HISTORIC AND DESIGN REVIEW COMMISSION

October 03, 2018

HDRC CASE NO:	**2018-492**
ADDRESS:	1335 SE MILITARY DR
LEGAL DESCRIPTION:	NCB 7676 BLK LOT 30
ZONING:	C-3, H
CITY COUNCIL DIST.:	3
DISTRICT:	Mission Historic District
APPLICANT:	Norgerie Rivas
OWNER:	Fresenius Medican Care
TYPE OF WORK:	Construction of an addition
APPLICATION RECEIVED:	September 17, 2018
60-DAY REVIEW:	November 16, 2018

REQUEST:

The applicant is requesting a Certificate of Appropriateness for approval to construct two, single story additions to the contemporary commercial structure at 1335 SE Military.

APPLICABLE CITATIONS:

Historic Design Guidelines, Chapter 3, Guidelines for Additions

1. Massing and Form of Residential Additions

A. GENERAL
i. Minimize visual impact—Site residential additions at the side or rear of the building whenever possible to minimize views of the addition from the public right-of-way. An addition to the front of a building would be inappropriate.
ii. Historic context—Design new residential additions to be in keeping with the existing, historic context of the block. For example, a large, two-story addition on a block comprised of single-story homes would not be appropriate.
iii. Similar roof form—Utilize a similar roof pitch, form, overhang, and orientation as the historic structure for additions.
iv. Transitions between old and new—Utilize a setback or recessed area and a small change in detailing at the seam of the historic structure and new addition to provide a clear visual distinction between old and new building forms.

B. SCALE, MASSING, AND FORM
i. Subordinate to principal facade—Design residential additions, including porches and balconies, to be subordinate to the principal façade of the original structure in terms of their scale and mass.
ii. Rooftop additions—Limit rooftop additions to rear facades to preserve the historic scale and form of the building from the street level and minimize visibility from the public right-of-way. Full-floor second story additions that obscure the form of the original structure are not appropriate.
iii. Dormers—Ensure dormers are compatible in size, scale, proportion, placement, and detail with the style of the house. Locate dormers only on non-primary facades (those not facing the public right-of-way) if not historically found within the district.
iv. Footprint—The building footprint should respond to the size of the lot. An appropriate yard to building ratio should be maintained for consistency within historic districts. Residential additions should not be so large as to double the existing building footprint, regardless of lot size.
v. Height—Generally, the height of new additions should be consistent with the height of the existing structure. The maximum height of new additions should be determined by examining the line-of-sight or visibility from the street. Addition height should never be so contrasting as to overwhelm or distract from the existing structure.

3. Materials and Textures

A. COMPLEMENTARY MATERIALS
i. Complementary materials—Use materials that match in type, color, and texture and include an offset or reveal to distinguish the addition from the historic structure whenever possible. Any new materials introduced to the site as a result

of an addition must be compatible with the architectural style and materials of the original structure.
ii. Metal roofs—Construct new metal roofs in a similar fashion as historic metal roofs. Refer to the Guidelines for Alternations and Maintenance section for additional specifications regarding metal roofs.
iii. Other roofing materials—Match original roofs in terms of form and materials. For example, when adding on to a building with a clay tile roof, the addition should have a roof that is clay tile, synthetic clay tile, or a material that appears similar in color and dimension to the existing clay tile.

B. INAPPROPRIATE MATERIALS
i. Imitation or synthetic materials—Do not use imitation or synthetic materials, such as vinyl siding, brick or simulated stone veneer, plastic, or other materials not compatible with the architectural style and materials of the original structure.

C. REUSE OF HISTORIC MATERIALS
i. Salvage—Salvage and reuse historic materials, where possible, that will be covered or removed as a result of an addition.

4. Architectural Details

A. GENERAL
i. Historic context—Design additions to reflect their time while respecting the historic context. Consider character-defining features and details of the original structure in the design of additions. These architectural details include roof form, porches, porticos, cornices, lintels, arches, quoins, chimneys, projecting bays, and the shapes of window and door openings.
ii. Architectural details—Incorporate architectural details that are in keeping with the architectural style of the original structure. Details should be simple in design and compliment the character of the original structure. Architectural details that are more ornate or elaborate than those found on the original structure should not be used to avoid drawing undue attention to the addition.
iii. Contemporary interpretations—Consider integrating contemporary interpretations of traditional designs and details for additions. Use of contemporary window moldings and door surroundings, for example, can provide visual interest while helping to convey the fact that the addition is new.

FINDINGS:

a. The applicant is requesting a Certificate of Appropriateness for approval to construct two, single story additions to the contemporary commercial structure at 1335 SE Military. The proposed additions will be located on the side (east) and rear (north) facades of the existing structure.
b. MATERIALS – The applicant has noted that materials and exterior finishes will match those of the existing structure. This is appropriate and consistent with the Guidelines.
c. SCALE, MASS & FORM – The applicant has noted that the proposed addition will feature an overall height and massing that is in keeping with the scale, mass and form of the existing structure. Staff finds this to be appropriate and consistent with the Guidelines.
d. SITE WORK – The site currently features existing curb cuts on both SE Military and Mission Road. The applicant has proposed improvements to the existing, curb cut on Mission Road, as well as site modifications to improve the existing surface parking lot. Generally, staff finds the proposed improvements to be appropriate. Any service or mechanical equipment is to be screened from view at the public right of way.
e. This review is limited to application documents that address the proposed addition and site work only. Any proposed new signage is to be reviewed and approved by the Historic and Design Review Commission prior to installation.

RECOMMENDATION:

Staff recommends approval based on findings a through e with the stipulation that all service and mechanical equipment be screened from view at the public right of way.

CASE MANAGER:

Edward Hall

Historical & Design Review Commission Application | Project Description	
Project Name:	FKC South San Antonio
Date:	09/07/2018

FKC South San Antonio Expansion Project Description

This project consists of a single-story interior build out expansion of an existing dialysis clinic with 15 existing treatment stations adding 10 new treatment stations. All exterior expansion finishes to match existing. Facility will continue to be used as an outpatient clinic for dialysis care. No care will be provided after business hours.

Images

Front Facade

Side Facade

Back Facade

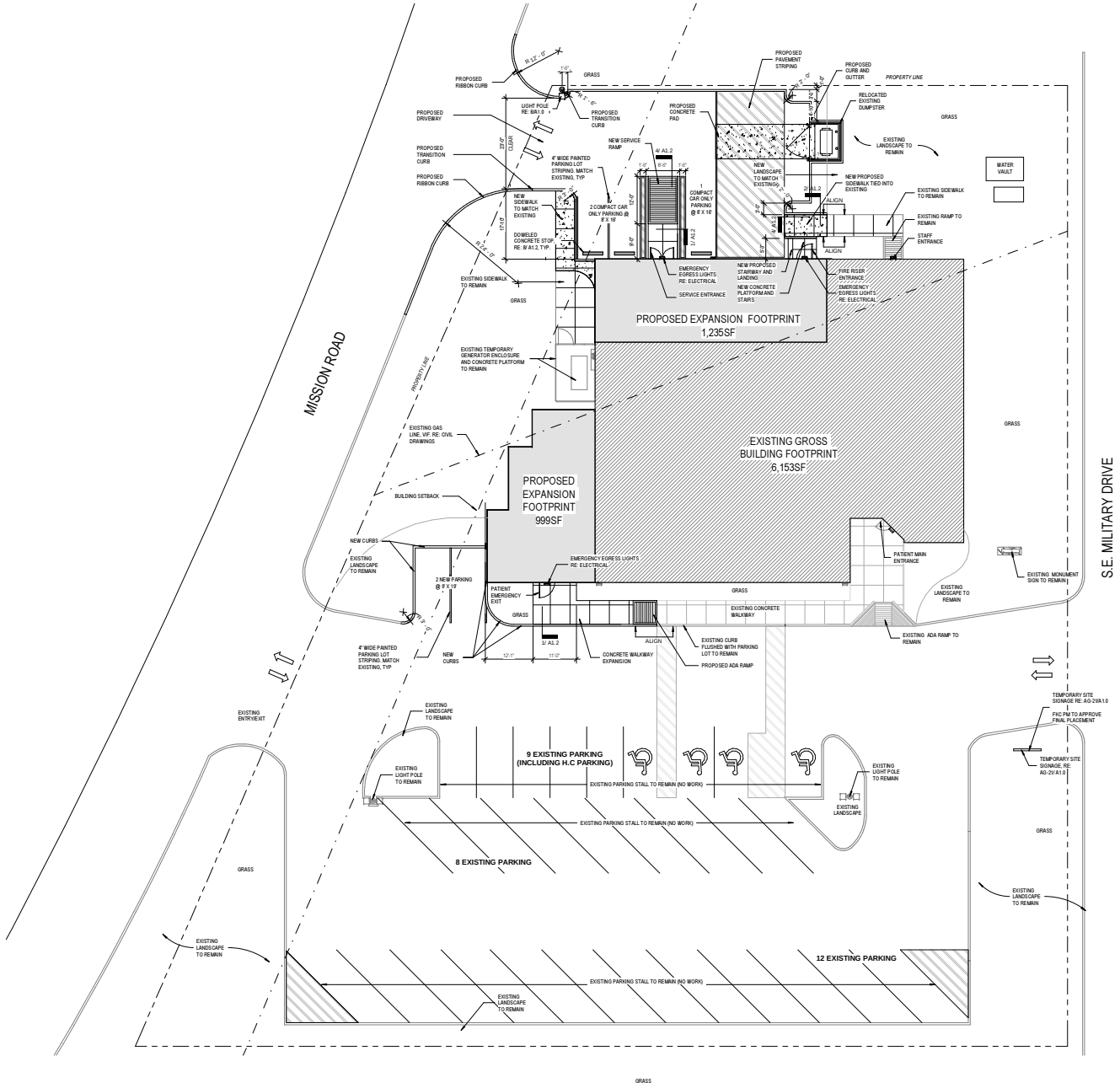
Back Facade

Back Facade

Back Facade

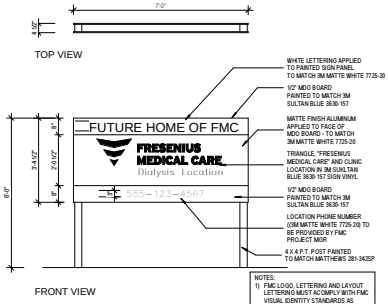
Back Façade

Side Facade



PARKING ANALYSIS

PARKING PROVIDED =	34 PARKING SPACES INCLUDING 4 HC SPACES
PARKING REQUIRED =	1 PER 250 S.F. OF FLOOR AREA (5 SPACES MIN.) 33 TOTAL SPACES
BUILDING SQUARE FOOTAGE =	8,387 S.F. G.F.A.



NOTES:
1) FMC LOGO, LETTERING AND LAYOUT LETTERING MUST ACCIMPLY WITH FMC VISUAL IDENTITY STANDARDS AS INDICATED IN THE "FMC VISUAL IDENTITY GUIDE - FEBRUARY 2012"
2) SIGN CAN BE SINGLE OR DOUBLE SIDED DEPENDING ON SPECIFIC SITE CONDITIONS

AG-21 / A1.0 FMC TEMPORARY SITE SIGNAGE
1/2" = 1'-0"

SITE PLAN LEGEND

═══	NEW CONDITIONS
═══	EXISTING TO REMAIN

ARCHITECTURAL SITE PLAN

SCALE: 3/32" = 1'-0"

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06/15/2018

Proposed Dialysis Clinic for:
SOUTH SAN ANTONIO
FKC LOCATION #001241-5-EX-W-RN-2017
1335 SE Military Dr
San Antonio, TX 78214

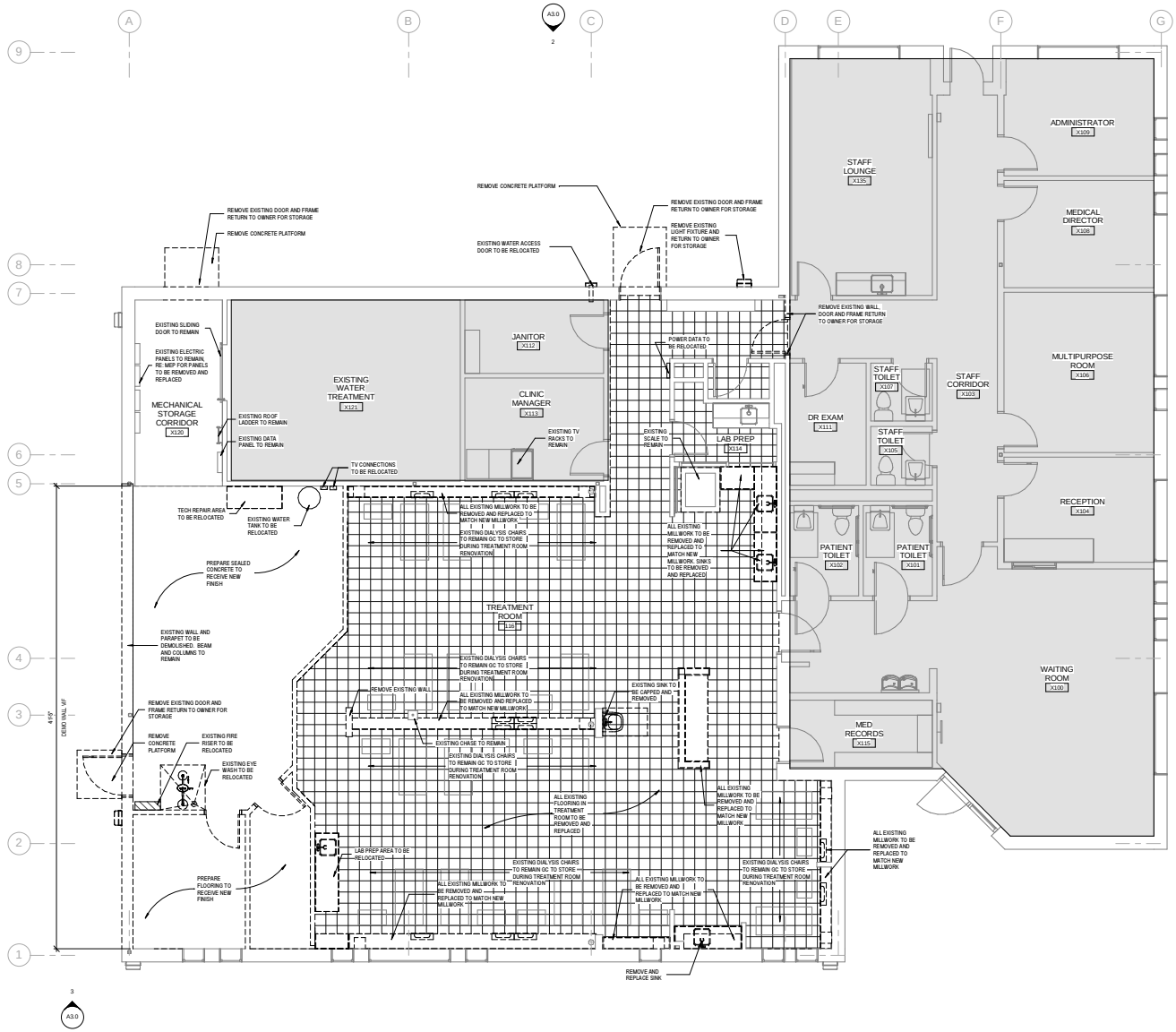
FRESENIUS KIDNEY CARE

Drawn by:	NR, SC
Checked by:	FE
Date Drawn:	06/15/2018
Project number	001241-5-EX-W-RN-2017

No.	Description	Date

A1.0

Sheet Number



GENERAL DEMOLITION NOTES

1. REFER TO GENERAL NOTES SHEET T1.0
2. PROVIDE DEMOLITION WORK SHOWN ON THE DRAWINGS AND RELATED AND INCIDENTAL DEMOLITION WORK REQUIRED TO COMPLETE NEW CONSTRUCTION WORK. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR ADDITIONAL DEMOLITION SCOPE AND REQUIREMENTS.
3. FIELD VERIFY EXISTING CONDITIONS, PRIOR TO THE START OF DEMOLITION OPERATIONS. BRING ANY DISCREPANCIES WHICH MAY AFFECT DEMOLITION OR NEW CONSTRUCTION WORK TO THE ATTENTION OF THE ARCHITECT FOR REVIEW.
4. PROTECT EXISTING CONSTRUCTION TO REMAIN FROM DAMAGE DURING DEMOLITION OPERATIONS. CONDUCT DEMOLITION OPERATIONS SO AS TO MINIMIZE THE DEVELOPMENT AND SPREAD OF DUST.
5. REMOVE DEMOLITION MATERIALS FROM SITE PROMPTLY AND DISPOSE OF LEGALLY OFF SITE.
6. DO NOT ALTER THE STRUCTURAL INTEGRITY OF THE EXISTING BUILDING OR ITS ASSEMBLIES UNLESS SPECIFICALLY NOTED OTHERWISE.
7. UPON REMOVAL OF FINISH MATERIALS INDICATED OR REQUIRED, PREPARE SUBSTRATE TO RECEIVE NEW FINISH. REFER ALSO TO ROOM FINISH SCHEDULE FOR NEW MATERIALS). REPAIR ANY EXISTING DAMAGE, OR DAMAGE ARISING FROM DEMOLITION OPERATIONS, TO MATCH EXISTING AND AS NEEDED FOR INSTALLATION OF NEW FINISHES.
8. PATCH AND REPAIR DAMAGE ARISING FROM DEMOLITION OPERATIONS TO FLOOR, WALL AND CEILING SURFACES, TO MATCH EXISTING. PATCH CHIPPED OR SPALLED CONCRETE CAUSED BY PARTITION REMOVAL. REMOVE ANY EXTRANEOUS MATERIAL AND PATCH TO MATCH ADJACENT SURFACES.
9. PROVIDE 1 HOUR FIRE-RESISTANT RATED DUST PROOF BARRIERS (U.L. DESIGN U806) TO SEPARATE DEMOLITION AREA FROM THE REST OF THE FACILITY. PROVIDE TEMPORARY FILTERS AS REQUIRED TO PREVENT THE SPREAD OF DUST THROUGH THE BUILDING VIA THE RETURN AIR SYSTEM. UPON COMPLETION OF DEMOLITION OPERATIONS, REMOVE BARRIERS AND REPAIR DAMAGE CAUSED BY THEIR INSTALLATION OR PRESENCE TO "LIKE NEW" CONDITION.
10. MAINTAIN MEANS OF EGRESS, AND KEEP FULLY SEPARATE FROM CONSTRUCTION AREA, AT ALL TIMES
11. PATCH AND REPAIR OPENINGS IN AND/OR PENETRATIONS THROUGH EXISTING FIRE RATED ASSEMBLIES AND SMOKE BARRIER ASSEMBLIES
12. AT UNEVEN AREAS AND DEPRESSIONS IN EXISTING CONCRETE FLOOR CONSTRUCTION, PROVIDE CEMENTITIOUS UNDERLAYMENT AS REQUIRED TO PROVIDE SUITABLE BASE CONDITION FOR NEW FINISHES) AND NEW CONSTRUCTION.
13. COORDINATE TIMING AND HOURS OF DEMOLITION OPERATIONS WITH OWNER'S SCHEDULE.
14. MINIMIZE NOISE FROM DEMOLITION OPERATIONS PARTICULARLY WHEN CONDUCTED DURING REGULAR BUSINESS HOURS.
15. CONDUCT DEMOLITION OPERATIONS TO PREVENT INJURY TO PEOPLE AND DAMAGE TO ADJACENT BUILDING AREAS. ENSURE SAFE PASSAGE OF PEOPLE AROUND SELECTIVE DEMOLITION AREA.
    - A. PROTECT WALLS, CEILINGS, FLOOR AND OTHER FINISH WORK THAT ARE TO REMAIN AND ARE EXPOSED DURING SELECTIVE DEMOLITION OPERATIONS
    - B. COVER AND PROTECT FURNISHINGS AND EQUIPMENT THAT HAVE NOT BEEN REMOVED.
    - C. DO NOT BLOCK ANY EXITS DURING CONSTRUCTION OPERATIONS.
17. IN WALLS TO BE REFINISHED, REMOVE EXISTING MISCELLANEOUS ACCESSORIES TO FACILITATE INSTALLATION OF NEW FINISHES. PATCH, REPAIR, AND PREP WALLS TO RECEIVE NEW FINISHES. ITEMS REMOVED TO BE SALVAGED AND GIVEN BACK TO THE OWNER.
18. THE GC SHALL NOTIFY THE OWNER IMMEDIATELY OF THE PRESENCE OF ANY SUSPECTED HAZARDOUS MATERIALS (INCLUDING BUT NOT LIMITED TO LEAD, ASBESTOS, MOLD, ETC.) DISCOVERED ON SITE DURING DEMOLITION.
19. REMOVE EXISTING CEILING IN ITS ENTIRETY INCLUDING LIGHTS, GRILLS, DIFFUSERS AND ALL OTHER DEVICES AND SUPPORTS FOR AREA IN CONTRACT ONLY.

SITE DEMO PLAN LEGEND

- EXISTING CONDITIONS TO BE REMOVED AND DISPOSED OF U.N.O.
- EXISTING TO REMAIN
- EXISTING DOOR & FRAME TO BE REMOVED AND DISPOSED OF U.N.O.
- NOT IN CONTRACT

DEMO PLAN

SCALE: 1/4" = 1'-0"

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06/08/2018

Proposed Dialysis Clinic for:
SOUTH SAN ANTONIO
FKC LOCATION #001241-5-EX-W-RN-2017
1335 SE Military Dr
San Antonio, TX 78214

FRESENIUS KIDNEY CARE

Drawn by:	NR
Checked by:	FE
Date Drawn:	06/08/2018
Project number	001241-5-EX-W-RN-2017

No.	Description	Date

D2.0

Sheet Number

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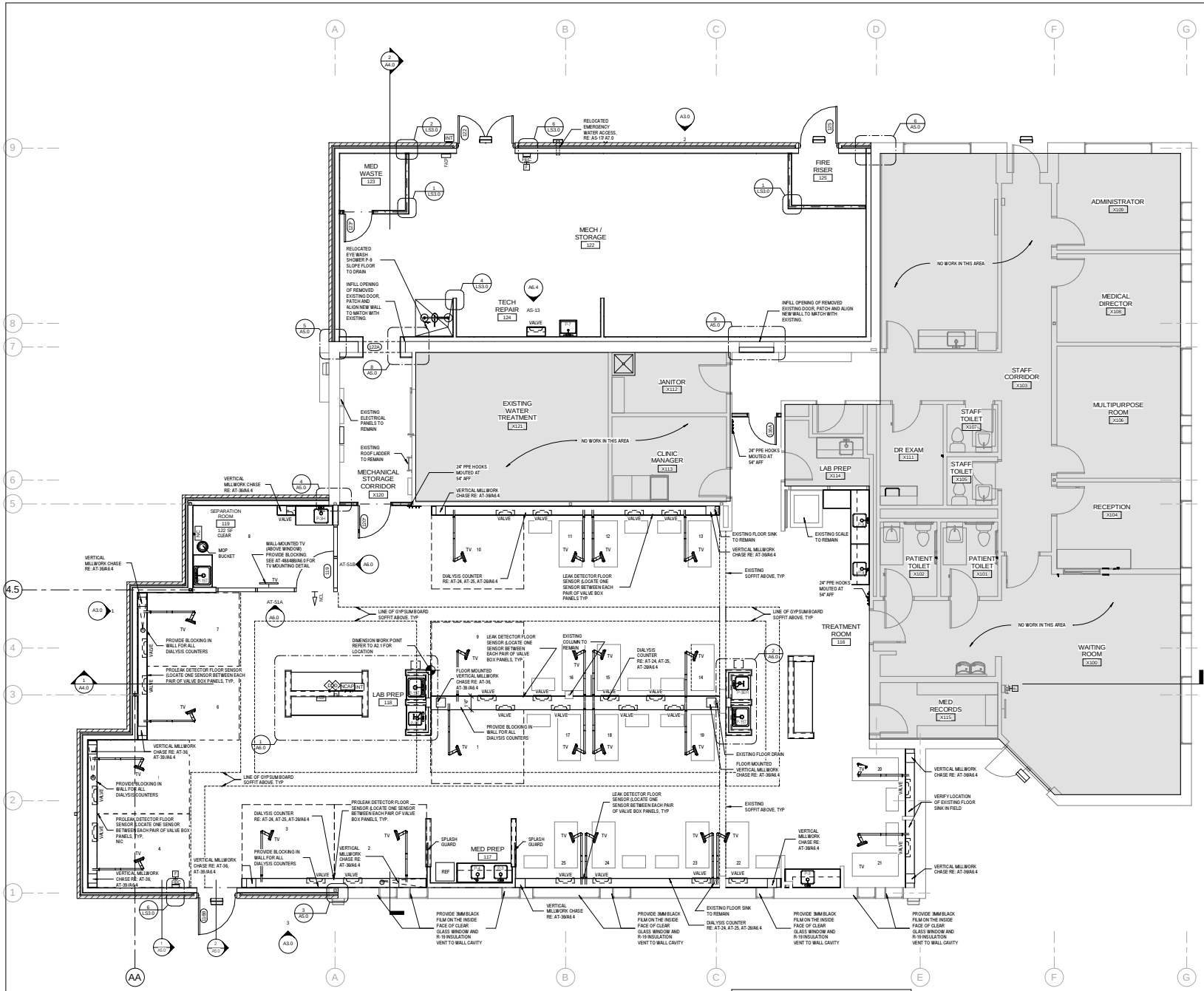

WALL TYPES SCHEDULE

MARK	DESCRIPTION	WIDTH	UL RATING
A	3-5/8" METAL STUD @ 16" O.C. TO 4" ABOVE FINISHED CEILING; 1 LAYER 5/8" GYPSUM BOARD EACH SIDE. LATERAL BRACING TO STRUCTURE @ 48" O.C. MAX, ALTERNATE SIDES	4-7/8"	
A6	6" METAL STUD @ 16" O.C. TO 4" ABOVE FINISHED CEILING; 1 LAYER 5/8" GYPSUM BOARD EACH SIDE. LATERAL BRACING TO STRUCTURE @ 48" O.C. MAX, ALTERNATE SIDES	7-1/4"	
B	3-5/8" METAL STUD @ 16" O.C. TO 4" ABOVE FINISHED CEILING; 1 LAYER 5/8" GYPSUM BOARD EACH SIDE. LATERAL BRACING TO STRUCTURE @ 48" O.C. MAX, ALTERNATE SIDES; 3" SOUND ATTENUATION BATT INSULATION	4-7/8"	
C	3-5/8" METAL STUD @ 16" O.C. TO ROOF/CEILING STRUCTURE; 1 LAYER 5/8" GYPSUM BOARD EACH SIDE.	4-7/8"	
G	3-5/8" METAL STUD @ 16" O.C. TO ROOF/CEILING STRUCTURE; 1 LAYER 5/8" GYPSUM BOARD EACH SIDE. FIRE RATED JOINT SEALANT AT ALL EDGES AND PENETRATIONS; ENSURE CONTINUOUS SMOKE PROOF SEAL	4-7/8"	1 HR
H	3-5/8" METAL STUD @ 16" O.C. TO DECK STRUCTURE; 1 LAYER 5/8" GYPSUM BOARD EACH SIDE SEALANT AT ALL EDGES AND PENETRATIONS; SOUND ATTENUATION BATT INSULATION; ENSURE CONTINUOUS SMOKE PROOF SEAL	4-7/8"	1 HR
J	3 5/8" METAL STUDS @ 16" O.C. TO 41", SOLID SURFACE TOP CAP; 1 LAYER 5/8" GYPSUM BOARD EACH SIDE; 3 1/2" TUBE STEEL SUPPORTS @ 48" O.C. ANCHORED TO CONCRETE SLAB	4-7/8"	
L6	6" METAL STUDS @ 16" O.C. TO DECK STRUCTURE; 1 LAYER 5/8" GYPSUM BOARD FINISH SIDE	6 5/8"	
K	EXISTING RATED WALL. PROTECT ALL PENETRATIONS		

NOTE:
1. ALL PARTITIONS TO BE TYPE "A", UNLESS OTHERWISE NOTED.
2. PROVIDE DENS ARMOR PLUS GYP. BD. BEHIND ENTIRE LENGTH OF ALL CABINETS WITH SINKS, AND ALL DIALYSIS CHASE SUP TO 48" AFF.
3. PROVIDE DENSE ARMOR PLUS GYP. BD. IN PSD/SGRAN/LFO AND WATER TREATMENT.
4. PROVIDE 3MM BLACK WINDOW FILM ON THE INSIDE FACE OF CLEAR GLASS WINDOWS BEHIND L-TYPE WALL WHEN APPLICABLE
5. PROVIDE 5/8" THICK GYPSUM BOARD AND R-19 BATT INSULATION AT ALL PERIMETER EXTERIOR WALLS, DENS ARMOR AT TREATMENT ROOM CHASE AND WET LOCATIONS.

PARTITION TYPE MODIFIERS:

1 PROVIDE (1) ADDITIONAL LAYER OF 1/2" PLYWOOD ATTACHED TO FACE OF MET STUDS ON ONE SIDE. EXTEND FULL HEIGHT OF PARTN.

2 PROVIDE (1) ADDITIONAL LAYER OF 1/2" PLYWOOD ATTACHED TO FACE OF MET STUDS ON BOTH SIDES. EXTEND FULL HEIGHT OF PARTN.

3 PROVIDE (1) ADDITIONAL LAYER OF 1/2" PLYWOOD AND 5/8" GYPSUM BOARD ATTACHED TO FACE OF MET STUDS ON ONE SIDE. EXTEND FULL HEIGHT OF PARTN.

KEY INDICATES SIDE W/ ADDITIONAL LAYER OF 1/2" PLYWOOD FOR MODIFIER #1

1 EB — PARTITION TYPE MARK / PARTITION TYPE MODIFIER

LEGEND

Room Name 101 / 150 SF — ROOM NAME/NUMBER/SF
101 — WINDOW TAG
101 — DOOR TAG
101 — SMOKE RATED DOOR TAG

ELEVATION DETAIL SYMBOL
A4.X — ELEVATION DETAIL NUMBER / ELEVATION SHEET NUMBER

SECTION DETAIL SYMBOL
X / A4.X — SECTION DETAIL NUMBER / SECTION SHEET NUMBER

BUILDING SECTION SYMBOL
X / A4.X — SECTION DETAIL NUMBER / SECTION SHEET NUMBER

SIM 1 / A10.1 — DETAIL CALL OUT SYMBOL: DETAIL NUMBER / SHEET NUMBER

1 — COLUMN GRID
EXISTING TO REMAIN
TV — WALLS/SOFFIT MOUNTED TELEVISION
DOOR RELEASE
D — DOOR CONTROL MODULE
VALVE — RECESSED VALVE PANEL
CH — COAT HOOK
FACP — FIRE ALARM CONTROL PANEL
FAAP — REMOTE FA ANNUNCIATOR PANEL
FEC — SEMI- RECESSED/ RECESSED FIRE EXTINGUISHER CABINET. RE:7/LS3.0
NCL — NURSE CALL DOME LIGHT
A — WALL TYPE TAG
NC — NURSE CALL PULL STRING
INT — VOICE INTERCOM
NCAP — NURSE CALL ANNUNCIATOR PANEL
1 HOUR FIRE/SMOKE WALL
NOT IN CONTRACT
3" SOUND ATTENUATION BATT INSULTION
EXISTING DIALYSIS CHAIRS

SHEET NOTES

1. REFER TO SHEET A2.1 FOR PLAN DIMENSIONS.
2. GC TO PROVIDE 1 LAYER 3/8" GYPSUM (U.N.O.) TO FULL HEIGHT OF WALL ON INTERIOR FACE OF ALL EXISTING EXTERIOR WALLS AND PROVIDE ANY MISSING R-19 INSULATION TO FILL GAPS IN EXTERIOR WALLS.
3. REFER TO PLUMBING DRAWINGS FOR PLUMBING FIXTURE SCHEDULE.

FLOOR PLAN

SCALE: 1/4" = 1'-0"

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Drawn by:	SC
Checked by:	JO
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A2.0

Sheet Number

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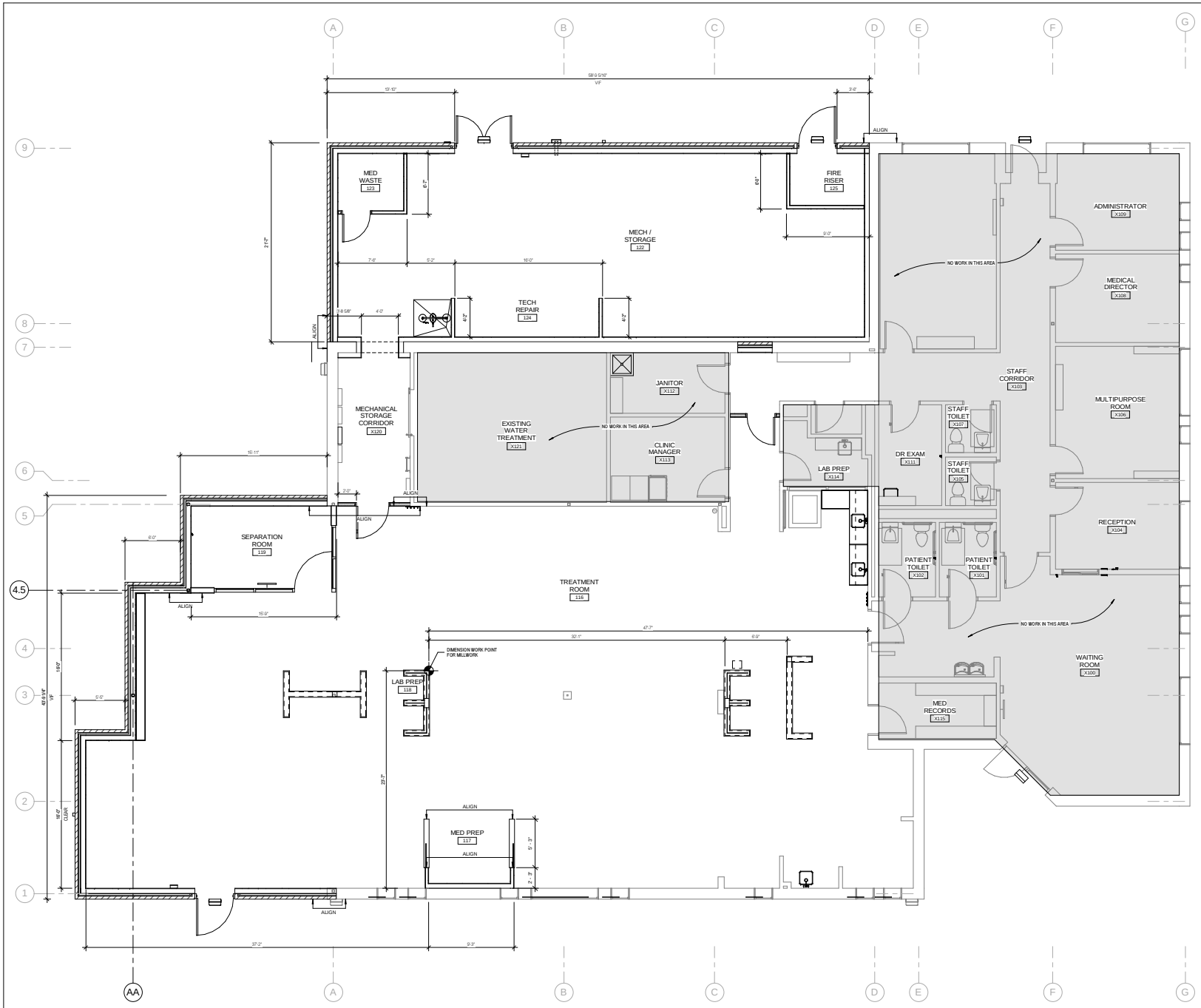

SHEET NOTES

1. VISIT THE SITE TO BECOME FAMILIAR WITH THE SCOPE OF WORK AND TO FIELD VERIFY EXISTING CONDITIONS PRIOR TO BIDDING THIS PROJECT. REPORT DISCREPANCIES OR AMBIGUOUS ITEMS TO THE ARCHITECT PRIOR TO BIDDING FOR CLARIFICATION.
2. FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO CONSTRUCTION.
3. REMOVE ALL OTHER DEBRIS AND WASTE FROM THE SITE AND DISPOSE OF PROPERLY, IN ACCORDANCE WITH ANY APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS.
4. RE: SHEET T-1.0 FOR TYPICAL GRAPHICAL SYMBOLS AND ABBREVIATION INDEX.
5. ALL DIMENSIONS OF EXISTING CONDITIONS TO BE FIELD VERIFIED.
6. GENERAL CONTRACTOR TO PROTECT ALL EXISTING PARKING LOT AND LANDSCAPE AND BUILDING DURING CONSTRUCTION.
7. GENERAL CONTRACTOR TO PROTECT ALL INTERIOR SPACES DURING CONSTRUCTION.
8. ALL DOORS TO BE INSTALLED 6" FROM PERPENDICULAR WALL ON THE HINGE SIDE U.N.O.

PLAN LEGEND

NEW WORK

EXISTING TO REMAIN

NOT IN CONTRACT

DIMENSIONED FLOOR PLAN

SCALE: 1/4" = 1'-0"

06/08/2018

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A2.1

Sheet Number

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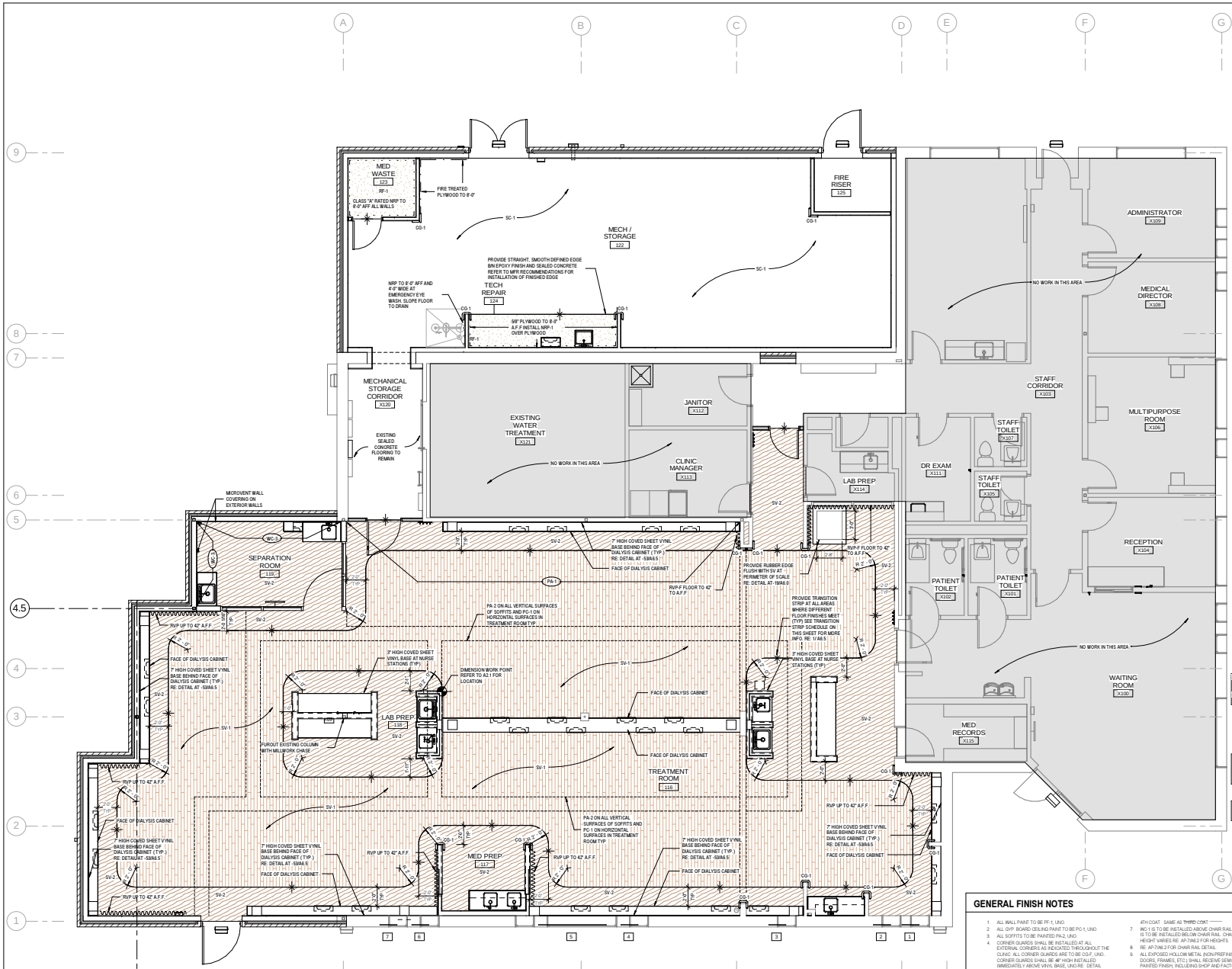


LEGEND

* SEE SHEET A2.8 FOR FINISH SCHEDULE

- SHEET VINYL (SV-1)
- SHEET VINYL (SV-2)
- SEALED CONCRETE (SC-1)
- RIGID VINYL PANEL (RVP-WR & RVP-F)
- PLYWOOD BLOCKING
- NON-FIBERGLASS RIGID PANEL (NRP-1)
- RESINOUS FLOOR (RF-1)
- PA-1 ACCENT PAINT (PA-1)
- PA-2 ACCENT PAINT (PA-2)
- 1 WINDOW SHADE TAG
- FLOOR TRANSITION STRIP
- SOFFIT
- CG-1 & CS-1 CORNER GUARD
- EXISTING TO REMAIN
- NEW WORK
- NOT IN CONTRACT

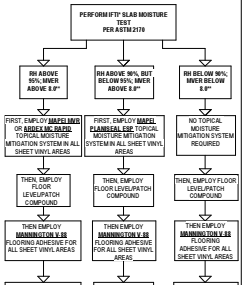
TRANSITION STRIP SCHEDULE

(NOT ALL NECESSARILY USED)

PORCELAIN TILE TO SHEET VINYL	- CTA-XX-Z
PORCELAIN TILE TO CARPET	- CTA-XX-L
SHEET VINYL TO CARPET	- CTA-XX-HT
SHEET VINYL TO SEALED CONCRETE	- SSR-XX-B
RESINOUS FLOOR TO SEALED CONCRETE	- SSR-XX-B
SHEET VINYL TO SHEET VINYL	- CTA-XX-Y
SEALED CONCRETE TO CARPET	- CTA-XX-J
SHEET VINYL TO RESINOUS FLOOR	- CTA-XX-X
CARPET TO CARPET	- CTA-XX-M
PORCELAIN TILE TO RESINOUS FLOOR	- CTA-XX-K
CARPET TO RESINOUS FLOOR	- CTA-XX-H
PORECELAIN TILE TO SEALED CONCRETE	- CTA-XX-P

* SEE SHEET A2.8 FOR TRANSITION STRIP COLOR SELECTION

SLAB MOISTURE DECISION TREE



*INDEPINDENT FLOOR TESTING & INSPECTION, INC. WWW.IFTI.COM

**IF PH IS ABOVE 10.0, FLOOR MAY NEED TO BE AUTO-SCRUBBED TO REDUCE PH LEVELS

GENERAL FINISH NOTES

1. ALL WALL PAINT TO BE PF-1, UNO.
2. ALL GYP. BOARD CEILING PAINT TO BE PC-1, UNO.
3. ALL SOFFITS TO BE PAINTED PA-2, UNO.
4. CORNER GUARDS SHALL BE INSTALLED AT ALL EXTERNAL CORNERS AS INDICATED THROUGHOUT THE CLINIC. ALL CORNER GUARDS ARE TO BE CS-F, UNO. CORNER GUARDS SHALL BE 48" HIGH INSTALLED IMMEDIATELY ABOVE VINYL BASE, UNO.RE: DETAIL AG-4/A6.5 FOR CORNER GUARD DETAIL.
5. ACCENT WALLS (PAINTED) DENOTED ON FLOOR PLAN BY ARROWS POINTING TO THE INDICATED WALL.
6. BIRCH WOOD TRIM AND DOORS SHALL BE STAINED AS FOLLOWS:
   1ST COAT : MINWAX WOOD FINISH (OIL BASE) 1 PART RED OAK 2/52-1 PART COLONIAL MAPLE #223
   2ND COAT : SAME AS FIRST COAT
   3RD COAT : MINWAX FAST DRYING POLYURETHANE-SATIN FINISH
   4TH COAT : SAME AS THIRD COAT
7. WC-1 IS TO BE INSTALLED ABOVE CHAIR RAIL AND WC-2 IS TO BE INSTALLED BELOW CHAIR RAIL. CHAIR RAIL HEIGHT VARIES RE: AP-7/A6.2 FOR HEIGHTS.
8. RE: AP-7/A6.2 FOR CHAIR RAIL DETAIL.
9. ALL EXPOSED HOLLOW METAL (NON-PREFINISHED DOORS, FRAMES, ETC.) SHALL RECEIVE SEMI-GLOSS PAINTED FINISH, INCLUDING SHOP AND FACTORY PRIMED SURFACES UNO.
10. ITEMS REQUIRING FINISH SELECTIONS THAT DO NOT APPEAR ON THE FINISH PLANS SHALL BE SELECTED FROM SHOP DRAWINGS OR SAMPLE SUBMITTALS AS REQUIRED.
11. ALL FLOOR MATERIAL CHANGES ARE TO OCCUR AT THE CENTERLINE OF CLOSED DOOR. AT TRANSITIONS WHERE THERE IS NO DOOR, INSTALL AS INDICATED ON THE FLOOR PLANE. REFER TO 2/A6.5 FOR FLOOR TRANSITION DETAILS.
12. ALL DOOR FRAMES TO BE PAINTED PF-2, UNO.
13. ALL EXPOSED SCREW HEADS SHALL MATCH ADJACENT SURFACES UNLESS NOTED ELSEWHERE. ALL NEW AND EXISTING GRILLES, REGISTERS, ACCESS DOORS, SPEAKERS, COVER PLATES, FIRE EQUIPMENT CABINETS, AND ALL OTHER APPLIED DEVICES REQUIRE JOB FINISH AND SHALL MATCH COLOR OF ADJACENT SURFACE UNO.
14. REFER TO AS-6/A6.5 FOR NRP BASE DETAILS
15. ALL EXPOSED INTERIOR WALL CORNERS SHALL RECEIVE CORNER GUARDS. CORNER GUARDS IN ROOMS WITH CHAIR RAIL SHALL TERMINATE AT BOTTOM OF CHAIR RAIL (CHAIR RAIL HEIGHT VARIES). CORNER GUARDS IN ROOMS WITH FULL HEIGHT NRP/NRPO WALL PROTECTION SHALL BE 8'-0" AFF TO TOP OF GUARDS. REMAINDER OF CORNER GUARDS SHALL BE 4'-0" AFF UNO ON PLANS. SEE SHEET AG-4/A6.5 FOR CORNER GUARD DETAIL. COORDINATE COLOR WITH ADJACENT WALL PAINT COLORS AND WALL COVERING COLORS.
16. INSTALL SHEET VINYL FLASH COVE ON MILLWORK.

FINISH FLOOR PLAN

SCALE: 1/4" = 1'-0"

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Proposed Dialysis Clinic for:
SOUTH SAN ANTONIO
FKC LOCATION #001241-5-EX-W-RN-2017
1335 SE Military Dr
San Antonio, TX 78214

FRESENIUS KIDNEY CARE

Drawn by:	SC
Checked by:	FE
Date Drawn:	06/08/2018
Project number	001241-5-EX-W-RN-2017

No.	Description	Date

A2.3

Sheet Number

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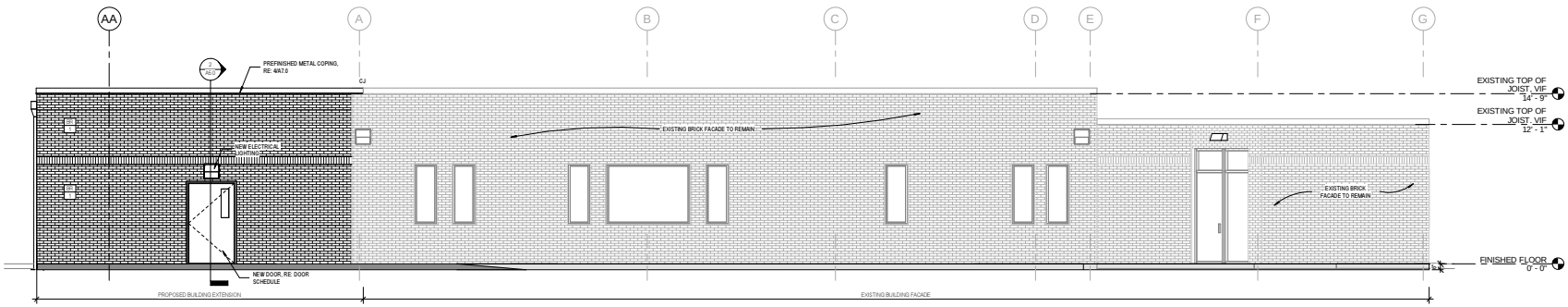
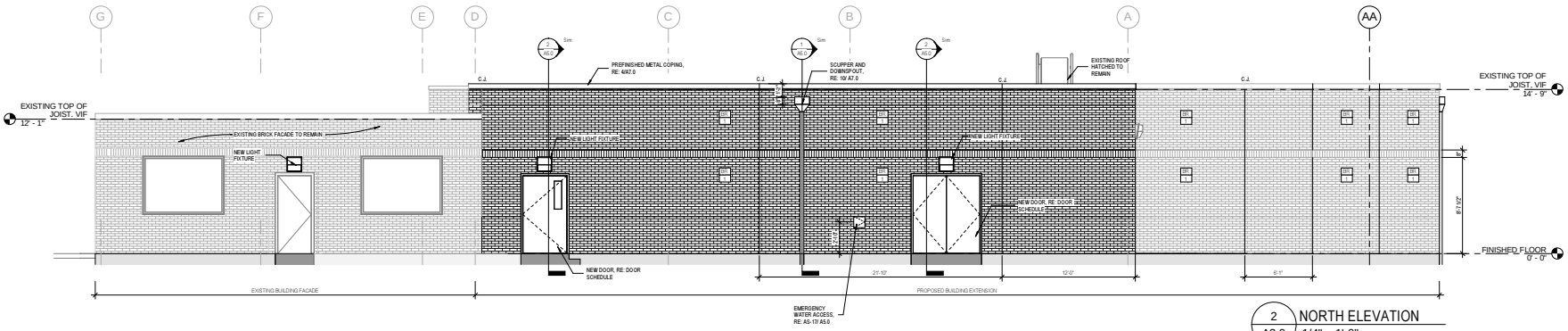
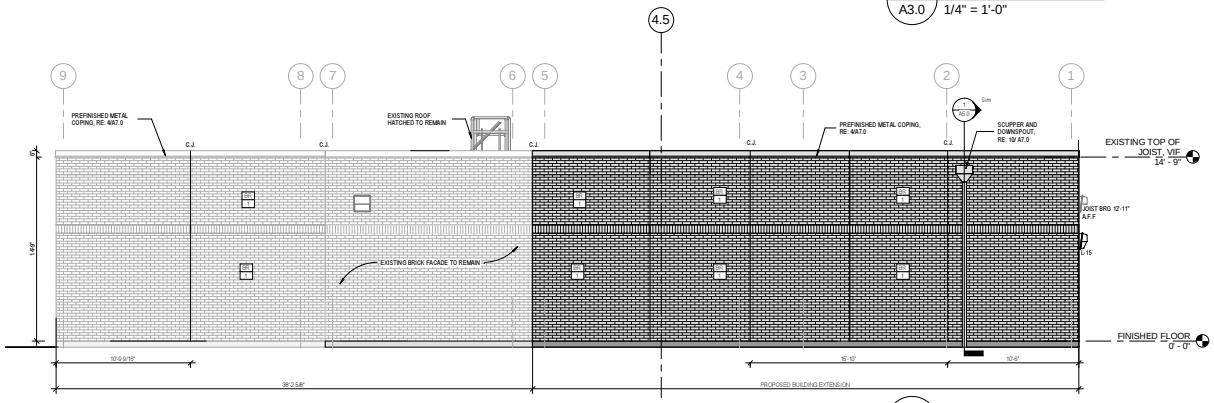


3 A3.0 SOUTH ELEVATION
1/4" = 1'-0"



2 A3.0 NORTH ELEVATION
1/4" = 1'-0"



1 A3.0 WEST ELEVATION
1/4" = 1'-0"

LOOSE LINTEL NOTES

1. ALL LOOSE BRICK LINTELS SHALL BE HOT DIP GALVANIZED.
2. PROVIDE 8" BEARING ON EACH END OF STEEL LINTEL MINIMUM.
3. LOOSE BRICK VENEER LINTEL MINIMUM SIZE SHALL BE AS FOLLOWS:

OPENING UP TP 3'-0" ..... L3-1/2 x 3-1/2 x 3/8
OPENING UP TP 6'-0" ..... L6 x 3-1/2 x 3

EXTERIOR FINISHING SCHEDULE

BR 1	BRICK VENEER MFR: ACME COLOR: CRANBERRY

EXTERIOR BUILDING ELEVATIONS

SCALE: AS NOTED

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06/15/2018

Proposed Dialysis Clinic for:
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No.	Description	Date

A3.0

Sheet Number

FRESENIUS MEDICAL CARE

Real Estate and Construction Services
Atlanta (Design)

SELECTED SPECIFICATIONS FOR HISTORICAL REVIEW

January 2018 Edition

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SECTION 04200

UNIT MASONRY

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section including, but not limited to, the following:
   1. Concrete masonry units.
   2. Face brick.
   3. Mortar and grout.
   4. Reinforcing steel, masonry joint reinforcement, ties and anchors.

B. Items To Be Installed Only: Install the following items as furnished by the designated Sections:
   1. Section 05500 - METAL FABRICATIONS:
      a. Lintels, miscellaneous metal and iron sleeves, anchors, inserts and plates to be built into masonry walls.
   2. Section 06100 - ROUGH CARPENTRY:
      a. Wood nailers and blocking built into masonry.
   3. Section 08111 - STEEL DOORS AND FRAMES:
      a. Hollow metal frames in masonry openings.
   4. Division 15 - FIRE PROTECTION:
      a. Access doors in masonry openings.
   5. Division 15 - PLUMBING:
      a. Access doors in masonry openings.
   6. Division 15 - HEATING, VENTILATING, AND AIR CONDITIONING:
      a. Grilles in interior masonry walls.
      b. Access doors in masonry openings.
      c. Pipe and duct sleeves for placement into masonry openings.
   7. Division 16 - ELECTRICAL:
      a. Access doors in masonry openings.

C. Items To Be Furnished Only: Furnish the following items for installation by the designated Sections:
   1. Section 03300 - CAST-IN-PLACE CONCRETE:
      a. Dovetail slots for masonry anchors.

D. Related Work: The following items are not included in this Section and will be performed under the designated Sections:
   1. Section 07844 - FIRE-RESISTIVE JOINT SYSTEMS for fire-resistive joint systems openings in masonry walls and at heads of masonry walls.
   2. Section 07920 - JOINT SEALANTS for sealing control and expansion joints in unit masonry.

1.2 SUBMITTALS

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

B. Shop Drawings: For the following:
   1. Masonry Units: Show sizes, profiles, coursing, and locations of special shapes.

2. Reinforcing Steel: Detail bending and placement of unit masonry reinforcing bars. Comply with ACI 315, "Details and Detailing of Concrete Reinforcement."

C. Samples for Verification: For each type and color of the following:
1. Exposed concrete masonry units.
2. Face brick, in the form of straps of five or more bricks.
3. Pigmented mortar. Make Samples using same sand and mortar ingredients to be used on Project. Label Samples to indicate types and amounts of pigments used.
4. Weep holes/vents.
5. Accessories embedded in masonry.

D. Qualification Data: For testing agency.

E. Material Certificates: Include statements of material properties indicating compliance with requirements including compliance with standards and type designations within standards. Provide for each type and size of the following:
1. Masonry units:
   a. Include material test reports substantiating compliance with requirements.
   b. For bricks, include size-variation data verifying that actual range of sizes falls within specified tolerances.
   c. For exposed brick, include material test report for efflorescence according to ASTM C 67.
   d. For masonry units used in structural masonry, include data and calculations establishing average net-area compressive strength of units.
2. Cementitious materials. Include brand, type, and name of manufacturer.
3. Mortar mixes. Include description of type and proportions of ingredients.
4. Grout mixes. Include description of type and proportions of ingredients.
5. Reinforcing bars.
6. Joint reinforcement.
7. Anchors, ties, and metal accessories.

F. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.
1. Include test reports, per ASTM C 780 for mortar mixes required to comply with property specification.
2. Include test reports, per ASTM C 1019 for grout mixes required to comply with compressive strength requirement.

G. Cold-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with cold-weather requirements.

1.3 QUALITY ASSURANCE

A. Testing Agency Qualifications: An independent agency qualified according to ASTM C 1093 for testing indicated, as documented according to ASTM E 548.

B. 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, through one source from a single manufacturer for each product required.

C. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from a single manufacturer for each cementitious component and from one source or producer for each aggregate.

D. Preconstruction Testing Service: The Owner will engage a qualified independent testing agency to perform preconstruction testing indicated below. Payment for these services will be made by the Owner. Retesting of materials that fail to meet specified requirements shall be done at Contractor's expense.

1. Prism Test: For each type of construction required, per ASTM C 1314.

E. Fire-Resistance Ratings: Where indicated, provide materials and construction identical to those of assemblies with fire-resistance ratings determined per ASTM E 119 by a testing and inspecting agency, by equivalent concrete masonry thickness, or by other means, as acceptable to authorities having jurisdiction.

F. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01. Agenda shall include protection of air barrier membrane during construction.

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 lifting and emptying into dispensing silo. Store preblended, dry mortar mix in delivery containers on elevated platforms, under cover, and in a dry location or in a metal dispensing silo with weatherproof cover.

E. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.5 PROJECT CONDITIONS

A. Protection of Air Barrier Membrane: During construction, protect air barrier membrane from penetrations which allow air to pass through air barrier assemblies. Engage original installer to repair damage promptly using identical materials and methods of installation, and to the satisfaction of the Owner.

B. 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 and hold cover securely in place.
   2. Where 1 wythe of multiwythe masonry walls is completed in advance of other wythes, secure cover a minimum of 24 inches down face next to unconstructed wythe and hold cover in place.

C. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least 3 days after building masonry walls or columns.

D. 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.

E. 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 above and will remain so until masonry has dried, but not less than 7 days after completing cleaning.

F. 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 exceed tolerances and to contain chips, cracks, or other defects exceeding limits stated in the standard. Do not use units where such defects, including dimensions that vary from specified dimensions by more than stated tolerances, will be exposed in the completed Work or will impair the quality of completed masonry.

2.2 CONCRETE MASONRY UNITS (CMUs)

A. Concrete Masonry Units: ASTM C 90, normalweight unless indicated otherwise manufactured to dimensions 3/8 inch less than nominal dimensions.

B. Shapes: Provide standard shapes indicated and as required for building configuration. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.

2.3 BRICK

A. Face Brick: ASTM C 216, Grade SW, Type FBS.
   1. Trade Reference and Color: As selected by Architect.
   2. Size (Actual Dimensions): As selected by Architect.
   3. Initial Rate of Absorption: Less than 30 g/30 sq. in. per minute when tested per ASTM C 67.
   4. Efflorescence: Provide brick that has been tested according to ASTM C 67 and is rated “not effloresced.”
   5. Where shown to “match existing,” provide face brick matching color range, texture, and size of existing adjacent brickwork.

