

St. Louis HOME Consortium
Office of Community Development
121 S. Meramec Avenue, Suite 444
Clayton MO 63105
Telephone: (314) 615-4592
Fax: (314) 615-8674
Web: www.stlouisco.com/plan/ocd.html

Saint Louis

HOME CONSORTIUM
Neighborhood Stabilization Program

— **Manual of Policies** —
— **Rehabilitation Standards** —
— **2009** —



L. Chapter 1: Rehabilitation Standards

1. Applicable Laws and Regulations. The St. Louis Home Consortium consists of a group of municipal government entities that may or may not have adopted building code requirements within their respective jurisdictions. In the event that a municipality has not adopted a standard, this standard shall be applied. When conflicts occur between these standards and the adopted local codes, the adopted local codes shall prevail.

2. General Specifications.

(a) The following general specifications shall be followed on work to be financed entirely or in part by federal funds in any Consortium Member administered housing rehabilitation program. Conflicts between the General Specifications and specific programs operational procedures shall be governed by the program regulations and guidelines. Conflicts in interpretation of construction work to be performed by the General and Specific Specifications contained herein shall be dealt with by the Office of Community Development (OCD) Rehabilitation Specialists, Members, and/or the Federal Housing Programs Coordinator. The Federal Housing Programs Coordinator must approve any deviation in these specifications before the bids are submitted, to ensure that all contractors are bidding under the same conditions. This does not preclude the right of the OCD staff upon the consent of the Federal Housing Programs Coordinator, to make changes to these specifications.

(b) The OCD shall issue copies of said changed specifications to the contractors. Cost adjustments must be approved by Federal Housing Programs Coordinator to reflect appropriate Specification Changes, before performance of work to ensure payment.

3. Trade Names. Trade names may be used only to set a standard and it will be followed by "or written approved equal". If Trade Names are used in the basic specifications to establish a guide as to the quality and type of materials required, the contractor must be able to prove to the Rehabilitation Specialist's satisfaction that alternate materials are equal to the trade name prior to installation, or contractor shall be required to replace unapproved alternate materials at the contractor's expense. The proof of equality of any material to trade name shall be the responsibility of the contractor. The Rehabilitation Specialist reserves the right to reject any product which, in his/her opinion, is not equal to the trade name either in its composition, quality, or its ability to withstand weathering, aging, deterioration, traffic, wear, tear, circumstances of application, etc. The term "or written approved equal" in these specifications means an item which is pre-approved by the Rehabilitation Specialist or Federal Housing Programs Coordinator.

4. Materials and Workmanship. Materials used and installed shall in all cases be new, of the best quality as specified, and in good condition. No seconds under any

circumstance will be allowed. Materials shall be of such grade and quality to meet the current Consortium Member codes and these specifications. That all work shall be completed in a workmanlike manner. Workmanlike definition is: "as characterized by the skill and efficiency typical of a good workman". The Rehabilitation Specialist verifies if the contractor, subcontractor, and others have the skill and efficiency required to complete a project.

5. Repairs. If the removal of all defective materials is called for, the contractor must remove all damaged, loose, or rotten parts in area described in the work description. The specifications will then call for installing new parts of a certain grade, type, design, and dimension. All repair work shall be completed in a workmanship manner.

6. Accessibility. The use of federal funds in housing programs requires that Consortium member must comply with Section 504 of the Rehabilitation Act of 1973, the Americans with Disabilities Act (ADA) and its implementing regulations (28 CFR Parts 35, 36). The following website www.access-board.gov/ufas/ufas-html/ufas.htm (Uniform Federal Accessible Standards) provides compliance requirements with Section 504 of the Rehabilitation Act of 1973. The Handicap Accessibility Checklist at Appendix "C" is for housing rehabilitation projects.

7. Specific Specifications. The following index refers to the specific specifications at appendix "A" for the housing rehabilitation projects.

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Appendix A: Specific Rehabilitation Standards

1. SITE WORK - The site work includes all labor material and equipment required for site excavation, grading, and soil preparation as shown on any drawings, specifications herein, and description of work.

1.01 General Requirements - Locate existing underground utilities in areas of work. If utilities are to remain in place, provide adequate means of protection during earthwork operations. The contractor is required to call "1-800-DIG RITE" two working days before starting any excavation to mark utilities. If uncharted, or incorrectly charted, piping or other utilities are encountered during excavation, consult utility owner immediately for directions.

1.02 Concrete Cold Weather Protection – At no time will more than 2% calcium chloride be used in freezing weather to accelerate concrete setting. No concrete shall be placed on frozen ground or when the temperature is less than 36 degrees.

1.03 General Requirements Concrete – For repair and replacement, materials shall produce finish textures and colors to closely match existing surfaces. Bonding of repair work to existing concrete members is critical, and repair work shall become an integral part of existing members.

1.04 Concrete Placement and Finish Place concrete in forms in one layer of the required thickness. After concrete has been placed in forms; use a strike-off device to bring the surface to the proper section to be compacted. Tamp and consolidate the concrete with a suitable wood or metal tamping bar. Where repair and replacement of new concrete is adjacent to or is a part of existing concrete, finish on new concrete shall match finish on existing concrete.

1.05 Soil Treatments for Lead Hazards - Repair Standard: Interim standards – 1 year – will require monitoring to ensure continued effective control methods. Replacement – 20 years. Play Areas: Bare soil play areas frequented by children under the age of six years shall be tested for lead content. Any bare soil over 400 mg/g of lead in lead shall be covered with a reinforced landscape cloth and impermanent surface covering e.g. gravel, bark, sod, or artificial turf containing not more than 200 mg/g of lead. Loose impermanent covering such as bark or gravel shall be applied in a thickness of not less than 6 inches. Other Bare Soil: Bare soil outside of play areas shall be tested for lead content. Bare soil over 2000 mg/g of lead in lead and totaling more than 9 square feet per property shall be covered with a reinforced landscape cloth or other impermanent surface covering containing not more than 200 mg/g of lead, an interim control measure which prevents children's access to the bare soil. Soil lead levels above 5000 mg/g of lead require abatement

1.06 **Trees** - Repair Standard: Minimum Life: NA. Trees that threaten the structure shall be removed. Replacement Standard: NA

1.07 **Landscaping** - Only approved landscaping is permitted.

1.08 **Outbuildings** - Unsafe and blighted structures, including outbuildings, sheds, garages and barns, will be addressed per the Consortium Member if it is not financially feasible to complete the repairs required to make them structurally sound and lead free with lead hazards stabilized.

2. SIDEWALKS, DRIVEWAYS AND DRIVE APPROACHES

2.01 **Sidewalks and Driveways** – Repair/installation of sidewalks and driveways performed as per work description. Concrete shall have compression strength after placement per Consortium Member code. Concrete shall be placed when temperatures are 36 degrees Fahrenheit or above and rising. Sidewalks and driveways shall be reinforced with mesh or reinforcing bars in accordance with Consortium Member code. Sidewalks and driveways shall have a minimum grade of ¼” per foot away from dwelling. Sidewalks and driveways shall be a full 4” thick and of widths to match existing, or as specified in work description.

2.02 **Drive Approaches** – Repair/installation of drive approaches performed as per work description. Concrete shall have compression strength after placement per Consortium member code. Concrete shall be placed when temperatures are 36 degrees Fahrenheit or above and rising. Drive approaches shall be reinforced with mesh or reinforcing bars in accordance with Consortium Member code. All drive approaches shall have minimum 6” concrete thickness, minimum width, doveled into the existing concrete street, minimum radius and maximum radius, minimum distance to any existing fire hydrant, recessed inlets, and curb returns at street corners in accordance with Consortium Member code.

2.03 **Paving and Walks** - Repair Standard: Minimum Life: 5 years. Badly deteriorated, essential paving, such as front sidewalks, will be repaired to match. Non-essential deteriorated paving such as sidewalks that are unnecessary, will be removed. Replacement Standard: Essential walks and drives shall be replaced with concrete.

3. FOUNDATION AND FLOORS

3.01 **Exterior Foundation Drain Tile (French Drain)** – French drain shall be installed or repaired per work description. Excavate around entire dwelling. Be aware of any underground utilities. Excavation at the highest point is to be 3” below the basement floor level. Fill bottom of trench with 3 inches of ¾” to 2” sized washed gravel. Place the 4” flexible, perforated plastic pipe at a slope of 1” per foot to sump pit and cover with

8" of washed gravel. Cover gravel with roofing felt or 6 mil. poly. **After covering with roof felt or 6 mil poly, contact the Housing Rehabilitation Specialist for an inspection before back fill is placed. Failure to contact the Housing Rehabilitation Specialist may result in removing back fill for inspection. Removal of back fill shall be at contractor's expense.** Back fill to within 6" of finish grade. Fill the remaining 6" inches with topsoil. Drain work must comply with current Consortium Member codes.

3.02 Concrete Slab Foundation – Concrete slab foundation repair shall be performed per work description. Insufficient water maintenance, poor drainage, trees too close to a foundation, and poor soil conditions cause foundation problems. The OCD will in nearly all cases have a Consortium Member structural engineer inspect the foundation and prepare a written inspection report for our review. If a determination is made to repair the foundation, the work is completed from the engineer's drawings and recommendations. An approved alternative method is the "cable lock system" type repairs offered by commercial foundation repair companies. The drawings provided by these companies are sufficient to meet the OCD specifications. If necessary, the contractor is responsible for obtaining a permit from the Consortium Member and obtains all necessary inspections. If a leak is detected, it must be located and repaired. Usually after the foundation has been lifted additional leaks may occur. If a leak is detected or has occurred, the leak repair work shall be conducted upon OCD approval. All leaks must be repaired before continuing with foundation repairs. If the foundation is "over raised" the contractor is responsible for correction at no additional expense. Excess fill dirt shall be installed around the foundation and sloped away from the dwelling in accordance with current Consortium Member codes. Brick in the areas where the repairs were accomplished shall be re-mortared and tuck pointed as necessary.

3.03 Leveling of a structure that is sitting on blocks with underpinning shall be done in such a manner as to permanently stabilize the structure. All wood blocks shall be removed and 4x16x16 concrete pads and 8"x8"x16" concrete blocks shall be installed approximately 6 feet on center (OC) and approved straps connected to the concrete blocks shall be fastened to the flooring members after the house has been raised to the required height and leveled. Shims shall be of such material, or treated, to prevent rot and/or deterioration. Any leak repairs or over raising shall be accomplished in the same manner as concrete slab foundation repairs (3.02). All loose wood material shall be removed from the ground beneath the house. An approved alternative method for leveling is the "cable lock system" type repairs offered by commercial foundation repair companies.

3.04 Underpinning skirt (foundation skirt) for a house set on concrete blocks piers shall be galvanized metal underpinning skirt applied to .40 pressure treated #2 dimension lumber framed with access and ventilation to Consortium Member code. The metal shall be washed and cleaned with vinegar before applying a galvanize resistant primer and paint. The only other underpinning skirt allowed is vinyl and it will be used when a house is covered with vinyl siding.

3.05 Crawl Hole (creep hole) Door shall be hinged and include a latching bolt and constructed of such material as to conform with foundation underpinning, and shall be 16" X 24" minimum access through wall or 18" x 24" minimum through floor, for entrance to crawl space.

3.06 Foundation Ventilation - Under floor areas shall be ventilated by openings in exterior foundation walls. Such openings shall have a net area of not less than 1 square foot for each 150 square feet of under-floor area. Openings shall be located within 3' of corners or per exceptions and provide cross ventilation. The required area of such opening shall be equally distributed along the length of at least two opposite sides and be covered with standard 8" x 16" screened, louvered metal closable vents. Repair all existing metal grate including pest screen and install appropriately sized vent covers.

3.07 Floor joist replacement - Replacement elements shall be a minimum #2 grade stamped lumber, and shall support minimum design loads in accordance with current Consortium Member code. Joists shall be set with crown up. Splices shall occur only over bearing points. New wood joists are laid 16" OC with a nominal thickness of 2" and the same width as existing joists or as specified. All nails and other metals are to be galvanized. If joist is within 16" of ground, treated lumber must be used.

3.08 Floor joist repair - When repair of floor joist is called for and furring-up of the top of the old joists (in good condition) is necessary in order to bring the top of the finished flooring to the same plane of adjacent floors, dimensional "scab-on" lumber is used and shall be secured with 16d nails every 8" OC. If one layer of plywood strip is used, it shall be glued to the existing floor joist with a construction type adhesive and fastened with 12d nails spaced every 8" OC. The top of finished floors shall be flush with the adjacent flooring.

3.09 Floor framing and subfloor – Replace all rotten, termite infested, or deteriorating flooring with a required grade and size of lumber and exterior grade and size plywood as required by Consortium Member code. Plywood/OSB sheathing to match existing in thickness with tight joints at all edges. All nails and other metals are to be galvanized. Rows of plywood are to be staggered a minimum of 24" per row with recommended stagger of 48".

3.10 Wood Beam – If wood beam with treated post and concrete footing is called for, spacing shall be based on the span limits of the lumber used for the construction of beams in the current Consortium Member code. Wood beam with treated post and concrete footing shall be done in accordance with systems designed by a qualified structural engineer and verified by a copy of structural blueprints with engineer's stamp to the OCD office.

3.11 Grading for Drainage - Slope all ground away from structure a minimum compacted grade of 6" in 10 feet. Water must always be directed away from the

structure. Use swales or earth berms to direct water flow from grades and to aid in positive drainage.

4. EXTERIOR WALLS, SIDING, AND CARPENTRY

4.01 Wall Framing – Replacement studs shall conform to existing wall framing. In the event an entire wall is added or replaced, the following criteria shall be applied: Stud grade 2x4's located at load-bearing walls shall have no more than a maximum height of 10 feet and shall be spaced a maximum 16" OC supporting roof and ceiling only; or supporting one floor, roof and ceiling. Stud grade 2x4's located on non bearing walls shall have no more than a maximum height of 14 feet and shall be placed 24" OC; utility grade studs shall not be spaced more than 16" OC nor support more than a roof and ceiling, or exceed no more than a maximum height of 8 feet for exterior walls and load-bearing walls, or no more than a maximum height of 10 feet for interior non load-bearing walls. All exterior walls subject to 100mph winds or less shall be in accordance with Consortium Member codes. All plates are to be 2x4, or 2x6 when appropriate. Top plate is to be doubled and interlocking at corners and wall sections. Bottom plate is to be moisture treated if resting on or beside concrete or masonry. Bottom plates are to be secured per Consortium Member code. Headers above window and doors are to be made up of 2-2x6's for spans up to 5 feet, or 2-2x8's for spans up to 6 feet, or 2-2x10's for spans up to 8 feet, or 2-2x12's for spans over eight feet. Secure beams together so that load is distributed evenly for load bearing walls. For non-load bearing walls use 2-2x4's for spans up to 5 feet as needed. Unless reinforced, no exterior wall studs shall be notched more than 1/3 of their depth or drilled through the wide face more than 1 ¼" in a 2x4 stud or more than 2" in a 2x6 stud. Studs shall be continuous without splicing. Finger-joint studs are acceptable when drywall and/or sheathing are applied to both sides. Studs shall be doubled at all wall openings. Exterior wall framing less than 6" above ground shall be preservative-treated or naturally durable. Wood framing set on concrete or masonry and less than 8" above ground shall be preservative treated or naturally durable. Exterior wall framing and exterior bearing walls, including studs, corner posts, headers, and plates shall be installed to support design loads and braced in such a manner as to provide adequate resistance to racking, warping, or structural fatigue in accordance with current Consortium Member codes.

