3.04 **ADJUSTING**

A. Adjust doors for smooth and balanced door movement.

B. Adjust closers for full closure.

3.05 **CLEANING**

A. Remove protective material from factory finished surfaces.

B. Clean units using cleaning material and methods in accordance with door manufacturer's written recommendations.

C. Remove excess sealant by moderate use of mineral spirits or other solvent acceptable to sealant manufacturer.

D. See Section 01 7419 - Construction Waste Management and Disposal, for additional requirements.

3.06 **PROTECTION**

A. Protect installed work from damage due to subsequent construction activity on the site.

3.07 **SCHEDULE - SEE DRAWINGS**

END OF SECTION

SECTION 085200
WOOD WINDOWS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Factory fabricated wood windows.

B. Glazing.

C. Operating hardware.

D. Wood trim for exterior finishing.

1.02 RELATED REQUIREMENTS

A. Section 079200 - Joint Sealants: Sealing joints between frames and adjacent construction.

1.03 REFERENCE STANDARDS

A. AAMA/WDMA/CSA 101/I.S.2/A440 - North American Fenestration Standard/Specification for windows, doors, and skylights 2017.

1.04 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Protect factory finished surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond when exposed to sunlight or weather.

1.06 FIELD CONDITIONS

A. Do not install sealants when ambient temperature is less than 40 degrees F (5 degrees C).

B. Maintain this minimum temperature during and after installation of sealants.

1.07 WARRANTY

A. See Section 017800 - Closeout Submittals, for additional warranty requirements.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Basis of Design: Andersen Windows, E100.

B. Aluminum Clad Wood Windows:

1. Andersen Windows, Inc; E-Series Casement Windows: www.andersenwindows.com/#sle.
2. Pella Corporation; Architect Series Reserve: www.pellacommercial.com/#sle.
3. Weather Shield Manufacturing, Inc; Premium Series Double Hung Windows: www.weathershield.com/#sle.
4. Substitutions: See Section 016000 - Product Requirements.

2.02 WOOD WINDOWS

A. Wood Windows: Wood frame and sash, factory fabricated and assembled.

1. Exterior Finish: Aluminum Cladding with prefinished color, submit colors from manufacturer to Architect for final color selection.
2. Interior Finish: Submit color from manufacture's standard colors.
3. Color: As selected by Architect from manufacturer's standard range.
4. Configuration: As indicated on drawings.

2.03 COMPONENTS

A. Glazing: Double glazed, clear, Low-E coated, argon filled, with glass thicknesses as recommended by manufacturer for specified wind conditions.

B. Frames: [____] inch ([____] mm) wide by [____] inch ([____] mm) deep profile; flush solid wood glass stops of screw fastened type, sloped for positive drainage.

C. Sills: Extruded aluminum, with [____] inch ([____] mm) nominal thickness; sloped for positive drainage; fits under sash and projects at least 1/2 inch (12 mm) beyond exterior face of wall; single piece full width of opening.

D. Fasteners: Stainless steel.

E. Sealant and Backing Materials: As specified in Section 079200 of types as indicated.

F. Flashing: Provide related flashings, with necessary anchors and attachment devices.

2.04 **PERFORMANCE REQUIREMENTS**

A. Comply with AAMA/WDMA/CSA 101/I.S.2/A440 requirements for the specific window type in accordance with the following:
   1. Performance Class (PC): R.

2.05 **HARDWARE**

A. Standard hardware per Manufacturer

PART 3 EXECUTION

3.01 **EXAMINATION**

A. Verify wall openings and adjoining air and vapor seal materials are ready to receive work of this section.

3.02 **INSTALLATION**

A. Install windows in accordance with manufacturer's instructions.

B. Attach window frame and shims to perimeter opening to accommodate construction tolerances and other irregularities.

C. Align window plumb and level, free of warp or twist. Maintain dimensional tolerances and alignment with adjacent work.

3.03 **TOLERANCES**

A. Maximum Variation from Level or Plumb: 1/16 inch per 3 ft (1.6 mm per m) non-cumulative or 1/8 inch per 10 ft (3.2 mm per 3 m), whichever is less.

3.04 **ADJUSTING**

A. Adjust hardware for smooth operation and secure weathertight closure.

3.05 **CLEANING**

A. Refer to Section 017419 - Construction Waste Management and Disposal, for additional requirements.

B. Remove protective material from factory finished surfaces.

C. Wash surfaces by method recommended and acceptable to window manufacturer; rinse and wipe surfaces clean.

END OF SECTION

SECTION 08 7100
DOOR HARDWARE

PART 1 GENERAL

1.01 **SECTION INCLUDES**

A. Hardware for wood doors.

B. Thresholds.

C. Weatherstripping and gasketing.

1.02 **RELATED REQUIREMENTS**

A. Section 08 0671 - Door Hardware Schedule: Schedule of door hardware sets.

B. Section 08 1416 - Flush Wood Doors.

1.03 **REFERENCE STANDARDS**

A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design 2010.

B. BHMA A156.1 - American National Standard for Butts and Hinges 2016.

C. BHMA A156.2 - American National Standard for Bored and Preassembled Locks & Latches 2017.

D. BHMA A156.13 - American National Standard for Mortise Locks & Latches Series 1000 2017.

E. BHMA A156.14 - American National Standard for Sliding and Folding Door Hardware 2013.

F. BHMA A156.16 - American National Standard for Auxiliary Hardware 2018.

G. BHMA A156.18 - American National Standard for Materials and Finishes 2016.

H. BHMA A156.21 - American National Standard for Thresholds 2014.

I. BHMA A156.22 - American National Standard for Door Gasketing and Edge Seal Systems Sponsor 2017.

J. BHMA A156.28 - American National Standard for Recommended Practices for Mechanical Keying Systems 2018.

K. DHI (KSN) - Keying Systems and Nomenclature 1989.

L. DHI WDHS.3 - Recommended Locations for Architectural Hardware for Flush Wood Doors 1993; also in WDHS-1/WDHS-5 Series, 1996.

M. ICC A117.1 - Accessible and Usable Buildings and Facilities 2017.

N. ITS (DIR) - Directory of Listed Products current edition.

O. NFPA 80 - Standard for Fire Doors and Other Opening Protectives 2019.

P. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies 2017.

Q. UL (DIR) - Online Certifications Directory Current Edition.

R. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies Current Edition, Including All Revisions.

1.04 **ADMINISTRATIVE REQUIREMENTS**

A. Coordinate the manufacture, fabrication, and installation of products that door hardware is installed on.

1.05 **SUBMITTALS**

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's catalog literature for each type of hardware, marked to clearly show products to be furnished for this project, and includes construction details, material descriptions, finishes, and dimensions and profiles of individual components.

C. Warranty: Submit manufacturer's warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.06 **DELIVERY, STORAGE, AND HANDLING**

A. Package hardware items individually; label and identify each package with door opening code to match door hardware schedule.

1.07 **WARRANTY**

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. Warranty against defects in material and workmanship for period indicated, from Date of Substantial Completion.
   1. Closers: Five years, minimum.
   2. Locksets and Cylinders: Three years, minimum.
   3. Other Hardware: Two years, minimum.