B. Building (Common) Brick where Concealed: ASTM C 62, Grade SW.

C. General: Provide shapes indicated and as follows:

1. For ends of sills and caps and for similar applications that would otherwise expose unfinished brick surfaces, provide units without cores or frogs and with exposed surfaces finished.
2. Provide special shapes for applications where stretcher units cannot accommodate special conditions, including those at corners, movement joints, bond beams, sashes, and lintels.
3. Provide special shapes for applications requiring brick of size, form, color, and texture on exposed surfaces.
4. Provide special shapes for applications where shapes produced by sawing would result in sawed surfaces being exposed to view.
5. Units which are sawn and less than one-half full size shall not be used.

2.4 MORTAR AND GROUT MATERIALS

A. Portland Cement: ASTM C 150, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.

B. Hydrated Lime: ASTM C 207, Type S.

C. Mortar Pigments: Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes. Use only pigments with a record of satisfactory performance in masonry mortar.
1. Available Products:
a. LanXess; Bayferrox Iron Oxide Pigments.
b. Davis Colors; True Tone Mortar Colors.
c. Solomon Grind-Chem Services, Inc.; SGS Mortar Colors.

D. Aggregate for Mortar: ASTM C 144. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.

E. Aggregate for Grout: ASTM C 404.

F. Water: Potable.

2.5 REINFORCEMENT

A. Uncoated Steel Reinforcing Bars: ASTM A.

B. Masonry Joint Reinforcement, General: ASTM A 951.
1. Interior Walls: Mill-galvanized, carbon steel.
2. Exterior Walls: Hot-dip galvanized, carbon steel.
3. Wire Size and Spacing: As required by Code.
4. Provide in lengths of not less than 10 feet, with prefabricated corner and tee units.

C. Masonry Joint Reinforcement for Multiwythe Masonry:
1. Ladder type with 1 side rod at each face shell of hollow masonry units more than 4 inches in width, plus 1 side rod at each wythe of masonry 4 inches or less in width.

2.6 TIES AND ANCHORS

A. Materials: Provide ties and anchors specified in subsequent paragraphs that are made from materials that comply with subparagraphs below, unless otherwise indicated.
1. Mill-Galvanized, Carbon-Steel Wire: ASTM A 82; with ASTM A 641/A 641M, Class 1 coating.
2. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A 82; with ASTM A 153/A 153M, Class B-2 coating.
3. Galvanized Steel Sheet: ASTM A 653/A 653M, Commercial Steel, G60 zinc coating.

4. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

B. Adjustable Anchors for Connecting to Structure: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.
   1. Anchor Section for Welding to Steel Frame: Crimped 1/4-inch-diameter, hot-dip galvanized steel. Mill-galvanized wire may be used at interior walls, unless otherwise indicated.

C. Partition Top Anchors: 0.097-inch-thick metal plate with 3/8-inch-diameter metal rod 6 inches long welded to plate and with closed-end plastic tube fitted over rod that allows rod to move in and out of tube. Fabricate from steel, hot-dip galvanized after fabrication.

D. Adjustable Masonry-Veneer Anchors:
   1. General: Provide anchors that allow vertical adjustment but resist tension and compression forces perpendicular to plane of wall, for attachment over sheathing to wood or metal studs, with structural performance capable of withstanding a 100-lbf load in both tension and compression without deforming or developing play in excess of 0.05 inch.
   2. Screw-Attached, Masonry-Veneer Anchors: Units consisting of a wire tie and a metal anchor section.
      a. Anchor Section: Zinc-alloy barrel section with flanged head with eye and corrosion-resistant, self-drilling screw. Eye designed to receive wire tie and to serve as head for drilling fastener into framing. Barrel length to suit sheathing thickness, allowing screw to seat directly against framing with flanged head covering hole in sheathing.
      b. Wire Ties: Triangular-, rectangular-, or T-shaped wire ties fabricated from 0.188-inch-diameter, hot-dip galvanized steel wire.

2.7 MISCELLANEOUS ANCHORS

A. Anchor Bolts: 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/A 153M, Class C; of dimensions indicated.

2.8 EMBEDDED FLASHING MATERIALS

A. Metal Flashings: Furnished under Section 07620 - SHEET METAL FLASHING AND TRIM.

2.9 MISCELLANEOUS MASONRY ACCESSORIES

A. 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.

B. Preformed Control-Joint Gaskets: Made from styrene-butadiene-rubber compound, complying with ASTM D 2000, Designation M2AA-805 designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.

C. Bond-Breaker Strips: Asphalt-saturated, organic roofing felt complying with ASTM D 226, Type I (No. 15 asphalt felt).

D. Weep/Vent Products: 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.

E. Cavity Drainage Material: Free-draining mesh, made from polymer strands that will not degrade within the wall cavity. Provide strips, full-depth of cavity and 10 inches wide, with dovetail shaped notches 7 inches deep that prevent mesh from being clogged with mortar droppings or equivalent. Available products:

1. Advanced Building Products Inc.; Mortar Break II.
2. Archovations, Inc.; CavClear Masonry Mat.
3. Dayton Superior Corporation, Dur-O-Wal Division; Polytite MortarStop.
4. Mortar Net USA, Ltd.; Mortar Net.

2.10 MASONRY CLEANERS

A. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned.
   1. Available Manufacturers:
      a. Diedrich Technologies, Inc.
      b. EaCo Chem, Inc.
      c. ProSoCo, Inc.

2.11 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. Limit cementitious materials in mortar to Portland cement (mortar cement) and lime.

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 masonry below grade or in contact with earth, use Type M.
   2. For reinforced masonry, use Type S.
   3. 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. Pigmented Mortar: Use colored cement product. Pigments shall not exceed 10 percent of Portland cement by weight.

D. Grout for Unit Masonry: Comply with ASTM C 476.
   1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with Table 1.15.1 in ACI 530.1/ASCE 6/TMS 602 for dimensions of grout spaces and pour height.
   2. Provide grout with a slump of 8 to 11 inches as measured according to ASTM C 143/C 143M.

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 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.

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.

3.2 INSTALLATION, GENERAL

A. Thickness: Build cavity and composite walls and other masonry construction to full thickness shown. Build single-wythe walls to actual widths of masonry units, using units of widths indicated.

B. Build chases and recesses to accommodate items specified in this and other Sections.

C. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match the construction immediately adjacent to opening.

D. 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. Do not use units cut to less than one-half size.

E. Do not install concrete masonry units with more than 5 percent damage to the face. Do not install brick units which will show defects after installation.

F. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures. Mix units from several pallets or cubes as they are placed.

G. Matching Existing Masonry: Match coarsing, bonding, color, and texture of existing masonry.

H. Comply with construction tolerances in ACI 530.1/ASCE 6/TMS 602 and with the following:
   1. For conspicuous vertical lines, such as external corners, doorjambs, 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.
   2. 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.
   3. 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.
   4. For exposed bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 1/2 inch. Do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch.
   5. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch. Do not vary from adjacent bed-joint and head-joint thicknesses by more than 1/8 inch.
   6. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than 1/16 inch except due to warpage of masonry units within tolerances specified for warpage of units.

3.3 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: Unless otherwise indicated, lay exposed masonry in (running bond) (one-third running bond) (Flemish bond) (bond pattern indicated on Drawings); do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs. Prior to installation, review bond pattern with Architect and the Owner.

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, remove loose masonry units and mortar, and wet brick if required 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.

E. Fill space between steel frames and masonry solidly with mortar, unless otherwise indicated.

F. Fill cores in hollow concrete masonry units with grout 24 inches under bearing plates, beams, lintels, posts, and similar items, unless otherwise indicated.

G. Build non-load-bearing interior partitions full height of story to underside of solid floor or roof structure above, unless otherwise indicated.
   1. Install compressible filler in joint between top of partition and underside of structure above.
   2. Fasten partition top anchors to structure above and build into top of partition. Grout cells of CMUs solidly around plastic tubes of anchors and push tubes down into grout to provide 1/2-inch clearance between end of anchor rod and end of tube. Space anchors 48 inches o.c., unless otherwise indicated.
   3. Wedge non-load-bearing partitions against structure above with small pieces of tile, slate, or metal. Fill joint with mortar after dead-load deflection of structure above approaches final position.
   4. At fire-rated partitions, treat joint between top of partition and underside of structure above to comply with Section 07841 - PENETRATION FIRESTOPPING.

3.4 MORTAR BEDDING AND JOINTING

A. Lay hollow brick and concrete masonry units as follows:
   1. With face shells fully bedded in mortar and with head joints of depth equal to bed joints.
   2. With webs fully bedded in mortar in all courses of piers, columns, and pilasters.
   3. With webs fully bedded in mortar in grouted masonry, including starting course on footings.
   4. With entire units, including areas under cells, fully bedded in mortar at starting course on footings where cells are not grouted.

B. 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.

C. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness, unless otherwise indicated.

D. Cut joints flush for masonry walls to receive plaster or other direct-applied finishes (other than paint), unless otherwise indicated.

3.5 CAVITY WALLS

A. Bond wythes of cavity walls together using one of the following methods:
   1. Masonry Joint Reinforcement: Installed in horizontal mortar joints. Where one wythe is of clay masonry and the other of concrete masonry, use adjustable (two-piece) type reinforcement with continuous horizontal wire in facing wythe attached to ties to allow for differential movement regardless of whether bed joints align.
   2. Masonry Veneer Anchors: Comply with requirements for anchoring masonry veneers.

B. Bond wythes of cavity walls together using bonding system indicated on Drawings.

C. Keep cavities clean of mortar droppings and other materials during construction. Bevel beds away from cavity, to minimize mortar protrusions into cavity. Do not attempt to trowel or remove mortar fins protruding into cavity.

3.6 MASONRY JOINT REINFORCEMENT

A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch on exterior side of walls, 1/2 inch elsewhere. Lap reinforcement a minimum of 6 inches. Space reinforcement not more than 16 inches o.c.

B. Interrupt joint reinforcement at control and expansion joints, unless otherwise indicated.

C. Provide continuity at wall intersections by using prefabricated T-shaped units.

D. Provide continuity at corners by using prefabricated L-shaped units.

3.7 ANCHORING MASONRY TO STRUCTURAL MEMBERS

A. Anchor masonry to structural members where masonry abuts or faces structural members to comply with the following:
   1. Provide an open space not less than 1 inch in width between masonry and structural member, unless otherwise indicated. Keep open space free of mortar and other rigid materials.
   2. Anchor masonry to structural members with anchors embedded in masonry joints and attached to structure.
   3. Space anchors as indicated, but not more than 24 inches o.c. vertically and 36 inches o.c. horizontally.

3.8 ANCHORING MASONRY VENEERS

A. Anchor masonry veneers with masonry-veneer anchors to comply with the following requirements:
   1. Embed tie sections in masonry joints. Provide air space indicated on the Drawings between back of masonry veneer and face of insulation.
   2. Locate anchor sections to allow maximum vertical differential movement of ties up and down.
   3. Space anchors as required by Code.

3.9 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 using one of the following methods:
   1. Fit bond-breaker strips into hollow contour in ends of concrete masonry units on one side of control joint. Fill resultant core with grout and rake out joints in exposed faces for application of sealant.
   2. Install preformed control-joint gaskets designed to fit standard sash block.
   3. Install interlocking units designed for control joints. Install bond-breaker strips at joint. Keep head joints free and clear of mortar or rake out joint for application of sealant.
   4. Install temporary foam-plastic filler in head joints and remove filler when unit masonry is complete for application of sealant.

C. Form expansion joints in brick made from clay or shale as follows:
   1. Build flanges of metal expansion strips into masonry. Lap each joint 4 inches in direction of water flow. Seal joints below grade and at junctures with horizontal expansion joints if any.
   2. Build flanges of factory-fabricated, expansion-joint units into masonry.
   3. Build in compressible joint fillers where indicated.
   4. Form open joint full depth of brick wythe and of width indicated, but not less than 3/8 inch for installation of sealant and backer rod specified in Section 07920 - JOINT SEALANTS.

D. Provide horizontal, pressure-relieving joints by either leaving an air space or inserting a compressible filler of width required for installing sealant and backer rod specified in Section 07920 - JOINT SEALANTS but not less than 3/8 inch.
   1. Locate horizontal, pressure-relieving joints beneath shelf angles supporting masonry.

3.10 LINTELS

A. Install steel lintels where indicated.

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

3.11 FLASHING, WEEP HOLES, CAVITY DRAINAGE, AND VENTS

A. General: Install embedded flashing and weep holes in masonry at shelf angles, lintels, ledges, other obstructions to downward flow of water in wall, and where indicated.

B. Install flashing as follows, unless otherwise indicated:
   1. Prepare masonry surfaces so they are smooth and free from projections that could puncture flashing. Where flashing is within mortar joint, place through-wall flashing on sloping bed of mortar and cover with mortar. Before covering with mortar, seal penetrations in flashing with adhesive, sealant, or tape as recommended by flashing manufacturer.
   2. At multiwythe masonry walls, including cavity walls, extend flashing through outer wythe, turned up a minimum of 8 inches, and 1-1/2 inches into the inner wythe. Form 1/4-inch hook in edge of flashing embedded in inner wythe.
   3. At masonry-veneer walls, extend flashing through veneer, across air space behind veneer, and up face of sheathing at least 8 inches; with upper edge covered with elastomeric membrane, lapping at least 4 inches.
   4. At lintels and shelf angles, extend flashing a minimum of 6 inches into masonry at each end. At heads and sills, extend flashing 6 inches at ends and turn up not less than 2 inches to form end dams.

C. Install reglets and nailers for flashing and other related construction where they are shown to be built into masonry.

D. Install weep holes in head joints in exterior wythes of first course of masonry immediately above embedded flashing and as follows:
   1. Use open head joints to form weep holes.
   2. Space weep holes 24 inches o.c., unless otherwise indicated.

E. Place cavity drainage material in cavities to comply with configuration requirements for cavity drainage material in Part 2 “Miscellaneous Masonry Accessories” Article.

F. Install vents in head joints in exterior wythes at spacing indicated.

3.12 REINFORCED UNIT MASONRY INSTALLATION

A. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.
   1. Construct formwork to provide shape, line, and dimensions of completed masonry as indicated. Make forms sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.
   2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other temporary loads that may be placed on them during construction.

B. Placing Reinforcement: Comply with requirements in ACI 530.1/ASCE 6/TMS 602.

C. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure. Comply with requirements in ACI 530.1/ASCE 6/TMS 602 for cleanouts and for grout placement, including minimum grout space and maximum pour height.

3.13 FIELD QUALITY CONTROL

A. Inspectors: Engage qualified independent inspectors to perform inspections and prepare reports. Allow inspectors access to scaffolding and work areas, as needed to perform inspections. Place grout only after inspectors have verified compliance of grout spaces and grades, sizes, and locations of reinforcement.

B. Testing Agency: Engage a qualified independent testing and inspecting agency to perform field tests and inspections indicated below and prepare test reports. Retesting of materials failing to comply with specified requirements shall be done at Contractor's expense.

C. Testing Frequency: One set of tests for each 5000 sq. ft. of wall area or portion thereof. Test types as determined by the independent testing and inspection agency.

3.14 REPAIRING, POINTING, AND CLEANING

A. 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 non-masonry 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 brick by bucket-and-brush hand-cleaning method described in BIA Technical Notes 20.
6. Clean concrete masonry by cleaning method indicated in NCMA TEK 8-2A applicable to type of stain on exposed surfaces.

3.15 MASONRY WASTE DISPOSAL

A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.

B. Waste Disposal as Fill Material: Dispose of clean masonry waste, including excess or soil-contaminated sand, waste mortar, and broken masonry units, by crushing and mixing with fill material as fill is placed.
1. Crush masonry waste to less than 4 inches in each dimension.
2. Mix masonry waste with at least two parts of specified fill material for each part of masonry waste. Fill material is specified in Section 02300 - EARTHWORK.
3. Do not dispose of masonry waste as fill within 18 inches of finished grade.

C. Excess Masonry Waste: Remove excess clean masonry waste that cannot be used as fill, as described above, and other masonry waste, and legally dispose of off the Site.

END OF SECTION

SECTION 05500

METAL FABRICATIONS

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1.2 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:
   1. All Work in this Section, including Schedule in Paragraph 2.1 of this Section.

B. Related Work: The following items are not included in this Section and will be performed under the designated Sections:
   1. Section 03300 - CAST-IN-PLACE CONCRETE for installing metal items into concrete.
   2. Section 04200 - UNIT MASONRY for installing metal items into masonry walls.
   3. Section 10605 - WIRE MESH PARTITIONS for interior wire mesh partitions.

1.3 PERFORMANCE REQUIREMENTS

A. Structural Performance of Ladders: Provide ladders capable of withstanding the effects of loads and stresses within limits and under conditions specified in ANSI A14.3.

B. Thermal Movements: Provide exterior metal fabrications that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
   1. Temperature Change (Range): 120 deg F ambient; 180 deg F material surfaces.

1.4 SUBMITTALS

A. Product Data: For the following:
   1. Paint products.
   2. Grout.

B. Shop Drawings: Show fabrication and installation details for metal fabrications.
   1. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.
   2. Provide templates for anchors and bolts specified for installation under other Sections.
   3. For installed products indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer, licensed by the local authorities having jurisdiction, responsible for their preparation.
   4. Where fabrications are to receive sprayed-on fireproofing, include statement that primer is compatible with fireproofing proposed for use.

C. Welding certificates.

D. Qualification Data: For professional engineer.

1.5 QUALITY ASSURANCE

A. Welding: Qualify procedures and personnel according to the following:

1. AWS D1.1, “Structural Welding Code--Steel.”
2. AWS D1.3, “Structural Welding Code--Sheet Steel.”

B. Metal Surfaces, General: Provide materials with smooth, flat surfaces, unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

1.6 PROJECT CONDITIONS

A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication and indicate measurements on Shop Drawings.
1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating metal fabrications without field measurements. Coordinate wall and other contiguous construction to ensure that actual dimensions correspond to established dimensions.
2. Provide allowance for trimming and fitting at site.

1.7 COORDINATION

A. Coordinate installation of anchorages for metal fabrications. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

B. Coordinate installation of steel weld plates and angles for casting into concrete that are specified in this Section but required for work of another Section. Deliver such items to Project site in time for installation.

PART 2 - PRODUCTS

2.1 SCHEDULE

A. Miscellaneous items include the following. Requirements for materials, hot-dip galvanizing and shop-applied primers are included with each item as applicable.
1. Steel framing and supports with shop-applied primer for sliding doors.
2. Steel framing and supports for countertops with shop-applied primer.
3. Galvanized steel framing and supports for mechanical and electrical equipment.
4. Steel framing and supports for applications where framing and supports are not specified in other Sections; galvanized at exterior locations and in exterior walls.
5. Galvanized steel bollards with shop-applied primer.

2.2 FERROUS METALS

A. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

B. Steel Tubing: ASTM A 500, cold-formed steel tubing.

C. Steel Pipe: ASTM A 53/A 53M, standard weight (Schedule 40), unless another weight is indicated or required by structural loads.

D. Cast Iron: ASTM A 48/A 48M, Class 30, unless another class is indicated or required by structural loads.

2.3 FASTENERS

A. General: Unless otherwise indicated, provide Type 316 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633, Class Fe/Zn 5, at exterior walls. Provide stainless-steel fasteners for fastening aluminum. Select fasteners for type, grade, and class required.

B. Anchor Bolts: ASTM F 1554, Grade 36. Provide hot-dip or mechanically deposited, zinc-coated anchor bolts where item being fastened is indicated to be galvanized.

C. Cast-in-Place Anchors in Concrete: Anchors capable of sustaining, without failure, a load equal to four times the load imposed, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.
   1. Threaded or wedge type; galvanized ferrous castings, either ASTM A 47/A 47M malleable iron or ASTM A 27/A 27M cast steel. Provide bolts, washers, and shims as needed, hot-dip galvanized per ASTM A 153/A 153M.

D. Expansion Anchors: Anchor bolt and sleeve assembly with capability to sustain, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.
   1. Acceptable Manufacturers: Kwik-Bolt 3 by Hilti, Inc., TruBolt Wedge Anchor by ITW Red Head or Power-Stud by Powers Fasteners.

2.4 MISCELLANEOUS MATERIALS

A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

B. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.

C. Zinc-Rich Primer: Complying with SSPC-Paint 20 or SSPC-Paint 29 and compatible with topcoat.

D. Galvanizing Repair Paint: High-zinc-dust-content paint for re-galvanizing welds in steel, complying with SSPC-Paint 20.

E. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.

F. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.

2.5 FABRICATION, GENERAL

A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch, unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

D. Form exposed work true to line and level with accurate angles and surfaces and straight edges.

E. Weld corners and seams continuously to comply with the following:
   1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
   2. Obtain fusion without undercut or overlap.
   3. Remove welding flux immediately.

4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) screws or bolts, unless otherwise indicated. Locate joints where least conspicuous.

G. Fabricate seams and other connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

H. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.

I. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.

2.6 MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.

B. Fabricate units from steel shapes, plates, and bars of welded construction, unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction retained by framing and supports. Cut, drill, and tap units to receive hardware, hangers, and similar items.
   1. Furnish inserts if units are installed after concrete is placed.

2.7 METAL BOLLARDS

A. Fabricate metal bollards from Schedule 40 steel pipe.

2.8 FINISHES, GENERAL

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

B. Finish metal fabrications after assembly.

2.9 STEEL PRIMERS AND FINISHES

A. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with minimum requirements indicated below for SSPC surface preparation specifications and environmental exposure conditions of installed metal fabrications:
   1. Exteriors (SSPC Zone 1B) and Items Indicated to Receive Zinc-Rich Urethane Primer: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
   2. Interiors (SSPC Zone 1A): SSPC-SP 7, "Brush Off Blast Cleaning."
   3. Apply shop primer to uncoated surfaces of metal fabrications, except those with galvanized finishes and those to be field welded, embedded in concrete or masonry, unless otherwise indicated. Extend priming of partially embedded members to a depth of 2 inches.
   4. Comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.
   5. Comply with SSPC-PA 2, "Measurement of Dry Coating Thickness with magnetic Gages."

B. Zinc-Rich Primer: Urethane zinc rich primer compatible with topcoat Specified in Section 09900 - PAINTING. Provide primer with a VOC content of 340 g/L (2.8 lb/gal.) or less per OTC ozone standards when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

Provide Tnemec Series 394 Perimerprime or Ameron Series 68HS at 3.0 mils DFT or approved equal by DuPont or Carboline.

C. Hot-Dip Galvanizing: For steel exposed to the elements, weather or corrosive environments and other steel indicated to be galvanized, provide coating for iron and steel fabrications applied by the hot-dip process. Comply with ASTM A 123 for fabricated products and ASTM A 153 for hardware. Provide thickness of galvanizing specified in referenced standards. The galvanizing bath shall contain high grade zinc and other earthly materials. Fill vent holes and grind smooth after galvanizing.

D. Hot-Dip Galvanizing And Factory-Applied Primer for Steel: Provide hot-dip galvanizing and factory-applied prime coat, certified OTC/VOC compliant less than 2.8 lbs/gal., and conforming to EPA and local requirements. Apply primer within 12 hours after galvanizing at the galvanizer's plant in a controlled environment meeting applicable environmental regulations and as recommended by the primer coating manufacturer. Blast cleaning of the surface is unacceptable for surface preparation. Primer shall have a minimum two year re-coat window for application of finish coat. Coatings must meet or exceed the following performance criteria:
   1. Abrasion: ASTM D 4060, CS17 Wheel, 1,000 gram load.
   2. Adhesion: ASTM D 3359, Method B, 5 mm crosshatch.
   3. Humidity Resistance: ASTM D 4585.
   4. Salt Spray (Fog): ASTM B 117.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

C. Field Welding: Comply with the following requirements:
   1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
   2. Obtain fusion without undercut or overlap.
   3. Remove welding flux immediately.
   4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag bolts, wood screws, and other connectors.

E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

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

3.2 INSTALLING MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.

B. Anchor supports for operable partitions securely to and rigidly brace from building structure.

C. Support steel girders on solid grouted masonry, concrete or steel pipe columns. Secure girders with anchor bolts embedded in grouted masonry or concrete or with bolts through top plates of pipe columns.
   1. Where grout space under bearing plates is indicated for girders supported on concrete or masonry, install as specified in this Section.

D. Install pipe columns on concrete footings with grouted baseplates. Position and grout column baseplates as specified in this Section.
   1. Grout baseplates of columns supporting steel girders after girders are installed and leveled.

3.3 INSTALLING PIPE BOLLARDS

A. Anchor bollards in place with concrete footings. Center and align bollards in holes 3 inches above bottom of excavation. Place concrete and vibrate or tamp for consolidation. Support and brace bollards in position until concrete has cured.

B. Fill bollards solidly with concrete, mounding top surface to shed water.

3.4 ADJUSTING AND CLEANING

A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
   1. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.

B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

END OF SECTION

SECTION 06100

ROUGH CARPENTRY

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:
   1. Wood blocking, metal blocking, cants, and nailers.
   2. Plywood backing panels.
   3. Rooftop equipment bases and support curbs.

B. Related Work: The following items are not included in this Section and will be performed under the designated Sections:
   1. Section 06402 - INTERIOR ARCHITECTURAL WOODWORK for interior woodwork not specified in this Section.

1.2 SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product, indicate component materials and dimensions, and include construction and application details.
   1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used, net amount of preservative retained, and chemical treatment manufacturer's written instructions for handling, storing, installing, and finishing treated material.
   2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Include physical properties of treated materials, both before and after exposure to elevated temperatures when tested according to ASTM D 5516 and ASTM D 5664.
   3. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
   4. Include copies of warranties from chemical treatment manufacturers for each type of treatment.
   5. Manufacturers' product data for construction adhesive, including printed statement of VOC content.
   6. Composite wood manufacturer's product data for each composite wood product used indicating that bonding agent used contains no urea formaldehyde.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Stack lumber, plywood, and other panels; place spacers between each bundle to provide air circulation. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

A. Lumber: DOC PS 20 and applicable rules of lumber grading agencies certified by the American Lumber Standards Committee Board of Review.
   1. Factory mark each piece of lumber with grade stamp of grading agency.
   2. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.

3. Provide dressed lumber, S4S, unless otherwise indicated.
4. Provide dry lumber with 15 percent maximum moisture content at time of dressing for 2-inch nominal thickness or less, unless otherwise indicated.

B. Plywood Panels:
1. Plywood: Either DOC PS 1 or DOC PS 2, unless otherwise indicated.
2. Thickness: As needed to comply with requirements specified but not less than thickness indicated.
3. Factory mark panels according to indicated standard.

2.2 WOOD-PRESERVATIVE-TREATED MATERIALS

A. Preservative Treatment by Pressure Process: AWPA C2 (lumber) and AWPA C9 (plywood), except that lumber that is not in contact with the ground and is continuously protected from liquid water may be treated according to AWPA C31 with inorganic boron (SBX).
1. Preservative Chemicals: Acceptable to authorities having jurisdiction and not containing arsenate.

B. Kiln-dry material after treatment to maximum moisture content of 19 percent for lumber and 15 percent for plywood. Do not use material that is warped or does not comply with requirements for untreated material.

C. Mark each treated item with the treatment quality mark of an inspection agency approved by the American Lumber Standards Committee Board of Review.

D. Application: Treat items indicated on Drawings, and the following:
1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
2. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete in exterior walls.

2.3 MISCELLANEOUS LUMBER

A. General: Provide lumber for support or attachment of other construction, including the following:

1. Rooftop equipment bases and support curbs.
2. Blocking.
3. Cants.
4. Nailers.
5. Furring.
6. Grounds.

B. For items of dimension lumber size, provide Construction, Stud, or No. 2 grade lumber with 15 percent moisture content.

2.4 PANEL PRODUCTS

A. Miscellaneous Concealed Plywood: Exposure 1 sheathing, span rating to suit framing in each location, and thickness as indicated but not less than 5/8".

B. Telephone and Electrical Equipment Backing Panels, including those at Water Treatment: DOC PS 1, Exposure 1, A-C Plugged, fire-retardant treated, in thickness indicated or, if not indicated, not less than 5/8" thick.

2.5 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.

1. Where carpentry is exposed to weather, in ground contact, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.

B. Nails, Wire, Brads, and Staples: FS FF-N-105.

C. Power-Driven Fasteners: CABO NER-272.

D. Wood Screws: ASME B18.6.1.

E. Screws for Fastening to Cold-Formed Metal Framing: ASTM C 954, except with wafer heads and reamer wings, length as recommended by screw manufacturer for material being fastened.

F. Bolts: Steel bolts complying with ASTM A 307, Grade A with ASTM A 563 hex nuts and, where indicated, flat washers.

G. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry assemblies and equal to 4 times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing and inspecting agency.
   1. Material: Carbon-steel components, zinc plated to comply with ASTM B 633, Class Fe/Zn 5.

2.6 MISCELLANEOUS MATERIALS

A. Adhesive, including Gluing Furring and Sleepers to Concrete or Masonry: Formulation complying with ASTM D 3498 that is approved for use indicated by adhesive manufacturer.
   1. Use adhesives that have a VOC content of 70 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

B. Metal stud backing (alternate to replace wood blocking) as follows:
   1. “Notch Tite” brand Flat-Reinforced Backing (1.25 x 6" x 16 GA; 9'-4" length).
   2. “Metal-Lite” brand flush mount backing (1.25" x 6" x 14 GA).

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Discard units of material with defects that impair quality of carpentry and that are too small to use with minimum number of joints or optimum joint arrangement.

B. Set carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit carpentry to other construction; scribe and cope as needed for accurate fit. Locate furring, nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.

C. Apply field treatment complying with AWPA M4 to cut surfaces of preservative-treated lumber and plywood.

D. Securely attach carpentry work as indicated and according to applicable codes and recognized standards.

E. Countersink fastener heads on exposed carpentry work and fill holes with wood filler.

F. Use fasteners of appropriate type and length. Predrill members when necessary to avoid splitting wood.

G. Cutting and Repairing: Do such work as normally required and done for mechanical and other trades.

H. Blocking: Furnish and install blocking, furring, brackets, etc. as required to properly carry out all work shown and reasonably inferred by the Drawings and Specifications.

I. Underlayment Installation:
   1. Acclimate underlayment by standing individual panels on edge in rooms where they are to be installed 24 to 48 hours prior to installation.
   2. Plywood underlayments shall be installed immediately before laying finished floor.
   3. Install plywood underlayment smooth side up with face grain perpendicular to floor joists. Stagger end joints in underlayment panels and offset end and edge joints of underlayment panels by at least two inches from joints in SW floor panels.
      * Panel edge and ends shall be space 1/16".
   4. Underlayment nailing shall be 3" o.c. along edge 3/8" minimum to ½" maximum from edge and 6" o.c. each way in field. Begin in corner adjacent to previous panels working diagonally across to opposite corner. DO NOT TACK PANELS FIRST.

J. Nailers and Wood Cants: Nailers, 2" stock unless otherwise noted, of the proper widths. Bevel nailers for concrete ½" both sides and properly place in forms. Bolt nailers in place on steel or masonry. Furnish ledgers bolted to wall in locations shown and as required.

K. Shoring: Furnish and place all necessary shoring and bracing of types and sizes best suited for the conditions to be met. Shoring must comply with all governing requirements.

L. Provide wood curbs, required blocking and cants around all openings through the roof indicated on all architectural, mechanical and electrical drawings. Check drawings for all trades and furnish for all openings indicated.

M. Studs for interior walls shall be solid and continuous from floor to double place at trusses, and shall not be cut for straightening; warped studs shall be replaced.

N. Studs shall be doubled at all corners, opening, and beam bearing points.

O. Headers over openings in walls shall be as follows, unless noted otherwise:

Opening Width	Header Size
up to 6'- 0"	2-2x6
6’ to 8'-0"	2-2x8
8' to 10"-0"	2-2x10

P. Plywood Backer Boards:
   1. Electrical, telephone, video and alarm equipment locations: Install 5/8" plywood over gypsum board, fastening into studs @ 8" o.c. Seal all vertical joints top, bottom and ends with Tremco sealant.
   2. Water Treatment Equipment: Install 5/8" exterior grade plywood over gypsum board. Finish with Class A FRP, panels to be butt jointed where they meet another panel. Apply Type IA acrylic fire stop sealant along all top and side top edges.

3.2 WOOD BLOCKING, AND NAILER INSTALLATION

A. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.

B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces, unless otherwise indicated.

END OF SECTION

SECTION 06402

INTERIOR ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:
   1. Interior standing and running trim.
   2. Interior frames and jambs.
   3. Wood cabinets.
   4. Plastic-laminate cabinets.
   5. Plastic-laminate countertops at dialysis counters and work areas.
   6. Solid surfacing countertops, sidesplash and backsplash, at units with sinks.
   7. Closet and utility shelving.
   8. Shop finishing of interior woodwork.

B. Related Work: The following items are not included in this Section and will be performed under the designated Sections:
   1. Section 06100 - ROUGH CARPENTRY for wood furring, blocking, shims, and hanging strips required for installing woodwork and concealed within other construction before woodwork installation.
   2. Section 08211 - FLUSH WOOD DOORS.
   3. Section 15200 - PLUMBING FIXTURES AND EQUIPMENT.
   4. Section 09900 - PAINTING.

1.2 SUBMITTALS

A. Product Data: For each type of product specified, including cabinet hardware and accessories, and finishing materials and processes.
   1. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements.
   2. Manufacturers' product data for installation adhesives, including printed statement of VOC content.
   3. Composite wood manufacturer's product data for each composite wood product used indicating that the bonding agent contains no urea formaldehyde. Adhesive manufacturer's product data for each adhesive used indicating that the adhesive contains no urea formaldehyde.

B. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.
   1. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.
   2. Show locations and sizes of cutouts and holes for plumbing fixtures, electrical components and other items installed in architectural woodwork.
   3. Show veneer leaves with dimensions, grain direction, exposed face, and identification numbers indicating the flitch and sequence within the flitch for each leaf.

C. Samples for Verification:
   1. Lumber with or for transparent finish, not less than 5 inches wide by 12 inches long for each species and cut, finished on 1 side and 1 edge.

2. Veneer leaves representative of and selected from flitches to be used for transparent-finished woodwork.
3. Lumber and panel products with shop-applied opaque finish, 5 inches wide by 12 inches long for lumber and 8 by 10 inches for panels, for each finish system and color, with 1/2 of exposed surface finished.
4. Plastic laminates, 8 by 10 inches for each type, color, pattern, and surface finish, with 1 sample applied to core material, and specified edge material applied to 1 edge.
5. Solid-surfacing materials, 6 inches square.

D. Qualification Data: For Installer and fabricator.

1.3 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. Source Limitations: Engage a qualified woodworking firm to assume undivided responsibility for production of interior architectural woodwork with sequence-matched wood veneers.

1.4 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.

B. Long Lead Items: Order long lead-time materials with sufficient time to comply with manufacturers’ delivery schedule, without causing delay to the construction schedule.

1.5 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 and relative humidity at occupancy levels 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, reinforcements and floor drains 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.

1.6 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 Species and Cut for Transparent Finish: Birch, rotary or plain, sawn or sliced.

C. Wood Species for Opaque Finish: Any closed-grain hardwood.

D. 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. Particleboard: ANSI A208.1, Grade M-2-Exterior Glue.
   4. Softwood Plywood: DOC PS 1, Medium Density Overlay.
   5. Veneer-Faced Panel Products (Hardwood Plywood): HPVA HP-1, made with adhesive containing no urea formaldehyde.
   6. Softwood Plywood: DOC PS 1, Medium Density Overlay.

E. High-Pressure Decorative Laminate: NEMA LD 3, grades as indicated.
   1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering high-pressure decorative laminates that may be incorporated into the Work include:
      a. Wilsonart

F. Solid-surfacing material: Homogenous solid sheets of filled plastic resin complying with ISSFA-2.
   1. Available products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
      a. Wilsonart

G. Dialysis Counters – New Construction
   1. Framing: Provide 3/4" plywood gussets finished both sides with white melamine, as detailed.
   2. Top with Shop Applied Trim: One layer 1-1/8", 40 lb. Medium density fiberboard (MDF). Front edge of counter shall be finished with 3 mm vinyl edge tape to match top. Provide 1" x 2" laminated backsplash where top counter meets adjacent walls.
   3. Panels: Both fixed and removable panels shall be 3/4" MDF or Medex with plastic laminate (front), white melamine (back) and 3 mm vinyl edge tape to match.
   4. Hinged Access Panels at face of counter: 3/4" MDF or Medex with plastic laminate (front), white melamine (back) and 3 mm vinyl edge tape to match.
   5. Countertop Access Panels: Provide 24" wide access panels above all valve box locations and drain cleanouts. Construction to match the rest of countertop and be easily removable. Back and sides to be .5 mil black laminate; bottom brown phenolic.

H. Dialysis Counters – <u>Renovation Construction Only</u>
   1. Framing: Provide 2 x 2, 2 x 4 and 1 x 3 pressure-treated lumber wood frames with 3/4" pressure-treated plywood gussets as detailed.
   2. Top with Shop Applied Trim: One layer 1/2", 40 lb. Medium density fiberboard (MDF) over 3/4" construction grade plywood with plastic laminate ship applied with adhesive under pressure. Front edge of counter shall be finished with 1-1/4" rounded bullnose trim. Provide quarter round trim where top counter meets adjacent walls.

3. Panels: Both fixed and removable panels shall be 3/4" thick birch plywood with hardwood edge banding on all edges. Joints between panels shall be uniformly 1/16" to allow for removal without binding.
4. Hinged Access Panels at face of counter: 3/4" thick birch plywood with edge band tape to match. Install continuous stainless steel piano hinge with stainless steel spring-loaded magnetic catch.
5. Finishing:
   a. Exposed framing and panel fronts, including all panel edges:
      Paint type: P-15 Acrylic Benjamin Moore 023-Fresh Start primer and (2) coats acrylic semi-gloss Benjamin Moore M-29 D.T.M paint.
   b. Birch bullnose and quarter round:
      Paint type P-6; (2) coats stain and (2) coats polyurethane.
   c. Interior cavity of counter including framing, gypsum board and electric raceways and boxes: Paint type P-15; (1) coat Acrylic direct to metal self-priming semi-gloss Benjamin Moore M-29 D.T.M. paint.
7. Finish Schedule: Construct counter framing and install electrical raceways and boxes. Paint P-15 on cabinet interior including gypsum board face. Paint P-15 on exterior frame and panel fronts and edges. Paint P-6 on exposed birch trim.

I. Solid Surface Dividers: Provide 1" inch thick solid surface material. Ease all edges. Secure to upper cabinet with aluminum channel, caulked all around. Color options as indicated below.
   1. For laminate countertop installations:
      a. Refer to most current FMC Clinic Finish Schedule.
   2. For solid surface countertop installations:
      a. Match countertop color.

J. Glass Splash Guards and Hardware (at nurse station chases and prep station dividers):
   1. Glass: Clear, Low Iron, Tempered Glass – 1/4" thickness.
   2. Edge Trim at Vertical Chase: CR Laurence #FA10SC – Satin Chrome Finish.
   3. 18" Vertical Posts: CR Laurence #D990A18E – Satin Chrome Finish.

2.2 CABINET HARDWARE AND ACCESSORIES

A. General: Provide cabinet hardware and accessory materials associated with architectural cabinets, except for items specified in Section 08710 - DOOR HARDWARE.

B. Dialysis Counter: Barrel Hinges – Hafele 344.06.810 Dowel-Mounted Cup and 344.06.900 Arm w/ pre-mounted expanding dowels.

C. All other clinic cabinet doors: Frameless Concealed Hinges (European Type); BHMA A156.9, B01602 100+ degrees of opening, self-closing.

D. Concealed panel clips (For all cabinet undersinks): Hafele 245.07.702.

E. Back-Mounted Pulls: BHMA A156.9, B02011.
   1. Provide brushed chrome wire pulls for all operating drawers and panel fronts.

F. Double Roller Catches: Push-in magnetic catches, BHMA A156.9, B03131.
   1. Provide Double Roller Catch – Hafele 244.01.125, black.

G. Adjustable Shelf Standards and Supports: KV85 Series Standards (KV85ANO); KV 185 Series Brackets (KV185ANO).

H. Drawer Slides: BHMA A156.9, B05091; side mounted and extending under bottom edge of drawer; 3/4-extension type; epoxy-coated-steel with steel ball-bearings; of the following grades:
   1. Box Drawer Slides: Grade 1.

2. File Drawer Slides: Grade 1HD-100.

I. Aluminum Slides for Sliding Glass Doors: BHMA A156.9, B07063.

J. Door & Drawer Locks: BHMA A156.11, E07121.

1. Provide three sets of keying for all cabinet door locks as follows:

Keying	In Center Dialysis Projects	Home Training Projects
K-1	General Supply Storage: Off-Treatment	All Non-Home Training Room areas (except Med Prep)
K-2	General Supply Storage: On-Treatment Floor	All Home Training Rooms
K-3	Medical Supply Storage	Med Prep Room

2. All cabinet keying work to be done by millwork vendor.
3. All cabinet locks and keys to be provided by millwork vendor.

K. Grommets for Cable Passage through Countertops: 3" Molded-plastic grommets and matching plastic caps with slot for wire passage.

L. CAPD Utility Hook:
1. 1 Piece - EP-40 Hook, Stainless Steel Type 304, by Sugatsune America, Inc.

M. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with BHMA A156.18 for BHMA finish number indicated, unless noted otherwise.
1. Satin Stainless Steel: BHMA 630.
2. Satin Chrome Finish: US26D (BHMA 626).

N. For concealed hardware, provide manufacturer's standard finish that complies with product class requirements in BHMA A156.9.

O. Swing-Up Grab Bar-OPTIONAL: For use at the in-floor scale for patients that require additional support.
1. Bobrick B-4998.

P. Optional Door Viewer (for solid door):
1. Harney 31834.

Q. Quick Leveling Glide: Hafele 637.05.000.

R. PPE (Personal Protection Equipment) Hook Racks:
1. 36" Safco 6 Hook Coat Rack, 7Hx36W - Grainger Item #45NG76.
2. 18" Safco 3 Hook Coat Rack, 7Hx18W - Grainger Item #45NG71.

2.3 MISCELLANEOUS MATERIALS

A. Furring, Blocking, Shims, and Hanging Strips: Softwood lumber, kiln dried to less than 15 percent moisture content.

B. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide nonferrous-metal or hot-dip galvanized anchors and inserts on inside face of exterior walls and elsewhere as required for corrosion resistance. Provide toothed-steel or lead expansion sleeves for drilled-in-place anchors.

C. Handrail Brackets: Cast from malleable iron with wall flange drilled for exposed anchor and with support arm for screwing to underside of rail. Sized to provide 1-1/2 inch clearance between handrail and wall.

D. Adhesives, General: Do not use adhesives that contain urea formaldehyde.

E. 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.

2.4 FABRICATION, GENERAL

A. 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.

B. Sand wood lightly to remove raised grain on exposed surfaces before fabrication.

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 and Rails: 1/16 inch.

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.

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 INTERIOR STANDING AND RUNNING TRIM FOR TRANSPARENT FINISH

A. Grade: Custom.

B. Wood Species and Cut: Match species and cut indicated for other types of transparent-finished architectural woodwork located in same area of building, unless otherwise indicated.
   1. Provide split species on trim that faces areas with different wood species, matching each face of woodwork to species and cut of finish wood surfaces in areas finished.

C. For trim items wider than available lumber, use veneered construction. Do not glue for width.

D. For rails wider or thicker than available lumber, use veneered construction. Do not glue for width or thickness.

E. Backout or groove backs of flat trim members and kerf backs of other wide, flat members, except for members with ends exposed in finished work.

F. Assemble casings in plant except where limitations of access to place of installation require field assembly.

2.6 PLASTIC-LAMINATE CABINETS

A. Grade: Custom.

B. Laminate Cladding for Exposed Surfaces: High-pressure decorative laminate complying with the following requirements:
   1. Horizontal Surfaces Other Than Tops: Grade HGS.
   2. Post-formed Surfaces: Grade HGS. (.40 VGS).
   3. Vertical Surfaces: Grade HGS. (.32 VGS).

4. Edges: Grade HGS.

C. Materials for Semi-exposed Surfaces:
1. Surfaces Other Than Drawer Bodies: High-pressure decorative laminate, Grade VGS.
a. Edges of Plastic-Laminate Shelves: PVC tape, 0.018-inch minimum thickness, matching laminate in color, pattern, and finish.
b. For semi-exposed backs of panels with exposed plastic-laminate surfaces, provide surface of high-pressure decorative laminate, Grade VGS.
2. Drawer Sides, Backs and bottom: Metabox drawer system, 3/4" white melamine bottom and back.

D. Concealed Backs of Panels with Exposed Plastic Laminate Surfaces: White melamine.

E. 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 per clinic finish schedule.

2.7 PLASTIC-LAMINATE COUNTERTOPS – Clinic Renovation Projects Only

A. Grade: Custom.

B. High-Pressure Decorative Laminate Grade: HGS typically.

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 per clinic finish schedule.

D. Edge Treatment: 3 mm edge tape.

E. Core Material: Exterior-grade plywood.

F. Backer Sheet: Provide brown melamine backer sheet, on underside of countertop substrate.

2.8 SOLID-SURFACING-MATERIAL COUNTERTOPS

A. Grade: Custom.

B. Solid-Surfacing-Material Thickness: 1/2" SS material over 1" MDF.

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. Refer to the Materials and Color Selection Form for approved colors.

D. Edge Treatment: Provide non-drip edge at all open countertop sides and fronts. Built-up to 1.5" total height.

E. 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 shop-applied backsplashes.
3. Backsplashes and sidesplashes to be field-installed.

F. Drill holes in countertops for plumbing fittings in shop.

G. Cut out openings for sinks and polish edges of all locations to receive undermount sinks.

2.9 SOLID SURFACE MATERIAL DIVIDERS, SIDESPLASHES & BACKSPLASHES

A. Grade: Custom.

B. Solid-Surfacing-Material Thickness: 1/2 inch.

C. Colors, Patterns, and Finishes: Match Countertop Color.

2.10 CLOSET AND UTILITY SHELVING

A. Grade: Custom.

B. Shelf Material: 3/4-inch NAUF Particle Board with white melamine; .5mm edge band all edges.

C. KV85ANO Standards, KV185ANO Standards.
   1. Paint Type P-5. Refer to Section 09900 - PAINTING for material and application requirements.
   2. Paint Type P-6. Refer to Section 09900 - PAINTING for material and application requirements.

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 back priming.

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.

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 stainless steel finishing nails or finishing screws for exposed fastening, countersunk and filled flush with woodwork and matching final finish if transparent finish is indicated.

F. Standing and Running Trim: Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to greatest extent possible. Do not use pieces less than 60 inches long, except where shorter single-length pieces are necessary. Scarf running joints and stagger in adjacent and related members.
   1. Fill gaps, if any, between top of base and wall with plastic wood filler, sand smooth, and finish same as wood base if finished.
   2. Install wall railings on indicated metal brackets securely fastened to wall framing.
   3. Install standing and running trim with no more variation from a straight line than 1/8 inch in 96 inches.

G. 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 sag, bow, or other variation from a straight line.
   2. Secure wall-hung cabinetry into wall blocking and/or framing.

H. 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 sag, bow, or other variation from a straight line.
   3. Install removable access panels in the dialysis counter with a 1/16" gap at both ends so that they are easily removable.
   4. Secure side splashes to tops and to walls with adhesive.
   5. Caulk space between backsplash and wall with sealant specified in Section 07920 - JOINT SEALANTS.

3.3 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 semi-exposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

END OF SECTION

SECTION 07140

WATERPROOFING & CRACK ISOLATION

1.1 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:
   1. Application of fluid applied waterproofing/crack isolation membrane over substrate above grade.

B. Related Work: The following items are not included in this Section and will be performed under the designated Sections:
   1. Section 03300 Cast-In-Place Concrete
   2. Section 03390 Concrete Curing
   3. Section 03410 Precast Structural Concrete
   4. Section 03530 Concrete Topping
   5. Section 04200 Unit Masonry (CMU wall substrates)
   6. Section 04430 Stone Masonry
   7. Section 06100 Rough Carpentry (plywood sub-floors)
   8. Section 07130 Sheet Waterproofing
   9. Section 07500 Membrane Roofing
   10. Section 07841 - PENETRATION FIRESTOPPING
   11. Section 07844 Fire resistive joint system
   12. Section 07920 Joint sealants and waterproofing
   13. Section 09280 Backing Boards and Underlayments
   14. Section 09290 Gypsum Board
   15. Section 10280 Toilet, Bath, and Laundry Accessories

1.2 SUBMITTALS

A. Product Data:
   1. UL GREENGUARD Certification Program For Chemical Emissions For Building Materials, Finishes And Furnishings, UL 2818 or UL GREENGUARD Gold certificates provided by the installation materials manufacturer on UL GREENGUARD letterhead stating “This product has been UL GREENGUARD Gold Product Certified For Low Chemical Emissions by the UL Environment under the UL GREENGUARD Certification Program For Chemical Emissions For Building Materials, Finishes And Furnishings” for each tile installation product used to verify Low VOC product information.

1.3 QUALITY ASSURANCE

A. Tile Manufacturer (single source responsibility): Company specializing in ceramic tile, thin brick, masonry veneer, mosaics, pavers, trim units and/or thresholds with three (3) years minimum experience. Obtain tile from a single source with resources to provide products of consistent quality in appearance and physical properties.

B. Installation System Manufacturer (single source responsibility): Company specializing in adhesives, mortars, grouts and other installation materials with ten (10) years minimum experience and ISO 9001 certification. Obtain installation materials from single source manufacturer to ensure consistent quality and full compatibility.

C. Submit laboratory confirmation of adhesives, mortars, grouts and other installation materials:
   1. Identify proper usage of specified materials using positive analytical method.
   2. Identify compatibility of specified materials using positive analytical method.
   3. Identify proper color matching of specified materials using a positive analytical method.

D. Installer qualifications: company specializing in installation of ceramic tile, thin brick, masonry veneer, mosaics, pavers, trim units and/or thresholds with five (5) years documented experience with installations of similar scope, materials and design.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Acceptance at Site: deliver and store packaged materials in original containers with seals unbroken and labels, including grade seal, intact until time of use, in accordance with manufacturer's instructions.

B. Store ceramic tile, stone, and installation system materials in a dry location; handle in a manner to prevent chipping, breakage, and contamination.

C. Protect latex additives, organic adhesives, epoxy adhesives and sealants from freezing or overheating in accordance with manufacturer's instructions; store at room temperature when possible.

D. Store portland cement mortars and grouts in a dry location.

1.5 PROJECT/SITE CONDITIONS

A. Provide ventilation and protection of environment as recommended by manufacturer.

B. Prevent carbon dioxide damage to ceramic tile, thin brick, masonry veneer, mosaics, pavers, trim units and/or thresholds as well as adhesives, mortars, grouts and other installation materials, by venting temporary heaters to the exterior.

C. Maintain ambient temperatures not less than 50ºF (10ºC) or more than 100ºF (38ºC) during installation and for a minimum of seven (7) days after completion. Setting of portland cement is retarded by low temperatures. Protect work for extended period of time and from damage by other trades. Installation with latex portland cement mortars requires substrate, ambient and material temperatures at least 37ºF (3ºC). There should be no ice in slab. Freezing after installation will not damage latex portland cement mortars. Protect portland cement based mortars and grouts from direct sunlight, radiant heat, forced ventilation (heat & cold) and drafts until cured to prevent premature evaporation of moisture. Epoxy mortars and grouts require surface temperatures between 60ºF (16ºC) and 90ºF (32ºC) at time of installation. It is the General Contractor’s responsibility to maintain temperature control.

PART 2 - PRODUCTS

2.1 HYDRO BAN

A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

LATICRETE
1 LATICRETE Park North
Bethany, Connecticut 06524-3423
Telephone 1-203-393-0010, Ext 235
Toll Free 1-800-243-4788, Ext. 235

Fax 1-203-393-1684
Internet www.laticrete.com

2.2 WATERPROOFING AND CRACK ISOLATION MEMBRANE

A. Waterproofing and Crack Isolation Membrane to be thin, cold applied, single component liquid and load bearing and UL GREENGUARD Gold certified. Reinforcing fabric to be non-woven rot-proof specifically intended for waterproofing membrane. Waterproofing Membrane to be non-toxic, non-flammable, and non-hazardous during storage, mixing, application and when cured. It shall be certified by IAPMO and ICC approved as a shower pan liner and shall also meet the following physical requirements:

1.	Hydrostatic Test (ASTM D4068):	Pass
2.	Elongation @ break (ASTM D751):	20-30%
3.	System Crack Resistance (ANSI A118.12):	Pass (High)
4.	7 day Tensile Strength (ANSI A118.10):	265 psi (1.8 MPa)
5.	7 day Shear Bond Strength (ANSI A118.10)	200 psi (1.4 MPa)
6.	28 Day Shear Bond Strength (ANSI A118.4):	214 psi (1.48 – 2.4 MPa)
7.	Service Rating (TCNA/ASTM C627):	Extra Heavy
8.	VOC Content:	2.39 g/L
9.	Total VOC Emissions:	0.22 mg/m^3

(Basis of Design: LATICRETE® HYDRO BAN®)**

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements of Sections in which substrates and related work are specified and for other conditions affecting performance.
   1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean substrates of substances harmful to insulation or vapor retarders, including removing projections capable of puncturing waterproofing and crack isolation membrane or of interfering with application on membrane.

3.3 INSTALLATION, GENERAL

A. Comply with manufacturer's written instructions applicable to products and application indicated.

B. Install product that is undamaged, unsoiled and that has not been left exposed at any time to ice, rain, and snow.

C. Extend application of membrane in thickness indicated to envelop entire area to be protected. Remove projections that interfere with application process.

3.4 INSTALLATION ACCESSORIES – CERAMIC TILE

A. Waterproofing and Crack Isolation Membrane (Liquid-Applied):
   1. Install waterproofing and crack isolation membrane in compliance with current revisions of ANSI A108.1 (2.7 Waterproofing), ANSI A108.13, and ANSI A108.17. Review the installation and plan the application sequence. Pre-cut LATICRETE® Waterproofing/Anti-Fracture Fabric (if required), allowing 2" (50mm) for overlap at ends and sides to fit the areas as required. Roll up

the pieces for easy handling and placement. Shake or stir LATICRETE HYDRO BAN® before using.

2. ***Pre-Treat Cracks and Joints*** - Fill all substrate cracks, cold joints and control joints to a smooth finish using a LATICRETE® latex-fortified thin-set. Alternatively, a liberal coat* of LATICRETE HYDRO BAN® applied with a paint brush or trowel may be used to fill in non-structural joints and cracks. Apply a liberal coat* of LATICRETE HYDRO BAN approximately 8" (200mm) wide over substrate cracks, cold joints, and control joints using a paint brush or heavy napped paint roller.
3. ***Pre-Treat Coves and Floor/Wall Intersections*** - Fill all substrate coves and floor/wall transitions to a smooth finish and changes in plane using a LATICRETE latex-fortified thin-set. Alternatively, a liberal coat* of LATICRETE HYDRO BAN applied with a paint brush or trowel may be used to fill in cove joints and floor/wall transitions <1/8" (3mm) in width. Apply a liberal coat* of LATICRETE HYDRO BAN approximately 8" (200mm) wide over substrate cracks, cold joints, and control joints using a paint brush or heavy napped paint roller.
4. ***Pre-Treat Drains*** - Drains must be of the clamping ring type, with weepers as per ASME A112.6.3. Apply a liberal coat* of LATICRETE HYDRO BAN around and over the bottom half of drain clamping ring. Cover with a second liberal coat of LATICRETE HYDRO BAN. When the LATICRETE HYDRO BAN dries, apply a bead of LATICRETE LATASIL™ where the LATICRETE HYDRO BAN meets the drain throat. Install the top half of drain clamping ring.
5. ***Pre-Treat Penetrations*** - Allow for a minimum 1/8" (3mm) space between drains, pipes, lights, or other penetrations and surrounding Ceramic tile, stone or brick. Pack any gaps around pipes, lights or other penetrations with a LATICRETE latex-fortified thin-set. Apply a liberal coat* of LATICRETE HYDRO BAN around penetration opening. Cover the first coat with a second liberal coat* of LATICRETE HYDRO BAN. Bring LATICRETE HYDRO BAN up to level of tile or stone. When LATICRETE HYDRO BAN has dried to the touch seal with LATICRETE LATASIL.
6. ***Main Application*** - Allow any pre-treated areas to dry to the touch. Apply a liberal coat* of LATICRETE HYDRO BAN with a paint brush or heavy napped roller over substrate including pre-treated areas and allow to dry to the touch. Install another liberal coat* of LATICRETE HYDRO BAN over the first coat. Let the top coat of LATICRETE HYDRO BAN dry to the touch approximately 1 – 2 hours at 70°F (21°C) and 50% RH. When the top coat has dried to the touch inspect the surface for pinholes, voids, thin spots or other defects. LATICRETE HYDRO BAN will dry to an olive green color when fully cured. Use additional LATICRETE HYDRO BAN to seal any defects.
7. ***Movement Joints*** - Apply a liberal coat* of LATICRETE HYDRO BAN, approximately 8" (200mm) wide over the areas. Then embed and loop the 6" (150mm) wide LATICRETE Waterproofing/Anti-Fracture Fabric and allow the LATICRETE HYDRO BAN liquid to bleed through. Immediately apply a second coat of LATICRETE HYDRO BAN.
8. *** Dry coat thickness is 20 – 30 mil (0.02 - 0.03" or 0.5 - 0.8mm); consumption per coat is approximately 0.01 gal/ft^2 (approx. 0.4 L/m^2); coverage is approximately 100 ft^2 /gal (approx. 2.5 m^2/ L). LATICRETE® Waterproofing/Anti-Fracture Fabric can be used to pre-treat cracks, joints, curves, corners, drains, and penetrations with LATICRETE HYDRO BAN®.**
9. ***Protection*** - Provide protection for newly installed membrane, even if covered with a thin-bed ceramic tile, stone or brick installation against exposure to rain or other water for a minimum of 2 hours at 70°F (21°C) and 50% RH. For temperatures between 45°F and 69°F (7°C to 21°C) allow a minimum 24 hour cure period.

10. ***Flood Testing -*** Allow membrane to cure fully before flood testing, typically a minimum 2 hours at 70°F (21°C) and 50% RH. Cold conditions will require a longer curing time. For temperatures between 50°F and 69°F (10°C to 21°C) allow a minimum 24 hour cure period prior to flood testing.

