

SECTION 061000

WOOD FRAME CONSTRUCTION

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

- A. Work of this Section, as shown or specified, shall be in accordance with the requirements of the Contract Documents.

1.2 SECTION INCLUDES

- A. The Work of this Section includes all labor, materials, equipment, and services necessary to complete the wood frame construction, as shown on the drawings and/or specified herein, including, but not limited to, the following:

1. Exterior wall framing.
2. Interior partition framing.
3. Floor framing with plywood sub-floor and underlayment.
4. Ceiling framing.
5. Blocking and rough hardware.
6. Refer to Structural Drawings for all structural requirements.

1.3 RELATED SECTIONS

- A. Carpentry - Section 062000.
- B. Thermal Insulation - Section 072100.
- C. Gypsum Drywall - Section 092900.

1.4 REFERENCES

- A. Lumber Standards: Comply with PS 20 and with applicable rules of the respective grading and inspecting agencies for species and products used.
- B. Plywood Product Standards: Comply with PS 1 (ANSI A 199.1) or, for products not manufactured under PS 1 provisions, with applicable APA Performance Standard for type of panel specified.

1.5 SUBMITTALS

- A. Wood Treatment Data: Submit treatment manufacturer's instructions for proper use of each type of treated material.

1. Pressure Treatment: For each type specified, include certification by treating plant stating chemicals and process used, net amount of preservative retained and conformance with applicable standards. Include statement that moisture content of treated materials was reduced to a maximum of 19% prior to shipment.

1.6 PRODUCT HANDLING

- A. Delivery and Storage: Keep materials dry at all times. Protect against exposure to weather and contact with damp or wet surfaces. Stack lumber and plywood, and provide air circulation within stacks.

1.7 JOB CONDITIONS

- A. Coordination: Fit carpentry work to other work; scribe and cope as required for accurate fit. Correlate location of furring, nails, blocking, grounds and similar supports to allow proper attachment of other work.

PART 2 PRODUCTS

2.1 WOOD MATERIALS

A. Lumber, General

1. Factory-mark each piece of lumber with type, grade, mill and grading agency, except omit marking from surfaces to be exposed with transparent finish or without finish.
2. Nominal sizes are indicated, except as shown by detail dimensions. Provide actual sizes as required by PS 20, for moisture content specified for each use.
3. Provide seasoned lumber with 19% max. moisture content at time of dressing.

- B. Framing Lumber and Miscellaneous Lumber (2" through 4" thick and less than 6" wide): For light framing and miscellaneous lumber (furring, grounds, blocking), provide No. 2 grade lumber for stud framing and "Standard" grade for other light framing, any species.

- C. Structural Framing (2" through 4" thick and 6" or wider): Refer to Structural Drawings.

D. Plywood

1. For wall sheathing, provide APA Structural 1 Rated Sheathing, Exposure 1, with span rating to suit stud spacing; thickness as noted on drawings.
2. For attic and kneewall backer, provide APA CDX with exterior glue, thickness as noted on drawings.

2.2 MISCELLANEOUS MATERIALS

- A. Provide metal hangers and framing anchors equal to Simpson Joist & Beam Hangers, or approved equal.

- B. Fasteners: Provide size, type, material and finish as indicated and as recommended by applicable standards, complying with applicable Federal Specifications for nails, staples, screws, bolts, nuts, washers and anchoring devices.
- C. Where rough carpentry work is exposed to weather or in ground contact, provide fasteners and anchorages with a hot-dip zinc coating (ASTM A 153).
- D. Construction Adhesive: Waterproof, air cured, rubber based, cartridge dispensed, Liquid Nail 601, manufactured by Macco Adhesives, The Glidden Company, or approved equal.

PART 3 EXECUTION

3.1 INSPECTION

- A. Examine the areas and conditions where wood frame construction is to be installed and correct any conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions are corrected to permit proper installation of the work.

3.2 INSTALLATION

A. General

1. Discard units of material with defects which might impair quality of work, and units which are too small to use in fabricating work with minimum joints or optimum joint arrangement.
2. Set carpentry work accurately to required levels and lines, with members plumb and true and accurately cut and fitted.
3. Securely attach carpentry work to substrate by anchoring and fastening as shown and as required by recognized standards. Countersink nail heads on exposed carpentry work and fill holes.
 - a. Use common wire nails, except as otherwise indicated. Use finishing nails for finish work. Select fasteners of size that will not penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting of wood; predrill as required.