PART 2 PRODUCTS

2.01 **DESIGN AND PERFORMANCE CRITERIA**

A. Provide specified door hardware as required to make doors fully functional, compliant with applicable codes, and secure to extent indicated.

B. Provide individual items of single type, of same model, and by same manufacturer.

C. Provide door hardware products that comply with the following requirements:
   1. Applicable provisions of federal, state, and local codes.
   2. Accessibility: ADA Standards and ICC A117.1.

2.02 **HINGES**

A. Hinges: Comply with BHMA A156.1, Grade 1.
   1. Provide hinges on every swinging door.
   2. Provide five-knuckle full mortise butt hinges unless otherwise indicated.
   3. Provide ball-bearing hinges at each door with closer.
   4. Provide non-removable pins on interior outswinging doors at locations as indicated.
   5. Provide following quantity of butt hinges for each door:
      a. Doors From 60 inches High up to 90 inches High: Three hinges.

2.03 **TRACK AND HANGERS**

A. Pocket Doors: Provide pocket door kit, including header assembly, split studs, hangers, door hanger plates, bumper, guides, floor plate, and end bracket.
   1. Provide flush cup pull on both sides.

B. Sliding and Bifolding Door Hardware: Comply with BHMA A156.14.
   1. Provide track, hanger fasteners, guides, and pulls; size track and hangers in accordance with manufacturer's recommendations for weight of doors.
   2. Provide one pull for each pair of panels hinged together.

2.04 **FLUSH BOLTS**

A. Flush Bolts: Comply with BHMA A156.16, Grade 1.
   1. Flush Bolt Throw: 3/4 inch, minimum.

2.05 **LOCK CYLINDERS**

A. Lock Cylinders: Provide key access on outside of each lock, unless otherwise indicated.
   1. Provide cylinders from same manufacturer as locking device.
   2. Provide cams and/or tailpieces as required for locking devices.

2.06 **CYLINDRICAL LOCKS**

A. Cylindrical Locks (Bored): Comply with BHMA A156.2, Grade 1, 4000 Series.
   1. Bored Hole: 2-1/8 inch diameter.
   2. Latchbolt Throw: 1/2 inch, minimum.
   3. Backset: 2-3/4 inch unless otherwise indicated.
   4. Strikes: Provide manufacturer's standard strike for each latchset or lockset with strike box and curved lip extending to protect frame in compliance with indicated requirements.
      a. Finish: To match the finish on the existing doors to remain.
   5. Provide a lock for each door, unless otherwise indicated that lock is not required.
   6. Trim: Provide lever handle or pull trim on outside of each lock, unless otherwise indicated.

2.07 **MORTISE LOCKS**

A. Manufacturers:

B. Mortise Locks: Comply with BHMA A156.13, Grade 1, Security, 1000 Series.

1. Latchbolt Throw: 3/4 inch, minimum.
2. Deadbolt Throw: 1 inch, minimum.
3. Backset: 2-3/4 inch unless otherwise indicated.
4. Strikes: Provide manufacturer's standard strike for each latchset or lockset with strike box and curved lip extending to protect frame in compliance with indicated requirements.
    a. Finish: To match lock or latch.

2.08 **WALL STOPS**

A. Wall Stops: Comply with BHMA A156.16, Grade 1 and Resilient Material Retention Test as described in this standard.
1. Provide wall stops to prevent damage to wall surface upon opening door.
2. Type: Bumper, concave, wall stop.
3. Material: Stainless steel housing with rubber insert.

2.09 **THRESHOLDS**

A. Thresholds: Comply with BHMA A156.21.
1. Provide threshold at each exterior door, unless otherwise indicated.
2. Type: Flat surface.
3. Material: Aluminum.
4. Threshold Surface: Fluted horizontal grooves across full width.
5. Field cut threshold to profile of frame and width of door sill for tight fit.
6. Provide non-corroding fasteners at exterior locations.

2.10 **WEATHERSTRIPPING AND GASKETING**

A. Weatherstripping and Gasketing: Comply with BHMA A156.22.
1. Head and Jamb Type: Self-adhesive.
2. Door Sweep Type: Encased in retainer.
3. Material: Aluminum, with neoprene weatherstripping.
4. Provide sound-rated gasketing and automatic door bottom on doors indicated as "Sound-Rated", "Acoustical", or with "Sound Transmission Class (STC) rating"; fabricate as continuous gasketing, do not cut or notch gasketing material.

2.11 **KEY CONTROL SYSTEMS**

A. Key Control Systems: Comply with guidelines of BHMA A156.28.
1. Provide keying information in compliance with DHI (KSN) standards.
2. Keying: Grand master keyed.
3. Supply keys in following quantities:
    a. 1 each Grand Master keys.

2.12 **FINISHES**

A. Finishes: Identified in Door Hardware Schedule.

B. Finishes: Provide door hardware of same finish, unless otherwise indicated.
1. Primary Finish: Satin Nickel 626; BHMA A156.18.
2. Secondary Finish: Contact Architect; BHMA A156.18.
    a. Use secondary finish in kitchens, bathrooms, and other spaces containing chrome or stainless steel finished appliances, fittings, and equipment; provide primary finish on one side of door and secondary finish on other side if necessary.

PART 3 EXECUTION

3.01 **EXAMINATION**

A. Verify that doors and frames are ready to receive this work; labeled, fire-rated doors and frames are properly installed, and dimensions are as indicated on shop drawings.

3.02 **INSTALLATION**

A. Install hardware in accordance with manufacturer's instructions and applicable codes.

B. Use templates provided by hardware item manufacturer.

C. Door Hardware Mounting Heights: Distance from finished floor to center line of hardware item. As indicated in following list; unless noted otherwise in Door Hardware Schedule or on drawings.
1. For Wood Doors: Install in compliance with DHI WDHS.3 recommendations.

2. Flush Wood Doors: Refer to Section 08 1416.
3. Mounting heights in compliance with ADA Standards:
   a. Locksets: 40-5/16 inch.

D. Set exterior door thresholds with full-width bead of elastomeric sealant at each point of contact with floor providing a continuous weather seal; anchor thresholds with stainless steel countersunk screws.

3.03 **FIELD QUALITY CONTROL**

A. Perform field inspection and testing under provisions of Section 01 4000 - Quality Requirements.

3.04 **ADJUSTING**

A. Adjust work under provisions of Section 01 7000 - Execution and Closeout Requirements.

B. Adjust hardware for smooth operation.

C. Adjust gasketing for complete, continuous seal; replace if unable to make complete seal.

3.05 **CLEANING**

A. Clean finished hardware in accordance with manufacturer's written instructions after final adjustments have been made.

B. Clean adjacent surfaces soiled by hardware installation.

C. Replace items that cannot be cleaned to manufacturer's level of finish quality at no additional cost.

D. See Section 01 7419 - Construction Waste Management and Disposal, for additional requirements.

3.06 **PROTECTION**

A. Protect finished Work under provisions of Section 01 7000 - Execution and Closeout Requirements.

B. Do not permit adjacent work to damage hardware or finish.

END OF SECTION

SECTION 088000
GLAZING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Insulating glass units.

