

STANDARD SPECIFICATIONS WITH WEATHERIZATION REQUIREMENTS FOR THE REHABILITATION OF PROPERTY

(Exhibit B of the Housing Rehabilitation Guidelines)

(To be used as reference material only, Adopted Codes, Federal regulations/Requirements, Manufacturer's installation instructions, and specifications in Scope of Work and plans shall be followed for each individual project)

THESE SPECIFICATIONS PERTAIN ONLY TO THOSE ITEMS IN THE WORK WRITE-UP FOR THE REHABILITATION CONTRACT.

IN SITUATIONS WHERE THESE SPECIFICATIONS ARE IN CONFLICT WITH CITY CODES, THE MORE RESTRICTIVE REQUIREMENT SHALL APPLY.

Contents

I. YARD AREA

A. Materials

B. Installation

C. Shrubs

D. Drainage

E. Fences and Walls

F. Off-street Parking

II. FOUNDATION

A. Footings

B. Foundation Walls

C. Piers

D. Termiting

E. Ventilation

III. STRUCTURE (Exterior)

A. Siding – Materials

B. Siding – Installation

C. Windows

D. Window Screens

E. Exterior Doors

F. Overhang and Cornices

G. Carpentry

H. Roofing, Sheet metal

IV. STRUCTURE (Interior)

A. Stucco, Plastering and Wall Board

B. Painting and Decorating

V. FIXTURES – PLUMBING

VI. PLUMBING GENERAL

VII. HEATING

A. All heating units

B. Selecting proper furnace size

VIII. ELECTRIC

A. Existing Equipment

B. Wiring Devices

C. Panel Boxes

D. Lighting Fixtures

E. Furnace Connection

F. Cutting, Fitting, Patching

IX. KITCHEN CABINETS, CABINET TOPS, FLOOR COVERING

X. APPLIANCES (Kitchen)

A. Refrigerator

B. Ranges

C. Hoods

D. All Appliances

XI. COOLING EQUIPMENT

XII. WEATHERIZATION STANDARDS

I. YARD AREA

A. Materials, when called for in the work write-up.

1. Lawn materials and ground cover shall be appropriate for the expected use and suitable to local climate, soil conditions, and exposures.
2. Seed quality shall be minimum purity of 85%, minimum germination of 80% and weed content not exceeding a maximum of ½ percent. Seed mixture shall be not less than 85 percent (by weight) annual grasses.
3. Sod shall be fresh cut, taken from a thick stand of permanent lawn grass, reasonably free from weeds and coarse grass. It shall be at least one inch thick, uniform in thickness and cut in strips.
4. Grass sprigs shall be live, fresh, well rooted tufts of cultivated and maintained permanent lawn grass.
5. Plugs or spot sod shall be at least 2 inch diameter with thickly matted root system. They shall be cut from live fresh heavy stands of cultivated and maintained permanent lawn grass.
6. Ground cover shall be healthy stock with well developed crown and vigorous root system.
7. Fertilizer shall be commercial fertilizer consisting of not less than 4 percent nitrogen, 8 percent phosphorous and 4 percent potassium, or as required by the Housing Staff or local soil conditions.

B. Installation

1. Prepare seed or plant bed by applying commercial fertilizer at a rate of not less than 25 pounds per 1,000 square feet and scarifying surface lightly.
2. Seeding – Broadcast seed as recommended by the producer but at a rate of not less than four (4) pounds per 1,000 square feet. Roll with a light roller and water thoroughly with fine spray, avoiding erosion of seed bed.
3. Sodding – Lay sod in strips avoiding wide joints. On slopes start laying at bottom, parallel to contour of slope. Roll sod with a light roller and water thoroughly.
4. Sprigging – Plant sprigs not more than eight (8") inches on center each way in rows of holes or furrows. Firm soil around plants and water thoroughly.

C. Shrubs, when called for in the work write-up.

1. Material
 - a) Plants shall be nursery grown, healthy, well branched and free from scars, injurious diseases and insects.