4.02 Straighten Walls – Walls shall be straightened per work description by removing necessary wallboards (either exterior or interior) in order to work wall framing, as reasonably possible, to a straight and even plane in old construction. Replace such structural members as required and brace properly. Re-install siding and other components in a workmanlike manner.

4.03 Plywood/OSB Sheathing and Siding – All plywood/OSB siding shall be exterior grade. Thickness shall conform to current Consortium Member codes. Vertical joints between plywood sheets shall not be on the same stud or joists in succeeding rows of sheathing. All roof decking shall have approved ply clips installed per current Consortium Member codes. Sheathing shall meet Consortium Member code's minimal size and grade requirements for either diagonal or horizontal installation. Joints shall be over studs. All exterior openings exposed to the weather shall be flashed to make them

waterproof by installing galvanized or corrosion-resistant metal flashing per Consortium Member code. Exterior wall sheathing and siding less than 6" above ground shall be preservative treated or naturally durable.

4.04 Vinyl Siding – Vinyl siding shall be a minimum .042 approved panel. All vinyl siding installation must comply with Consortium Member codes and be installed in accordance manufacturer's specifications. On exterior walls, the structure shall be wrapped with Tyvek or written approved equal if existing siding has been removed. Vinyl siding must be nailed so expansion and contraction are not restricted. Allow a ¼ inch gap for expansion wherever siding butts accessories. Nail must be driven straight into center of slot with approximately 1/32" between nail head and vinyl. Siding must be able to move from side to side under changing weather conditions. Proper ventilation to underneath house, soffit, and attic must be provided. All caulking must be done, as necessary, using an approved caulking in accordance with the siding manufacturer's specifications.

4.05 Repair of Vinyl, steel, wood, and composition siding – Repair and replacement of existing siding shall be conforming pattern, type and colors. All siding shall be repaired in a workmanlike manner.

4.06 Replace Wood Siding – All hardboard wood siding shall be plain finished, horizontal lap unless otherwise specified. All siding must be D-select or good #1 for wood siding, no seconds on hardboard siding or any other composition sidings will be allowed. Plywood sidings must have APA rating stamp and be exterior. Plywood and hardboard siding shall have a minimum thickness of 3/8", unless placed over sheathing that has International Residential Code (IRC) approval. Bevel siding shall have a minimum thickness measured at the butt section of not less than 7/16" and a tip thickness of not less than 3/16". All weather boarding or siding shall be securely nailed to each stud with not less than one nail, or to solid 1" nominal wood sheathing or ½ inch plywood sheathing with not less than one line of nails spaced not more than 24" OC in each piece of the weatherboarding or siding. All fasteners used for the attachment of siding shall be a corrosive resistant type. When installing siding over masonry stucco, or irregular surfaces, contractor shall first install furring strips. 1x3 furring shall be installed at intervals no greater than 16" OC. Siding shall be installed in accordance with manufacturer's recommendations. Vertical corner boards or metal corners shall be used on outside corners. Corner boards shall be used on inside corners. Joints at all corners shall be caulked with latex caulk. Boards shall be factory primed and attached with 8d (2 ½") hot-dipped galvanized nails.

4.07 General Exterior Finish Carpentry – Provide designs, sizes, and material to match existing whenever possible. Joints in all mill and trim shall be tight, concealing shrinkage and excluding water. In addition to nailing, glue joints of built-up items as necessary for weather-resistant construction. All returns and interior angles shall be mitered. Furnish exterior door and window trim in single lengths. Fasten woodwork with galvanized finish nails suitable for setting. Provide blind nailing as far as practicable. Set face nails for putty stopping.

4.08 **Cornice Work** – Assemble with necessary blocking to form protection for vertical joints. Fabricate lookouts for cornices of not less than 2” stock to provide nailing at all points of cornice. When an open cornice is part of a roof design, roofing nails shall not penetrate the exposed side of the cornice roof decking and repairs of any protruding nails shall give no trace of nail penetration.

4.09 **Eave Soffits** – Apply 3/8” Grade B-C exterior plywood with medium density overlay or match existing materials. Do not cover any soffit vents. Uniformly space joints. Nail all wood at 12” OC on all supports. Or install vinyl or aluminum soffit material (in accordance with manufacturer’s instructions and recommendations) Ensure that perforated soffit is used over vents.

4.10 **Fascia** - All replacement lumber to fascia shall be of high quality D grade or better lumber; or composite material such as PrimeTrim, etc. approved for exterior application. Lumber can be #2 grade, if coil stock covering is being installed.

4.11 **Coil Stock Covering** – Install coil stock as specified on all exposed exterior wood in accordance with manufacturer’s instructions and recommendations. All bent metal 5 inches wide or over, applied to fascia or other facings, must have v-crimp in center to prevent buckling.

4.12 **All Exterior Trim** (i.e: corner boards, bird boards, fascia, and other moldings) shall be D grade, if coil stock is being installed, trim can be #2 grade. All exterior trim shall be caulked at trim and siding joint, horizontal and vertical. Miter joints shall be filled and finished as per nails. Window and doorsills shall be cut at a 5-degree angle. All exterior trim shall be fastened with finish nails (galvanized) and countersunk. Countersunk nails shall be filled and sanded to a smooth finish.

4.13 **Masonry** – All masonry work shall be completed in a workmanlike manner as called for in work description and per standards of the trade.

4.14 **Exterior Lead Hazards** - Repair Standard: All exterior paint shall be stabilized using lead-safe practices. Replacement Standard: Leaded components shall be replaced or the paint removed to create a lead-free exterior.

5. PORCHES

5.01 **Removal** shall be done in such a manner as to cause a minimum amount of damage to the remaining structure. Adequate bracing and strengthening shall be done as necessary for the existing structure, after the porch has been removed. If porch removal exposes areas of exterior wall, install siding of conforming pattern, type and color to existing siding.

5.02 **Replacing/Repairing Wood Flooring** – Replace all rotten, termite infested, or deteriorating flooring with a required grade of lumber and/or exterior grade T & G plywood /OSB as required by Consortium Member code. Plywood/OSB sheathing to

match existing in thickness with tight joints at all edges. New decks over floor joists shall have 3/4" T & G plywood/OSB glued and nailed perpendicular to joists. . All nails and other metals are to be galvanized. Strip flooring shall be installed across supports, with close joints, driven tightly. Blind nail each strip with 8-penny screw type or cement-coated cut steel nails. Stagger joints so that there will be at least two boards between joints.

5.03 Replacing/Repairing Wood Ceilings – Cover with 3/8", exterior-type plywood, grade A-C or medium density overlay, or match existing. Provide solid bearing at joints, ends, and edges of plywood. Joints shall be V-grooved or batten covered. Secure plywood with zinc-coated six-penny common nails spaced 10" apart along intermediate supports and 5" apart along ends and bearing edges. Cut end joints of V-grooved ceiling square and locate joints over centerline of bearings. Blind and face nail each piece at each end and at each bearing with two six-penny finish nails with heads set for putty stopping. Install a bed mold at perimeter. Vinyl soffit material, if specified in work description, should be installed in accordance with manufacturer's instructions and recommendation to cover ceiling.

5.04 Wrought Iron Columns – Replacement columns shall be sufficient in size and gauge for bearing load or written approved equal. The column shall extend continuously from the porch floor to the bearing beam. All wrought iron columns shall be primed and painted with a quality rust resistant paint product, or powder coated per standards of the trade.

5.05 Wood/Metal Columns – Where a 4x4 solid wood post exists, it shall be replaced with a solid 4x4 select grade solid treated lumber with clearance to ground affixed to a metal base brace. A minimum 3" diameter steel column may be substituted for wood and shall be primed and painted with a quality rust resistant paint product. The column shall extend continuously from the porch floor to the bearing beam.

5.06 Stairs – Construction and/or repair of exterior stairways shall conform to the current Consortium Member code. All new exterior wood shall be at least a #2 grade, cedar, or treated (.40 pressure treated material).

5.07 Wood Steps shall be installed/repared to current Consortium Member code. New wood stringers shall be cut from 2x12 #2 or better dimension lumber. All stringers shall be no less than 16" OC. Treads shall be of 2" #2 grade or better dimension lumber. The rise of each step shall not be less than 4" and no more than 7 3/4", nor to exceed the smallest by more than 3/8". The run shall not be less than 11". Treads shall be secured to treated stringers by deck screws or approved exterior grade nails that are approximately 2 times the tread thickness.

5.08 Wood Porches shall be installed/repared to current Consortium Member code. Minimum landing size is 4 feet x 4 feet. All lumber to be #2 or better treated .40 pressure treated Southern Yellow Pine. All porches shall have #2 or better treated 4x4

or larger legs set in concrete. All rails and steps must conform to the current Consortium Member code.

5.09 Concrete Porches – Concrete porches shall be installed/repared to current Consortium Member code. Concrete porches shall be formed square and true using lumber of sufficient size to ensure straight forms. All reinforcing steel, concrete thickness and porch size shall be as per drawings, work description and current Consortium Member Codes. Adequately brace all forms to eliminate bellying or bows in concrete work. All concrete porch slab forms shall be inspected by the Rehabilitation Specialist before placing concrete. All porch slabs shall pitch 1/8" per foot away from structure for drainage. Concrete shall be screeded true, floated, and vibrated with a mechanical vibrator to ensure that no voiding will occur and proper covering of reinforcing steel. Steel trowel twice and lightly broom for a non-slip surface. Remove edge forms and finish all exposed ends. Finish all edges with a concrete edger including bottom edge of slab overhang. All porch slabs improperly finished and/or pitched will be removed and replaced at contractor's expense.

5.10 Handrails shall be required for stairways having two or more risers and serving one individual dwelling unit. Handrails shall be placed not less than 34" and no more than 38" in height and extend beyond top and bottom risers per local code. The handgrip portion of handrails shall not be less than 1¼" or more than 2" in cross-sectional dimension or the shape shall provide an equivalent gripping surface. The handgrip portion of handrails shall have a smooth surface with no sharp corners.

5.11 Guardrails – All enclosed balconies or porches more than 30" above grade, a guardrail shall protect the area. Guardrails shall not be less than 36" in height. Open guardrail and stair railings shall have intermediate rails or an ornamental pattern such that a sphere 4" in diameter cannot pass through. No horizontal rails that can be used to climb.

6. ROOFS

6.01 General Requirements - All roof framing, decking, shingles, and roof trim workmanship shall be of high quality. Fasteners for all framing shall meet current Consortium Member codes. All roof framing shall be constructed of material that meets the span, grade, and type material as required by the current Consortium Member codes. All material must have the grade, mill, type, moisture content, specifications, etc. stamped and installed where it can be read. No seconds or defective material shall be used. All building materials shall be protected from the elements before being used. No factory seconds will be allowed.

6.02 Roof ridges and rafters shall be installed on a level, smooth plain. All scab-on rafters shall be the same size as existing. All installed scab-on rafters shall be level, even, and fastened per local codes; all framing repairs and existing roof framing shall be a smooth, even, and distortion free plane.

6.03 When **complete reframing or reconstruction** is called for, the use of pre-fabricated roof trusses is acceptable. The total removal of the entire roof down to the top exterior plate including removal of all overhanging tree limbs and hauling away of all demolition and construction debris to an approved dumpsite. Install new rafters ridges, braces, and structural support or manufactured trusses as called for in work description. Installation of OSB/plywood decking, metal edging, flashing, felt, and shingles (shingles - minimum 20-year fiberglass base, three-tab composition shingles or 25-year fiberglass base, three-tab composition shingles) and ridge row shall be applied in workmanship manner.

6.04 **Roof Bracing and support** – All roof bracing shall meet the requirements of the current Consortium Member codes. When roof bracing is required, sufficient bracing shall be installed to prevent sagging and maintain a true level plain. The size of bracing shall equal the size of existing rafters. Bracing shall be accomplished in such a manner as to prevent damage to any structural member and shall improve the roof load-bearing structural member. Bracing extending to unsupported parts of ceiling joists or bracing to “Hogs trough or Strong back” which is attached to ceiling joists is prohibited.

6.05 **Roof framing** – Rafters to be 2” nominal thickness laid 24” OC. Width is to match existing or as specified. Ridge board shall be 2” nominal thickness with a width 2” greater than rafter widths. Trusses to be manufactured according to the requirements in drawings and installed per current Consortium Member codes. Trusses should be used whenever possible and match existing roof pitches whenever possible. Roof sheathing plywood or OSB thickness shall be in accordance with Consortium Member code requirements. Use “H” clips for intermediate support with spacing equal to or greater than 24” OC. Install plywood or OSB perpendicular to rafters and stagger every other row 48”

6.06 Most **replacement roof** jobs will be completed using a 20-year fiberglass base, three-tab composition shingle or 25-year fiberglass, three-tab composition shingles. **Absolutely no seconds or factory defect composition shingles will be allowed on Consortium Member Housing Rehabilitation projects.** On a complete roof replacement, existing shingles and felt paper shall be removed and hauled off to an approved dumpsite and job cleaned up (broom clean) and loose nails removed from gutters and ground at the end of the job. If replacing the roof deck is called for, the defective roof deck shall be replaced with approved material that meets current Consortium Member codes. Metal drip edging and defective vents, stacks, jacks, pipes, turbines, and bases shall be replaced. If vinyl siding is to be installed, a prefinished metal drip edging shall be used. Felt shall be installed before shingles are installed, felt weight shall meet minimum Consortium Member codes. A certificate of warranty on the shingles shall be obtained from the seller of the shingles by the contractor and presented to the owner upon completion of the job; OCD will receive an additional copy of the warranty for the project file. A minimum 3/12 roof pitch is required when asphalt shingles are installed.