3.5 SUBSTRATE EXAMINATION

A. Verify that surfaces to be covered with ceramic tile, mosaics, pavers, brick, masonry veneer, stone, trim or waterproofing are:
   1. Sound, rigid and conform to good design/engineering practices;
   2. Systems, including the framing system and panels, over which ceramic tile will be installed shall be in conformance with the International Residential Code (IRC) for residential applications, the International Building Code (IBC) for commercial applications, or applicable building codes.
   3. Clean and free of dust, dirt, oil, grease, sealers, curing compounds, laitance, efflorescence, form oil, loose plaster, paint, and scale;
   4. For thin-bed Ceramic tile installations when a cementitious bonding material will be used, including medium bed mortar: maximum allowable variation in the tile substrate – for tiles with edges shorter than 15" (375mm), maximum allowable variation is ¼" in 10' (6mm in 3m) from the required plane, with no more than 1/16" variation in 12" (1.5mm variation in 300mm) when measured from the high points in the surface. For tiles with at least one edge 15" (375mm) in length, maximum allowable variation is 1/8" in 10' (3mm in 3m) from the required plane, with no more than 1/16" variation in 24" (1.5mm variation in 600mm) when measured from the high points in the surface. For modular substrate units, such as exterior glue plywood panels or adjacent concrete masonry units, adjacent edges cannot exceed 1/32" (0.8mm) difference in height. For thick bed (mortar bed) Ceramic tile and stone installations, and self-leveling methods; maximum allowable variation in the installation substrate to be (1/4" in 10' (6mm in 3m).
   5. To fully evacuate water, shower pan membranes and bonded waterproofing membranes in wet areas must slope to and connect with a drain. Plumbing code typically requires membranes to be sloped a minimum of ¼" per ft. (6mm per 300mm) and extend at least 3" (75mm) above the height of the curb or threshold. Account for the perimeter floor height required to form adequate slopes. Membranes must be installed over the other horizontal surfaces in wet areas subject to deterioration, like shower seats. They must be sloped and configured so as to direct water to the membrane connected to the drain. The weep holes of clamping ring drains enable water to pass from the membrane into the plumbing system. Crushed Ceramic tile or stone, or other positive weep protectors, placed around/over weep holes help prevent their blockage. To form a watertight seal, membranes must have adequate contact with the clamping ring of the drain or with the bonding area of an integrated bonding flange.
   6. Not leveled with gypsum or asphalt based compounds
   7. For substrates scheduled to receive a waterproofing and/or crack isolation membrane, maximum amount of moisture in the concrete/mortar bed substrate should not exceed 5 lbs./1,000 ft^2 / 24 hours (283 $\mu g/s \cdot m^2$) per ASTM F1869 or 75% relative humidity as measured with moisture probes per ASTM F2170. Consult with finish materials manufacturer to determine the maximum allowable moisture content for substrates under their finished material. Please refer to LATICRETE TDS 183 "Drying of Concrete" and TDS 166 "LATICRETE and Moisture Vapor Emission Rate, Relative Humidity and Moisture Testing of Concrete", available at www.laticrete.com, for more information.
   8. Dry as per American Society for Testing and Materials (ASTM) D4263 **"Standard Test for Determining Moisture in Concrete by the Plastic Sheet Method."**

B. Concrete surfaces shall also be:
   1. Cured a minimum of 28 days at 70°F (21°C), including an initial seven (7) day period of wet curing;
   2. Wood float finished, or better, if the installation is to be done by the thin bed method;

C. Advise General Contractor and Architect of any surface or substrate conditions requiring correction before tile work commences. ***Beginning of work constitutes acceptance of substrate or surface conditions.***

PART 4 – HEALTH AND SAFETY

The use of personal protection such as rubber gloves, suitable dust masks, safety glasses and industrial clothing is highly recommended. Discarded packaging, product wash and waste water should be disposed of as per local, state or federal regulations.

END OF SECTION

SECTION 07210

THERMAL INSULATION

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:
   1. Perimeter insulation under slabs-on-grade.
   2. Perimeter foundation wall insulation.
   3. Concealed building insulation.
   4. Vapor retarders.

B. Related Work: The following items are not included in this Section and will be performed under the designated Sections:
   1. Section 07841 - PENETRATION FIRESTOPPING for firestopping insulation.
   2. Section 07500 - ROOF REMODELING for roofing insulation.
   3. Section 09260 - GYPSUM BOARD ASSEMBLIES for acoustic insulation in gypsum board assemblies.
   4. Division 15 - PLUMBING for plumbing insulation.
   5. Division 15 - HEATING, VENTILATING, AND AIR CONDITIONING for mechanical insulation.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated.
   1. Manufacturer's product data indicating percentages by weight of post-consumer and pre-consumer recycled content for products having recycled content.
   2. Manufacturer's product data indicating no urea-formaldehyde content.

1.3 QUALITY ASSURANCE

A. Source Limitations: Obtain each type of building insulation through one source from a single manufacturer.

B. Fire-Test-Response Characteristics: Provide insulation and related materials with the fire-test-response characteristics indicated, as determined by testing identical products per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.
   1. Surface-Burning Characteristics: ASTM E 84.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Protect insulation materials from physical damage and from deterioration by moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.

B. Protect plastic insulation as follows:
   1. Do not expose to sunlight, except to extent necessary for period of installation and concealment.
   2. Protect against ignition at all times. Do not deliver plastic insulating materials to Project site before installation time.
   3. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.

PART 2 - PRODUCTS

2.1 FOAM-PLASTIC BOARD INSULATION

A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
   1. DiversiFoam Products.
   2. Dow Chemical Company.
   3. Owens Corning.

B. Extruded-Polystyrene Board Insulation: ASTM C 578, Type IV, with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively.

2.2 GLASS-FIBER BLANKET INSULATION

A. Available Manufacturers:
   1. CertainTeed Corporation.
   2. Guardian Fiberglass, Inc.
   3. Johns Manville.
   4. Knauf Fiber Glass.
   5. Owens Corning.

B. Unfaced, Glass-Fiber Blanket Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E 136 for combustion characteristics.

C. Faced, Glass-Fiber Blanket Insulation: ASTM C 665, Type III (blankets with reflective membrane facing), Class A (membrane-faced surface with a flame-spread index of 25 or less); Category 1 (membrane is a vapor barrier), faced with foil-scrim-kraft vapor-retarder membrane on 1 face.

D. Where glass-fiber blanket insulation is indicated by the following thicknesses, provide blankets in batt or roll form with thermal resistances indicated:
   1. 3-1/2 inches thick with a thermal resistance of 11 deg F x h x sq. ft./Btu at 75 deg F.
   2. 9-1/2 inches thick with a thermal resistance of 30 deg F x h x sq. ft./Btu at 75 deg F.

E. Provide glass-fiber blanket insulation as follows:
   1. Recycled content of 20% minimum.
   2. Contain no urea-formaldehyde resins.

F. Where the thermal performance of an existing roof is not indicated on the drawings, Contractor shall verify the existing R-Valve prior to bidding. Contractor's bid shall include an alternate identifying the existing R-Valve and the cost to achieve an R-Valve that meets governing energy codes but is not less than R-19. Furnish and install Batt Insulation at the underside of the existing roof to attain required values.

2.3 VAPOR RETARDERS

A. Polyethylene Vapor Retarders: ASTM D 4397, 6 mils thick, with maximum permeance rating of 0.1 perm.

B. Vapor-Retarder Tape: Pressure-sensitive tape of type recommended by vapor-retarder manufacturer for sealing joints and penetrations in vapor retarder.

C. Vapor Retarders and installation shall comply with IBC-2015 sec. 1405

2.4 AUXILIARY INSULATING MATERIALS

A. Adhesive for Bonding Insulation: Product with demonstrated capability to bond insulation securely to substrates indicated without damaging insulation and substrates.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements of Sections in which substrates and related work are specified and for other conditions affecting performance.
   1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean substrates of substances harmful to insulation or vapor retarders, including removing projections capable of puncturing vapor retarders or of interfering with insulation attachment.

3.3 INSTALLATION, GENERAL

A. Comply with insulation manufacturer's written instructions applicable to products and application indicated.

B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed at any time to ice, rain, and snow.

C. Extend insulation in thickness indicated to envelop entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

3.4 INSTALLATION OF PERIMETER AND UNDER-SLAB INSULATION

A. On vertical surfaces, set insulation units in adhesive applied according to manufacturer's written instructions. Use adhesive recommended by insulation manufacturer.
   1. If not otherwise indicated, extend insulation a minimum of 48 inches below exterior grade line.

B. On horizontal surfaces, loosely lay insulation units according to manufacturer's written instructions. Stagger end joints and tightly abut insulation units.

3.5 INSTALLATION OF GENERAL BUILDING INSULATION

A. Apply insulation units to substrates by method indicated, complying with manufacturer's written instructions. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.

B. Seal joints between foam-plastic insulation units by applying adhesive, mastic, or sealant to edges of each unit to form a tight seal as units are shoved into place. Fill voids in completed installation with adhesive, mastic, or sealant as recommended by insulation manufacturer.

C. Set vapor-retarder-faced units with vapor retarder in location indicated of construction, unless otherwise indicated.
   1. Tape joints and ruptures in vapor retarder, and seal each continuous area of insulation to surrounding construction to ensure airtight installation.

3.6 INSTALLATION OF VAPOR RETARDERS

A. General: Extend vapor retarder to extremities of areas to be protected from vapor transmission. Secure in place with adhesives or other anchorage system as indicated. Extend vapor retarder to cover miscellaneous voids in insulated substrates, including those filled with loose-fiber insulation.

B. Seal vertical joints in vapor retarders over framing by lapping not less than two wall studs. Fasten vapor retarders to wood framing at top, end, and bottom edges; at perimeter of wall openings; and at lap joints. Space fasteners 16 inches o.c.

C. Firmly attach vapor retarders to metal framing and solid substrates with vapor-retarder fasteners as recommended by vapor-retarder manufacturer.

D. Seal joints caused by pipes, conduits, electrical boxes, and similar items penetrating vapor retarders with vapor-retarder tape to create an airtight seal between penetrating objects and vapor retarder.

E. Repair tears or punctures in vapor retarders immediately before concealment by other work. Cover with vapor-retarder tape or another layer of vapor retarder.

3.7 PROTECTION

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

END OF SECTION

SECTION 07500

ROOFING REMODELING

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:
   1. Roofing penetrations and remodeling of existing roofing to accommodate new work.
   2. Addition of new insulation to existing roof deck.
   3. Protection of existing roofing during remodeling operations.

B. Items To Be Installed Only: Install the following items as furnished by the designated Sections:
   1. Division 15 - PLUMBING:
      a. Roof drains.
      b. Sanitary vent pipes.
      c. Indirect waste vent pipes.
   2. Division 15 - HEATING, VENTILATING, AND AIR CONDITIONING:
      a. Roof curbs for HVAC equipment.

C. Related Work: The following items are not included in this Section and will be performed under the designated Sections:
   1. Section 06100 - ROUGH CARPENTRY for wood nailers, curbs, and blocking.
   2. Section 07620 - SHEET METAL FLASHING AND TRIM for metal roof penetration flashings, flashings, and counterflashings.
   3. Section 07920 - JOINT SEALANTS for sealants.

1.2 DEFINITIONS

A. Roofing Terminology: Refer to ASTM D 1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" for definition of terms related to roofing work in this Section.

1.3 PERFORMANCE REQUIREMENTS

A. General: Provide installed roofing membrane and base flashings that remain watertight; do not permit the passage of water; and resist specified uplift pressures, thermally induced movement, and exposure to weather without failure.

B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by roofing manufacturer based on testing and field experience. Roofing System Design: Roofing system shall be designed to withstand Code required loads and wind speeds.

C. Flashings: Provide base flashings, perimeter flashings, detail flashings and component materials that comply with requirements and recommendations in FMG 1-49 Loss Prevention Data Sheet for Perimeter Flashings; FMG 1-29 Loss Prevention Data Sheet for Above Deck Roof Components; NRCA Roofing and Waterproofing Manual (Fourth Edition) for Construction Details; and SMACNA Architectural Sheet Metal Manual (Fifth Edition) for Construction Details, as applicable.

1.4 SUBMITTALS

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

B. Installer Certificates: Signed by roofing system manufacturer certifying that Installer is approved, authorized, or licensed by manufacturer to install and modify roofing system.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain components for roofing system from or approved by roofing system manufacturer.

B. Preinstallation Conference: Conduct conference at Project site. Comply with requirements in Division 01. Review methods and procedures related to roofing system including, but not limited to, the following:

1. Meet with the Owner; Landlord if applicable; testing and inspecting agency representative; roofing Installer; roofing system manufacturer's representative if existing roof is under warranty; and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
4. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
5. Review structural loading limitations of roof deck during and after roofing.
6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
7. Review governing regulations and requirements for insurance and certificates if applicable.
8. Review temporary protection requirements for roofing system during and after installation.
9. Review roof observation and repair procedures after roofing installation.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, and directions for storing and mixing with other components.

B. Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of deck.

1.7 PROJECT CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

1.8 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during remodeling, by methods and with materials so as not to void existing roofing system warranty. Notify warrantor before proceeding.

1. Notify warrantor of existing roofing system on completion of reroofing, and obtain documentation verifying that existing roofing system has been inspected and warranty remains in effect. Submit documentation at Project closeout.

B. Roofing Contractor's Warranty: The roofing subcontractor shall supply Owner with a minimum two-year workmanship warranty for each roof. In the event any work related to the roofing, flashing, or metalwork is found to be defective within two years of substantial

completion, the roofing contractor shall remove and replace such at no additional cost. The roofing subcontractor's warranty obligation shall run directly to the building owner, and a signed copy of the roofing warranty shall be sent to the roofing system's manufacturer.

PART 2 - PRODUCTS

1.1 ROOFING ASSEMBLY MATERIALS

A. Roofing Materials: Match existing. Engage services of a roofing consultant if type of roof and roof assembly is not readily determinable. Provide auxiliary materials recommended by roofing system manufacturer for intended use and compatible with membrane roofing.

B. Fasteners: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening membrane to substrate, and acceptable to membrane roofing system manufacturer.

C. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, in-seam sealants, termination reglets, cover strips, and other accessories.

1.2 WALKWAYS

A. Flexible Walkways at New Equipment: Factory-formed, nonporous, heavy-duty, solid-rubber, slip-resisting, surface-textured walkway pads or rolls approximately 3/16 inch thick, and acceptable to membrane roofing system manufacturer.

PART 3 - EXECUTION

1.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with conditions affecting performance of roofing system.
   1. Verify that roof openings and penetrations are in place and set and braced, and that roof drains are securely clamped in place.
   2. Proceed with installation only after unsatisfactory conditions have been corrected.

1.2 PREPARATION AND INSTALLATION

A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.

B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

C. Install roofing membrane over area to receive roofing according to membrane roofing system manufacturer's written instructions. Unroll roofing membrane and allow to relax before installing.

D. Repair tears, voids, and lapped seams in roofing that does not meet requirements.

E. Install sheet flashings and preformed flashing accessories and adhere to substrates according to membrane roofing system manufacturer's written instructions.

F. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.

G. Clean splice areas, apply splicing cement, and firmly roll side and end laps of overlapping sheets to ensure a watertight seam installation. Apply lap sealant and seal exposed edges of sheet flashing terminations.

H. Terminate and seal top of sheet flashings.

1.3 WALKWAY INSTALLATION

A. Flexible Walkways: Install walkway products in locations indicated. Adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer's written instructions.

1.4 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified independent testing and inspecting agency to perform roof tests and inspections and to prepare test reports. Repair or remove and replace components of membrane roofing system where test results or inspections indicate that they do not comply with specified requirements.

C. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

1.5 PROTECTING AND CLEANING

A. Protect membrane roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Owner.

B. Correct deficiencies in or remove membrane roofing system that do not comply with requirements, repair substrates, and repair or reinstall membrane roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION

SECTION 07841

PENETRATION FIRESTOPPING

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:
   1. Through-penetration firestop systems for penetrations through fire-resistance-rated constructions, including both empty openings and openings containing penetrating items.
   2. Fire-resistive joint systems for floor, wall, and head-of-wall joints.
   3. Firewall stencils.

B. Related Work: The following items are not included in this Section and will be performed under the designated Sections:
   1. Section 07844 - FIRE-RESISTIVE JOINT SYSTEMS for fire-resistive joint sealers.
   2. Section 07920 - JOINT SEALANTS for standard joint sealers.
   3. Division 15 - FIRE PROTECTION for fire-suppression piping penetrations.
   4. Division 15 - PLUMBING for piping penetrations.
   5. Division 15 - HEATING, VENTILATING AND AIR CONDITIONING for duct and piping penetrations.
   6. Division 16 - ELECTRICAL for cable and conduit penetrations.

1.2 PERFORMANCE REQUIREMENTS

A. General: For penetrations through fire-resistance-rated constructions, including both empty openings and openings containing penetrating items, provide through-penetration firestop systems that are produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of construction penetrated.

B. F-Rated Systems: Provide through-penetration firestop systems with F-ratings indicated, but not less than that equaling or exceeding fire-resistance rating of constructions penetrated, as determined per ASTM E 814.

C. For through-penetration firestop systems exposed to view, traffic, moisture, and physical damage, provide products that, after curing, do not deteriorate when exposed to these conditions both during and after construction.
   1. For piping penetrations for plumbing and wet-pipe sprinkler systems, provide moisture-resistant through-penetration firestop systems.
   2. For floor penetrations with annular spaces exceeding 4 inches in width and exposed to possible loading and traffic, provide firestop systems capable of supporting floor loads involved, either by installing floor plates or by other means.
   3. For penetrations involving insulated piping, provide through-penetration firestop systems not requiring removal of insulation.

1.3 SUBMITTALS

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

B. Shop Drawings: For each through-penetration firestop system, show each type of construction condition penetrated, relationships to adjoining construction and type of penetrating item. Include firestop design designation of qualified testing and inspecting agency that evidences compliance with requirements for each condition indicated.

1. Submit documentation, including illustrations, from a qualified testing and inspecting agency that is applicable to each through-penetration firestop system configuration for construction and penetrating items.

C. Through-Penetration Firestop System Schedule: Indicate locations of each through-penetration firestop system, along with the following information:
1. Types of penetrating items.
2. Types of constructions penetrated, including fire-resistance ratings and, where applicable, thicknesses of construction penetrated.
3. Through-penetration firestop systems for each location identified by firestop design designation of qualified testing and inspecting agency.

D. Qualification Data: For Installer.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Either a firm that has been approved by FMG according to FMG 4991, "Approval of Firestop Contractors" or a firm experienced in installing through-penetration firestop systems similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction of a minimum of five projects with a record of successful performance. Qualifications include having the necessary experience, staff, and training to install manufacturer's products per specified requirements.

B. Source Limitations: Obtain through-penetration firestop systems, for each kind of penetration and construction condition indicated, through one source from a single manufacturer.

C. Fire-Test-Response Characteristics: Provide through-penetration firestop systems that comply with the following requirements and those specified in Part 1 "Performance Requirements" Article:
1. Firestopping tests are performed by a qualified testing and inspecting agency. A qualified testing and inspecting agency is UL or another agency performing testing and follow-up inspection services for firestop systems acceptable to authorities having jurisdiction.
2. Through-penetration firestop systems are identical to those tested per testing standard referenced in "Part 1 Performance Requirements" Article. Provide rated systems complying with the following requirements:
   a. Through-penetration firestop system products bear classification marking of qualified testing and inspecting agency.
   b. Through-penetration firestop systems correspond to those indicated by reference to through-penetration firestop system designations listed in the UL "Fire Resistance Directory."

D. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver through-penetration firestop system products to Project site in original, unopened containers or packages with intact and legible manufacturers' labels identifying product and manufacturer, date of manufacture, lot number, shelf life if applicable, qualified testing and inspecting agency's classification marking applicable to Project, curing time, and mixing instructions for multicomponent materials.

B. Store and handle materials for through-penetration firestop systems to prevent their deterioration or damage due to moisture, temperature changes, contaminants, or other causes.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Do not install through-penetration firestop systems when ambient or substrate temperatures are outside limits permitted by through-penetration firestop system manufacturers or when substrates are wet due to rain, frost, condensation, or other causes.

B. Ventilate through-penetration firestop systems per manufacturer's written instructions by natural means or, where this is inadequate, forced-air circulation.

1.7 COORDINATION

A. Coordinate construction of openings and penetrating items to ensure that through-penetration firestop systems are installed according to specified requirements.

B. Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate through-penetration firestop systems.

C. Do not cover up through-penetration firestop system installations that will become concealed behind other construction until each installation has been examined by the building inspector, if required by authorities having jurisdiction.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Products: Subject to compliance with requirements, through-penetration firestop systems that may be incorporated into the Work include, but are not limited to, those systems indicated in the Through-Penetration Firestop System Schedule at the end of Part 3.
1. Hilti, Inc.
2. BioFireshield; RectorSeal Corporation.
3. 3M; Fire Protection Products Division.
4. Or approved equal.

2.2 FIRESTOPPING MATERIALS

A. Compatibility: Provide through-penetration firestop systems that are compatible with one another; with the substrates forming openings; and with the items, if any, penetrating through-penetration firestop systems, under conditions of service and application, as demonstrated by through-penetration firestop system manufacturer based on testing and field experience.

B. Materials: Provide through-penetration firestop systems containing primary materials and fill materials which are part of the tested assemblies indicated in the Through-Penetration Firestop System Schedule at the end of Part 3. Fill materials are those referred to in directories of referenced testing and inspecting agencies as "fill," "void," or "cavity" materials.

C. Accessories: Provide components for each through-penetration firestop system that are needed to install fill materials and to comply with Part 1 "Performance Requirements" Article. Use only components specified by through-penetration firestop system manufacturer and approved by qualified testing and inspecting agency for firestop systems indicated.

D. Approved Colors: Provide Firestopping materials (caulk, putty, sealants) that are red in color whenever possible as they provide better visibility for inspection.

2.3 MIXING

A. For those products requiring mixing before application, comply with through-penetration firestop system manufacturer's written instructions for accurate proportioning of materials,

water (if required), type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other items or procedures needed to produce products of uniform quality with optimum performance characteristics for application indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of work. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning: Clean out openings immediately before installing through-penetration firestop systems to comply with firestop system manufacturer's written instructions and with the following requirements:
   1. Remove from surfaces of opening substrates and from penetrating items foreign materials that could interfere with adhesion of through-penetration firestop systems.
   2. Clean opening substrates and penetrating items to produce clean, sound surfaces capable of developing optimum bond with through-penetration firestop systems. Remove loose particles remaining from cleaning operation.
   3. Remove laitance and form-release agents from concrete.

B. Priming: Prime substrates where recommended in writing by through-penetration firestop system manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.

C. Masking Tape: Use masking tape to prevent through-penetration firestop systems from contacting adjoining surfaces that will remain exposed on completion of Work and that would otherwise be permanently stained or damaged by such contact or by cleaning methods used to remove smears from firestop system materials. Remove tape as soon as possible without disturbing firestop system's seal with substrates.

3.3 THROUGH-PENETRATION FIRESTOP SYSTEM INSTALLATION

A. General: Install through-penetration firestop systems to comply with Part 1 "Performance Requirements" Article and with firestop system manufacturer's written installation instructions and published drawings for products and applications indicated.

B. Install forming/damming/backing materials and other accessories of types required to support fill materials during their application and in the position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.

C. Install fill materials for firestop systems by proven techniques to produce the following results:
   1. Fill voids and cavities formed by openings, forming materials, accessories, and penetrating items as required to achieve fire-resistance ratings indicated.
   2. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
   3. For fill materials that will remain exposed after completing Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.4 FIELD QUALITY CONTROL

A. Inspecting Agency: Engage a qualified, independent inspecting agency to inspect through-penetration firestops. Independent inspecting agency shall comply with ASTM E 2174

requirements including those related to qualifications, conducting inspections, and preparing test reports.

B. Where deficiencies are found, repair or replace through-penetration firestop systems so they comply with requirements.

C. Proceed with enclosing through-penetration firestop systems with other construction only after inspection reports are issued and firestop installations comply with requirements.

D. Provide one tube of partially used fire caulking for each type and color of fire caulking installed to the Owner's Project Manager for storage and future reference.

3.5 CLEANING AND PROTECTING

A. Clean off excess fill materials adjacent to openings as Work progresses by methods and with cleaning materials that are approved in writing by through-penetration firestop system manufacturers and that do not damage materials in which openings occur.

B. Provide final protection and maintain conditions during and after installation that ensure that through-penetration firestop systems are without damage or deterioration at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated through-penetration firestop systems immediately and install new materials to produce systems complying with specified requirements.

3.6 LABELING/STENCILING OF FIRE WALLS

A. All rated walls are required to be labeled with a spray-applied stencil. The label should read: "ONE HOUR FIRE WALL – PROTECT ALL PENETRATIONS".

B. Letters shall be a minimum of 3" in height and should be legible from 20'-0" distance. A non-serif typeface should be used for maximum legibility.

3.7 THROUGH-PENETRATION FIRESTOP SYSTEM SCHEDULE

CONCRETE FLOORS		**UL-CLASSIFIED SYSTEMS**			**CONCRETE OR BLOCK WALLS**		**UL-CLASSIFIED SYSTEMS**		
TYPE OF PENETRANT	**F-RATING HR**	**HILTI**	**3M**	**BIO-FIRE**	**TYPE OF PENETRANT**	**F-RATING**	**HILTI**	**3M**	**BIO-FIRE**
CIRCULAR BLANK OPENINGS	1	FA 0006, CAJ 0070	CAJ 0009	CAJ 0056	CIRCULAR BLANK OPENINGS	1	CAJ 0055, CAJ 0070	CAJ 0009	CAJ 0056
	2	FA 0006, CAJ 0070	CAJ 0009	CAJ 0056		2	CAJ 0055, CAJ 0070	CAJ 0009	CAJ 0056
	3	CAJ 0055	CAJ 0009	CAJ 0056		3	CAJ 0055	CAJ 0009	CAJ 0056
SINGLE METAL PIPES OR CONDUIT	1	CAJ 1226, CAJ 1278, FA	CAJ 1058	CAJ 1264	SINGLE METAL PIPES OR CONDUIT	1	CAJ 1226, CAJ 1278,	CAJ 1058	CAJ 1264

		1017							
	2	CAJ 1226, CAJ 1278, FA 1017	CAJ 1058	CAJ 1264		2	CAJ 1226, CAJ 1278,	CAJ 1058	CAJ 1264
	3	CAJ 1226, CAJ 1278, FA 1017	CAJ 1058	CAJ 1264		3	CAJ 1226, CAJ 1278,	CAJ 1058	CAJ 1264
	4	CAJ 8095, CBJ 1034	CAJ 1044	N/A		4	CAJ 8095, CBJ 1034, WJ 1042	CAJ 1044	WJ 1064
SINGLE NON-METALLIC PIPE OR CONDUIT (I.E. PVC, CPVC, ABS, ENT)	1	CAJ 2109, CAJ 2168, FA 2054, FA 2067	CAJ 2189, CAJ 2117, CAJ 2027	CAJ 2131	SINGLE NON-METALLIC PIPE OR CONDUIT (I.E. PVC, CPVC, ABS, ENT)	1	CAJ 2109, WJ 2108, WJ 2121	CAJ 2189, CAJ 2117, CAJ 2027	CAJ 2131
	2	CAJ 2109, CAJ 2168, FA 2054, FA 2067	CAJ 2189, CAJ 2117	CAJ 2131		2	CAJ 2109, WJ 2108, WJ 2121	CAJ 2189, CAJ 2117, CAJ 2027	CAJ2131
	3	CAJ 2109, CAJ 2168, FA 2054,	CAJ 2005, CAJ 2117	CAJ 2152		3	CAJ 2109, CAJ 2168, WJ 2091	CAJ 2005, CAJ 211	CAJ2152

								7, CAJ 2027	
	4	N/A*	N/A*	N/A		4	WJ 2091	N/A*	N/A

SINGLE OR BUNDLED CABLES	1	FA 3007, CAJ 3095,	CAJ 3021	CAJ 3103	SINGLE OR BUNDLED CABLES	1	CAJ 3095, WJ 3060 WJ 3074	CAJ 3021	WJ 3071
	2	FA 3007, CAJ 3095,	CAJ 3021	CAJ 3103		2	CAJ 3095, WJ 3060 WJ 3074	CAJ 3021	WJ 3071
	3	FA 3007, CAJ 3095,	CAJ 3030	CAJ 3103		3	CAJ 3095, WJ 3050	CAJ 3030	CAJ 3103
	4	N/A*	N/A*	N/A		4	WJ 3050	N/A*	N/A
CABLE TRAY	1	CAJ 4034, CAJ 4054, CAJ 4017	CAJ 4003	CAJ 4048	CABLE TRAY	1	CAJ 4034, CAJ 4054, WJ 4016,	CAJ 4003	CAJ 4048
	2	CAJ 4034, CAJ 4054, CAJ 4017	CAJ 4003	CAJ 4048		2	CAJ 4034, CAJ 4054, WJ 4016,	CAJ 4003	CAJ 4048
	3	CAJ 4034, CAJ 4017	CAJ 4003	CAJ 4048		3	CAJ 4034, WJ 8007	CAJ 4003	CAJ 4048
	4	N/A*	N/A*	N/A		4	WJ 8007	N/A*	N/A
SINGLE INSULATED PIPES	1	FA 5016, FA 5017 CAJ 5090, CAJ	CAJ 5080, CAJ 5024, CAJ 5017	CAJ 5082	SINGLE INSULATED PIPES	1	CAJ 5090, CAJ 5091, WJ 5042	CAJ 5080, CAJ 5024, CAJ 5017	CAJ 5082

		5091,							
	2	FA 5016, FA 5017 CAJ 5090, CAJ 5091,	CAJ 5080, CAJ 5024, CAJ 5017	CAJ 5082		2	CAJ 5090, CAJ 5091, WJ 5042	CAJ 5080, CAJ 5024, CAJ 5017	CAJ 5082
	3	FA5016, CAJ 5061, CAJ 5090,	CAJ 5024, CAJ 5017	CAJ 5006		3	CAJ 5090, CAJ 5091,	CAJ 5024, CAJ 5017	CAJ 5006
	4	CBJ 5006	N/A*	N/A		4	WJ 5028, CBJ 5006	N/A*	N/A
ELECTRICAL BUSWAY	1	CAJ 6006, CAJ 6017	CAJ 6001, CAJ 6002	CAJ 6026	ELECTRICAL BUSWAY	1	CAJ 6006, CAJ 6017	CAJ 6001, CAJ 6002	CAJ 6026
	2	CAJ 6006, CAJ 6017	CAJ 6001, CAJ 6002	CAJ 6026		2	CAJ 6006, CAJ 6017	CAJ 6001, CAJ 6002	CAJ 6026
	3	CAJ 6006, CAJ 6017	CAJ 6001, CAJ 6002	N/A		3	CAJ 6006, CAJ 6017	CAJ 6001, CAJ 6002	N/A

NON-INSULATED MECHANICAL DUCTWORK WITHOUT DAMPERS	1	CAJ 7046 CAJ 7051	CAJ 7003, CAJ 7021	CAJ 7036	NON-INSULATED MECHANICAL DUCTWORK WITHOUT DAMPERS	1	CAJ 7046, WJ 7029, WJ 7022	CAJ 7003, CAJ 7021	CAJ 7036
	2	CAJ 7046 CAJ 7051	CAJ 7003, CAJ 7021	N/A		2	CAJ 7046, WJ 7029, WJ 7022	CAJ 7003, CAJ 7021	CAJ 7036
	3	CAJ 7046 CAJ 7051	CAJ 7003, CAJ 7021	N/A		3	CAJ 7046 CAJ 7051	CAJ 7003, CAJ 7021	N/A

MIXED PENETRANTS	1	CAJ 8056, CAJ 8095, CAJ 8099	CAJ 8001, CAJ 8013	CAJ 8051	MIXED PENETRANTS	1	CAJ 8096, CAJ 8099 WJ 8007	CAJ 8001, CAJ 8013	CAJ 8051
	2	CAJ 8056, CAJ 8095, CAJ 8099	CAJ 8001, CAJ 8013	CAJ 8051		2	CAJ 8096, CAJ 8099 WJ 8007	CAJ 8001, CAJ 8013	CAJ 8051
	3	CAJ 8056, CAJ 8095, CAJ 8099	CAJ 8001, CAJ 8013	CAJ 8051		3	CAJ 8099 WJ 8007	CAJ 8001, CAJ 8013	CAJ 8051
	4	CAJ 8095	N/A*	N/A		4	WJ 8007	N/A*	N/A

WOOD FLOORS		**UL-CLASSIFIED SYSTEMS**			**GYPSUM WALLBOARD ASSEMBLIES**		**UL-CLASSIFIED SYSTEMS**		
TYPE OF PENETRANT	**F-RATING**	**HILTI**	**3M**	**BIO-FIRE**	**TYPE OF PENETRANT**	**F-RATING**	**HILTI**	**3M**	**BIO-FIRE**
METAL PIPES OR CONDUIT	1	FC 1009, FC 1059	FC 1002	FC 1031	METAL PIPES OR CONDUIT	1	WL 1054, WL 1164	WL 1146	WL 1115
						2	WL 1054, WL 1164	WL 1010, WL 1146	WL 1115
	2	FC 1009, FC 1059	FC 1002	FC 1031		4	WL 1110	WL 1001	
NON-METALLIC PIPE OR CONDUIT	1	FC 2025, FC 2126	FC 2024	FC 2059	NON-METALLIC PIPE OR CONDUIT	1	WL 2078, WL 2075, WL 2128	WL 2088, WL 2002	WL 2133
						2	WL	WL	WL 2133

							2078, WL 2075, WL 2128	2088, WL 2002	
	2	FC 2025, FC 2126	FC 2024	FC 2059					
						4	WL 2184, WL 2245	N/A *	
SINGLE OR BUNDLED CABLES	1	FC 3012, FC 3044	FC 3017	FC 3050	SINGLE OR BUNDLED CABLES	1	WL 3065	WL 3032, WL 3030	WL 3153
						2	WL 3065	WL 3032, WL 3030	WL 3153
						4	WL 3139	N/A *	
	2	FC 3012	FC 3017	N/A					
					CABLE TRAY	1	WL 4011, WL 4019	WL 4004	WL 4032
						2	WL 4011, WL 4019	WL 4004	WL 4032
						4	WL 8014	N/A *	
INSULATED PIPES	1	FC 5004, FC 5036, FC 5037	FC 5014	FC 5025	INSULATED PIPES	1	WL 5029, WL 5096	WL 5040, WL 5001, WL 5032	WL 5062
						2	WL 5029, WL	WL 5040,	WL 5062

							5096	WL 5001, WL 5032	
	2	FC 5004	N/A*	FC 5025		4 4	WL 5073 WL 5073	N/A*	

NON-INSULATED MECHANICAL DUCTWORK WITHOUT DAMPERS	1	FC 7013	FC 7001		NON-INSULATED MECHANICAL DUCTWORK WITHOUT DAMPERS	1	WL 7040, WL 7042	WL 7008	WL 7037
						2 4	WL 7040, WL 7042	WL 7008, WL 7013, WL 7016	WL 7037
MIXED PENETRANTS	1	FC 8014, FC 8026	FC 8013	N/A	MIXED PENETRANTS	1	WL 8004, WL 8013	WL 8010	WL 8017
						2	WL 8004, WL 8013	WL 8010, WL 8002	WL 8017
	2	N/A*	N/A*	N/A		4 4	WL 8014 WL 8014	N/A*	

* No UL-Classified system is available as of August 2003. Engineer Judgement Drawing Required.

NOTES:

1. Jobsite conditions of each through-penetration firestop system must meet all details of the UL-Classified System selected.
2. If jobsite conditions do not match any UL-classified systems in the schedules above, contact firestop manufacturer for alternative systems or Engineer Judgement Drawings.
3. Coordinate work with other trades to assure that penetration-opening sizes are appropriate for penetrant locations, and vice versa.
4. For 3-hour rated gypsum walls, contact the firestop manufacturer for a UL-classified system or engineer judgement drawing.
5. The Contractor shall verify that the schedule is current at the time of construction, and that each referenced system is suitable for the intended application.

END OF SECTION

SECTION 07844

FIRE-RESISTIVE JOINT SYSTEMS

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the Work of this Section, including but not limited to fire-resistive joint systems for the following:
   1. Floor-to-floor joints.
   2. Floor-to-wall joints.
   3. Head-of-wall joints.
   4. Wall-to-wall joints.
   5. Perimeter fire-resistive joint systems consisting of floor-to-wall joints between perimeter edges of fire-resistance-rated floor assemblies and exterior curtain walls.

B. Related Work: The following items are not included in this Section and will be performed under the designated Sections:
   1. Section 07841 - PENETRATION FIRESTOPPING for firestopping.
   2. Section 07920 - JOINT SEALANTS for standard joint sealers.
   3. Division 15 - FIRE PROTECTION for fire-suppression piping penetrations.
   4. Division 15 - PLUMBING for piping penetrations.
   5. Division 15 - HEATING, VENTILATING AND AIR CONDITIONING for duct and piping penetrations.
   6. Division 16 - ELECTRICAL for cable and conduit penetrations.

1.2 PERFORMANCE REQUIREMENTS

A. General: Provide fire-resistive joint systems that are produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of assembly in which fire-resistive joint systems are installed.

B. For fire-resistive systems exposed to view, provide products with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E 84.

1.3 SUBMITTALS

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

B. Shop Drawings: For each fire-resistive joint system, show each kind of construction condition in which joints are installed; also show relationships to adjoining construction. Include fire-resistive joint system design designation of testing and inspecting agency acceptable to authorities having jurisdiction that demonstrates compliance with requirements for each condition indicated.
   1. Submit documentation, including illustrations, from a qualified testing and inspecting agency that is applicable to each fire-resistive joint system configuration for construction and penetrating items.

C. Product Certificates: For each type of fire-resistive joint system, signed by product manufacturer.

D. Qualification Data: For Installer.

E. Field quality-control test reports.

F. Research/Evaluation Reports: For each type of fire-resistive joint system.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Either a firm that has been approved by FMG according to FMG 4991, “Approval of Firestop Contractors" or a firm experienced in installing through-penetration firestop systems similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction of a minimum of five projects with a record of successful performance. Qualifications include having the necessary experience, staff, and training to install manufacturer's products per specified requirements.

B. Installation Responsibility: Assign installation of through-penetration firestop systems and fire-resistive joint systems in Project to a single qualified installer.

Commented [LEH1]:

C. Source Limitations: Obtain fire-resistive joint systems, for each kind of joint and construction condition indicated, through one source from a single manufacturer.

D. Fire-Test-Response Characteristics: Provide fire-resistive joint systems that comply with the following requirements and those specified in Part 1 "Performance Requirements" Article:
   1. Fire-resistance tests are performed by a qualified testing and inspecting agency. A qualified testing and inspecting agency is UL or another agency performing testing and follow-up inspection services for fire-resistive joint systems acceptable to authorities having jurisdiction.
   2. Fire-resistive joint systems are identical to those tested per methods indicated in Part 1 "Performance Requirements" Article and comply with the following:
      a. Fire-resistive joint system products bear classification marking of qualified testing and inspecting agency.
      b. Fire-resistive joint systems correspond to those indicated by referencing system designations of the qualified testing and inspecting agency.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver fire-resistive joint system products to Project site in original, unopened containers or packages with qualified testing and inspecting agency's classification marking applicable to Project and with intact and legible manufacturers' labels identifying product and manufacturer, date of manufacture, lot number, shelf life, curing time, and mixing instructions for multi-component materials.

B. Store and handle materials for fire-resistive joint systems to prevent their deterioration or damage due to moisture, temperature changes, contaminants, or other causes.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Do not install fire-resistive joint systems when ambient or substrate temperatures are outside limits permitted by fire-resistive joint system manufacturers or when substrates are wet due to rain, frost, condensation, or other causes.

B. Ventilate fire-resistive joint systems per manufacturer's written instructions by natural means or, if this is inadequate, forced-air circulation.

1.7 COORDINATION

A. Coordinate construction of joints to ensure that fire-resistive joint systems are installed according to specified requirements.

B. Coordinate sizing of joints to accommodate fire-resistive joint systems.

C. Do not cover up fire-resistive joint system installations that will become concealed behind other construction until Owner’s inspecting agency and building inspector of authorities having jurisdiction have examined each installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Products: Subject to compliance with requirements, fire-resistive joint systems that may be incorporated into the Work include, but are not limited to, those systems indicated in the Fire-Resistive Joint System Schedule at the end of Part 3.
   1. Hilti, Inc.
   2. BioFireshield; RectorSeal Corporation.
   3. 3M; Fire Protection Products Division.
   4. Or approved equal.

2.2 FIRE-RESISTIVE JOINT SYSTEMS

A. Compatibility: Provide fire-resistive joint systems that are compatible with joint substrates, under conditions of service and application, as demonstrated by fire-resistive joint system manufacturer based on testing and field experience.

B. Accessories: Provide components of fire-resistive joint systems, including primers and forming materials, that are needed to install fill materials and to comply with Part 1 "Performance Requirements" Article. Use only components specified by fire-resistive joint system manufacturer and approved by the qualified testing and inspecting agency for systems indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for joint configurations, substrates, and other conditions affecting performance of work.
   1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning: Clean joints immediately before installing fire-resistive joint systems to comply with fire-resistive joint system manufacturer's written instructions and the following requirements:
   1. Remove from surfaces of joint substrates foreign materials that could interfere with adhesion of fill materials.
   2. Clean joint substrates to produce clean, sound surfaces capable of developing optimum bond with fill materials. Remove loose particles remaining from cleaning operation.
   3. Remove laitance and form-release agents from concrete.

B. Priming: Prime substrates where recommended in writing by fire-resistive joint system manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.

C. Masking Tape: Use masking tape to prevent fill materials of fire-resistive joint system from contacting adjoining surfaces that will remain exposed on completion of Work and that would otherwise be permanently stained or damaged by such contact or by cleaning methods used to remove smears from fire-resistive joint system materials. Remove tape as soon as possible without disturbing fire-resistive joint system's seal with substrates or damaging adjoining surfaces.

3.3 INSTALLATION

A. General: Install fire-resistive joint systems to comply with Part 1 "Performance Requirements" Article and fire-resistive joint system manufacturer's written installation instructions for products and applications indicated.

B. Install forming/packing/backing materials and other accessories of types required to support fill materials during their application and in position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.

C. Install fill materials for fire-resistive joint systems by proven techniques to produce the following results:
   1. Fill voids and cavities formed by openings and forming/packing/backing materials as required to achieve fire-resistance ratings indicated.
   2. Apply fill materials so they contact and adhere to substrates formed by joints.
   3. For fill materials that will remain exposed after completing Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.4 FIELD QUALITY CONTROL

A. Inspecting Agency: Engage a qualified independent inspecting agency to inspect fire-resistive joint systems and prepare inspection reports.

B. Testing Services: Inspecting of completed installations of fire-resistive joint systems shall take place in successive stages as installation of fire-resistive joint systems proceeds. Do not proceed with installation of joint systems for the next area until inspecting agency determines completed work shows compliance with requirements.
   1. Inspecting agency shall state in each report whether inspected fire-resistive joint systems comply with or deviate from requirements.

C. Remove and replace fire-resistive joint systems where inspections indicate that they do not comply with specified requirements.

D. Additional inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

E. Proceed with enclosing fire-resistive joint systems with other construction only after inspection reports are issued and fire-resistive joint systems comply with requirements.

3.5 CLEANING AND PROTECTING

A. Clean off excess fill materials adjacent to joints as Work progresses by methods and with cleaning materials that are approved in writing by fire-resistive joint system manufacturers and that do not damage materials in which openings occur.

B. Provide final protection and maintain conditions during and after installation that ensure fire-resistive joint systems are without damage or deterioration at time of Substantial Completion. If damage or deterioration occurs despite such protection, cut out and remove damaged or deteriorated fire-resistive joint systems immediately and install new materials to produce fire-resistive joint systems complying with specified requirements.

3.6 TESTED (DYNAMIC) JOINT FIRESTOP SYSTEM SCHEDULE

JOINT TYPE	F-RATING	UL-CLASSIFIED SYSTEM NUMBER					
		JOINT WIDTH LESS THAN OR EQUAL TO 2"			JOINT WIDTH LESS THAN OR EQUAL TO 6"		
		HILTI	3M	BIO-FIRESHIELD	HILTI	3M	BIO-FIRESHIELD
CONCRETE FLOOR-TO-FLOOR	1	see note 2	FF-D-0002	N/A**	FF-D-1026, FF-D-1039	FF-D-1002, FF-D-1003, FF-D-1004	N/A**
	2	see note 2	FF-D-0002	N/A**	FF-D-1026, FF-D-1039	FF-D-1002, FF-D-1003, FF-D-1004	N/A**
	3	see note 2	N/A**	N/A**	FF-D-1026, FF-D-1039	N/A**	N/A**
EDGE OF CONCRETE FLOOR SLAB-TO-WALL (also see CURTAIN WALLS & note 1))	1	see note 2	-	N/A**	FW-D-1011, FW-D-1012, FW-D-1013, FW-D-1021	FW-D-1002, FW-D-1003, FW-D-1009	FW-D-1023
	2	see note 2	-	N/A**	FW-D-1011, FW-D-1012, FW-D-1013, FW-D-1021	FW-D-1002, FW-D-1003, FW-D-1009	FW-D-1023
	3	see note 2	-	N/A**	FW-D-1011, FW-D-1021	FW-D-1002, FW-D-1009	N/A**
CONCRETE OR BLOCK WALL TO FLAT CONCRETE SLAB FLOOR (TOP-OF-WALL)	1	HW-D-0097	HW-D-0023, HW-D-0029	HW-D-0114	HW-D-1008, HW-D-1009	HW-D-1003	HW-D-1023
	2	HW-D-0097	HW-D-0023, HW-D-0029	HW-D-0114	HW-D-1008, HW-D-1009	HW-D-1003	HW-D-1023
	3	see note 2	-	HW-D-	HW-D-	HW-D-	N/A**

				0114	1008	1002, HW-D-1007	
CONCRETE OR BLOCK WALL TO CONCRETE OVER FLUTED METAL DECK (TOP-OF-WALL)	1	HW-D-0080, HW-D-0081, HW-D-0098, HW-D 0181	HW-D-0022, HW-D-0030, HW-D-0040HW-D-0013	HW-D-0200	HW-D- 1037 1041	HW-D	N/A**
	2	HW-D-0080, HW-D-0081, HW-D-0098, HW-D 0181	HW-D-0022, HW-D-0030, HW-D-0040HW-D-0013	HW-D-0200	HW-D- 1037 1041	HW-D	N/A**
	3	N/A**	N/A**	N/A**	N/A**		N/A**

GYPSUM WALL TO FLAT CONCRETE SLAB FLOOR (TOP-OF-WALL)	1	HW-D-0082, HW-D-0083, HW-D-0097	HW-D-0012, HW-D-0021	HW-D-0180	N/A**		
	2	HW-D-0082, HW-D-0083, HW-D-0097	HW-D-0012, HW-D-0021	HW-D-0180	N/A**		
	3	N/A**	N/A**	N/A**	N/A**		
GYPSUM WALL TO CONCRETE OVER FLUTED METAL DECK (TOP-OF-WALL)	1	HW-D-0042, HW-D-0049, HW-D-0076, HW-D-0264	HW-D-0011, HW-D-0020, HW-D-0031	HW-D-0033	N/A**		
	2	HW-D-0042, HW-D-0049, HW-D-0076, HW-D-0264	HW-D-0011, HW-D-0020, HW-D-0031	HW-D-0033	N/A**		
	3	HW-D-292	N/A**	N/A**	N/A**		
CONCRETE WALL-TO-WALL	1	WW-D-0017, WW-D-0032	-	WW-D-0009	WW-D-1011, WW-D-1012	WW-D-1003, WW-D-1004, WW-D-1010	N/A**
	2	WW-D-0017, WW-D-0032	-	WW-D-0009	WW-D-1011, WW-D-1012	WW-D-1003, WW-D-1004, WW-D-1010	N/A**
	3	-	-	WW-D-0010	WW-D-1011	WW-D-1003, WW-D-1010	N/A**
CURTAIN WALLS (see note 1)		JOINT WIDTH LESS THAN OR EQUAL TO 6"			JOINT WIDTH LESS THAN OR EQUAL TO 8"		
EDGE OF FLOOR TO NON-RATED ALUMINUM & GLASS	2 hr Integrity Rating	CW-D-2027			CW-D-2026, CW-D-2027		CW-D-2019, CW-D-2015

CURTAIN WALL							
EDGE OF FLOOR TO NON-RATED CONCRETE/STONE SPANDREL	2 hr Integrity Rating	CW-D-1001			CW-D-2025		CW-D-2017

** CONTACT MANUFACTURER FOR CURRENT UL-CLASSIFIED SYSTEM OR ENGINEER JUDGEMENT DRAWING

NOTES:

1. EDGE OF SLAB, CURTAIN WALL SYSTEMS ARE ALSO TESTED BY OMEGA POINT LABS. CONTACT MANUFACTURER FOR ADDITIONAL LISTINGS.
2. CLASSIFIED SYSTEMS FOR 2" - 6" WIDE JOINTS MAY BE USED FOR JOINTS 2" WIDE AND LESS.
3. CONFIRM THAT MOVEMENT CAPABILITIES OF THE SELECTED UL SYSTEM MEETS OR EXCEEDS THE SPECIFIED MOVEMENT RANGE OF THE PARTICULAR JOINT.
4. SYSTEM PERFORMANCE MAY BE AFFECTED BY FACTORS SUCH AS METAL STUD WIDTH, JOINT WIDTH OR THE PRESENCE OF FIREPROOFING MATERIALS WITHIN THE JOINT.

CONSULT INDIVIDUAL DETAILS FOR SPECIFICATIONS & LIMITATIONS.

5. HEAD-OF-WALL SYSTEMS SPECIFIED ONLY FOR 2- OR 3-HR SYSTEMS MAY NOT BE SUITABLE FOR MASONRY WALLS OR GYPSUM WALL ASSEMBLIES WITH LOWER HOURLY RATINGS.

CONTACT THE FIRESTOP MANUFACTURER FOR CLARIFICATION

END OF SECTION

SECTION 07920

JOINT SEALANTS & WATERPROOFING MEMBRANES

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:

1. Joint sealants and fillers.
2. Waterproofing membranes.
3. Protection of studs in water treatment from moisture/water damage.

B. This Section includes joint sealants for the applications specified with the products in this Section and as indicated on the Drawings.

C. Related Work: The following items are not included in this Section and will be performed under the designated Sections:

1. Section 04200 - UNIT Masonry for masonry control and expansion joint fillers and gaskets.
2. Section 08800 - GLAZING for glazing sealants.
3. Section 09260 - GYPSUM BOARD ASSEMBLIES for sealing perimeter joints of gypsum board partitions to reduce sound transmission.
4. Section 09511 - ACOUSTICAL PANEL CEILINGS for sealing edge moldings at perimeters of acoustical ceilings.

D. Referenced Standards: Comply with the requirements of the following standards published by ASTM International to the extent referenced in this section.

1. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers - Tension.
2. ASTM D461 - Standard Test Methods for Felt.
3. ASTM D 903 - Standard Test Method for Peel or Stripping Strength of Adhesive Bonds.
4. ASTM D1970 - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.
5. ASTM D3767 - Standard Practice for Rubber—Measurement of Dimensions.
6. ASTM E96 - Standard Test Methods for Water Vapor Transmission of Materials.
7. ASTM G90 – EMMAqua test.

1.2 PERFORMANCE REQUIREMENTS

A. Provide elastomeric joint sealants that establish and maintain watertight and airtight continuous joint seals without staining or deteriorating joint substrates.

B. Provide joint sealants for interior applications that establish and maintain airtight and water-resistant continuous joint seals without staining or deteriorating joint substrates.

1.3 SUBMITTALS

A. Product Data: For each joint-sealant product indicated.

1. Manufacturers' product data for interior sealants, including printed statement of VOC content.

B. Samples for Verification: For each type and color of joint sealant required, provide samples with joint sealants in 1/2-inch-wide joints formed between two 6-inch-long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.

C. Qualification Data: For Installer.

D. Preconstruction Field Test Reports: Indicate which sealants and joint preparation methods resulted in optimum adhesion to joint substrates based on preconstruction testing specified in "Quality Assurance" Article.

E. Compatibility and Adhesion Test Reports: From sealant manufacturer, indicating the following:

1. Materials forming joint substrates and joint sealant backings have been tested for compatibility and adhesion with joint sealants.
2. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.

F. Field Test Report Log: For each elastomeric sealant application.

G. Product Test Reports: Based on comprehensive testing of product formulations performed by a qualified testing agency, indicating that sealants comply with requirements.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized Installer who is approved or licensed for installation of elastomeric sealants required for this Project.

B. Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer.

C. Preconstruction Compatibility and Adhesion Testing: Submit to joint sealant manufacturers, for testing indicated below, samples of materials that will contact or affect joint sealants.

1. Use manufacturer's standard test method to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
2. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
3. For materials failing tests, obtain joint sealant manufacturer's written instructions for corrective measures including use of specially formulated primers.
4. Testing will not be required if joint sealant manufacturers submit joint preparation data that are based on previous testing of current sealant products for adhesion to, and compatibility with, joint substrates and other materials matching those submitted.

D. Preconstruction Field-Adhesion Testing: Before installing elastomeric sealants, field test their adhesion to Project joint substrates as follows:

1. Locate test joints where indicated on Project or, if not indicated, as directed by Architect.
2. Conduct field tests for each application indicated below:
   a. Each type of elastomeric sealant and joint substrate indicated.
   b. Each type of non-elastomeric sealant and joint substrate indicated.
3. Notify Architect seven days in advance of dates and times when test joints will be erected.
   a. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193.

1) For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.

4. Report whether sealant in joint connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each type of product and joint substrate. For sealants that fail adhesively, retest until satisfactory adhesion is obtained.
5. Evaluation of Preconstruction Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing, in absence of other indications of noncompliance with requirements, will be considered satisfactory. Do not use sealants that fail to adhere to joint substrates during testing.

E. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01.

1.5 PROJECT CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside limits permitted by joint sealant manufacturer or are below 40 deg F.
2. When joint substrates are wet.
3. Where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.
4. Contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.6 WARRANTY

A. Special Installer’s Warranty: Installer’s standard form in which Installer agrees to repair or replace elastomeric joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

B. Special Manufacturer’s Warranty: Manufacturer's standard form in which elastomeric sealant manufacturer agrees to furnish elastomeric joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion.

C. Special warranties specified in this Article exclude deterioration or failure of elastomeric joint sealants from the following:

1. Movement of the structure resulting in stresses on the sealant exceeding sealant manufacturer’s written specifications for sealant elongation and compression caused by structural settlement or errors attributable to design or construction.
2. Disintegration of joint substrates from natural causes exceeding design specifications.
3. Mechanical damage caused by individuals, tools, or other outside agents.
4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer, based on testing and field experience.

B. VOC Content of Interior Sealants: Provide interior sealants and sealant primers that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

1. Sealants: 250 g/L.
2. Sealant Primers for Nonporous Substrates: 250 g/L.
3. Sealant Primers for Porous Substrates: 775 g/L.

C. Colors of Exposed Joint Sealants: As indicated by manufacturer's designations.

2.2 JOINT SEALANTS

A. Elastomeric Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied chemically curing sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.

B. Stain-Test-Response Characteristics: Elastomeric sealants shall be nonstaining to porous substrates. Provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.

C. Single-Component Neutral-Curing Silicone Sealant:

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

   a. Dow Corning Corporation; 790.
   b. GE Silicones; SilPruf LM SCS2700.
   c. Tremco; Spectrem 1.
   d. Pecora Corporation; 864.

2. Extent of Use: Joints in exterior vertical and soffit surfaces.

D. Acrylic-Based Solvent-Release Joint Sealant:

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

   a. Tremco; Mono 555.

2. Extent of Use: Joints in water treatment areas.

E. Multicomponent Pourable Urethane Sealant:

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

   a. Bostik Findley; Chem-Calk 550.
   b. Meadows, W. R., Inc.; POURTHANE.
   c. Pecora Corporation; Urexpan NR-200.
   d. Tremco; THC-901.

2. Extent of Use: Joints in exterior horizontal surfaces.

F. Single-Component Mildew-Resistant Acid-Curing Silicone Sealant:

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

   a. Dow Corning Corporation; 786 Mildew Resistant.
   b. GE Silicones; Sanitary SCS1700.
   c. Tremco; Tremsil 200.

2. Extent of Use: Sanitary joints at toilet rooms and wet areas.

G. Latex Sealant: Comply with ASTM C 834, Type P, Grade NF.

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

   a. Bostik Findley; Chem-Calk 600.
   b. Pecora Corporation; AC-20+.
   c. Sonneborn, Division of Degussa; Sonolac.
   d. Tremco; Tremflex 834.

2.3 JOINT-SEALANT BACKING

A. General: Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

B. Elastomeric Tubing Sealant Backings: Neoprene, butyl, EPDM, or silicone tubing complying with ASTM D 1056, nonabsorbent to water and gas, and capable of remaining resilient at temperatures down to minus 26 deg F. Provide products with low compression set and of size and shape to provide a secondary seal, to control sealant depth, and to otherwise contribute to optimum sealant performance.

C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

2.4 WATERPROOFING MEMBRANE

A. Single Layer, Self-Adhesive Waterproof Membrane: Provide Grace Ice and Water Shield by GCP Applied Technologies, Inc. with the following characteristics:

1. Material: Cold applied, self adhering membrane composed of a high strength polyethylene film coated on one side with a layer of rubberized asphalt adhesive and interwound with a disposable release sheet. An embossed, slip resistant surface is provided on the polyethylene.

   a. Color: Gray-black.

   b. Membrane Thickness: 40 mil (1.02 mm) ASTM D3767 procedure A (Section 9.1).

   c. Tensile Strength, Membrane: 250 psi (1720 kN/m2) ASTM D412 (Die C modified).

   d. Elongation, Membrane: 250% ASTM D412 (Die C modified).

   e. Low Temperature Flexibility: Unaffected @ -20°F (-29°C) ASTM D1970.

   f. Adhesion to Plywood: 3.0 lbs/in. width (525 N/m) ASTM D903.

   g. Permeance (Max): 0.05 Perms (2.9 ng/m2s Pa) ASTM E96.

   h. Material Weight Installed (Max): 0.3 lb/ft2 (1.3 kg/m2) ASTM D461.

i. Primer: Water-based Perm-A-Barrier WB Primer by GCP Applied Technologies

2. Extent of Use: Perimeter metal stud walls and track at water treatment and SDS.

2.5 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint sealant performance.

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

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint sealant manufacturer's written instructions and the following requirements:

1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
2. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include concrete, masonry and unglazed surfaces of ceramic tile.
3. Remove laitance and form-release agents from concrete.
4. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following metal, glass, porcelain enamel and glazed surfaces of ceramic tile.

B. Joint Priming: Prime joint substrates, where recommended in writing by joint sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint sealant manufacturer's written instructions. Confine primers to areas of joint sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Install sealant backings of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of sealant backings.
2. Do not stretch, twist, puncture, or tear sealant backings.
3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses in each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of configuration indicated to eliminate air pockets, and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
3. Provide concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.

G. Provide caulking at the following locations. This schedule is not to be construed to be complete. Provide caulking at other areas as indicated.

1. Control joints in masonry surfaces, interior and exterior.
2. Control joints in concrete surfaces, interior and exterior.
3. Perimeter of door frames, interior and exterior.
4. Perimeter of window frames, interior and exterior.
5. Perimeter of louvers and grilles, interior and exterior.
6. Perimeter of aluminum sections, interior and exterior.
7. Perimeter and joints at plywood in water treatment area.
8. Setting bed for countertops at prefabricated cabinet locations.
9. Along wall and cabinet where indicated on drawings.

Note: At interior partitions caulking is required at all joints between dissimilar materials where the joint width exceeds 1/16".