- b) Plant material shall be suitable to climate, exposure, soil conditions and intended use.
- c) Plants shall be balled and burlapped, bare rooted or container grown. In general, "American Standard for Nursery Stock" published by American Association of Nurserymen shall be used as a guide in determining acceptability of plant material.
- d) Planting soil shall be clean, workable soil, free from stones, lumps, weeds, and debris. It shall be suitable to support plant growth.

2. Installation

- a) Excavation for planting shall be at least 6 inches deeper than depth of root system, ball, or container, Width of opening shall be at least 1 ½ times the width of ball, container, or root spread.
- b) Plants shall be in upright position and at, or slightly below nursery levels, Root ball shall be intact. Exposed roots shall be spread; injured roots shall be pruned. Container shall be removed.
- c) Backfill shall be planting soil firmly compacted around roots and thoroughly watered. An earth saucer shall be formed for watering.
- d) Mulch of peat moss, well rotted manure or native organic material shall be at least 2 inches deep, spread uniformly over saucer.
- e) Pruning; branches shall be cut back to balance root system. Broken and disfigured branches shall be removed.
- f) Staking; trees shall be adequately supported by appropriate attachment to stakes driven in firm ground.
- g) Seasonal limits; planting shall be installed during appropriate season, favorable weather conditions and when ground is frost-free.
- h) Maintenance; planting shall be watered, cultivated and protected until possession is taken by mortgagor.

D. Drainage, when called for in the work write-up.

- 1. Crawl Spaces (new work) – Ground level shall be at least 18 inches below bottom of floor joists and 12 inches below bottom of girders. Where it is necessary to provide access for maintenance and repair of mechanical equipment located in the underfloor space, the ground level in the affected area shall be not less than two (2') feet below floor joists.
- 2. Crawl Spaces (existing structure)

- a) The interior ground level shall be above the outside finish grade unless:
 - (1) *Adequate gravity drainage to a positive outfall is provided, or*
 - (2) *The permeability of the soil and the location of the water table are such that water will not collect in the basement less space. When drainage is necessary, the surface shall be properly sloped.*

3. Foundation Drains

- a) Foundation or footing drains shall be provided around foundations enclosing basements or habitable spaces below grade. Drains shall be installed at or below the area to be protected and shall discharge by gravity or by mechanical means to a positive outfall such as a drainage ditch or swale.
- b) Protect top of joints in drain tile with strips of building paper. Cover drain tile with 6 to 8 inches coarse gravel or crushed rock or blast-furnace slag. Provide approximately 2 inches of aggregate material under tile. Tile shall be plastic, bituminous fiber or transite type.

E. FENCES AND WALLS

- 1.** Existing fences shall be structurally sound and durable or removed, repaired or replaced as specified in the work write-up.
- 2.** New Fences or retaining walls when called for in the work write-up shall be of quality material and constructed in accordance with good building practices.

F. OFF-STREET PARKING

- 1.** When called for in the work write-up, shall comply with the current City Code and Ordinances.
- 2.** Parking Space Design
 - a) 20 feet per space, minimum length
 - b) 10 feet per space, minimum width
 - c) Two (2) parking spaces per dwelling unit
- 3.** Driveway Design
 - a) Driveway shall extend from street or alley pavement or curb line to garage, carport or parking space.
 - b) Minimum width, 9 feet.

- c) Driveway entrance shall have a flare or radii adequate for safe and convenient ingress and egress.
- d) Vertical transition shall prevent contact of car undercarriage or bumper with surface.

4. Construction

- a) Subgrade shall be well drained, uniformly graded and compacted to prevent harmful differential settlement.
- b) Pavement shall be concrete, bituminous pavement or other, appropriate local road materials.

c) Concrete Pavement

(1) Concrete shall be 2,500 psf. ready-mix.

(2) Minimum thickness is four (4") inches nominal.

(3) Provide an expansion joint at public walk or curb and at garage or carport slab.

(4) Provide an expansion joint at approximate 20 feet intervals.

(5) Provide a smooth finish surface true to cross-section and grade. Brush lightly for nonskid surface.