6.07 **Composition Roof Repair** – All missing or broken shingles shall be replaced. Remove defective shingles and flashing material. Renail all loose shingles and flashing members. Replacement shingles shall be of same color, design, and brand (if possible) as existing material.

6.08 **Level** – Install sufficient bracing to remove and prevent reoccurrence of swag to maintain a true and even plane. Sufficient bracing shall be consistent with specifications called for by current Consortium Member code.

6.09 **Decking** – Repair by replacing defective sheathing boards leaving new deck surface smooth and clean and adequately secured to structural members. Nails to be 8d common or box for shiplap; all other 1x4 materials shall have 8d common or box nails, 6d common or box nails for plywood sheathing 6" OC along intermediate members for plywood/OSB. Plywood/OSB is to be sheathing grade no less than 5/8" in thickness or in accordance with Consortium Member codes as to size and distance between joists. Decking shall be trimmed flush at any change in elevation in excess of 1/8".

6.10 **Wood Shingle Roof** – In a case where a wood shingle roof exists, it will be necessary to remove the old roof and the 1X4 lathe and haul off to an approved dumpsite. Re-deck with either 7/16" oriented strandboard(OSB) or 15/32" CD exterior APA certified yellow pine plywood. Install new 1x2 galvanized or pre-finished metal drip edge, roof vents, pipes, stacks, jacks, turbine vents, and base prior to installing felt, which meets Consortium Member code requirements, and install 20-year fiberglass base, three-tab composition shingles or 25-year fiberglass, three-tab composition shingles.

6.11 **Built-up Roof (usually a flat roof)** shall be installed/repaired per work description in accordance with current Consortium Member codes and accepted roofing manufacturer's specifications. Roof will have to be thoroughly cleaned and reliable materials installed to provide a leak-proof surface.

6.12 **Recover (new composition shingles over old composition)** – On a recover, new shingles may be installed on top of existing shingles, if the recover will meet current Consortium Member codes. Install 20-year fiberglass base, three-tab composition shingles. **NO ASPHALT COMPOSITION SHINGLES ALLOWED ON RECOVERS.** Properly repair structural wood material by replacing all rotten and defective decking, overhang, rafter ends, and fascia. Apply composition roof in accordance with current Consortium Member code and manufacturer's instructions. Install 1" x 1 1/2 " metal drip edge over all exposed edges of roof.

6.13 All **Roofing Work** (either new or old) shall be accomplished in a workmanlike manner.

Roofing material shall be installed in accordance with the manufacturer recommendation and instructions, and installed in such a manner (with proper flashing and all other necessary components) to prevent leaks of any kind.

6.14 Gutter and Downspouts shall be seamless, pre-finished metal; properly hung with necessary downspouts. All gutter and downspouts must be secured to a part of the house. Downspouts must have a splash block, in areas where soil exists beneath the installed downspout. It is not necessary to have a splash block in an area such as a concrete driveway, or hard surface other than soil where the downspout empties. All gutters must have the proper slope as to empty the rainwater from the gutter. Gutter guard is not necessary unless called for in the project work description.

6.15 Flashing and Exposed Valley Material shall be 26-gauge galvanized/aluminum flashing with valleys at least 18" wide.

7. DOORS & HARDWARE

7.01 Installation of Metal Exterior Door – Door is to be an insulated steel, or fiberglass entry door or written approved equal prehung 1¾" thick, both sides 24 gauge primed galvanized steel, or fiberglass with foam insulation, magnetic weatherstripping, and threshold. All doors shall be a 6-panel design, with hinges and pre-bored for passage locksets and deadbolts. Doors shall be shop prime painted for site finishing. Door edges to be formed and locked into wood stiles and rails. All units are to be hung plumb, true, and square with equal margins. Doors are to fit tightly against stop and have no play in strike plate/lock assembly. Consortium Member code requires one 3/0 x 6/8 front exterior door. Install appropriate lockset and deadbolt. When exterior door locks are installed, all door locks, new and existing, shall be keyed alike. Furnish three (3) keys for each lock. Exterior doors between garage and house shall also meet fire resistant requirements per Consortium Member code.

7.02 Installation of Prehung Interior Wood Passage Doors – All interior doors are to be pre-hung. Jambs and casing are to be made of wood material. Doors shall be 1 3/8" thick, hollow-core 6-panel hardboard when door is to be painted, or flush factory finished when door is to be pre-finished, complete with hinges and pre-bored for passage sets. Hollow-core flush doors shall conform to the standards of the National Woodwork Manufacturer's Association I.S. 1 and have face panels "good" grade or better and meet Consortium member codes. All units are to be hung plumb, true, and square with equal margins. Doors are to fit tightly against stop and have no play in strike plate/lock assembly. Install appropriate passage set.

7.03 Replacement of Garage Doors – Door shall be Clopay, Delden or written approved equal constructed of 25 gauge hot-dipped galvanized steel sections with an epoxy primer and a baked-on polyester finish to resist rust and impact with galvanized steel track and durable, steel wheel, ball bearing rollers, and a bottom weather seal along the entire length of the door. The door shall be installed in accordance with the manufacturer's instructions.

7.04 Interior Wood Slab Door Replacement– Where slab door replacement is called for and original door jamb remains, install doors 1 3/8" thick, hollow-core hardboard when door is to be painted or luan mahogany when door is to be natural finish with

hinges and pre-bored for passage sets. Hollow-core flush slab doors shall conform to the standards of the National Woodwork Manufacturer's Association I.S. 1 and have face panels "good" grade or better and meet Consortium Member codes. All slab doors are to be hung plumb, true, and square with equal margins. Slab doors are to fit tightly against stop and have no play in strike plate/lock assembly. Install appropriate passage set.

7.05 Sliding Glass Door Repair/Replacement – There are several brands of sliding glass doors, some of the older ones have been discontinued and there are various odd sizes. In cases where the door is 25 or more years old or the glass is cracked, or the correct replacement hardware cannot be purchased, the whole unit shall be replaced with an AAMA "Quality Certified" aluminum or vinyl, insulated glass with type I or type II glazing sliding glass doors with attached label, of thermal break construction with ½" minimum air space, and insect screen. Install sliding glass door per manufacturer's instructions. If locking system is keyed, furnish three (3) keys for each lock. If door is less than 25 years old and the correct hardware can be purchased, door shall be repaired with new guides and rollers (or cleaned and adjusted), hardware replaced, repair insect screen if necessary.

7.06 Installation of Storm Doors – When a storm door is called for, a solid, heavy duty, with a lifetime plus warranty, Larson, 288-S (942-936) value core or better, self-sealing storm door or written approved equal will be installed in accordance with manufacturer's instructions. Unit is to include threshold, weatherstripping, closer, chain stop, and lock assembly. Door shall be hinged on the same side jamb as exterior door, or as indicated in work description. Door must give a tight fit when closed.

7.07 Jamb Replacement/Repair – Where replacement/repair of jamb is called for and original door is re-installed, doorjamb is to be made of 5/4" jamb material with faces machine sanded. No finger joints will be accepted when work description specifies stain finish. Finger joints are acceptable when work description specifies paint finish. Jamb is to be set square, level, and plumb. Anchor frame with 2 ½" wood screws above and below each hinge and strike plate. Secure jamb header in the same manner. Use shims where needed. Prime or seal before installation and paint after installation.

7.08 Plane or Adjust Door – Plane door to provide uniform space between door and jamb and to allow smooth operation of door. Adjust striker plate to allow door to close tightly without excessive movement. Touch up with paint to match existing.

7.09 Thresholds – All thresholds shall be installed at proper height and width for the particular opening.

7.10 Door Framing - New and/or repaired rough openings shall be properly framed in accordance with current Consortium Member code. Contractor is required to secure a framing inspection for any new and/or repaired rough door openings.

7.11 Door Opening Removal – Doors removed and not replaced shall be per the work description. After removal, structure shall be properly framed, strengthened, and opening shall be covered with conforming exterior and interior finish materials in such a manner as to remove all traces of removal. Void between exterior and interior shall be insulated.

7.12 Weatherstripping – The types of weatherstripping shall be metal with rubber insert Jamb-up Tite type or written approved equal, applied snug up to the door. No paint is allowed on weatherstripping. If called for in work description, contractor shall install necessary weatherstripping at sides and top of door to form a tight seal with door closed.

7.13 Exterior Door Deadbolt and/or Locksets – Deadbolts shall have a throw bolt of at least 1" long with thumb turn on inside and shall be Kwikset #940, or written approved equal. Door locks shall be Kwikset #400, or written approved equal. Exterior keyed locksets and deadbolts are to be installed as per manufacturer's directions. Key all lock sets and deadbolts alike. Furnish three (3) keys for each lock.

7.14 Existing Hardware Installation – Reinstall all existing door hardware, including locksets, dead bolts, mail slots, peep holes, automatic closures and security devices, or as described in work description. Key all lock sets and deadbolts alike. Furnish three (3) keys for each lock.

7.15 Interior Door Passage Sets - Interior passage sets are to be installed as per manufacturer's directions. Standard passage set and privacy passage set (bathroom/bedrooms) shall be Kwikset or written approved equal.

7.16 Door Viewer – Door viewer shall be Ajax or written approved equal.

7.17 Storm Door Closer – Storm King or written approved equal closer. Storm King has a complete package of the closer, door saver, and latchset, which is a suggested standard of storm door hardware. Closer shall be installed in accordance with manufacturer's instructions.

8. WINDOWS

8.01 New Windows – Install aluminum, or aluminum and vinyl, or vinyl, or wood single hung windows with insulated glass (thermal pane) and screens as specified in work description. All windows must meet Energy Star Guidelines having a minimum U factor of 0.40 or less and a **SHGC**, Solar heat gain coefficient of 0.55 or less, with labels affixed to windows stating this information. **If metal framing, the window must have a thermal break.** Locking mechanism to be included. Windows will be the same size as the framed opening into which they are being installed. Carefree, Capital, Silverline, or written approved equal shall be used. Exposed surface of windows shall be pre-finished, uniform in color, and free from surface blemishes. Contractor is responsible for proper fit and measurement of windows. Operating sash shall be weather tight and have weatherstripping. When installing new windows, the

rough opening must be framed in accordance with current Consortium Member codes and a framing inspection acquired. All new windows in bedrooms shall meet the Consortium Member code egress size requirements. Windows shall be caulked with 100% silicone caulk. New windows shall be set plumb, square, level, and caulked. All windows shall be left clean, tight, and weatherproof. New windows shall have half-screens which cover the moveable sash part of the unit. Wood windows shall all have full screens (unless manufactured with half-screens). New wood screens when called for shall be redwood, cedar, or pressure treated material and cut/set on a 5-degree angle (or greater per existing sill). Install all windows and screens per manufacturer's instructions. Dilapidated lead-containing windows shall be replaced by a licensed lead abatement contractor.

8.02 Replacement Windows – Install aluminum, or aluminum and vinyl, or vinyl, or wood single hung windows with insulated glass (thermal pane) and screens. All windows must meet Energy Star Guidelines having a minimum -U factor of 0.40 or less and a **SHGC**, Solar heat gain coefficient of .055 or less. **If metal framing, the window must have a thermal break.** If metal framing, the window must have a thermal break. Locking mechanism shall be cam-lock type. Windows will be the same exact size as the opening into which they are being installed. When called for, replacement windows are installed, after removal of existing sashes and stops, into the existing window frame in accordance with manufacturer's specifications. Carefree, Capital, Silverline or written approved equal shall be used. Exposed surface of windows shall be pre-finished, uniform in color, and free from surface blemishes. Contractor is responsible for proper fit and measurement of windows. Operating sash shall be weather tight and have weatherstripping. All replacement windows in bedrooms shall meet the Consortium Member code egress size requirements. If reframing is required for bedroom windows, a framing inspection is required. Windows shall be caulked with 100% silicone caulk. New windows shall be set plumb, square, level, and caulked. All replacement windows shall be left clean, tight, and weatherproof. Replacement windows shall have half-screens which cover the moveable sash part of the unit. Wood replacement windows shall all have full screens (unless manufactured with half-screens). Dilapidated lead-containing window shall be replaced by a licensed lead abatement contractor.

8.03 Storm Windows – Furnish aluminum storm window and screen unit in windows per work description. Window units shall be furnished with necessary anchors and clip to provide a complete installation. Units shall be sized as to provide installation to existing window or frame. The screen frame and mesh shall recess into an aluminum frame and be held in place with screen spreaders and thumb fasteners and removable from the inside. All joints of the frames shall be mechanically joined by means of screws securely fitted into screw grooves. The joint formed by the jamb and the sill frame shall be made weather tight by an approved sealant (ensure than weep holes are not covered). Windows will be installed plumb, true to plane, level, and firmly secured. All storm windows shall be left clean and tight. Provide material and labor for perimeter caulking, grouting, and cleaning unit on interior and exterior.

8.04 Window Repair – As called for in work description, repair existing windows. All interior and exterior wood trim, and millwork shall be of the highest quality material and shall match (or exceed) the existing trim or mill work in quality, design scheme, dimensions and finish appearance. Any newly-installed or repaired millwork with hammer marks, nicks, dents, splits, knot holes, nail set indentations, rough areas or other blemishes will not be tolerated and shall be replaced. All exterior wood trim shall be D grade, unless coil stock is being installed, then trim can be #2 grade. . See Appendix D: Lead-Based Paint Procedures for Federally Assisted Housing Activities.

8.05 Window Glass Repair – When replacing insulated glass, old glass shall be removed and all old caulking removed and surfaces cleaned. New glass shall be set on rubber spacers and sealed in place with 100% silicone caulk. All new vinyl window beads shall be insulated. All old glass and vinyl bead shall be packaged up and removed from jobsite. All cracked or broken single glass shall be removed and replaced with glass meeting the specifications for new windows. In aluminum windows, all vinyl glazing beads shall be replaced with new vinyl glazing beads. Glazing material for wood windows shall be applied according to the manufacturer's specifications. Glazing material shall be applied in a smooth, continuous, uniform and straight (symmetrical) bead with no lumps, bumps, distortion or irregularities and shall conform to the appearance of a smooth, flat, angular surface, which is flush with and congruent to the interior window glazing or style and the exterior style.

8.06 Screen Replacement or Repair – Contractor shall replace or repair all screens as specified in work description. Screens shall be mounted in a removable aluminum frame. If the frame is over four ft. high, an aluminum cross member shall be used. Screen shall be aluminum; fiberglass screening is not acceptable. Screen shall not be patched; a minimum repair is replacing the screen in an existing frame. If wood screen bead is replaced, the wood shall be primed and painted to match existing. New wood screens when called for shall be redwood, cedar, or pressure treated material and cut/set on a 5-degree angle (or greater per existing sill).