B. Wood Grounds, Nailers and Blocking:

1. Provide wherever shown and wherever required for screeding or attachment of other work. Form to shapes as shown and cut as required for true line and level of work to be attached. Coordinate location with other work involved.
2. Attach to substrates as required to support applied loading. Countersink bolts and nuts flush with surfaces, unless otherwise shown. Build into masonry during

installation of masonry work. Where possible, anchor to formwork before concrete placement.

C. Wood Framing, General

1. Provide framing members of sizes and on spacings shown, and frame openings as shown, or if not shown, comply with "Details for Conventional Wood Frame Construction" of AFPA. Do not splice structural members between supports.
2. Anchor and nail to comply with the following minimum standards:
 - a. Blocking to joist bearing: Two 10d toenailed each side
 - b. Blocking to joist or stud: Two 10d toenailed each side
 - c. One inch brace to stud: Two 8d face nailed
 - d. Two inch brace to stud: Two 16d face nailed
 - e. Bridging to joint: Two 8d toenailed
 - f. Built-up beams 8" or less in depth: 16d at 12" o.c., staggered
 - g. Joists to support: Two 10d toenailed each side
 - h. At laps 12" min.: Four 16d face nailed
 - i. Multiple joists: 16d at 12" o.c., staggered
 - j. Joists to sill or girder: Two 16d toenailed
 - k. 1" furring to underside of joints: Two 8d (one straight; one slanted)
 - l. 2" furring to underside of joints: Two 16d (one straight; one slanted)
 - m. Studs toenailed to plate: Two 10d each side
 - n. Studs end nailed to plate: Two 16d at 12" o.c., staggered
 - o. Plates: Upper to lower: 16d at 12" o.c., staggered
 - p. At splices: Two 16d face nailed
 - q. Plate lap at corners: Two 16d face nailed
3. Firestop concealed spaces with wood blocking not less than 2" thick, if not blocked by other framing members. Provide blocking at each building story level and at ends of joist spans including where none may exist in the existing construction.

D. Stud Framing

1. General: Provide stud framing of dimension where shown. Provide single bottom plate and double-top plates 2" thick by width of studs; except single top plate may be used for non-load-bearing partitions. Nail or anchor plates to supporting construction.
2. Construct corners and intersections with not less than 3 studs. Provide miscellaneous blocking and framing as shown and as required for support of facing materials, fixtures, specialty items and trim.
3. Frame openings with multiple studs and headers. Provide nailed header members of thickness equal to width of studs. Set headers on edge and support on jamb studs.

- a. For non-bearing partitions, provide double-jamb studs and headers not less than 4" deep for openings 3' and less in width, and not less than 6" deep for wider openings.
- b. For load-bearing partitions, provide double-jamb studs for openings 6'-0" and less in width, and triple-jamb studs for wider openings. Provide headers of depth shown, or if not shown, provide as recommended by N.F.P.A. "Manual for House Framing."

END OF SECTION

SECTION 064116

PLASTIC LAMINATE CLAD CABINETS

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

- A. Work of this Section, as shown or specified, shall be in accordance with the Contract Documents.

1.2 SECTION INCLUDES:

- A. Work of this Section includes all labor, materials, equipment, and services necessary to complete the work of this Section including, but not limited to, the following:
 - 1. Kitchen cabinets, post form counters, trim and accessories.

1.3 RELATED REQUIREMENTS

- A. The following items of work are not included in this section and are specified under the designation Sections:
 - 1. Section 062000 – Finish Carpentry
 - a. All exposed finished woodwork, not otherwise specified under this section.
 - 2. Section 092900 – Gypsum Drywall
 - a. Gypsum board wall surfaces to which Specialty Casework is attached.

1.4 REFERENCE STANDARDS

- A. American National Standards Institute (ANSI)
- B. Builders Hardware Manufacturers Association (BHMA).
- C. Hardwood Plywood & Veneer Association (HPVA).
- D. Kitchen Cabinet Manufacturers Association (KCMA).