3.4 INSTALLATION OF WATERPROOFING MEMBRANE

A. Installation: Install roofing underlayment on sloped surfaces at locations indicated on the Drawings, but not less than at hips, ridges, eaves, valleys, sidewalls and chimneys, and surfaces over interior space within 36 inches (914 mm) from the inside face of the exterior wall. Strictly comply with manufacturer's installation instructions including but not limited to the following:

1. Do not install underlayment on wet or frozen substrates.
2. Install when surface temperature of substrate is a minimum of 40 degrees F (5 degrees C) and rising.
3. Remove dust, dirt, loose materials and protrusions from deck surface.
4. Install membrane on clean, dry, continuous structural deck. Fill voids and damaged or unsupported areas prior to installation.
5. Prime concrete and masonry surfaces using specified primer at a rate of 500-600 square feet per gallon (12-15 sqm/L). Priming is not required for other suitable clean and dry surfaces.
6. Side laps minimum 3-1/2 inches (89 mm) and end laps minimum 6 inches (152 mm) following lap lines marked on underlayment.
7. Patch penetrations and damage using manufacturer's recommended methods.

3.5 CLEANING

A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.6 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

END OF SECTION

SECTION 08111

STEEL DOORS AND FRAMES

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:

1. Standard hollow metal steel doors.
2. Standard hollow metal steel frames.

B. Related Work: The following items are not included in this Section and will be performed under the designated Sections:

1. Section 04200 - UNIT MASONRY for building anchors into and grouting steel frames in masonry construction.
2. Section 08710 - DOOR HARDWARE for door hardware for steel doors.
3. Section 08800 - GLASS AND GLAZING for glazed lites.
4. Section 09900 - PAINTING for field painting steel doors and frames.

1.2 SUBMITTALS

A. Product Data: Include construction details, material descriptions, core descriptions, label compliance, fire-resistance rating, temperature-rise ratings, and finishes for each type of steel door and frame specified.

B. Shop Drawings:

1. Elevations of each door design.
2. Details of doors, including vertical and horizontal edge details and metal thicknesses.
3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
4. Locations of reinforcement and preparations for hardware.
5. Details of each different wall opening condition.
6. Details of anchorages, joints, field splices, and connections.
7. Details of accessories.
8. Details of moldings, removable stops, and glazing.
9. Details of conduit and preparations for power, signal, and control systems.
10. Manufacturer's recommended installation procedures, which when approved by the Architect, will become the basis for accepting or rejecting actual installation procedures used on the work.

C. Schedule: Provide a schedule of hollow metal work prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with door hardware schedule.

D. Qualification Data: For Installer.

E. Product Test Reports: Based on evaluation of comprehensive fire tests performed by a qualified testing agency, for each type of standard steel door and frame.

1.3 QUALITY ASSURANCE

A. Installer Qualifications: An employer of workers trained and approved by manufacturer.

B. Source Limitations: Obtain standard steel doors and frames through one source from a single manufacturer.

C. Fire-Rated Door, Sidelight and Transom Frame Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated. Identify each fire door or frame with UL labels, indicating the applicable fire rating of both door and frame.

1. Temperature-Rise Limit: At vertical exit enclosures and exit passageways, provide doors that have a maximum transmitted temperature end point of not more than 450 deg F above ambient after 30 minutes of standard fire-test exposure.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver doors and frames palletized, wrapped, or crated to provide protection during transit and Project-site storage. Do not use non-vented plastic.

B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.

C. General Contractor must inspect and inventory all deliveries within 24 hours of delivery. All freight damage must be signed as damaged on the Bill of Lading document and reported to the freight carrier. General Contractor must report to the supplier any missing, incorrect or damaged goods immediately. Failure to report missing, damaged or incorrect material within 48 hours means the receiver has accepted the shipment as complete and correct.

D. Store hollow metal work under cover at Project site. Place in stacks of five units maximum in a vertical position with heads up, spaced by blocking, on minimum 4-inch-high wood blocking. Do not store in a manner that traps excess humidity.

1. Provide minimum 1/4 inch space between each stacked door to permit air circulation.

1.5 PROJECT CONDITIONS

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

1.6 COORDINATION

A. Coordinate installation of anchorages for hollow metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

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

1. Steelcraft Hollow Metal Door and Frames
2. Curries Hollow Metal Doors and Frames

2.2 MATERIALS

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

B. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.

C. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with minimum G60 metallic coating.

D. Frame Anchors: ASTM A 591/A 591M, Commercial Steel (CS), 40Z coating designation; mill phosphatized.

1. For anchors built into exterior walls, steel sheet complying with ASTM A 1008/A 1008M or ASTM A 1011/A 1011M, hot-dip galvanized according to ASTM A 153/A 153M, Class B.

E. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.

F. Powder-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 hollow metal frames of type indicated.

G. Grout: ASTM C 476, except with a maximum slump of 4 inches, as measured according to ASTM C 143/C 143M.

H. Mineral-Fiber Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool with 6- to 12-lb/cu. ft. density; with maximum flame-spread and smoke-development indexes of 25 and 50, respectively; passing ASTM E 136 for combustion characteristics.

I. Glazing: Comply with requirements in Section 08800 – GLASS AND GLAZING.

J. Bituminous Coating: Cold-applied asphalt mastic, SSPC-Paint 12, compounded for 15-mil dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities. All bituminous coating to be supplied and installed by the General Contractor.

2.3 STANDARD STEEL DOORS

A. General: Provide doors of design indicated, not less than thickness indicated; fabricated with smooth surfaces, without visible joints or seams on exposed faces, unless otherwise indicated. Comply with ANSI A250.8.

1. Design: Flush panel.
2. Core Construction: Manufacturer's standard kraft-paper honeycomb, polystyrene, polyurethane, mineral-board, or vertical steel-stiffener core that produces doors complying with ANSI A250.8.

a. Fire Door Core: As required to provide fire-protection and temperature-rise ratings indicated.
b. Thermal-Rated (Insulated) Exterior Doors: Where indicated, provide doors fabricated with thermal-resistance value (R-value) of not less than 4.0 deg F x h x sq. ft./Btu when tested according to ASTM C 1363.

3. Top and Bottom Edges: Closed with flush or inverted 0.042-inch-thick end closures or channels of same material as face sheets.
4. Tolerances: Comply with SDI 117, "Manufacturing Tolerances for Standard Steel Doors and Frames."

B. Exterior Doors: Face sheets fabricated from metallic-coated steel sheet. Provide doors complying with requirements indicated below by referencing ANSI A250.8 for level and model and ANSI A250.4 for physical-endurance level:

1. Level 3 and Physical Performance Level A (Extra Heavy Duty), Model 1, 1-3/4 inches thick.

C. Interior Doors: Face sheets fabricated from cold-rolled steel sheet, unless otherwise indicated to comply with exterior door requirements. Provide doors complying with requirements indicated below by referencing ANSI A250.8 for level and model and ANSI A250.4 for physical-endurance level:

1. Level 2 and Physical Performance Level B (Heavy Duty), Model 1, 1-3/4 inches thick.

D. Hardware Reinforcement: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.

E. Fabricate concealed stiffeners and hardware reinforcement from either cold- or hot-rolled steel sheet.

2.4 STANDARD STEEL FRAMES

A. General: Comply with ANSI A250.8 and with details indicated for type and profile. Combination type with integral stop.

B. Exterior Frames: Fabricated from metallic-coated steel sheet.

1. Fabricate frames with mitered or coped and welded face corners and seamless face joints.
2. Frames for Level 3 Steel Doors: 0.053-inch-thick steel sheet.

C. Interior Frames: Fabricated from cold-rolled steel sheet, unless otherwise indicated to comply with exterior frame requirements.

1. Fabricate frames with mitered or coped and welded face corners and seamless face joints.
2. Frames for Level 2 Steel Doors: 0.053-inch-thick steel sheet.
3. Knock down frames will only be acceptable on renovation and new construction projects when approved by FMC and/or Architect.

D. Interior Frame for Hospital Privacy Set at Patient Toilets: Fabricated from cold-rolled steel sheet, unless otherwise indicated to comply with exterior frame requirements.

1. Fabricate frames without integral stop and prep for jamb mount pivot hinge set per HW Set 30.

E. Hardware Reinforcement: Fabricate according to ANSI/SDI A250.6 with reinforcement plates from same material as frames.

F. Plaster Guards: Formed from same material as frames, not less than 0.016-inch thick.

2.5 FRAME ANCHORS

A. Jamb Anchors:

1. Masonry Type: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, not less than 0.042 inch thick, with corrugated or perforated straps not less than 2 inches wide by 10 inches long; or wire anchors not less than 0.177 inch thick.
2. Stud-Wall Type: Designed to engage stud, welded to back of frames not less than 0.042 inch thick.
3. Compression Type for Drywall Slip-on Frames: Adjustable compression anchors.
4. Post installed Expansion Type for In-Place Concrete or Masonry: Minimum 3/8 inch diameter bolts with expansion shields or inserts. Provide pipe spacer from frame to wall, with throat reinforcement plate, welded to frame at each anchor location.

B. Floor Anchors: Formed from same material as frames, not less than 0.042 inch (1.0 mm) thick, and as follows:

1. Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.
2. Separate Topping Concrete Slabs: Adjustable-type anchors with extension clips, allowing not less than 2-inch height adjustment. Terminate bottom of frames at finish floor surface.

2.6 HOLLOW METAL PANELS

A. Provide hollow metal panels of same materials, construction, and finish as specified for adjoining hollow metal work.

2.7 STOPS AND MOLDINGS

A. Moldings for Glazed Lites in Doors: Minimum 0.032 inch thick, fabricated from same material as door face sheet in which they are installed.

B. Fixed Frame Moldings: Formed integral with hollow metal frames, a minimum of 5/8 inch high unless otherwise indicated.

C. Loose Stops for Glazed Lites in Frames: Minimum 0.032 inch thick, fabricated from same material as frames in which they are installed.

2.8 LOUVERS

A. Provide louvers for interior doors, where indicated, that comply with SDI 111C, with blades or baffles formed of 0.020-inch-thick, cold-rolled steel sheet set into 0.032-inch-thick steel frame.

1. Sightproof Louver: Stationary louvers constructed with inverted V-shaped or Y-shaped blades.
2. Fire-Rated Automatic Louvers: Louvers constructed with movable blades closed by actuating fusible link, and listed and labeled for use in fire-rated door assemblies of type and fire-resistance rating indicated by same testing and inspecting agency that established fire-resistance rating of door assembly.

2.9 ACCESSORIES

A. Mullions and Transom Bars: Join to adjacent members by welding or rigid mechanical anchors.

B. Ceiling Struts: Minimum 1/4 inch thick by 1 inch wide steel.

C. Grout Guards: Formed from same material as frames, not less than 0.016 inch thick.

2.10 FABRICATION

A. Fabricate hollow metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.

B. Tolerances: Fabricate hollow metal work to tolerances indicated in SDI 117.

C. Hollow Metal Doors:

1. Exterior Doors: Provide weep-hole openings in bottom of exterior doors to permit moisture to escape. Seal joints in top edges of doors against water penetration.
2. Glazed Lites: Factory cut openings in doors.
3. Astragals: Provide overlapping astragal on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch beyond edge of door on which astragal is mounted.

D. Hollow Metal Frames: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.

1. Welded Frames: Weld flush face joints continuously; grind, fill, dress, and make smooth, flush, and not visible.
2. Sidelight and Transom Bar Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by butt welding.
3. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
4. Plaster/Grout Guards: Weld guards to frame at back of hardware mortises in frames installed in concrete or masonry and to be grouted.
5. Floor Anchors: Weld anchors to bottom of jambs and mullions with at least four spot welds per anchor.
6. Jamb Anchors: Provide number and spacing of anchors as follows:

    a. Masonry Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:

        1) Two anchors per jamb up to 60 inches high.
        2) Three anchors per jamb from 60 to 90 inches high.
        3) Four anchors per jamb from 90 to 120 inches high.
        4) Four anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof above 120 inches high.

    b. Stud-Wall Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:

        1) Three anchors per jamb up to 60 inches high.
        2) Four anchors per jamb from 60 to 90 inches high.
        3) Five anchors per jamb from 90 to 96 inches high.
        4) Five anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof above 96 inches high.
        5) Two anchors per head for frames above 42 inches wide and mounted in metal-stud partitions.

    c. Compression Type: Not less than two anchors in each jamb.
    d. Post installed Expansion Type: Locate anchors not more than 6 inches from top and bottom of frame. Space anchors not more than 26 inches o.c.

7. Door Silencers: Except on weather-stripped doors, drill stops to receive door silencers as follows. Keep holes clear during construction.

    a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
    b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.

E. Fabricate concealed stiffeners, edge channels, and hardware reinforcement from either cold- or hot-rolled steel sheet.

F. Hardware Preparation: Factory prepare hollow metal work to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to the Door Hardware Schedule and templates furnished as specified in Section 08710 - DOOR HARDWARE.

1. Locate hardware as indicated, or if not indicated, according to ANSI/SDI A250.8.

2. Reinforce doors and frames at the manufacturer's plant to receive non-templated, mortised and surface-mounted door hardware.
3. Comply with applicable requirements in ANSI/SDI A250.6 and ANSI/DHI A115 Series specifications for preparation of hollow metal work for hardware.
4. Coordinate locations of conduit and wiring boxes for electrical connections with Section 16100 - ELECTRICAL.

G. Stops and Moldings: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with butted or mitered hairline joints.

1. Single Glazed Lites: Provide fixed stops and moldings welded on secure side of hollow metal work.
2. Multiple Glazed Lites: Provide fixed and removable stops and moldings so that each glazed lite is capable of being removed independently.
3. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames.
4. Provide loose stops and moldings on inside of hollow metal work.
5. Coordinate rabbet width between fixed and removable stops with type of glazing and type of installation indicated.

2.11 STEEL FINISHES

A. Prime Finish: Apply manufacturer's standard primer immediately after cleaning and pretreating.

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

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine roughing-in for embedded and built-in anchors to verify actual locations before frame installation.

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

3.2 PREPARATION

A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.

B. Prior to installation, adjust and securely brace welded hollow metal frames for squareness, alignment, twist, and plumbness to the following tolerances:

1. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
2. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
3. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
4. Plumbness: Plus or minus 1/16 inch, measured at jambs on a perpendicular line from head to floor.

C. Drill and tap doors and frames to receive non-templated, mortised, and surface-mounted door hardware.

3.3 INSTALLATION

A. General: Install hollow metal work plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer's written instructions.

B. Hollow Metal Frames: Install hollow metal frames of size and profile indicated. Comply with ANSI/SDI A250.11.

1. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.

   a. At fire-protection-rated openings, install frames according to NFPA 80.
   b. Where frames are fabricated in sections because of shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.
   c. Install frames with removable glazing stops located on secure side of opening.
   d. Install door silencers in frames before grouting.
   e. Remove temporary braces necessary for installation only after frames have been properly set and secured.
   f. Check plumbness, squareness, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
   g. Field apply bituminous coating to backs of frames that are filled with grout.
   h. Remove shipping bars before installing frames.

2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with post installed expansion anchors.

   a. Floor anchors may be set with powder-actuated fasteners instead of post installed expansion anchors if so indicated and approved on Shop Drawings.

3. Metal-Stud Partitions: Solidly pack mineral-fiber insulation behind frames.
4. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout.
5. Concrete Walls: Solidly fill space between frames and concrete with grout. Take precautions, including bracing frames, to ensure that frames are not deformed or damaged by grout forces.
6. In-Place Concrete or Masonry Construction: Secure frames in place with post installed expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
7. In-Place Gypsum Board Partitions: Secure frames in place with post installed expansion anchors through floor anchors at each jamb. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
8. Ceiling Struts: Extend struts vertically from top of frame at each jamb to overhead structural supports or substrates above frame unless frame is anchored to masonry or to other structural support at each jamb. Bend top of struts to provide flush contact for securing to supporting construction. Provide adjustable wedged or bolted anchorage to frame jamb members.
9. Installation Tolerances: Adjust hollow metal door frames for squareness, alignment, twist, and plumb to the following tolerances:

   a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.

b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.

C. Hollow Metal Doors: Fit hollow metal doors accurately in frames, within clearances specified below. Shim as necessary.

1. Non-Fire-Rated Standard Steel Doors:

a. Jambs and Head: 1/8 inch plus or minus 1/16 inch.
b. Between Edges of Pairs of Doors: 1/8 inch plus or minus 1/16 inch.
c. Between Bottom of Door and Top of Threshold: Maximum 3/8 inch.
d. Between Bottom of Door and Top of Finish Floor (No Threshold): Maximum 3/4 inch.

2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.
3. Smoke-Control Doors: Install doors according to NFPA 105.

D. Glazing: Comply with hollow metal manufacturer's written instructions.

1. Secure stops with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches o.c. and not more than 2 inches o.c. from each corner.

3.4 ADJUSTING AND CLEANING

A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow metal work that is warped, bowed, or otherwise unacceptable.

B. Remove grout and other bonding material from hollow metal work immediately after installation.

C. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.

D. Metallic-Coated Surfaces: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.

END OF SECTION

SECTION 08211

FLUSH WOOD DOORS

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:

1. Solid-core doors with wood-veneer faces.
2. Factory fitting flush wood doors to frames and factory machining for hardware.
3. Factory finishing for wood doors.
4. Factory glazing for wood doors.

B. Related Work: The following items are not included in this Section and will be performed under the designated Sections:

1. Section 04200 - UNIT MASONRY for building anchors into and grouting steel frames in masonry construction.
2. Section 08111 - STEEL DOORS AND FRAMES.
3. Section 08710 - DOOR HARDWARE for hardware for wood doors.

1.2 SUBMITTALS

A. Product Data: For each type of door. Include details of core and edge construction, and trim for openings. Include factory-finishing specifications. Include manufacturer's specifications and other data needed to prove compliance with specified requirements.

B. Shop Drawings: Indicate location, size, and hand of each door; elevation of each kind of door; construction details not covered in Product Data; location and extent of hardware blocking; and other pertinent data.

1. Indicate dimensions and locations of mortises and holes for hardware.
2. Indicate dimensions and locations of cutouts.
3. Indicate requirements for veneer matching.
4. Indicate doors to be factory finished and finish requirements.
5. Indicate fire ratings for fire doors.

1.3 QUALITY ASSURANCE

A. Wood Doors covered in this section shall be provided and installed by the General Contractor unless otherwise noted on the drawings.

B. Source Limitations: Obtain flush wood doors through one source from a single manufacturer.

C. Quality Standard: complying with WDMA I.S 1A-11 Industry Standard for Architectural Wood Flush Doors, Windows and Door Manufacturers' Association.

D. Fire-Rated Wood Doors: Doors complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL 10-C Positive Pressure fire test requirements. Provide Category A intumescent concealed in door edge.

E. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 01.

F. For renovation projects General Contractor to verify and provide to supplier the existing species and finish stain of existing to remain wood doors.

1.4 DELIVERY, STORAGE, AND HANDLING

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

B. Package doors individually in plastic bags.

C. Mark each door on top and bottom rail with opening number used on Shop Drawings. Indicating manufacturer's name, brand name, size and thickness.

D. General Contractor must inspect and inventory all deliveries within 24 hours of delivery. All freight damage must be signed as damaged on the Bill of Lading document and reported to the freight carrier. General Contractor must report to the supplier any missing, incorrect or damaged goods immediately. Failure to report missing, damaged or incorrect material within 48 hours means the receiver has accepted the shipment as complete and correct.

1.5 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install doors until building is enclosed, wet work is complete, and HVAC system is operating and will maintain temperature and relative humidity at occupancy levels during the remainder of the construction period.

1.6 WARRANTY

A. Special Warranty: Manufacturer's standard form, signed by Manufacturer, Installer, and Contractor, in which manufacturer agrees to repair or replace doors that are defective in materials or workmanship, have warped (bow, cup, or twist) more than 1/4 inch in a 42-by-84-inch section, or show telegraphing of core construction in face veneers exceeding 0.01 inch in a 3-inch span.

1. Warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors at no cost to Owner.
2. Warranty shall be in effect during the following period of time from date of Substantial Completion:

a. Solid-Core Interior Doors: Life of installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. All FLUSH WOOD DOORS are to be provided by FMC Sole Source flush wood doors Suppliers:

1. Flush Wood Doors:
   a. Marshfield Door Systems
   b. VT Industries Inc.
   c. Eggers Industries

2.2 DOOR CONSTRUCTION, GENERAL

A. Provide WDMA I.S. 1A-Extra Heavy Duty performance construction and Premium Grade Aesthetic Standard.

B. Doors for Transparent Finish:

1. Grade: Grade A faces
2. Species and Cut: Plain Sliced, Cherry

3. Match between Veneer Leaves: Book match
4. Assembly of Veneer Leaves on Door Faces: Running with Remainders. (Keeps cost down. Refer to our Veneer Guideline for appearance details.)
5. Pair and Set Match: Provide for doors hung in same opening or separated only by mullions.
6. Transom Match: Continuous match.
7. Stiles: Same species as faces or a compatible species.
8. Provide cutouts and molding type W-6, manufactured by Marshfield Door Systems or approved equal.

2.3 SOLID-CORE DOORS

A. Particleboard Cores: Comply with the following requirements:

1. Particleboard: ANSI A208.1, Grade LD-2.
2. Provide doors with Structural Composite Lumber (Stave Lumber Core is outdated, lower performance and increases cost) cores instead of particleboard cores at locations where exit devices are indicated.

B. Interior Veneer-Faced Doors:

1. Core: Particleboard, PC-5 construction.
2. Construction: Five plies with stiles and rails bonded to core, then entire unit abrasive planed before veneering. 1-3/4" thick, flush type. Hot Press technology only. Cold Press technology is not acceptable.
   a. Exposed crossbands are not acceptable.
   b. Outer stiles to be constructed with 1/16" compatible veneer edge bands with SCL backer. Wood tape is not acceptable.

C. Fire-Rated Doors:

1. Construction: Construction and core specified above for type of face indicated or manufacturer's standard mineral-core construction as needed to provide fire rating indicated.
2. Solid Blocking: For rated doors, provide composite blocking (wherever closers are to be mounted) with improved screw-holding capability approved for use in doors of fire ratings indicated as needed to eliminate through-bolting hardware.
3. Edge Construction: At hinge stiles, provide manufacturer’s standard laminated-edge construction with improved screw-holding capability and split resistance, and with outer stile matching face veneer.
4. Pairs: Provide fire-rated pairs with fire-retardant stiles matching face veneer that are labeled and listed for kinds of applications indicated without formed-steel edges and astragals. Provide stiles with concealed intumescent seals. Cat B, Positive Pressure is not acceptable.

D. Impact/Abuse Resistant Doors:

1. Construction: One Piece High Density Fiberboard (HDF); Manufacturer’s standard construction is 1" structural composite lumber with impact resistant edge band. 1-3/8" stiles (3/4" hdwd, 5/8" SCL) available upon request 1-3/8" SCL stiles with impact resistant edge band.
2. Core: Particleboard core (which complies with ANSI A208.1). See WDMA Performance Level below.
3. Warranty: Full; life of original installation. No exterior warranty.
4. Products:

a. Durable Door by Marshfield
b. FRL Door by VT Industries

5. This door is to be used between the treatment floor and storage area.

2.4 LIGHT FRAMES

A. Wood Beads for Light Openings in Wood Doors:

1. Wood Species: Same species as door faces.
2. Profile: Manufacturer's standard shape. Molding type W-6.
3. At 20-minute, fire-rated, wood-core doors, provide wood beads and metal glazing clips approved for such use.

B. Wood-Veneered Beads for Light Openings in Fire Doors: Manufacturer's standard wood-veneered noncombustible beads matching veneer species of door faces and approved for use in doors of fire rating indicated. Include concealed metal glazing clips where required for opening size and fire rating indicated.

2.5 FABRICATION

A. Factory fit doors to suit frame-opening sizes indicated, with the following uniform clearances and bevels, unless otherwise indicated:

1. Comply with clearance requirements of referenced quality standard for fitting. Comply with requirements in NFPA 80 for fire-rated doors.

B. Factory machine doors for hardware that is not surface applied. Locate hardware to comply with DHI-WDHS-3. Comply with final hardware schedules, door frame Shop Drawings, DHI A115-W series standards, and hardware templates.

1. Coordinate measurements of hardware mortises in metal frames to verify dimensions and alignment before factory machining.
2. Metal Astragals: Pre-machine astragals and formed-steel edges for hardware for pairs of fire-rated doors.
3. Factory pre-drill pilot holes for hinge screws.

C. Transom and Side Panels: Fabricate matching panels with same construction, exposed surfaces, and finish as specified for associated doors. Finish bottom edges of transoms and top edges of rabbeted doors same as door stiles.

1. Fabricate door and transom panels with full-width, solid-lumber meeting rails. Provide factory-installed spring bolts for concealed attachment into jambs of metal door frames.

D. Openings: Cut and trim openings through doors to comply with applicable requirements of referenced standards for kind(s) of door(s) required.

1. Light Openings: Trim openings with moldings of material and profile indicated.

E. Undercut all doors a minimum of 1/2" and a maximum of 3/4" with the exception of fire rated doors, which must comply with NFPA 80.

2.6 FACTORY FINISHING

A. General: Comply with WDMA I.S. 1A-04 standards for factory finishing.

B. Finish doors at factory that are indicated to receive transparent finish. Factory prime and prepare for field finish doors indicated to receive opaque finish.

C. Transparent Finish:

1. Grade: Premium.
2. Finish: WDMA TR-6 Catalyzed Polyurethane, UV Cured.
3. Effect: Open grain finish.
4. Sheen: Satin.
5. Stain colors:
   a. Marshfield Door Systems - Enviroclad "Espresso" 42-95
   b. VT Industries – Custom Finish #D396
6. Top and Bottom Rails: To be factory sealed. If rails are modified in the field, they must be resealed after field modification. Modification must be approved by Architect/Owner.

D. Unfinished Wood Doors Provision
   1. For specific time constraint projects, supply of unfinished wood doors will be acceptable for field finish on a case by case basis. All supply of unfinished wood doors must be approved by the architect prior to supply and be based on current wood door manufacturer lead times with the specific project schedule.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine doors and installed door frames before hanging doors.
   1. Verify that frames comply with indicated requirements for type, size, location, and swing characteristics, and have been installed with level heads and plumb jambs.
   2. Reject doors with defects.

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

3.2 FIELD FINISHING

A. All approved field finish applications are to be completed to industry standards per architectural approval of colors to be used.

B. FMC Stain Color: Espresso 42-95 or as approved
   1. One Coat (apply second coat if darker finish is desired base don absorption of wood species being stained)
      1) Interior Stain
         a) Color – Espresso 42-95 or as approved
   2. Two Coats
      a. Interior Polyurethane Varnish

3.3 INSTALLATION

A. Hardware: Refer to 08710 - DOOR HARDWARE section for type and location. Receive and retain custody of door hardware furnished for the work of this section under Section 08710 of these specifications and, except as otherwise directed by the Architect, install all such hardware in strict accordance with manufacturer's installation instructions.

B. Manufacturer's Written Instructions: Install doors to comply with manufacturer's written instructions, referenced quality standard, and as indicated.
   1. Install fire-rated doors in corresponding fire-rated frames according to NFPA 80.

C. Factory-Fitted Doors: Align in frames for uniform clearance at each edge.

3.4 ADJUSTING

A. Operation: Rehang or replace doors that do not swing or operate freely. Once inserted do not remove hinge screws from stiles of positive pressure fire doors.

B. Finished Doors: Replace doors that are damaged or do not comply with requirements. Doors may be repaired or refinished if work complies with requirements and shows no evidence of repair or refinishing.

3.4 COMPLIANCE

A. The Owner reserves the right to request and pay for an inspection by a representative of the referenced organization to determine that the work of this Section has been performed in accordance with the specified standards.

B. In the event such inspection determines that the work of this Section does not comply with the specified requirements, immediately remove the non-complying items and replace them with items complying with the specified requirements, all at no additional cost to the Owner, and reimburse the Owner for the cost of the inspection.

END OF SECTION

SECTION 08310

EMERGENCY ACCESS DOORS

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. This Section includes the following:
   1. Framed metal access doors as specified, indicated, or scheduled, with components as required for a complete installation.

B. Related Sections include the following:
   1. Section 04200 - UNIT MASONRY
   2. Section 09260 - GYPSUM BOARD ASSEMBLIES
   3. Section 07920 - JOINT SEALANTS

1.2 DEFINITIONS

A. Access Panel: Device that provides quick access for water hose through exterior building wall and an exterior door.

1.3 PERFORMANCE REQUIREMENTS

A. General: Provide access panels capable of withstanding structural loads and thermal movements based on testing manufacturer's standard units in assemblies similar to those indicated for this Project.

B. Thermal Movements: Provide access panels that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

   1. Temperature Change (Range): 130 deg F, ambient; 180 deg F, material surfaces.

C. Operating Range: Minus 30 deg F to 130 deg F.

1.4 SUBMITTALS

A. Furnish submittals for items that are identified in this Section by a different typeface and a bracketed code (e.g., *Item [L]***).** Refer to Division 1, General Requirements for definition of codes for types of submittals and the administrative requirements governing submittal procedure.

B. Product Data: Submit product data for all metal access doors.

1.5 QUALITY ASSURANCE

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

   1. Maintenance Proximity: Not more than four hours' normal travel time from Installer's place of business to Project site.

B. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

C. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination." Review methods and procedures related to automatic entrance doors including, but not limited to, the following:

1. Review structural load limitations.
2. Review and finalize construction schedule and verify availability of materials, installer's personnel, equipment, and facilities needed to make progress and avoid delays.
3. Review required testing, inspecting, and certifying procedures.

1.6 PROJECT CONDITIONS

A. Field Measurements: Obtain specific locations and sizes for required access doors from trades requiring access to concealed equipment or accessories. Field verify existing openings for proper coordination and fit.

1. Established Dimensions: Where field measurements cannot be made without delaying the work, establish opening dimensions and coordinate installation to ensure that actual opening dimensions correspond to established dimensions.

2. Delivery Storage and Handling: Comply with factory's ordering instructions and lead times. Delivery shall be in factory's original, unopened and undamaged containers with identification labels intact.

3. Storage and Protection: Provide protection from exposure to harmful weather conditions and other damages.

1.7 COORDINATION

A. Coordinate with the GC the size and location of openings in exterior wall for placement of access panels.

B. Templates: Obtain and distribute, to the parties involved, a template for installation of access panels. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing access panels to comply with indicated requirements.

1.8 WARRANTY

A. Special Finish Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components on which finishes fail within specified warranty period. Warranty does not include normal weathering.

1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Manufacturer: Subject to compliance with requirements, provide products of the following:

1. Best Access Doors, model# BA-PAL"8 x 8", with cylinder lock and key, stainless steel (brush finish) for wall profile installation.

2. Best Access Doors, model# BA-FM "10 x 10", ¼" Allen key with interior release, Satin Finish Galvanized (Bonderized) Steel and automatic closer. Paint to match door color.

2.2 MATERIALS

A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.

1. Frame – Tamper-Resistant Silicon Bronze Box
2. Door - Tamper-Resistant Silicon Bronze Box

3. Hinge - Steel
4. Latch – Loose Tee Key
5. Finish – Chrome

B. Sealants and Joint Fillers: Refer to Section 07920 - JOINT SEALANTS.

C. Nonmetallic, Shrinkage-Resistant Grout: Premixed, nonmetallic, noncorrosive, nonstaining grout; complying with ASTM C 1107; of consistency suitable for application.

D. Steel: Galvanized Steel to match exterior door.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances, header support, and other conditions affecting performance of automatic entrance doors.

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

3.2 INSTALLATION

A. Coordinate installation with work of other trades. Comply with manufacturer's instructions for installation.

B. Set access doors accurately in position, flush and level in relation to adjacent finish surfaces.

3.3 ADJUSTING

A. Adjust access panel for smooth and safe operation, and weather tight closure.

B. Lubricate operating hardware and other moving parts.

3.4 CLEANING AND PROTECTION

A. Repair or clean items that have been damaged or soiled that can be restored to an "as new" condition at no cost to the Owner.

3.5 DEMONSTRATION

A. After doors are installed, test-demonstrate in the presence of the Owner's Representative that the doors operate properly under all conditions. Lubricate hinges, latches and other moving parts. Adjust doors and hardware if tests show improper functioning.

END OF SECTION

SECTION 08411

ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:

1. Exterior and interior aluminum-framed storefronts.
2. Exterior and interior power assisted-swing aluminum doors.

B. Related Work: The following items are not included in this Section and will be performed under the designated Sections:

1. Section 07920 - JOINT SEALANTS for installation of joint sealants installed with aluminum-framed systems and for sealants to the extent not specified in this Section.
2. Section 08710 - DOOR HARDWARE for hardware type, lock cylinders and keying.
3. Section 08800 - GLASS AND GLAZING for glazing requirements to the extent not specified in this Section.
4. Section 08720 – Automatic door operators
5. Section 08461 – Sliding automatic entrance doors

1.2 PERFORMANCE REQUIREMENTS

A. General: Provide aluminum-framed systems, including anchorage, capable of withstanding, without failure, the effects of the following:

1. Structural loads.
2. Thermal movements.
3. Dimensional tolerances of building frame and other adjacent construction.
4. Failure includes the following:

   a. Deflection exceeding specified limits.
   b. Thermal stresses transferred to building structure.
   c. Framing members transferring stresses, including those caused by thermal and structural movements, to glazing.
   d. Noise or vibration created by wind and thermal and structural movements.
   e. Loosening or weakening of fasteners, attachments, and other components.
   f. Sealant failure.
   g. Failure of operating units to function properly.

B. Structural Loads: Wind and seismic loads as indicated on the Structural Drawings, but not less than that required by Code.

C. Deflection of Framing Members:

1. Deflection Normal to Wall Plane: Limited to 1/175 of clear span for spans up to 13 feet 6 inches (and to 1/240 of clear span plus 1/4 inch for spans greater than 13 feet 6 inches or an amount that restricts edge deflection of individual glazing lites to 3/4 inch, whichever is less.
2. Deflection Parallel to Glazing Plane: Limited to 1/360 of clear span or 1/8 inch, whichever is smaller, amount not exceeding that which reduces glazing bite to less than 75 percent of design dimension and that which reduces edge clearance between framing

members and glazing or other fixed components directly below to less than 1/8 inch and clearance between members and operable units directly below to less than 1/16 inch.

D. Thermal Movements: Provide aluminum-framed 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): 120 deg F, ambient; 180 deg F, material surfaces.

E. Air Infiltration Test: Test unit in accordance with ASTM E 283, as follows:

1. Static Air Pressure Difference: 6.24 psf for fixed storefront units, and 1.567 psf for doors.
2. Performance: Maximum air leakage shall not exceed the following: fixed storefront units, 1.0 cfm/sf.: glazed entrance door units, 0.3 cfm/sf of other areas.

F. Water Leakage Test: Test fixed framing system in accordance with ASTM E 331.

1. Test Pressure: 8 psf.
2. Performance: No leakage as defined in test method at specified test pressure. No uncontrolled water penetrating system or appearing on normally exposed interior surfaces.

G. Solar Heat-Gain Coefficient: Provide units with a whole-unit SHGC maximum as required by Code, determined according to NFRC 200 procedures. Submit proof of compliance with submittals as specified.

H. Thermal Transmittance: Provide window units that have a U-value as required by Code rated in BTU/hour/sq. ft./degrees F at 15-mph exterior wind velocity, when tested in accordance with AAMA 1503.1. Test unit to be 4 ft. x 6 ft. Submit proof of compliance with submittals as specified.

I. Condensation Resistance: Provide aluminum-framed systems with fixed glazing and framing areas having condensation-resistance factor (CRF) of not less than 45 for fixed storefront units and not less than 48 for doors when tested according to AAMA 1503.

1.3 SUBMITTALS

A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of product indicated. Include manufacturer's specification and other data to provide compliance with specified requirements.

B. Shop Drawings: For aluminum-framed systems. Include plans, elevations, sections, details, and attachments to other work.

1. Include structural analysis data signed and sealed by the qualified professional engineer, licensed by the local authorities having jurisdiction, responsible for their preparation.
2. Include structural analysis of story drift and deflection from anticipated live loads, and determination whether head receptors are required.
3. Include details of provisions for system expansion and contraction and for draining moisture occurring within the system to the exterior.
4. For entrances, include hardware schedule and indicate operating hardware types, functions, quantities, and locations.

C. Samples for Verification: For each type of exposed finish required, in manufacturer's standard sizes.

D. Qualification Data: For Installer.

E. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for aluminum-framed systems.

F. Performance Reports: Based on systems, components and glazing methods proposed for use on this Project, proof that units as glazed for this Project meet or exceed Code requirements for the following:

1. U-value.
2. Solar heat-gain coefficient.

G. Maintenance Data: For aluminum-framed systems to include in maintenance manuals.

H. Warranties: Special warranties specified in this Section.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Capable of assuming engineering responsibility and performing work of this Section and who is acceptable to manufacturer.

1. Engineering Responsibility: Preparation of data for aluminum-framed systems including Shop Drawings based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project and submission of reports of tests performed on manufacturer's standard assemblies.

B. Accessible Entrances: Comply with local Architectural Access Board and the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)."

1.5 PROJECT CONDITIONS

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

1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating aluminum-framed systems without field measurements. Coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.6 WARRANTY

A. Upon completion of work and as a condition of its acceptance, deliver to the architect two copies of written warranty agreeing to replace work of this section, which fails due to defective materials or workmanship. This includes failures in operation of components or components leakage, or air infiltration in excess of specified standard; defects which contribute to unsightly appearance; potential safety hazard or potential untimely failure of work of this section; or work as a whole within three years after substantial completion.

B. Special Finish Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components on which finishes fail within specified warranty period. Warranty does not include normal weathering.

1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Provide and install glass, aluminum frames and related hardware provided under Section 08710 as shown on architectural drawings.

1. Exterior Storefront, insulated, 2 inch by 4-1/2 inch profile:

    a. Kawneer, VG451T.
    b. Approved equal.
    c. Finish – Fluropon, Medium Bronze (unless otherwise specified).

2. Interior Storefront, 2 inch by 4-1/2 inch profile:

    a. Kawneer, VG450-2.
    b. Raco Interior OfficeFronts Classic.
    c. Approved equal.
    d. Finish – Fluropon, Medium Bronze.

3. Exterior Doors, Thermal, Medium Stile (Cold Climates):

    a. Kawneer, Series 360 Insulclad.
    b. Approved equal.
    c. Finish – Fluropon, Medium Bronze (unless otherwise specified).

4. Exterior Doors, Thermal, Medium Stile (Warm Climates):

    a. Kawneer, Series 350.
    b. Approved equal.
    c. Finish – Fluropon, Medium Bronze (unless otherwise specified).

5. Interior Doors, Medium Stile:

    a. Kawneer, 360.
    b. Raco Interior OfficeFronts – Series 550.
    c. Approved equal.
    d. Finish – Fluropon, Medium Bronze.

2.2 MATERIALS

A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.

1. Sheet and Plate: ASTM B 209.
2. Extruded Bars, Rods, Profiles, and Tubes: ASTM B 221.
3. Extruded Structural Pipe and Tubes: ASTM B 429.
4. Structural Profiles: ASTM B 308/B 308M.
5. Welding Rods and Bare Electrodes: AWS A5.10/A5.10M.

B. Steel Reinforcement: With manufacturer's standard corrosion-resistant primer complying with SSPC-PS Guide No. 12.00 applied immediately after surface preparation and pretreatment. Select surface preparation methods according to recommendations in SSPC-SP COM and prepare surfaces according to applicable SSPC standard.

1. Structural Shapes, Plates, and Bars: ASTM A 36/A 36M.
2. Cold-Rolled Sheet and Strip: ASTM A 1008/A 1008M.
3. Hot-Rolled Sheet and Strip: ASTM A 1011/A 1011M.

2.3 FRAMING SYSTEMS

A. Framing Members: Manufacturer's standard extruded-aluminum framing members of thickness required and reinforced as required to support imposed loads.

1. Construction for Exterior Framing: Thermal-break.

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. Where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration, use self-locking devices.
2. Reinforce members as required to receive fastener threads.
3. Use exposed fasteners with countersunk Phillips screw heads, finished to match framing system.

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 requirements.

E. Flashing: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding flashing compatible with adjacent materials. Form exposed flashing from sheet aluminum finished to match framing and of sufficient thickness to maintain a flat appearance without visible deflection.

F. Framing System Gaskets and Sealants: Manufacturer's standard recommended by manufacturer for joint type.

2.4 GLAZING SYSTEMS

A. Glazing: As specified in Section 08800 - GLASS AND GLAZING.

B. Glazing Gaskets: Manufacturer's standard compression types, replaceable, molded or extruded, that maintain uniform pressure and watertight seal.

C. Spacers and Setting Blocks: Manufacturer's standard elastomeric types.

2.5 DOORS

A. Doors: Manufacturer's standard glazed doors, for manual swing operation.

1. Door Construction: Mechanical clip fastening, SIGMA deep penetration plus welds and 1-1/8 inch long fillet welds inside and outside of all four corners. Glazing stops shall be hook-in type and EPDM glazing gaskets reinforced with non-stretchable cord.

2.6 DOOR HARDWARE

A. General: Provide heavy-duty units in sizes and types indicated in SECTION 08710 – Door Hardware. Coordinate and install hardware in the factory as required. Provide all hardware required for a proper and complete installation.

1. Opening-Force Requirements:

a. Egress Doors: Not more than 30 lbf required to set door in motion and not more than 15 lbf required to open door to minimum required width.
b. Accessible Interior Doors: Not more than 5 lbf.

B. Pivot Hinges: BHMA A156.4, Grade 1.

C. Locking Devices, General: As specified in Section 08710 – Door Hardware. Do not require use of key, tool, or special knowledge for operation.

1. Opening-Force Requirements:

a. Delayed-Egress Locks: Lock releases within 15 seconds after applying a force of not more than 15 lbf (67 N) for not more than 3 seconds.
b. Latches and Exit Devices: Not more than 15 lbf (67 N) required to release latch.

D. Mortise Auxiliary Locks: BHMA A156.5, Grade 1.

E. Panic Exit Devices: As specified in Section 08710 Door Hardware. Listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for panic protection, based on testing according to UL 305.

1. Standard: BHMA A156.3, Grade 1.

F. Cylinders: As specified in Section 08710 – Door Hardware.

G. Strikes: As specified in Section 08710 – Door Hardware.

H. Operating Trim: BHMA A156.6.

I. Closers: Refer to Section 08710 and 08720 – Automatic door operators.

J. Concealed Overhead Holders: Refer to Section 08710 BHMA A156.8, Grade 1.

K. Surface-Mounted Holders: Refer to Section 08710 BHMA A156.16, Grade 1.

L. Door Stops: BHMA A156.16, Grade 1, floor or wall mounted, as appropriate for door location indicated, with integral rubber bumper.

M. Weather Stripping: Manufacturer's standard replaceable components at exterior doors.

1. Compression Type: Made of ASTM D 2000, molded neoprene, or ASTM D 2287, molded PVC.

N. Weather Sweeps: Manufacturer's standard exterior-door bottom sweep with concealed fasteners on mounting strip, at exterior doors.

O. Silencers: BHMA A156.16, Grade 1.

P. Finger Guards: Manufacturer's standard collapsible neoprene or PVC gasket anchored to frame hinge-jamb at center-pivoted doors.

Q. Finishes: Match framing, as indicated below.

2.7 ACCESSORY MATERIALS

A. Insulating Materials: As specified in Section 07210 - INSULATION.

B. Joint Sealants: For installation at perimeter of aluminum-framed systems, as specified in Section 07920 - JOINT SEALANTS.

C. Bituminous Paint: Cold-applied asphalt-mastic paint complying with SSPC-Paint 12 requirements except containing no asbestos, formulated for 30-mil thickness per coat.

2.8 FABRICATION

A. Form aluminum shapes before finishing.

B. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.

C. Framing Members, General: Fabricate components that, when assembled, have the following characteristics:

1. Profiles that are sharp, straight, and free of defects or deformations.
2. Accurately fitted joints with ends coped or mitered.
3. Means to drain water-passing joints, condensation occurring within framing members, and moisture migrating within the system to exterior.
4. Physical and thermal isolation of glazing from framing members.
5. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.

6. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.

D. Mechanically Glazed Framing Members: Fabricate for flush glazing (without projecting stops).

E. Door Frames: Reinforce as required to support loads imposed by door operation and for installing hardware.

1. At exterior doors, provide compression weather stripping at fixed stops.
2. At interior doors, provide silencers at stops to prevent metal-to-metal contact. Install three silencers on strike jamb of single-door frames and two silencers on head of frames for pairs of doors.

F. Doors: Reinforce doors as required for installing hardware.

1. At pairs of exterior doors, provide sliding weather stripping retained in adjustable strip mortised into door edge.
2. At exterior doors, provide weather sweeps applied to door bottoms.

G. Hardware Installation: Factory install hardware to the greatest extent possible. Cut, drill, and tap for factory-installed hardware before applying finishes.

H. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

2.9 ALUMINUM FINISHES

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

B. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.

C. Class I, Color Anodic Finish: AA-M12C22A42/A44 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, integrally colored or electrolytically deposited color coating 0.018 mm or thicker) complying with AAMA 611.

1. Color: Fluropon – Medium Bronze

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 work.

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

3.2 INSTALLATION

A. General:

1. Comply with manufacturer’s written instructions.
2. Do not install damaged components.
3. Fit joints to produce hairline joints free of burrs and distortion.
4. Rigidly secure non-movement joints.
5. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration.
6. Seal joints watertight, unless otherwise indicated.

7. Comply with original design and approved shop drawings and governing codes and regulations.

B. Metal Protection:

1. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape or installing nonconductive spacers as recommended by manufacturer for this purpose.
2. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

C. Install components to drain water-passing joints, condensation occurring within framing members, and moisture migrating within the system to exterior.

D. Set continuous sill members and flashing in full sealant bed as specified in Section 07920 - JOINT SEALANTS and to produce weathertight installation.

E. Install components plumb and true in alignment with established lines and grades, without warp or rack.

F. Install glazing as specified in Section 08800 - GLASS AND GLAZING.

1. Structural-Sealant Glazing:

a. Prepare surfaces that will contact structural sealant according to sealant manufacturer's written instructions to ensure compatibility and adhesion. Preparation includes, but is not limited to, cleaning and priming surfaces.
b. Install weatherseal sealant according to Section 07920 - JOINT SEALANTS and according to sealant manufacturer's written instructions to produce weatherproof joints. Install joint filler behind sealant as recommended by sealant manufacturer.

G. Entrances: Install to produce smooth operation and tight fit at contact points.

1. Exterior Entrances: Install to produce tight fit at weather stripping and weathertight closure.
2. Field-Installed Hardware: Install surface-mounted hardware according to hardware manufacturer's written instructions using concealed fasteners to greatest extent possible.

H. Erection Tolerances: Install aluminum-framed systems to comply with the following maximum tolerances:

1. Location and Plane: Limit variation from true location and plane to 1/8 inch in 12 feet; 1/4 inch over total length.
2. Alignment:

a. Where surfaces abut in line, limit offset from true alignment to 1/16 inch.
b. 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 and inspecting agency to perform field tests and inspections and prepare test reports.

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 stages 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: Areas shall be tested for air leakage of 1.5 times the rate specified for laboratory testing under Part 1 “Performance Requirements” Article, but not more than 0.09 cfm/sq. ft. of fixed wall area when tested according to ASTM E 783 at a minimum static-air-pressure difference of 6.24 lbf/sq. ft.
2. Water Penetration: Areas shall be tested according to ASTM E 1105 at a minimum cyclic static-air-pressure difference of 0.67 times the static-air-pressure difference specified for laboratory testing under Part 1 “Performance Requirements” Article, but not less than 4.18 lbf/sq. ft., and shall not evidence water penetration.
3. Water Spray Test: Before installation of interior finishes has begun, a minimum area of 75 feet by 1 story of aluminum-framed systems designated by Architect shall be tested according to AAMA 501.2 and shall not evidence water penetration.

C. Repair or remove work where test results and inspections indicate that it does not comply with 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.

3.4 ADJUSTING

A. Entrances: Adjust operating hardware for smooth operation according to hardware manufacturer’s written instructions.

1. For doors accessible to people with disabilities, adjust closers to provide a 3-second closer sweep period for doors to move from a 70-degree open position to 3 inches from the latch measured to the leading door edge.

END OF SECTION

Resue

SECTION 08710

DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:
   1. Furnishing and installation of all mechanical and electrical finish hardware necessary for all doors and hardware as specified herein; as enumerated in hardware sets; and as indicated and required by actual conditions at the building. The hardware shall include the furnishing of all necessary screws, bolts, expansion shields, drop plates, and all other devices necessary for the proper application of the hardware. Installation shall include field modification and preparation of existing doors and/or frames for new hardware being installed. Provide necessary fillers, Dutchmen, reinforcements, and fasteners for mounting new hardware and to cover existing door/frame preps.

B. Vendors:
   1. All door hardware covered in this Section shall be provided and installed by the General Contractor.
   2. Division 6 Section - FINISH CARPENTRY.
   3. Division 8 Section - HOLLOW METAL DOORS AND FRAMES.
   4. Division 8 Section - WOOD DOORS.
   5. Division 8 Section - ALUMINUM FRAMED STOREFRONTS.
   6. Section 08461 - SLIDING AUTOMATIC ENTRANCE DOORS for entrance doors packaged with automatic operators and controls.
   7. Section 08720 - AUTOMATIC DOOR OPERATORS for doors with low-energy operators.
   8. Division 16 Section - ELECTRICAL for electrical connections including conduit and wiring for electrified hardware.

C. Specific Omissions: Hardware for the following is specified or indicated elsewhere, unless specifically listed in the hardware sets:
   1. Windows.
   2. Cabinets of all kinds, including open wall shelving and locks.

1.3 REFERENCES

A. Applicable state and local building codes and standards.

B. FIRE/LIFE SAFETY
   1. NFPA - National Fire Protection Association
      a. NFPA 70 – National Electric Code
      b. NFPA 80 - Standard for Fire Doors and Fire Windows
      c. NFPA 101 - Life Safety Code
      d. NFPA 105 - Smoke and Draft Control Door Assemblies

C. UL - Underwriters Laboratories
   1. UL 10C - Positive Pressure Test of Fire Door Assemblies
   2. UL 1784 - Air Leakage Tests of Door Assemblies

3. UL 305 - Panic Hardware

D. Accessibility
1. ADA - Americans with Disabilities Act
2. ICC (CABO) / ANSI A117.1 - Accessible and Usable Buildings and Facilities

E. DHI - Door and Hardware Institute
1. Sequence and Format for the Hardware Schedule
2. Recommended Locations for Builders Hardware

F. ANSI - American National Standards Institute
1. ANSI/BHMA A156.1 - A156.24 - Standards for Hardware and Specialties

1.4 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 requirements. Prior to submittal, field verify existing doors and/or frames receiving new hardware, and/or existing conditions receiving new openings. Verify new hardware is compatible with the existing door/frame preparation and/or existing conditions. Advise architect within the submittal package of incompatibility or issues.

B. Catalog Cuts: Product data including manufacturers' technical product data for each item of door hardware, installation instructions, and maintenance of operating parts and finish, and other information necessary to show compliance with requirements.

C. Final Hardware Schedule Content: Submit schedule with hardware sets in vertical format as illustrated by the Sequence of Format for the Hardware Schedule as published by the Door and Hardware Institute. Indicate complete designations of each item required for each door or opening, Include the following information:
1. Door Index; include door number, heading number, and Architects hardware set number.
2. Opening Lock Function Spreadsheet; list locking device and function for each opening.
3. Type, style, function, size, and finish of each hardware item.
4. Name and manufacturer of each item.
5. Fastenings and other pertinent information.
6. Location of each hardware set cross-referenced to indications on Drawings.
7. Explanation of all abbreviations, symbols, and codes contained in schedule.
8. Mounting locations for hardware.
9. Door and frame sizes and materials.
10. Name and phone number for the local manufacturer's representative for each product.
11. Operational Description of openings with any electrified hardware (locks, exits, electromagnetic locks, electric strikes, automatic operators, door position switches, magnetic holders or closer/holder units, and/or access control components). Operational description should include how the door will operate on egress, ingress, and/or fire/smoke alarm connection.

D. Templates: After final approval of the hardware schedule, provide templates for doors, frames, and other work specified to be factory prepared for the installation of door hardware.

E. Riser and Wiring Diagrams: After final approval of the hardware schedule, submit riser and wiring diagrams as required for the proper installation of complete electrical, electromechanical, and electromagnetic products.

F. Operations and Maintenance Data: Provide in accordance with Division 1 and include the following:
1. Complete information on care, maintenance, and adjustment; data on repair and replacement parts; and information on preservation of finishes.

2. Catalog pages for each product.
3. Name, address, and phone number of local representative for each manufacturer.
4. Parts list for each product.
5. Copy of final approved hardware schedule, edited to reflect “As installed.”
6. Copy of final keying schedule.
7. As installed “Wiring Diagrams” for each opening connected to power, both low voltage and 110 volts.
8. One (1) complete set of special tools required for maintenance and adjustment of hardware, including changing of cylinders.
9. Copy of warranties including appropriate reference numbers for manufacturers to identify the project.

G. Certificates of Compliance: Upon request of Architect or Authority Having Jurisdiction, certificates of compliance for fire-rated hardware and installation instructions shall be made available.

1.5 QUALITY ASSURANCE

A. Items specified as “no substitute” shall be provided exactly as listed.

B. Single Source Responsibility: Obtain each type of hardware (latch and locksets, hinges, exit devices, closers, etc.) from a single manufacturer.

C. Fire-Rated Openings: Provide door hardware for fire-rated openings that complies with NFPA Standard No. 80 and requirements of authorities having jurisdiction. Provide only items of door hardware that are listed and are identical to products tested by Underwriters Laboratories, Intertek Testing Services, Factory Mutual, or other testing and inspecting organizations acceptable to the authorities having jurisdiction for use on types and sizes of doors indicated in compliance with requirements of fire-rated door and door frame labels.

D. Electronic Security Hardware: When electrified hardware is included in the hardware specification, the hardware supplier must employ an individual knowledgeable in electrified components and systems who is capable of producing wiring diagrams and consulting as needed. Coordinate installation of the electronic security hardware with the Architect and electrical engineers, and provide installation and technical data to the Architect and other related subcontractors. Upon completion of electronic security hardware installation, inspect and verify that all components are working properly.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Tag each item or package separately with identification related to the final hardware schedule, and include installation instructions with each item or package.

B. Each article of hardware shall be individually packaged in manufacturer's original packaging.

C. Contractor will provide secure lock-up for door hardware delivered to the Project, but not yet installed. Control handling and installation of hardware items so that completion of Work will not be delayed by hardware losses both before and after installation.

D. Items damaged in shipment shall be replaced promptly and with proper material and paid for by whoever did the damage or caused the damage to occur.

E. Hardware shall be handled in a manner to avoid damage, marring, or scratching. Irregularities that occur to the hardware after it has been delivered to the Project shall be corrected, replaced, or repaired by the Contractor. Hardware shall be protected against malfunction due to paint, solvent, cleanser, or any chemical agent.

F. General Contractor must inspect and inventory all deliveries within 24 hours of delivery. All freight damage must be signed as damaged on the Bill of Lading document and reported to the freight carrier. General Contractor must report to supplier any missing, incorrect or damaged goods immediately. Failure to report missing, damaged or incorrect material within 48 hours means the receiver has accepted the shipment as complete and correct.

1.7 WARRANTY

A. Provide manufacturer's warranties as specified in Division 1 and as follows:
   1. Closers: 10 years, except electronic closers, 2 years.
   2. Exit Devices: 3 years, except electrified devices, 1 year.
   3. Locksets: 3 years, except electrified locksets, 1 year.
   4. Other hardware: 1 year.

B. No liability is to be assumed where damage or faulty operation is due to improper installation, improper use, or abuse.

C. Products judged to be defective during the warranty period shall be replaced or repaired in accordance with the manufacturer's warranty, at no additional cost to the Owner.

1.8 MAINTENANCE

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

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Approval of manufacturers other than those listed shall be in accordance with paragraph 1.5.A.

B. Note that even though an acceptable substitute manufacturer may be listed, the product must provide all the functions and features of the specified product or it will not be approved.

Item	Scheduled Manufacturer	Acceptable Substitute
Hinges	Hager (HAG)	Ives, McKinney
Emergency Release Pivots	Ives (IVE)	Rixson, Stanley, McKinney
Double Lipped Strikes	Don-jo (DON)	Hager, McKinney
Emergency Stop	Hager (HAG)	McKinney, Stanley
Flush Bolts & Coordinators	Ives (IVE)	Don-jo, Rockwood, Hager
Locksets	Falcon (FAL)	Schlage (SCH)
Aluminum Door Locks – Narrow Style	Adams Rite (ADA)	No Substitute
Hospital Latches	Glynn-Johnson (GLY)	No Substitute
Exit Devices & Mullions	Adams Rite (ADA) or Falcon (FAL)	No Substitute
Key Pad Locks	Schlage (SCH)	No Substitute
Electric Strikes	Adams Rite (ADA) or Von Duprin (VON)	No Substitute

Door Closers	Falcon (FAL)	No Substitute
Door Closers Concealed	LCN (LCN)	No Substitute
Electro-Mechanical Automatic Operators	See Section 08720	See Section 08720
Door Pulls at Aluminum Doors	Kawneer (KAW)	No Substitute
Door Trim	Ives (IVE)	Don-jo, Rockwood
Protection Plates	Ives (IVE)	Don-jo, Rockwood
Overhead Stops	Glynn-Johnson (GLY)	Rixson, Sargent
	Dor-O-Matic (DOR)	
Stops	Ives (IVE)	Don-jo, Rockwood
Thresholds	Pemco (PEM)	No Substitute
Weatherstripping	Pemco	National Guard Products
Silencers	Ives (IVE)	Don-jo, Rockwood
Magnetic Holders	LCN (LCN)	Rixson, Sargent
Latch Protector	Ives (IVE)	Don-jo, Rockwood
Bi-pass Hardware	Hager (HAG)	Henderson, Stanley
Bi-fold Hardware	Hager (HAG)	Henderson, Stanley
Robe Hooks	Bobrick (BOB)	No Substitute
Cylinders & Keying	Schlage (SCH)	No Substitute
Button Mini Boxes, Cobra Locks	Schlage Electronic Security (SCE)	No Substitute
Key Cabinets	Telkee (TEL)	HPC, Lund
Auto Operators	Record-USA (REC)	Besam
Keypad Locksets	Yale (YAL)	No Substitute
Wire Mesh Gates Standard Door Locks	Wire Crafters or Folding Guard	No Substitute

C. Hand of Door: Drawings show direction of slide, swing, or hand of each door leaf. Furnish each item of hardware for proper installation and operation of door movement as shown.

D. Where the hardware specified is not adaptable to the finished shape or size of the members requiring hardware, furnish suitable types having the same operation and quality as the type specified, subject to the Architect's approval.

2.2 MATERIALS

A. Fasteners
   1. Provide hardware manufactured to conform to published templates, generally prepared for machine screw installation.
   2. Furnish screws for installation with each hardware item. Finish exposed (exposed under any condition) screws to match hardware finish, or, if exposed in surfaces of other work, to match finish of this other work as closely as possible including “prepared for paint” surfaces to receive painted finish.
   3. Provide concealed fasteners for hardware units that are exposed when door is closed except to the extent that no standard units of type specified are available with concealed fasteners. Do not use thru-bolts for installation where bolt head or nut on opposite face is exposed in other work unless their use is the only means of reinforcing the work adequately to fasten the hardware securely. Review door specification and advise Architect if thru-bolts are required.