(6) Concrete shall be kept moist for a period of three (3) days to insure proper curing.

d) Bituminous Pavement

(1) Base shall be of crushed stone, gravel or other appropriate, durable road materials, properly compacted.

(2) Wearing surface shall be bituminous concrete. Minimum compacted thickness, 1 ½ inches.

5. Existing paved areas – required to be repaired shall be done in accordance with good construction practices as follows:

- a) Replaced areas (patches) shall be of same type material as existing.

- b) Small cracks in a concrete slab shall be thoroughly cleaned out and caulked with a quality vinyl cement patch material for a water tight seal.
- c) Large cracks in a concrete slab shall be thoroughly cleaned out, dampened, treated with a bonding agent and patched with a Portland cement, sand mix. Cracks shall be thoroughly filled and finished to match existing texture as close as possible.
- d) Patched areas – broken pieces shall be completely removed and replaced as for new work. Skim coating or topping shall not be acceptable.
- e) All Weather Material – Other appropriate durable road materials properly placed so as to be durable under the use and maintenance contemplated.
- f) Paved areas to be provided/replaced as required in the work write-up shall be treated as for new work.

I. FOUNDATION

A. FOOTINGS

- 1. New Work – General – When required by the work write-up, shall comply with the current adopted City Codes and Building Codes.
- 2. Concrete shall be placed continuously where possible or provide construction joint with dowels for transfer of stress. Spade and rod concrete thoroughly between forms and reinforcing. Allow time for strength of concrete to develop before subjecting to loads.
- 3. In freezing weather, concrete shall be placed as soon as possible after excavation of trenches and shall be protected against freezing until hardened.
- 4. Existing
 - a) Settlement and cracked: Provide pier on both sides of footing and tunnel across under footing.
 - b) Provide two #5 reinforcing rods in each hole and across under footing; fill with concrete.
 - c) Sections of footings/walls to be removed shall be treated as for new work.
 - d) Reinforcing rods (if any) shall be exposed in existing footings for tie on of additional reinforcing.

B. FOUNDATION WALLS

- 1. Construction – Masonry Walls

- a) Masonry mortar shall consist of one part masonry cement (Dewey or equal) to 2 ½ to 3 parts clean washed sand.
- b) No masonry work shall be done when the temperature of the surrounding air is below forty degrees Fahrenheit.
- c) All joints shall be completely filled with mortar.
- d) All brick, stone or block used shall match adjacent work and samples shall be approved by the Owner or his Agent before starting the work, unless the work is to be painted or covered.
- e) Soft salmon type brick shall not be allowed.
- f) Tuck pointing shall be done only after the joints have been raked out to a minimum depth of one-half (½") inch and wetted.
- g) All damaged, loose or salmon brick, in area to be rebuilt, must be removed until sound brickwork is encountered.
- h) New brick patches shall be toothed into and match in size, joints and bond the existing work.
- i) Veneer brickwork masonry shall be tied to frame wall with galvanized wall ties on every third course, 32" o.c. installed per product specification and instruction.
- j) All masonry veneer shall conform to the above specifications.

(1) All new retaining walls over 24" high shall have ½" steel dowels placed every two (2') feet and imbedded at least six (6") inches in the footing.

(2) Retaining wall footing shall be at least eight (8") inches wide and 18" deep with at least one-half (½") inch steel re-bar.

(3) All retaining walls over 24" high shall have weep holes at grade level at five foot intervals.

2. Top Course Capping

- a) Walls of hollow masonry shall be capped with four (4") inches of solid masonry or concrete or shall have cells of top course filled with concrete or grout. Capping may be omitted where a sill plate which bears on both inner and outer face shells is provided.

- b) Where a continuous reinforced concrete cap is required for termite protection, see termite section.
- c) Cap walls of hollow masonry units under girders, minimum thickness, and the six (6") inches in addition to the four (4") inches minimum thickness.