8.07 Window Opening Removal – Windows removed and not replaced shall be per the work description. After removal, structure shall be properly framed, strengthened, and opening shall be covered with conforming exterior and interior finish materials in such a manner as to remove all traces of removal. Void between exterior and interior shall be insulated. . See Appendix D: Lead-Based Paint Procedures for Federally Assisted Housing Activities.

9. CAULKING

9.01 Caulking shall be appropriate for the materials to be caulked, but all caulking will be a type that is guaranteed by the manufacturer for 20 years or more. Empty tube will be required proof of meeting specifications. Caulking where metal meets metal shall be adhesive caulk, polyurethane caulk or "gutter" caulk. Caulking at plastic bathtub enclosures shall be 20-year silicone caulk and a color, which will hide, fill and/or replace joints, seams, or cracks and shall conform or compliment the bath color scheme. All

caulk in wet locations shall be mold and mildew resistant. Caulking or filling of deeply rotted wood shall include the chemical preparation of the interior surface of the hole after the removal of loose rotten wood according to the manufacturer's specifications. Once the chemical preparation of the hole is complete and allowed to dry, use of a "deep hole wood filler" (or written approved equal) shall be required. Proper workmanship shall include filling the hole with deep wood filler to excess, allowing filler to dry, and then sanding the excess to a smooth finish to blend with the surrounding wood and finished appearance. Caulking at nail set holes shall be of an approved painter's putty or plastic wood, which shall be filled past the top of hole, allowed to dry, then sanded to be smooth and flush with the surrounding surface before painting. Putty for filling stained surfaces shall be of a color matching adjacent existing stained surfaces. Caulking at joints, seams or cracks at the exterior where dissimilar wall materials meet shall be of a urethane sealant material that conforms to federal specifications.

10. INTERIOR WALLS AND CEILINGS

10.01 Lead-Containing Components - Repair Standard: Deteriorated lead-based paint on walls, trim, doors, and cabinets must be stabilized using lead-safe work practices. As an alternative, a liquid encapsulant can be applied on such components when the surface is deemed suitable for such coatings.

Replacement Standard: At the owner's request, when funding is sufficient, lead-containing walls, trim, doors and cabinets identified during a lead-paint inspection can be replaced or enclosed as appropriate. See Appendix D: Lead-Based Paint Procedures for Federally Assisted Housing Activities.

10.02 Interior wall framing – When strength of structural members is impaired by improper cutting or defects, they shall be replaced per current Consortium Member codes and in a manner acceptable to the Rehabilitation Specialist. See exterior wall framing 4.01 and studs 10.03 for additional framing requirements.

10.03 New repair or retrofit – Interior wall framing and interior bearing walls, including studs, corner posts, headers, and plates shall be installed to support design loads and braced in such a manner as to provide adequate resistance to racking, warping, or structural fatigue in accordance with current Consortium Member codes. See exterior wall framing 4.01 and studs 10.03 for additional framing requirements.

10.04 Unless otherwise specified, **studs** shall be equally spaced 16" OC. Double studs shall be installed at all openings. Notching of studs shall conform to current Consortium Member codes. Constructed 2x4 partitions shall be of not less than three (3) full 2x4 members set to receive interior finish. Plates resting on masonry or concrete shall be treated material and shall be anchored in a manner approved by the current Consortium Member codes. Headers in bearing walls shall be installed above all doors and other interior openings and shall meet current Consortium Member codes. The framing (or re-framing/sizing) of new door openings shall include all necessary cutting and trimming of wall materials, installation of studs (doubled), headers, cripples, wall

materials and the appropriate complete door unit and all necessary paint finish. Unless reinforced, no interior wall studs shall be notched more than 25% of their depth or drilled through the wide face more than 1 ¼” in a 2x4 stud or more than 2” in a 2x6 stud. Studs shall be continuous without splicing. Finger-joint studs are acceptable when drywall and/or sheathing are applied to both sides..

10.05 Partition corners shall have not less than three full 2x4 members. Bearing partitions shall have double top plates. All bottom plates shall be treated, if placed on masonry or concrete. The bathroom (plumbing wall partition) shall be 2x6 construction, unless specified otherwise. In new construction, all hallways shall have a minimum net clear width of 42 inches.

10.06 Repair of ceiling joist - When repair of ceiling joist is called and dimensional “scab-on” lumber is used, same size material as existing joist shall be used with a minimum of a 4 foot piece centered on repair and attached to existing ceiling joist and secured with 16d nails every 8” OC double nailed.

10.07 General Interior Finish Carpentry –Provide designs, sizes, and material to match existing whenever possible. Joints in all mill and trim shall be tight, concealing shrinkage and excluding water. All returns, and external corners shall be mitered and all interior angles shall be coped. Furnish interior door and window trim in single lengths. Fasten woodwork with finish nails suitable for setting. Provide blind nailing as far as practicable. Set face nails for putty stopping.

10.08 Baseboard, Window & Door Casings, Crown and Other Moldings – Whenever possible new baseboard, moldings, and casings are to be matched in size and shape to existing trim. All joints are to be cut to fit and be tight. Fasten trim work with the appropriate nails, fasteners, or adhesives. All nails are to be countersunk and filled. New material that is split or otherwise defective will not be accepted. All joints in continuous rows of trim will be scarfed and break on a stud. Material used should be mill finished and sanded, white pine free from scars. Sand wood before painting. Use paint grade AWI Section 300, economy grade with any closed grain softwood or any closed grain hardwood for painting. Use stain grade trim where specified and stain and match existing. All interior wood trim and millwork shall be of the highest quality material and shall match (or exceed) the adjacent trim or mill work in quality, design scheme, dimensions and finish appearance. Any newly-installed or repaired millwork with hammer marks, nicks, dents, splits, knot holes, nail set indentations, rough areas or other blemishes will not be tolerated and shall be replaced in both new and old construction.

10.09 Thresholds – Cut to fit jambs, secure with casing nails set for putty stopping on wood framing and install with flat head screw and expansion shields on concrete or masonry.

10.10 Casings – Match existing, shall have mitered corners, set back 3/8” from the face of jambs, and nailed to finish and rough jambs and ground. (Also see 10.07)

10.11 **Base** – Nail base to studs or wood framing members. Nail shoe mold to base. (Also see 10.07)

10.12 **Wood Wainscot** – Boards shall be laid vertically and securely blind and face nailed to wood furring or studs.

10.13 **Other Wainscot** – Where Amazonite or tempered tile is used, it shall be installed with metal trim and sealed properly to prevent entrance of moisture. Where ceramic tile is used, it shall be installed with an adhesive recommended by the manufacturer, or installed on the metal lath with masonry mortar, and grouted properly to make moisture proof. All wainscot shall be installed a minimum of 4 feet high (off floor) in all bathrooms, and shall be a minimum of 70" above the drain inlet around showers and bathtubs.

10.14 **Ceramic Tile Repair** – Cut out all loose, damaged, or cracked tile sufficiently to allow at least a 1/8" setting bed. Wet recess to receive tile and press presoaked buttered tile firmly into place flush with adjacent tile service. Grout, wipe off excess with sponge and buff to a luster when dry. Match existing tile as closely as possible. Replace all missing or cracked base and caps. Dig out all loose grout in walls and regROUT forcing grout firmly into place. Clean remaining dirt from grout and tile and buff all tile walls. When bathtub abuts tile, dig out grout between tub and first course of tile and caulk with a silicone flexible caulking in a smooth bead. Properly apply grout sealant to prevent moisture from penetrating grout per manufacturer's specifications.

10.15 **Bathtub wall surrounds** shall be Lasco (or written approved equal) tub surround. No Masonite with baked-on enamel will be allowed in the tub surround area. When a new surround is called for, the existing tub surround, moldings, and wallboard must be removed, along with any defective framing members behind it. Defective framing members must be replaced with #2 or better lumber. New wallboard must be moisture resistant. All necessary corners, cap, and trim must be used on tub surrounds and the surrounds must be caulked to make watertight.

10.16 **Prefinished Hardboard Panels** – Apply over wall material in accordance with manufacturer's written instructions. Provide factory-finished moldings and other accessories as required (see 10.16 for additional information).

10.17 **Wood Paneling** – Prefinished wood paneling 4 feet x 8 feet x 1/4", as approved by the Consortium member. Use panel adhesive, nails with matching color heads, and prefinished wood moldings when installing. To cover existing wall surfaces with paneling, remove any loose plaster, protruding objects such as nails and screws. Remove old baseboard and window and door trim if called for. Break vertical joints over studs and fasten panels securely to the wall. Where the new wall paneling is installed directly to the wall framing or over furring strips, install wood blocking as needed for the top and bottom edges of sheet. Break joints of paneling over vertical framing members. Attach panels securely to framing. Framing member should be 16" O. C. if no plaster or drywall backing. On panel installation where old baseboard and trim is left on openings,

neatly scribe panels to trim or baseboard. If new trim is called for, use prefinished wood trim and moldings to match paneling or use white pine and stain with matching stain and apply two coats of interior varnish or lacquer. Install 1 3/4" cove moldings to inside corners and at ceilings, 3 1/4" baseboards, 2 1/4" casings around window and doorframes, 3/4" outside corner, and 1/2" x 3/4" shoe molding at floor. Remove existing cove, quarter round, Ogee or other trim from around doors, windows, or baseboards. Scribe paneling to meet remaining trim and cover joints with prefinished wood trim. Finish existing trim to match prefinished wood trim as closely as possible.

10.18 Finish Stair Work - Construction and/or repair of interior stairways shall conform to the current Consortium Member code. Comply with the applicable provisions for grading and workmanship of the ARCHITECTURAL WOODWORK QUALITY ILLUSTRATED of the American Woodwork Institute. Conform to voluntary lumber grading and wood species products standard PS 20. Except for attic and basement stairs, stair treads shall be Oak, White, or Red, select grade as graded by the National Hardwood Lumber Association. Treads and risers for attic and basement stairs shall be Douglas Fir, D Select, edge grain or Southern Pine, D Grade. Stair work shall be fitted, nailed, screwed, or bolted, and glued together forming a strong and rigid structure without squeaks or vibration.

10.19 Handrails shall be required for stairways having three or more risers. Handrails shall be placed not less than 34" and no more than 38" in height. The handgrip portion of handrails shall not be less than 1 1/4" or more than 2" in cross-sectional dimension or the shape shall provide an equivalent gripping surface. The handgrip portion of handrails shall have a smooth surface with no sharp corners. Except for basement and attic stairs, interior handrails and newels shall be Natural Birch, Beech, Hard Maple, Pecan, or Oak quality select grade mounted on standard handrail brackets

10.20 Railings - Construction and/or repair of interior railings shall conform to the current Consortium Member code. Comply with the applicable provisions for grading and workmanship of the ARCHITECTURAL WOODWORK QUALITY ILLUSTRATED of the American Woodwork Institute. Conform to voluntary lumber grading and wood species products standard PS 20. Constructed of not less than 2" stock, upper rails shall be grooved to receive balusters. Balusters shall be 1 5/16" square, fitted to bottom rail and toenailed in place,

10.21 Drywall Products – All drywall products shall be GA-216 by Gypsum Association, ASTM C36. Where gypsum drywall systems with fire resistance ratings are indicated or are required to comply with governing regulations, provide materials and installation identical with applicable assemblies that have been tested and listed by recognized UL and AIA. Replacement drywall shall be 1/2" thick with paintable paper-faced surface and with long edges tapered for standard joint treatment. Repair wallboard shall be of a thickness to match adjacent wallboard with paintable paper-faced surface. Moisture-resistant wallboard with core and paper facings treated to resist moisture to comply with ASTM C630 as a wall tile back-up board around shower stalls, bathtubs, and bathroom tile wainscot. All drywall products shall be taped,

bedded, floated, and textured in a workmanlike manner, and dried properly (minimum of 24 hours drying period between each coat shall be allowed).

10.22 Drywall Accessories – Metal trim accessories on all external corners shall be beaded nose casing with expose flange knurled for joint treatment. Joint tape shall be plain or perforated conforming to ASTM C475. Joint compound shall conform to ASTM C475. Use manufacturer's single-compound for both bedding and finishing joints. Standard drywall nails or screws conforming to ASTM C380 and ASTM C514 shall be used for attaching wallboard.

10.23 Replacement Drywall Application – Install wallboard to conceal cut edges at internal and external corners by overlapping edge of the abutting wallboards. On ceilings, install wallboards with the long dimension at right angles to the supporting members, with ends on supporting members. Attach ceiling wallboard by nailing or screwing into supporting members only with spacing 7" on centers. On walls, install wallboards with edge occurring on supporting members, place wallboards with the long dimension vertical and each board continuous from floor to ceiling. On walls, attach wallboard by nailing or screwing into supporting members only with spacing 8" on centers. At showers, tubs and similar wet areas, install water-resistant wallboard. Apply with uncut long edge at bottom of work, and space ¼" above fixture lips. Seal ends, cut edges, and penetrations of each piece with water-resistant sealant before installation. Attach wallboard by nailing or screwing into supporting members only with spacing 8" on centers.

10.24 Repair Drywall Application – Remove existing defective wallboard to expose ½ the existing supporting members on opposite sides. Butterfly patches are acceptable on areas less than 2 square foot. Cut wallboard to fit snugly and fasten to supporting members as indicated in replacement drywall application. Reset fastener heads and retape joints as required. Use appropriate wallboard for each area and match existing thickness.

10.25 Joint and Fastener Treatment – Apply embedding compound over joints and fastener heads in a thin uniform layer. Spread compound 3" wide at joints. Center and embed reinforcing tape on joints. Spread a thin layer of compound over the tape and allow drying. Apply a second coat of embedding compound in a thin uniform coat 6" wide and allow drying. Sand joints to eliminate ridges and highpoints. Apply a coat of finishing compound to joints and fastener heads. Allow to dry then sand smooth. On internal corners, treat the same as joints, except fold the reinforcing tape lengthwise through the middle and fit neatly into corner. Apply embedding compound to external metal corner beads and finish the same as joints. Feather the joint compound 8" to 10" on each side of corner. After all carpentry, tile and other trades have completed their work and prior to texturing and painting, contractor shall point up all wallboards surface to ready for texturing and painting.

10.26 Drywall Repair – Repair ceiling and wall finishes to make surface smooth and uniform; free from any cracks, holes, loose joint tape, nail pops, indentations, and loose

and sagging drywall. Cut out cracks ¼” wide in a vee joint. Butterfly patches are acceptable on areas less than 2 square foot. Joint tape shall be used where repairs are needed at wallboard joints. Where holes or sagging drywall are present, the damaged drywall shall be replaced to the two nearest framing members. Apply thin coats of ready-mix joint compound to make surfaces smooth. Texture repaired area to match existing.