1.5 GENERAL

- A. Construction and installation of cabinets shall be equivalent in quality and construction to cabinets meeting ANSI/KCMS A161.1.

1.6 SUBMITTALS

- A. Product Data: For the following:
 - 1. Cabinets
 - 2. Cabinet hardware
 - 3. Post form counters
- B. Shop Drawings: For cabinets and countertops – include plans, elevations, details, and attachments to other work. Show materials, finishes, filler panels, hardware, edge and backsplash profiles, cutouts for plumbing fixtures, and methods of joining cabinets.

- C. Material Samples for Initial Selection: Manufacturer's color charts showing the full range of colors, textures, and patterns available for each type of material exposed to view.
- D. Material Samples for Verification:
 - 1. Samples of full range of manufacturer's plastic laminate
 - 2. One unit of each type of exposed hardware
- E. Product Certificates: Signed by manufacturers of casework certifying that products furnished comply with specified requirements.

1.7 GUARANTEE/WARRANTY

- A. Attention is directed to the provisions of the General Conditions for Construction Contracts – Public Housing Programs (HUD-5370) regarding guarantees/warranties for the Work.
- B. Manufacturers shall provide their standard guarantees/warranties for work under this Section. However, such guarantees/warranties shall be in addition to and not in lieu of all other liabilities which the manufacturers, the Contractor and the Subcontractors may have by law or by other provisions of the Contract Documents.

1.8 INTENT

- A. It is not the intent of this Specification to define the types, sizes, or installation methods for each item of millwork. Methods of installation, joinery, sizes, types of finish, and other information pertaining to the case work, millwork and other items or required finish shall be installed in accordance with the detailing on the drawings for the specific areas involved, unless otherwise specified herein. Grades and types of finish shall be as specified under this Section.

1.9 QUALITY ASSURANCE

- A. The "Quality Standards" of the Architectural Woodwork Institute shall apply and by reference are hereby made a part of this specification. Any reference to Premium, Custom, or Economy in this specification shall be as defined in the latest edition of AWI "Quality Standards".
- B. Any item not given a specific quality grade shall be "Premium Grade" as defined in the latest edition of the AWI "Quality Standards".
- C. Woodwork manufacturer must have a reputation for doing satisfactory work on time and shall have successfully completed comparable work. The Architect reserves the right to approve the woodwork manufacturer selected to finish all of the woodwork.
- D. Source Limitations for Cabinets: Obtain cabinets through one source from a single manufacturer.
- E. Product Designations: Drawings indicate size, configurations, and finish materials of casework by referencing designated manufacturer's catalog numbers. Other manufacturer's casework of similar sizes, similar door and drawer configurations, similar finish materials, and complying with the Specifications may be considered. Refer Section 016000 Product Requirements..
- F. Quality Standards: Unless otherwise indicated, comply with the following latest standards:
 - 1. Cabinets: ANSI/KCMA A161.1
- G. Mockups: Full size base and upper cabinets, minimum 4" countertop. Include sink base. Mockup shall not remain as part of the work.

1.10 PROJECT CONDITIONS

- A. Established Dimensions: Where casework is indicated to fit to other construction, establish dimensions for areas where casework is to fit. Coordinate construction to ensure that the actual dimensions correspond to established dimensions. Provide fillers and scribes to allow for trimming and fitting.
- B. Field Measurements:
 - 1. For cabinets: Where casework is indicated to fit tightly to finished wall surfaces construction, verify dimensions of wall construction by field measurements before fabrication and indicate measurements on Shop Drawings. Provide filler and scribe if necessary.

1.11 COORDINATION

- A. Coordinate layout installation of blocking and reinforcement in partitions for support of casework.