3. Joints

- a) Maximum average thickness of mortar joints, one-half (1/2") inch. No joint shall be more than three-fourth (3/4") inch in thickness.
- b) Solid masonry shall be laid in full bed and head joints.
- c) Hollow masonry shall be laid with mortar applied to bed and head joints of face shells except that first course shall be laid in full mortar bed.
- d) All exterior joints in walls enclosing basements or habitable spaces shall be tooled unless parged.

4. Bonding

- a) Walls shall be bonded or anchored to intersecting wall.
- b) Porch and entrance platform slabs and areaways shall be supported at wall.

5. Sill Plate Anchorage – Wood frame floor and wall construction shall be anchored to exterior foundation wall as follows:

- a) Masonry Walls – One-half (1/2") inch bolts with two (2") inches washer or equivalent embedded not less than 15 inches and fully grouted.
- b) Maximum spacing, eight (8') feet o.c. with not less than two bolts in each sill piece. End bolts shall not be more than 12 inches from end of piece. Where earthquake design is required, maximum spacing, six (6') feet o.c.
- c) Frame walls – bolts shall be embedded in concrete a minimum seven (7") inches and maximum spacing of six feet (6'0") o.c.

C. PIERS

1. Free Standing Pier Construction

a) Interior Piers

(1) Piers supporting interior construction and not subject to wind may be concrete, solid masonry or hollow masonry. Cap piers of hollow masonry with four (4") inches of concrete, solid masonry or fill cells of top course with concrete or grout.

(2) Maximum height above grade unless reinforced:

(a) Concrete or solid masonry, 10 times their least dimension.

(b) Hollow masonry – Four (4) times their least dimension.

b) Pier Size – Size and spacing of piers and size of footing shall be as required, to support design load.

D. SLAB FLOORS

Where slab floors are required, they shall be constructed in conformance with the current adopted codes.

E. TERMITE PROTECTION

1. Methods of Termite Protection

a) Chemical Barriers

(1) Soil Treatment

(2) Pressure treated wood

b) Physical Barriers

(1) Metal shields

(2) Concrete foundations

(3) Monolithic concrete slab

(4) Reinforced concrete foundation cap

2. All stumps, roots, fallen timber and other wood or wood-product debris shall be removed from building site before completion.

3. Concrete porch floors, entrance platforms, planters, fences, screens, or other appurtenances shall be separated from the main structure or be protected against entrance of termites.

4. Soil Treatment

Application (Basement or Crawl Space Construction) – Apply to critical areas along foundation walls, around piers and under slabs of porches and entrance platforms.

F. VENTILATION

Natural ventilation of spaces such as enclosed basement less spaces shall be provided by opening where foundations are solid, there shall be provided at least four (4) foundation vents located near the corners of the basement less space, drawing an aggregate free ventilation space per 150 sq. ft. of floor area.

III. STRUCTURE EXTERIOR

A. SIDING - MATERIALS

1. Wood Siding, Shingles, and Shakes

a) Siding

(1) Siding shall comply with the specific grading requirements of the association recognized in the trade as covering the particular species. Grade shall be suitable for its intended use and commensurate with the class of dwelling under consideration.

(2) Moisture content – Material shall be kiln-dried.

b) Shingles and Rebutted-rejointed Shingles-Roof or Wall

(1) Shingles shall be edge grain Red Cedar, Cypress, or Redwood complying with C.S. 31, or rebutted-rejointed shingles complying with C.S. 199.

(2) Minimum Grade

(a) Roof Shingles, No.1

(b) Wall shingles, No. 1; No. 2 may be used for certain exposures. Undercoursing may be No. 3 or under-coursing grade.

(c) Each bundler of shingles shall be labeled with the grade, species and compliance with applicable Commercial Standard.

c) Plywood

(1) Exterior type (EXT.) This type shall meet requirements for exterior type plywood in the Commercial Standards. In Hardwood plywood, exterior type is termed "Technical" or "Type I".

(2) Structural-Interior type (STRUC.-INT.) This type shall meet the requirements for interior type plywood in the Commercial Standard and in addition shall:

(a) Comply with specific requirements in the Commercial Standard for mold-resistance, resistance to elevated temperature and other requirements relating to sheathing use.