4. Hardware shall be installed with the fasteners provided by the hardware manufacturer.

B. Hinges
1. Provide five-knuckle, ball bearing hinges of type, material, and height as outlined in the following guide for this specification:
   a. 1-3/4 inch thick doors, up to and including 36 inches wide:
      Exterior: standard weight, BB1191 stainless steel, 4-1/2 inches high
      Interior: standard weight, BB1279 steel, 4-1/2 inches high
   b. 1-3/4 inch thick doors over 36 inches wide:
      Exterior: heavy weight, BB1199 stainless steel, 4-1/2 inches high
      Interior: heavy weight, BB1168 steel, 4-1/2 inches high
2. Provide three hinges per door leaf for doors 90 inches or less in height, and one additional hinge for each 30 inches of additional door height.
3. Hinge Pins: Except as otherwise indicated, provide hinge pins as follows:
   a. Steel Hinges: Steel pins
   b. Non-Ferrous Hinges: Stainless steel pins
   c. Out-Swinging Exterior Doors: Non-removable pins
   d. Out-Swinging Interior Lockable Doors: Non-removable pins
   e. Interior Non-lockable Doors: Non-rising pins
4. Adjust hinge width as required for door, frame, and/or wall conditions to allow proper degree of opening.
5. Provide hinges with electrified option where specified. Provide with sufficient number and gage of concealed wires to accommodate electric function of specified hardware. Locate electric hinge nearest to the electrified locking component.
6. Provide mortar guard for each electrified hinge specified, unless specified in hollow metal frame specification.

C. Emergency Release Pivots
1. Provide emergency release pivot sets, where specified, offset-hung to allow door to swing open in opposite direction unless detailed otherwise.

D. Double Lipped Strike
1. Provide double lip strike, where specified, offset-hung to allow door to swing open in opposite direction unless detailed otherwise. Size for specific frame depth. Coordinate special latchbolt-hole location and/or special template, as required, to operate with the mortise lock being used as specified.
2. Provide a compatible emergency stop/release as recommended by the manufacturer of the double lip strike or engineered to operate with the double lip strike.

E. Emergency Stop/Release
1. Provide emergency stop/release, where specified, for doors with double lip strikes offset-hung to allow door to swing open in opposite direction unless detailed otherwise.

F. Flush Bolts
1. Provide automatic and manual flush bolts with stainless steel face plates, levers, and guides and strikes. Provide 12 inch steel rods at doors up to 90 inches in height. Top rods at manual flush bolts for doors over 90 inches in height shall be increased by 6 inches for each additional 6 inches of door height. Provide dust-proof strikes at each bottom flush bolt.

G. Coordinators
1. Provide a bar-type coordinating device, surface applied to the underside of the stop at the frame head where pairs of doors are equipped with automatic flush bolts, an astragal, or other hardware that requires synchronized closing of the doors.

2. Provide a filler bar of the correct length for the unit to span the entire width of the opening, and appropriate brackets for parallel arm door closers and surface vertical rod exit device strikes. Factory-prep coordinators for vertical rod devices if required.

H. Aluminum Door Locks - Narrow Style
1. Provide narrow style aluminum door locks as specified. Cylinders: Refer to 2.4 KEYING.
2. Provide locks with a 1-1/8 inches, or 1-1/2 inches backset as required for door detail with a full 5/8" throw latchbolt.
3. Provide manufacturers' standard strikes unless extended lip strikes are necessary to protect trim.

I. Cylindrical Locks - Grade 1
1. Provide Grade 1 cylindrical locks, where specified, conforming to ANSI A156.2 Series 4000, Grade 1. Cylinders: Refer to 2.4 KEYING.
2. Provide locksets able to withstand 1500 inch pounds of torque applied to the locked outside lever without gaining access per ANSI A156.2 Abusive Locked Lever Torque Test and cycle tested to 3 million cycles per ANSI A156.2 Cycle Test.
3. Provide locks with a standard 2-3/4 inches backset, unless noted otherwise, with a 1/2 inch latch throw. Provide proper latch throw for UL listing at pairs.
4. Provide locksets with separate anti-rotation through-bolts, and shall have no exposed screws. Levers shall operate independently, and shall have two external return spring cassettes mounted under roses to prevent lever sag.
5. Provide standard ASA strikes unless extended lip strikes are necessary to protect trim.
6. Provide electrical options as scheduled. Provide power supplies, recommended and approved by the manufacturer of the electrified lock and other components requiring a power supply.
7. Lever trim shall be solid cast levers without plastic inserts, and wrought roses on both sides. Locksets shall be through-bolted to assure proper alignment.
   a. Lever design shall be Falcon Dane.
   b. Lever trim on the secure side of doors serving rooms considered by the authority having jurisdiction to be hazardous shall have a tactile warning.

J. Mortise Locks - Push/Pull Trim
1. Provide mortise locks with push/pull trim, where specified, certified as ANSI A156.13, Grade 1 Operational, Grade 1 Security, and manufactured from heavy gauge steel, containing components of steel with a zinc dichromate plating for corrosion resistance. Lock case shall be multi-function and field reversible for handing without opening the case. Cylinders: Refer to 2.4 KEYING.
2. Provide locks with a standard 2-3/4 inches backset with a full 3/4 inch throw stainless steel mechanical anti-friction latchbolt. Deadbolt shall be a full 1 inch throw, constructed of stainless steel.
3. Provide standard ASA strikes unless extended lip strikes are necessary to protect trim.
4. Trim shall be push paddle mounted up and pull paddle mounted down except at psychiatric or security areas provide both paddles mounted down for safety, unless noted otherwise.
   a. Trim on the secure side of doors serving rooms considered by the authority having jurisdiction to be hazardous shall have a tactile warning.

K. Exit Devices – Heavy Duty
1. Exit devices shall be tested to ANSI/BHMA A156.3 Grade 1, and UL listed for Panic Exit and/or Fire Exit Hardware. Cylinders: Refer to 2.4 KEYING.
2. Provide touchpad type exit devices, fabricated of stainless steel, or aluminum, plated to the standard architectural finishes to match the balance of the door hardware.
3. Exit devices shall incorporate a fluid damper or other device that eliminates noise associated with exit device operation. Touchpad shall extend a minimum of one half of the door width,

but not the full length of the exit device rail. End-cap will have two-point attachment to door. For all other finishes, the touch-pad finish shall be of compatible finish to exit device. Only compression springs will be used in devices, latches, and outside trims or controls.

4. Devices to incorporate a dead-latching feature for security and/or for future addition of alarm kits and/or other electrical requirements.
5. Vertical rod devices shall be capable of being field modified to less bottom rod devices by removal of bottom rod and adding firing pin(s), if required at fire rated openings.
6. Provide manufacturer's standard strikes.
7. Provide exit devices cut to door width and height. Locate exit devices at a height recommended by the exit device manufacturer, allowable by governing building codes, and approved by the Architect.
8. Mechanism case shall sit flush on the face of all flush doors, or spacers shall be furnished to fill gaps behind devices. Where glass trims or molding projects off the face of the door, provide glass bead kits.
9. Non-fire-rated exit devices shall have hex key dogging.
10. Where lever handles are specified as outside trim for exit devices, provide heavy-duty lever trims with forged or cast escutcheon plates. Provide vandal-resistant levers that will travel to a 90-degree down position when more than 35 pounds of torque are applied, and which can easily be reset.
    a. Lever style will match the lever style of the locksets.
11. Exit devices for fire rated openings shall be UL labeled fire exit hardware.
12. Provide electrical options as scheduled.
13. Provide power transfer sufficient for number and gage of wires to accommodate electric function of specified hardware. Electric power transfer is to be located per manufacturer's template and UL requirements, unless interference with operation of door or other hardware items.
14. Provide power supplies, recommended and approved by the manufacturer of the electrified exit device and other components requiring a power supply.

L. Key Pad Locks
1. Provide manually programmable locks conforming to ANSI A156 standards. Cylinders: Refer to 2.4 KEYING.
2. Provide manufacturer's standard strikes.
3. Provide keypad product with a minimum of 100 users.

M. Electric Strikes
1. Provide electric strikes, as specified, designed for use with the type locks shown at each opening.
2. Provide electric strikes UL Listed as burglary-resistant electric door strikes and, where required, shall be UL Listed as electric strikes for fire doors and frames. Provide fail-secure type electric strikes unless specified otherwise.
3. Provide transformers and rectifiers for each strike as required. Verify voltage with electrical contractor.

N. Door Closers – Heavy Duty
1. Provide heavy-duty door closers at exterior doors where specified, certified to ANSI/BHMA A156.4 Grade 1 requirements by a BHMA certified independent testing laboratory. Surface mounted mechanical closers shall be certified to exceed ten million (10,000,000) full load cycles by a recognized independent testing laboratory. Closers shall be ISO 9000 certified. Units shall be stamped with date of manufacture code.

2. Door closers shall have fully hydraulic, full rack and pinion action with a high strength cast iron cylinder and shall utilize full complement bearings at shaft. Cylinder body shall be 1-1/2 inch diameter, and double heat-treated pinion shall be 11/16 inch diameter.
3. Provide hydraulic fluid requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to -30 degrees F. Fluid shall be fireproof and shall pass the requirements of the UL10C "positive pressure" fire test.
4. Spring power shall be continuously adjustable over the full range of closer sizes, and allow for reduced opening force as required by accessibility codes and standards. Hydraulic regulation shall be by tamper-proof, non-critical valves. Closers shall have separate adjustment for latch speed, general speed, and back check.
5. Provide closers with a solid forged steel main arms and factory assembled heavy-duty forged forearms for parallel arm closers. When closers are parallel arm mounted, provide closers which mount within a 6 inch top rail without the use of a mounting plate so that closer shall not be visible through vision panel from pull side.
6. Provide special templates, drop plates, mounting brackets, or adapters for arms as required for details, overhead stops, and other finish hardware items interfering with closer mounting.
7. Mount closers inside of exterior and vestibule doors.
8. Door closers meeting this specification: As scheduled.

O. Electro-Mechanical Automatic Operators
1. Specified in Section 08720.

P. Door Trim
1. Provide flush pulls as specified. Where required, provide back-to-back mounted model.
2. Provide wire pulls of solid bar stock, diameter and length as scheduled.

Q. Protection Plates
1. Provide kick plates and armor plates minimum of 0.050 inch thick and beveled 4 edges as scheduled. Furnish with machine or wood screws, finished to match plates. Sizes of plates shall be as follows:
   a. Kick Plates – 10 inches high x 2 inches less width of door on single doors, 1 inch less width of door on pairs
   b. Armor Plates – 30 inches high x 2 inches less width of door on single doors, 1 inch less width of door on pairs. If labeled door doesn't allow 30 inch high armor plate, provide 16 inch high kick plate.
   c. Standard finish – stainless steel.
2. Acceptable manufacturers and/or products: Ives, Don-Jo, Rockwood.

R. Overhead Stops and Overhead Stop/Holders
1. Provide heavy duty concealed, mounted overhead stop or overhead stop/holder as specified for exterior and interior vestibule single acting doors.
2. Provide medium duty, concealed mounted overhead stop as specified for double acting doors with emergency release hardware.
3. Provide heavy- or medium duty and concealed or surface mounted overhead stop (on interior side of room; not corridor), or overhead stop/holder for interior doors as specified. Provide medium duty, surface mounted overhead stop (on interior side of room; not corridor) for interior doors and at any door that swings more than 140 degrees before striking a wall; opens against equipment, casework, sidelights, and/or where conditions do not allow a wall stop; or a floor stop presents a tripping hazard.
4. Where overhead holders are specified, provide friction type at doors without a closer and positive type at doors with a closer.

2.3 FINISHES

A. Finish of all hardware shall be satin chrome plated US26D (BHMA 626) with the exceptions as follows:
   1. Door Closers: Metallic Powder Coat to Match.
   2. Latch Protectors: To match.
   3. Weather-stripping: Clear Anodized Aluminum.
   4. Thresholds: Mill Finish Aluminum.

2.4 KEYING

A. Provide cores for the Owner's Existing Schlage key system conforming to the following requirements:
   1. Provide removable core cylinders at all keyed devices. Provide construction cores with construction master keying for use during construction. The temporary construction cores are to be returned to the hardware supplier.
   2. Provide permanent cores keyed by the manufacturer or authorized distributor into the existing key system as directed by the Owner. Provide owner with a copy of the bitting list, return receipt requested.
   3. Provide keys as follows:
      a. GM - Grand Master opens all doors (Provide 2 non-duplicating keys).
      b. M - Interior Master Janitorial opens all doors except Medical Records and Medical Waste(Provide 2 non-duplicate keys) Janitorial use access control employee entry.
      c. SM - Sub Master - Selected Employees open doors listed (provide 6 non-duplicating keys).
      d. K1 - Keyed alike, exterior doors only (Provide 6 non-duplicating keys).
      e. K - Keyed differently, opens assigned office (Provide 2 keys for each office).
      f. K2 - Keyed different, exterior door with rechangeable core.
      g. IC - Interchangeable Key Core
   4. Visual key control:
      a. Keys shall be stamped with their respective key set number and stamped "DO NOT DUPLICATE".
      b. All keys shall be stamped with their respective key set letters.
      c. Do not stamp any keys with the factory key change number.
      d. Do not stamp any cores with key set on face (front) of Core. Stamp on back or side of cores so not to be visible when core is in cylinder.
   5. Deliver all keys and/or key blanks from the factory or authorized distributor directly to the Owner in sealed containers, return receipt requested. Failure to comply with these requirements may be cause to require replacement of all or any part of the keying system that was compromised at no additional cost to the Owner.
   6. Approved products: Schlage Everest B, No Substitute. Restricted keyway authorization letter included in this master specification.

2.5 KEY CONTROL SYSTEM

A. Provide a key control system, including envelopes, labels, tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet; all as recommended by system manufacturer, with capacity for 150% of the number of locks required for the Project.
   1. Provide complete cross index system set up by the hardware supplier, and place keys on markers and hooks in the cabinet as determined by the final key schedule.
   2. Provide hinged-panel type cabinet for wall mounting.

PART 3 - EXECUTION 3.1

EXAMINATION

A. Prior to installation of any hardware, examine all doors, frames, walls and related items for conditions that would prevent proper installation of finish hardware. Correct all defects prior to proceeding with installation.

3.2 INSTALLATION

A. Coordination:
   1. Prior to installation of hardware, General Contractor will schedule and hold a meeting with the installer for the purpose of instructing installers on proper installation and adjustment of finish hardware.
   2. Prior to ordering electrified hardware, General Contractor will schedule and hold a meeting with the installer for the purpose of coordinating finish hardware with security, electrical, doors and frames, and other related suppliers.

B. Hardware will be installed by qualified tradesmen, skilled in the application of commercial grade hardware.

C. Mount hardware units at heights indicated in "Recommended Locations for Builders Hardware for Standard Steel Doors and Frames" by the Door and Hardware Institute.

D. Install each hardware item in compliance with the manufacturer's instructions and recommendations, using only the fasteners provided by the manufacturer.

E. Do not install surface mounted items until finishes have been completed on the substrate. Protect all installed hardware during painting.

F. Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.

G. Operating parts shall move freely and smoothly without binding, sticking, or excessive clearance.

H. Existing Doors and/or Frames: Remove existing hardware being replaced, tag, and store according to contract documents. Field modifies and prepares existing door and/or frame for new hardware being installed. Provide necessary fillers, Dutchmen, reinforcements, and fasteners for mounting new hardware and to cover existing door/frame preps.

I. Wire (including low voltage), conduit, junction boxes, and pulling of wire are by Division 16, Electrical. Electrical Contractor shall connect wire to door position switches and run wire to central room or area as directed by the Architect. Wires shall be tested and labeled with the Architect's opening number. Connections to/from power supplies to electrified hardware and any connection to fire/smoke alarm system, and/or smoke evacuation system where specified is by Division 16 Electrical.

3.3 ADJUSTING, CLEANING, AND DEMONSTRATING

A. Adjust and check each operating item of hardware and each door, to ensure proper operation or function of every unit. Replace units which cannot be adjusted to operate freely and smoothly.

B. Where door hardware is installed more than one month prior to acceptance or occupancy of a space or area, return to the installation during the week prior to acceptance or occupancy and make a final check and adjustment of all hardware items in such space or area. Clean operating items as necessary to restore proper function and finish of hardware and doors. Adjust door control devices to compensate for final operation of heating and ventilating equipment.

C. Clean adjacent surfaces soiled by hardware installation.

D. Instruct Owner's personnel in the proper adjustment, lubrication, and maintenance of door hardware and hardware finishes.

3.4 PROTECTION

A. Provide for the proper protection of complete items of hardware until the Owner accepts the project as complete. Damaged or disfigured hardware shall be replaced or repaired by the responsible party.

3.5 HARDWARE SCHEDULE

A. Provide hardware for each door to comply with requirements of Section "Finish Hardware," hardware set numbers indicated in door schedule, and in the following schedule of hardware sets.

B. It is intended that the following schedule includes complete items of finish hardware necessary to complete the work. If a discrepancy is found in the schedule such as a missing item, improper hardware for a frame, door or fire codes, the preamble will be the deciding document.

C. Locksets, exit devices, and other hardware items are referenced in the Hardware Sets for series, type, and function. Refer to the preamble for special features, options, cylinders/keying, and other requirements.

D. Hardware Sets

HW SET: 01 INNER VESTIBULE, DOOR OFF OF COMMON LOBBY, ALUMINUM AUTOMATIC SLIDING DOOR

1	EA	CYLINDER HOUSING	80-103 X 626	SCH
1	EA	CONSTRUCTION CORE	80-035 X GRN	SCH
1	EA	CYLINDER CORE	80-036 X 626 X B123 KEYWAY	SCH
1	EA	INSIDE THUMBTURN	AS SPECIFIED IN SECTION 08461	
1	EA	BUTTON MINI BOX	660-PB	SCE
		ELECTRIC LOCKING	AS SPECIFIED IN SECTION 08461	
		BALANCE OF HARDWARE	AS SPECIFIED IN SECTION 08461	

ALL WIRING AND CONNECTIONS BY DIVISION 16.
OPERATIONAL DESCRIPTION:
IMMEDIATE EGRESS ALWAYS ALLOWED. DOOR REMAINS LOCKED DURING BUSINESS HOURS. HEADER MOUNTED MOTION SENSOR IS DEACTIVATED FOR INCOMING TRAFFIC. AUTOMATIC OPERATION FOR ACCESS BY REMOTE RELEASE AT RECEPTIONIST AND NURSE STATION, OR AUTOMATIC OPERATION FOR EGRESS BY MOTION SENSOR IN HEADER IN WAITING AREA WHICH RELEASES SECURE DOORS AND SIGNALS DOORS TO AUTOMATICALLY OPEN. LOCATE REMOTE RELEASE AS DIRECTED BY ARCHITECT.

A. POWER ON, FIRE ALARM QUIET:
- AUTOMATIC SLIDING DOORS ARE SECURE/UNSECURED VIA ROCKER SWITCH LOCATED IN DOOR OPERATOR AND LOCKING MECHANISM PER SECTION 08460.

B. POWER OUT, FIRE ALARM QUIET:
- AUTOMATIC SLIDING DOORS ARE INOPERABLE DUE TO LOSS OF POWER. EMERGENCY PANIC HARDWARE (PART OF DOOR PACKAGE) WILL ALLOW EGRESS FROM WAITING ROOM BUT NOT GAIN ENTRY FROM OUTSIDE WITHOUT KEY.

C. POWER ON, FIRE ALARM ACTIVE:
- FIRE ALARM DE-ENERGIZES AUTOMATIC SLIDING DOORS. AUTOMATIC SLIDING DOORS ARE INOPERABLE DUE TO LOSS OF POWER. EMERGENCY PANIC HARDWARE (PART OF DOOR PACKAGE) WILL ALLOW EGRESS FROM WAITING ROOM BUT NOT GAIN ENTRY FROM OUTSIDE WITHOUT KEY.

HW SET: 02 OUTER VESTIBULE, ALUMINUM AUTOMATIC SLIDING DOOR

1	EA	CYLINDER HOUSING	80-103 X 626	SCH
1	EA	CYLINDER CORE	80-036 X 626 X B123 KEYWAY	SCH
1	EA	CONSTRUCTION CORE	80-035 X GRN	SCH

1	EA	TURN	AS SPECIFIED IN SECTION 08461	
		BALANCE OF HARDWARE	AS SPECIFIED IN SECTION 08461	

ALL WIRING AND CONNECTIONS BY DIVISION 16.
OPERATIONAL DESCRIPTION:
IMMEDIATE EGRESS ALWAYS ALLOWED. DOOR REMAINS UNLOCKED DURING BUSINESS HOURS. AUTOMATIC OPERATION FOR ACCESS OR EGRESS BY MOTION SENSOR IN HEADER ON BOTH SIDES WHICH SIGNALS DOORS TO AUTOMATICALLY OPEN.

A. POWER ON, FIRE ALARM QUIET:
- AUTOMATIC SLIDING DOORS ARE SECURE/UNSECURED VIA ROCKER SWITCH LOCATED IN DOOR OPERATOR AND LOCKING MECHANISM PER SECTION 08460.

B. POWER OUT, FIRE ALARM QUIET:
- AUTOMATIC SLIDING DOORS ARE INOPERABLE DUE TO LOSS OF POWER. EMERGENCY PANIC HARDWARE (PART OF DOOR PACKAGE).

C. POWER ON, FIRE ALARM ACTIVE
- FIRE ALARM DE-ENERGIZES AUTOMATIC SLIDING DOORS. AUTOMATIC SLIDING DOORS ARE INOPERABLE DUE TO LOSS OF POWER. EMERGENCY PANIC HARDWARE (PART OF DOOR PACKAGE) WILL ALLOW EGRESS FROM WAITING ROOM.

HW SET: 03 ENTRANCE, ALUMINUM AUTOMATIC SLIDING DOOR

1	EA	CYLINDER HOUSING	80-103 X 626	SCH
1	EA	CONSTRUCTION CORE	80-035 X GRN	SCH
1	EA	CYLINDER CORE	80-036 X 626 X B123 KEYWAY	SCH
1	EA	INSIDE THUMBTURN	AS SPECIFIED IN SECTION 08461	
2	EA	BUTTON MINI BOX	660-PB	SCE
		ELECTRIC LOCKING	AS SPECIFIED IN SECTION 08461	
		BALANCE OF HARDWARE	AS SPECIFIED IN SECTION 08461	

ALL WIRING AND CONNECTIONS BY DIVISION 16.
OPERATIONAL DESCRIPTION:
IMMEDIATE EGRESS ALWAYS ALLOWED. DOOR REMAINS LOCKED DURING BUSINESS HOURS. HEADER MOUNTED MOTION SENSOR IS DEACTIVATED FOR INCOMING TRAFFIC. AUTOMATIC OPERATION FOR ACCESS BY REMOTE RELEASE AT RECEPTIONIST AND NURSE STATION, OR AUTOMATIC OPERATION FOR EGRESS BY MOTION SENSOR IN HEADER IN WAITING AREA WHICH RELEASES SECURE DOORS AND SIGNALS DOORS TO AUTOMATICALLY OPEN. LOCATE REMOTE RELEASES AS DIRECTED BY ARCHITECT.

A. POWER ON, FIRE ALARM QUIET:
- AUTOMATIC SLIDING DOORS ARE SECURE/UNSECURED VIA ROCKER SWITCH LOCATED IN DOOR OPERATOR AND LOCKING MECHANISM PER SECTION 08460.

B. POWER OUT, FIRE ALARM QUIET:
- AUTOMATIC SLIDING DOORS ARE INOPERABLE DUE TO LOSS OF POWER. EMERGENCY PANIC HARDWARE (PART OF DOOR PACKAGE) WILL ALLOW EGRESS FROM WAITING ROOM BUT NOT GAIN ENTRY FROM OUTSIDE WITHOUT KEY. C SLIDING DOORS ARE INOPERABLE DUE TO LOSS OF POWER. EMERGENCY PANIC HARDWARE (PART OF DOOR PACKAGE) WILL ALLOW EGRESS FROM WAITING ROOM BUT NOT GAIN ENTRY FROM OUTSIDE WITHOUT KEY.

HW SET: 04 SECURE VESTIBULE, DOOR OFF OF COMMON LOBBY - ALUM SGLE WITH PANIC DEVICE, ELEC STRIKE, AND AUTO OPERATOR – INTERIOR VESTIBULE

3	EA	HINGES	AS SPECIFIED	HAG
1	EA	ALUMINUM DOOR PANIC DEVICE	8400 SERIES C. POWER ON, FIRE ALARM ACTIVE:	ADA

			- FIRE ALARM DE-ENERGIZES AUTOMATIC SLIDING DOORS. AUTOMATI	
1	EA	CYLINDER HOUSING	80-103 X 626	SCH
1	EA	CONSTRUCTION CORE	80-035	SCH
1	EA	ELECTRIC STRIKE	7100 FAIL SECURE	ADA
1	EA	PERMANENT CORE	80-036 B123 KEYWAY	SCH
1	EA	LOCK GUARD	LG11	IVE
1	EA	OFFSET DOOR PULL	CO-9 BY ALUMINUM DOOR SUPPLIER	KAW
1	EA	AUTO. OPERATOR	CL-204R1 SURFACE MOUNT (AS SPECIFIED IN 08720)	REC
1	EA	OVERHEAD STOP	CONCEALED HEAVY DUTY 100S SERIES	GLY
1	SET	SEALS	BY ALUMINUM DOOR SUPPLIER	
2	EA	WALL PLATE SWITCH	AS SPECIFIED IN 08720	LCN
2	EA	BUTTON MINI BOX	660-PB	SCE

ALL WIRING AND CONNECTIONS BY DIVISION 16.
OPERATIONAL DESCRIPTION:
FOR CONTROLLED ENTRY (TOGGLE IN SECURE POSITION) -
IMMEDIATE EGRESS ALWAYS ALLOWED. MANUAL ACCESS BY KEY. AUTOMATIC OPERATION FOR ACCESS BY REMOTE RELEASE AT RECEPTIONIST AND NURSE STATION, OR AUTOMATIC OPERATION FOR EGRESS BY ACTUATOR IN WAITING AREA WHICH SIGNALS AUTOMATIC OPERATOR TO RELEASE ELECTRIC STRIKE AND OPEN DOOR. LOCATE REMOTE RELEASE AND ACTUATORS AS DIRECTED BY ARCHITECT.

FOR NON-CONTROLLED ENTRY (TOGGLE IN NON-SECURE POSITION) -
IMMEDIATE EGRESS ALWAYS ALLOWED. TOGGLE (BY OTHERS) IN AUTOMATIC OPERATOR HEAD TO RELEASE AND HOLD ELECTRIC STRIKE AND ENABLE OUTSIDE AUTOMATIC OPERATOR ACTUATOR. MANUAL OPERATION BY PUSH N' GO FEATURE OR AUTOMATIC OPERATION BY PUSHING EITHER ACTUATOR WHICH WILL SIGNAL AUTOMATIC OPERATOR TO OPEN DOOR. LOCATE ACTUATORS AS DIRECTED BY ARCHITECT.

A. POWER ON, FIRE ALARM QUIET:
- DOOR OPERATOR IS SECURE/UNSECURED VIA ROCKER SWITCH LOCATED IN DOOR OPERATOR.

B. POWER OUT, FIRE ALARM QUIET:
- DOOR OPERATOR IS INOPERABLE DUE TO LOSS OF POWER. ELECTRIC STRIKE "FAIL SECURE". HARDWARE WILL ALLOW EGRESS FROM WAITING ROOM BUT NOT GAIN ENTRY FROM OUTSIDE WITHOUT KEY.

C. POWER ON, FIRE ALARM ACTIVE:
- FIRE ALARM DE-ENERGIZES ELECTRIC STRIKE AND DOOR OPERATOR. DOOR OPERATOR IS INOPERABLE DUE TO LOSS OF POWER. ELECTRIC STRIKE "FAIL SECURE". HARDWARE WILL ALLOW EGRESS FROM WAITING ROOM BUT NOT GAIN ENTRY FROM OUTSIDE WITHOUT KEY.

HW SET: 05 NON-SECURE ENTRANCE - ALUM SGLE WITH LOCKSET AND AUTO OPERATOR

3	EA	HINGES	AS SPECIFIED	HAG
1	EA	ALUMINUM DOOR LOCK	4900 SERIES X LEVER TRIM	ADA
1	EA	CYLINDER HOUSING	80-103 X 626	SCH
1	EA	PERMANENT CORE	80-036 B123 KEYWAY	SCH
1	EA	CONSTRUCTION CORE	80-035	SCH
1	EA	OFFSET DOOR PULL	CO-9 BY ALUMINUM DOOR SUPPLIER	KAW
1	EA	AUTO. OPERATOR	CL-204R1 SURFACE MOUNT (AS SPECIFIED IN 08720)	REC
1	EA	OVERHEAD STOP	CONCEALED HEAVY DUTY 100S SERIES	GLY
1	SET	SEALS	BY ALUMINUM DOOR SUPPLIER	
1	EA	DOOR SWEEP	BY ALUMINUM DOOR SUPPLIER	PEM

1	EA	THRESHOLD	BY ALUMINUM DOOR SUPPLIER	PEM
2	EA	WALL PLATE SWITCH	AS SPECIFIED IN 08720	LCN

ALL WIRING AND CONNECTIONS BY DIVISION 16.
OPERATIONAL DESCRIPTION:
FOR NON-CONTROLLED ENTRY -
IMMEDIATE EGRESS ALWAYS ALLOWED. LOCKSET TO BE HELD BACK MANUALLY BY CYLINDER PRIOR TO ACTIVATING AUTOMATIC OPERATOR. MANUAL OPERATION BY PUSH N' GO FEATURE OR AUTOMATIC OPERATION PUSHING EITHER ACTUATOR WHICH WILL SIGNAL AUTOMATIC OPERATOR TO OPEN DOOR. LOCATE ACTUATORS AS DIRECTED BY ARCHITECT.

A. POWER ON, FIRE ALARM QUIET:
- DOOR OPERATOR IS SECURE/UNSECURED VIA ROCKER SWITCH LOCATED IN DOOR OPERATOR.

B. POWER OUT, FIRE ALARM QUIET:
- DOOR OPERATOR IS INOPERABLE DUE TO LOSS OF POWER. EGRESS AND ACCESS BY MANUALLY PUSHING/PULLING THE DOOR.

C. POWER ON, FIRE ALARM ACTIVE:
- FIRE ALARM DE-ENERGIZES DOOR OPERATOR. EGRESS AND ACCESS BY MANUALLY PUSHING/PULLING THE DOOR.

HW SET: 06 NON-SECURE ENTRANCE - ALUM STOREFRONT SGLE WITH PANIC DEVICE – EMERGENCY EGRESS FROM TREATMENT

3	EA	HINGES	AS SPECIFIED	HAG
1	EA	ALUMINUM DOOR PANIC DEVICE	8400 SERIES	ADA
1	EA	CYLINDER	80-103 X 626	SCH
1	EA	LOCK GUARD	LG11	IVE
1	EA	OFFSET DOOR PULL	CO-9 BY ALUMINUM DOOR SUPPLIER	KAW
1	EA	SURFACE CLOSER	SC81 HD X 689	FAL
1	EA	OVERHEAD STOP	CONCEALED HEAVY DUTY 100S SERIES	GLY
1	SET	SEALS	BY ALUMINUM DOOR SUPPLIER	
1	EA	DOOR SWEEP	368DN BY ALUMINUM DOOR SUPPLIER	PEM
1	EA	THRESHOLD	273 X 3DFG BY ALUMINUM DOOR SUPPLIER	PEM

HW SET: 07 SECURE ENTRANCE - ALUM SGLE WITH ACCESS CONTROL PANIC DEVICE – STAFF ENTRANCE

3	EA	HINGES	AS SPECIFIED	HAG
1	EA	ELECTRONIC TRIM	CO-100-993R-70-KP RHO 4B BD	SCE
1	EA	PERMANENT CORE	80-036 B123 KEYWAY	SCH
1	EA	CONSTRUCTION CORE	80-035	SCH
1	EA	PANIC DEVICE	24-R-EO	FAL
1	EA	SURFACE CLOSER	SC81 RW/PA X 689	FAL
1	EA	CLOSER MOUNTING PLATE	SC80 18-PA	FAL
1	EA	OVERHEAD STOP	CONCEALED HEAVY DUTY 100S SERIES	GLY
1	SET	SEALS	BY ALUMINUM DOOR SUPPLIER.	
1	EA	DOOR SWEEP	BY ALUMINUM DOOR SUPPLIER	PEM
1	EA	THRESHOLD	BY ALUMINUM DOOR SUPPLIER	PEM

HW SET: 08 SECURE ENTRANCE - ALUM SGLE WITH PANIC DEVICE, ELEC STRIKE, AND AUTO OPERATOR

3	EA	HINGES	AS SPECIFIED	HAG

1	EA	ALUMINUM DOOR PANIC DEVICE	8400 SERIES	ADA
1	EA	CYLINDER HOUSING	80-103 X 626	SCH
1	EA	PERMANENT CORE	80-036 B123 KEYWAY	SCH
1	EA	CONSTRUCTION CORE	80-035	SCH
1	EA	ELECTRIC STRIKE	7100 FAIL SECURE	ADA
1	EA	LOCK GUARD	LG11	IVE
1	EA	OFFSET DOOR PULL	CO-9	KAW
1	EA	AUTO. OPERATOR	8100 SERIES (AS SPECIFIED IN 08720)	REC
1	EA	OVERHEAD STOP	CONCEALED HEAVY DUTY 100S SERIES	GLY
1	SET	SEALS	BY ALUMINUM DOOR SUPPLIER.	
1	EA	DOOR SWEEP	BY ALUMINUM DOOR SUPPLIER	PEM
1	EA	THRESHOLD	BY ALUMINUM DOOR SUPPLIER	PEM
2	EA	WALL PLATE SWITCH	AS SPECIFIED IN 08720	REC
2	EA	BUTTON MINI BOX	660-PB	REC

ALL WIRING AND CONNECTIONS BY DIVISION 16.
OPERATIONAL DESCRIPTION:
FOR CONTROLLED ENTRY (TOGGLE IN SECURE POSITION) -
IMMEDIATE EGRESS ALWAYS ALLOWED. MANUAL ACCESS BY KEY. AUTOMATIC OPERATION FOR ACCESS BY REMOTE RELEASE AT RECEPTIONIST AND NURSE STATION, OR AUTOMATIC OPERATION FOR EGRESS BY ACTUATOR IN WAITING AREA WHICH SIGNALS AUTOMATIC OPERATOR TO RELEASE ELECTRIC STRIKE AND OPEN DOOR. LOCATE REMOTE RELEASE AND ACTUATORS AS DIRECTED BY ARCHITECT.

FOR NON-CONTROLLED ENTRY (TOGGLE IN NON-SECURE POSITION) -
IMMEDIATE EGRESS ALWAYS ALLOWED. TOGGLE (BY OTHERS) IN AUTOMATIC OPERATOR HEAD TO RELEASE AND HOLD ELECTRIC STRIKE AND ENABLE OUTSIDE AUTOMATIC OPERATOR ACTUATOR. MANUAL OPERATION BY PUSH N' GO FEATURE OR AUTOMATIC OPERATION BY PUSHING EITHER ACTUATOR WHICH WILL SIGNAL AUTOMATIC OPERATOR TO OPEN DOOR. LOCATE ACTUATORS AS DIRECTED BY ARCHITECT.

A. POWER ON, FIRE ALARM QUIET:
- DOOR OPERATOR IS SECURE/UNSECURED VIA ROCKER SWITCH LOCATED IN DOOR OPERATOR.

B. POWER OUT, FIRE ALARM QUIET:
- DOOR OPERATOR IS INOPERABLE DUE TO LOSS OF POWER. ELECTRIC STRIKE "FAIL SECURE". HARDWARE WILL ALLOW EGRESS FROM WAITING ROOM BUT NOT GAIN ENTRY FROM OUTSIDE WITHOUT KEY.

C. POWER ON, FIRE ALARM ACTIVE:
- FIRE ALARM DE-ENERGIZES ELECTRIC STRIKE AND DOOR OPERATOR. DOOR OPERATOR IS INOPERABLE DUE TO LOSS OF POWER. ELECTRIC STRIKE "FAIL SECURE". HARDWARE WILL ALLOW EGRESS FROM WAITING ROOM BUT NOT GAIN ENTRY FROM OUTSIDE WITHOUT KEY.

HW SET: 09NC SECURE VEST, DOOR OFF OF COMMON LOBBY - ALUM SGLE WITH MORT PANIC HDWE, ELEC STRIKE, AND AUTO OPERATOR – INTERIOR VESTIBULE (NEW CONSTRUCTION)

3	EA	HINGES	AS SPECIFIED	HAG
1	EA	PANIC HARDWARE	8400	ADA
1	EA	CYLINDER HOUSING	80-103 X 626	SCH
1	EA	PERMANENT CORE	80-036 B123 KEYWAY	SCH
1	EA	CONSTRUCTION CORE	80-035	SCH
1	EA	ELECTRIC STRIKE	7100 FAIL SECURE	ADA
1	EA	LOCK GUARD	LG11	IVE
1	EA	OFFSET DOOR PULL	CO-9 BY ALUMINUM DOOR SUPPLIER	KAW
1	EA	AUTO. OPERATOR	8100 SERIES	REC
1	EA	OVERHEAD STOP	CONCEALED HEAVY DUTY 100S SERIES	GLY

1	SET	SEALS	BY ALUMINUM DOOR SUPPLIER	
2	EA	WALL PLATE SWITCH	AS SPECIFIED IN 08720	LCN
2	EA	BUTTON MINI BOX	660-PB	SCE

ALL WIRING AND CONNECTIONS BY DIVISION 16.
OPERATIONAL DESCRIPTION:
FOR CONTROLLED ENTRY (TOGGLE IN SECURE POSITION) - IMMEDIATE EGRESS ALWAYS ALLOWED. MANUAL ACCESS BY KEY. AUTOMATIC OPERATION FOR ACCESS BY REMOTE RELEASE AT RECEPTIONIST AND NURSE STATION, OR AUTOMATIC OPERATION FOR EGRESS BY ACTUATOR IN WAITING AREA WHICH SIGNALS AUTOMATIC OPERATOR TO RELEASE ELECTRIC STRIKE AND OPEN DOOR. LOCATE REMOTE RELEASE AND ACTUATORS AS DIRECTED BY ARCHITECT.

FOR NON-CONTROLLED ENTRY (TOGGLE IN NON-SECURE POSITION) - IMMEDIATE EGRESS ALWAYS ALLOWED. TOGGLE (BY OTHERS) IN AUTOMATIC OPERATOR HEAD TO RELEASE AND HOLD ELECTRIC STRIKE AND ENABLE OUTSIDE AUTOMATIC OPERATOR ACTUATOR. MANUAL OPERATION BY PUSH N' GO FEATURE OR AUTOMATIC OPERATION BY PUSHING EITHER ACTUATOR WHICH WILL SIGNAL AUTOMATIC OPERATOR TO OPEN DOOR. LOCATE ACTUATORS AS DIRECTED BY ARCHITECT.

A. POWER ON, FIRE ALARM QUIET:
- DOOR OPERATOR IS SECURE/UNSECURED VIA ROCKER SWITCH LOCATED IN DOOR OPERATOR.
B. POWER OUT, FIRE ALARM QUIET:
- DOOR OPERATOR IS INOPERABLE DUE TO LOSS OF POWER. ELECTRIC STRIKE "FAIL SECURE". HARDWARE WILL ALLOW EGRESS FROM WAITING ROOM BUT NOT GAIN ENTRY FROM OUTSIDE WITHOUT KEY.
C. POWER ON, FIRE ALARM ACTIVE:
- FIRE ALARM DE-ENERGIZES ELECTRIC STRIKE AND DOOR OPERATOR. DOOR OPERATOR IS INOPERABLE DUE TO LOSS OF POWER. ELECTRIC STRIKE "FAIL SECURE". HARDWARE WILL ALLOW EGRESS FROM WAITING ROOM BUT NOT GAIN ENTRY FROM OUTSIDE WITHOUT KEY.

HW SET: 09RT SECURE VESTIBULE - ALUM SGLE WITH RIM PANIC HARDWARE AND AUTO OPERATOR (RETROFIT CONSTRUCTION)

3	EA	HINGES	AS SPECIFIED	HAG
1	EA	PANIC HARDWARE	24-R-NL-OP	FAL
1	EA	CYLINDER HOUSING	80-102 X 626	SCH
1	EA	PERMANENT CORE	80-036 B123 KEYWAY	SCH
1	EA	CONSTRUCTION CORE	80-035	SCH
1	EA	ELECTRIC STRIKE	6112 FSE 24VAC	VON
1	EA	OFFSET DOOR PULL	CO-9 BY ALUMINUM DOOR SUPPLIER	KAW
1	EA	AUTO. OPERATOR	8100 SERIES	REC
1	EA	OVERHEAD STOP	CONCEALED HEAVY DUTY 100S SERIES	GLY
1	SET	SEALS	BY ALUMINUM DOOR SUPPLIER	
2	EA	WALL PLATE SWITCH	AS SPECIFIED IN 08720	REC
2	EA	BUTTON MINI BOX	660-PB	SCE

ALL WIRING AND CONNECTIONS BY DIVISION 16.
OPERATIONAL DESCRIPTION:
FOR CONTROLLED ENTRY (TOGGLE IN SECURE POSITION) -
IMMEDIATE EGRESS ALWAYS ALLOWED. MANUAL ACCESS BY KEY. AUTOMATIC OPERATION FOR ACCESS BY REMOTE RELEASE AT RECEPTIONIST AND NURSE STATION, OR AUTOMATIC OPERATION FOR EGRESS BY ACTUATOR IN WAITING AREA WHICH SIGNALS AUTOMATIC OPERATOR TO RELEASE ELECTRIC STRIKE AND OPEN DOOR. LOCATE REMOTE RELEASE AND ACTUATORS AS DIRECTED BY ARCHITECT.

FOR NON-CONTROLLED ENTRY (TOGGLE IN NON-SECURE POSITION) -
IMMEDIATE EGRESS ALWAYS ALLOWED. TOGGLE (BY OTHERS) IN AUTOMATIC OPERATOR HEAD TO RELEASE AND HOLD ELECTRIC STRIKE AND ENABLE OUTSIDE AUTOMATIC OPERATOR ACTUATOR. MANUAL OPERATION BY PUSH N' GO FEATURE OR AUTOMATIC OPERATION BY PUSHING EITHER ACTUATOR WHICH WILL SIGNAL AUTOMATIC OPERATOR TO OPEN DOOR. LOCATE ACTUATORS AS DIRECTED BY ARCHITECT.

A. POWER ON, FIRE ALARM QUIET:
- DOOR OPERATOR IS SECURE/UNSECURED VIA ROCKER SWITCH LOCATED IN DOOR OPERATOR.

B. POWER OUT, FIRE ALARM QUIET:
- DOOR OPERATOR IS INOPERABLE DUE TO LOSS OF POWER. ELECTRIC STRIKE "FAIL SECURE". HARDWARE WILL ALLOW EGRESS FROM WAITING ROOM BUT NOT GAIN ENTRY FROM OUTSIDE WITHOUT KEY.

C. POWER ON, FIRE ALARM ACTIVE:
- FIRE ALARM DE-ENERGIZES ELECTRIC STRIKE AND DOOR OPERATOR. DOOR OPERATOR IS INOPERABLE DUE TO LOSS OF POWER. ELECTRIC STRIKE "FAIL SECURE". HARDWARE WILL ALLOW EGRESS FROM WAITING ROOM BUT NOT GAIN ENTRY FROM OUTSIDE WITHOUT KEY.

HW SET: 10NC NON-SECURE ENTRANCE - ALUM SGLE WITH MORTISE PANIC HARDWARE AND AUTO OPERATOR (NEW CONSTRUCTION)

3	EA	HINGES	AS SPECIFIED	HAG
1	EA	PANIC HARDWARE	8400	ADA
1	EA	CYLINDER HOUSING	80-103 X 626	SCH
1	EA	PERMANENT CORE	80-036 B123 KEYWAY	SCH
1	EA	CONSTRUCTION CORE	80-035	SCH
1	EA	LOCK GUARD	LG11	IVE
1	EA	OFFSET DOOR PULL	CO-9 BY ALUMINUM DOOR SUPPLIER	KAW
1	EA	AUTO. OPERATOR	8100 SERIES	REC
1	EA	OVERHEAD STOP	CONCEALED HEAVY DUTY 100S SERIES	GLY
1	SET	SEALS	BY ALUMINUM DOOR SUPPLIER	
1	EA	DOOR SWEEP	BY ALUMINUM DOOR SUPPLIER	PEM
1	EA	THRESHOLD	BY ALUMINUM DOOR SUPPLIER	PEM
2	EA	WALL PLATE SWITCH	AS SPECIFIED IN 08720	LCN

ALL WIRING AND CONNECTIONS BY DIVISION 16.
OPERATIONAL DESCRIPTION:
FOR NON-CONTROLLED ENTRY -
IMMEDIATE EGRESS ALWAYS ALLOWED. EXIT DEVICE TO BE MECHANICALLY DOGGED MANUALLY PRIOR TO ACTIVATING AUTOMATIC OPERATOR. MANUAL OPERATION BY PUSH N' GO FEATURE OR AUTOMATIC OPERATION PUSHING EITHER ACTUATOR WHICH WILL SIGNAL AUTOMATIC OPERATOR TO OPEN DOOR. LOCATE ACTUATORS AS DIRECTED BY ARCHITECT.

A. POWER ON, FIRE ALARM QUIET:
- DOOR OPERATOR IS SECURE/UNSECURED VIA ROCKER SWITCH LOCATED IN DOOR OPERATOR.

B. POWER OUT, FIRE ALARM QUIET:
- DOOR OPERATOR IS INOPERABLE DUE TO LOSS OF POWER. EGRESS AND ACCESS BY MANUALLY PUSHING/PULLING THE DOOR.

C. POWER ON, FIRE ALARM ACTIVE:
- FIRE ALARM DE-ENERGIZES DOOR OPERATOR. EGRESS AND ACCESS BY MANUALLY PUSHING/PULLING THE DOORS.

HW SET: 10RT NON-SECURE ENTRANCE - ALUM SGLE WITH RIM PANIC HARDWARE AND AUTO OPERATOR (RETROFIT CONSTRUCTION)

3	EA	HINGES	AS SPECIFIED	HAG
1	EA	PANIC HARDWARE	24-R-NL-OP	FAL
1	EA	CYLINDER HOUSING	80-102 X 626	SCH
1	EA	PERMANENT CORE	80-036 B123 KEYWAY	SCH
1	EA	CONSTRUCTION CORE	80-035	SCH
1	EA	OFFSET DOOR PULL	CO-9 BY ALUMINUM DOOR SUPPLIER	KAW
1	EA	AUTO. OPERATOR	8100 SERIES	REC
1	EA	OVERHEAD STOP	CONCEALED HEAVY DUTY 100S SERIES	GLY
1	SET	SEALS	BY ALUMINUM DOOR SUPPLIER	
1	EA	DOOR SWEEP	BY ALUMINUM DOOR SUPPLIER	PEM
1	EA	THRESHOLD	BY ALUMINUM DOOR SUPPLIER	PEM
2	EA	WALL PLATE SWITCH	AS SPECIFIED IN 08720	LCN

ALL WIRING AND CONNECTIONS BY DIVISION 16.
OPERATIONAL DESCRIPTION:
FOR NON-CONTROLLED ENTRY -
IMMEDIATE EGRESS ALWAYS ALLOWED . EXIT DEVICE TO BE MECHANICALLY DOGGED MANUALLY PRIOR TO ACTIVATING AUTOMATIC OPERATOR. MANUAL OPERATION BY PUSH N' GO FEATURE OR AUTOMATIC OPERATION PUSHING EITHER ACTUATOR WHICH WILL SIGNAL AUTOMATIC OPERATOR TO OPEN DOOR. LOCATE ACTUATORS AS DIRECTED BY ARCHITECT.

A. POWER ON, FIRE ALARM QUIET:
- DOOR OPERATOR IS SECURE/UNSECURED VIA ROCKER SWITCH LOCATED IN DOOR OPERATOR.

B. POWER OUT, FIRE ALARM QUIET:
- DOOR OPERATOR IS INOPERABLE DUE TO LOSS OF POWER. EGRESS AND ACCESS BY MANUALLY PUSHING/PULLING THE DOOR.

C. POWER ON, FIRE ALARM ACTIVE:
- FIRE ALARM DE-ENERGIZES DOOR OPERATOR. EGRESS AND ACCESS BY MANUALLY PUSHING/PULLING THE DOORS.

HW SET: 11NC SECURE ENTRANCE, DOOR OFF OF COMMON LOBBY - ALUM SGLE WITH MORT PANIC HDWE, ELEC STRIKE, AND AUTO OPERATOR (NEW CONSTRUCTION)

3	EA	HINGES	AS SPECIFIED	HAG
1	EA	PANIC HARDWARE	8400	ADA
1	EA	CYLINDER HOUSING	80-103 X 626	SCH
1	EA	PERMANENT CORE	80-036 B123 KEYWAY	SCH
1	EA	CONSTRUCTION CORE	80-035	SCH
1	EA	ELECTRIC STRIKE	7100 FAIL SECURE	ADA
1	EA	LOCK GUARD	LG11	IVE
1	EA	OFFSET DOOR PULL	CO-9 BY ALUMINUM DOOR SUPPLIER	KAW
1	EA	AUTO. OPERATOR	8100 SERIES	REC
1	EA	OVERHEAD STOP	CONCEALED HEAVY DUTY 100S SERIES	GLY
1	SET	SEALS	BY ALUMINUM DOOR SUPPLIER	
1	EA	DOOR SWEEP	BY ALUMINUM DOOR SUPPLIER	PEM
1	EA	THRESHOLD	BY ALUMINUM DOOR SUPPLIER	PEM
2	EA	WALL PLATE SWITCH	AS SPECIFIED IN 08720	LCN
2	EA	BUTTON MINI BOX	660-PB	SCE

ALL WIRING AND CONNECTIONS BY DIVISION 16.
OPERATIONAL DESCRIPTION:
FOR CONTROLLED ENTRY (TOGGLE IN SECURE POSITION) -
IMMEDIATE EGRESS ALWAYS ALLOWED. MANUAL ACCESS BY KEY. AUTOMATIC OPERATION FOR ACCESS BY REMOTE RELEASE AT RECEPTIONIST AND NURSE STATION, OR AUTOMATIC OPERATION FOR EGRESS BY ACTUATOR IN WAITING AREA WHICH SIGNALS AUTOMATIC OPERATOR TO RELEASE ELECTRIC STRIKE AND OPEN DOOR. LOCATE REMOTE RELEASE AND

ACTUATORS AS DIRECTED BY ARCHITECT.

FOR NON-CONTROLLED ENTRY (TOGGLE IN NON-SECURE POSITION) -
IMMEDIATE EGRESS ALWAYS ALLOWED. TOGGLE (BY OTHERS) IN AUTOMATIC OPERATOR HEAD TO RELEASE AND HOLD ELECTRIC STRIKE AND ENABLE OUTSIDE AUTOMATIC OPERATOR ACTUATOR. MANUAL OPERATION BY PUSH N' GO FEATURE OR AUTOMATIC OPERATION BY PUSHING EITHER ACTUATOR WHICH WILL SIGNAL AUTOMATIC OPERATOR TO OPEN DOOR. LOCATE ACTUATORS AS DIRECTED BY ARCHITECT.

A. POWER ON, FIRE ALARM QUIET:
- DOOR OPERATOR IS SECURE/UNSECURED VIA ROCKER SWITCH LOCATED IN DOOR OPERATOR.

B. POWER OUT, FIRE ALARM QUIET:
- DOOR OPERATOR IS INOPERABLE DUE TO LOSS OF POWER. ELECTRIC STRIKE "FAIL SECURE". HARDWARE WILL ALLOW EGRESS FROM WAITING ROOM BUT NOT GAIN ENTRY FROM OUTSIDE WITHOUT KEY.

C. POWER ON, FIRE ALARM ACTIVE:
- FIRE ALARM DE-ENERGIZES ELECTRIC STRIKE AND DOOR OPERATOR. DOOR OPERATOR IS INOPERABLE DUE TO LOSS OF POWER. ELECTRIC STRIKE "FAIL SECURE". HARDWARE WILL ALLOW EGRESS FROM WAITING ROOM BUT NOT GAIN ENTRY FROM OUTSIDE WITHOUT KEY.

HW SET: 11RT SECURE ENTRANCE - ALUM SGLE WITH RIM PANIC HDWE, ELEC STRIKE, AND AUTO OPERATOR (RETROFIT CONSTRUCTION)

3	EA	HINGES	AS SPECIFIED	HAG
1	EA	PANIC HARDWARE	24-R-NL-OP	FAL
1	EA	CYLINDER HOUSING	80-102 X 626	SCH
1	EA	PERMANENT CORE	80-036 B123 KEYWAY	SCH
1	EA	CONSTRUCTION CORE	80-035	SCH
1	EA	ELECTRIC STRIKE	6112 FSE 24VAC	VON
1	EA	OFFSET DOOR PULL	CO-9 BY ALUMINUM DOOR SUPPLIER	KAW
1	EA	AUTO. OPERATOR	9540 SERIES X RELAY BOARD (AS SPECIFIED IN 08720)	LCN
1	EA	OVERHEAD STOP	CONCEALED HEAVY DUTY 100S SERIES	GLY
1	SET	SEALS	BY ALUMINUM DOOR SUPPLIER	
1	EA	DOOR SWEEP	BY ALUMINUM DOOR SUPPLIER	PEM
1	EA	THRESHOLD	BY ALUMINUM DOOR SUPPLIER	PEM
2	EA	WALL PLATE SWITCH	AS SPECIFIED IN 08720	LCN
2	EA	BUTTON MINI BOX	660-PB	SCE

ALL WIRING AND CONNECTIONS BY DIVISION 16.
OPERATIONAL DESCRIPTION:
FOR CONTROLLED ENTRY (TOGGLE IN SECURE POSITION) -
IMMEDIATE EGRESS ALWAYS ALLOWED. MANUAL ACCESS BY KEY. AUTOMATIC OPERATION FOR ACCESS BY REMOTE RELEASE AT RECEPTIONIST AND NURSE STATION, OR AUTOMATIC OPERATION FOR EGRESS BY ACTUATOR IN WAITING AREA WHICH SIGNALS AUTOMATIC OPERATOR TO RELEASE ELECTRIC STRIKE AND OPEN DOOR. LOCATE REMOTE RELEASE AND ACTUATORS AS DIRECTED BY ARCHITECT.

FOR NON-CONTROLLED ENTRY (TOGGLE IN NON-SECURE POSITION) -
IMMEDIATE EGRESS ALWAYS ALLOWED. TOGGLE (BY OTHERS) IN AUTOMATIC OPERATOR HEAD TO RELEASE AND HOLD ELECTRIC STRIKE AND ENABLE OUTSIDE AUTOMATIC OPERATOR ACTUATOR. MANUAL OPERATION BY PUSH N' GO FEATURE OR AUTOMATIC OPERATION BY PUSHING EITHER ACTUATOR WHICH WILL SIGNAL AUTOMATIC OPERATOR TO OPEN DOOR. LOCATE ACTUATORS AS DIRECTED BY ARCHITECT.

A. POWER ON, FIRE ALARM QUIET:

- DOOR OPERATOR IS SECURE/UNSECURED VIA ROCKER SWITCH LOCATED IN DOOR OPERATOR.

B. POWER OUT, FIRE ALARM QUIET:
- DOOR OPERATOR IS INOPERABLE DUE TO LOSS OF POWER. ELECTRIC STRIKE “FAIL SECURE”. HARDWARE WILL ALLOW EGRESS FROM WAITING ROOM BUT NOT GAIN ENTRY FROM OUTSIDE WITHOUT KEY.

C. POWER ON, FIRE ALARM ACTIVE:
- FIRE ALARM DE-ENERGIZES ELECTRIC STRIKE AND DOOR OPERATOR. DOOR OPERATOR IS INOPERABLE DUE TO LOSS OF POWER. ELECTRIC STRIKE “FAIL SECURE”. HARDWARE WILL ALLOW EGRESS FROM WAITING ROOM BUT NOT GAIN ENTRY FROM OUTSIDE WITHOUT KEY.