PART 2 PRODUCTS

2.1 CABINETS

- A. Acceptable Manufacturers;
 - 1. CNC Cabinet, 101 Kentile Road, South Plainfield, NJ 07080. Phone: 718-416-3853.
- B. Substitutions: Refer to Product Requirements – *Section 016000 Part 3, Article 3.1 Substitutions Procedures* to submit for consideration.
- C. Kitchen Cabinets:
 - 1. Premanufactured and factory-finished, complying with construction and testing requirements in KCMA A161.1 (severe use).
 - 2. Finish:
 - a. As selected by Architect from manufacturer's full range of high-pressure laminate.
 - 3. Plywood and Other Semi-exposed Surfaces:
 - a. Provide plywood in thicknesses and finishes indicated:
 - i. Wall and Base Cabinet end panels: ½" plywood with finish to match doors and frames. Interior finish to be laminate.
 - ii. Wall Cabinet tops and bottoms: ½" plywood dadoed into end panels and interlocked into hanging rails for strength. Base bottoms constructed in similar fashion. Interior finished to be laminate.
 - iii. Base Cabinet bottoms: ½" plywood with exterior unfinished. Interior finish to be laminate.
 - iv. Wall Cabinet backs: ½" plywood with exterior unfinished. Interior finish to be laminate. Dado joints stapled into cabinet sides, glued and screwed into top and bottom.
 - v. Base Cabinet backs: ½" plywood with exterior unfinished. Interior finish to be laminate. Dado joints stapled into cabinet side, glued and screwed into top and bottom
 - vi. Shelving: ¾" plywood with 15lbs./sq.ft. load capacity. End panels to be laminate.

vii. Toe Kick: ¾" pressure treated solid lumber on three sides of cabinet. Matching laminate on toes base cover. 4 ½" tall by 3" inset.

4. Drawers

- a. Solid hardwood ¾" dovetail drawer box with 3 ply hardwood plywood ¼" drawer bottom. Bottoms of drawer to be let into all four drawer sides.
- b. Drawer front constructed to match cabinet door material and style.

5. Hardware

- a. Hinges: Semi-concealed, five knuckle barrel hinges, two (2) per door.
- b. Drawer Guides: Soft-closing, full-extension, concealed side-mount. Capacity to be 100lb. per drawer. Two (2) guides per drawer.
- c. Lifetime warranty on all hinges and drawer guides.
- d. Pulls: Liberty Hardware – 5" center to center, polished chrome finish #P01026-PC-C.

D. Cabinet Construction:

- 1. Face Style: Full overlay: Door and drawer faces cover body up to 3/16" face frame reveal.
- 2. Face Frames: ¾" x 1½" kiln-dried solid hardwood, glued and nailed, under clamp pressure.
- 3. Door and Drawer Fronts:
 - a. Solid wood, 5/8" thick, dovetail sides 3/8" thick.
 - b. Style: Slab
- 4. Joinery:
 - a. Wall cabinet back panels shall be retained by a dado in the end panels and secured with adhesive. For extra strength, full-length dadoes shall be machined in the back panel near the top and bottom edges like the dadoes in the end panels to accept the top panels and secured with adhesive and staples.
 - b. Base cabinets: A dado joint and adhesive shall be used to join the bottom to end panels. The upper portion of base cabinets shall be reinforced with ½" thick engineered wood corner gussets.
 - c. The back panel shall be retained by a dado in the end panels secured with adhesive. The top of base cabinets shall have an 11/16" x 2-1/4" solid wood screw rail retained by the same groove as the back panel in the end panels and secured with adhesive. The screw rail shall be grooved full length on the underside to accept the top edge of the back panel.

E. Warranty: Five (5) Year Limited Warranty on Defects in Material and Workmanship.

F. Attic Stock: Provide Owner with an additional 5% of hinges and drawer guides.

2.2 PLASTIC LAMINATE COUNTERTOPS

- A. Surfacing: High-pressure decorative laminate, (grade HGS) complying with ANSI 161.2 Performance Standards for High Pressure Decorative Laminate Countertops.
- B. Backing: Grade BKL. Plastic laminate backer sheet.
- C. Core: AC Plywood
 - 1. Solid: (3/4"). Built-up 1½" edge.
- D. Joints: Secured with biscuits and tight joint fasteners.
- E. Backsplashes: 4" high, thickness to match countertop thickness.
- F. Edges: Self-edge, same material as top.
- G. Caulk to wall.