1.02 RELATED REQUIREMENTS

A. Section 081113 - Hollow Metal Doors and Frames: Glazed lites in doors.

B. Section 085200 - Wood Windows: Glazing furnished by window manufacturer.

C. Section 085313 - Vinyl Windows: Glazing furnished by window manufacturer.

1.03 REFERENCE STANDARDS

A. ASTM C1193 - Standard Guide for Use of Joint Sealants 2016.

B. ASTM E1300 - Standard Practice for Determining Load Resistance of Glass in Buildings 2016.

C. GANA (SM) - GANA Sealant Manual 2008.

D. NFRC 100 - Procedure for Determining Fenestration Product U-factors 2017.

E. NFRC 200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence 2014, with Errata (2017).

F. NFRC 300 - Test Method for Determining the Solar Optical Properties of Glazing Materials and Systems 2017.

1.04 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.

B. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.05 FIELD CONDITIONS

A. Do not install glazing when ambient temperature is less than 40 degrees F (4 degrees C).

B. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.06 WARRANTY

A. See Section 017800 - Closeout Submittals, for additional warranty requirements.

B. Insulating Glass Units: Provide a five (5) year manufacturer warranty to include coverage for seal failure, interpane dusting or misting, including providing products to replace failed units.

PART 2 PRODUCTS

2.01 PERFORMANCE REQUIREMENTS - EXTERIOR GLAZING ASSEMBLIES

A. Provide type and thickness of exterior glazing assemblies to support assembly dead loads, and to withstand live loads caused by positive and negative wind pressure acting normal to plane of glass.
   1. Comply with ASTM E1300 for design load resistance of glass type, thickness, dimensions, and maximum lateral deflection of supported glass.
   2. Provide glass edge support system sufficiently stiff to limit the lateral deflection of supported glass edges to less than 1/175 of their lengths under specified design load.
   3. Glass thicknesses listed are minimum.

B. Vapor Retarder and Air Barrier Seals: Provide completed assemblies that maintain continuity of building enclosure vapor retarder and air barrier.
   1. In conjunction with vapor retarder and joint sealer materials described in other sections.

C. Thermal and Optical Performance: Provide exterior glazing products with performance properties as indicated. Performance properties are in accordance with manufacturer's published data as determined with the following procedures and/or test methods:
   1. Center of Glass U-Value: Comply with NFRC 100 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 6.3 computer program.

2. Center of Glass Solar Heat Gain Coefficient (SHGC): Comply with NFRC 200 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 6.3 computer program.
3. Solar Optical Properties: Comply with NFRC 300 test method.

2.02 **GLASS MATERIALS**

2.03 **BASIS OF DESIGN - INSULATING GLASS UNITS**

A. Basis of Design - Insulating Glass Units: Vision glazing, with Low-E coating.
1. Applications: Exterior insulating glass glazing unless otherwise indicated.
2. Space between lites filled with air.
3. Total Thickness: 1 inch (25.4 mm).
4. Thermal Transmittance (U-Value), Summer - Center of Glass: .32, nominal.
5. Spacer Color: Black.
6. Edge Seal:
7. Color: Black.
8. Purge interpane space with dry air, hermetically sealed.

PART 3 EXECUTION

3.01 **VERIFICATION OF CONDITIONS**

A. Verify that openings for glazing are correctly sized and within tolerances, including those for size, squareness, and offsets at corners.

B. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and support framing is ready to receive glazing system.

3.02 **PREPARATION**

A. Clean contact surfaces with appropriate solvent and wipe dry within maximum of 24 hours before glazing. Remove coatings that are not tightly bonded to substrates.

B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.

C. Prime surfaces scheduled to receive sealant where required for proper sealant adhesion.

3.03 **INSTALLATION, GENERAL**

A. Install glazing in compliance with written instructions of glass, gaskets, and other glazing material manufacturers, unless more stringent requirements are indicated, including those in glazing referenced standards.

B. Install glazing sealants in accordance with ASTM C1193, GANA (SM), and manufacturer's instructions.

3.04 **FIELD QUALITY CONTROL**

A. Glass and Glazing product manufacturers to provide field surveillance of the installation of their products.

B. Monitor and report installation procedures and unacceptable conditions.

3.05 **CLEANING**

A. Remove excess glazing materials from finish surfaces immediately after application using solvents or cleaners recommended by manufacturers.

B. Remove non-permanent labels immediately after glazing installation is complete.

C. Clean glass and adjacent surfaces after sealants are fully cured.

D. Clean glass on both exposed surfaces not more than 4 days prior to Date of Substantial Completion in accordance with glass manufacturer's written recommendations.

3.06 **PROTECTION**

A. After installation, mark pane with an 'X' by using removable plastic tape or paste; do not mark heat absorbing or reflective glass units.

B. Remove and replace glass that is damaged during construction period prior to Date of Substantial Completion.

END OF SECTION

SECTION 092116
GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Metal stud wall framing.

B. Gypsum sheathing.

C. Cementitious backing board.

D. Gypsum wallboard.

E. Joint treatment and accessories.

F. Textured finish system.

1.02 RELATED REQUIREMENTS

A. Section 092216 - Non-Structural Metal Framing.

1.03 REFERENCE STANDARDS

A. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board 2017.

B. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members 2018.

C. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products 2020.

D. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board 2019b.

E. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness 2018.

F. ASTM C1396/C1396M - Standard Specification for Gypsum Board 2017.

G. ASTM C1658/C1658M - Standard Specification for Glass Mat Gypsum Panels 2019.

H. GA-216 - Application and Finishing of Gypsum Panel Products 2016.

1.04 SUBMITTALS

A. See Section 013000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data on gypsum board, accessories, and joint finishing system.

1.05 QUALITY ASSURANCE

PART 2 PRODUCTS

2.01 GYPSUM BOARD ASSEMBLIES

A. Provide completed assemblies complying with ASTM C840 and GA-216.
   1. See PART 3 for finishing requirements.

2.02 METAL FRAMING MATERIALS

A. Non-structural Steel Framing for Application of Gypsum Board: As specified in Section 092216.

B. Non-structural Framing System Components: ASTM C645; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 for the spacing indicated, with maximum deflection of wall framing of L/120 at 5 psf (L/120 at 240 Pa).
   1. Studs: C-shaped with knurled or embossed faces.
   2. Runners: U shaped, sized to match studs.

2.03 BOARD MATERIALS

A. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
   1. Application: Use for vertical surfaces, unless otherwise indicated.
   2. Glass mat faced gypsum panels, as defined in ASTM C1658/C1658M, suitable for paint finish, of the same core type and thickness may be substituted for paper-faced board.
   3. Thickness:
      a. Vertical Surfaces: 5/8 inch (16 mm).

2.04 **GYPSUM WALLBOARD ACCESSORIES**

A. Joint Materials: ASTM C475/C475M and as recommended by gypsum board manufacturer for project conditions.
   1. Fiberglass Tape: 2 inch (50 mm) wide, coated glass fiber tape for joints and corners, except as otherwise indicated.
   2. Joint Compound: Setting type, field-mixed.

B. Finishing Compound: Surface coat and primer, takes the place of skim coating.

C. Screws for Fastening of Gypsum Panel Products to Steel Members from 0.033 to 0.112 inch (0.84 to 2.84 mm) in Thickness: ASTM C954; steel drill screws, corrosion-resistant.