10.27 Plaster Repair – On masonry remove all loose or dead plaster. Cut out cracks ¼” wide in a vee joint. Wet existing plaster and tool in finishing lime. Use a steel trowel and water brushes, finish lime flush and smooth with adjacent surfaces. Texture repaired area to match existing. When plastering larger areas, screed lime first with a wood float so that newly plastered surfaces will be in the same plane as existing wall. No bulges or depression will be allowed. On wood lath, remove all loose or dead non-keyed plaster. Remove all rotten wood laths. Renail all loose wood laths. Cut and install 1/8” flat rib “special mesh” metal lath securely. Apply base coat plaster leaving surface not less than 1/16” below adjacent surfaces. Allow base coat to dry at least 24 hours. Apply not less than 1/16” of finish coat plaster. Apply in same manner as on masonry walls. All plaster that is not true, smooth, and flush with adjacent surfaces will be rejected and replaced at contractor’s expense.

10.28 Texturing – All wallboard and plaster repairs will be textured to match existing. Replacement wallboard texturing is the option of the owner and contractor. Drywall texture can take a wide variety of forms and what appeals to different people is often a matter of the materials used, the techniques employed, and individual taste. From a light, machine-applied “orange peel” to the heavy swirls of a hand-applied Mediterranean look, is acceptable. Once the topping is done, drywallers should prime the drywall prior to applying the texture. The primer coat seals the porous paper surface of the drywall and helps to point up any flaws in the finish topping coats before putting on the texture. Priming can be done with wallboard sealer or with a primer – follow paint or sealer instructions for specific recommendations. Because of its uniformity and greatly increased speed, most texturing is done by machine. Powdered texture material is mixed with water, and then air pressure is used to blow the texture through a nozzle. For large areas, a professional texturing rig will give the most uniform appearance. The two most common machine-applied textures are: Orange peel, also called splatter, is the lightest texture. A combination of thin material, high air pressure, a small nozzle opening, and a rapid spraying motion creates small dots of texture on the wall. Knockdown, which combines thicker material, lower air pressure, a larger nozzle and a slower application to spray large globs of texture onto the surface. As the texture begins to dry, a wide metal trowel called a knockdown blade is pulled lightly over the texture globs, knocking down the high spots and creating large flat areas. Knockdown texture can be varied from very light to very heavy. All texturing will be applied in a workmanlike manner.

10.29 Attic Access – Install attic access by framing an area with 2x4 dimension lumber attached to existing ceiling joist in accordance with Consortium Member codes. Access should have a minimum 18”x 24” opening. Trim all sides of opening with

casing, install access cover, which should be ½" A/C plywood/OSB with R-30 batt or Styrofoam insulation attached to attic side of cover, paint all exposed wood to match existing trim. Repair attic access as per work description. Attic access openings shall be gasketed, weatherstripped, or otherwise sealed to limit air infiltration and exfiltration. Folding attic access stairs, if called for in work description, shall be installed in accordance with manufacturer's instructions. Cover and insulate new or existing folding attic stairway with an attic stair insulating cover. New or existing folding attic access stairs shall be gasketed, weatherstripped, or otherwise sealed to limit air infiltration and exfiltration

11. THERMAL PROTECTION

11.01 Insulation, including blankets, batts, loose fill, blown, rigid foam board, or rigid fiberglass fiberboard shall be installed according to manufacturer's instructions and specifications. Fasteners for insulation shall be galvanized or written approved equal corrosion-resistant staples or nails. Proof of insulation shall include an official manufacturer's certificate filled out by the applicator indicating insulation type, insulation rating (R-13, R-19, etc.) of installed material and any photo's required by the inspector. Insulation of ceilings shall meet a minimum R-30 rating. Insulation of walls and floors shall meet a minimum of R-13. Insulation in ceiling-floor assembly between garage and habitable space above, and in floors cantilevered to the exterior shall be minimum R-19 or greater. Blown fiberglass, rockwool or cellulose is acceptable in ceilings, walls, or floors as long as the material meets the required rating. Blow fiberglass, rockwool, or cellulose into existing wall cavities between studs by cutting out a hole with a hole saw or drill between each stud along the top outside wall. Blow in the cellulose until it begins to back up and out of the hole. **Prior to repairing or covering holes, contact the OCD Rehabilitation Specialist for inspection of wall insulation. Failure to contact the OCD Rehabilitation Specialist may result in opening walls again for inspection. Repair of reopened walls shall be at contractor's expense.** Return the plug cut out by the hole saw into the hole and spackle over it; or use prefabricated hole fillers. If the house is over ten years old, fire blocking was probably installed between the studs. In this case, you will need to drill two holes between each stud - one above and one below the fire blocking. You can test this by drilling a hole at the top of the wall and inserting a stiff wire down into the hole to feel for any obstructions. Then drill below the obstruction as well. For aluminum, plastic, steel, or any other similar outside surfaced structures that do not lend themselves to this method, blow the insulation in through holes in the interior wall surfaces. This will require patch and repair work when complete. If blown fiberglass, rockwool, or cellulose is used in attic, ensure that blocking is used at all openings, electrical boxes, recessed lighting, horizontal heating units, and other areas as necessary for safety reasons. Install blocking or a barrier of batts or blanket insulation in attic at the inside of eave vents to avoid blocking circulation. If batt insulation is used, ensure that vapor barrier faces the interior of structure.

11.02 Weatherstripping – Install weatherstripping in accordance with manufacturer's instructions to ensure proper seal. Use appropriate weatherstripping for each area.

11.03 **Caulking** – Caulk or spray appropriate foam insulation at all infiltration points in accordance with the specifications (9.01) above.

11.04 **Venting** - Clean debris from gable end, turbines, and soffit vents. Install aluminum screen to interior side of vent to provide tight seal. Replace broken or missing vents. Attic vents and louvers shall be constructed of heavy gauged galvanized metal, aluminum, or vinyl. Install aluminum dryer vent with a damper. If called for in work description, install new vents in accordance with manufacturer's instructions. Attic ventilation shall have a net area of not less than 1 square foot for each 300 square feet of attic area. Install additional venting per work description. : Install a new (4" minimum diameter) aluminum dryer vent with a damper in the wall in accordance with manufacturer's instructions and Consortium Member codes.

12. KITCHEN COUNTERTOPS

12.01 **Kitchen countertops** - Countertops shall have a minimum backsplash as per work description. All new prefabricated countertops shall include matching side or end splashes where countertops attach to intersecting walls. The splash shall extend from the front edge to the back edge of the prefabricated countertop to be level, plumb and square.

12.02 **Countertop Ends** - Where the ends of countertops terminate in an open area or next to an appliance, the end shall be trimmed with a precisely fitted laminate.

12.03 **Custom Built Countertops** - When site-built or custom-built countertops are called for; backsplashes shall be caulked at all edges with a waterproof caulk to prevent water from entering between seams. If called for, backsplashes for site-built or custom-built countertops shall extend and be fitted to the bottom sides of existing wall-hung cabinets. Custom built countertops shall be made from $\frac{3}{4}$ " plywood or written approved equal material. Top material shall be phenolic laminate, vinyl plastic covering, ceramic tile, stainless steel or other written approved equal material suitable for its intended use. All edges shall be of same material as countertop. All countertops shall be installed using the proper brackets, supports, fasteners and contact glues or cements.

12.04 **Fit Custom Countertop** - Where narrow-width base cabinets are furred out at the facing in the sink area only to facilitate the installation of a new sink, the custom countertop shall fit the average cabinet outline, but shall extend outward from the average cabinet outline in the sink area only in a "curvilinear" manner to cover the top of the cabinet furred-out. Seams in countertops shall be placed at a 45-degree angle to said corner and mitered to produce a precise tight seam. Material and installation specifications are identical to custom built countertops. All countertops shall be installed using the proper brackets, supports, fasteners and contact glues or cements.

13. CABINETS

13.01 **On-Site Newly Constructed Base and Wall Cabinets** – Install new upper and lower cabinets, using cabinet grade plywood, as per work description. Make new doors

and drawer fronts of matching $\frac{3}{4}$ " cabinet grade **lumber core** plywood, with routed edges and routed design cut in facing. Base and wall-hung cabinets shall comply with the requirements of American National Standards Institute (ANSI) 161-1 "Recommended Minimum Construction and Performance Standards for Kitchen Cabinets." Cabinets shall be installed plumb, level and true to plane. Cabinets shall be attached to studs or other framing members with screws. All new cabinets shall be painted or stained and finished per work description. When cabinet hardware is called for hinges, pulls, and catches are required. Spring-loaded hinges may be used instead of catches.

13.02 Prefabricated Base and Wall Cabinets - Cabinets shall be Aristocraft, Contractors Choice, Quality Kitchen Kompact or written approved equal. Cabinets shall be installed plumb, level and true to plane and in accordance with manufacturer's specifications. Cabinets shall be attached to studs or other framing members with screws. Cabinet hardware will be high quality. When cabinet hardware is called for, hinges and pulls are required. Spring-loaded hinges may be used instead of catches.

13.03 Cabinet Repairs - Where cabinet door, shelving, or drawer repairs are called for, repairs shall include planing, cutting, trimming, gluing, fitting, sanding, jointing or whatever is required to produce proper fit and operation of same. Repairs shall include new door hinges, door or drawer pulls, and drawer guides, shelving, shelving mounting brackets, braces or hardware. All repairs shall ensure flawless operation of doors, shelving or drawers.

13.04 Refacing Cabinets – Remove cabinet doors and drawer fronts. Face out stiles, rails and end plates with $\frac{1}{4}$ " cabinet grade plywood. Make new doors and drawer fronts of matching $\frac{3}{4}$ " cabinet grade **lumber core** plywood, with routed edges and routed design cut in facing. Install doors, end plates and drawer fronts' plywood with grain running vertically and grain all in same direction. Cabinet hardware will be high quality. When cabinet hardware is called for hinges, pulls, and catches are required. Spring-loaded hinges may be used instead of catches. Paint interior, stain and varnish exterior per paint specifications. Repair walls behind cabinets before painting.

13.05 Bathroom Vanity Repair – Repair, as necessary, existing vanity to include hardware.

13.06 Install Bathroom Vanity – Remove existing vanity, install new prebuilt finished $\frac{3}{4}$ " vanity with new hardware, new washerless faucets (Delta or written approved equal), new P-trap, and new supply lines with shutoffs or reinstall existing faucets, drains, and supply lines.

13.07 Install Medicine Cabinet – Contractor shall install a new surface mounted or recessed mounted metal or finished wood medicine cabinet with mirror above lavatory in bathrooms in accordance with manufacturer's instructions.

14. PAINTING

14.01 Quality of Paint - All paint used must be “top quality”, low VOC preferred. Exterior paint must have guarantee of 15 years and interior paint must have a guarantee of 10 years. Stains, varnishes, sealers, and urethanes must be top quality. Apply paint in accordance with manufacturer’s directions. Use applicators and techniques best suited for substrate and type of material being applied per manufacturer recommendations.

14.02 Preparation of Interior- All surfaces to be painted shall be clean, dry, and free of dust, dirt, grease, wax, and foreign matter. Loose or scaling paint shall be removed. Preparation shall include filling all holes, cracks, and seams in walls and trim followed by tape, bed, and texturing of walls to match existing finishes. Prime all repairs before applying paint. Protect glass and finished surfaces adjacent to painted surfaces. Remove all paint misapplied to non-painted surfaces. The finished work shall blend in with the surroundings and show no evidence of repair.

14.03 Preparation of Exterior Surfaces – All surfaces to be painted shall be clean, dry, and free of dust, dirt, grease, wax, and foreign matter. Remove existing loose, peeling, or cracking paint; scrape, sand, or wire brush surfaces to smooth condition to receive finish, feather edges into sound adjoining surfaces and dust clean. Preparation shall include filling all holes and cracks. Prime all surfaces before applying paint. Protect glass and finished surfaces adjacent to painted surfaces. Remove all paint misapplied to non-painted surfaces. The finished work shall blend in with the surroundings and show no evidence of repair.

14.04 Application – Do not apply initial coatings until moisture content of surface and temperature are within limitation recommended by paint manufacturer. Apply paint in accordance with manufacturer’s directions. Use applicators and techniques best suited for substrate and type of material being applied per manufacturer. The number of coats required is the same regardless of the application method. Do not apply succeeding coats until the previous coat has completely dried. Sand between applications with fine sandpaper, or rub surfaces with pumice stone to produce an even, smooth surface in accordance with the manufacturer’s directions. Apply additional coats when undercoats, stains, or other conditions show through the final coat of paint, until the paint film is a uniform finish, color and appearance. Finish doors on all side edges the same as the faces. Sand lightly between each succeeding enamel or varnish coat. Omit the first coat (primer) on metal surfaces which have been shop-primed and touch-up painted. All repaired painted surfaces must be scraped, sanded and primed to present an even appearance. In a case where the painted surface has been maintained and painted, all cracks, seams, and holes in the to-be-painted surface must be filled and caulked before painting. All paintbrush applications must be smooth. No streaks or poor application will be allowed. No runs in paint, or thin applications will be allowed in spray paint applications. Provide coverage of uniform color, texture and sheen. All colors of paint covered by a lighter color must not bleed or show through the new color of paint applied upon completion of paint job. It is the contractor’s responsibility to cover and protect all items and property around the areas to be painted. It shall be the contractor’s responsibilities to clean up all unwanted paint spots or spills in the painting area. All

stains on a wallboard, textured area must have “Kilz” or written approved equal, applied before painting has begun. All new or bare wood and metal areas to be painted must have a top quality primer applied before topcoat painting has begun.