PART 3 EXECUTION

3.1 INSTALLATIONS

- A. Install casework, components, and accessories in accordance with manufacturer's instructions, approved shop drawings, and Quality Standards No. 187.
- B. Install casework with no variations in flushness of adjoining surfaces; use concealed shims. Where casework abuts other finished work, scribe and cut for accurate fit. Provide filler strips, scribe strips, and moldings in finish to match casework face.
- C. Install casework without distortion so doors and drawers fit openings and are aligned. Complete installation of hardware and accessories as indicated
- D. Install casework and countertop level and plumb to a tolerance of ½" in 8 feet.
- E. Coordinate such that solid blocking is provided at the tops of all base cabinets and the top and bottom of all wall cabinets. Blocking shall allow the installation of approved fasteners at the top and bottom inside corners of all wall cabinets and the top inside corners of all base cabinets. Where cabinets are wider than 24", additional fasteners shall be installed at midpoints at all cabinet backs.
- F. Fasten cabinets to adjacent units and to backing.
 - 1. Fasten wall cabinets through back, near top and bottom, at ends and not further than 16" o.c.
- G. Use anchoring devices to suit conditions and substrate materials encountered.
- H. Carefully scribe casework abutting other components, with maximum gaps OF 1/16".
- I. Protect finished surfaces from damage or staining resulting from subsequent work until Date of Substantial Completion. Repair or replace damaged cabinet work, including warped or loose members.

3.2 ADJUSTING

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

END OF SECTION

SECTION 06 2000

CARPENTRY

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

- A. Work of this Section, as shown or specified, shall be in accordance with the requirements of the Contract Documents.

1.2 SECTION INCLUDES

- A. Work of this Section includes all labor, materials, equipment, and services necessary to complete the carpentry work as shown on the drawings and/or specified herein, including, but not limited to, the following:
 - 1. Blocking and miscellaneous wood.
 - 2. Plywood backing for panels, telephone and electrical closets.
 - 3. Rough hardware.
 - 4. Installation only of finish hardware.
 - 5. Installation of doors, and hollow metal frames.

1.3 RELATED SECTIONS

- A. Architectural Woodwork - Section 064023.
- B. Roofing - Division 7.
- C. Steel Doors and Frames - Section 081113.
- D. Wood Doors - Section 081416.
- E. Finish Hardware - Section 087100.
- F. Joint Sealants – Section 079200

1.4 QUALITY ASSURANCE

- A. Lumber Standard: Comply with PS 20.
- B. Plywood Standard: Comply with PS 1 and American Plywood Assoc. (APA).
- C. Shop fabricate carpentry work to the extent feasible and where shop fabrication will result in better workmanship than feasible for on-site fabrication.
- D. Grade Marks: Identify lumber and plywood by official grade mark.
 - 1. Lumber: Grade stamp to contain symbol of grading agency certified by Board of Review, American Lumber Standards Committee, mill number or name, grade

of lumber, species grouping or combination designation, rules under which graded where applicable, and condition of seasoning at time of manufacture.

- a. S-Dry: Maximum nineteen (19) percent moisture content as per ASTM D 2016.
- b. MC-15 or KD: Maximum of fifteen (15) percent moisture content.

E. Installation of doors, frames and hardware shall conform to the minimum standards of "Installation Guides for Doors and Hardware" of the Door and Hardware Institute.

1.5 SUBMITTALS

- A. Pressure Treatment: Include certification by treating plant stating chemicals and process used, net amount of salts retained and conformance with applicable standards.
- B. Fire-Retardant Treatment: Include certification by treating plant that treatment material complies with governing ordinances and that treatment will not bleed through finished surfaces.

1.6 PRODUCT HANDLING

- A. Deliver carpentry materials to the site ready to use with each piece of lumber clearly marked as to grade, type and mill, and place in an area protected from the elements.
- B. Deliver rough hardware in sealed kegs and/or other containers which shall bear labels as to type and kind.
- C. Pile lumber for rough usage, when delivered to the site in stacks to insure drainage and with a minimum clearance of six (6) inches above grade. Cover stacks with tarpaulins or other watertight coverings. Store grounds and similar small sized lumber inside the building as soon as possible after delivery.
- D. Do not store seasoned lumber in wet or damp portions of the building.
- E. Protect fire retardant treated materials against high humidity and moisture during storage and erection.
- F. Remove delivered materials which do not conform to specified grading rules or are otherwise not suitable for installation from the job site and replace with acceptable materials.
- G. All items specified in Section 087100 of this specification entitled "Finish Hardware" shall be received, accounted for, stored and applied under this Section.
- H. Hardware shall be sorted and stored in space assigned by Contractor and shall be kept at all times under lock and key. The safety and preservation of all items delivered will be the responsibility of the Contractor.