PART 3 EXECUTION

3.01 **EXAMINATION**

A. Verify that project conditions are appropriate for work of this section to commence.

3.02 **FRAMING INSTALLATION**

A. Metal Framing: Install in accordance with ASTM C754 and manufacturer's instructions.

B. Studs: Space studs at 16 inches on center (at 406 mm on center).
   1. Extend partition framing to structure in all locations.

3.03 **BOARD INSTALLATION**

A. Comply with ASTM C840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.

B. Single-Layer Nonrated: Install gypsum board in most economical direction, with ends and edges occurring over firm bearing.
   1. Exception: Tapered edges to receive joint treatment at right angles to framing.

3.04 **JOINT TREATMENT**

A. Glass Mat Faced Gypsum Board and Exterior Glass Mat Faced Sheathing: Use fiberglass joint tape, embed and finish with setting type joint compound.

B. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
   1. Level 5: Walls and ceilings to receive semi-gloss or gloss paint finish and other areas specifically indicated.
   2. Level 1: Fire-resistance-rated wall areas above finished ceilings, whether or not accessible in the completed construction.

C. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
   1. Feather coats of joint compound so that camber is maximum 1/32 inch (0.8 mm).

D. Where Level 5 finish is indicated, spray apply high build drywall surfacer over entire surface after joints have been properly treated; achieve a flat and tool mark-free finish.

E. Fill and finish joints and corners of cementitious backing board as recommended by manufacturer.

3.05 **TEXTURE FINISH**

A. Apply finish texture coating by means of trowel in accordance with manufacturer's instructions existing texture.

3.06 **TOLERANCES**

A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet (3 mm in 3 m) in any direction.

END OF SECTION

SECTION 09 3000
TILING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Tile for floor applications.

B. Tile for wall applications.

C. Cementitious backer board as tile substrate.

D. Ceramic accessories.

E. Ceramic trim.

1.02 RELATED REQUIREMENTS

1.03 REFERENCE STANDARDS

A. ANSI A108/A118/A136 - American National Standard Specifications for the Installation of Ceramic Tile (Compendium) 2019.

B. ANSI A108.1a - American National Standard Specifications for Installation of Ceramic Tile in the Wet-Set Method, with Portland Cement Mortar 2017.

C. ANSI A108.1b - American National Standard Specifications for Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set or Latex-Portland Cement Mortar 2017.

D. ANSI A108.1c - Specifications for Contractors Option: Installation of Ceramic Tile in the Wet-Set Method with Portland Cement Mortar or Installation of Ceramic Tile on a Cured Portland Cement Mortar Bed with Dry-Set or Latex-Portland Cement 1999 (Reaffirmed 2016).

E. ANSI A108.2 - American National Standard General Requirements: Materials, Environmental and Workmanship 2019.

F. ANSI A108.4 - American National Standard Specifications for Installation of Ceramic Tile with Organic Adhesives or Water Cleanable Tile-Setting Epoxy Adhesive 2009 (Revised).

G. ANSI A108.5 - American National Standard Specifications for Installation of Ceramic Tile with Dry-Set Portland Cement Mortar or Latex-Portland Cement Mortar 1999 (Reaffirmed 2010).

H. ANSI A108.6 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant, Water Cleanable Tile-Setting and -Grouting Epoxy 1999 (Reaffirmed 2010).

I. ANSI A108.8 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant Furan Resin Mortar and Grout 1999 (Reaffirmed 2010).

J. ANSI A108.9 - American National Standard Specifications for Installation of Ceramic Tile with Modified Epoxy Emulsion Mortar/Grout 1999 (Reaffirmed 2010).

K. ANSI A108.10 - American National Standard Specifications for Installation of Grout in Tilework 2017.

L. ANSI A108.11 - American National Standard Specifications for Interior Installation of Cementitious Backer Units 2018.

M. ANSI A108.12 - American National Standard for Installation of Ceramic Tile with EGP (Exterior Glue Plywood) Latex-Portland Cement Mortar 1999 (Reaffirmed 2010).

N. ANSI A108.13 - American National Standard for Installation of Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone 2005 (Reaffirmed 2016).

O. ANSI A108.19 - American National Standard Specifications for Interior Installation of Gauged Porcelain Tiles and Gauged Porcelain Tile Panels/Slabs by the Thin-Bed Method Bonded with Modified Dry-Set Cement Mortar or Improved Modified Dry-Set Cement Mortar 2017.

P. ANSI A118.4 - American National Standard Specifications for Modified Dry-Set Cement Mortar 2012 (Revised).

Q. ANSI A118.6 - American National Standard Specifications for Standard Cement Grouts for Tile Installation 2010 (Reaffirmed 2016).

R. ANSI A118.9 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units 1999 (Reaffirmed 2016).

S. ANSI A118.10 - American National Standard Specifications for Load Bearing, Bonded, Waterproof Membranes For Thin-Set Ceramic Tile And Dimension Stone Installation 2014.

T. ANSI A118.12 - American National Standard Specifications for Crack Isolation Membranes for Thin-Set Ceramic Tile and Dimension Stone Installation 2014.

U. ANSI A137.1 - American National Standard Specifications for Ceramic Tile 2019.

V. TCNA (HB) - Handbook for Ceramic, Glass, and Stone Tile Installation 2019.

1.04 **ADMINISTRATIVE REQUIREMENTS**

A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by affected installers.

1.05 **SUBMITTALS**

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturers' data sheets on tile, mortar, grout, and accessories. Include instructions for using grouts and adhesives.

1.06 **QUALITY ASSURANCE**

A. Maintain one copy of and ANSI A108/A118/A136 and TCNA (HB) on site.

1.07 **DELIVERY, STORAGE, AND HANDLING**

A. Protect adhesives from freezing or overheating in accordance with manufacturer's instructions.

1.08 **FIELD CONDITIONS**

A. Do not install solvent-based products in an unventilated environment.

B. Maintain ambient and substrate temperature above 50 degrees F and below 100 degrees F during installation and curing of setting materials.

PART 2 PRODUCTS

2.01 **TILE**

A. Manufacturers: All products by the same manufacturer.

B. Porcelain Tile: ANSI A137.1 standard grade.
   1. Size: 12 by 12 inch, nominal.
   2. Thickness: 3/8 inch.
   3. Edges: Cushioned.
   4. Surface Finish: Non-slip.
   5. Color(s): To be selected by Architect from manufacturer's standard range.
   6. Pattern: Grid Pattern so grid is parallel with walls.
   7. Trim Units: Matching cove base and cove shapes in sizes coordinated with field tile.
   8. Products:
      a. Dal-Tile Corporation; [_____]: www.daltile.com/#sle.
      b. Substitutions: See Section 01 6000 - Product Requirements.

2.02 **TRIM AND ACCESSORIES**

A. Ceramic Accessories: same as floor finish, same color and finish as adjacent field tile; same manufacturer as tile.

B. Ceramic Trim: Matching cove base and cove ceramic shapes in sizes coordinated with field tile.
   1. Manufacturers: Same as for tile.