HW SETS: 12-17 – NOT USED

HW SET: 18 SECURE ENTRANCE - HOLLOW METAL SGLE WITH ACCESS CONTROL PANIC DEVICE – STAFF ENTRANCE

3	EA	HINGES	B1191 4-1/2 X 4-1/2 NRP	HAG
1	EA	ELEC TRIM	CO-100-993R-70-KP-RHO	SCE
1	EA	PANIC DEVICE	25-R-EO SERIES	FAL
1	EA	SURFACE CLOSER	SC71 SS	FAL
1	EA	LOCK GUARD	LG11	IVE
1	EA	PERMANENT CORE	80-036 B123 KEYWAY	SCH
1	EA	CONSTRUCTION CORE	80-035	SCH
1	SET	SEALS	290AV	PEM
1	EA	DOOR SWEEP	368 DN	PEM
1	EA	THRESHOLD	2001 AT	PEM

HW SET: 18EX SECURE EXTERIOR DOOR - HOLLOW METAL SGLE – SPRINKLER, ELECTRICAL, STORAGE ROOM

3	EA	HINGES	B1191 4-1/2 X 4-1/2 NRP	IAG
1	EA	LOCKSET	B581BD D X 626	AL
1	EA	PERMANENT CORE	80-036 B123 KEYWAY	CH
1	EA	CONSTRUCTION CORE	80-035	CH
1	EA	SURFACE CLOSER	SC71 SS	AL
1	SET	SEALS	303AS	EM
1	EA	DRIP CAP	346C	EM
1	EA	THRESHOLD	2005AT	EM

HW SET: 19 EMERGENCY EXIT/EGRESS DOOR - HOLLOW METAL SGLE WITH RIM PANIC HARDWARE – EMERGENCY EXIT OFF TREATMENT ROOM

3	EA	HINGES	B1191 4-1/2 X 4-1/2 NRP	HAG
1	EA	PANIC HARDWARE	25-R-L-NL x 510L-NL DANE X US26D	FAL
1	EA	CYLINDER HOUSING	80-129 X 626	SCH
1	EA	CONSTRUCTION CORE	80-035 X GRN	SCH
1	EA	CYLINDER CORE	80-036 X 626 X B123 KEYWAY	SCH
1	EA	LOCK GUARD	LG11	IVE
1	EA	SURFACE CLOSER	SC81 RW/PA	FAL
1	SET	SEALS	290AV	PEM
1	EA	DOOR SWEEP	368DN	PEM
1	EA	THRESHOLD	273 X 3DFG	PEM

HW SET: 20 SECURE ENTRANCE - HOLLOW METAL PR WITH PANIC DEVICE NIGHT LATCH FUNCTION X FLUSH BOLT – DELIVERY DOORS

6	EA	HINGES	B1191 4-1/2 X 4-1/2 NRP	HAG
2	EA	AUTO FLUSH BOLT	FB31B	IVE
1	EA	DUST PROOF STRIKE	DP1	IVE
1	EA	PANIC DEVICE	9875EO	VON
1	EA	LOCK GUARD	LG12	IVE
2	EA	CLOSER (HOLD OPEN)	SC71 HO/DS	FAL
1	EA	ELEC TRIM	CO-100-993M-70-KP-RHO	SCE
2	EA	ARMOR PLATE	8400 30" X 1" LDW	IVE
1	SET	SEALS	290AV	PEM
2	EA	DOOR SWEEP	368DN	PEM
1	EA	THRESHOLD	1715	PEM
1	SET	DOOR COORDINATOR	COR72	IVE
1	SET	COOR. MOUNTING BRACKET	MB1 SP28	IVE
2	EA	ASTRAGAL	18041CNB	PEM

HW SET: 20A NON-SECURE ENTRANCE - HOLLOW METAL WITH PANIC DEVICE NIGHT LATCH FUNCTION– SINGLE DELIVERY DOOR

3	EA	HINGES	B1191 4-1/2 X 4-1/2 NRP	HAG
1	EA	DUST PROOF STRIKE	280X	HAG
1	EA	PANIC DEVICE	25-R-EO	FAL
1	EA	ELEC TRIM	CO-100-993M-70-KP-RHO	SCE
1	EA	LOCK GUARD	LG12	IVE
1	EA	CLOSER (HOLD OPEN)	SC71 HO/DS	FAL
1	EA	ARMOR PLATE	8400 30" X 1" LDW	IVE
1	SET	SEALS	290AV	PEM
1	EA	DOOR SWEEP	368DN	PEM
1	EA	THRESHOLD	1715	PEM

HW SET: 21 INTERIOR - NON-RATED SGLE BI-FOLD – CLOSET (48” OPENING)

1	EA	BI-FOLD KIT	9860-4H	HAG
1	EA	DOOR PULL	8102-G	IVE

HW SET: 22 INTERIOR - NON-RATED SGLE WITH PASSAGE – STAFF LOUNGE, DOUBLE OCCUPANCY TOILET, CORRIDORS, SOILED UTILITY, LAB PREP, MED PREP

3	EA	HINGES	BB1279 4-1/2 X 4-1/2 NRP	HAG
1	EA	PASSAGE SET	B101S D	FAL
1	EA	KICK PLATE	194S 10" X 2" LDW	HAG
1	EA	STOP	236W/242F AS SPECIFIED	HAG
3	EA	SILENCER	307D	HAG
1	EA	CLOSER WITH HOLD OPEN	SC80-3049PA	DOR

HW SET: 23 INTERIOR - NON-RATED SGLE WITH PASSAGE – EXAM ROOM

3	EA	HINGES	BB1279 4-1/2 X 4-1/2 NRP	HAG
1	EA	PASSAGE SET	B101S D	FAL
1	EA	KICK PLATE	194S 10" X 2" LDW	HAG
1	EA	STOP	236W/242F AS SPECIFIED	HAG
3	EA	SILENCER	307D	HAG

1	EA	COAT HOOK	BOBRICK B670	BOB

HW SET: 24 INTERIOR - NON-RATED SGLE WITH OFFICE LOCKSET – OFFICES RECEPTION

3	EA	HINGES	BB1279 4-1/2 X 4-1/2 NRP	HAG
1	EA	OFFICE LOCK	B511BD D	FAL
1	EA	PERMANENT CORE	80-036 B123 KEYWAY	SCH
1	EA	CONSTRUCTION CORE	80-035	SCH
1	EA	STOP	WS407/FS436 AS SPECIFIED	IVE
3	EA	SILENCER	SR64/SR65	IVE
2	EA	COAT HOOK	BOBRICK B670	BOB

HW SET: 25 INTERIOR - NON-RATED SGLE WITH CLASSROOM LOCKSET- CONFERENCE ROOM, TRAINING ROOM, CAPD, HOME HEMO

3	EA	HINGES	BB1279 4-1/2 X 4-1/2 NRP	HAG
1	EA	CLASSROOM LOCK	B561BD D	FAL
1	EA	PERMANENT CORE	80-036 B123 KEYWAY	SCH
1	EA	CONSTRUCTION CORE	80-035	SCH
1	EA	STOP	WS407/FS436 AS SPECIFIED	IVE
1	EA	OVERHEAD STOP	90S	GLY
3	EA	SILENCER	SR64/SR65	IVE

HW SET: 26 INTERIOR - NON-RATED SGLE WITH STOREROOM LOCKSET – GENERAL STORAGE, JANITOR, WIRING CLOSET

3	EA	HINGES	BB1279 4-1/2 X 4-1/2 NRP	HAG
1	EA	NEX-TOUCH LOCK	B-AU-NTB620-NR-626-1-3/4	YAL
1	EA	PERMANENT CORE	80-036 B123 KEYWAY	SCH
1	EA	CONSTRUCTION CORE	80-035	SCH
1	EA	ARMOR PLATE	194S 30" X 2" LDW	HAG
1	EA	STOP	236W/242F AS SPECIFIED	HAG
3	EA	SILENCER	307D	HAG
1	EA	SURFACE CLOSER	SC81 RW/PA	FAL

HW SET: 26PR INTERIOR - NON-RATED PAIR, WIRING CLOSET

6	EA	HINGES	BB1279 4-1/2 X 4-1/2 NRP	IVE
1	EA	CYLINDER DEADLOCK	D121	FAL
1	EA	PERMANENT CORE	80-036 B123 KEYWAY	SCH
1	EA	CONSTRUCTION CORE	80-035	SCH
2	EA	MANUAL FLUSH BOLT	FB358	IVE
1	EA	DUST PROOF STRIKE	DP1	IVE
2	EA	ARMOR PLATE	8400 30" X 1" LDW	IVE
2	EA	STOP	236W/242F AS SPECIFIED	IVE
2	EA	SILENCER	608	RCK

HW SET: 26PRR INTERIOR - RATED PAIR, WIRING CLOSET

6	EA	HINGES	BB1279 4-1/2 X 4-1/2 NRP	IVE
1	EA	STOREROOM LOCK	B581BD D	FAL
1	EA	PERMANENT CORE	80-036 B123 KEYWAY	SCH
1	EA	CONSTRUCTION CORE	80-035	SCH

2	EA	MANUAL FLUSH BOLT	FB358	IVE
1	EA	DUST PROOF STRIKE	DP1	IVE
2	EA	ARMOR PLATE	8400 30" X 1" LDW	IVE
2	EA	STOP	236W/242F AS SPECIFIED	IVE
2	EA	SILENCER	608	RCK
1	EA	SURFACE CLOSER	SC81 RW/PA	FAL

HW SET: 27 INTERIOR - RATED OR NON-RATED SGLE WITH HOSPITAL PRIVACY X CLOSER – OUT SWINGING PATIENT TOILET AND CHANGING ROOM

3	EA	HINGES	BB1279 4-1/2 X 4-1/2 NRP	HAG
1	EA	PRIVACY SET	AL44	SCH
1	EA	SURFACE CLOSER	SC81 RW/PA AS SPECIFIED	FAL
1	EA	KICK PLATE	194S 10" X 2" LDW	HAG
1	EA	STOP	236W/242F AS SPECIFIED	HAG
3	EA	SILENCER	307D	HAG
1	EA	COAT HOOK	BOBRICK B670	BOB

HW SET: 28 INTERIOR - RATED OR NON-RATED SGLE WITH PASSAGE X CLOSER – STAFF LOUNGE, SOILED UTILITY, DOUBLE OCCUPANCY TOILET, CORRIDORS

3	EA	HINGES	BB1279 4-1/2 X 4-1/2 NRP	HAG
1	EA	PASSAGE SET	B101S D	FAL
1	EA	PERMANENT CORE	80-036 B123 KEYWAY	SCH
1	EA	CONSTRUCTION CORE	80-035	SCH
1	EA	SURFACE CLOSER	SC81 RW/PA AS SPECIFIED	FAL
		NOTE: PROVIDE HOLD-OPEN	ARM AT NON-RATED DOORS	
1	EA	KICK PLATE	194S 10" X 2" LDW	HAG
1	EA	STOP	236W/242F AS SPECIFIED	HAG
3	EA	SILENCER	307D	HAG

HW SET: 29 INTERIOR - RATED OR NON-RATED SGLE WITH PRIVACY X CLOSER – STAFF TOILET

3	EA	HINGES	BB1279 4-1/2 X 4-1/2 NRP	HAG
1	EA	PRIVACY SET	B301S D	FAL
1	EA	SURFACE CLOSER	SC81 RW/PA	FAL
1	EA	KICK PLATE	194S 10" X 2" LDW	HAG
1	EA	STOP	236W/242F AS SPECIFIED	HAG
3	EA	SILENCER	307D	HAG
1	EA	COAT HOOK	BOBRICK B670	BOB

HW SET: 30 INTERIOR - RATED OR NON-RATED SGLE WITH HOSPITAL PRIVACY X CLOSER – IN/OUT SWINGING PATIENT TOILET AND CHANGING ROOM

1	PR	HINGES	EP-5J PIVOT SET	MCK
1	EA	HOSPITAL PRIVACY LOCK	AL44	SCH
1	EA	COMBO STOP & STRIKE	CSS-9 (CENTER HUNG)	MCK
1	EA	CONCEALED CLOSER	6030 DOUBLE ACTING	LCN
1	EA	KICK PLATE	8400 10” X 2” LDW	IVE
1	EA	STOP	236W/242F AS SPECIFIED	IVE
1	EA	EDGE GASKET	369P	PEM
1	EA	COAT HOOK	BOBRICK B670	BOB

HW SET: 31 INTERIOR - RATED SGLE WITH CLASSROOM LOCKSET X CLOSER – CONFERENCE ROOM, TRAINING ROOM, CAPD, HOME HEMO

3	EA	HINGES	BB1279 4-1/2 X 4-1/2 NRP	HAG
1	EA	CLASSROOM LOCK	B561BD D	FAL
1	EA	PERMANENT CORE	80-036 B123 KEYWAY	SCH
1	EA	CONSTRUCTION CORE	80-035	SCH
1	EA	SURFACE CLOSER	SC81 RW/PA AS SPECIFIED	FAL
1	EA	ARMOR PLATE	194S 30" X 2" LDW	HAG
1	EA	STOP	236W/242F AS SPECIFIED	HAG
3	EA	SILENCER	307D	HAG
1	EA	COAT HOOK	BOBRICK B670	BOB

HW SET: 32 INTERIOR - RATED OR NON-RATED SGLE W/ TOUCH PAD CLASSROOM LOCKSET X CLOSER – TREATMENT TO MECHANICAL/ STORAGE

3	EA	HINGES	BB1279 4-1/2 X 4-1/2 NRP	HAG
1	EA	NEX-TOUCH LOCK	B-AU-NTB620-NR-626-1-3/4	YAL
1	EA	PERMANENT CORE	80-036 B123 KEYWAY	SCH
1	EA	CONSTRUCTION CORE	80-035	SCH
1	EA	SURFACE CLOSER	SC81 RW/PA AS SPECIFIED	FAL
1	EA	ARMOR PLATE	194S 30" X 2" LDW	HAG
1	EA	STOP	236W/242F AS SPECIFIED	HAG
3	EA	SILENCER	307D	HAG

HW SET: 33 INTERIOR - RATED SGLE WITH STOREROOM LOCKSET X CLOSER – MEDICAL RECORDS, CLEAN UTILITY, JANITOR

3	EA	HINGES	BB1279 4-1/2 X 4-1/2 NRP	HAG
1	EA	NEX-TOUCH LOCK	B-AU-NTB620-NR-626-1-3/4	YAL
1	EA	PERMANENT CORE	80-036 B123 KEYWAY	SCH
1	EA	CONSTRUCTION CORE	80-035	SCH
1	EA	SURFACE CLOSER	SC81 RW/PA AS SPECIFIED	FAL
1	EA	ARMOR PLATE	194S 30" X 2" LDW	HAG
1	EA	STOP	236W/242F AS SPECIFIED	HAG
3	EA	SILENCER	307D	HAG

HW SET: 34 INTERIOR - NON-RATED SGLE WITH CLASSROOM LOCKSET X CLOSER – CONTROLLED ENTRY – WAITING TO TREATMENT

3	EA	HINGES	BB1279 4-1/2 X 4-1/2 NRP	HAG
1	EA	CLASSROOM LOCK	B561BD D	FAL
1	EA	ELECTRIC STRIKE	7440 FAIL SAFE (12V or 24V)	ADA
1	EA	PERMANENT CORE	80-036 B123 KEYWAY	SCH
1	EA	CONSTRUCTION CORE	80-035	SCH
1	EA	AUTO. OPERATOR	8100 SERIES (AS SPECIFIED IN 08720)	REC
1	EA	ARMOR PLATE	194S 30" X 2" LDW	HAG
1	EA	STOP	236W/242F AS SPECIFIED	HAG
2	EA	WALL PLATE SWITCH	AS SPECIFIED IN 08720	LCN
3	EA	SILENCER	307D	HAG
2	EA	BUTTON MINI BOX	660-PB	SCE

ALL WIRING AND CONNECTIONS BY DIVISION 16.
OPERATIONAL DESCRIPTION:
FOR CONTROLLED ENTRY (TOGGLE IN SECURE POSITION) -

IMMEDIATE EGRESS ALWAYS ALLOWED. MANUAL ACCESS BY KEY. AUTOMATIC OPERATION FOR ACCESS BY REMOTE RELEASE AT RECEPTIONIST AND NURSE STATION, OR AUTOMATIC OPERATION FOR EGRESS BY ACTUATOR IN TREATMENT AREA WHICH SIGNALS AUTOMATIC OPERATOR TO RELEASE ELECTRIC STRIKE AND OPEN DOOR. LOCATE REMOTE RELEASE AND ACTUATORS AS DIRECTED BY ARCHITECT.

FOR NON-CONTROLLED ENTRY (TOGGLE IN NON-SECURE POSITION) -
IMMEDIATE EGRESS ALWAYS ALLOWED. TOGGLE (BY OTHERS) IN AUTOMATIC OPERATOR HEAD TO RELEASE AND HOLD ELECTRIC STRIKE AND ENABLE OUTSIDE AUTOMATIC OPERATOR ACTUATOR. MANUAL OPERATION BY PUSH N' GO FEATURE OR AUTOMATIC OPERATION BY PUSHING EITHER ACTUATOR OR REMOTE RELEASE WHICH WILL SIGNAL AUTOMATIC OPERATOR TO OPEN DOOR. LOCATE ACTUATORS AS DIRECTED BY ARCHITECT.

A. POWER ON, FIRE ALARM QUIET:
- DOOR OPERATOR IS SECURE/UNSECURED VIA ROCKER SWITCH LOCATED IN DOOR OPERATOR.

B. POWER OUT, FIRE ALARM QUIET:
- DOOR OPERATOR IS INOPERABLE DUE TO LOSS OF POWER. ELECTRIC STRIKE "FAIL SAFE". HARDWARE WILL ALLOW EGRESS FROM TREATMENT AREA AND ALLOW ENTRY FROM WAITING ROOM.

C. POWER ON, FIRE ALARM ACTIVE:
- FIRE ALARM DE-ENERGIZES ELECTRIC STRIKE AND DOOR OPERATOR. DOOR OPERATOR IS INOPERABLE DUE TO LOSS OF POWER. ELECTRIC STRIKE "FAIL SAFE". HARDWARE WILL ALLOW EGRESS FROM TREATMENT AREA AND ALLOW ENTRY FROM WAITING ROOM.

HW SET: 35 INTERIOR - RATED SGLE WITH ELEC LOCKSET AND ELEC STRIKE X CLOSER – CONTROLLED ENTRY - WAITING TO TREATMENT

3	EA	HINGES	BB1279 4-1/2 X 4-1/2 NRP	HAG
1	EA	ELECTRIC HINGE	AS SPECIFIED	HAG
1	EA	EL STOREROOM LOCK	T851BD D	FAL
1	EA	ELECTRIC STRIKE	7240 FAIL SECURE	ADA
1	EA	PERMANENT CORE	80-036 B123 KEYWAY	SCH
1	EA	CONSTRUCTION CORE	80-035	SCH
1	EA	AUTO. OPERATOR	8100 SERIES (AS SPECIFIED IN 08720)	REC
1	EA	ARMOR PLATE	8400 30" X 2" LDW	IVE
1	EA	STOP	WS407/FS436 AS SPECIFIED	IVE
2	EA	WALL PLATE SWITCH	AS SPECIFIED IN 08720	LCN
3	EA	SILENCER	SR64/SR65	IVE
1	EA	POWER SUPPLY	PS902-900FA	VON
2	EA	BUTTON MINI BOX	660-PB	SCE

ALL WIRING AND CONNECTIONS BY DIVISION 16.
OPERATIONAL DESCRIPTION:
IMMEDIATE EGRESS ALWAYS ALLOWED. DOOR CAN BE MANUALLY OR AUTOMATICALLY OPERATED. MANUAL OPERATION AND ACCESS BY KEY. AUTOMATIC OPERATION AND ACCESS BY REMOTE RELEASE AT RECEPTIONIST AND NURSE STATION, OR ACTUATOR IN TREATMENT AREA WHICH SIGNALS AUTOMATIC OPERATOR TO RELEASE ELECTRIC STRIKE AND OPEN DOOR. FAIL SAFE LOCKSET TO BE TIED INTO BUILDING'S FIRE/SMOKE ALARM SYSTEM TO UNLOCK IMMEDIATELY UPON ACTIVATION TO ALLOW ACCESS FROM WAITING AREA. LOCATE REMOTE RELEASE AND ACTUATOR AS DIRECTED BY ARCHITECT.

ALL WIRING AND CONNECTIONS BY DIVISION 16.
OPERATIONAL DESCRIPTION:
FOR CONTROLLED ENTRY (TOGGLE IN SECURE POSITION) -
IMMEDIATE EGRESS ALWAYS ALLOWED. MANUAL ACCESS BY KEY. AUTOMATIC OPERATION FOR ACCESS BY REMOTE RELEASE AT RECEPTIONIST AND NURSE STATION, OR AUTOMATIC

OPERATION FOR EGRESS BY ACTUATOR IN TREATMENT AREA WHICH SIGNALS AUTOMATIC OPERATOR TO RELEASE ELECTRIC STRIKE AND OPEN DOOR. LOCATE REMOTE RELEASE AND ACTUATORS AS DIRECTED BY ARCHITECT.

FOR NON-CONTROLLED ENTRY (TOGGLE IN NON-SECURE POSITION) -
IMMEDIATE EGRESS ALWAYS ALLOWED. TOGGLE (BY OTHERS) IN AUTOMATIC OPERATOR HEAD TO RELEASE AND HOLD ELECTRIC STRIKE AND ENABLE OUTSIDE AUTOMATIC OPERATOR ACTUATOR. MANUAL OPERATION BY PUSH N' GO FEATURE OR AUTOMATIC OPERATION BY PUSHING EITHER ACTUATOR OR REMOTE RELEASE WHICH WILL SIGNAL AUTOMATIC OPERATOR TO OPEN DOOR. LOCATE ACTUATORS AS DIRECTED BY ARCHITECT.

A. POWER ON, FIRE ALARM QUIET:
- DOOR OPERATOR IS SECURE/UNSECURED VIA ROCKER SWITCH LOCATED IN DOOR OPERATOR.

B. POWER OUT, FIRE ALARM QUIET:
- DOOR OPERATOR IS INOPERABLE DUE TO LOSS OF POWER. ELECTRIC STRIKE "FAIL SECURE" AND ELECTRIC LOCKSET "FAIL SAFE". HARDWARE WILL ALLOW EGRESS FROM TREATMENT AREA AND ALLOW ENTRY FROM WAITING ROOM.

C. POWER ON, FIRE ALARM ACTIVE:
- FIRE ALARM DE-ENERGIZES ELECTRIC STRIKE AND DOOR OPERATOR, AND UNLOCKS ELECTRIC LOCKSET. DOOR OPERATOR IS INOPERABLE DUE TO LOSS OF POWER.

ELECTRIC STRIKE "FAIL SECURE" AND ELECTRIC LOCKSET "FAIL SAFE". HARDWARE WILL ALLOW EGRESS FROM TREATMENT AREA AND ALLOW ENTRY FROM WAITING ROOM.

HW SET: 36 INTERIOR - RATED OR NON-RATED SGLE WITH ACCESS CONTROL LOCKSET X CLOSER – WAITING ROOM TO ADMINISTRATIVE AREA

3	EA	HINGES	BB1279 4-1/2 X 4-1/2 NRP	HAG
1	EA	NEX-TOUCH LOCK	B-AU-NTB620-NR-626-1-3/4	YAL
1	EA	PERMANENT CORE	80-036 B123 KEYWAY	SCH
1	EA	CONSTRUCTION CORE	80-035	SCH
1	EA	SURFACE CLOSER	SC81 RW/PA AS SPECIFIED	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW	IVE
1	EA	STOP	WS407/FS436 AS SPECIFIED	IVE
3	EA	SILENCER	SR64/SR65	IVE

HW SET: 37 INTERIOR - RATED OR NON-RATED SGLE WITH STOREROOM LOCKSET CLOSER – MEDICAL WASTE, ELECTRICAL CLOSET

3	EA	HINGES	BB1279 4-1/2 X 4-1/2 NRP	HAG
1	EA	NEX-TOUCH LOCK	B-AU-NTB620-NR-626-1-3/4 (add tactile warning strip)	YAL
1	EA	PERMANENT CORE	80-036 B123 KEYWAY	SCH
1	EA	CONSTRUCTION CORE	80-035	SCH
1	EA	SURFACE CLOSER	SC81 RW/PA AS SPECIFIED	FAL
1	EA	ARMOR PLATE	8400 30" X 2" LDW	IVE
1	EA	STOP	WS407/FS436 AS SPECIFIED	IVE
3	EA	SILENCER	SR64/SR65	IVE

HW SET: 38 INTERIOR - NON-RATED PR BIFOLD – CLOSET – 36" OPENING

2	EA	BIFOLD KIT	9860-36	HAG
2	EA	DOOR PULL	8102-6	IVE

HW SET: 39 INTERIOR - NON-RATED PR BY-PASS - CLOSET

1	EA	BY-PASS KIT	9875 60	HAG
2	EA	FLUSH PULL	22	IVE

HW SET: 40 – NOT USED

HW SET: 41 INTERIOR - NON-RATED STOREFRONT -TYPE DOOR – NO LOCKSET - SEPARATION ROOM

3	EA	HINGES	PER MANUFACTURER SPECIFICATIONS	
1	EA	PUSH BAR	PER MANUFACTURER SPECIFICATIONS	
1	EA	CLOSER	SC81 RW/PA AS SPECIFIED	FAL
1	EA	ADAPTER PLATE	SC80-18PA	FAL
1	EA	PULL	PER MANUFACTURER SPECIFICATIONS	

HW SET: 42 – NOT USED

HW SET: 43 INTERIOR - HOLLOW METAL PR X FLUSH BOLT – WATER TREATMENT/PSDS ROOM

6	EA	HINGES	BB1279 4-1/2 X 4-1/2 NRP	HAG
2	EA	MANUAL FLUSH BOLT	FB458	IVE
1	EA	NEX-TOUCH LOCK	B-AU-NTB620-NR-626-1-3/4	YAL
1	EA	CYLINDER CORE	80-036 (KEYWAY B123)	SCH
1	EA	CONSTRUCTION CORE	80-035	SCH
1	EA	DUST PROOF STRIKE	DP1	IVE
2	EA	CLOSER (HOLD OPEN)	SC71 HO	FAL
2	EA	ARMOR PLATE	8400 30" X 1" LDW	IVE

NOTE: EACH DOOR LEAF TO HAVE 5" X 35" CUT OUT WITH VISION KIT PROVIDED.

END OF SECTION

ADDENDUM THREE - FACILITY KEYING SCHEDULE

ROOM	KEYING SYSTEM				LOCKSET TYPE	IN CENTER	HOME
Employee Entry	GM		SM	K2	Stand Alone Access Control w/keyed cylinder		
	GM		SM	K2	If standard lockset w/IC		
Delivery Entry	GM		SM	K1	Stand Alone Access Control w/keyed cylinder		
Waiting Room to Treatment Room	GM	M	SM		See Note (2)		
Waiting Room to Offices	GM	M	SM		Stand Alone Access Control w/keyed cylinder		
From Treatment Rm to Mech/Storage	GM	M	SM		Stand Alone Access Control w/keyed cylinder		
Area Manager	GM	M		K	Office function lockset		**N/A**
Clinic Manager	GM	M		K	Office function lockset		
Dietitian	GM	M		K	Office function lockset		
Social Worker	GM	M		K	Office function lockset		
Doctor	GM	M		K	Office function lockset		
Doctor/Exam Room	GM	M		K	Office function lockset		
Home Dialysis Training	GM	M		K	Office function lockset		
Education Coordinator	GM	M		K	Office function lockset		**N/A**
Multi Purpose Office	GM	M		K	Office function lockset		
Wiring Closet	GM	M		K	Office function lockset		
Reception	GM	M	SM		Office function lockset		
Clean Utility	GM	M	SM		Office function lockset		
Tech Supervisor	GM	M	SM		Office function lockset		
Janitor Closet	GM	M	SM		Classroom function lockset		
Conference Room	GM	M	SM		Classroom function lockset		
Medical Records	GM		SM		Office function lockset		
Medical Waste	GM		SM		Classroom function lockset		
Consultation Room	GM	M	SM		Classroom function lockset	**N/A**	
Changing Room	non keyed lockset				Privacy Set		**N/A**
Patient Toilet	non keyed lockset				Privacy Set		
Single Occupancy Staff Toilet	non keyed lockset				Privacy Set		
Soiled Utility	non keyed lockset				Privacy Set		
Exam Room	non keyed lockset				Passage Set		
Double Occupancy Staff Toilet	non keyed lockset				Passage Set		
Staff Lounge	non keyed lockset				Passage Set		
From Mech/Storage to Offices	non keyed lockset				Passage Set		
From Treatment Room to Corridor	non keyed lockset				Passage Set		**N/A**
Corridor	non keyed lockset				Passage Set		
Key:							
GM	Grand Master opens all doors (Provide 2 non-duplicating keys)						
M	Interior Master (Janitorial) opens all doors except Med. Records and Med. Waste (Provide 2 non-dup. Keys						
	Janitorial uses access control employee entry						
SM	Sub Master - Selected Employees open doors listed (provide 6 non-duplicating keys)						
K1	Keyed alike, exterior doors only (Provide 6 non-duplicating keys)						
K	Keyed differently, opens assigned office (Provide 2 keys for each office)						
K2	Keyed different, exterior door with rechangeable core						
IC	Interchangeable Key Core						

NOTES: 1) Cylindrical Locks only. Mortise locks to be used for new construction only.
2) Door from Waiting to Treatment Room:
Rated wall: Electric strike 'fail secure', electric storeroom function lockset 'fail safe'.
Non-rated wall: Electric strike 'fail safe' and standard storeroom set
3) GM, M, SM, K1 embossed 'non-duplicating keys'
4) All lockset cores to be furnished with interchangeable key cores.

Fresenius Medical Care Hardware Worksheet

HARDWARE BY HW SET

HW SET	LOCATION	DOOR TYPE	MODE	DUTY	EXIT DEVICE	SECURE	APPLICATION	LOCKABLE	CLOSING DEVICE	RATING	ROOM TYPES/USE
01	Int-Vestibule	Aluminum	Sliding	Standard	Break-away	Yes	Vestibule used with Non-secure Entrance (HW Set 02)	Yes	Automatic	Non-rated	Vestibule to Waiting
02	Exterior	Aluminum	Sliding	Standard	Break-away	No	Entrance used with Secure Vestibule (HW Set 01)	Yes	Automatic	Non-rated	Main Entrance with Vestibule
03	Exterior	Aluminum	Sliding	Standard	Break-away	Yes	Entrance with no Vestibule	Yes	Automatic	Non-rated	Main Entrance with no Vestibule
04	Int-Vestibule	Aluminum	Single	Standard		Yes	Vestibule used with Non-secure Entrance (HW Set 05)	Yes	Auto Operator	Non-rated	Vestibule to Waiting
05	Ext-Vestibule	Aluminum	Single	Standard		No	Entrance used with Secure Vestibule (HW Set 04)	Yes	Auto Operator	Non-rated	Main Entrance into Vestibule
06	Exterior	Aluminum	Single	Standard		No	Entrance with mechanical lock	Yes	Closer	Non-rated	Emergency Exit from Treatment
07	Exterior	Aluminum	Single	Standard		Yes	Entrance with stand-alone access control	Yes	Closer	Non-rated	Staff Entrance
08	Exterior	Aluminum	Single	Standard		Yes	Entrance with no Vestibule	Yes	Auto Operator	Non-rated	Main Entrance with no Vestibule
09NC	Int-Vestibule	Aluminum	Single	Standard	Mortise Panic	Yes	Vestibule used with Non-secure Entrance (HW Set 10)	Yes	Auto Operator	Non-rated	Vestibule to Waiting
09RT	Int-Vestibule	Aluminum	Single	Standard	Rim Panic	Yes	Vestibule used with Non-secure Entrance (HW Set 10)	Yes	Auto Operator	Non-rated	Vestibule to Waiting
10NC	Exterior	Aluminum	Single	Standard	Mortise Panic	No	Entrance used with Secure Vestibule (HW Set 09)	Yes	Auto Operator	Non-rated	Main Entrance into Vestibule
10RT	Exterior	Aluminum	Single	Standard	Rim Panic	No	Entrance used with Secure Vestibule (HW Set 09)	Yes	Auto Operator	Non-rated	Main Entrance into Vestibule
11NC	Exterior	Aluminum	Single	Standard	Mortise Panic	Yes	Entrance with no Vestibule - New Construction	Yes	Auto Operator	Non-rated	Main Entrance with no Vestibule
11RT	Exterior	Aluminum	Single	Standard	Rim Panic	Yes	Entrance with no Vestibule - Retrofit	Yes	Auto Operator	Non-rated	Main Entrance with no Vestibule
12	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED
13	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED
14	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED
15	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED
16	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED
17	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED
18	Exterior	Hollow Metal	Single	Standard		Yes	Entrance with stand-alone access control	Yes	Closer	Non-rated	Staff Entrance
18EX	Exterior	Hollow Metal	Single	Standard		Yes	Entrance with stand-alone access control	Yes	Closer	Non-rated	Sprinkler Room, Electrical Room, Storage Room
19	Exterior	Hollow Metal	Single	Standard	Panic	No	Emergency Exit - 48"	Yes	Closer	Non-rated	Emergency Exit from Treatment
20	Exterior	Hollow Metal	Pair	Standard	Panic	No	Delivery Entrance - Double Door	Yes	Closer	Non-rated	Delivery
20A	Exterior	Hollow Metal	Single	Standard	Panic	No	Delivery Entrance - Single Door	Yes	Closer	Non-rated	Delivery
21	Interior	Wood	Bi-Fold	Standard		No	Storage Closet - 48" Bifold	No	None	Non-rated	General Storage
22	Interior	Wood or Hollow Metal	Single	Standard		No	Passage Set	No	Closer	Non-rated	Lounge, Soiled Utility, Dble Occup, Toilet, Corridors
23	Interior	Wood	Single	Standard		No	Passage Set with coat hook	No	None	Non-rated	Exam Room
24	Interior	Wood	Single	Standard		No	Office Lockset with coat hook	Yes	None	Non-rated	Offices, Reception
25	Interior	Wood	Single	Standard		No	Classroom Lockset	Yes	None	Non-rated	Conference Room, Training Room, CAPD, Home Hemo
26	Interior	Wood or Hollow Metal	Single	Standard		No	Storeroom Lockset	Yes	Closer	Rated	General Storage, Janitor, Wiring Closet
27	Not Used	Not Used	Not Used	Not Used		Not Used	Not Used	Not Used	Not Used	Not Used	Not Used
28	Interior	Wood or Hollow Metal	Single	Standard		No	Passage Set	No	Closer	Rated	Lounge, Soiled Utility, Dble Occup. Toilet, Corridors
29	Interior	Wood	Single	Standard		No	Privacy Set	Yes	Closer	Rated or Non-rated	Staff Toilet
30	Interior	Wood	Single	Standard		No	Hospital Privacy Set (Rescue Hardware)	Yes	Closer	Rated or Non-rated	In/Out-swinging Patient Toilet and Changing Room
31	Interior	Wood	Single	Standard		No	Classroom Lockset	Yes	Closer	Rated	Conference Room, Training Room, CAPD, Home Hemo
32	Interior	Wood or Hollow Metal	Single	Standard		No	Stand-alone access control (Touch Lock)	Yes	Closer	Rated or Non-rated	Treatment to Mechanical Storage/Corridor
33	Interior	Wood or Hollow Metal	Single	Standard		No	Stand-alone access control (Touch Lock)	Yes	Closer	Rated	Medical Records, Clean Utility
34	Interior	Wood	Single	Standard		Yes	Classroom Lockset with electric strike	Yes	Auto Operator	Non-rated	Waiting to Treatment
35	Interior	Wood	Single	Standard		Yes	Electrified Lockset with electric strike	Yes	Auto Operator	Rated	Waiting to Treatment
36	Interior	Wood	Single	Standard		Yes	Stand-alone access control (Touch Lock)	Yes	Closer	Rated or Non-rated	Waiting to Admininstration Offices
37	Interior	Wood or Hollow Metal	Single	Standard		Yes	Stand-alone access control (Touch Lock)	Yes	Closer	Rated or Non-rated	Medical Waste, Electrical Closet
38	Interior	Wood	Pair	Standard		No	Storage Closet - 36" Bifold	No	None	Non-Rated	General Storage
39	Interior	Wood	Pair	Standard		No	Storage Closet	No	None	Non-Rated	General Storage
40	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED
41	Interior	Aluminum	Single	Standard		No	Passage Set	No	None	Non-rated	Separation Room
42	Interior	Hollow Metal	Pair	Standard		No	Passage Set	No	None	Non-rated	Water Heater Closet
43	Interior	Hollow Metal	Pair	Standard		Yes	Storeroom Lockset	Yes	Closer	Non-rated	Water Treatment Room

SECTION 08800

GLASS AND GLAZING

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:

1. Glass and glazing for the following products and applications:

a. Steel doors, frames and sidelights specified in Section 08111 - STEEL DOORS AND FRAMES.
b. Wood doors specified in Section 08211 - FLUSH WOOD DOORS.
c. Glass doors specified in Section 08320 - SLIDING GLASS DOORS.
d. Glazed entrances and storefronts specified in Section 08411 - ALUMINUM-FRAMED ENTRANCES AND STOREFRONT.
e. Interior borrowed lites.
f. Glazing film.
g. 3form Translucent Resin Panel System

B. Related Work: The following items are not included in this Section and will be performed under the designated Sections:

1. Section 08320 - SLIDING GLASS DOORS for factory glazing for sliding doors.
2. Section 08461 - SLIDING AUTOMATIC ENTRANCE DOORS.

1.2 DEFINITIONS

A. Manufacturers of Glass Products: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.

B. Glass Thicknesses: Indicated by thickness designations in millimeters according to ASTM C 1036.

C. Interspace: Space between lites of an insulating-glass unit that contains dehydrated air or a specified gas.

D. Deterioration of Coated Glass: Defects developed from normal use that are attributed to the manufacturing process and not to causes other than glass breakage and practices for maintaining and cleaning coated glass contrary to manufacturer's written instructions. Defects include peeling, cracking, and other indications of deterioration in metallic coating.

E. Deterioration of Insulating Glass: Failure of hermetic seal under normal use that is attributed to the manufacturing process and not to causes other than glass breakage and practices for maintaining and cleaning insulating glass contrary to manufacturer’s written instructions. Evidence of failure is the obstruction of vision by dust, moisture, or film on interior surfaces of glass.

F. Deterioration of Laminated Glass: Defects developed from normal use that are attributed to the manufacturing process and not to causes other than glass breakage and practices for maintaining and cleaning laminated glass contrary to manufacturer’s written instructions. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated-glass standard.

1.3 PERFORMANCE REQUIREMENTS

A. General: Provide glazing systems capable of withstanding normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, and installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.

B. Glass Design: Glass thickness designations indicated are minimums and are for detailing only. Confirm glass thicknesses by analyzing Project loads and in-service conditions. Provide glass lites in the thickness designations indicated for various size openings, but not less than thicknesses and in strengths (annealed or heat treated) required to meet or exceed the following criteria:

1. Glass Thicknesses: Select minimum glass thicknesses to comply with ASTM E 1300, according to the following requirements:

a. Specified Design Wind Loads: As required by Code.
b. Probability of Breakage for Vertical Glazing: 8 lites per 1000 for lites set vertically or not more than 15 degrees off vertical and under wind action.

1) Load Duration: 60 seconds or less

c. Maximum Lateral Deflection: For the following types of glass supported on all 4 edges, provide thickness required that limits center deflection at design wind pressure to 1/50 times the short side length or 1 inch, whichever is less.

1) For monolithic-glass lites heat treated to resist wind loads.
2) For insulating glass.
3) For laminated-glass lites.

d. Minimum Glass Thickness for Exterior Lites: Not less than 6 mm.

C. Thermal Movements: Provide glazing that allows for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures acting on glass framing members and glazing components. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

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

D. Thermal and Optical Performance Properties: Provide glass with performance properties specified based on manufacturer's published test data, as determined according to procedures indicated below:

1. For monolithic-glass lites, properties are based on units with lites 6.0 mm thick.
2. For laminated-glass lites, properties are based on products of construction indicated.
3. For insulating-glass units, properties are based on units with lites 6.0 mm thick and a nominal 1/2-inch-wide interspace.
4. Center-of-Glass Values: Based on using LBL-44789 WINDOW 5.0 computer program for the following methodologies:

a. U-Factors: NFRC 100 expressed as Btu/ sq. ft. x h x deg F.
b. Solar Heat Gain Coefficient: NFRC 200.
c. Solar Optical Properties: NFRC 300.

1.4 SUBMITTALS

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

B. Samples: For the following products, in the form of 12-inch- square samples for glass.

1. Wired glass.
2. Tempered glass.
3. Insulating glass for each designation indicated.
4. Glazing film.
5. For each color (except black) of exposed glazing sealant indicated.

C. Glazing Schedule: Use same designations indicated on Drawings for glazed openings in preparing a schedule listing glass types and thicknesses for each size opening and location.

D. Product Certificates: Signed by manufacturers of glass and glazing products certifying that products furnished comply with requirements.

1. For solar-control low-e-coated glass, provide documentation demonstrating that manufacturer of coated glass is certified by coating manufacturer.

E. Qualification Data: For installers.

F. Preconstruction Adhesion and Compatibility Test Report: From glazing sealant manufacturer indicating glazing sealants were tested for adhesion to glass and glazing channel substrates, and for compatibility with glass and other glazing materials.

G. Product Test Reports: For each of the following types of glazing products:

1. Coated float glass.
2. Insulating glass.
3. Glazing film.
4. Glazing sealants.
5. Glazing gaskets.

H. Warranties: Special warranties specified in this Section.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed glazing similar in material, design, and extent to that indicated for this Project whose work has resulted in glass installations with a record of successful in-service performance.

B. Source Limitations for Glass: Obtain the following through one source from a single manufacturer for each glass type: clear float glass, laminated glass and insulating glass.

C. Source Limitations for Glass Sputter-Coated with Solar-Control Low-E Coatings: Where solar-control low-e coatings of a primary glass manufacturer that has established a certified fabricator program is specified, obtain sputter-coated solar-control low-e-coated glass in fabricated units from a manufacturer that is certified by coated-glass manufacturer.

D. Source Limitations for Glazing Accessories: Obtain glazing accessories through one source from a single manufacturer for each product and installation method indicated.

E. Elastomeric Glazing Sealant Product Testing: Obtain sealant test results for product test reports in “Submittals” Article from a qualified testing agency based on testing current sealant formulations within a 36-month period.

1. Sealant Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated, as documented according to ASTM E 548.
2. Test elastomeric glazing sealants for compliance with requirements specified by reference to ASTM C 920 and, where applicable, to other standard test methods.

F. Preconstruction Adhesion and Compatibility Testing: Submit to elastomeric glazing sealant manufacturers, for testing indicated below, samples of each glazing material type, tape sealant,

gasket, glazing accessory, and glass-framing member that will contact or affect elastomeric glazing sealants:

1. Use ASTM C 1087 to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of glazing sealants to glass, tape sealants, gaskets, and glazing channel substrates.
2. Submit not fewer than eight pieces of each type of material, including joint substrates, shims, joint-sealant backings, secondary seals, and miscellaneous materials.
3. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
4. For materials failing tests, obtain sealant manufacturer's written instructions for corrective measures, including the use of specially formulated primers.
5. Testing will not be required if elastomeric glazing sealant manufacturers submit data based on previous testing of current sealant products for adhesion to, and compatibility with, glazing materials matching those submitted.

G. Glazing for Fire-Rated Door Assemblies: Glazing for assemblies that comply with NFPA 80 and that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA 252.

H. Safety Glazing Products: Comply with testing requirements in 16 CFR 120 and, for wired glass, ANSI Z97.1.

1. Subject to compliance with requirements, obtain safety glazing products permanently marked with certification label of the Safety Glazing Certification Council or another certification agency] acceptable to authorities having jurisdiction.
2. Where glazing units, including Kind FT glass and laminated glass, are specified in Part 2 articles for glazing lites more than 9 sq. ft. in exposed surface area of one side, provide glazing products that comply with Category II materials, for lites 9 sq. ft. or less in exposed surface area of one side, provide glazing products that comply with Category I or II materials, except for hazardous locations where Category II materials are required by 16 CFR 1201 and regulations of authorities having jurisdiction.

I. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below, unless more stringent requirements are indicated. Refer to these publications for glazing terms not otherwise defined in this Section or in referenced standards.

1. GANA Publications: GANA Laminated Division's "Laminated Glass Design Guide" and GANA's "Glazing Manual".
2. IGMA Publication for Insulating Glass: SIGMA TM-3000, "Glazing Guidelines for Sealed Insulating Glass Units".

J. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of the following testing and inspecting agency:

1. Insulating Glass Certification Council.

K. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01.

L. Comply with pertinent codes and regulations.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Protect glazing materials according to manufacturer's written instructions and as needed to prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

B. For insulating-glass units that will be exposed to substantial altitude changes, comply with insulating-glass manufacturer's written recommendations for venting and sealing to avoid hermetic seal ruptures.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers, and when glazing channel substrates are wet from rain, frost, condensation, or other causes.

1. Do not install liquid glazing sealants when ambient and substrate temperature conditions are outside limits permitted by glazing sealant manufacturer or below 40 deg F.

1.8 WARRANTY

A. Manufacturer's Special Warranty for Coated-Glass Products: Manufacturer's standard form, made out to the Owner and signed by coated-glass manufacturer, agreeing to replace coated-glass units that deteriorate as defined in "Definitions" Article, f.o.b. the nearest shipping point to Project site, within specified warranty period indicated below.

1. Warranty Period: Ten years from date of Substantial Completion.

B. Manufacturer's Special Warranty on Laminated Glass: Manufacturer's standard form, made out to the Owner and signed by laminated-glass manufacturer, agreeing to replace laminated-glass units that deteriorate as defined in 'Definitions" Article, f.o.b. the nearest shipping point to Project site, within specified warranty period indicated below.

1. Warranty Period: Five years from date of Substantial Completion.

C. Manufacturer's Special Warranty on Insulating Glass: Manufacturer's standard form, made out to the Owner and signed by insulating-glass manufacturer, agreeing to replace insulating-glass units that deteriorate as defined in "Definitions" Article, f.o.b. the nearest shipping point to Project site, within specified warranty period indicated below.

1. Warranty Period: Ten years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 INSULATING-GLASS UNITS

A. Insulating-Glass Units for Vertical Glazing: 1 inch thick insulating glass consisting of two lites of 1/4 inch glass, low-e coating on the No. 2 surface and argon gas filled. Provide one of the following or equal:

1. VE1-2M by Viracon.

a. Visible Light Transmittance: 70 percent.
b. Reflectance Visible Light: 11 percent.
c. U Value (Winter): 0.25.
d. Shading Coefficient: 0.43.
e. Solar Heat Gain Coefficient: 0.37.

2. Solarban 60 by PPG Industries.

a. Visible Light Transmittance: 70 percent.

b. Reflectance Visible Light: 11 percent.
c. U Value (Winter): 0.29.
d. Shading Coefficient: 0.44.
e. Solar Heat Gain Coefficient: 0.38.

3. SN-68 by Guardian Industries.

a. Visible Light Transmittance: 68 percent.
b. Reflectance Visible Light: 10 percent.
c. U Value (Winter): 0.29.
d. Shading Coefficient: 0.43.
e. Solar Heat Gain Coefficient: 0.37.

2.2 INTERIOR GLAZING

A. Tempered Float Glass: ASTM C 1048, Type I (transparent flat glass), Quality-Q3, Kind FT, 1/4 inch thick unless indicated otherwise.

B. Wired Glass: ASTM C 1036, Type II (patterned and wired flat glass), Class 1 (clear), Quality-Q-6, form 1 and square mesh pattern.

C. Sliding glass window:

1. Location: Reception Area
2. Glass shall be 1/4" tempered safety glass, with etched finger pulls
3. Provide and install Knape & Vogt track assembly No. 1092, complete with double channels, rubber guides, nylon rollers, rubber bumpers, shoes and double tracks for sliding glass windows in sizes, and locations by drawings. Provide in bronze anodized finished. Provide Knape & Vogt 965 locks.

D. Decorative Resin Panels: - Varia™ produced from Ecoresin™ by 3-Form, Inc.:

1. Engineered Polyester Resin Sheet
2. Sheet Size: Maximum 4’ x 10’
3. Thickness: 1/4 inch unless indicated otherwise.
4. Meets Class A Flame Spread (ASTM E84-03)
5. Basis of Design Product: The design of Plastic Fabrications is based on Varia™ produced with Ecoresin™ as provided by 3-Form, Inc. Products from other manufacturers must be approved by the Architect or Designer prior to bidding.

E. Glazing Film: Opaque black type, to be selected by Architect.

2.3 GLAZING SEALANTS

A. General: Provide products of type indicated, complying with the following requirements:

1. Compatibility: Verify glazing sealants that are compatible with one another and with other materials they will contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
2. Suitability: Comply with sealant and glass manufacturer’s written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
3. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer’s full range.

B. Elastomeric Glazing Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied chemically curing sealant specified, including those referencing

ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.

1. Single-Component Neutral- and Basic-Curing Silicone Glazing Sealants:

   a. Dow Corning Corporation; 790.
   b. GE Silicones; SilPruf LM SCS2700.
   c. Tremco; Spectrem 1 (Basic).

2.4 GLAZING TAPES

A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based elastomeric tape with a solids content of 100 percent; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; packaged on rolls with a release paper backing; and complying with ASTM C 1281 and AAMA 800 for project conditions.

B. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; packaged on rolls with release liner protecting adhesive; and complying with AAMA 800 for the following types:

   1. Type 1, for glazing applications in which tape acts as the primary sealant.
   2. Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.

2.5 MISCELLANEOUS GLAZING MATERIALS

A. General: Provide products of material, size, and shape complying with referenced glazing standard, requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.

B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.

C. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.

D. Spacers: Elastomeric blocks or continuous extrusions with a Shore, Type A durometer hardness required by glass manufacturer to maintain glass lites in place for installation indicated.

E. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).

2.6 FABRICATION OF GLAZING UNITS

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

B. Clean-cut or flat-grind vertical edges of butt-glazed monolithic lites in a manner that produces square edges with slight kerfs at junctions with outdoor and indoor faces.

C. Grind smooth and polish exposed glass edges and corners.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine framing glazing, with Installer present, for compliance with the following:

1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
2. Presence and functioning of weep system.
3. Minimum required face or edge clearances.
4. Effective sealing between joints of glass-framing members.
5. Do not remove labels from glass until so directed by the architect.

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

3.2 PREPARATION

A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.

3.3 GLAZING, GENERAL

A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.

B. Glazing channel dimensions, as indicated on Drawings, provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances. Adjust as required by Project conditions during installation.

C. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass is glass with edge damage or other imperfections that, when installed, could weaken glass and impair performance and appearance.

D. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction sealant-substrate testing.

E. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.

F. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.

G. Provide spacers for glass lites where length plus width is larger than 50 inches as follows:

1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
2. Provide 1/8-inch minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.

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

I. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.

3.4 TAPE GLAZING

A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.

B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.

C. Cover vertical framing joints by applying tapes to heads and sills first and then to jambs. Cover horizontal framing joints by applying tapes to jambs and then to heads and sills.

D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.

E. Do not remove release paper from tape until just before each glazing unit is installed.

F. Center glass lites in openings on setting blocks and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.

3.5 SEALANT GLAZING (WET)

A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.

B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.

C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

3.6 CLEANING AND PROTECTION

A. Protect exterior glass from damage immediately after installation by attaching crossed streamers to framing held away from glass. Do not apply markers to glass surface. Remove nonpermanent labels, and clean surfaces.

B. Protect glass from contact with contaminating substances resulting from construction operations, including weld splatter. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended by glass manufacturer.

C. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains; remove as recommended in writing by glass manufacturer.

D. Remove and replace glass that is broken, chipped, cracked, or abraded or that is damaged from natural causes, accidents, and vandalism, during construction period.

E. All loose lights shall be removed and reset before acceptance.

F. Final cleaning shall be done by the contractor under supplementary general conditions.

END OF SECTION

SECTION 09260

GYPSUM BOARD ASSEMBLIES

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:

1. Interior gypsum wallboard.
2. Tile backing panels.
3. Paperless mold and mildew resistant wallboard.
4. Acoustic insulation in gypsum wallboard assemblies.
5. Non-load-bearing steel framing.

B. Related Work: The following items are not included in this Section and will be performed under the designated Sections:

1. Section 06100 – Rough carpentry for installation of wood blocking.
2. Section 09900 – For wallboard priming and finishing.
3. Division 15 - FIRE PROTECTION for installation of access doors in gypsum board assemblies.
4. Division 15 - PLUMBING for installation of access doors in gypsum board assemblies.
5. Division 15 - HEATING, VENTILATING, AND AIR CONDITIONING for installation of access doors, pipes and duct sleeves in gypsum board assemblies.
6. Division 16 - ELECTRICAL for installation of access doors in gypsum board assemblies.

1.2 SUBMITTALS

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

B. Samples: Full-size Sample in 12-inch-long length for each trim accessory indicated.

1. Manufacturers' product data for adhesives used to laminate gypsum board panels to substrates, including printed statement of VOC content.

1.3 QUALITY ASSURANCE

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

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

1.4 STORAGE AND HANDLING

A. Store materials inside under cover and keep them dry and protected against damage from weather, condensation, direct sunlight, construction traffic, and other causes. Stack panels flat to prevent sagging.

1.5 PROJECT CONDITIONS

A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.

B. Do not install interior products until installation areas are enclosed and conditioned.

C. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

1.6 FMC STANDARD WALL TYPES

A. Refer to this wall types schedule for a description of all standard wall types for FMC projects.

WALL TAG	WALL TYPE DESCRIPTION
A	3-5/8" METAL STUD @ 16" O.C. TO 4" ABOVE FINISHED CEILING; 1 LAYER 5/8" GYPSUM BOARD EACH SIDE; LATERAL BRACING TO STRUCTURE @ 48" O.C. MAX, ALTERNATE SIDES
A_6	3-5/8" METAL STUD @ 16" O.C. TO 4" ABOVE FINISHED CEILING; 1 LAYER 5/8" GYPSUM BOARD EACH SIDE; LATERAL BRACING TO STRUCTURE @ 48" O.C. MAX, ALTERNATE SIDES
B	3-5/8" METAL STUD @ 16" O.C. TO 4" ABOVE FINISHED CEILING; 1 LAYER 5/8" GYPSUM BOARD EACH SIDE; LATERAL BRACING TO STRUCTURE @ 48" O.C. MAX, ALTERNATE SIDES; 3" SOUND ATTENUATION BATT INSULATION
B_6	6" METAL STUD @ 16" O.C. TO 4" ABOVE FINISHED CEILING; 1 LAYER 5/8" GYPSUM BOARD EACH SIDE; LATERAL BRACING TO STRUCTURE @ 48" O.C. MAX, ALTERNATE SIDES; 6" SOUND ATTENUATION BATT INSULATION
C	3-5/8" METAL STUD @ 16" O.C. TO ROOF/CEILING STRUCTURE; 1 LAYER 5/8" GYPSUM BOARD EACH SIDE
C_6	6" METAL STUD @ 16" O.C. TO ROOF/CEILING STRUCTURE; 1 LAYER 5/8" GYPSUM BOARD EACH SIDE
D	3-5/8" METAL STUD @ 16" O.C. TO ROOF/CEILING STRUCTURE; 1 LAYER 5/8" GYPSUM BOARD EACH SIDE; 3" SOUND ATTENUATION BATT INSULATION
D_6	6" METAL STUD @ 16" O.C. TO ROOF/CEILING STRUCTURE; 1 LAYER 5/8" GYPSUM BOARD EACH SIDE; 6" SOUND ATTENUATION BATT INSULATION
E	3-5/8" METAL STUD @ 16" O.C. TO ROOF/CEILING STRUCTURE; 1 LAYER TYPE "X" GYPSUM BOARD EACH SIDE; FIRE RATED JOINT SEALANT AT ALL EDGES AND PENETRATIONS
E_6	6" METAL STUD @ 16" O.C. TO ROOF/CEILING STRUCTURE; 1 LAYER TYPE "X"

	GYPSUM BOARD EACH SIDE; FIRE RATED JOINT SEALANT AT ALL EDGES AND PENETRATIONS
F	3-5/8" METAL STUD @ 16" O.C. TO ROOF/CEILING STRUCTURE; 1 LAYER TYPE “X” GYPSUM BOARD EACH SIDE; FIRE RATED JOINT SEALANT AT ALL EDGES AND PENETRATIONS; 3" SOUND ATTENUATION BATT INSULATION
F_6	6" METAL STUD @ 16" O.C. TO ROOF/CEILING STRUCTURE; 1 LAYER TYPE “X” GYPSUM BOARD EACH SIDE; FIRE RATED JOINT SEALANT AT ALL EDGES AND PENETRATIONS; 6" SOUND ATTENUATION BATT INSULATION
G	3-5/8" METAL STUD @ 16" O.C. TO ROOF/CEILING STRUCTURE; 1 LAYER 5/8" GYPSUM BOARD EACH SIDE; FIRE RATED JOINT SEALANT AT ALL EDGES AND PENETRATIONS; ENSURE CONTINUOUS SMOKE PROOF SEAL
G_6	6" METAL STUD @ 16" O.C. TO ROOF/CEILING STRUCTURE; 1 LAYER 5/8" GYPSUM BOARD EACH SIDE; FIRE RATED JOINT SEALANT AT ALL EDGES AND PENETRATIONS; ENSURE CONTINUOUS SMOKE PROOF SEAL
H	3-5/8" METAL STUD @ 16" O.C. TO ROOF/CEILING STRUCTURE; 1 LAYER 5/8" GYPSUM BOARD EACH SIDE FIRE RATED JOINT SEALANT AT ALL EDGES AND PENETRATIONS; 3" SOUND ATTENUATION BATT INSULATION; ENSURE CONTINUOUS SMOKE PROOF SEAL
H_6	6" METAL STUD @ 16" O.C. TO ROOF/CEILING STRUCTURE; 1 LAYER 5/8" GYPSUM BOARD EACH SIDE; FIRE RATED JOINT SEALANT AT ALL EDGES AND PENETRATIONS; 6" SOUND ATTENUATION BATT INSULATION; ENSURE CONTINUOUS SMOKE PROOF SEAL
I	NOT USED
J	3-5/8" METAL STUD @ 16" O.C. TO 41"; SOLID SURFACE TOP CAP; 1 LAYER 5/8" GYPSUM BOARD EACH SIDE; 3-1/2" TUBE STEEL SUPPORTS @ 48" O.C. ANCHORED TO CONCRETE SLAB
K	MINOR WORK TO EXISTING TENANT DEMISING WALL
-	ADD ADDITIONAL JOB SPECIFIC WALL TYPES AS NEEDED

PART 2 - PRODUCTS

2.1 NON-LOAD-BEARING STEEL FRAMING, GENERAL

A. Framing Members, General: Comply with ASTM C 754 for conditions indicated.

1. Steel Sheet Components: Comply with ASTM C 645 requirements for metal, unless otherwise indicated.
2. Protective Coating: manufacturer's standard corrosion-resistant zinc coating, unless otherwise indicated.

2.2 SUSPENSION SYSTEM COMPONENTS

A. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.0625-inch-diameter wire, or double strand of 0.0475-inch-diameter wire.

B. Hanger Attachments to Concrete:

1. Anchors: Fabricated from corrosion-resistant materials with holes or loops for attaching wire hangers and capable of sustaining, without failure, a load equal to 5 times that imposed by construction as determined by testing according to ASTM E 488 by an independent testing agency.

a. Type: Post-installed, expansion anchor.

C. Wire Hangers: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.162-inch diameter.

D. Carrying Channels: Cold-rolled, commercial steel sheet with a base-metal thickness of 0.0538 inch and minimum 1/2 inch wide flanges with depth as required for span and loading and indicated on Drawings.

E. Furring Channels (Furring Members): 0.0538-inch bare-steel thickness, with minimum 1/2 inch wide flanges, 3/4 inch deep.

F. Grid Suspension System for Ceilings: ASTM C 645, direct-hung system composed of main beams and cross-furring members that interlock.

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

a. Armstrong World Industries, Inc.; Drywall Grid Systems.
b. Chicago Metallic Corporation; Drywall Furring System.
c. USG Corporation; Drywall Suspension System.

2.3 STEEL FRAMING FOR FRAMED ASSEMBLIES

A. Steel Studs and Runners: ASTM C 645.

1. Minimum Base-Metal Thickness: 25 GA for walls less than 13'-0" in height
2. Minimum Base-Metal Thickness: 20 GA for walls greater than 13'-0" in height and less than 20'-0" in height.
3. For walls greater than 20'-0" in height, structural engineers shall consider doubling 20 GA studs and/or decreasing the stud spacing to achieve height requirement as opposed to decreasing the gauge of the studs.
4. At all corner guard locations, provide doubled 20 GA metal studs run continuously from floor to structure above.

B. Slip-Type Head Joints: Where indicated, provide one of the following:

1. Single Long-Leg Runner System: ASTM C 645 top runner with 2 inch deep flanges in thickness not less than indicated for studs, installed with studs friction fit into top runner

and with continuous bridging located within 12 inches of the top of studs to provide lateral bracing.

2. Double-Runner System: ASTM C 645 top runners, inside runner with 2 inch deep flanges in thickness not less than indicated for studs and fastened to studs, and outer runner sized to friction fit inside runner.
3. Deflection Track: Steel sheet top runner manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above; in thickness not less than indicated for studs and in width to accommodate depth of studs.

    a. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

        1) Steel Network Inc. (The); VertiClip Series.
        2) Superior Metal Trim; Superior Flex Track System (SFT).

C. Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width indicated.

1. Minimum Base-Metal Thickness: 0.021 inch.

D. Cold-Rolled Channel Bridging: 0.0538-inch bare steel thickness, with minimum 1/2 inch wide flanges.

1. Depth: 1-1/2 inches.
2. Clip Angle: Not less than 1-1/2 by 1-1/2 inches, 0.068 inch-thick, galvanized steel.

E. Hat-Shaped, Rigid Furring Channels: ASTM C 645.

1. Minimum Base Metal Thickness: 0.021 inch.
2. Depth: 1-1/2 inches.

F. Resilient Furring Channels: 1/2 inch deep, steel sheet members designed to reduce sound transmission.

1. Configuration: Asymmetrical or hat shaped.

G. Z-Shaped Furring: With slotted or non-slotted web, face flange of 1-1/4 inches wall attachment flange of 7/8 inch, minimum bare-metal thickness of 0.0179 inch, and depth required to fit insulation thickness indicated.

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

I. Isolation Strip at Exterior Walls: Adhesive-backed, closed-cell vinyl foam strips that allow fastener penetration without foam displacement, 1/8 inch thick, in width to suit steel stud size.