1.7 JOB CONDITIONS

- A. Installer must examine the substrates and supporting structure and the conditions under which the carpentry work is to be installed, and notify the Contractor in writing of conditions detrimental to the work. Do not proceed with the installation until unsatisfactory conditions have been corrected in a manner acceptable to the Installer and the Architect.
- B. Coordination: Fit carpentry work to other work; scribe and cope as required for accurate fit. Correlate location of furring, nailers, blocking, grounds and similar supports to allow proper attachment of other work.

PART 2 PRODUCTS

2.1 WOOD MATERIALS

A. General

1. All wood shall be sound, flat, straight, well-seasoned, thoroughly dry and free from all defects. Warped or twisted wood shall not be used.
2. For miscellaneous wood blocking, grounds, furring as required, use Utility Grade Coastal Douglas Fir or Southern Pine, free from knots, shakes, rot or other defects, straight, square edges and straight grain, air seasoned with maximum moisture content of nineteen (19) percent. Wood shall be S4S, S-Dry, complying with PS-20.
3. Plywood and rough carpentry for panels, telephone and electrical closets, provide 3/4" thick C-D EXT-APA plywood, fire retardant treated as specified herein.

B. Wood Treatment

1. All interior wood material specified herein shall be fire retardant treated to comply with the AWP standard U1 to achieve a flame spread rating of not more than 25 (UL Class "FR-S") when tested in accordance with UL Test 723 or ASTM E 84. The fire-retardant chemicals used to treat the lumber must comply with FR-1 of AWP Standard P49 and be free of halogens, sulfates and ammonium phosphate.
 - a. After treatment, kiln dry to a moisture content of fifteen (15) percent; if wood is to be painted or finished, kiln dry to a moisture content of twelve (12) percent. Treatment shall be equal to "Dricon" made by Arch Wood Protection Inc. or approved equal. Provide UL approved identification on treated materials.
2. Treated wood which is cut or otherwise damaged shall be further treated in accordance with the AWP Standard M-4.

2.2 HARDWARE

- A. Rough Hardware for Treated Woods and Exterior Use: Hot-dipped galvanized or Type 304 stainless steel.

- B. Nails: Common steel wire, untreated for interior work as per ASTM F 1667.
- C. Bolts: Standard mild steel, square head machine bolts with square nuts and malleable iron or steel plate washers or carriage bolts with square nuts and cut washers conforming to the following:
 - 1. Bolts: ASTM A 307, Grade A.
 - 2. Nuts: ASTM A 563.
 - 3. Lag Screws and Bolts: ASME B 18.2.1.
- D. 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. Material for Treated Woods and Exterior Use: Stainless steel with bolts and nuts complying with ASTM F 593 and ASTM F 594, Alloy Group 1 or 2.
- E. Wood Screws: ASME B 18.6.1.
- F. Concrete and Masonry Anchors: Standard expansion-shield self-drilling type concrete anchors where so shown or noted on the drawings, or where approved by the Architect.

PART 3 EXECUTION

3.1 INSPECTION

- A. Examine the areas and conditions where carpentry is to be installed and correct any conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions are corrected to permit proper installation of the work.

3.2 INSTALLATION OF FINISH HARDWARE

- A. Hardware shall be carefully fitted and securely attached, in accordance with these specifications and the instructions of the various manufacturers.
- B. Unless otherwise noted, mount hardware units at heights established in Section 081113.
- C. Install each hardware item in compliance with the manufacturer's instructions and recommendations. Wherever cutting and fitting is required to install hardware onto or into surfaces which are later to be painted or finished in another way, install each item completely and then remove and store in a secure place during the finish application. After completion of the finishes, re-install each item. Do not install surface-mounted items until finishes have been completed on the substrate.