14.05 Exterior Paint Coats – paint the various substrates, as indicated.

Surface	1 st Coat	2 nd Coat
Painted Wood Trim	100% acrylic latex primer	100% acrylic latex paint
Stained Wood Option 1	Exterior oil stain	Exterior polyurethane finish
Stained Wood Option 2	Solid-color acrylic latex stain	Solid-color acrylic latex stain
Ferrous Metal and Aluminum	Zinc-yellow iron oxide primer. Not required on items shop primed	High Gloss alkyd enamel
Concrete/Masonry	Primer – Block Coat	Gloss finish, catalyzed polyester epoxy base

14.06 Interior Paint Coats – paint the various substrates, as indicated.

Surface	1 st Coat	2 nd Coat
Drywall/Plaster	Latex Primer	Interior Latex Paint Alkyd enamel (Kitchen & Bath)
Natural Finish Wood	Clear Polyurethane	Clear Polyurethane
Stained Wood Finish	Latex or Oil Stain Oil stain (kitchen & bath)	Clear Polyurethane
Painted Wood Finish	Latex Primer	Interior Acrylic Latex Paint Alkyd enamel (Kitchen & Bath)
Ferrous Metal	Red primer, not required on items that are shop primed	Enamel undercoater

15. VINYL FLOORING

15.01 Sheet Vinyl - All sheet vinyl shall meet FHA standards. All sheet vinyl shall have a minimum wear layer of .010” in thickness and an overall thickness of .055”. Lay sheet vinyl to provide as few seams as possible with economical use of materials. Match edges for color shading and pattern at seams in compliance with manufacturer’s recommendations, such as reversing adjoining sheets so that abutting edges are from same edge of roll. Under most circumstances, the old floor covering shall be removed and all debris removed from the area to be covered. All cracks, holes, and low spots in concrete shall be filled with approved filler and troweled to a smooth finish; use a filler of type recommended by the flooring manufacturer of the floor covering to be used in the area. All cracks, holes, and low spots in the underlayment shall be filled with approved

filler and troweled to a smooth finish; use a filler of type recommended by the flooring manufacturer of the floor covering to be used in the area. ¼" rated underlayment is to be installed over existing wooden flooring before installation of new floor covering. Particleboard underlayment shall not be used. Under a few circumstances, if the Rehabilitation Specialist determines that the existing floor covering is securely glued and is smooth enough, the contractor may be able to install the vinyl over the existing floor covering. All vinyl shall be installed wall to wall under most circumstances. Maintain minimum temperature of 65 degrees F in spaces to receive resilient flooring for at least 40 hours before installation, during installation, and for not less than 48 hours after installation. If the Rehabilitation Specialist determines that the existing wall trim is still acceptable, but might be damaged upon removal, then the contractor shall install the vinyl up to the existing casing and then install shoe molding around all the trim in the vinyl floor covering area.

15.02 Adhesives - Adhesives and primers shall be water resistant type and of consistency recommended and approved by the vinyl flooring manufacturer and the condition of the surface to be covered. Use adhesive in accordance with manufacturer's instructions.

15.03 **Blank**

15.04 **Carpet** - Repair minor floor irregularities. Clean floor of dust, grit, and debris. Carpet and cushion shall meet the requirements of HUD No. 75-C1, dated 2-26-75, MPS UM 44C. Provide virgin filler of first quality pile-carpet suitable for use as wall-to-wall carpet. Average synthetic fiber size shall be 15 denier or coarser. Finished yarn shall contain not more than 2.0 percent chloroform-soluble material. Comply with manufacturer's instructions and recommendations for seam locations and direction of carpet; maintain uniformity of direction and lay of pile. Pad shall be FHA 3/8" thick, 5 pounds, re-bond foam, or better. At doors, center seams under doors; do not place seams in traffic directions at doorways. Extend carpet under open-bottomed obstructions and under removable flanges, and into alcove and closets of each space. Provide cutouts where required and bind cut edges properly when not concealed by protective guards or overlapping flanges. Install carpet edge guards where edge of carpet is exposed, anchor guards to substrate. Install tack strips with nails, or adhesive and nails when required for adequate strength. Locate properly for concealment of carpet edges between stripping and base of wall. Strip entire perimeter of each carpeted space and where possible at obstructions and cutouts. Install carpet by trimming edges, buttering cuts with seaming cement, taping or sewing. Taping and sewing seams top provide sufficient strength for stretching and continued stresses during life of carpet. Apply seaming cement over stitching on backing, if not covered by tape. Stretch carpet both directions, the exact amount recommended by carpet manufacturer, trim edges, secure to stripping, and conceal behind edge of stripping. Re-fit all doors as necessary to allow carpet clearance when opening or closing. Ensure that cut down doors have bottom plugs. Remove all loose threads with sharp scissors. Clean spots with proper cleaners, and then vacuum the carpet. A professional installer shall do all work. Carpet shall be installed in accordance with the manufacturer's specifications.

16. UNDERLAYMENT

16.01 **Plywood** – 3/8", exterior grade, smooth one side, shall be used as an underlayment in kitchen, bathrooms, utility rooms, areas where a washer and dryer are located, or other wet areas when feasible upon replacing existing.

16.02 **Underlayment** - The underlayment shall extend into the closets of that room and under any equipment in that room, and moving of said equipment shall be considered as part of the work and not a separate item or cost. 1/4" rated underlayment is to be installed over existing wooden flooring before installation of new floor covering. Particleboard underlayment shall not be used.

16.03 **Water-heater or furnace areas** - Whenever an elevated water-heater or elevated furnace is removed and replaced with a new one, all damaged floors shall be replaced. Use #2 or better-treated exterior grade plywood floor lumber with a minimum 3/4" thickness.

17. GENERAL PLUMBING

17.01 **General Requirements** Journeymen or Master Plumbers with current licenses must perform all work requiring permits and inspections. All plumbing work requiring a permit must be completed in accordance with Consortium Member code and plumbing inspections obtained. All installations, water tests, and pressure tests requiring a permit must pass the Consortium member plumbing inspections. All plumbing, rough-in, top off, and final work shall be completed in accordance with current Consortium Member codes.

17.02 **Bathtub, Kitchen Sink, Lavatory, Toilet Tank Repair** – Repair damaged items in accordance with repair products manufacturer's recommendation. Prior to usage, protect repaired surface to ensure a satisfactory bond.

17.03 **Replacement of Existing Sewer Service** – Contractor is to furnish all material, labor, permits, fees necessary to replace sewer service line from dwelling to main, including tap, as necessary with PVC. PVC or cast iron pipe to be used and installation to be in accordance with all accordance with Consortium members plumbing codes. Consortium member permits and inspections required.

17.04 **Snake and Camera Sewer Lines** – Snake out and run camera and video tape of waste lines to ensure clear and stable lines to main. Check with Consortium Member Sewer Lateral program to see if property is eligible for program.

17.05 **Repair Faucets** - All faucets not to be replaced shall have valves reseated; receive new washers and/or rings, and packing as called for in work description. Valves, which cannot be repaired, are to be replaced with similar type fittings.

17.06 **Plumbing Repair** – If called for in work description, replace all sink and lavatory traps that are corroded and cannot be tightened leak-free. Clear all traps and drains

with a suitable electric snake. All supply lines are to be thoroughly inspected for leaks. All fittings and joints, which are not watertight, are to be repaired or replaced.

17.07 Toilet **Repair** – Replace all toilet supply valves with anti-siphon type. Replace all tank mechanisms and place existing toilets in proper flushing action.

17.08 **Install Hose Bibbs** – Provide two hose bibbs, one at front and one at rear, frost-proof type with inside cutoffs whenever possible and called for, to include back flow preventer on each bibb.

17.09 **Install Water Valves** – Provide water cutoff valves at each fixture. Where exposed in bathrooms, they shall be chrome plated.

17.10 **Washer Standpipe** – Provide standpipe for washing machine drain with hot and cold connections for washing machine with individual cutoff valves. All plumbing lines and plastic box are to be concealed within framing of existing walls, except in basements. If necessary, frame a new wall partition to conceal plumbing lines. Location shall be within 18" of an existing laundry tub. Install all connecting and supply lines to meet Consortium Member codes.

17.11 **Gas Water Heater Repair** – Inspect water heater and place in proper automatic operation. Clean burners, combustion chambers, vent flues, and replace relief valves according to current Consortium Member codes. Properly adjust flame and pilot. Flush tank. All gas water heaters being repaired in a garage must have the burner elevated 18" above the floor or be installed in accordance with manufactures' requirements and have a gas cutoff valve.

17.12 **Install Water Heater** – Water heater shall be a minimum 40 gallon gas State, A.O. Smith or written approved equal, or 40 gallon electric, energy saver type, 240 volt, complete with cutoff valve on cold water supply, and a thermal and pressure safety relief valve. All gas water heaters being replaced in a garage must have the burner elevated 18" above the floor or installed in accordance with manufacturer's requirements. Install gas cutoff valve on gas water heater. Water heater is to be energy efficient or insulating blanket is to be applied

17.13 **Repair Interior Gas Lines** – Check all gas piping, replace improper connections, cap unused lines, install gas cutoff valves as necessary. Any copper or galvanized pipe gas line shall be removed and replaced with gas lines allowed under current Consortium Member codes and secure required inspection. Local gas utility to inspect and approve lines.

17.14 **Replacement of Existing Gas Service** – Replace 1 ¼" gas service line from dwelling to meter tied to new gas distribution lines in dwelling with new drops. Installation is to be in accordance with all Consortium Member codes. Local gas utility to inspect and approve lines.

17.15 **Replacement of Existing Water Service** – Replace ¾" water service line from dwelling to meter tied to new water lines in dwelling with new drops. Installation is to be

in accordance with all Consortium Member codes. All work to be performed by a licensed plumber with all required permits and inspections obtained.

17.16 Fiberglass – One piece Tub and Shower Unit – Contractor to supply, rough-in and install 5 foot length “Lasco” unit or written approved equal with required left or right outlets with Moen or written approved equal washerless single handle anti-scald valve shower fittings and showerhead. All shower valves must be pressure hermostatic type mixing valves (anti-scald valves) that conform to ASSE 1016 standards.

17.17 Bathtub – Bathtub shall be 5 foot length American Standard or written approved equal steel enameled tub complete with lever-operated pop-up drain and overflow. Furnish and install Moen or written approved equal bath filler and shower with diverter spout washerless single handle anti-scald valve shower fittings and showerhead. All shower valves must be pressure hermostatic type mixing valves (anti-scald valves) that conform to ASSE 1016 standards.

17.18 Bath/Shower fittings - Contractor is to supply and install new bath/shower fittings, Moen or written approved equal washerless single handle anti-scald valve shower fittings and showerhead. All shower valves must be pressure hermostatic type mixing valves (anti-scald valves) that conform to ASSE 1016 standards.

17.19 Lavatory – Lavatory shall be “American Standard” or written approved equal vitreous china lavatory complete with new washerless center set faucets (Moen or written approved equal) with aquaseal valves, aerator, and pop-up drain, new P-trap, and new supply lines with cutoffs.

17.20 Water Closet – Water closet shall be “American Standard” or written approved equal vitreous china freestanding close coupled toilet combination complete with toilet seat.

17.21 Toilet Seal Replacement - Take up water closet and reseal with new bowl wax.

17.22 Shower (Pan) Base Installation – Shower base is to be fiberglass or written approved equal. Install new to be sized as existing or as specified in work description.

17.23 Tub/Shower Doors – Install doors plumb and level and adjusted to operate freely. Use jamb and tub tile filler where out of square conditions exist. Bed strips in waterproof mastic. Attach unit securely to structure with plugs and screws in accordance with manufacturer’s instructions. Tighten all hardware and adjust for smooth operation.

17.24 Kitchen Sink Double Bowl – kitchen sink shall be 22” x 33” double compartment, 20 gauge self rimming, nickel stainless steel sink complete with single-lever faucets (Moen or written approved equal) with aerator, drains, garbage disposal, new P-trap, and new supply lines with cutoffs. Sink shall be at least 7” deep. Install in accordance with current Consortium Member codes.

18.06 Outlets, Junction Boxes, One-Piece Type Device, Switches, Receptacles – Devices for repair or replacement shall meet current Consortium Member codes and be installed in accordance with Consortium Member codes.

18.07 100 Amp Panel – Remove old inadequate electric service. Install new 100 Amp 110/220v service, circuit breaker type panel with 100 Amp main breaker (or greater). Install a new approved secondary ground and grounding electrode. Replace service entrance cable and meter box as required by Consortium Member code. Replace all cracked or dried circuit wires. Connect existing lighting circuits into new panel with line rated breakers as per specifications. Include separate appliance circuits.

18.08 150-200 Amp Panel - Remove old inadequate electric service. Install new 150-200 Amp 110/220v single phase service with circuit breaker panel box and circuit breakers with 150-200 Amp main breaker. Install a new approved secondary ground and grounding electrode. Replace service entrance cable and meter box as required by Consortium Member code. Replace all cracked or dried circuit wires. Connect existing lighting circuits into new panel with line rated breakers as per specifications. Include separate appliance circuits.

18.09 Repair Electric Service – Remove all illegal wiring and replace as required by Consortium Member codes. Make operable or replace all faulty, cracked, or damaged convenience outlet switches, and cover plates. Replace any dried and cracked wiring. Install breakers of proper size. Check and seal service riser through roof or exterior wall. Inspect weather cap and replace if cracked. Replace all pushbutton switches with toggle type switches. Replace all two (2)-hole receptacles with three (3) hole grounded receptacles, if required by Consortium Member code.

18.10 GFCI receptacles shall be installed in the kitchen counter top area, each bathroom, in the garage, the exterior of the house, and any other wet area designated in the work description. Installation of GFCI receptacles must be in accordance with current Consortium Member code.

18.11 Smoke Detectors – Provide and install smoke detectors in each sleeping room, each corridor or area giving access to sleeping rooms, and at ceilings near stairways on floors without bedrooms. If existing are 115 volt smoke detectors, and permanently connected to electric supply, all smoke detectors must be interconnected so all will sound if one is activated. Installation of smoke detectors must be in accordance with current Consortium Member code and manufacturer's specifications.

18.12 Bathroom Exhaust Fan– Install new ceiling exhaust fan according to Consortium Member code with ventilator assembly kit ducted through roof or wall. Include new switch to Consortium Member code. Patch disturbed area to match existing.

18.13 Blank

18.14 Water Heater Connection – Provide labor and material to install 40 Amp/230 Volt Circuit connections to the electric hot water heater. Obtain necessary permits and inspections. Install in accordance with Consortium Member codes.

18.15 Appliances – If dishwasher or refrigerator are to be replaced, at least one of the appliances are to be Energy Star rated

19. HEATING, VENTILATION AND AIR CONDITIONING (HVAC)

19.01 General Requirements – Provide all labor, material, equipment, services, and perform all operations required for complete installation of all packaged and/or split system units and related work as called for in work description including ductwork, air distribution devices, heating and air conditioning control wiring, fuel burning or electric furnaces, and electric heat pumps. All work must comply with the current Consortium Member code. Installers must have required license. **In almost all cases, types of heating and cooling system units will be replaced with the existing type of unit,** unless the whole HVAC system is replaced. All fuel burning heat units shall be vented through the roof or wall per manufacturer's specification and Consortium Member codes. All heat units, coils, and condenser-compressors must be of sufficient size to perform intended function. All furnaces must be based on square footage of house but large enough to perform intended function, or using Manual J calculations. Forced air furnaces placed in attics must be installed with required sized catwalk, light fixture, and the ability to have access to it. The condenser-compressor shall be placed as close to the furnace as possible and in a place where the noise will be the least annoying. There are restrictions on where the compressor may be placed in relation to property lines and how the drain line may be attached and where it should be discharged. Check with Building Inspections to determine what restrictions are applicable. The system shall be controlled by a heat and air thermostat and have a filter located inside the dwelling. All existing unvented space heaters shall be removed and gas lines capped off underneath the floor. Obtain necessary permits and inspections as required by Consortium Member code.