2.03 **SETTING MATERIALS**

A. Latex-Portland Cement Mortar Bond Coat: ANSI A118.4.

2.04 **GROUTS**

A. Standard Grout: ANSI A118.6 standard cement grout.

1. Applications: Use this type of grout where indicated and where no other type of grout is indicated.
2. Use sanded grout for joints 1/8 inch wide and larger; use unsanded grout for joints less than 1/8 inch wide.
3. Color(s): As selected by Architect from manufacturer's full line.

2.05 **MAINTENANCE MATERIALS**

A. Tile Sealant: Gunnable, silicone, siliconized acrylic, or urethane sealant; moisture and mildew resistant type.
1. Applications: Between tile and plumbing fixtures.
2. Color(s): As selected by Architect from manufacturer's full line.

B. Grout Sealer: Liquid-applied, moisture and stain protection for existing or new Portland cement grout.
1. Composition: Water-based colorless silicone.

2.06 **ACCESSORY MATERIALS**

A. Waterproofing Membrane at Floors: Specifically designed for bonding to cementitious substrate under thick mortar bed or thin-set tile; complying with ANSI A118.10.
1. Fluid or Trowel Applied Type:

B. Underlayment at Floors: Specifically designed for bonding to thin-set setting mortar; not primarily a waterproofing material and having the following characteristics:
1. Crack Resistance: No failure at 1/16 inch gap, minimum; comply with ANSI A118.12.
2. Suitable for installation over wood-based substrates.
3. Type: Fluid or Trowel Applied.

C. Backer Board: Cementitious type complying with ANSI A118.9; high density, glass fiber reinforced, 1/2 inch thick; 2 inch wide coated glass fiber tape for joints and corners.

D. Mesh Tape: 2 inch wide self-adhesive fiberglass mesh tape.

PART 3 EXECUTION

3.01 **EXAMINATION**

A. Verify that subfloor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive tile.

B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive tile.

C. Verify that subfloor surfaces are dust free and free of substances that could impair bonding of setting materials to subfloor surfaces.

D. Cementitious Subfloor Surfaces: Verify that substrates are ready for tiling installation by testing for moisture and alkalinity (pH).
1. Obtain instructions if test results are not within limits recommended by tiling material manufacturer and setting material manufacturer.

3.02 **PREPARATION**

A. Protect surrounding work from damage.

B. Vacuum clean surfaces and damp clean.

C. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.

D. Install backer board in accordance with ANSI A108.11 and board manufacturer's instructions. Tape joints and corners, cover with skim coat of setting material to a feather edge.

3.03 **INSTALLATION - GENERAL**

A. Install tile, thresholds, and stair treads and grout in accordance with applicable requirements of ANSI A108.1a through ANSI A108.19 , manufacturer's instructions, and TCNA (HB) recommendations.

B. Lay tile to pattern indicated. Do not interrupt tile pattern through openings.

C. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align floor joints.

D. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make grout joints without voids, cracks, excess mortar or excess grout, or too little grout.

E. Form internal angles square and external angles bullnosed.

F. Install ceramic accessories rigidly in prepared openings.

G. Sound tile after setting. Replace hollow sounding units.

H. Keep control and expansion joints free of mortar, grout, and adhesive.

I. Prior to grouting, allow installation to completely cure; minimum of 48 hours.

J. Grout tile joints unless otherwise indicated. Use standard grout unless otherwise indicated.

K. At changes in plane and tile-to-tile control joints, use tile sealant instead of grout, with either bond breaker tape or backer rod as appropriate to prevent three-sided bonding.

3.04 **INSTALLATION - FLOORS - THIN-SET METHODS**

A. Over wood substrates, install in accordance with TCNA (HB) Method F142, with standard grout, unless otherwise indicated.
   1. Where epoxy bond coat and grout are indicated, install in accordance with TCNA (HB) Method F143.

B. Over wood substrate with backer board underlayment, install in accordance with TCNA (HB) Method F144, for cementitious backer boards, with standard grout.

3.05 **INSTALLATION - WALL TILE**

A. Over gypsum wallboard on wood or metal studs install in accordance with TCNA (HB) Method W243, thin-set with dry-set or latex-Portland cement bond coat, unless otherwise indicated.

3.06 **CLEANING**

A. Clean tile and grout surfaces.

3.07 **PROTECTION**

A. Do not permit traffic over finished floor surface for 4 days after installation.

3.08 **SCHEDULE**

A. Restroom:
   1. Tile: Porcelain.
   2. Base: Coved, 2 inches high, bullnosed top edge.
   3. Installation Method: Thinset over wood substrate.
   4. Grout: Standard.

END OF SECTION

SECTION 096433
LAMINATED WOOD FLOORING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Laminated wood flooring.

1.02 RELATED REQUIREMENTS

A. Section 061000 - Rough Carpentry: Wood subfloor surface.

1.03 REFERENCE STANDARDS

1.04 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, wood species and colors available; and installation instructions.

C. Shop Drawings: Indicate floor joint pattern and termination details.

D. Samples: Submit Two samples [2"] by [2"] inch ([___] by [___] mm) in size illustrating floor finish, color, and sheen.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

1.06 FIELD CONDITIONS

A. Do not install wood flooring until wet construction work is complete and ambient air at installation space has moisture content stabilized at maximum moisture content of 40 percent.

B. Provide heat, light, and ventilation prior to installation.

C. Store materials in area of installation for minimum period of 24 hours prior to installation.

D. Maintain minimum room temperature of 65 degrees F (18 degrees C) and relative humidity in accordance with adhesive manufacturer's instructions for a minimum period of 48 hours prior to delivery of materials to installation space, during installation, and after installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Laminated Wood Flooring:
   1. Armstrong World Industries, Inc; [_____]: www.armstrong.com/#sle.
   2. Mannington Commercial; [_____]: www.mannington.com/commercial/#sle.
   3. Traffic Master.
   4. Substitutions: Section 016000 - Product Requirements.

2.02 MATERIALS

A. Laminated Wood Flooring:
   1. Construction: Tongue and groove, self-locking, 5-ply laminated wood planks.
   2. Installation Method: Floating floor.
   3. Species: Red Oak.
   4. Color: As selected from manufacturer's full range for species specified above.
   5. Length: Random, minimum of 9 inches (230 mm).

B. Underlayment: 1/8 inch (3.175 mm) thick polyurethane foam.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that subfloor surfaces are smooth and flat within the tolerances required for type of substrate and ready to receive laminated wood flooring.

B. Verify that subfloor surfaces are dust-free and free of substances that could impair bonding of materials to substrate surface.

C. Verify that required floor-mounted utilities are in correct location.

3.02 **PREPARATION**

A. Prepare subfloor in accordance with flooring manufacturer's installation instructions.

B. Remove subfloor ridges and bumps. Fill minor or local low spots, cracks, joints, holes, and other defects with subfloor filler to achieve smooth, flat, hard surface.

C. Prohibit traffic until filler is fully cured.

3.03 **INSTALLATION**

A. Vapor Retarder: Install loose laid, seams overlapped 4 inches (101.6 mm) and sealed with polyethylene tape. Run material 2 inches (50.8 mm) up the wall and trim after flooring is installed.

B. Underlayment: Install in accordance with manufacturer's installation instructions.

C. Wood Flooring:
   1. Install flooring in accordance with manufacturer's installation instructions.
   2. Lay flooring in patterns indicated on drawings. Verify alignment as work progresses.
   3. Install edge strips at unprotected or exposed edges, and where flooring terminates.
   4. Install flooring under movable partitions without interrupting floor pattern.
   5. Provide [1/4"] inch ([_____] mm) expansion space at fixed walls and other interruptions.