- D. Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.
- E. Drill and countersink units which are not factory prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.
- F. Cut and fit threshold and floor covers to profile of door frames, with mitered corners and hair-line joints. Join units with concealed welds or concealed mechanical joints. Cut smooth openings for spindles, bolts and similar items, if any.
- G. All keys used shall be construction keys which are to be tagged with fiber discs as approved, clearly labeled with identifying inscriptions and then neatly arranged in a temporary cabinet. All construction keys shall be returned to the Owner.
- H. Adjusting and Cleaning
 - 1. Adjust and check each operating item of hardware and each door, to ensure proper operation and function of every unit. Lubricate moving parts with type lubrication recommended by manufacturer (graphite type if no other recommended). Replace units which cannot be adjusted and lubricated to operate freely and smoothly as intended for the application made.
 - 2. Final Adjustment: Wherever hardware installation is made more than one month prior to acceptance or occupancy of a space or area, return to the work 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 and re-lubricate 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.

3.3 INSTALLATION OF DOORS AND FRAMES

A. Preparation

- 1. Remove welded-in shipping spreaders installed at factory.
- 2. Prior to installation and with installation spreaders in place, adjust and securely brace standard steel 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 on a perpendicular line from head to floor.
- 3. Drill and tap doors and frames to receive non-templated mortised and surface-mounted door hardware.

B. Installation

1. General: Provide doors and frames of sizes, thicknesses, and designs indicated. Install steel doors and frames plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer's written instructions.
2. 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. Install frames in accordance with ANSI 250.11-20001, Recommended Erection Instructions for Steel Frames, unless more stringent requirements are specified herein.
 - b. At fire-protection-rated openings, install frames according to NFPA 80.
 - c. Where frames are fabricated in sections due to 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.
 - d. Install frames with removable glazing stops located on secure side of opening.
 - e. Frames set in masonry walls shall have door silencers installed in frames before grouting.
 - f. Remove temporary braces necessary for installation only after frames have been properly set and secured.
 - g. Check plumb, squareness, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
3. 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.
4. Metal-Stud Partitions: Solidly pack mineral-fiber insulation behind frames conforming to the requirements of Section 072100, "Thermal Insulation."
5. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with mortar; refer to Section 042000 "Unit Masonry" for installation of frames in masonry walls.
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 supporting construction above, 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 above. Provide adjustable wedged or bolted anchorage to frame jamb members.

9. Installation Tolerances: Adjust steel door frames for squareness, alignment, twist, and plumb to the tolerance given in HMMA 841 of ANSI/NAAMM, current edition.
1. Steel Doors: Fit hollow metal doors accurately in frames to the tolerances given in HMMA 841 of ANSI/NAAMM, current edition.
 - a. Fire-Rated Doors: Install doors with clearances according to NFPA 80.
11. Glazing: Comply with installation requirements in Division 8 Section "Glass and Glazing" and with standard steel door and frame manufacturer's written instructions.
 - a. 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.

C. Wood Doors

1. Condition doors to average prevailing humidity in installation area prior to hanging.
2. Install doors in accordance with manufacturer's instructions.
3. Fit door to frames and machine for hardware to whatever extent not previously worked at factory as required for proper fit and uniform clearance at each edge.
4. Clearances: Install doors to meet clearance requirements specified in Section 081416.
5. Fire-Rated Doors: Install in corresponding fire-rated frames in accordance with the requirements of NFPA No. 80. Provide clearances complying with the limitations of the authority having jurisdiction.

- D. Adjustments: Check and readjust operating finish hardware items just prior to final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including doors or frames which are warped, bowed or otherwise unacceptable.

3.4 BLOCKING AND MISCELLANEOUS WOOD

A. General

1. Erect rough carpentry true to line, levels and dimensions required; squared, aligned, plumbed, and securely fastened in place.
2. Shim where required to true up furring, blocking and the like. Use wood or metal shims only.
3. Do all cutting, fitting, drilling and tapping of other work as required to secure

work in place and to perform the work included herein. Do all the cutting and fitting of carpentry work, for the work of other trades as required.