2.4 INTERIOR GYPSUM BOARD

A. General: Complying with ASTM C 36/C 36M or ASTM C 1396/C 1396M, as applicable to type of gypsum board indicated and whichever is more stringent.

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

    a. USG Corporation.
    b. Georgia Pacific.
    c. National Gypsum Company.

B. Regular Type:

1. Thickness: 5/8 inch.

2. Long Edges: Tapered.

C. Fire-Resistant Type X:

1. Thickness: 5/8 inch.
2. Long Edges: Tapered.

D. Flexible Type: Manufactured to bend to fit radii and to be more flexible than standard regular type gypsum board of same thickness.

1. Thickness: 1/4 inch.
2. Long Edges: Tapered.

E. Moisture Resistant Type - DensShield® or equal (for Toilet Rooms), Glass-Mat Backer Board / Tile Backing Panels: ASTM C 1396/C1396M.

1. Thickness: 1/2"
2. Long edges: Tapered

F. Paperless Mold & Moisture Resistant Type - DensArmor® Plus or equal (for behind all dialysis counters, hand wash sinks and prep sink areas, toilet room ceiling, janitor closet ceiling and medical waste ceiling, and any other wet wall areas not mentioned): ASTM D 3273.

1. Thickness: 5/8"
2. Long edges: Tapered

2.5 TRIM ACCESSORIES

A. Interior Trim: ASTM C 1047.

1. Material: Galvanized or aluminum-coated steel sheet or rolled zinc.
2. Shapes:

a. Cornerbead.
b. Bullnose bead.
c. LC-Bead: J-shaped; exposed long flange receives joint compound.
d. Expansion (control) joint.
e. Curved-Edge Cornerbead: With notched or flexible flanges.

B. Aluminum Trim: Extruded accessories of profiles and dimensions indicated.

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Fry Reglet Corp.
b. Gordon, Inc.
c. Pittcon Industries.

2. Aluminum: Alloy and temper with not less than the strength and durability properties of ASTM B 221, Alloy 6063-T5.
3. Finish: Corrosion-resistant primer compatible with joint compound and finish materials specified.

2.6 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C 475/C 475M.

B. Joint Tape:

1. Interior Gypsum Wallboard: Paper.

2. Glass-Mat Gypsum Board/Tile Backing Panels: 10-by-10 glass mesh, as recommended by panel manufacturer.

C. Joint Compound for Interior Gypsum Wallboard: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.

1. Prefilling: At open joints, rounded or beveled panel edges, and damaged surface areas, use setting-type taping compound.
2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use setting-type taping compound.
3. Fill Coat: For second coat, use setting-type, sandable topping compound.
4. Finish Coat: For third coat, use setting-type, sandable topping compound.
5. Skim Coat: For final coat of Level 4 finish, use setting-type, sandable topping compound.

2.7 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.

B. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.

1. Use adhesives that have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

C. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.

1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch thick.
2. For fastening cementitious backer units, use screws of type and size recommended by panel manufacturer.

D. Sound Attenuation Blankets: ASTM C 665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.

1. Fire-Resistance-Rated Assemblies: Comply with mineral-fiber requirements of assembly.

E. Acoustical Sealant: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

1. Acoustical Sealant for Exposed and Concealed Joints:

a. Pecora Corp.; AC-20 FTR Acoustical and Insulation Sealant.
b. United States Gypsum Co.; SHEETROCK Acoustical Sealant.

2. Acoustical Sealant for Concealed Joints:

a. Ohio Sealants, Inc.; Pro-Series SC-170 Rubber Base Sound Sealant.
b. Pecora Corp.; BA-98.
c. Tremco, Inc.; Tremco Acoustical Sealant.

F. Access Doors: Provide access doors in gypsum wallboard ceilings where required for access to mechanical and electrical units (i.e., fire dampers, electrical boxes). Access doors shall be of the size indicated on the drawings or as required for proper access to equipment beyond. Provide mounting straps, concealed hinges and screwdriver locks. Door panel should open to 180 degrees. All doors to be constructed from 16 gauge. Door and frame to have prime coat finish.

1. Fire Rated Walls
    a. Acudor Products, Inc.; FB-5060 Access Door.
2. Non-Fire Rated Walls
    a. Acudor Products, Inc.; DW-5040 Access Door.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and substrates, with Installer present, and including welded hollow metal frames and framing, for compliance with requirements and other conditions affecting performance.

B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

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

3.2 PREPARATION

A. Suspended Assemblies: Coordinate installation of suspension systems with installation of overhead structure to ensure that inserts and other provisions for anchorages to building structure have been installed to receive hangers at spacing required to support the Work and that hangers will develop their full strength.

1. Furnish concrete inserts and other devices indicated to other trades for installation in advance of time needed for coordination and construction.

B. Coordination with Sprayed Fire-Resistive Materials:

1. Before sprayed fire-resistive materials are applied, attach offset anchor plates or ceiling runners (tracks) to surfaces indicated to receive sprayed fire-resistive materials. Where offset anchor plates are required, provide continuous plates fastened to building structure not more than 24 inches o.c.
2. After sprayed fire-resistive materials are applied, remove them only to extent necessary for installation of non-load-bearing steel framing. Do not reduce thickness of fire-resistive materials below that required for fire-resistance ratings indicated. Protect adjacent fire-resistive materials from damage.

3.3 INSTALLATION, GENERAL

A. Installation Standard: ASTM C 754. Also comply with requirements in ASTM C 840 that apply to framing installation.

B. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.

C. Install bracing at terminations in assemblies.

D. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.

3.4 INSTALLING SUSPENSION SYSTEMS

A. Install suspension system components in sizes and spacings indicated on Drawings, but not less than those required by referenced installation standards for assembly types and other assembly components indicated.

B. Isolate suspension systems from building structure where they abut or are penetrated by building structure to prevent transfer of loading imposed by structural movement.

C. Suspend hangers from building structure as follows:

1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or suspension system.

   a. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.

2. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with locations of hangers required to support standard suspension system members, install supplemental suspension members and hangers in the form of trapezes or equivalent devices.

   a. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced installation standards.

3. Wire Hangers: Secure by looping and wire tying, either directly to structures or to inserts, eye screws, or other devices and fasteners that are secure and appropriate for substrate, and in a manner that will not cause hangers to deteriorate or otherwise fail.
4. Flat Hangers: Secure to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices and fasteners that are secure and appropriate for structure and hanger, and in a manner that will not cause hangers to deteriorate or otherwise fail.
5. Do not attach hangers to steel roof deck.
6. Do not attach hangers to permanent metal forms. Furnish cast-in-place hanger inserts that extend through forms.
7. Do not attach hangers to rolled-in hanger tabs of composite steel floor deck.
8. Do not connect or suspend steel framing from ducts, pipes, or conduit.

D. Fire-Resistance-Rated Assemblies: Wire tie furring channels to supports.

E. Seismic Bracing: Sway-brace suspension systems with hangers used for support.

F. Grid Suspension Systems: Attach perimeter wall track or angle where grid suspension systems meet vertical surfaces. Mechanically join main beam and cross-furring members to each other and butt-cut to fit into wall track.

G. Installation Tolerances: Install suspension systems that are level to within 1/8 inch in 12 feet measured lengthwise on each member that will receive finishes, and transversely between parallel members that will receive finishes.

3.5 INSTALLING FRAMED ASSEMBLIES

A. Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.

B. Install studs so flanges within framing system point in same direction.

C. Install tracks (runners) at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings, except where partitions are indicated to terminate at suspended ceilings. Continue framing around ducts penetrating partitions above ceiling.

1. Slip-Type Head Joints: Where framing extends to overhead structural supports, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies.
2. Door Openings: Screw vertical studs at jambs to jamb anchor clips on door frames; install runner track section (for cripple studs) at head and secure to jamb studs.

a. Install two studs at each jamb, unless otherwise indicated.
b. Install cripple studs at head adjacent to each jamb stud, with a minimum 1/2 inch clearance from jamb stud to allow for installation of control joint in finished assembly.
c. Extend jamb studs through suspended ceilings and attach to underside of overhead structure.

3. Other Framed Openings: Frame openings other than door openings the same as required for door openings, unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.
4. Fire-Resistance-Rated Partitions: Install framing to comply with fire-resistance-rated assembly indicated and support closures and to make partitions continuous from floor to underside of solid structure.

a. Firestop Track: Where indicated, install to maintain continuity of fire-resistance-rated assembly indicated.

5. Sound-Rated Partitions: Install framing to comply with sound-rated assembly indicated.
6. Curved Partitions:

a. Bend track to uniform curve and locate straight lengths so they are tangent to arcs.
b. Begin and end each arc with a stud, and space intermediate studs equally along arcs. On straight lengths of not less than 2 studs at ends of arcs, place studs 6 inches o.c.

D. Direct Furring: Attach to concrete or masonry with stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches o.c.

E. Z-Furring Members:

1. Erect insulation vertically and hold in place with Z-furring members spaced 24 inches o.c.
2. Except at exterior corners, securely attach narrow flanges of furring members to wall with concrete stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches o.c.
3. At exterior corners, attach wide flange of furring members to wall with short flange extending beyond corner; on adjacent wall surface, screw-attach short flange of furring channel to web of attached channel. At interior corners, space second member no more than 12 inches from corner and cut insulation to fit.

3.6 APPLYING AND FINISHING PANELS, GENERAL

A. Comply with ASTM C 840.

B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.

D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

E. Form control and expansion joints with space between edges of adjoining gypsum panels.

F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.

1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. in area.
2. Fit gypsum panels around ducts, pipes, and conduits.
3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch wide joints to install sealant.

G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2-inch wide spaces at these locations, and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

H. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.

3.7 APPLYING INTERIOR GYPSUM BOARD

A. Single-Layer Application:

1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing, unless otherwise indicated.
2. On partitions/walls, apply gypsum panels to minimize end joints.
3. On Z-furring members, apply gypsum panels vertically (parallel to framing) with no end joints. Locate edge joints over furring members.
4. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

B. Multi-Layer Application:

1. On ceilings, apply gypsum board indicated for base layers before applying base layers on walls/partitions; apply face layers in same sequence. Apply base layers at right angles to framing members and offset face-layer joints 1 framing member, 16 inches minimum, from parallel base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly.
2. On partitions/walls, apply gypsum board indicated for base layers and face layers vertically (parallel to framing) with joints of base layers located over stud or furring member and face-layer joints offset at least one stud or furring member with base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly. Stagger joints on opposite sides of partitions.
3. On Z-furring members, apply base layer vertically (parallel to framing) and face layer either vertically (parallel to framing) or horizontally (perpendicular to framing) with vertical joints offset at least one furring member. Locate edge joints of base layer over furring members.
4. Fastening Methods: Fasten base layers and face layers separately to supports with screws.

C. Laminating to Substrate: Where gypsum panels are indicated as directly adhered to a substrate (other than studs, joists, furring members, or base layer of gypsum board), comply with gypsum board manufacturer's written recommendations and temporarily brace or fasten gypsum panels until fastening adhesive has set.

D. Curved Surfaces:

1. Install panels horizontally (perpendicular to supports) and unbroken, to extent possible, across curved surface plus 12-inch-long straight sections at ends of curves and tangent to them.
2. For double-layer construction, fasten base layer to studs with screws 16 inches o.c. Center gypsum board face layer over joints in base layer, and fasten to studs with screws spaced 12 inches o.c.

3.8 APPLYING TILE BACKING PANELS

A. Areas Not Subject to Wetting: Install regular-type gypsum wallboard panels to produce a flat surface except at showers, and all wet walls, including walls behind dialysis counter, sink base cabinets, FRP panels, throughout the water treatment room, and other locations indicated to receive water-resistant panels.

B. Where tile-backing panels abut other types of panels in same plane, shim surfaces to produce a uniform plane across panel surfaces.

3.9 INSTALLING TRIM ACCESSORIES

A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.

B. Control Joints: Install control joints according to ASTM C 840 and in specific locations approved by Architect for visual effect.

C. Interior Trim: Install in the following locations:

1. Cornerbead: Use at outside corners, unless otherwise indicated.
2. LC-Bead: Use at exposed panel edges.
3. Curved-Edge Cornerbead: Use at curved openings.

D. Aluminum Trim: Install in locations indicated on Drawings.

3.10 FINISHING GYPSUM BOARD

A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.

B. Prefill open joints, rounded or beveled edges, and damaged surface areas.

C. Apply joint tape over gypsum board joints, except those with trim having flanges not intended for tape.

D. Gypsum Board Finish Levels: Finish panels to levels indicated below:

1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
2. Level 2: Panels that are substrate for tile.
3. Level 4: At panel surfaces that will be exposed to view, unless otherwise indicated.

E. Cementitious Backer Units: Finish according to manufacturer’s written instructions.

3.11 PROTECTION

A. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.

B. Remove and replace panels that are wet, moisture damaged, or exhibit mold growth. Repair of damaged panels in place is not acceptable.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION

SECTION 09511

ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:

1. Acoustical ceiling tiles and panels.
2. Suspension systems, grid systems and ceiling hangers.
3. Acoustical sealant at edge moldings at acoustical ceilings.

B. Related Work: The following items are not included in this Section and will be performed under the designated Sections:

1. Section 00850 – NATIONAL ACCOUNTS for pricing.
2. Section 09260 - GYPSUM BOARD ASSEMBLIES for gypsum board ceilings and soffits.
3. Division 15 - FIRE PROTECTION for fire-suppression components located in ceilings.
4. Division 15 - HEATING, VENTILATING AND AIR CONDITIONING for air handling and distribution components located in ceilings.
5. Division 16 - ELECTRICAL for light fixture and alarm system components located in ceilings.

1.2 SUBMITTALS

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

1. Manufacturer's product data for sealants, including printed statement of VOC content and material safety data sheets.

2. Manufacturer's ceiling tile sample with attached fire resistance classification and other technical data for each ceiling tile type installed to be used for Section 01700 Contract Closeout.

B. Coordination Drawings: Reflected ceiling plans drawn to scale and coordinating penetrations and ceiling-mounted items. Show the following:

1. Ceiling suspension members.
2. Method of attaching hangers to building structure. 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.

C. Asbestos Certification: Manufacturer's written certification that acoustical ceiling products contain no asbestos (0.0000%). Product labels indicating that it is the user's responsibility to test the products for asbestos are unacceptable and sufficient cause for rejection of the product on site.

D. Maintenance Data: For finishes to include in maintenance manuals.

1.3 QUALITY ASSURANCE

A. Source Limitations:

1. Acoustical Ceiling Panels: Obtain each type through one source from a single manufacturer.

2. Suspension Systems: Obtain each type through one source from a single manufacturer.

B. Fire-Test-Response Characteristics: Provide acoustical panel ceilings that comply with the following requirements:

1. Fire-Resistance Characteristics: Where indicated, provide acoustical panel ceilings identical to those of assemblies tested for fire resistance per ASTM E 119 by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.

a. Fire-Resistance Ratings: Indicated by design designations from UL's "Fire Resistance Directory" or from the listings of another testing and inspecting agency.

b. Identify materials with appropriate markings of applicable testing and inspecting agency.

2. Surface-Burning Characteristics: Provide acoustical panels complying with ASTM E 1264 for Class A materials as determined by testing identical products per ASTM E 84:

C. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01.

1.4 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 stabilized moisture content.

C. Handle acoustical panels carefully to avoid chipping edges or damaging units in any way.

1.5 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.

1.6 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.

1.7 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 two unopened boxes or each type.

PART 2 - PRODUCTS

2.1 ACOUSTICAL PANELS, GENERAL

A. Products: Subject to compliance with specified requirements, provide one of the following products for each type indicated.

B. ACT-1: General office use and as indicated.

1. Manufacturer and Model Number:
    a. Certainteed, “Baroque” BET-154 – Safetone Class A
    b. USG, “Radar Clima Plus” SLT 2220 – Class A
    c. Armstrong, “Tegular” Fine Fissured 1732 - Class A
2. Panel Size: 24 inches by 24 inches by 5/8 inch.
3. Panel Mounting: Revealed edge.
4. Noise Reduction Coefficient (NRC): Not less than 0.55.
5. Ceiling Attenuation Class (CAC): Not less than 33.
6. Color: White.
7. Grid Material: Painted aluminum.
8. Grid Face Width: 15/16 inch.
9. Recycled content: > 25%.

C. ACT-2: General office use and as indicated. (For UL Fire Resistance time-rated assemblies).

1. Manufacturer and Model Number:
    a. Certainteed, “Baroque” PBT-154 Protectone Class A
    b. USG, “Radar” SLT 2125 – Class A
    c. Armstrong, “Tegular” Fine Fissured 1833 - Class A
2. Panel Size: 24 inches by 24 inches by 5/8 inch.
3. Panel Mounting: Revealed edge.
4. Noise Reduction Coefficient (NRC): Not less than 0.55.
5. Ceiling Attenuation Class (CAC): Not less than 33.
6. Color: White.
7. Grid Material: Painted aluminum.
8. Grid Face Width: 15/16 inch.
9. Recycled content: > 25%.

D. ACT-3: Water Treatment and Mixing Room (SDS) Ceilings.

1. Manufacturer and Model Number:
    a. Certainteed, “Aquarock” 1182-CRF-1SV - Class A.
    b. USG, “Sheetrock Lay –In Ceiling ClimaPlus, Vinyl” 3260 – Class A.
    c. Armstrong, “Kitchen Zone” 673 – Class A.
2. Panel Size: 24 inches by 24 inches by 5/8 inch.
3. Panel Mounting: Trim edge.
4. Noise Reduction Coefficient (NRC): Not less than 0.55.
5. Ceiling Attenuation Class (CAC): Not less than 35.
6. Color: White.
7. Grid Material: Painted aluminum.
8. Grid Face Width: 15/16 inch.
9. Recycled content: > 50%.

2.2 METAL SUSPENSION SYSTEMS

A. 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.

1. Manufacturer and Model Number:
    a. Certainteed - 15/16" Classic Aluminum Capped Stab System.
    b. USG – Donn DX/DXL Suspension System.
    c. Armstrong – Prelude ML 15/16" Exposed Tee System.
2. Structural Classification: As recommended by manufacturer for the specified seismic region.

3. Cross Tee End Condition:
   a. Stainless Steel stab-in clip.
   b. Hook-over end tab.
4. Face Design: Double web construction.
5. Cap Material:
   a. Hot-dipped galvanized steel.
   b. Aluminum capped components (for humid environments).
6. Color: White, prefinished.
7. Grid Face Width: 15/16".

B. Attachment Devices: Size for five times the design load indicated in ASTM C 635, Table 1, "Direct Hung," unless otherwise indicated.

1. Anchors in Concrete: Anchors 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; zinc-plated for Class SC1 service.

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.

C. 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 three 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 diameter wire.

D. Hold-Down Clips: At vestibules and areas subject to wind uplift, provide manufacturer's standard hold-down clips spaced 24 inches on all cross tees.

2.3 METAL EDGE MOLDINGS AND TRIM

A. 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 fit acoustical panel edge details and suspension systems indicated; 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.
3. For narrow-face suspension systems, provide suspension system and manufacturer's standard edge moldings that match width and configuration of exposed runners.

2.4 ACOUSTICAL SEALANT

A. Acoustical Sealant for Concealed Joints: Manufacturer's standard nondrying, non-hardening, non-skinning, 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.

B. 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 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. 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. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.
4. 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.
5. Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts, post-installed mechanical or adhesive anchors, or power-actuated fasteners that extend through forms into concrete.
6. Do not attach hangers to steel deck tabs.
7. Space hangers not more than 48 o.c. along each member supported directly from hangers, unless otherwise indicated; provide hangers not more than 8 inches 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 wall moldings before they are installed.
2. Screw attach moldings to substrate at intervals not more than 16 inches o.c. and not more than 3 inches from ends, leveling with ceiling suspension system to a tolerance of 1/8 inch in 12 feet. 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. Paint cut edges of panel remaining exposed after installation; match color of exposed panel surfaces using coating recommended in writing for this purpose by acoustical panel manufacturer.
2. Install hold-down clips in areas indicated, in areas required by authorities having jurisdiction, and for fire-resistance ratings; space as recommended by panel manufacturer's written instructions, unless otherwise indicated.

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

SECTION 09610

FLOOR TREATMENT

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:

a. Water-based urethane floor sealer/finish/coating
b. Sealer/finish stripper
c. Grout Cleaner
d. Grout colorant/sealer
e. Urethane-tread casters

B. Related Work: The following items are not included in this Section and will be performed under the designated Sections:

a. Section 00850 – NATIONAL ACCOUNTS for pricing
b. Section 09650 - RESILIENT FLOORING

C. THIS PRODUCT IS ONLY TO BE USED FOR RENOVATION AND EXPANSION PROJECTS WITH THE SPECIFIC APPROVAL OF THE FMC PROJECT MANAGER.

1.2 SUBMITTALS

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

1. Manufacturers' product data for adhesives, including printed statement of VOC content.

2. Samples for Verification:
   a. Samples can be provided to Ultra Durable Floors for verification of appearance on the desired and/or specified flooring materials prior to installation when requested.
   b. Flooring materials must be sent to Ultra Durable Floors within a reasonable time frame for coating to be applied and returned.

1.3 QUALITY ASSURANCE

A. Applicator Qualifications:
   a. Only trained and certified installation contractors will be used to provide preparation and installation services.

B. Source limitations:
   a. Only products shipped directly from Ultra Durable Floors or an approved distributor will be used for floor coating applications.
   b. No substitutes will be allowed for the coating products:
      i. Alternative stripper chemicals may be used if unavailable from UD Floors, or if additional quantity is needed and time does not allow for shipping.
      ii. Various grout colorant/sealers are available and can be incorporated into our system. Some contractors prefer specific brands. The colorant/sealer chosen typically has no effect on the overall solution for tile and grout floors.

1.4 DELIVERY, STORAGE AND HANDLING

A. Materials will be delivered to the job site either by the contractor or by direct parcel carrier. (Preferred delivery by the contractor working on the project).

B. Materials must be stored in a cool, dry environment away from fluctuating heat sources and should be kept at a temperature within the range of 45 degrees to 75 degrees F.
   a. Do not allow product to freeze.

b. If product was susceptible to heat at any time during transfer or storage, it is best to cool the product down as cool as possible without freezing.

C. Keep containers upright and unopened prior to first use.

1.5 PROJECT CONDITIONS

A. Coatings should be applied in a temperature-controlled environment at an optimal temperature of 65-75 degrees F. The air should be as dry as possible for optimal drying/curing time.
   a. High humidity can potentially slow down the drying/curing process

B. The flooring surfaces to be coated will be free of equipment and/or construction debris.
   a. It is not necessary to have a completely dust- and dirt-free floor prior to the preparation and application procedures. However, major build up of dust and/or construction debris can extend the time associated with the floor preparation procedures and add to the price of the service.

C. Preferably, no finish, sealer or coating will be applied to the flooring surfaces prior to a scheduled coating of products from UD Floors.
   a. The factory applied finish/sealer on VCT floors provides enough protection during construction prior to the preparation and application procedures of UD Floors coating systems.
   b. With tile and grout floors, it is best to coat the floors prior to applications of any silicone caulking around toilets, perimeter tiles and/or other fixtures.
      i. Because unsealed grout is porous and easily stained, plumbers, painters and other contractors should apply plastic sheeting on the floor when doing work. Stains created from clean up of spilled paints or adhesives can permanently stain grout.
   c. Even though UD Floors' coating systems are typically ready for foot traffic after eight hours or less, it is best to allow a full 24 hours prior to additional construction traffic.
   d. After application of coating, other building contractors should take extreme caution not to damage the coating.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Only products supplied and/or approved by UD Floors will be used for coating applications
   a. Ultra Durable Urethane, manufactured exclusively by UD Floors
   b. www.udfloors.com
   c. Sealer/Finish Stripper – no specific requirements, but certified contractors will be encouraged to use stripper chemicals with low quantities of hazardous components
   d. Grout Cleaner – for the tile and grout preparation process, UD Floors offers a product that contains no VOCs that is equally as effective as any product on the market, however some contractors will have experience will alternative products and methods. If proven not to interfere with the quality of our coating products, these products and processes will be approved
   e. Grout Colorant/Sealer – some experienced contractors who have worked with the coating systems from UD Floors have used various colorant/sealer products with equal effectiveness. As long as the product used does not compromise the coating performance, it will be approved for use.

2.2 MATERIAL COMPATIBILITY

A. Only products and materials that are compatible with UD Floors coatings and pre-tested for quality will be used by certified installation contractors.

PART 3 – EXECUTION

3.1 EXAMINATION

A. An examination of the flooring surface will be conducted by the trained, certified contractor prior to application of coating.
    a. If surface is found to be faulty or damaged, the general contractor will be notified immediately to allow for correction prior to coating.
        i. In some cases, damage can be corrected as a result of the coating process, or can be corrected after the initial coating process.

3.2 PREPARATION

A. Remove all previously applied coatings, finishes and/or sealers using chemical and mechanical stripping procedures.
    a. Rotary floor machine with high-quality stripping pad or special stripping brushes
    b. High Quality floor stripper chemical (preferably green and free of harmful chemicals requiring minimal water for dilution)
    c. If high alkaline stripper solution is used, floor must be neutralized
    d. Neutralize with a solution of citric acid and water
    e. While neutralizing solution is on floor, screen VCT flooring with a 150-grit sanding screen to further open up the pores and minimize uneven stripping of previous coatings/finishes/sealers.
    f. Rinse floor thoroughly
    g. Allow plenty of time for drying
        i. Moisture can often seep easily into seams and cracks between tiles. Ensure that excess moisture is not still coming up from the tile seams prior to coating.
B. Perform a final cleaning of the floor prior to coating using a damp microfiber flat mop
    a. Use a dry microfiber flat mop or a tacky cloth to lift any final debris from the floor

3.3 APPLICATION

A. Follow the procedures and guidelines that are strictly outlined by UD Floors.
    a. Only certified, trained installers will be allowed to provide the finishing services.
    b. Proper and approved tools and applicators must be used to effectively apply the coating.
    c. Pre-plan the coating application to incorporate an appropriate exit strategy.
    d. Coatings will be applied at the approved thickness for effective coverage according to manufacturer’s instructions

3.4 FIELD QUALITY CONTROL

A. UD Floors will provide quality control analysis upon request and/or randomly at the discretion of UD Floors.
    a. Certified contractor will ensure that quality standards are met during and after the application process.

3.5 CLEANING

A. Certified Contractor will properly clean up any and all spills or mess associated with applying floor coating.
B. Routine cleaning procedures will be provided to FMC and/or the contract cleaning provider for each clinic.

3.6 PROTECTION

A. Certified contractor will protect the work of other trades and will protect other surfaces from damage while applying urethane floor coatings.

B. Certified contractor will apply “Wet Floor” signs and will lock and/or tape off doorways to prevent early access from other trade providers and/or building occupants.

END OF SECTION

SECTION 09650

RESILIENT FLOORING

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:

1. Heterogeneous Sheet Flooring
2. Vinyl Composition Tile (VCT) (for renovation projects only)
3. Resilient wall base and accessories.
4. Concrete Slab Moisture and pH Testing
5. Substrate preparation for resilient flooring and accessories.

B. Related Work: The following items are not included in this Section and will be performed under the designated Sections:

1. Section 00850 – NATIONAL ACCOUNTS for pricing.
2. Section 09681 - SHEET CARPETING for carpet accessories.

1.2 REFERENCES

A. ASTM International:

1. ASTM F710-11, 'Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring'.
2. ASTM F1869-11, 'Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride'.
3. ASTM F2170-11, 'Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes'.

B. International Concrete Repair Institute (ICRI):

1. ICRI Guideline 03732 - Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, and Polymer Overlays.

1.3 SUBMITTALS

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

1. Manufacturers' product data for adhesives, including printed statement of VOC content.

B. Samples for Verification:

1. Tile Flooring: Full-size units of each color and pattern of resilient floor tile required.
2. Resilient Wall Base and Accessories: Manufacturer's standard-size samples, but not less than 12 inches long, of each resilient product color and pattern required.

C. Seaming Diagrams:

1. Submit complete floor plan diagram for all areas receiving sheet vinyl indicating all proposed heat welding seam locations.

D. Samples for Section 01700 Contract Closeout:

1. Tile Flooring (VCT & Sheet Vinyl): Manufacturer's sample with attached critical radiant flux testing (fire resistance) classification and other technical data for each floor tile type and color installed to be used for Section 01700 Contract Closeout.

E. Maintenance Data: For resilient products to include in maintenance manuals.

F. Concrete Slab Moisture and pH Test Report which includes the following:

1. Executive Summary.

2. Certified Moisture and Alkalinity (pH) Test Report.
3. Project floor plan with test points indicated.
4. Risk Assessment and Repair Option Chart.
5. Test results mapping diagrams.
6. Site Photographs.
7. Repair Option Specification.
8. Product Data and Installation Instructions.

G. All test results shall be forwarded to the FMC Project Manager immediately following testing.

H. Information furnished in Moisture Testing Report shall not be used to modify the requirements of these specifications except as specifically required herein or unless otherwise specified or directed by FMC Project Manager or RECS Atlanta.

1.4 QUALITY ASSURANCE

A. Fire-Test-Response Characteristics: Provide products identical to those tested for fire-exposure behavior per test method indicated by a testing and inspecting agency acceptable to authorities having jurisdiction.

B. Concrete Slab Moisture and pH Testing: Concrete slab moisture vapor emission, in-situ relative humidity and pH (alkalinity) testing will be conducted by Owner's Moisture Testing Agency, paid for by the General Contractor.

1. Owner's Moisture Testing Agency: Independent Floor Testing & Inspection, Inc. (IFTI). Contact: James Pouliot (800) 490-3657; email: Fresenius.spec@ifti.com

2. No substitutions or alternate testing company is permitted.

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 or more than 90 deg F. Store tiles on flat surfaces.

1.6 PROJECT CONDITIONS

A. Moisture Testing.

1. Testing conditions inside building shall be brought to same ambient temperature and relative humidity levels as to be expected during normal occupancy of building (service conditions). Service conditions include normal levels of humidity, lighting, heating, and air conditioning:

a. If service conditions are not possible, test conditions shall be 75 ± 10°F (23.9 ± 5.5°C) and 50 ± 10% relative humidity.

2. Maintain these conditions forty eight (48) hours prior to, and during testing. Otherwise, results may not accurately reflect amount of moisture present in concrete slab or would normally be emitted from or through concrete slab during normal operating conditions.

3. If test conditions requirements cannot be satisfied at the time of the testing, the test must postpone until such time as the required ambient conditions can be established.

B. Product Installation.

1. Maintain temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 95 deg F in spaces to receive floor tile during the following time periods, per ASTM E 1907:

a. 48 hours before installation.

b. During installation.
c. 48 hours after installation.

C. After post installation period, maintain temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F.

D. Close spaces to traffic during floor covering installation.

E. Close spaces to traffic for 48 hours after floor covering installation.

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

PART 2 - PRODUCTS

2.1 DISTRIBUTORS:

A. Mannington Commercial

2.2 HETEROGENEOUS SHEET FLOORING

A. Sheet Vinyl – Field Color (Woodgrain), Typical: ASTM F-1303, Type 1, Grade 1, Class B.

1. Product: Realities, by Mannington
2. Style and colors: Refer to current FMC Finish Schedule
3. Thickness: .080 inch
4. Size: 12'-0" wide x 45’-0” 37’-0” Long, Roll stock (standard)

B. Sheet Vinyl - Accent Border (Speckled), Typical: ASTM F-1913, Type 1, Grade 1, Class B.

1. Product: Entwined - Lino, by Mannington Commercial
2. Style and colors: Refer to current FMC Finish Schedule
3. Thickness: .080 inch
4. Size: 12'-0" wide x 45’-0” 37’-0” Long, Roll stock

2.3 RESILIENT WALL BASE

A. Wall Base: ASTM F 1861.

1. Products:
   a. Commercial Wall Base, by Mannington Commercial
2. Style and Colors: Refer to Finish Schedule
3. Type (Material Requirement): TV or TS (rubber, vulcanized thermoset), TP (rubber, thermoplastic) or Vinyl
4. Shape: Straight (toeless) at carpet and coved at resilient flooring
5. Standard Thicknesses: 0.080 inch (vinyl); 0.125 inch (rubber)
6. Height: 4 inches
7. Lengths: Cut lengths 48 inches long or coils in manufacturer's standard length
8. Surface: Smooth

2.4 MOLDED VINYL WALL BASE

A. Wall Base: ASTM F 1861.
1. Products:
   a. Elegance, by Mannington Commercial
2. Style and Colors: Refer to current FMC Finish Schedule.
3. Type (Material Requirement): TP (Thermoplastic Rubber)
4. Shape: High flat surface wall base profile with sculptured top
5. Standard Thicknesses: 0.1875 inches

6. Height: 6 inches
7. Lengths: 36'-0" coiled length per carton
8. Corners: 15 pcs per carton
9. Mounting: Use MR101 Acrylic Wall Base Adhesive

2.5 RESILIENT MOLDING ACCESSORIES

A. Types Include the Following As Applicable: Carpet edge for glue-down applications, nosing for carpet, nosing for resilient floor covering, reducer strip for resilient floor covering, joiner for tile and carpet.
   1. Manufacturer: Mannington Commercial
   2. Material: Rubber or vinyl, as indicated
   3. Profile and Dimensions: As indicated

B. Product: Transition Strip (from concrete slab to quarry tile)
   1. Johnsonite Vinyl Adapter #CTA-XX-Q
   2. Color – Per FMC Finish Schedule

C. Product: Trim Cap (for Heterogeneous Sheet Flooring)
   1. Southland Aluminum Trim – Model #CC18
   2. Color – Aluminum
   3. Provided by Mannington

D. Product: Outside Corner Trim (for Heterogeneous Sheet Flooring)
   1. Crain Trim Line Vinyl Corner System
   2. Color – 207 Silver

2.6 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, Portland cement based or blended hydraulic cement based formulation provided or approved by resilient product manufacturer for applications indicated.
   1. Ardex Forti Finish – High Strength, Self-Drying Finishing Underlayment

B. Water-resistant type adhesives as provided in Owner's Moisture Testing Agency Certified Moisture Test Report 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. VCT and Asphalt Tile Adhesives: 50 g/L
      b. Cove Base Adhesives: 50 g/L

C. Outside Corner Trim Adhesive
   1. Johnsonite Power Tape Adhesive System

2.7 ADHESIVES – HETEROGENEOUS SHEET FLOORING

For a documented moisture vapor emission rate (MVER), no more than 8 lb/1000 sq. ft. as determined by ASTM F-1869 test method, and no more than 90% RH as determined by ASTM F-2170, use the following product~~s~~ unless otherwise furnished in accordance with Owner's Moisture Testing Agency recommendations:
   1. M-Guard V-88 Commercial Adhesive by Mannington

~~E.~~B. When the moisture vapor emission rate (MVER) is above 8 lb/1000 sq. ft. as determined by ASTM F-1869 test method and above 90% RH as determined by ASTM F-2170, an approved epoxy-based moisture mitigation system must be employed in accordance with Owner's Moisture Testing Agency recommendations when heterogeneous sheet flooring is to be installed. Vinyl Composition Tile (VCT): V-11 Premium Latex Adhesive, by Mannington.

~~F.~~C. For high concrete alkali conditions (above 10 pH), concrete slab must be washed with an auto-scrubber and clean water to reduce pH to below 10 prior to flooring installation.

PART 3 - EXECUTION

3.1 PREPARATION

A. General: Prepare and clean substrates according to resilient flooring manufacturer's written instructions for substrate indicated.

B. Concrete Substrates: Provide sound concrete surfaces free of laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants incompatible with resinous flooring.
   1. Prepare floor substrate in accordance with ASTM F710-11, 'Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring'.
   2. Repair damaged and deteriorated concrete according to resilient flooring manufacturer's written recommendations.

C. Slab Moisture and Alkali Testing:
   1. Provide access for and cooperate with Owner's Moisture Testing Agency.
   2. Maintain ambient temperatures of not less than 65 F or more than 85 F in spaces to receive testing for 48 hours prior to commencement of and during testing.
   3. Maintain relative humidity between 40 and 60 percent in spaces to receive testing for 48 hours prior to commencement of and during testing.
   4. Notify Owner's Moisture Testing Agency no less than 30 calendar days prior to the building being enclosed and temperature and relative humidity meeting the requirements for testing.
   5. Notify Owner's Moisture Testing Agency no less than 10 working days prior to commencement of testing.
   6. Moisture Testing to commence no less than 12 working days prior to scheduled flooring installation.
   7. Owner's Moisture Testing Agency will require no more than 7 working days for testing on Site and issuing Moisture Testing Report.
   8. Perform anhydrous calcium chloride test in accordance with ASTM F 1869-11, Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride and manufacturer's instruction.
      a. The number of tests required is determined by the square footage of the project:
         i. Three (3) tests are required for the first 1,000 square feet, and One (1) additional test for each 1,000 square feet or fraction thereof.
   9. Perform relative humidity test in accordance with ASTM 2170-11 Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using In Situ Probes.
      a. The number of tests required is determined by the square-footage of the project:
         i. Three (3) tests are required for the first 1,000 square feet, and one (1) additional test for each 1,000 square feet or fraction thereof.
   10. Perform pH testing in accordance with ASTM F 710-11 'Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring' at the same time as moisture testing.

D. 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.

E. Use trowelable leveling and patching compound to fill cracks, holes, and depressions in substrates.

F. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.

1. Do not install resilient products until they are same temperature as space where they are to be installed.

G. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation. After cleaning, examine substrates for moisture, alkaline salts, carbonation, and dust. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PRE-INSTALLATION TESTING BY CONTRACTOR

A. Bond Test: Determine suitability of concrete subfloor for receiving specified floor covering with regard to moisture content and curing compounds. Use bond test recommended by flooring manufacturer.

B. Perform bond test per ASTM C1583 at all newly poured trench fills.

3.3 RESILIENT FLOORING INSTALLATION, GENERAL

A. Install resilient flooring in strict accordance with the latest edition (available at the time of installation) of flooring manufacturer's installation instructions.

3.4 RESILIENT SHEET VINYL INSTALLATION

A. General Installation Instructions:
1. Cut order pieces should be rolled face out on a core to take to the job site. Otherwise, the roll will flatten or "oval," making it difficult to get the floor covering to lay flat when unrolled.
2. The floor covering, adhesive, and room temperature must be kept at a minimum temperature of 65°F with a maximum of 90°F for at least 48 hours before and during, and 48 hours after installation.
3. All subfloor patching on and below grade must be done with a quality cementitious floor patch or embossing leveler as appropriate.
4. Never install Mannington sheet goods over residual asphalt-type (cut back) adhesive. It can bleed through the new floor covering. Residual asphalt type adhesive must be removed or isolated from the finished flooring by providing a mechanical barrier, such as Mannington MVP-2023.
5. Should only be installed on properly prepared concrete substrates. (See concrete section below.) Do not install Realities and Primus products on wood panel subfloors.
6. All seams must be heat welded with Mannington solid color weld rod.

B. Subfloor Information:
1. Careful and correct preparation of the subfloor is a major part of a satisfactory sheet floor covering installation. Roughness or unevenness of the subfloor will telegraph through the new floor covering, resulting in an unsightly surface and excessive wear on high spots. Proper subfloor selection and preparation are essential for a trouble-free job.
   a. Wood subfloors – MANNINGTON COMMERCIAL PRODUCTS REALITIES AND PRIMUS SHOULD NOT BE INSTALLED OVER WOOD PANEL SUBFLOORS.
   b. Concrete Subfloors

i. Concrete subfloors must be dry, smooth, and free from dust, solvent, paint, wax, grease, oil, asphalt sealing compounds and other extraneous materials. The surface must be hard and dense, and free from powder or flaking.
ii. New concrete slabs must be thoroughly dry (at least six (6) weeks) and completely cured. Curing agents, surface hardeners and other additives may cause adhesive bonding failure. These should be removed by sanding or grinding.
iii. All concrete slabs shall be tested for moisture regardless of age or grade level before installing floor covering material.
iv. Concrete floors with a radiant heating system are satisfactory, provided the temperature of the floor does not exceed 90°F at any point.
v. Holes, grooves, and other depressions must be filled with Mannington MVP-2023 patching and leveling compound (or equivalent), and troweled smooth and feathered even with the surrounding surface.

C. Existing Resilient Floor Covering:
1. To achieve maximum product performance, Realities and Primus should not be installed over existing resilient floor coverings. In the rare cases where removal of the existing resilient floor coverings is not an option, the existing flooring must be covered with Mannington MVP-2023 or other appropriate porous underlayment.
2. NOTE: Consult Mannington's Commercial Installation Guide or the Recommended Work Practices brochure from the Resilient Floor Covering Institute for specific instructions on removal of old resilient floor covering. Visit www.rfci.com.
3. WARNING: Do not sand, dry sweep, dry scape, drill, saw, bead blast, or mechanically chip or pulverize existing resilient flooring, backing, lining, felt, paint, asphaltic "cutback" adhesives, or other adhesives. These products may contain asbestos fibers or crystalline silica. Avoid creating dust.
4. Inhalation of such dust is a cancer and respiratory tract hazard. Smoking by individuals exposed to asbestos fibers greatly increases the risk of serious bodily harm. Unless positively certain that the product is a non-asbestos-containing material, you must presume it contains asbestos.
5. Regulations may require that the material be tested to determine asbestos content. The Resilient Floor Covering Institute (RFCI) document "Recommended Work Practices for Removal of Resilient Floor Coverings" should be consulted for a defined set of instructions addressed to the task of removing all resilient floor covering structures. For more information, visit the Resilient Floor Covering Institute at www.rfci.com.

D. Cutting and Fitting:
1. It is imperative that the material, adhesive and job site be maintained at a minimum ambient temperature of 65°F or a maximum of 90°F 48 hours before, during and 48 hours after installation.
2. If the material has been stored at colder temperatures, it will be necessary to unroll the material and allow it to relax overnight before proceeding with the installation.
3. If the job site is complex and requires a precise fit, traditional pattern scribing techniques should be used.
4. The material may also be fit using direct scribing techniques. Once the material has been fit, it will be necessary to tube lap half of the sheet back to expose the underfloor for adhesive application.
5. Care should be taken when folding the material back. Always fold the material in a wide radius to avoid sharp kinks and creases which may cause breaks in the product.

E. Adhesive Application:

1. After the material has been trimmed to fit the room, it should be tubed or lapped back to expose the underfloor.
2. On porous substrates, V-88 adhesive should be applied with a 1/16" wide, 1/32" deep, spaced 1/32" apart, notched trowel.
3. Follow all directions on adhesive container.
4. The adhesive must be spread over 100% of the exposed subfloor, leaving no gaps or puddles. Uniform coverage can be maintained by keeping the trowel clean and properly notched.
5. After the adhesive has been applied, roll the sheet forward into the adhesive to eliminate trapping air. Do not drop or flop the material into the adhesive. Roll the floor covering with a three-section 100 lb. or heavier floor in both directions. After the first half of the sheet has been adhered and rolled, fold back the second half and repeat the procedure.
6. Wait 1-2 hours then re-roll again to ensure full contact and to remove any trapped air.

   CAUTION: When providing open time, do not permit the adhesive to 'skin' over or dry. Too much open time will result in insufficient bonding.

F. Seaming:
1. Lay out resilient sheet vinyl flooring in conformance with the approved seaming diagram.
2. Realities and Primus are available only in 12' widths. Choose product width to eliminate unnecessary seams and minimize waste. When seaming is required with Mannington Commercial heterogeneous sheet flooring, the materials should be positioned Reverse Sheets for seaming.
3. The construction of heterogeneous flooring requires that the seams be cut using the trace cutting technique.
4. The selvage edge of one sheet should be straight-edged approximately 3/8" from the edge.
5. Position the sheets in such a manner that the straight-edged is approximately 3/8" from the edge.
6. Carefully trace along the edge of the top sheet with a utility knife with a sharp blade or a cutting tool designed for this purpose. Remove the trimmed selvage edge of the bottom sheet. Once the seams are cut, weigh the sheets and tube or lap back the sheets to expose the underfloor. Apply the appropriate Mannington adhesive using the correctly notched trowel over 100% of the exposed underfloor.
7. After providing sufficient open time for the adhesive, lay the straight-edged sheet in to the adhesive first and then lay in the second sheet.
8. Roll the adhered areas to within about 6" of the seam line with a 100 lb. three-section floor roller.
9. Roll the seam area with a hand seam roller to bring the seam edges level. Re-roll the entire adhered area with the 100 lb. floor roller.
10. Thoroughly clean the seam area and wipe dry.

G. Heat Welding Heterogeneous Flooring:
1. Seams may be heat-welded using coordinating solid color weld rod.
2. Wait at least 24 hours after initial installation to allow the adhesive to cure before grooving Realities and Primus to receive the heat weld rod.
3. Proper temperature of the heat welding tool is critical to the success of this process. Heat welding is always dependent on speed of application and temperature. Practice on a scrap piece of material to determine optimum speed and temperature.
4. After the weld rod has cooled, trim the applied weld rod in two steps. Always use a trim plate with a sharp spatula trim knife for the first pass. Trim weld rod flush with the spatula knife, being careful to not gouge the vinyl surface.

5. Mannington Commercial Heat Weld Rod is color coordinated for use with Realities and Primus. Contrasting colors may be used if so desired.

H. Heat Welded Seam Sealing:
1. Apply Mannington Quantum Guard HP Seam Coater to all heat welded seams after weld rod installation is complete. Follow all manufacturer's instructions.

I. Flash Coving:
1. All Mannington Commercial sheet flooring can be integrally self or flash coved at the wall line. Flash coving is the procedure in which the flooring material is continued up the wall to the height of 4 or 6 inches. This coving technique eliminates the floor-wall juncture and provides for easy maintenance.
2. When flash coving is required, follow these recommendations:
   a. Prepare the area by installing a cove fillet strip and a cove cap.
   b. The cap should be firmly attached to the wall at the designated height. Outside corners in the cap should be notched and formed rather than mitered. This eliminates a sharp edge at the corner.
   c. Cove fillet strip is available in both plastic and wood. The fillet strip should have a minimum 1-1/3" radius.
   d. The cove stick should be precisely mitered at all inside and outside corners and firmly secured into the floor or the wall.
   e. Best results can be obtained by pattern or template scribing Mannington Commercial Sheet flooring when flash coving is required. Traditional pattern scribing techniques should be followed.
   f. Inside corners should be cut net, with no fullness or gaps. Outside corners must be filled using “boot” plugs.
   g. All Treatment Room cabinetry must be flash coved.

J. Finishing the Job:
1. Cover all exposed edges.
2. Use vinyl cove base along the walls, cabinet toe kicks, etc.
3. Use strips in doorways or where new flooring joins another floor covering.
4. Caulk along tubs, toilet bowls, etc.
5. Do not wash the floor for 48 hours after installation.
6. After 48 hours, damp mop with water only to remove residual surface dirt.
7. Follow appropriate maintenance schedule for heterogeneous flooring products.

K. Cautions and Miscellaneous:
1. Do not place heavy items on newly installed floor covering for at least 48 hours after completion of the installation. Heavy furniture should be equipped with suitable non-staining, wide-bearing casters.
2. Furniture should be moved onto the newly installed floor using an appliance hand truck over hardboard runways.
3. Floor covering subjected to excessive heat and light exposure is subject to thermal degradation. Use appropriate precautions to minimize potential affects on the floor covering.
4. Oil or petroleum-based products can result in surface staining. Do not track asphalt driveway sealer or automobile oil drips on to the vinyl floor covering.
5. Use non-staining walk-off mats at building entrances to remove excess dirt and grit from foot traffic – rubber can discolor vinyl floor covering.

3.5 RESILIENT TILE INSTALLATION

A. Lay out 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 in pattern indicated.

B. Match 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.

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

D. Extend tiles into toe spaces, door reveals, closets, and similar openings.

E. 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.

F. Install tiles on covers for telephone and electrical ducts and similar items in finished floor areas. Maintain overall continuity of color and pattern with pieces of tile installed on covers. Tightly adhere tile edges to substrates that abut covers and to cover perimeters.

G. Adhere 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.

3.6 RESILIENT WALL BASE INSTALLATION

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

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

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

D. Do not stretch wall base during installation.

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

F. Inside Corners: Meter, scribe or wrap base at inside corner.

G. Outside Corners: Wrap base around outside corners. Shave a strip approximately 1/4" wide and 1/4 the thickness from the back of the wall base where the corner will be positioned.

3.7 RESILIENT ACCESSORY INSTALLATION

A. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of floor coverings that would otherwise be exposed.

3.8 CLEANING AND PROTECTION

A. Perform the following operations immediately 48 hours after completing resilient product installation:
   1. Remove adhesive and other blemishes from exposed surfaces.
   2. Sweep and vacuum surfaces thoroughly.

3. Damp-mop surfaces with water only to remove marks and soil.
   a. Do not wash surfaces until after 48 hours.

B. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period. Use protection methods recommended in writing by manufacturer.
   1. Cover products installed on horizontal surfaces with un-dyed, untreated building paper until Substantial Completion.
   2. Do not move heavy and sharp objects directly over surfaces. Place hardboard or plywood panels over flooring and under objects while they are being moved. Slide or roll objects over panels without moving panels.

C. Provide Owner or Owner’s representative with in-service training seminar on manufacturer-recommended application and maintenance of new resilient flooring surfaces at or prior to Substantial Completion.

3.9 WARRANTIES

A. Mannington Commercial Flooring provides a 10 year warranty to Fresenius Medical Care on all flooring installations with Mannington products that are installed according to the manufacturer's installation instructions. Proper slab testing must be in place prior to flooring installation. All installations must be documented with flooring and adhesive material purchase orders and slab moisture-testing reports in order to achieve the full flooring installation warranty from Mannington.

END OF SECTION

SECTION 09670

RESINOUS FLOORING

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:
   1. Resinous flooring with epoxy body coats.

B. Related Work: The following items are not included in this Section and will be performed under the designated Sections:
   1. Section 07920 - JOINT SEALANTS for sealants installed at joints in resinous flooring systems.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated. Include manufacturer's technical data, application instructions, and recommendations for each resinous flooring component required.

B. Samples for Verification: For each resinous flooring system required, 6 inches square, applied to a rigid backing by Installer for this Project.

C. Samples for Section 01700 Contract Closeout: 3 inches square, applied to rigid backing for each type and color resinous flooring installed, with attached fire resistance classification and other technical information to be used in Section 01700 Contract Closeout.

D. Material Certificates: For each resinous flooring component, signed by manufacturer.

E. Maintenance Data: For resinous flooring to include in maintenance manuals.

F. Test Results: For field testing of substrate, signed by installer.

1.3 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced installer (applicator) who is experienced in applying resinous flooring systems similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance, and who is acceptable to resinous flooring manufacturer.
   1. Engage an installer who employs only persons trained and approved by resinous flooring manufacturer for applying resinous flooring systems indicated.

B. Source Limitations: Obtain primary resinous flooring materials, including primers, resins, hardening agents, grouting coats, and topcoats, through one source from a single manufacturer. Provide secondary materials, including patching and fill material, joint sealant, and repair materials, of type and from source recommended by manufacturer of primary materials.

1.4 DELIVERY, STORAGE, AND HANDLING

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

B. Store materials to prevent deterioration from moisture, heat, cold, direct sunlight, or other detrimental effects.

1.5 PROJECT CONDITIONS

A. Environmental Limitations: Comply with resinous flooring manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting resinous flooring application.

B. Lighting: Provide permanent lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during resinous flooring application.

C. Close spaces to traffic during resinous flooring application and for not less than 24 hours after application, unless manufacturer recommends a longer period.

PART 2 - PRODUCTS

2.1 RESINOUS FLOORING – NEW WORK

A. Products, Tech Repair, Medical Waste Room: Subject to compliance with requirements, provide one of the following:
   1. Dur-A-Flex, Inc.; Shop Floor, standard "non-skid" texture.

   Note: See Finish scheme on drawings for color selection.

B. System Characteristics:
   1. Color and Pattern: Match Architect's sample.
   2. Wearing Surface: Textured for slip resistance, unless indicated otherwise.
   3. Integral Cove Base: 4 inches, unless indicated otherwise.
   4. Overall System Thickness: 1/8 inch.

C. System Components: Manufacturer's standard components that are compatible with each other and as follows:
   1. Body Coat(s):
      a. Resin: Epoxy.
      b. Formulation Description: 100 percent solids.
      c. Application Method: Flat squeegee and back roll with broadcast aggregate.
         1) Number of Coats: Three.
      d. Aggregates: Dur-A-Flex Flintshot Broadcast Aggregate, as specified.
   2. Primer: Type recommended by manufacturer for substrate and body coat(s) indicated, 100% solids.
   3. Waterproofing Membrane: Type recommended by manufacturer for substrate, primer and body coat(s) indicated, 100% solids.
   4. Topcoat: Sealing or finish coat(s).
      a. Resin: Armor-Top Urethane, as specified.
      b. Formulation Description: 100 percent solids.
      c. Type: Clear.
      d. Finish: Gloss or Satin.
      e. Number of Coats: Two.

2.2 RESINOUS FLOORING – FOR RENOVATION WORK ONLY

A. Product System:
   1. Dur-A-Flex, Inc., ACCELERA Q seamless flooring system.

B. System Materials:
   1. Primer: Dur-A-Flex, Inc., ACCELERA resin, hardener, and pigment.
   2. Broadcast Coat: Dur-A-Flex, Inc., ACCELERA resin and hardener.
   3. Quartz: Dur-A-Flex, Inc. Q28 Decorative Colored Quartz.
   4. Grout Coat: Dur-A-Flex, Inc. ACCELERA resin and hardener.

5. Topcoat: Dur-A-Flex, Inc. ACCELERA resin and hardener.

C. Patch Materials:
1. Shallow Fill and Patching: Use Dur-A-Flex, Inc. Dur-A-Glaze #4 Cov-Rez.
2. Deep Fill and Sloping Material (over 1/4 inch): Use Dur-A-Flex, Inc. Dur-A-Crete.

D. Product Requirements

1.	Percent Solids	100 %
2.	VOC	0 g/L
3.	Bond Strength to Concrete ASTM D 4541	400 psi, substrates fails
4.	Hardness, Shore D ASTM D2240	70
5.	Compressive Strength, ASTM C579	18,000 psi
6.	Tensile Strength, ASTM D638	2,600 psi
7.	Abrasion Resistance, ASTM D4060	27 mg loss
8.	C-17 Wheel, 1,000 gm load	1,000 cycles
9.	Pot life @ 70 F	7 – 10 minutes
10.	Gloss (ASTM D523) 60°	90
11.	Coefficient of Friction (ASTM D2047)	0.8

E. The work shall consist of preparation of the substrate, the furnishing and application of a squeegee-applied resinous flooring system with Q28 decorative quartz and topcoat. The system shall have the color and texture as specified by the Owner with a nominal thickness of 1/8 inch. It shall be applied to the prepared area(s) as defined in the plans strictly in accordance with the manufacturer's recommendations.

F. Cove base (if required) to be applied where noted on plans and per manufacturer's standard details unless otherwise noted.

2.3 MANUFACTURER

A. Dur-A-Flex, Inc., 95 Goodwin Street, East Hartford, CT 06108, Phone: (860) 528-9838, Fax: (860) 528-2802

B. Manufacturer of Approved System shall be single source.

2.4 PRODUCT REQUIREMENTS

A. Primer, Broadcast, Grout and Topcoats — ACCELERA

1.	Percent Solids	100 %
2.	VOC	0 g/L
3.	Bond Strength to Concrete ASTM D 4541	400 psi, substrates fails
4.	Hardness, Shore D ASTM D2240	70
5.	Compressive Strength, ASTM C579	18,000 psi
6.	Tensile Strength, ASTM D638	2,600 psi
7.	Abrasion Resistance, ASTM D4060	27 mg loss
8.	C-17 Wheel, 1,000 gm load	1,000 cycles
9.	Pot life @ 70 F	7 – 10 minutes
10.	Gloss (ASTM D523) 60°	90
11.	Coefficient of Friction (ASTM D2047)	0.8

2.5 ACCESSORY MATERIALS

A. Patching and Fill Material: Resinous product of or approved by resinous flooring manufacturer and recommended by manufacturer for application indicated.

B. Joint Sealant: Type recommended or produced by resinous flooring manufacturer for type of service and joint condition indicated.

2.6 COLOR SELECTION

A. Refer to FMC Clinic Finish Schedule for proper color mix on resin floors.

PART 3 - EXECUTION

3.1 PREPARATION

A. General: Prepare and clean substrates according to resinous flooring manufacturer's written instructions for substrate indicated. Provide clean, dry, and neutral pH substrate for resinous flooring application.

B. Concrete Substrates: Provide sound concrete surfaces free of laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants incompatible with resinous flooring.
   1. Roughen concrete substrates as follows:
      a. Shot-blast surfaces with an apparatus that abrades the concrete surface, contains the dispensed shot within the apparatus, and recirculates the shot by vacuum pickup.
      b. Comply with ASTM C 811 requirements, unless manufacturer’s written instructions are more stringent.
   2. Repair damaged and deteriorated concrete according to resinous flooring manufacturer’s written recommendations.
   3. Verify that concrete substrates are dry:
      a. Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with application only after substrates have maximum moisture-vapor-emission rate as required by the manufacturer.
      b. Perform additional moisture tests recommended by manufacturer. Proceed with application only after substrates pass testing.
   4. Verify that concrete substrates have neutral pH and that resinous flooring will adhere to them. Perform tests recommended by manufacturer. Proceed with application only after substrates pass testing.

C. Plywood substrates must be sound and non-flexing under the expected load. Typical plywood substrate must be exterior or marine grade, new, clean and smooth finish (NO KNOTS). Two layers with staggered joints are required. Plywood should be positively fastened to the existing surface with a high quality cinstruction adhesive as well as a 6” screw pattern. For further information on plywood substrates, please contact your local sales representative or DUR-A-FLEX technical department.

D. Resinous Materials: Mix components and prepare materials according to resinous flooring manufacturer’s written instructions.

E. Use patching and fill material to fill holes and depressions in substrates according to manufacturer’s written instructions.

F. Treat control joints and other nonmoving substrate cracks to prevent cracks from reflecting through resinous flooring according to manufacturer’s written recommendations.

G. Install rubber reducer strap at parameter of recessed floor scale.

3.2 APPLICATION

A. General: Apply components of resinous flooring system according to manufacturer’s written instructions to produce a uniform, monolithic wearing surface of thickness indicated.
   1. Coordinate application of components to provide optimum adhesion of resinous flooring system to substrate, and optimum intercoat adhesion.

2. Cure resinous flooring components according to manufacturer's written instructions. Prevent contamination during application and curing processes.
3. At substrate expansion and isolation joints, provide joint in resinous flooring to comply with resinous flooring manufacturer's written recommendations.
   a. Apply joint sealant to comply with manufacturer's written recommendations.

B. Apply primer over prepared substrate at manufacturer's recommended spreading rate.

C. Apply waterproofing membrane, where indicated, in manufacturer's recommended thickness.
   1. Apply waterproofing membrane to integral cove base substrates.

D. Apply reinforcing membrane to substrate cracks.

E. Integral Cove Base: Apply cove base mix to wall surfaces before applying flooring. Apply according to manufacturer's written instructions and details including those for taping, mixing, priming, troweling, sanding, and top coating of cove base. Round internal and external corners.

F. Apply self-leveling slurry body coat(s) in thickness indicated for flooring system.
   1. Broadcast aggregates and, after resin is cured, remove excess aggregates to provide surface texture indicated.