19.02 Repair Heating System – When existing heating equipment is to remain, clean burners, combustion chambers, vent stacks, adjust flame and pilot, and correctly set fan limit control switches. Clean and oil blowers and install new filter. Test heating system under stress condition long enough to establish proper operation, including automatic parts and control. Proper sized, usable slide baffles shall be provide if missing. Repair service must be performed by a licensed HVAC professional.

19.03 Replace Existing Gas Furnace - Contractor shall furnish and install electric start (electric spark ignition system) gas fired (AFUE of 90% percent or higher) heating unit system(s) complete and operable in every detail, as called for in work description. Unit shall be complete with all necessary connections for operations including: fans, blowers, controls, and thermostatic controls. Old heating unit is to be removed and disposed. Obtain necessary permits and inspections as required by Consortium Member code.

19.04 Replace **Existing Electric Furnace** - Contractor shall furnish and install electric heating unit system(s) complete and operable in every detail, as called for in work description. Electric furnace complete with all electrical connections for operations including: fans, blowers, controls, and thermostatic controls. All equipment and installation shall be in compliance with Consortium Member codes. Old heating unit is to be removed and disposed.

19.05 **Replace/Install Existing Central Air Conditioner** - Contractor shall furnish and install a 14 SEER or better Carrier or approved written equal air conditioning system(s) complete and operable in every detail, as called for in work description. With all electrical connections, thermostatic controls that can be set for fan only, condensing unit, "A" type evaporator coils, housing, lines, ducts, registers and all other necessary connections, control and equipment for a completely operable unit, including exterior concrete pad. All equipment and installations shall be in compliance with Consortium Member codes. Old unit is to be removed and disposed.

19.06 **Installation of Air Source Heat Pump** - Contractor shall furnish and install a 14 SEER or better Carrier or approved written equal heat pump complete and operable in every detail, as called for in work description. With all electrical connections, thermostatic controls that can be set for fan only, condensing unit, "A" type evaporator coils, housing, lines, ducts, registers and all other necessary connections, control and equipment for a completely operable heating and cooling unit, including exterior concrete pad. The Consortium Member shall choose the back-up heating system (gas or electric). All equipment and installations shall be in compliance with Consortium Member codes. Old unit is to be removed and disposed.

19.07 **Installation of Wall Air Conditioning Unit – Authorized only for the elderly(62 and older) or persons with a debilitating illness documented by a doctor's certificate.** A/C unit shall be installed in opening in wall as per work description. Unit shall be supported with metal angle brackets where necessary; all exterior metal shall be galvanized or aluminum. Cut opening minimum size to allow proper fit of unit cover. Any masonry or wood structural elements cut shall be headed with proper size steel angles or wood headers (Framing inspection required). Exterior opening shall be clean cut and framed to accept A/C cover. Attach A/C cover with galvanized screws or nails on all sides. Trim and caulk, as necessary, on interior and exterior walls; all trim to be finished to match existing trim. Electric outlet with appropriate voltage shall have individual circuits for each A/C unit; extension cords to plug in A/C unit are prohibited. A maximum of two (2) units may be installed in the dwelling.

19.08 **Ducts** – Install the minimum length of metallic duct; ensure that duct is not compressed during installation. Locate metallic duct away from hot equipment such as furnaces and steam pipes. When joining lengths of metallic duct or attaching duct to air supply or terminal equipment use adhesive and connectors as recommended by the manufacturer. Trim the end of the ducts square before installing them. Follow manufacturer's instruction for placement of duct supports. However the duct is

supported, make sure the supports are adequately attached to the structure. Any terminal devices attached to the duct should have their own support. Install all ductwork in accordance with Consortium Member code. Duct inspection required. **If any duct or HVAC component has asbestos wrap in areas that will be disturbed or removed, or if asbestos wrap is deteriorated, a licensed asbestos abatement contractor must perform removal or the asbestos hazard.**

20. MISCELLANEOUS

20.01 **Bathroom Accessories** – Contractor shall install chromium-plated accessories (in all bathrooms. Minimum accessories shall include, but may not be limited to a paper holder and towel bars.

20.02 **Pest Eradication** – A licensed pest control operator shall be used to **inspect or treat** the entire dwelling for roaches, fleas, ants, rodents, and/or subterranean termites. Contractor shall provide the OCD with a copy of the report of inspection or treatment by the pest control operator. A licensed pest control operator must perform all roach, flea, ant, rodent, and/or subterranean termite treatments. All of structure shall be treated for the extermination of roaches, fleas, ants, rodents, and/or subterranean termites or other wood destroying insects, i.e.: carpenter ants. The company must use industry-approved methods and chemicals. A one-year guarantee shall be supplied to the owner and a copy provided to the OCD office and the homeowner against re-occurrence of roaches, fleas, ants, rodents, and/or subterranean termites. Payment to contractor shall be determined based on the service provided, inspection or treatment. If necessary, yearly termite follow-up treatments will be the responsibility of the property owner.

20.03 **Door Stops** – Install solid metal base mounted doorstops to all doors where appropriate. Install solid metal hinge mounted doorstops if base mounted type is not appropriate.

20.04 **House Numbers** – Install 4” or larger metal or plastic letters on front of house, identifying house visible from the street.

20.05 **Asbestos Siding Removal** – Comply with all EPA and OSHA regulations and laws with regard to pollution control and worker protection. In most cases a licensed asbestos abatement contractor must be used.

20.06 **Asbestos Chrysotile Siding Removal** – Comply with all EPA and OSHA regulations and laws with regard to pollution control and worker protection. In most cases, an asbestos abatement contractor must be used.

20.07 LBP Safe Work Practices – Comply with all EPA, ODEQ, HUD, and OSHA regulations and laws with regard to performing lead-based paint (LBP) safe work practices for interim controls to address LBP hazards in homes built prior to 1978 on federal funded rehabilitation projects.

20.08 Mold Remediation – Comply with all EPA HUD and OSHA regulation and laws with regard to performing mold remediation. Materials & structures showing signs of mold must be removed and replaced or treated per applicable regulations.

20.09 Handicap Accessibility – Comply with all specifications in accordance with Section 504 of the Rehabilitation Act of 1973 on federal funded rehabilitation projects.

Appendix B: Glossary of Popular Construction Terms

Acoustical Tile	Special tile for walls and ceilings made of mineral, wood, vegetable fibers, cork, or metal. Its purpose is to control sound volume, while providing cover.
Air Duct	Pipes that carry warm air and cold air to rooms and back to furnace or air conditioning system.
Ampere	The rate of flow of electricity through electric wires.
Apron	A paved area, such as the juncture of a driveway with the street or with a garage entrance.
Backfill	The gravel or earth replaced in the space around a building wall after foundations are in place.
Balusters	Upright supports of a balustrade rail.
Balustrade	A row of balusters topped by a rail, edging a balcony or a staircase.
Baseboard	A board along the floor against walls and partitions to hid gaps.
Batt	Insulation in the form of a blanket, rather than loose filling.
Batten	Small thin strips covering joints between wider boards on exterior building surfaces.
Beam	One of the principal horizontal wood or steel members of a building.

Bearing Wall	A wall that supports a floor or roof of a building.
Bib or Bibcock	A water faucet to which a hose may be attached, also called a hose bib or sill cock.
Bleeding	Seeping of resin or gum from lumber. This term is also used in referring to the process of drawing air from water pipes.
Brace	A piece of wood or other material used to form a triangle and stiffen some part of a structure.
Braced Framing	Construction technique using posts and cross-bracing for greater rigidity.
Brick Veneer	Brick used as the outer surface of a framed wall.
Bridging	Small wood or metal pieces placed diagonally between floor joists.
Building Paper	Heavy paper used in walls or roofs to damp proof.
Built-Up Roof	A roofing material applied in sealed, waterproof layers, where there is only a slight slope to the roof.
Butt Joint	Joining point of two pieces of wood or molding.
Bx Cable	Electricity cable wrapped in rubber with a flexible steel outer covering.
Cantilever	A projecting beam or joist, not supported at one end, used to support an extension of a structure.
Carriage	The member which supports the steps or treads of a stair.
Casement	A window sash that opens on hinges at the vertical edge.
Casing	Door and window framing.
Cavity Wall	A hollow wall formed by firmly linked masonry walls, providing an insulating air space between.
Chimney Cap	Concrete capping around the top of chimney bricks and around the floors to protect the masonry from the elements.
Chair Rail	Wooden molding on a wall around a room at the level of a chair back.
Chamfered Edge	Molding with pared-off corners.
Chase	A groove in a masonry wall or through a floor to accommodate pipes or ducts.

Chimney Breast	The horizontal projection-usually inside a building-of a chimney from the wall in which it is built.
Circuit Breaker	A safety device which opens (breaks) an electric circuit automatically when it becomes overloaded.
Cistern	A tank to catch and store rain water.
Clapboard	A long thin board, thicker on one edge, overlapped and nailed on for exterior siding.
Collar Beam	A horizontal beam fastened above the lower ends of rafters to add rigidity.
Consortium Member	Any Jurisdiction currently associated with the St. Louis HOME Consortium by written agreement.
Coping	Tile or brick used to cap or cover the top of a masonry wall.
Corbel	A horizontal projection from a wall, forming a ledge or supporting a structure above it.
Corner Bead	A strip of wood or metal for protecting the external corners of plastered walls.
Cornice	Horizontal projection at the top of a wall or under the overhanging part of the roof.
Course	A horizontal row of bricks, cinder blocks or other masonry materials.
Cove Lighting	Concealed light sources behind a cornice or horizontal recess which directs the light upon a reflecting ceiling.
Crawl Space	A shallow, unfinished space beneath the first floor of a house which has no basement, used for visual inspection and access to pipes and ducts. Also, a shallow space in the attic, immediately under the roof.
Cripples	Cut-off framing members above and below windows.
Door Buck	The rough frame of a door.
Dormer	The projecting frame of a recess in a sloping roof.
Double Glazing	An insulating windowpane formed of two thicknesses of glass with a sealed air space between them.
Double Hung Windows	Windows with an upper and lower sash, each supported by cords and weights.
Downspout Leader	DOWNSPOUT A spout or pipe to carry rain water

	down from a roof or gutters.
Cripples	A pipe for conducting rainwater from the roof to a cistern or to the ground by way of a downspout.
Downspout Strap	A piece of metal, which secures the downspout to the eaves or wall of a building.
Drip	The projecting part of a cornice, which sheds rainwater.
Dry Wall	A wall surface of plasterboard or material other than plaster.
Eaves	The extension of roof beyond house walls.
Efflorescence	White powder that forms on the surface of brick.
Effluent	Treated sewage from a septic tank or sewage treatment plant.
Fascia	A flat horizontal member of a cornice placed in a vertical position.
Fill-Type Insulation	Loose insulating material, which is applied by hand or blown into wall spaces mechanically.
Flashing	Noncorrosive metal used around angles or junctions in roofs and exterior walls to prevent leaks.
Floor Joists	Framing pieces which rest on outer foundation walls and interior beams or girders.
Flue	A passageway in a chimney for conveying smoke, gases or fumes to the outside air.
Footing	Concrete base on which a foundation sits.
Foundation	Lower parts of walls on which the structure is built. Foundation walls of masonry or concrete are mainly below ground level.
Framing	The rough lumber of house-joists, studs, rafters, and beams.
Furring	Thin wood, or metal applied to a wall to level the surface for lathing, boarding, or plastering, to create an insulating air space, and to damp proof the wall.
Fuse	A short plug in an electric panel box which opens (breaks) an electrical circuit when it becomes overloaded.
Gable	The triangular part of a wall under the inverted "v" of the roof line.

Gambrel Roof	A roof with two pitches, designed to provide more space on upper floors. The roof is steeper on its lower slope and flatter toward the ridge.
Girder	A main member in a framed floor supporting the joists which carry the flooring boards. It carries the weight of a floor or partition.
Glazing	Fitting glass into windows or doors.
Grade Line	The point at which the ground rests against the foundation wall.
Green Lumber	Lumber which has been inadequately dried and which tends to warp or "bleed" resin.
Grounds	Pieces of wood embedded in plaster of walls to which skirting are attached. In addition, wood pieces used to stop the plasterwork around doors and windows.
Gusset	A brace or bracket used to strengthen a structure.
Gutter	A channel at the eaves for conveying away rain water.
Hardwood	The close-grained wood from broad-leaved trees such as oak or maple.
Headers	Double wood pieces supporting joists in a floor or double wood members placed on edge over windows and doors to transfer the roof and floor weight to the studs.
Heel	The end of a rafter that rests on the wall plate.
Hip Roof	A roof that slants upward on three or four sides.
Hip	The external angle formed by the juncture of two slopes of a roof.
Jalousies	Windows with movable, horizontal glass slats angled to admit-ventilation and keep out rain. This term is also used for outside shutters of wood constructed in this way.
Jamb	An upright surface that lines an opening for a door or window.
Joist	A small rectangular sectional member arranged parallel from wall to wall in a building, or resting on beams or girders. They support a floor or the laths or furring strips of a ceiling.
Kiln-Dried	Artificial drying of lumber, superior to most lumber that is air dried.