(b) Not permit heavy white pocket as defined by the Commercial Standard in either face or back veneers.

(3) Structural-Interior type with Exterior glues. This is improved interior type plywood recommended for interior-structural uses. Such plywood shall meet the requirements of Structural-Interior type except that adhesive shall meet requirements for Exterior type and shall be appropriately marked.

(4) Interior type (INT.). This type shall meet the requirements for interior type plywood in the Commercial Standard. In Hardwood plywood, interior type is termed "type II".

(5) Overlaid Plywood – a resin-impregnated facing over exterior type of plywood especially suitable for painted finishes.

d) Hardboard – Hardboard shall comply with F.S. LLL-H-35 or C. S. 251-63. Hardboard shall be of the following types for the locations indicated.

(1) Exterior wall finish and other surfaces exposed to weather, tempered type.

(2) Interior wall finish, baths or kitchens, Standard or tempered types.

(3) Other interior wall finishes, Standard, tempered or service types.

(4) Underlayment, Service type.

e) Aluminum Products – Minimum Thickness and Tensile Strength shall be:

(1) Siding (backed) sheathed walls...Min. thickness .024 inches and Min. tensile strength 19,000.

(2) Siding (unbacked) sheathed walls...Min. thickness .024 inches and min. tensile strength 19,000.

B. SIDING - INSTALLATION

1. Wood Siding – Nail siding to each stud with corrosion resistant nails. Length of nail shall be that which will provide at least 1 inch penetration into stud.

2. Plywood Siding – Plywood shall be Exterior type.

a) Panel Siding (large sheets)

(1) Minimum thickness and maximum stud spacing shall comply with the following:

Min. thickness	Max. stud spacing	
-inches-	-inches o.c. - over shtg.	direct to framing
3/8.....	24	16
1/2.....	24	24

(2) Specialty siding with special surface treatment such as V-groove, channel groove, striated, brushed, rough sawn, etc., shall comply with specifications for 303 Specialty Siding published by the American Plywood Association.

(3) Nail siding to each bearing with corrosion resistant nails. Length of nail shall be that which will penetrate stud at least 1 inch if the sheathing is used and 1 ½ inches if sheathing is omitted.

(4) Nail six (6") inches o.c. around all edges and 12 inches o.c. on intermediate members.

(5) All joints shall occur over studs or solid blocking. Joints shall be filled with mastic caulking unless they are of interlapping type or battens are applied over joints. When siding is applied over sheathing, caulking may be omitted if edges are treated with a water repellent containing at least 5 percent pentachlorophenol.

3. Aluminum Siding

- a) Siding shall be installed over sheathing in accordance with the manufacturer's recommendations.
- b) Nail with aluminum nails. Nails shall penetrate support 1 inch.
- c) Provide for the escape of water vapor by ventilating each space behind siding. Ventilation may be obtained by weather protected horizontal opening or by the installation of siding over furring.
- d) Starter strip of siding shall be separated from foundation by a layer of sheathing paper or by a heavy bituminous coating.
- e) Ends of siding abutting wood trim shall be squarely cut and tightly fitted. Siding over heads of opening shall be installed as flashing and drip unless separate aluminum flashing is used.

C. WINDOWS

1. Wood – Windows shall comply with the following:

- a) Standard Stock Ponderosa Pine Windows, Sash and Screens—Certified Standard 163.
- b) Standard Stock Double-hung Wood Window Units—C.S. 190.
- c) Standard Stock Ponderosa Pine Insulating-Glass Windows and Sash—C.S. 193.
- d) Standard Stock Woos Awning Window Units and Projected Awning and Stationary Sash Units—C.S. 204.

- e) Standard Stock Wood Casement Window Units—C.S. 205.
- f) Horizontal-Sliding Wood Window Units—C.S. 264 or C.S. 265.
- g) Single-hung Wood Window Units—C.S. 266.