B. Blocking and Miscellaneous Wood

1. Furnish and install all wood grounds, furring, blocking, curbs, bucks, nailers, etc., that may be necessary and required in connection with the carpentry and with the work described for any other trades and including required carpentry for electrical fixtures. All blocking and nailers shall be continuous wherever required, whether or not so indicated.
2. Blocking shall be as required for the proper installation of the finished work and for items in mechanical sections as required. Blocking, edgings, stops, nailing strips, etc., shall be continuous, unless distinctly noted otherwise. Provide blocking as required to install all equipment. Provide blocking and nailers where shown or required to fasten interior sheet metal work.
3. Fastening for wood grounds, furring and blocking shall be of metal and of type and spacing as best suited to conditions. Hardened steel nails, expansion screws, toggle bolts, self-clinching nails, metal plugs, inserts or similar fastenings shall be used, of suitable type and size to draw the members into place and securely hold same.

C. Rough Lumber for Roofing and Sheet Metal

1. Furnish and install all wood nailing strips and wood blocking required in connection with respective types of roofing, fans, flashings, and sheet metal work, using preservative treated wood as herein before specified.
2. Wood blocking shall be of sizes and shapes as indicated on the drawings and/or designed for the reception of curb flashings for roof ventilators and similar items.
3. All nailing strips and blocking shall be carried out in accordance with the printed installation instructions, and/or recommendations of the accepted manufacturer of the roofing materials, and in coordination and cooperation with the sheet metal work trades.
4. All blocking and nailing strips shall be firmly secured in place using counter bored bolt and nut fastenings or secured by any other proposed flush surfaced fastenings.
5. Wood nailing strips or blocking required to be embedded in concrete work shall be furnished in time due for placing, prior to start of concrete operations. Locations and spacings of nailing strips or blocking shall be performed in coordination with the concrete trades, as required for respective installations.

3.5 TELEPHONE AND ELECTRICAL EQUIPMENT MOUNTING BOARDS

- A. Furnish and install 3/4" thick plywood panels to the walls of the telephone and electrical equipment rooms in accordance with the requirements of the local utility company.
- B. Secure to wall using proper devices for substrates encountered, spaced twelve (12)

inches o.c., maximum around the edges, 1-1/2" from corners, and in three (3) rows of three (3) each in the field. Recess fastening devices flush with the plywood surface. Adjacent panels shall be butted with 1/16" space between without lapping.

3.6 ROUGH HARDWARE

- A. Securely fasten rough carpentry together. Nail, spike, lag screw or bolt as required by conditions encountered in the field and the Contract Documents.
- B. Provide rough or framing hardware, such as nails, screws, bolts, anchors, hangers, clips, inserts, miscellaneous fastenings, and similar items of the best quality and of the proper size and kind to adequately secure the work together and in place, in a rigid and substantial manner.
- C. Secure rough carpentry to masonry with countersunk bolts in expansion sleeves or other acceptable manner, with fastenings not more than sixteen (16) inches apart. Secure woodwork to hollow masonry with toggle bolts spaced not more than sixteen (16) inches apart.
- D. Countersink bolts in nailers and other rough woodwork and include washers and nuts. Cut bolts off flush with surfaces and peen as may be required to receive finished work.
- E. Inserts to secure wood nailers to concrete shall be malleable iron threaded inserts with 3/8" diameter bolts of length to allow for countersinking. Locate at end of each nailer and at intervals not exceeding thirty (30) inches o.c.
- F. Furnish to the mason for building into the work, or attaching the work which is to be built in, anchors, bolts, wall plates bolted to masonry, corrugated wall plugs, nailing blocks, etc., which are required for the proper fastening and installation for the work or other items as called for in this Section.
- G. Detailed instructions with sketches of necessary requirements, shall be given to the masonry trade showing the location and other details of such nailing devices.

3.7 CLEANING UP

- A. General: Keep the premises in a neat, safe and orderly condition at all times during execution of this portion of the work, free from accumulation of sawdust, cut-ends and debris.
- B. Sweeping
 - 1. At the end of each working day, or more often if necessary, thoroughly sweep all surfaces where refuse from this portion of the work has settled.
 - 2. Remove the refuse to the area of the job site set aside for its storage.
 - 3. Upon completion of this portion of the work, thoroughly broom clean all surfaces.

END OF SECTION