King-Post	The center post of a truss. Large, heavy screws, used where great strength is required, as in heavy framing or when attaching ironwork to wood.
Lag-Screws or Coach-Screws	Large, heavy screws, used where great strength is required, as in heavy framing or when attaching ironwork to wood.
Lally Column	A steel tube sometimes filled with concrete, used to support girders or other floor beams.
Lath	One of a number of thin narrow strips of wood nailed to rafters, ceiling joists, wall studs, etc. to make a groundwork or key for slates, tiles, or plastering.
Leaching Bed	Tiles in the trenches carrying treated wastes from septic tanks.
Ledger	A piece of wood which is attached to a beam to support joists.
Lintel	The top piece over a door or window which supports walls above the opening.
Load-Bearing Wall	A strong wall capable of supporting weight.
Louver	An opening with horizontal slats to permit passage of air, but excluding rain, sunlight and view.
Masonry	Walls built by a mason, using brick, stone, tile or similar materials.
Molding	A strip of decorative material having a plane or curved narrow surface prepared for ornamental application. These strips are often used to hide gaps at wall junctures.
Moisture Barrier	Treated paper or metal that retards or bars water vapor, used to keep moisture from passing into walls or floors.
Mullion	Slender framing which divides the lights or panes of windows.
Newel	The upright post or the upright formed by the inner or smaller ends of steps about which steps of a circular staircase wind. In a straight flight staircase, the principal post at the foot or the secondary post at a landing.
Nosing	The rounded edges of a stair tread.
Parging	A rough coat of mortar applied over a masonry wall as protection or finishes; may also serve as a base for an

	asphaltic waterproofing compound below grade.
Pilaster	A projection or the foundation wall used to support a floor girder or stiffen the wall.
Pitch	The angle of slope of a roof.
Plasterboard (See Dry Wall)	Gypsum board, used instead of plaster.
Plates	Pieces of wood placed on wall surfaces as fastening devices. The bottom member of the wall is the sole plate and the top member is the rafter plate.
Plenum	A chamber which can serve as a distribution area for heating or cooling systems, generally between a false ceiling and the actual ceiling.
Pointing	Treatment of joints in masonry by filling with mortar to improve appearance or protect against weather.
Post-And-Beam Construction	Wall construction in which beams are supported by heavy posts rather than many smaller studs.
Prefabrication	Construction of components such as walls, trusses, or doors, before delivery to the building site.
Rabbet	A groove cut in a board to receive another board.
Radiant Heat	Coils of electricity, hot water or steam pipes embedded in floors, ceilings, or walls to heat rooms.
Rafter	One of a series of structural roof members spanning from an exterior wall to a center ridge beam or ridge board.
Reinforced Concrete	Concrete strengthened with wire or metal bars.
Ridge Pole	A thick longitudinal plank to which the ridge rafters of a roof are attached.
Riser	The upright piece of a stair step, from tread to tread.
Roof Sheathing	Sheets, usually of plywood, which are nailed to the top edges of trusses or rafters to tie the roof together and support the roofing material.
Sandwich Panel	A panel with plastic, paper, or other material enclosed between two layers of a different material.
Sash	The movable part of a window-the frame in which panes of glass are set in a window or door.
Scotia	A concave molding.
Scarf Joint	Joints cut at 45 degree angle to match. Used instead

	of butt joints.
Scuttle Hole	A small opening either to the attic, to the crawl space or to the plumbing pipes.
Seepage Pit	A sewage disposal system composed of a septic tank and a connected cesspool.
Septic Tank	A sewage settling tank in which part of the sewage is converted into gas and sludge before the remaining waste is discharged by gravity into a leaching bed underground.
Shakes	Hand cut wood shingles.
Sheathing (See Wall Sheathing)	The first covering of boards or material on the outside wall or roof prior to installing the finished siding or roof covering.
Shim	Thin tapered piece of wood used for leveling or tightening a stair or other building element.
Shingles	Pieces of wood, asbestos or other material used as an overlapping outer covering on walls or roofs.
Shiplap	Boards with rebated edges overlapping.
Shiplap	Siding Boards of special design nailed horizontally to vertical studs with or without intervening sheathing to form the exposed surface of outside walls of frame buildings.
Sill Plate	The lowest member of the house framing resting on top of the foundation wall. Also called the mud sill.
Skirtings	Narrow boards around the margin of a floor; baseboards.
Slab	Concrete floor placed directly on earth or a gravel base and usually about four inches thick.
Sleeper	Strip of wood laid over concrete floor to which the finished wood floor is nailed or glued.
Soffit	The visible underside of structural members such as staircases, cornices, beams, a roof overhang or eave.
Softwood	Easily worked wood or wood from a cone bearing tree.
Soil Stack	Vertical plumbing pipe for waste water.
Stringer	A long, horizontal member which connects uprights in a frame or supports a floor or the like. One of the enclosed sides of a stair supporting the treads and

	risers.
Studs	In wall framing, the vertical members to which horizontal pieces are nailed. Studs are spaced either 16 inches or 24 inches apart.
Subfloor	Usually, plywood sheets that are nailed directly to the floor joists and that receive the finish flooring.
Sump	A pit in the basement in which water collects to be pumped out with a sump pump.
Swale	A wide shallow depression in the ground to form a channel for storm water drainage.
Tie	A wood member which binds a pair of principal rafters at the bottom.
Tile Field	Open-joint drain tiles laid to distribute septic tank effluent over an absorption area or to provide subsoil drainage in wet areas.
Toenail	Driving nails at an angle into corners or other joints.
Tongue-And-Groove	Carpentry joint in which the jutting edge of one board fits into the grooved end of a similar board.
Trap	A bend in a water pipe to hold water so gases will not escape from the plumbing system into the house.
Tread	The horizontal part of a stair step.
Truss	A combination of structural members usually arranged in triangular units to form a rigid framework for spanning between load-bearing walls.
Valley	The depression at the meeting point of two roof slopes.
Vapor Barrier	Material such as paper, metal or paint, which is used to prevent vapor from passing from, rooms into the outside walls.
Venetian Window	A window with one large fixed central pane and smaller panes at each side.
Vent Pipe	A pipe, which allows gas to escape from plumbing systems.
Verge	The edge of tiles, slates or shingles, projecting over the gable of a roof.
Wainscoting	The lower three or four feet of an interior wall when lined with paneling, tile or other material different from the rest of the wall.

Wall Sheathing	Sheets of plywood, gypsum board, or other material nailed to the outside face of studs as a base for exterior siding.
Weather Stripping	Metal, wood, plastic or other material installed around door and window openings to prevent air infiltration.
Weep Hole	A small hole in a wall, which permits water to drain off.

Appendix D: Lead-Based Paint Procedures for Federally Assisted Housing Activities

The U.S. Department of Housing and Urban Development (HUD) has implemented a regulation to protect young children from lead-based paint hazards in housing that is financially assisted by funding from the federal government. The "Lead Safe Housing Rule" (***Requirements for Notification, Evaluation and Reduction of Lead-Based Paint Hazards in Federally Owned Residential Property and Housing Receiving Federal Assistance***), was published in the Federal Register on September 15, 1999, amended June 21, 2004. The hazard reduction requirements in this regulation are based on scientific research and the practical experience of cities, states, and others who have been controlling lead-based paint hazards in low-income housing through HUD assistance. The requirements apply to housing built before 1978; the year lead-based paint was banned nationwide for consumer use.

What are the Requirements?

The regulation sets hazard reduction requirements that give much greater emphasis than previous regulations to reducing lead in house dust. Scientific research has found that exposure to lead in dust is the most common way young children become lead poisoned. Therefore the new regulation requires dust testing after paint is disturbed to make sure the home is lead-safe. Specific requirements depend on whether the housing is being disposed of or assisted by the federal government, and also on the type and amount of financial assistance, the age of the structure, and whether the dwelling is rental or owner-occupied. (See definitions in Chapter 2)

Lead-Based Paint Disclosure Rule Guidance

To protect families from exposure to lead from paint, dust, and soil, Congress passed the Residential Lead-Based Paint Hazard Reduction Act of 1992. Section 1018 ("Lead-Based Paint Disclosure Rule") of this law directed HUD and EPA to require the

disclosure of known information on lead-based paint and lead-based paint hazards before the sale or lease of most housing built before 1978. Sellers, landlords, and their agents are responsible for providing this information to the buyer or renter before sale or lease.

Lead Safe Housing Rule Guidance

Specific requirements depend on whether the housing is being disposed of or assisted by the federal government, and also on the type and amount of financial assistance, the age of the structure, and whether the dwelling is rental or owner-occupied.

Housing units to be assisted by CDBG and HOME Programs must be tested for the presence of lead-based paint. All units built before 1978 are subject to the testing requirement. Owners must submit a disclosure regarding visual inspection for “defective paint surfaces” and the proposed treatment of such surfaces, or the owner must submit the results of lead-based paint testing. The owner must reduce the hazard, if testing reveals the presence of lead-based paint, or if defective paint surfaces are found.

A “defective paint surface” is any interior or exterior surface on which the paint is cracking, scaling, chipping, peeling, or loose.

The following are summaries from the HUD regulations and guidebooks on the activities required for levels of rehabilitation work and of methods for hazard reduction.

REQUIRED ACTIVITIES TO ADDRESS LEAD BASED PAINT

Levels of CDBG & HOME Assistance Per Unit	(\$5,000)	(\$5,000 - \$25,000)	(>\$25,000)
Approach to Lead Hazard Evaluation and Reduction	Do no harm	Identify and control lead hazards	Identify and abate lead hazards
Notification	Yes	Yes	Yes
Lead Hazard Evaluation	Presumed LBP and Visual Inspection	• Risk assessment	• Risk assessment
Lead Hazard Reduction	Repair surfaces disturbed during rehabilitation	Repair surfaces disturbed during rehabilitation	Repair surfaces disturbed during rehabilitation
	Safe work practices	Safe work practices	Safe work practices
	Clearance of work site	Clearance of work site	Clearance of work site
	Interim controls	Interim controls	Abatement

	Visual Inspection	Clearance of unit	Clearance of unit
Ongoing Maintenance	For HOME rental properties only	For HOME rental properties only	For HOME rental properties only

Notification: The following notification requirements apply to all units receiving Federal assistance for rehabilitation.

Lead Hazard Information Pamphlet and Disclosure: Occupants must receive the pamphlet “Protect Your Family from Lead in Your Home”. The pamphlet provides educational information describing lead-based paint hazards. Also, if a pre-1978 unit is known to contain lead based paint or lead based paint hazards, owners must notify tenants or prospective purchasers.

Notices of Hazard Evaluation and Reduction: Occupants must be notified of any lead hazard evaluation results (or the presumption of lead based paint/hazards) and of the hazard reduction activities and clearance.

Lead Hazard Evaluation: Each unit must be evaluated to identify lead hazards. The required method of evaluation depends on the level of rehabilitation assistance. Methods include paint testing of surfaces to be disturbed by rehabilitation and conducting a risk assessment. See the above chart for a summary of when each method is required.

Lead Hazard Reduction: The level of hazard reduction required depends on the level of assistance. Specific actions required include:

(a) Repair of Paint Disturbed During Rehabilitation: Includes repairing disturbed paint and applying a new coat of paint.

(b) Interim Controls and Standard Treatments: Includes addressing friction and impact surfaces, creating smooth and cleanable surfaces, encapsulation, removing or covering lead based paint components, and paint stabilization.

(c) Abatement: Abatement involves permanently removing lead based paint hazards, often through paint and component removal, and enclosure.

(d) Safe Work Practices. Safe work practices must be used for all work on all lead based paint surfaces. Safe work practices are required on interior surfaces larger than 2 ft² and on exterior surfaces larger than 20 ft².

(e) Clearance: A certified professional must perform clearance to check if rehabilitated units are safe for future occupants.

(f) Ongoing Maintenance. Ongoing maintenance, monitoring, and cleaning are required for HOME rental properties to have an ongoing relationship with the funding program.

LEAD HAZARD REDUCTION METHODS

Paint Stabilization: This lead hazard reduction method reduces exposure to lead based paint by addressing deteriorated paint on exterior and interior surfaces through repairs, safe paint removal, and repainting or abatement.

Interim Controls: Interim controls temporarily reduce exposure to lead based paint hazards through repairs, painting, maintenance, special cleaning, occupant protection measures, clearance, and education programs. Interim control methods require safe practices and include:

(a) Paint stabilization: All deteriorated paint on exterior and interior surfaces must be stabilized through repairs, safe paint removal, and repainting. Treatment applied to friction and impact surfaces. If lead based paint is found and exceeds acceptable levels or is presumed, the conditions creating friction or impact with surfaces with lead based paint such as those that rub, bind, or crush must be corrected. Examples of this work include re-hanging binding doors, installing doorstops, or reworking windows.

(b) Treatment for chewable surfaces: If a child under age six has chewed surfaces known to contain lead based paint or if lead based paint is presumed, these surfaces must be enclosed or coated so they are impenetrable.

(c) Lead contaminated dust control: All horizontal surfaces that are rough, pitted, or porous such as bare floors, stairs, windowsills, and window troughs must be covered with a smooth, cleanable covering or coating such as metal coil stock, plastic, polyurethane, or linoleum. Carpeting must be vacuumed or rugs must be removed and vacuumed on both sides. Vacuuming must be done using HEPA vacuums.

(d) Lead contaminated soil control: If soil is lead contaminated, interim controls that may be used include impermanent surface coverings such as gravel, bark, and sod as well as land use controls such as fencing, landscaping, and warning signs.

Standard Treatments: In some cases, standard treatments may be conducted in lieu of interim controls on all applicable surfaces, including soil, to control lead based paint hazards that may be present. All standard treatment methods must follow the same safe work practice and clearance requirements that apply to interim control activities. These methods include:

(a) Paint Stabilization: For all smooth and cleanable horizontal surfaces, all deteriorated paint on exterior and interior surfaces must be stabilized through repairs,

safe paint removal, and repainting or abatement. All horizontal surfaces that are rough, pitted, or porous such as bare floors, stairs, windowsills, and window troughs must be covered with a smooth, cleanable covering or coating such as metal coil stock, plastic, polyurethane, or linoleum.

(b) Correcting Dust-Generating Conditions: All conditions that generate lead contaminated dust such as those that rub, bind, or crush surfaces with lead based paint must be corrected. Examples include re-hanging doors, installing doorstops, or reworking windows.

(c) Bare Residential Soil: Soil is addressed using interim control methods including impermanent surface coverings such as gravel, bark, and sod as well as land use controls such as fencing, landscaping, and warning signs.

Abatement: Abatement permanently (at least 20 years) removes lead based paint and lead based paint hazards by removing lead based paint and its dust, or permanently encapsulating or enclosing the lead based paint, replacing components with lead based paint, and removing or permanently covering lead contaminated soil. Encapsulation and enclosure require ongoing maintenance to check their effectiveness.

(a) Encapsulation: Encapsulation means the application of a covering or coating that acts as a barrier between the lead-based paint and the environment and that relies for its durability on adhesion between the encapsulant and the painted surface, and on the integrity of the existing bonds between paint layers and between the paint and the substrate. Encapsulation may be used as a method of abatement if it is designed and performed so as to be permanent (20 years).

(b) Enclosure: Enclosure means the use of rigid, durable construction materials that are mechanically fastened to the substrate in order to act as a barrier between lead-based paint and the environment. Enclosure may be used as a method of abatement if it is designed to be permanent (20 years).

(c) Replacement: Replacement means a strategy of abatement that entails the removal of building components that have surfaces coated with lead-based paint and the installation of new components free of lead-based paint.

(d) Removal: Removal means a strategy of abatement that entails the removal of paint from building components that have surfaces coated with lead-based paint.