2. Wood Frames for windows shall comply with C.S. 208.

3. Aluminum Windows

- a) Material – Window frame, sash and sill shall be made of a heat-treatable wrought alloy having a minimum ultimate tensile strength of 22,000 psi.
- b) Design – Design of windows shall be suitable for the specific use and shall equal or exceed the A1 specifications for residential windows as published by the Architectural Aluminum Manufacturers' Association.

c) AAMA Specifications

(1) Section 1 Part B, of the AAMA specification, except as modified herein, is also a part of these standards.

(2) In Areas subject to high wind conditions, the windows shall also meet the requirements for "H" series windows, as outlined in section 3 of the AAMA specification.

d) Labeling

(1) Each window unit shall bear the label of independent inspection agency that maintains continuing control, testing and inspection over the quality of the window unit. The inspection and testing program of the independent inspection agency shall be in accordance with the procedures set forth in ASA Z34.1-1947, R 1959, "American Standard Practice for Certification Procedures" and shall be acceptable to FHA.

(2) The label shall identify the window unit as to type, series, manufacturer's name or symbol and as in compliance with the applicable AAMA standard.

4. OR to comply with the current energy standards or codes.

D. WINDOW SCREENS – shall be of Aluminum or wood frame. Mesh shall be 16x16 or 18x14 per inch.

E. EXTERIOR DOORS

1. Thickness of wood doors shall be not less than 1-3/4 inches except that service doors and garage doors may be 1-3/8 inches.

2. Hardware shall be installed. Use three butts on all hinged exterior doors. Install suitable lock on each door (see item 7d under Carpentry).
3. Doors shall be made weather tight. A watertight threshold shall be provided. Doors shall be weather stripped when required to prevent infiltration of dust.
4. Provide security doors in those areas where security doors are customarily provided.
5. All doors, including storm or security doors, opening outward shall be provided with a safety door check.

F. OVERHANG AND CORNICE

1. Exterior Wood Surfaces – Exterior wood surfaces shall be finished as follows except that edge grain redwood or red cedar may be left unfinished when acceptable to City Housing Staff.
2. Wood Siding, Millwork, and Trim
 - a) Knots and resinous wood shall be sealed with a prepared knot sealer or aluminum paint prior to priming. Any nail holes or cracks shall be filled with putty.
 - b) Apply a suitable prime coat to all surfaces to be painted before or immediately after installation. Apply primer at coverage rate recommended by manufacturer. Primer shall be formulated specifically for application to unfinished wood. Certain finish coats are formulated to serve as primers and may be used when applied in accordance with manufacturer's recommendations.
 - c) Apply finish coats in a workmanlike manner providing a smooth surface.
 - d) Top and bottom of exterior wood doors, casement sash, awning sash, and bottom of double hung sash shall receive two coats of paint or sealer.
 - e) Paint used above masonry surfaces shall be low chalking type to avoid streaks and stains.
3. Wood Shingles Shakes or Rough sawn Siding
 - a) Sidewalls – Apply two coats of oil stain, pigmented oil stain or oil shingle paint. Factory applied finishes may be used provided qualities of durability, resistance to fading and color variation are equivalent to that obtained with field application.
 - b) Roofs – May be left unfinished or finished in manner similar to sidewalls.

4. Exterior Plywood

a) Sanded and overlaid surface

(1) Prior to erection seal all edges with a heavy coat of a house paint primer, exterior aluminum house paint primer, exterior aluminum house paint or primer, or white lead linseed oil paste.

(2) Apply a suitable prime coat to all surfaces to be painted. Apply primer at a coverage rate recommended by manufacturer. Primer may be a specially prepared primer for plywood, a ready mixed exterior house primer thinned with approximately 1 pint raw linseed oil, an exterior aluminum house paint or an aluminum primer compounded or 1-3/4 to 2 pounds of aluminum paste or powder in one gallon of long oil spar varnish, mixed just prior to application.

(3) Unsanded surface (grooved-siding) – Apply at least two coats of an opaque penetrating finish such as a pigmented oil stain. Ordinary house paint or clear finished shall not be used. Oil shingle and shake paints may be used formulated to provide good penetration. In grooved siding, plies exposed to view shall be finished.