3.04 **CLEANING**

A. Remove excess adhesive from floor, base, and wall surfaces without damaging surfaces.

B. Clean floor surfaces in accordance with the flooring manufacturer's instructions.

3.05 **PROTECTION**

A. Prohibit traffic on finished floor for 24 hours after installation.

B. Place protective coverings over finished floors; do not remove coverings until after Date of Substantial Completion.

END OF SECTION

SECTION 099123
INTERIOR PAINTING

PART 2 PRODUCTS

1.01 PAINTS AND FINISHES - GENERAL

A. Paints and Finishes: Ready mixed, unless intended to be a field-catalyzed paint.
   1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
   2. Supply each paint material in quantity required to complete entire project's work from a single production run.
   3. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.

PART 3 EXECUTION

2.01 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.

D. Seal surfaces that might cause bleed through or staining of topcoat.

2.02 APPLICATION

A. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".

B. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

C. Apply each coat to uniform appearance in thicknesses specified by manufacturer.

D. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

E. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

END OF SECTION

SECTION 10 4400
FIRE PROTECTION SPECIALTIES

PART 1 GENERAL

1.01 **SECTION INCLUDES**

A. Fire extinguishers.

1.02 **RELATED REQUIREMENTS**

1.03 **REFERENCE STANDARDS**

A. NFPA 10 - Standard for Portable Fire Extinguishers 2017, with Errata (2018).

1.04 **SUBMITTALS**

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide extinguisher ratings and classifications.

PART 2 PRODUCTS

2.01 **FIRE EXTINGUISHERS**

A. Fire Extinguishers - General: Comply with product requirements of NFPA 10 and applicable codes, whichever is more stringent.

B. Provide 5lb 2A 10BC fire extinguisher,

PART 3 EXECUTION

3.01 **EXAMINATION**

A. Verify existing conditions before starting work.

B. Verify rough openings for cabinet are correctly sized and located.

3.02 **INSTALLATION**

A. Install in accordance with manufacturer's instructions.

B. Place extinguishers in cabinets.

3.03 **MAINTENANCE**

A. See Section 01 7000 - Execution and Closeout Requirements, for additional requirements relating to maintenance service.

END OF SECTION

SECTION 11 3013
RESIDENTIAL APPLIANCES

PART 1 GENERAL

1.01 **SECTION INCLUDES**

A. Kitchen appliances.

1.02 **RELATED REQUIREMENTS**

A. Section 22 1005 - Plumbing Piping: Plumbing connections for appliances.

B. Section 26 0583 - Wiring Connections: Electrical connections for appliances.

1.03 **REFERENCE STANDARDS**

A. UL (DIR) - Online Certifications Directory Current Edition.

1.04 **SUBMITTALS**

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Copies of Warranties: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.05 **QUALITY ASSURANCE**

A. Electric Appliances: Listed and labeled by UL (DIR) and complying with NEMA Standards (National Electrical Manufacturers Association).

1.06 **WARRANTY**

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. Provide ten (10) year manufacturer warranty on tub and door liner of dishwashers.

PART 2 PRODUCTS

2.01 **KITCHEN APPLIANCES**

A. Provide Equipment Eligible for Energy Star Rating: Energy Star Rated.

B. Refrigerator: Free-standing, side-by-side, and frost-free.
   1. Features: Include glass shelves, automatic icemaker, light in freezer compartment, and in-door water and ice dispenser.
   2. Exterior Finish: Porcelain enameled steel, color Stainless Steel.
   3. Manufacturers:
      a. Frigidaire Home Products; [____]: www.frigidaire.com/#sle.
      b. GE Appliances; [____]: www.geappliances.com/#sle.
      c. Whirlpool Corp; [____]: www.whirlpool.com/#sle.
      d. Substitutions: See Section 01 6000 - Product Requirements.

C. Range: Electric, free-standing, with glass-ceramic cooktop.
   1. Size: 30 inches wide.
   2. Oven: Self-cleaning with electronic ignition.
   3. Elements: Four (4).
   4. Controls: Solid state electronic.
   5. Features: Include storage drawer, oven door window, and oven light.
   6. Exterior Finish: Porcelain enameled steel, color Stainless Steel.
   7. Manufacturers:
      a. Frigidaire Home Products; [____]: www.frigidaire.com/#sle.
      b. GE Appliances; [____]: www.geappliances.com/#sle.
      c. Whirlpool Corp; [____]: www.whirlpool.com/#sle.
      d. Substitutions: See Section 01 6000 - Product Requirements.

D. Cooking Exhaust: Range hood.
   1. Size: 42 inches wide.
   2. Fan: Two-speed, 500 cfm
   3. Exhaust: Rectangular, vented to exterior.
   4. Features: Include cooktop light, night light, backdraft damper, and removable grease filter.
   5. Exterior Finish: Stainless steel.
   6. Manufacturers:

a. Broan-NuTone, LLC; BCDF130SS Under-Cabinet Range Hood: www.broan-nutone.com/#sle.
b. Frigidaire Home Products; [____]: www.frigidaire.com/#sle.
c. GE Appliances; [____]: www.geappliances.com/#sle.
d. Whirlpool Corp; [____]: www.whirlpool.com/#sle.
e. Substitutions: See Section 01 6000 - Product Requirements.

E. Waste Disposer: Standard type, overload protection, direct wired, dishwasher connection, drain elbow, drain connector, and sound reduction features.
1. Power: 1/3 HP.
2. Capacity: Large.
3. Height: 14-1/2 inch.
4. Depth: 8-1/2 inch.
5. Splash Guard: Removable.
6. Controls: Wall switch.
7. Voltage: 115 volts, 60 Hz, 4 amps.
8. Sink Flange Kit: Stainless steel.
9. Manufacturers:
a. Frigidaire Home Products; [____]: www.frigidaire.com/#sle.
b. GE Appliances; [____]: www.geappliances.com/#sle.
c. Whirlpool Corp; [____]: www.whirlpool.com/#sle.
d. Substitutions: See Section 01 6000 - Product Requirements.

F. Dishwasher: Undercounter.
1. Controls: Solid state electronic.
2. Wash Levels: Three (3).
3. Cycles: Four (4), including normal, rinse and hold, short, and pot and pan.
4. Features: Include rinse aid dispenser, optional no-heat dry, and optional water temperature boost.
5. Finish: Stainless steel .
6. Manufacturers:
a. Frigidaire Home Products; [____]: www.frigidaire.com/#sle.
b. GE Appliances; [____]: www.geappliances.com/#sle.
c. Whirlpool Corp; [____]: www.whirlpool.com/#sle.
d. Substitutions: See Section 01 6000 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify utility rough-ins are provided and correctly located.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

3.03 ADJUSTING

A. Adjust equipment to provide efficient operation.

3.04 CLEANING

A. Remove packing materials from equipment and properly discard.

B. Wash and clean equipment.

END OF SECTION

SECTION 12 3530
RESIDENTIAL CASEWORK

PART 1 GENERAL

1.01 **SECTION INCLUDES**

A. Kitchen cabinets.

B. Vanity cabinets.

1.02 **RELATED REQUIREMENTS**

A. Section 07 9200 - Joint Sealants: Sealing joints between casework and countertops and adjacent walls, floors, and ceilings.