G. Apply grout coat, of type recommended by resinous flooring manufacturer, to fill voids in surface of final body coat and to produce wearing surface indicated.

H. Apply topcoat(s) in number of coats indicated for flooring system and at spreading rates recommended in writing by manufacturer.

3.3 CLEANING AND PROTECTING

A. Protect resinous flooring from damage and wear during the remainder of construction period. Use protective methods and materials, including temporary covering, recommended in writing by resinous flooring manufacturer.

END OF SECTION

SECTION 09900

PAINTS AND COATINGS

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:

1. Field painting of exposed interior items and surfaces.
2. Field painting of exposed exterior items and surfaces.
3. Surface preparation for painting.

B. Related Work: The following items are not included in this Section and will be performed under the designated Sections:

1. Section 05500 - METAL FABRICATIONS for shop priming ferrous metal.
2. Section 06402 - INTERIOR ARCHITECTURAL WOODWORK for shop priming interior architectural woodwork.
3. Section 08111 - STEEL METAL DOORS AND FRAMES for factory priming steel doors and frames.
4. Section 08211 - FLUSH WOOD DOORS for factory finishing.
5. Section 09260 - GYPSUM BOARD ASSEMBLIES for surface preparation of gypsum board.

1.2 DEFINITIONS AND EXTENT

A. General: Standard coating terms defined in ASTM D 16 apply to this Section.

1. Flat refers to a lusterless or matte finish with a gloss range below 15 when measured at an 85-degree meter.
2. Eggshell refers to low-sheen finish with a gloss range between 20 and 35 when measured at a 60-degree meter.
3. Semi-gloss refers to medium-sheen finish with a gloss range between 35 and 70 when measured at a 60-degree meter.
4. Full gloss refers to high-sheen finish with a gloss range more than 70 when measured at a 60-degree meter.

B. This Section includes surface preparation and field painting of exposed exterior and interior items and surfaces.

1. Surface preparation, priming, and finish coats specified in this Section are in addition to shop priming and surface treatment specified in other Sections.

C. Paint exposed surfaces, except where these Specifications indicate that the surface or material is not to be painted or is to remain natural. If an item or a surface is not specifically mentioned, paint the item or surface the same as similar adjacent materials or surfaces. If a color of finish is not indicated, Architect will select from standard colors and finishes available.

1. Painting includes field painting of exposed bare and covered pipes and ducts (including color coding), hangers, exposed steel and iron supports, and surfaces of mechanical and electrical equipment that do not have a factory-applied final finish.
2. All dialysis counter interior cavities and back prime underside of countertop lip.

D. Whenever possible, paint should match the corner guard that will be applied over it for the lowest contrast possible.

E. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels – unless noted otherwise.

1. Prefinished items include the following factory-finished components:

a. Architectural woodwork.
b. Acoustical wall panels.
c. Metal toilet enclosures.
d. Metal lockers.
e. Kitchen appliances.
f. Elevator entrance doors and frames.
g. Elevator equipment.
h. Finished mechanical and electrical equipment.
i. Light fixtures.
j. Ceiling grid.

2. Concealed surfaces include walls or ceilings in the following generally inaccessible spaces:

a. Foundation spaces.
b. Furred areas.
c. Ceiling plenums.
d. Utility tunnels.
e. Pipe spaces.
f. Duct shafts.
g. Elevator shafts.

3. Finished metal surfaces include the following:

a. Anodized aluminum.
b. Stainless steel.
c. Chromium plate.
d. Copper and copper alloys.
e. Bronze and brass.

4. Operating parts include moving parts of operating equipment and the following:

a. Valve and damper operators.
b. Linkages.
c. Sensing devices.
d. Motor and fan shafts.

5. Labels: Do not paint over UL, FMG, or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.

F. Manufacturers' Abbreviations:
1. Moore – Benjamin Moore & Co.
2. DE – Dunn Edwards Paint Co.
3. SW – The Sherwin-Williams Company
4. WG – Wolf Gordon Scuffmaster Paint

1.3 SUBMITTALS

A. Product Data: For each paint system indicated. Include block fillers and primers.

1. Material List: An inclusive list of required coating materials. Indicate each material and cross-reference specific coating, finish system, and application. Identify each material by manufacturer's catalog number and general classification.

2. Manufacturer's Information: Manufacturer's technical information, including label analysis and instructions for handling, storing, and applying each coating material.
3. Manufacturer's product data for paints, including printed statement of VOC content and chemical components.

B. Samples for Verification: For each color and material to be applied, with texture to simulate actual conditions, on representative Samples of the actual substrate.

1. Provide stepped Samples, defining each separate coat, including block fillers and primers. Use representative colors when preparing Samples for review. Resubmit until required sheen, color, and texture are achieved.
2. Provide a list of materials and applications for each coat of each Sample. Label each Sample for location and application.
3. Submit two 8 inch by 12 inch Samples for each type of finish coating for Architect's review of color and texture only.

C. Qualification Data: For Applicator.

D. Samples for Section 01700 Contract Closeout: For each type and color to be applied with attached fire resistance classification.

E. Coating Maintenance Manual: Upon conclusion of the project, the Contractor or paint manufacturer/supplier shall furnish a coating maintenance manual, such as Sherwin-Williams "Custodian Project Color and Product Information" report or equal. Manual shall include an Area Summary with finish schedule, Area Detail designating where each product/color/finish was used, product data pages, Material Safety Data Sheets, care and cleaning instructions, touch-up procedures, and color samples of each color and finish used.

1.4 QUALITY ASSURANCE

A. Applicator Qualifications: A firm or individual experienced in applying paints and coatings similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance.

B. Source Limitations: Obtain block fillers and primers for each coating system from the same manufacturer as the finish coats.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Project site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label and the following information:

1. Product name or title of material.
2. Product description (generic classification or binder type).
3. Manufacturer's stock number and date of manufacture.
4. Contents by volume, for pigment and vehicle constituents.
5. Thinning instructions.
6. Application instructions.
7. Color name and number.
8. VOC content.

B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F. Maintain storage containers in a clean condition, free of foreign materials and residue.

1. Protect from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily.

1.6 PROJECT CONDITIONS

A. Apply waterborne paints only when temperatures of surfaces to be painted and surrounding air are between 50 and 90 deg F.

B. Apply solvent-thinned paints only when temperatures of surfaces to be painted and surrounding air are between 45 and 95 deg F.

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

1. Painting may continue during inclement weather if surfaces and areas to be painted are enclosed and heated within temperature limits specified by manufacturer during application and drying periods.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, manufacturers and products listed in this Section or approved equal.

1. Paints:
   a. Benjamin Moore & Co. (herein “Moore”)
   b. Dunn Edwards Paints (herein “DE”)
   c. Sherwin Williams (herein “SW”)
   d. Wolf Gordon Scuffmaster (herein “WG”)
2. Sealers:
   a. Benjamin Moore & Co. (herein “Moore”)
   b. Sherwin Williams (herein “SW”)
   c. BASF

2.2 PAINT MATERIALS, GENERAL

A. Material Compatibility: Provide block fillers, primers, and finish-coat materials that are compatible with one another and with the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

B. Material Quality: Provide manufacturer’s best-quality paint material of the various coating types specified that are factory formulated and recommended by manufacturer for application indicated. Paint-material containers not displaying manufacturer’s product identification will not be acceptable.

1. Proprietary Names: Use of manufacturer’s proprietary product names to designate colors or materials is not intended to imply that products named are required to be used to the exclusion of equivalent products of other manufacturers. Furnish manufacturer’s material data and certificates of performance for proposed substitutions.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements for paint application.

1. Proceed with paint application only after unsatisfactory conditions have been corrected and surfaces receiving paint are thoroughly dry.

2. Start of painting will be construed as Applicator's acceptance of surfaces and conditions within a particular area.

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

1. Notify Architect about anticipated problems when using the materials specified over substrates primed by others.

3.2 PREPARATION

A. General: Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted. If removal is impractical or impossible because of size or weight of the item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.

B. Cleaning: Before applying paint or other surface treatments, clean substrates of substances that could impair bond of the various coatings. Remove oil and grease before cleaning.

1. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.

C. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified.

1. Provide barrier coats over incompatible primers or remove and reprime.
2. Cementitious Materials: Prepare concrete, concrete unit masonry, cement plaster, and mineral-fiber-reinforced cement panel surfaces to be painted. Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. Roughen as required to remove glaze. If hardeners or sealers have been used to improve curing, use mechanical methods of surface preparation.

   a. Use abrasive blast-cleaning methods if recommended by paint manufacturer.
   b. Determine alkalinity and moisture content of surfaces by performing appropriate tests. If surfaces are sufficiently alkaline to cause the finish paint to blister and burn, correct this condition before application. Do not paint surfaces if moisture content exceeds that permitted in manufacturer's written instructions.
   c. Clean concrete floors to be painted with a 5 percent solution of muriatic acid or other etching cleaner. Flush the floor with clean water to remove acid, neutralize with ammonia, rinse, allow to dry, and vacuum before painting.

3. Wood: Clean surfaces of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sand surfaces exposed to view smooth and dust off.

   a. Scrape and clean small, dry, seasoned knots, and apply a thin coat of white shellac or other recommended knot sealer before applying primer. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood filler. Sand smooth when dried.
   b. Prime, stain, or seal wood to be painted immediately on delivery. Prime edges, ends, faces, undersides, and back sides of wood, including cabinets, counters, cases, and paneling.
   c. If transparent finish is required, backprime with spar varnish.
   d. Backprime paneling on interior partitions where masonry, plaster, or other wet wall construction occurs on backside.

e. Seal tops, bottoms, and cutouts of unprimed wood doors with a heavy coat of varnish or sealer immediately on delivery.

4. Ferrous Metals: Clean ungalvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with SSPC's recommendations.

   a. Blast steel surfaces clean as recommended by paint system manufacturer and according to [SSPC-SP 6/NACE No. 3] [SSPC-SP 10/NACE No. 2].
   b. Treat bare and sandblasted or pickled clean metal with a metal treatment wash coat before priming.

5. Galvanized Surfaces: Clean galvanized surfaces with nonpetroleum-based solvents so surface is free of oil and surface contaminants. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods.

D. Material Preparation: Mix and prepare paint materials according to manufacturer's written instructions.

1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
2. Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain material before using.
3. Use only thinners approved by paint manufacturer and only within recommended limits.

E. Tinting: Tint each undercoat a lighter shade to simplify identification of each coat when multiple coats of same material are applied. Tint undercoats to match the color of the finish coat, but provide sufficient differences in shade of undercoats to distinguish each separate coat.

3.3 APPLICATION

A. General: Apply paint according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.

1. Paint colors, surface treatments, and finishes are indicated in the finish schedule.
2. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.
3. Provide finish coats that are compatible with primers used.
4. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, grilles, convector covers, covers for finned-tube radiation, and similar components are in place. Extend coatings in these areas, as required, to maintain system integrity and provide desired protection.
5. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Before final installation of equipment, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
6. Paint interior surfaces of ducts with a flat, nonspecular black paint where visible through registers or grilles.
7. Paint backsides of access panels and removable or hinged covers to match exposed surfaces.
8. Finish exterior doors on tops, bottoms, and side edges the same as exterior faces.
9. Sand lightly between each succeeding enamel or varnish coat.

B. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.

1. The number of coats and film thickness required are the same regardless of application method. Do not apply succeeding coats until previous coat has cured as recommended by manufacturer. If sanding is required to produce a smooth, even surface according to manufacturer's written instructions, sand between applications.
2. Omit primer over metal surfaces that have been shop primed and touchup painted.
3. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance. Give special attention to ensure that edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
4. Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until paint has dried to where it feels firm, and does not deform or feel sticky under moderate thumb pressure, and until application of another coat of paint does not cause undercoat to lift or lose adhesion.

C. Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions.

1. Brushes: Use brushes best suited for type of material applied. Use brush of appropriate size for surface or item being painted.
2. Rollers: Use rollers of carpet, velvet-back, or high-pile sheep's wool as recommended by manufacturer for material and texture required.
3. Spray Equipment: Use airless spray equipment with orifice size as recommended by manufacturer for material and texture required.

D. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate to achieve dry film thickness indicated. Provide total dry film thickness of the entire system as recommended by manufacturer.

E. Mechanical and Electrical Work: Painting of mechanical and electrical work is limited to items exposed in equipment rooms and occupied spaces. Paint all exposed ceilings and structural elements in the mechanical and storage areas.

F. Mechanical items to be painted include, but are not limited to, the following:

1. Uninsulated metal piping.
2. Uninsulated plastic piping. (excluding R.O. piping)
3. Pipe hangers and supports.
4. Tanks that do not have factory-applied final finishes.
5. Visible portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets.
6. Duct, equipment, and pipe insulation having "all-service jacket" or other paintable jacket material.
7. Mechanical equipment that is indicated to have a factory-primed finish for field painting.

G. Electrical items to be painted include, but are not limited to, the following:

1. Switchgear.
2. Panelboards.
3. Electrical equipment that is indicated to have a factory-primed finish for field painting.

H. Block Fillers: Apply block fillers to concrete masonry block at a rate to ensure complete coverage with pores filled.

I. Prime Coats: Before applying finish coats, apply a prime coat, as recommended by manufacturer, to material that is required to be painted or finished and that has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or

unsealed areas in first coat appears, to ensure a finish coat with no burn-through or other defects due to insufficient sealing.

J. Pigmented (Opaque) Finishes: Completely cover surfaces as necessary to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.

K. Transparent (Clear) Finishes: Use multiple coats to produce a glass-smooth surface film of even luster. Provide a finish free of laps, runs, cloudiness, color irregularity, brush marks, orange peel, nail holes, or other surface imperfections.

1. Provide satin finish for final coats.

L. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with requirements.

3.4 FIELD QUALITY CONTROL

A. The Owner reserves the right to invoke the following test procedure at any time and as often as the Owner deems necessary during the period when paint is being applied:

1. The Owner will engage a qualified independent testing agency to sample paint material being used. Samples of material delivered to Project will be taken, identified, sealed, and certified in the presence of Contractor.

2. Testing agency will perform appropriate tests for the following characteristics as required by the Owner.

3. The Owner may direct Contractor to stop painting if test results show material being used does not comply with specified requirements. Contractor shall remove non-complying paint from Project site, pay for testing, and repaint surfaces previously coated with the non-complying paint. If necessary, Contractor may be required to remove non-complying paint from previously painted surfaces if, on repainting with specified paint, the two coatings are incompatible.

3.5 CLEANING

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

1. After completing painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping without scratching or damaging adjacent finished surfaces.

B. Cleanup for Scuff Master:

1. Allow product to cure for at least seven days following application (allow 28 days on hard, non-absorbent substrates) before applying cleaning chemicals.
2. Most common stains can be removed using warm water and detergent. More difficult stains may require stronger cleaners and a light abrasive pad.
3. Before using a new cleaner for the first time, test its effect on the finish by applying in an inconspicuous area as a small amount of paint may also be removed during the cleaning process.
4. The preferred cleaner for Scuffmaster Paints is Formula 409. A five-to-one water to bleach solution may also when cleaning Scuffmaster Paints in areas that require disinfectants.

3.6 PROTECTION

A. Protect work of other trades, whether being painted or not, against damage from painting. Correct damage by cleaning, repairing or replacing, and repainting, as approved by Architect.

B. Provide "Wet Paint" signs to protect newly painted finishes. After completing painting operations, remove temporary protective wrappings provided by others to protect their work.

1. After work of other trades is complete, touch up and restore damaged or defaced painted surfaces. Comply with procedures specified in PDCA P1.

3.7 PAINT SCHEDULE

A. Schedule: Provide products and number of coats specified. Use of manufacturer's proprietary product names to designate colors, materials, generic class, standard of quality and performance criteria is not intended to imply that products named are required to be used to the exclusion of equivalent performing products of other manufacturers.

1. FMC Paint Type P-1A: Non-Patient Areas - Interior Gypsum Wallboard for Latex Eggshell Finish for Offices, Staff Lounge, Staff toilets, janitor's closet, Water Treatment/SDS:

a. One Coat
   1) Moore Ultra Spec 500 Acrylic Zero VOC Primer Sealer (N534)
   2) DE Ultra-Grip Zero VOC Multi Surface Primer (UGPR00)
   3) SW Harmony Interior Latex Primer (B11W001000)

b. Two Coats
   1) Moore Ultra Spec 500 Acrylic Zero VOC Eggshell Enamel (N538)
   2) DE Everest Zero VOC Eggshell Enamel (EVER30)
   3) SW Harmony Interior Latex Eggshell (B09-1000 Series)

2. FMC Paint Type P-1B: Interior Gypsum Wallboard for Eggshell Finish (All Hard Ceilings):

a. One Coat
   1) Moore Ultra Spec 500 Acrylic Zero VOC Primer Sealer (N534)
   2) DE Ultra-Grip Zero VOC Multi Surface Primer (UGPR00)
   3) SW Harmony Interior Latex Primer (B11W001000)

b. Two Coats
   1) Moore Ultra Spec 500 Acrylic Zero VOC Eggshell Enamel (N538)
   2) DE Everest Zero VOC Eggshell Enamel (EVER30)
   3) SW Harmony Interior Latex Eggshell (B09-1000 Series)

3. FMC Paint Type P-2A: Patient Areas - Interior Gypsum Wallboard ~~and Plaster~~ for Waterbased, two component Polyurethane ~~Latex~~ Eggshell Finish (at dialysis area, prep areas, doctor/exam rooms & toilets):

All patient areas to receive only Wolf Gordon Scuffmaster paint: Dialysis/Treatment, Exam, Dr./Exam Room, Separation Room, Patient Corridor & Home Training Rooms.

a. One Coat
   1) Scuffmaster Primemaster Primer/Sealer, or equal.

b. Two Coats
   1) Scuffmaster ScrubTough Eggshell (ST)

4. FMC Paint Type P-2B: All Door Frames for Scuffmaster Waterbased, two component Polyurethane Gloss Finish

   a. One Coat
      1) Scuffmaster Primemaster Primer/Sealer, or equal.
   b. Two Coats
      1) Scuffmaster ScrubTough Max Gloss (STM)

5. FMC Paint Type P-3: Interior Galvanized Metals, for Latex Eggshell Finish:

   a. One Coat
      1) Moore Super Spec Acrylic Metal Primer (P04)
      2) DE Ultra-Grip Zero VOC Multi Surface Primer (UGPR00)
      3) SW Multi-Purpose Latex Primer (B51W8020)

   b. Two Coats
      1) Moore Ultra Spec 500 Acrylic Zero VOC Eggshell Enamel (N538)
      2) DE Everest Zero VOC Eggshell Enamel (EVER30)
      3) SW Harmony Interior Latex Eggshell (B09-500 Series)

6. FMC Paint Type P-4: Interior Unprimed Metals, for Latex Eggshell Finish:

   a. One Coat
      1) Moore Super Spec HP Acrylic Metal Primer (P04)
      2) DE Ultrashield Zero VOC Gray Metal Primer (ULDM00-GR-0)
      3) SW Multi-Purpose Latex Primer (B51W8020)
   b. Two Coats
      1) Moore Ultra Spec 500 Acrylic Zero VOC Eggshell Enamel (N538)
      2) DE Everest Zero VOC Eggshell Enamel (EVER30)
      3) SW Harmony Interior Latex Eggshell (B09-500 Series)

7. Paint Type P-5: Interior Architectural Woodwork and Finish Carpentry for Opaque Finish (exposed framing, adjustable shelving, and miscellaneous backboards):

   a. One Coat
      1) Moore Fresh Start Interior 100% Acrylic High Hiding All Purpose Primer (046)
      2) DE Ultra-Grip Zero VOC Multi Surface Primer (UGPR00)
      3) SW Multi-Purpose Latex Primer-B51 series
   b. Two Coats
      1) Moore Ultra Spec 500 Acrylic Zero VOC Eggshell Enamel (N538)
      2) DE Everest Zero VOC Eggshell Enamel (EVER30)
      3) SW Harmony Interior Latex Eggshell (B09-1000 Series)

8. FMC Paint Type P-6: Interior Architectural Woodwork for Stained Finish (fireplace trim)

   a. One Coat (apply second coat if darker finish is desired based on absorption of wood species being stained)
      1) Sherwin Williams Wood Classics Interior Oil Stain
         a) Color – SW 3130-B Brazilnut
   b. Two Coats
      1) Sherwin Williams Wood Classics Interior Satin Polyurethane Varnish

9. FMC Paint Type P-7: Interior Primed Metals, exposed grilles, louvers, panels, un-insulated HVAC sheet metal):

   a. Two Coats

1) Moore Ultra Spec 500 Acrylic Zero VOC Semi-Gloss (N539)
2) DE - ARISTOWALL Alkyd Emulsion Semi-Gloss Enamel (AWLL50)
3) SW Pro Industrial Multi-Surface Acrylic Semi-Gloss (B66-1500)

10. FMC Paint Type P-8: Exterior Primed Painted Metals:

a. One Coat
1) Moore Ultra Spec Acrylic DTM HP04 Primer
2) DE Ultrashield Zero VOC Gray Metal Primer (ULDM00-GR-0)
3) SW Pro-Cryl® Universal Acrylic Primer

b. Two Coats
1) Moore Ultra Spec Acrylic DTM HP25.
2) DE Ultrashield Zero VOC Low Sheen (ULSH40)
SW Pro Industrial DTM Acrylic Semi-Gloss (B66-1000) Series

11. FMC Paint Type P-9: Exterior Unprimed Metals

a. One Coat
1) Moore Ultra Spec Acrylic DTM HP25
2) DE Ultrashield Zero VOC Gray Metal Primer (ULDM00-GR-0)
3) SW Pro-Cryl Universal Acrylic Primer

b. Two Coats
1) Moore Ultra Spec Acrylic DTM HP25
2) DE Ultrashield Zero VOC Low Sheen (ULSH40)
3) SW Pro Industrial DTM Acrylic Semi Gloss (B66-1000 series)

12. FMC Paint Type P-10: Exposed Concrete Floor Sealer: Mechanical/Storage Rooms:

a. Primer/Etcher – One Coat
1) Moore Corotech 100% Solids Epoxy Pre-Primer V155, Clear
2) SW – H&C Concrete Etcher

b. Finish – Two Coats
1) Moore Corotech 100% Solids Epoxy Floor Coating V430, clear
2) Armorseal 8100 Epoxy Floor Coating (B70 Series)
3) H&C SharkGrip Slip Resistant Additive

13. FMC Paint Type P-11: Exposed ceilings and structural elements in mechanical and storage rooms:

a. One Coat
1) Moore Coronado Super Kote 5000 Dry Fall Coatings 105
2) SW Dry Fall Coatings Flat B42 Series

14. FMC Paint Type P-12: EIFS at exterior of building:

a. Primer - One Coat
1) Moore - Ultra Spec Masonry Int/Ext Acrylic High Build Masonry Primer (609)
2) DE - Flex-Prime Select Int/Ext Flexible Masonry Primer (FPSL00)
3) SW - Loxon Concrete & Masonry Primer (A24W8300)

b. Finish - Two Coats
1) Moore - Ben Exterior Latex Acrylic, 541 or 542-01 - sheen to EIFS
2) DE - Acri-Hues Exterior, ACHS 10-0-L or ACHS30 - sheen to EIFS
3) SW - Exterior Latex A-100, A6 or A82 Series - sheen to EIFS.

15. FMC Paint Type P-13: Traffic Marking Coatings (as indicated on Drawings intended to keep aisle ways clear and identify areas emergency eye wash showers).

    a. One Coat
        1) Moore TP-23XX Insl-X Acrylic Fast Set Traffic Marking Paint
        2) SW Pro-Park Traffic Marking Paint

16. FMC Paint Type P-14: Fire Retardant Paint (at Electrical Panel Boards)

    a. One Coat
        1) Moore N023 All Purpose Latex Primer
    b. Two Coats
        1) Moore INSL-X Fire Retardant Paint FR-110
        2) Flame Control 20-20

17. Mechanical and Electrical Work: Paint all exposed items throughout the project except factory finished items with factory-applied baked enamel finishes which occur in mechanical rooms or areas; and except chrome or nickel plating, stainless steel, and aluminum other than mill finished. Paint all exposed ductwork and inner portion of all ductwork; same as specified for other interior metals, here in above.

END OF SECTION

SECTION 09940

DECORATIVE FINISHES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the Plastic Fabrication as shown and specified in the described system(s):
   1. Decorative Film

B. Related Sections include the following:
   1. Section 08211 Flush Wood Doors

1.3 SUBMITTALS

A. General: Submit the following in accordance with conditions of contact and Division 1 specification section 01340 “Submittal Procedures”.

B. Shop Drawings: Include plans, elevations, sections, panel dimensions, details, and attachments to other work.

C. Samples for Verification:
   1. Submit minimum 4-inch by 4-inch sample for each type, pattern and color.

D. Maintenance Data: Submit manufacturer’s care and maintenance data, including care, repair and cleaning instructions. Include in Project closeout documents.

1.4 QUALITY ASSURANCE

A. Manufacturers’ Qualifications
   1. Materials and systems shall be manufactured by a company continuously and regularly employed in the manufacture of specified materials for a period of at least one (1) consecutive year, and which can show evidence of those materials being satisfactorily used on at least two (2) projects of similar size, scope and location. At least one (1) of the projects shall have been successful for use one (1) year or longer.
   2. Manufacturer must offer a documented reclaim process that will take back, at the manufacturer’s cost, panels that are at their end-of life cycle. Return process is preceded by following requirements highlighted in Section 02.42.00 Removal and Salvage of Construction Materials.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver Architectural Finishes, systems and specified items in manufacturer’s standard protective packaging.

B. Do not deliver Architectural Finishes, system, components and accessories to Project site until areas are ready for installation.

C. Handle materials to prevent damage to finished surfaces. Provide protective coverings to prevent damage or staining following installation for duration of project.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Do not install Solid Architectural Finishes until spaces are enclosed and weatherproof, and ambient temperatures and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

1.7 WARRANTY

A. Manufacturer's Special Warranty on Architectural Finishes: Manufacturer's standard form agreeing to repair or replace units that fail in material or workmanship within the specified warranty period.

B. Warranty Period: 1 year after the date of substantial completion.

C. The warranty shall not deprive the owner of other rights or remedies the Owner may have under other provisions of the Contract Documents, and is in addition to and runs concurrent with other warranties made by the Contractor under the requirements of the Contract Documents.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Manufacturer: 3M

2.2 MATERIALS

A. Architectural Glass Finish (for conference room door)
   1. Fasara Yamato – White, SH2PTYA
   2. Film Thickness – 2.76 mil
   3. Sheet Size: Maximum 50" x 99'-0"

B. Sheet minimum performance attributes:
   a. UV Stability – Must be UV stable and retain adhesive properties after 10,000 hrs. of exposure in Arizona.
   b. Temperature – Must be temperature stable up to 390°F.

2.3 MISCELLANEOUS MATERIALS

A. General: Provide products of material, size, and shape required for application indicated, and with a proven record of compatibility with surfaces contacted in installation.

B. Cleaner: Type recommended by manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions where installation of Architectural Finishes will occur, with Installer present, for compliance with manufacturer's requirements. Verify that substrates and conditions are satisfactory for installation and comply with requirements specified.

3.2 INSTALLATION

A. General: Comply with manufacturer's written instructions for the installation of Architectural Finishes.

B. Install components plumb, level and rigid, scribed to adjacent finishes, in accordance with approved shop drawings and product data.

3.3 CLEANING AND PROTECTION

A. Protect surfaces from damage until date of substantial completion. Repair work or replace damaged work, which cannot be repaired to Architect's satisfaction.

END OF SECTION

SECTION 10240

METAL GRILLES

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:
   1. Metal Grilles

B. Related Work: The following items are not included in this Section and will be performed under the designated Sections:
   1. Section 06100 - ROUGH CARPENTRY for wood blocking.
   2. Section 09260 - GYPSUM BOARD ASSEMBLIES for coordination with wall-mounted units.

1.2 SUBMITTALS

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

1.3 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver grilles until building is enclosed and other construction within spaces where boards will be installed is substantially complete and ready for decoration installation. All equipment in this section will need to be secured in a locked room prior to installation.

1.4 COORDINATION

A. Coordinate electrical service and installation of grilles with adjacent construction, including wall framing, partitions and wall boxes.

PART 2 - PRODUCTS

2.1 MANUFACTURERS AND DISTRIBUTORS

A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include only the following:
   1. www.HVACquick.com

2.2 STRAIGHT BLADE GRILLE

A. Separation Room – 12" x 36" Dayus DAH Single Deflection Supply Grille with Horizontal Blades by www.HVACquick.com.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Securely anchor and install grilles to supporting substrate at locations indicated on the drawings to comply with manufacturer's written instructions.

3.2 PROTECTING AND CLEANING

A. After installation, protect all grilles from damage during construction. If damage occurs despite such protection, remove and replace damaged components or entire unit as required to provide units in their original, undamaged condition.

END OF SECTION

SECTION 10260

WALL AND DOOR PROTECTION

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:

1. Corner guards.
2. Impact-resistant wall coverings.
3. Molded Chair Rail

B. Related Work: The following items are not included in this Section and will be performed under the designated Sections:

1. Section 00850 – NATIONAL ACCOUNTS for pricing.
2. Section 08710 - DOOR HARDWARE for metal armor, kick, mop and push plates.

1.2 SUBMITTALS

A. Product Data: Include construction details, material descriptions, impact strength, and fire-test-response characteristics, dimensions of individual components and profiles, and finishes for each impact-resistant wall-protection unit.

B. Shop Drawings: For each impact-resistant wall-protection unit showing locations and extent. Include sections, details, and attachments to other work.

C. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below.

1. Corner Guards: 12 inches long. Include examples of joinery, corners, end caps, top caps, and field splices.
2. Impact-Resistant Wall Covering: 6 by 6 inches square.

D. Material Certificates: For each impact-resistant plastic material, signed by manufacturer.

E. Maintenance Data: For each impact-resistant wall-protection unit to include in maintenance manuals.

1. Include recommended methods and frequency of maintenance for maintaining optimum condition of plastic covers under anticipated traffic and use conditions. Include precautions against using cleaning materials and methods that may be detrimental to plastic finishes and performance.

F. Warranty: Special warranty specified in this Section.

1.3 QUALITY ASSURANCE

A. Installer Qualifications: An employer of workers trained and approved by manufacturer.

B. Source Limitations: Obtain impact-resistant wall-protection units through one source from a single manufacturer.

C. Fire-Test-Response Characteristics: Provide impact-resistant, plastic wall-protection units with surface-burning characteristics as determined by testing identical products per ASTM E 84, NFPA 255, or UL 723 by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Store impact-resistant wall-protection units in original undamaged packages and containers inside well-ventilated area protected from weather, moisture, soiling, extreme temperatures, and humidity.

1. Maintain room temperature within storage area at not less than 70 deg F during the period plastic materials are stored.
2. Keep plastic sheet material out of direct sunlight.
3. Store plastic wall-protection components for a minimum of 72 hours, or until plastic material attains a minimum room temperature of 70 deg F.
   a. Store corner-guard covers in a vertical position.

1.5 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install impact-resistant wall-protection units until building is enclosed and weatherproof, wet work is complete and dry, and HVAC system is operating and maintaining temperature at 70 deg F for not less than 72 hours before beginning installation and for the remainder of the construction period.

B. Field Measurements: Verify actual locations of walls, columns, and other construction contiguous with impact-resistant wall-protection units by field measurements before fabrication and indicate measurements on Shop Drawings.

1.6 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of impact-resistant wall-protection units that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:
   a. Structural failures.
   b. Deterioration of plastic and other materials beyond normal use.

2. Warranty Period: Five years from date of Substantial Completion, and a limited lifetime warranty, where applicable.

1.7 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. Corner-Guard Covers: Full-size plastic covers of maximum length equal to 2 percent of each type, color, and texture of units installed, but no fewer than four, 4-foot-long units.

B. Include mounting and accessory components. Replacement materials shall be from same production run as installed units.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Extruded Rigid Plastic: ASTM D 1784, Class 1, textured, chemical- and stain-resistant, high-impact-resistant PVC or acrylic-modified vinyl plastic with integral color throughout; thickness as indicated.

1. Impact Resistance: Minimum 25.4 ft-lb-ft/in. of notch when tested according to ASTM D 256, Test Method A.
2. Chemical and Stain Resistance: Tested according to ASTM D 543.
3. Self-extinguishing when tested according to ASTM D 635.

4. Flame-Spread Index: 25 or less.
5. Smoke-Developed Index: 450 or less.

B. Aluminum Extrusions: Alloy and temper recommended by manufacturer for type of use and finish indicated but with not less than strength and durability properties specified in ASTM B 221 for Alloy 6063-T5.

C. Fasteners: Aluminum, nonmagnetic stainless steel, or other noncorrosive metal screws, bolts, and other fasteners compatible with items being fastened. Use security-type fasteners where exposed to view.

2.2 CORNER GUARDS

A. Surface-Mounted, Resilient, Plastic Corner Guards: Assembly consisting of snap-on plastic cover installed over continuous retainer; including mounting hardware; fabricated with 90- or 135-degree turn to match wall condition.

1. Acceptable Products:
   a. Model No. 160BN, 90 Degree Surface Mount Corner Guard Profile.
   b. Model No. 130BN, 135 Degree Surface Mount Corner Guard Profile.
   c. Manufacturer - IPC Door and Wall Protection Systems; Division of InPro Corporation, Muskego, WI 53150; www.inprocorp.com.
2. Cover: Extruded rigid plastic, minimum 0.08-inch wall thickness; as follows:
   a. Profile: Nominal 2-inch-long leg and 1/4-inch corner radius.
   b. Required Heights:
      1) 31.5" – below chair rail.
      2) 48" – at typical corners.
      3) 96" – at full height FRP and vinyl wall paneling.
   c. Color and Texture: Refer to FMC Finish Schedule.
3. Retainer: Minimum 0.070-inch-thick, 1-piece, extruded aluminum.
4. Top and Bottom Caps: Prefabricated, injection-molded plastic; color matching cover; field adjustable for close alignment with snap-on cover.
5. Custom Angles – Provide vinyl covers and retainers with custom angles. Custom angles shall be between 112.5° and 157.5°. Provide flexible top caps to bend to retainer angle.
6. Fire Rating: Same rating as wall in which corner guard is installed; UL listed and labeled according to UL 2079.

2.3 IMPACT-RESISTANT WALL COVERINGS

A. Impact-Resistant Sheet Wall Covering: Fabricated from rigid plastic sheet material.

1. Acceptable Product: IPC Rigid Vinyl Sheet by IPC Door and Wall Protection Systems; Division of InPro Corporation, Muskego, WI 53150; www.inprocorp.com.
2. Size: 48 by 96 inches for sheet, minimum.
3. Sheet Thickness: 0.040 inches (standard); 0.080 (on wall behind scale).
4. Color and Texture: Refer to FMC Finish Schedule.
5. Height: As indicated.
6. Trim and Joint Moldings: Extruded rigid plastic that matches sheet wall covering color.
7. Mounting: Use adhesive as recommended by manufacturer.

B. NON-Fiberglass Reinforced Plastic Panels (NRP-FR) with top coat; Class A (ASTM E-84):
1. Acceptable Product: Parkland Plastics NRP-FR panels; Part numbers: FRE3110C (4x8), FRE3120C (4x10).
2. Size: 48 by 96 inches for sheet, minimum.

3. Sheet Thickness: 0.090 inches (standard).
4. Color and Texture: Refer to FMC Finish Schedule (Almond Matte).
5. Height: As indicated.
6. Trim and Joint Moldings: Extruded rigid plastic that matches sheet wall covering color Almond. 2-piece Divider moulding; 1-piece Inside Corner moulding; 1-piece Cap moulding; 2-piece Outside Corner moulding.
7. Mounting: Refer to Manufacturers "Installation Guide". Use adhesive only as recommended by manufacturer.

2.4 MOLDED VINYL CHAIR RAIL

A. Chair Rail: ASTM F 1861.

1. Products:
   a. Effectual, by Mannington Commercial:
      1) When ordering, use Private Label Numbers as follows:
         i. Item # 252379 Toffee
         ii. Item # 252380 Dark Chocolate
2. Style and Colors: Refer to current FMC Finish Schedule.
3. Type (Material Requirement): TP (Thermoplastic Rubber).
4. Shape: Convex shape with sculptured top and bottom
5. Standard Thicknesses: 0.25 inches.
6. Height: 4 inches.
7. Lengths: 50'-0" coiled length per carton.
8. Corners: 15 pcs per carton.
9. Mounting: Use Contact Bond Adhesive.

2.5 MOLDED VINYL WALL BASE

A. Wall Base: ASTM F 1861.

1. Products:
   a. Elegance, by Mannington Commercial
2. Style and Colors: Refer to current FMC Finish Schedule.
3. Type (Material Requirement): TP (Thermoplastic Rubber).
4. Shape: Straight base with sculptured top.
5. Standard Thicknesses: 0.375 inches.
6. Height: 6 inches.
7. Lengths: 36'-0" coiled length per carton.
8. Corners: Custom miter.
9. Mounting: Use MR101 Acrylic Wall Base Adhesive.

2.6 FABRICATION

A. Fabricate impact-resistant wall-protection units to comply with requirements indicated for design, dimensions, and member sizes, including thicknesses of components.

B. Assemble components in factory to greatest extent possible to minimize field assembly. Disassemble only as necessary for shipping and handling.

C. Fabricate components with tight seams and joints with exposed edges rolled. Provide surfaces free of wrinkles, chips, dents, uneven coloration, and other imperfections. Fabricate members and fittings to produce flush, smooth, and rigid hairline joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and wall areas, with Installer present, for compliance with requirements for installation tolerances, fire rating, and other conditions affecting performance of work.

1. Examine walls to which impact-resistant wall protection will be attached for blocking, grounds, and other solid backing that have been installed in the locations required for secure attachment of support fasteners.
2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Complete finishing operations, including painting, before installing impact-resistant wall-protection system components.

B. Before installation, clean substrate to remove dust, debris, and loose particles.

3.3 INSTALLATION

A. General: Install impact-resistant wall-protection units level, plumb, and true to line without distortions. Do not use materials with chips, cracks, voids, stains, or other defects that might be visible in the finished Work.

1. Install impact-resistant wall-protection units in locations and at mounting heights indicated on Drawings.
2. Provide splices, mounting hardware, anchors, and other accessories required for a complete installation.
   a. Provide anchoring devices to withstand imposed loads.
   b. Where splices occur in horizontal runs of more than 20 feet, splice aluminum retainers and plastic covers at different locations along the run, but no closer than 12 inches.
   c. Adjust caps as required to ensure tight seams.

B. Impact-Resistant Wall Covering: Install top and edge moldings, corners, and divider bars as required for a complete installation. Install panels vertically, with butt joints between panels.

C. Installation of Mannington Effectual vinyl wall base and chair rail: Install per manufacturer's specifications. Vinyl trim sections (particularly chair rail) can be nailed to the drywall substrate to assist the adhesive bond. Nail holes should be filled to match trim for complete installation.

3.4 CLEANING

A. Immediately after completion of installation, clean plastic covers and accessories using a standard, ammonia-based, household cleaning agent.

B. Remove excess adhesive using methods and materials recommended in writing by manufacturer.

END OF SECTION

SECTION 10440

INTERIOR SIGNAGE

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:
   1. Interior Room Signs

B. Related Work: The following items are not included in this Section and will be performed under the designated Sections:
   1. Section 09260 - GYPSUM BOARD ASSEMBLIES for coordination with wall-mounted units.

1.2 SUBMITTALS

A. Completed FMC Standard Clinic Signage Package Order Form.

1.3 REFERENCES

A. Americans with Disabilities Act (ADA).
   1. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines.

B. American National Standards Institute (ANSI):
   1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
   2. ASTM International (ASTM):
   3. ASTM D 635 - Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position.
   4. ASTM D 1929 - Standard Test Method for Determining Ignition Temperature of Plastics.
   5. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
   6. ASTM E 2073 - Standard Test Method for Photopic Luminance of Photoluminescent (Phosphorescent) Markings.

C. Underwriters Laboratory (UL):
   1. UL 94 - Tests for Flammability of Plastic Materials for Parts in Devices and Appliances.
   2. UL 723 - Surface Burning Characteristics of Interior Finish Materials and Systems.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in unopened factory packaging.

B. Inspect materials upon delivery to verify entire order has been received.

C. Store products in manufacturer's original packaging until ready for installation, in climate controlled location away from direct sunlight.

1.5 COORDINATION

A. Coordinate electrical service and installation of bulletin boards with adjacent construction, including wall framing, partitions and wall boxes.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include only the following:

1. Badgeman Promotional Products
   Contact: Leigh Arguijo
   Email: bmpromo@swbell.net
   Phone: 210.614.9495
   Fax: 210.614.1767

2. Substitutions are not permitted.

2.2 INTERIOR SIGNS

A. Provide photopolymer signage that conforms to the requirements of all regulatory agencies holding jurisdiction and the quality control of Badgeman Promotional Products.

B. Use the attached **Interior Sign Standard Order Form** to place order for interior signage.

PART 3 - EXECUTION

3.1 PREPARATION

A. Verify mounting heights and locations comply with referenced standards.

B. Clean surfaces thoroughly prior to installation to remove dust, debris and loose particles.

C. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.2 INSTALLATION

A. Locate the signage system as indicated on drawings for the appropriate substrate and in accordance with manufacturer's installation instructions.

B. Install signage systems level and plumb at the height indicated on the drawings.

3.3 PROTECTING AND CLEANING

C. After installation, protect all signage from damage during construction.

D. If damage occurs despite such protection, remove and replace damaged components or entire unit as required to provide units in their original, undamaged condition.

E. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 10520

FIRE-PROTECTION SPECIALTIES

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:

1. Portable fire extinguishers.
2. Fire-protection cabinets for portable fire extinguishers, fire hose valves, and fire hoses.
3. Mounting brackets for fire extinguishers.

B. Related Work: The following items are not included in this Section and will be performed under the designated Sections:

1. Section 09900 - PAINTING for field painting fire-protection cabinets.
2. Division 15 - FIRE PROTECTION for fire hose valves and standpipes.

1.2 SUBMITTALS

A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each item.

1. Fire Extinguishers: Include rating and classification.
2. Fire-Protection Cabinets: Include roughing-in dimensions, details showing mounting methods, relationships of box and trim to surrounding construction, door hardware, cabinet type, trim style, and panel style.
3. Show location of knockouts for hose valves.

B. Maintenance Data: For fire extinguishers and fire-protection cabinets to include in maintenance manuals.

1.3 QUALITY ASSURANCE

A. Source Limitations: Obtain fire extinguishers and fire-protection cabinets through one source from a single manufacturer.

B. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10, “Portable Fire Extinguishers.”

C. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.

D. Fire-Rated Fire-Protection Cabinets: Listed and labeled to comply with requirements of ASTM E 814 for fire-resistance rating of walls where they are installed.

1.4 COORDINATION

A. Coordinate size of fire-protection cabinets to ensure that type and capacity of fire extinguishers indicated are accommodated.

B. Coordinate size of fire-protection cabinets to ensure that type and capacity of fire hoses, hose valves, and hose racks indicated are accommodated.

PART 2 - PRODUCTS

2.1 PORTABLE FIRE EXTINGUISHERS

A. General: Provide fire extinguishers of type, size, and capacity for each fire-protection cabinet and mounting bracket indicated.

B. Multipurpose Dry-Chemical Type in Steel Container: UL-rated 3A:40B:C, 6-lb nominal capacity, with monoammonium phosphate-based dry chemical in enameled-steel container.

1. Product: Cosmic 6E series, by JL Industries, Inc.

2.2 FIRE-PROTECTION CABINET

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

1. JL Industries, Inc.
2. Larsen's Manufacturing Company.
3. Potter Roemer; Div. of Smith Industries, Inc.

B. Cabinet Type: Suitable for fire extinguisher, and hose and hose valve where applicable.

C. Cabinet Material: Enameled-steel sheet.

D. Semi-Recessed Cabinet: Cabinet box recessed in walls of sufficient depth to suit style of trim indicated.

1. Trimless with Plaster Stop: Surface of surrounding wall finishes flush with exterior finished surface of cabinet frame and door, without overlapping trim attached to cabinet. Provide recessed flange, of same material as box, attached to box to act as plaster stop.

E. Door Material: Steel sheet with baked enamel finish, color as selected.

F. Door Style: Vertical duo panel with frame.

G. Door Glazing: Tempered break glass.

H. Door Hardware: Manufacturer’s standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.

I. Accessories:

1. Mounting Bracket: Manufacturer’s standard steel, designed to secure fire extinguisher to fire-protection cabinet, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.
2. Break-Glass Strike: Manufacturer’s standard metal strike, complete with chain and mounting clip, secured to cabinet.
3. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as indicated by Architect.

2.3 MOUNTING BRACKETS

A. Mounting Brackets: Manufacturer’s standard steel, designed to secure fire extinguisher to wall or structure, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.

1. Product: Mark Bracket MB808 for Cosmic 6E series, by JL Industries, Inc.

B. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as indicated by Architect.

2.4 FABRICATION

A. Fire-Protection Cabinets: Provide manufacturer’s standard box (tub), with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated.

1. Weld joints and grind smooth.
2. Construct fire-rated cabinets with double walls fabricated from 0.0428-inch-thick, cold-rolled steel sheet lined with minimum 5/8-inch-thick, fire-barrier material.

a. Provide factory-drilled mounting holes.

B. Cabinet Doors: Fabricate doors according to manufacturer's standards, from materials indicated and coordinated with cabinet types and trim styles selected.

1. Fabricate door frames with tubular stiles and rails and hollow-metal design, minimum 1/2 inch thick.
2. Miter and weld perimeter door frames.

C. Cabinet Trim: Fabricate cabinet trim in one piece with corners mitered, welded, and ground smooth.

2.5 FINISHES, GENERAL

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

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Finish fire-protection cabinets after assembly.

D. 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.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine roughing-in for hose valves and cabinets to verify actual locations of piping connections before cabinet installation.

B. Examine walls and partitions for suitable framing depth and blocking where recessed cabinets will be installed.

C. Examine fire extinguishers for proper charging and tagging.

1. Remove and replace damaged, defective, or undercharged units.

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

3.2 PREPARATION

A. Prepare recesses for recessed fire-protection cabinets as required by type and size of cabinet and trim style.

3.3 INSTALLATION

A. General: Install fire-protection specialties in locations and at mounting heights indicated on the Drawings and acceptable to authorities having jurisdiction.

B. Fire-Protection Cabinets: Fasten fire-protection cabinets to structure, square and plumb.

1. Unless otherwise indicated, provide recessed fire-protection cabinets. If wall thickness is not adequate for recessed cabinets, provide semi-recessed fire-protection cabinets.
2. Provide inside latch and lock for break-glass panels.
3. Fasten mounting brackets to inside surface of fire-protection cabinets, square and plumb.

C. Mounting Brackets: Fasten mounting brackets to surfaces, square and plumb, at locations indicated.

D. Identification: Apply vinyl lettering at locations indicated.

E. Signage: All signs must be installed perpendicular to the path of egress.

3.4 INSTALLATION OF FIRE-RATED CABINETS

A. Install cabinet with not more than 1/16-inch tolerance between pipe OD and knockout OD. Center pipe within knockout.

B. Seal through penetrations with firestopping sealant as specified in Section 07841 - PENETRATION FIRESTOPPING.

3.5 ADJUSTING AND CLEANING

A. Remove temporary protective coverings and strippable films, if any, as fire-protection specialties are installed, unless otherwise indicated in manufacturer's written installation instructions.

B. Adjust fire-protection cabinet doors to operate easily without binding. Verify that integral locking devices operate properly.

C. On completion of fire-protection cabinet installation, clean interior and exterior surfaces as recommended by manufacturer.

D. Touch up marred finishes, or replace fire-protection cabinets that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by fire-protection cabinet manufacturer.

E. Replace fire-protection cabinets that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

F. Service, charge, tag and obtain local fire department certification for each F.E. not more than 5 calendar days prior to the date of substantial completion of the work, as that date is established by the architect.

END OF SECTION

SECTION 12494

MANUALLY OPERATED ROLLER SHADES

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:

1. Manually Operated Solar Screen Shades.

B. Related Work: The following items are not included in this Section and will be performed under the designated Sections:

1. Section 06100 - Rough Carpentry: Wood blocking and grounds for mounting roller shades and accessories.
2. Section 09260 - Gypsum Board Assemblies: Coordination with gypsum board assemblies for installation of shade pockets, closures and related accessories.
3. Section 09510 - Acoustical Ceilings: Coordination with acoustical ceiling systems for installation of shade pockets, closures and related accessories.

1.2 REFERENCES

A. ASTM G 21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.

B. NFPA 701 - Fire Tests for Flame-Resistant Textiles and Films.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated. Include styles, material descriptions, construction details, dimensions of individual components and profiles, features, finishes, and operating instructions.

B. Shop Drawings: Show location and extent of manually operated shades. Include elevations, sections, details, and dimensions not shown in Product Data. Show installation details, mountings, attachments to other Work, operational clearances, and relationship to adjoining work.

C. Samples for Verification: Shade fabric in specified color, minimum 12" x 12" and aluminum fascia.

D. Window Treatment Schedule: Include manually operated shades in schedule using same window number and/or room designations indicated on Drawings.

E. Maintenance Data: For manually operated shades to include in maintenance manuals. Include the following:

1. Methods for maintaining manually operated shades and finishes.
2. Precautions about cleaning materials and methods that could be detrimental to finishes and performance.
3. Operating hardware.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain manually operated shades through one source from a single manufacturer.

B. Installer Qualifications: Installer trained and certified by the manufacturer.

C. Fire-Test-Response Characteristics: Passes NFPA 701 small and large-scale vertical burn. Materials tested shall be identical to products proposed for use.

D. Anti-Microbial Characteristics: 'No Growth' per ASTM G 21 results for fungi ATCC9642, ATCC 9644, ATCC9645.

1.5 DELIVERY, STORAGE, AND HANDLING

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

1.6 PROJECT CONDITIONS

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

B. Field Measurements: Where manually operated shades 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.

1.7 WARRANTY

A. Roller Shade Hardware and Chain Warranty: Manufacturer's standard non-depreciating ten year limited warranty.

B. Standard Shadecloth: Manufacturer's standard ten year warranty.

C. Roller Shade Installation: One year from date of Substantial Completion, not including scaffolding, lifts or other means to reach inaccessible areas.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Available Manufacturer: Subject to compliance with requirements and basis of design, manufacturer offering products that may be incorporated into the Work is limited to the following:
   1. Inpro Corporation – Solarity Solar Shades

2.2 MANUALLY OPERATED ROLLER SHADE TYPES
   1. Mounting: Surface mounted with fascia.
   2. Configuration: Single solar shadecloth.
   3. Solar Shadecloths:
      a. Inpro Corporation – Dawn Solar Screen Fabric, 5% Openness Factor
   4. Shade Color: Per FMC Clinic Finish Schedule

2.3 SHADE BAND

   1. Shade Bands: Construction of shade band includes the fabric, the hem weight, hem-pocket, shade roller tube, and the attachment of the shade band to the roller tube. Sewn hems and open hem pockets are not acceptable.
   2. Hem Pockets and Hem Weights: Fabric hem pocket with RF-welded seams (including welded ends) and concealed hem weights. Hem weights shall be of appropriate size and weight for shade band. Hem weight shall be continuous inside a sealed hem pocket.

Hem pocket construction and hem weights shall be similar, for all shades within one room.

2.4 SHADE BAND AND SHADE ROLLER ATTACHMENT:

1. Use extruded aluminum shade roller tube of a diameter and wall thickness required to support shade fabric without excessive deflection. Roller tubes less than 1.55 inch (39.37 mm) in diameter for manual shades, and less than 2.55 inches (64.77 mm) for motorize shades are not acceptable.
2. Provide for positive mechanical engagement with drive / brake mechanism.
3. Provide for positive mechanical attachment of shade band to roller tube; shade band shall be made removable / replaceable with a “snap-on” snap-off” spline mounting, without having to remove shade roller from shade brackets.
4. Mounting spline shall not require use of adhesives, adhesive tapes, staples, and/or rivets.
5. Any method of attaching shade band to roller tube that requires the use of adhesive, adhesive tapes, staples, and/or rivets are not acceptable.

2.5 SHADE FABRICATION

1. Fabricate units to completely fill existing openings from head to sill and jamb-to-jamb, unless specifically indicated otherwise.
2. Provide battens in standard shades as required to ensure proper tracking and uniform rolling of the shadebands. Contractor shall be responsible for assuring the width-to-height (W:H) ratios shall not exceed manufacturer’s standards or, in absence of such standards, shall be responsible for establishing appropriate standards to assure proper tracking and rolling of the shadecloth within specified standards. Battens shall be roll-formed stainless steel or tempered steel, as required.
3. For railroaded shadebands, provide seams in railroaded multi-width shadebands as required to meet size requirements and in accordance with seam alignment as acceptable to Architect. Seams shall be properly located. Furnish battens in place of plain seams when the width, height, or weight of the shade exceeds manufacturer’s standards. In absence of such standards, assure proper use of seams or battens as required to, and assure the proper tracking of the railroaded multi-width shadebands.
4. Provide battens for railroaded shades when width-to-height (W/H) ratios meet or exceed manufacturer’s standards. In absence of manufacturer’s standards, be responsible for proper use and placement of battens to assure proper tracking and roll of shade bands.
5. If window height is greater than 10'-0", use Mecho 5 system by MechoShade.

2.6 COMPONENTS

A. Access and Material Requirements:

1. Provide shade hardware allowing for the removal of shade roller tube from brackets without removing hardware from opening and without requiring end or center supports to be removed.
2. Provide shade hardware that allows for removal and re-mounting of the shade bands without having to remove the shade tube, drive or operating support brackets.
3. Use only Delrin engineered plastics by DuPont for all plastic components of shade hardware. Styrene based plastics, and/or polyester, or reinforced polyester will not be acceptable.

B. Manual Operated Chain Drive Hardware and Brackets:

1. Provide for universal, regular and offset drive capacity, allowing drive chain to fall at front, rear or non-offset for all shade drive end brackets. Universal offset shall be adjustable for future change.

2. Provide hardware capable for installation of a removable fascia, for both regular and/or reverse roll, which shall be installed without exposed fastening devices of any kind.
3. Provide shade hardware system that allows for removable regular and/or reverse roll fascias to be mounted continuously across two or more shade bands without requiring exposed fasteners of any kind.
4. Provide shade hardware system that allows for operation of multiple shade bands (multi-banded shades) by a single chain operator, subject to manufacturer's design criteria. Connectors shall be offset to assure alignment from the first to the last shade band.
5. Provide shade hardware system that allows multi-banded manually operated shades to be capable of smooth operation when the axis is offset a maximum of 6 degrees on each side of the plane perpendicular to the radial line of the curve, for a 12 degrees total offset.
6. Provide positive mechanical engagement of drive mechanism to shade roller tube. Friction fit connectors for drive mechanism connection to shade roller tube are not acceptable.
7. Provide shade hardware constructed of minimum 1/8 inch (3.18 mm) thick plated steel or heavier as required to support 150 percent of the full weight of each shade.
8. Drive Bracket / Brake Assembly: MechoShade Drive Bracket Model M5 shall be fully integrated with all MechoShade accessories, including, but not limited to: SnapLoc fascia, room darkening side / sill channels, center supports and connectors for multi-banded shades.
9. M5 drive sprocket and brake assembly shall rotate and be supported on a welded 3/8 inch (9.525 mm) steel pin.
10. The brake shall be an over-running clutch design which disengages to 90 percent during raising and lowering of a shade. The brake shall withstand a pull force of 50 lbs. (22 kg) in the stopped position.
11. The braking mechanism shall be applied to an oil-impregnated hub on to which the brake system is mounted. The oil impregnated hub design includes an articulated brake assembly, which assures a smooth, non-jerky operation in raising and lowering the shades. The assembly shall be permanently lubricated. Products that require externally applied lubrication and/or not permanently lubricated are not acceptable.
12. The entire M5 assembly shall be fully mounted on the steel support bracket, and fully independent of the shade tube assembly, which may be removed and reinstalled without affecting the roller shade limit adjustments.
13. Drive Chain: #10 qualified stainless steel chain rated to 90 lb. (41 kg) minimum breaking strength. Nickel plate chain shall not be accepted.

2.7 ACCESSORIES

A. Fascia:
1. Continuous removable extruded aluminum fascia that attaches to shade mounting brackets without the use of adhesives, magnetic strips, or exposed fasteners.
2. Fascia shall be able to be installed across two or more shade bands in one piece.
3. Fascia shall fully conceal brackets, shade roller and fabric on the tube.
4. Provide bracket / fascia end caps where mounting conditions expose outside of roller shade brackets.
5. Notching of Fascia for manual chain shall not be acceptable.

B. Product selection shall meet or exceed specifications for "Urban Shade" by MechoShade Systems.

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

3.2 MANUALLY OPERATED ROLLER SHADE INSTALLATION

A. Install roller shades level and plumb and aligned with adjacent units according to manufacturer's written instructions, and located so exterior fabric in any position is not closer than 1 inch to interior face of glass. Allow clearances between adjacent shades and for operating glazed opening's operation hardware, if any.

3.3 ADJUSTING

A. Adjust roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.

3.4 CLEANING AND PROTECTION

A. Clean shade 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 roller shades are without damage or deterioration at time of Substantial Completion.

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

END OF SECTION

SECTION 13850

CARBON MONOXIDE MONITORS

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Furnish and install all Carbon Monoxide (CO) sensors as indicated on the contract documents.

B. CO sensors are only required for facilities having fuel burning appliances. Locations with non-fuel burning appliances are exempt from this requirement.

1.02 REFERENCE DOCUMENTS

A. The Special Provisions for Electrical Work are hereby made a part of this Section of the Work. Refer to Section 16010.

1.03 SUBMITTALS

A. Submit complete manufacturers' data sheet for each type and style of sensor proposed.

PART 2 - PRODUCTS

2.01 APPROVED PRODUCTS

A. CO1224 series by System Sensor.

2.02 MATERIALS

A. All sensors shall be surface mountable, independent, self-contained units. The units shall receive 12/24 VDC power from the fire or security control panels.

B. Each sensor shall be fully listed to UL 2075 specifications.

C. The units supplied must utilize a gas-sensing cell which can be tested by employing a commercially available, standard CO test gas. Additionally, the unit must provide an alarm input capability for the end of sensor life function.

D. Each monitor must employ microprocessor solid state electronic circuitry.

E. The units must be single stage operation with a user adjustable alarm set point between 0-250 parts per million concentration. If the alarm point is attained for 10 consecutive seconds then the unit shall initiate an audible alarm in the 85 decibel range.

F. The face of the alarm casing shall contain LED indicators of the unit's current status. At minimum this must show 'normal' or 'alarm' conditions.

G. Each unit is to have an alarm silence/reset button.

H. The sensors must have the capability of sending a trouble signal to a remote panel via a set of integrated contacts, for future use. The contacts should be configured as a selectable set of Normally Open (NO), Closed, and Normally Closed (NC).

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install a minimum of one unit in the vicinity of the fuel burning water heater/boiler and one central to the treatment area. Add other locations as deemed appropriate by architect of record.

B. The CO monitors supplement, but do not replace, the requirement for the installation of smoke detectors.

C. On new installations, CO monitors should be tied to the clinic fire alarm system and be "descriptively annunciated" from fire alarm panel. CO signals take precedence over supervisory or trouble signals. CO monitor trouble signals must be indicated visually and audibly at the control panel and auxiliary annunciator panels, but should not set off the fire alarm.

END OF SECTION