B. Section 12 3600 - Countertops.

1.03 **REFERENCE STANDARDS**

A. BHMA A156.9 - American National Standard for Cabinet Hardware 2015.

B. HPVA HP-1 - American National Standard for Hardwood and Decorative Plywood 2016.

1.04 **SUBMITTALS**

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Certificate: Submit Kitchen Cabinet Manufacturers Association (KCMA) certificate showing manufacturer has met the requirements of KCMA's Environmental Stewardship Program (ESP).

1.05 **QUALITY ASSURANCE**

A. Products: Cabinets complying with requirements of KCMA's Environmental Stewardship Program (ESP).

PART 2 PRODUCTS

2.01 **CABINETS**

A. Kitchen and Vanity Cabinets: Premanufactured and factory-finished, complying with construction and testing requirements in KCMA A161.1.

B. Cabinet Box: Manufacturer's standard materials and construction as determined by selected product line.

C. Cabinet Doors:
1. Solid wood, stained finish.
2. Particle board or medium density fiberboard (MDF), wood veneer finish.
3. Species: Oak.
4. Stain Color: [_____].

D. Drawers:
1. Drawer Front: To match cabinet doors in style, material, and finish.

E. Shelves: Manufacturer's standard adjustable shelves and shelf supports.

F. Cabinet Hardware: As selected from manufacturer's standard types, styles and finishes.
1. Comply with BHMA A156.9.

G. Countertops: As specified in Section 12 3600.

H. Bolts, Nuts, Washers and Screws: Of size and type to suit application.

2.02 **MATERIALS**

A. Adhesives Used for Assembly: Comply with VOC requirements for adhesives and sealants as specified in Section 01 6116.

B. Wood-Based Materials:
1. Solid Wood: Air-dried to 4.5 percent moisture content, then tempered to 6 percent moisture content before use.
2. Composite Wood Panels: Containing no urea-formaldehyde resin binders.

C. Solid Wood: Clear, dry, sound, plain sawn, selected for species grain and color, no defects.

D. Hardwood Plywood: Veneer core; HPVA HP-1 Grade as indicated; same species as exposed solid wood, clear, compatible grain and color, no defects. Band exposed edges with solid wood of same species as veneer.

2.03 **FABRICATION**

A. Shop assemble casework for delivery to site in units easily handled and to permit passage through building openings.

B. Fabricate corners and joints without gaps.

C. Fabricate each unit to be rigid and not dependent on adjacent units for rigidity.

D. Provide cutouts for appliances. Prime paint contact surfaces of cut edges.

PART 3 EXECUTION

3.01 **EXAMINATION**

A. Verify adequacy of support framing.

3.02 **INSTALLATION**

A. Install casework, components and accessories in accordance with manufacturer's instructions.

B. Set casework items plumb and square, securely anchored to building structure.

3.03 **ADJUSTING**

A. Adjust doors, drawers, hardware, and other moving or operating parts to function smoothly.

3.04 **CLEANING**

A. Clean casework, countertops, shelves, and hardware.

3.05 **PROTECTION**

A. Do not permit finished casework to be exposed to continued construction activity.

END OF SECTION

SECTION 12 3600
COUNTERTOPS

PART 1 GENERAL

1.01 **SECTION INCLUDES**

A. Countertops for manufactured casework.

B. Sinks molded into countertops.

1.02 **RELATED REQUIREMENTS**

A. Section 06 4100 - Architectural Wood Casework.

B. Section 12 3530 - Residential Casework.

1.03 **REFERENCE STANDARDS**

A. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards 2014, with Errata (2018).

B. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards, U.S. Version 3.1 2017, with Errata (2019).

C. ISFA 2-01 - Classification and Standards for Solid Surfacing Material 2013.

D. NEMA LD 3 - High-Pressure Decorative Laminates 2005.

1.04 **SUBMITTALS**

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Complete details of materials and installation ; combine with shop drawings of cabinets and casework specified in other sections.

1.05 **DELIVERY, STORAGE, AND HANDLING**

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.06 **FIELD CONDITIONS**

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

PART 2 PRODUCTS

2.01 **COUNTERTOPS**

A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.

B. Solid Surfacing Countertops: Solid surfacing sheet or plastic resin casting self-supporting over structural members.
   1. Flat Sheet Thickness: 3/4 inch, minimum.
   2. Solid Surfacing Sheet and Plastic Resin Castings: Complying with ISFA 2-01 and NEMA LD 3; acrylic or polyester resin, mineral filler, and pigments; homogenous, non-porous and capable of being worked and repaired using standard woodworking tools; no surface coating; color and pattern consistent throughout thickness.
      a. Finish on Exposed Surfaces: Matte, gloss rating of 5 to 20.
      b. Color and Pattern: As selected by Architect from manufacturer's full line.
   3. Other Components Thickness: 1/2 inch, minimum.
   4. Exposed Edge Treatment: Built up to minimum 1-1/4 inch thick; marine edge; use marine edge at sinks.
   5. Back and End Splashes: Same sheet material, square top; minimum 4 inches high.
   6. Fabricate in accordance with manufacturer's standard requirements.

2.02 **MATERIALS**

A. Adhesives: Chemical resistant waterproof adhesive as recommended by manufacturer of materials being joined.

2.03 **FABRICATION**

A. Fabricate tops and splashes in the largest sections practicable, with top surface of joints flush.

1. Join lengths of tops using best method recommended by manufacturer.
2. Fabricate to overhang fronts and ends of cabinets 1 inch except where top butts against cabinet or wall.
3. Prepare all cutouts accurately to size; replace tops having improperly dimensioned or unnecessary cutouts or fixture holes.

B. Provide back/end splash wherever counter edge abuts vertical surface unless otherwise indicated.
1. Secure to countertop with concealed fasteners and with contact surfaces set in waterproof glue.
2. Height: 4 inches, unless otherwise indicated.
3. In the kitchen at the exterior wall the countertop and window sill heights are to match the solid surface counter top and window sill are to be one piece of solid surface, with no back splash.

C. Solid Surfacing: Fabricate tops up to 144 inches long in one piece; join pieces with adhesive sealant in accordance with manufacturer's recommendations and instructions.
1. Integral sinks: Shop-mount securely to countertop with adhesives, using flush configuration, as per manufacturer's instructions.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

C. Verify that wall surfaces have been finished and mechanical and electrical services and outlets are installed in proper locations.

3.02 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 INSTALLATION

A. Securely attach countertops to cabinets using concealed fasteners. Make flat surfaces level; shim where required.

B. Seal joint between back/end splashes and vertical surfaces.

3.04 TOLERANCES

A. Variation From Horizontal: 1/8 inch in 10 feet, maximum.

B. Offset From Wall, Countertops: 1/8 inch maximum; 1/16 inch minimum.

C. Field Joints: 1/8 inch wide, maximum.

3.05 CLEANING

A. Clean countertops surfaces thoroughly.

3.06 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION

SECTION 22 4000
PLUMBING FIXTURES

PART 1 GENERAL

1.01 **SECTION INCLUDES**

A. Water closets.

B. Sinks.

C. Bathtubs.

D. Showers.

1.02 **RELATED REQUIREMENTS**

A. Section 06 4100 - Architectural Wood Casework: Preparation of counters for sinks and lavatories.

B. Section 07 9200 - Joint Sealants: Sealing joints between fixtures and walls and floors.

C. Section 12 3600 - Countertops: Preparation of counters for sinks and lavatories.

1.03 **REFERENCE STANDARDS**

A. ASME A112.18.1 - Plumbing Supply Fittings 2018, with Errata.

B. ASME A112.19.2 - Ceramic Plumbing Fixtures 2018.

C. IAPMO Z124 - Plastic Plumbing Fixtures 2017.

D. NSF 61 - Drinking Water System Components - Health Effects 2019.

E. NSF 372 - Drinking Water System Components - Lead Content 2016.

F. UL (DIR) - Online Certifications Directory Current Edition.

1.04 **SUBMITTALS**

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide catalog illustrations of fixtures, sizes, rough-in dimensions, utility sizes, trim, and finishes.

PART 2 PRODUCTS

2.01 **GENERAL REQUIREMENTS**

A. Potable Water Systems: Provide plumbing fittings and faucets that comply with NSF 61 and NSF 372 for maximum lead content; label pipe and fittings.

B. Water Efficiency: EPA WaterSense label is required for all water closets, urinals, lavatory faucets, and showerheads.

2.02 **REGULATORY REQUIREMENTS**

A. Comply with applicable codes for installation of plumbing systems.

B. Comply with UL (DIR) requirements.

C. Perform work in accordance with local health department regulations.

D. Provide certificate of compliance from Authority Having Jurisdiction indicating approval of installation.

2.03 **FLUSH VALVE WATER CLOSETS**

A. Water Closets: Vitreous china, ASME A112.19.2, floor mounted, siphon jet flush action, china bolt caps.
   1. Flush Valve: Exposed (top spud).
   2. Flush Operation: Sensor operated.
   3. Handle Height: 44 inches or less.
   4. Color: White.
   5. Manufacturers:
      a. American Standard, Inc; [_____]: www.americanstandard-us.com/#sle.
      b. Kohler Company; [_____]: www.kohler.com/#sle.
      c. Substitutions: See Section 01 6000 - Product Requirements.

B. Flush Valves: ASME A112.18.1, diaphragm type, complete with vacuum breaker stops and accessories.

1. Sensor-Operated Type: Solenoid or motor-driven operator, low voltage hard-wired, infrared sensor with mechanical over-ride or over-ride push button.
2. Exposed Type: Chrome plated, escutcheon, integral screwdriver stop.

2.04 **SINKS**

A. Kitchen Sink
1. Solid Surface, per countertop manufacturers standard materials, and installation provide in the same color as the countertops.

B. Restroom Sinks
1. Solid Surface, per countertop manufacturers standard materials, and installation provide in the same color as the countertops.

C. BATHTUBS AND SHOWERS
1. Bathtub Manufacturers:
a. American Standard, Inc; [_____]: www.americanstandard-us.com/#sle.
b. Kohler Company; [_____]: www.kohler.com/#sle.
c. Delta, available at Home Depot
d. Substitutions: See Section 01 6000 - Product Requirements.
2. Bathtub:
a. IAPMO Z124; molded glass fiber reinforced polyester, with slip-resistant bottom surface, contoured shape, White color.
b. Length: 60 inches.
c. Width: 30 inches.
3. Bath and Shower Trim: ASME A112.18.1; concealed shower and over rim supply with diverter spout, pressure balanced mixing valve, bent shower arm with adjustable spray ball joint showerhead with maximum 2.5 gallons per minute flow and escutcheon, lever operated pop-up waste and overflow.
4. SHOWERS
a. Shower Manufacturers:
1) American Standard, Inc; [_____]: www.americanstandard-us.com/#sle.
2) Kohler Company; [_____]: www.kohler.com/#sle.
3) Delta, available at Home Depot
4) Substitutions: See Section 01 6000 - Product Requirements.
b. Cabinet: IAPMO Z124 reinforced glass fiber, 32 by 32 by 75 inches with stone texture, integral receptor, soap dish, integral seat, removable chrome plated strainer, tail piece, White color.
c. -- To specify the shower and valve separately, use the paragraphs below. --
d. Wall Mounted Shower Valve:
1) Comply with ASME A112.18.1.
2) Provide two handle in wall diverter valve body with integral thermostatic mixing valve to supply 1.5 gpm.
e. Shower Head:
1) ASME A112.18.1; chrome plated vandal-proof institutional head with integral wall bracket, built-in 2.5 gpm flow control.
2) Shower Head Manufacturers:
(a) American Standard, Inc; [_____]: www.americanstandard-us.com/#sle.
(b) Substitutions: See Section 01 6000 - Product Requirements.

PART 3 EXECUTION

3.01 **EXAMINATION**

A. Verify that walls and floor finishes are prepared and ready for installation of fixtures.

B. Confirm that millwork is constructed with adequate provision for the installation of counter top lavatories and sinks.

3.02 **PREPARATION**

A. Rough-in fixture piping connections in accordance with minimum sizes indicated in fixture rough-in schedule for particular fixtures.

3.03 **INSTALLATION**

A. Install components level and plumb.

3.04 **INTERFACE WITH WORK OF OTHER SECTIONS**

A. Review millwork shop drawings. Confirm location and size of fixtures and openings before rough-in and installation.

3.05 **ADJUSTING**

A. Adjust stops or valves for intended water flow rate to fixtures without splashing, noise, or overflow.

3.06 **CLEANING**

A. Clean plumbing fixtures and equipment.

3.07 **PROTECTION**

A. Protect installed products from damage due to subsequent construction operations.

B. Do not permit use of fixtures by construction personnel.

C. Repair or replace damaged products before Date of Substantial Completion.

3.08 **SCHEDULES**

A. Fixture Heights: Install fixtures to heights above finished floor as indicated.
   1. Water Closet:
      a. Standard: 15 inches to top of bowl rim.
   2. Lavatory:
      a. Standard: 31 inches to top of basin rim.
   3. Shower Heads:
      a. Adult Male: 69.5 inches to bottom of head.
      b. Adult Female: 64.5 inches to bottom of head.

B. Fixture Rough-In
   1. Water Closet (Flush Valve Type):
      a. Cold Water: 1 Inch.
      b. Waste: 4 Inch.
      c. Vent: 2 Inch.
   2. Sink:
      a. Hot Water: 1/2 Inch.
      b. Cold Water: 1/2 Inch.
      c. Waste: 1-1/2 Inch.
      d. Vent: 1-1/4 Inch.
   3. Bathtub:
      a. Hot Water: 1/2 Inch.
      b. Cold Water: 1/2 Inch.
      c. Waste: 1-1/2 Inch.
      d. Vent: 1-1/4 Inch.
   4. Shower:
      a. Hot Water: 1/2 Inch.
      b. Cold Water: 1/2 Inch.
      c. Waste: 1-1/2 Inch.
      d. Vent: 1-1/4 Inch.

END OF SECTION