(4) Decorative surface (striated, embossed, etc.). Finish same as sanded surface.

b) 24" on center when 25/32" flooring is to be installed at right angles to the joist over diagonal sub-flooring; or, 16" on center when 25/32" flooring is to be applied directly to the joist; or 16" on center when any lesser thickness of finish flooring is to be laid over a subfloor.

c) Notching and cutting of structural members shall be done in accordance with adopted CITY CODE.

5. Sub-flooring may be plywood, OSB or common boards.

a) Plywood/OSB shall be one-half (1/2") inch minimum where 25/32" finished flooring is to be laid; 5/8" where resilient flooring is to be laid and joists are not over 16" on center.

G. CARPENTRY

1. Framing Lumber shall be Douglas Fir, utility grade or better.

a) Allowable spans for new work for floor, roof, and ceiling joists shall be as specified in the current adopted CITY CODE.

- b) Bearing partition stud walls shall not be less than 2"x4" studs, set with long dimension perpendicular to the wall, 16" on center.
- c) Floor joist spacing shall be no more than:
- d) Nail Plywood/OSB sub-floor to joist at each bearing with 8d cemented or galvanized or 6d threaded nails spaced 6" on center along all edges and 10" on center along intermediate members.
- e) Install Plywood/OSB with outer plies at right angles to the panels bear on different joists.
- f) Common boards used as sub-flooring shall be not over 8" wide or less than three-fourth ($\frac{3}{4}$ ") inch thick when laid on joists spaced 16" on center, and shall be laid diagonally.
- g) Nail boards with 8d common nails or 6d threaded nails providing two nails in 4" and 6" boards and three nails in 8" boards.
- h) Sheathing shall be as specified under "Sub-flooring".

2. Underlayment shall be 3/8" inch structural grade plywood, 3/8" particle board or 3/8" untempered hard-board placed with smooth side up. Nail underlayment with cement coated, resin coated, or ring groove nails placed on four (4") inches centers on all edges and over the face of each piece.

3. Finish Flooring as called for on the work write-up for type of finish and material.

4. Finish Lumber – shall be a species suitable for its intended use; kiln dried #1 dimension, free from tool marks and other objectionable defects.

Interior trim, unless otherwise specifically called for, shall match existing adjacent or adjoining work in design and dimension as closely as possible.

5. Doors – where required by the work write-up shall be:

- a) Exterior Doors shall be approved for exterior use.
- b) Interior Doors as per approved work write up.
- c) Of stock sizes and designs unless work write-up calls for them to match existing door or openings as close as possible.
- d) Installation of the jamb, when required in the work write-up, casing (both sides), butt hinges and lock set and any required repairs to the adjoining surfaces. All and any required repairs to the adjoining surfaces to be finished as per work write-up.

e) Storm Doors – Aluminum Screen Doors – where required by the work write-up and as specified in work write-up.

f) Garage Doors (overhead door type) as per work write up and installed per manufacture’s specifications.

6. Hardware – when required by the work write-up shall be put in operable condition or provided as follows:

a) Interior doors – passage lock sets shall be as specified in work write-up.

b) Bathroom, Bedrooms, toilet compartment doors shall be provided with “privacy lock” sets.

c) Closet Doors shall be provided with “passage lock” sets.

d) All exterior doors as per specification or approved write up.

7. Window Frames, Sill, Sash, Trim and Hardware – shall match existing work in design and dimension unless otherwise specified. See Section on Repairs of the general conditions and the work write-up.

a) Where sash counter balances are to be replaced, friction guides are acceptable as a substitute. Cotton cord replacement is acceptable.

b) Positive locking devices shall be provided on all windows which are accessible from the exterior and all existing interior finish hardware shall be made operative or replaced.

c) Wood Window Units – Shall be single or double hung units LSI grade or equal with aluminum screens. See write-up for size and number of lites; (White Pine jamb, sill and casing, spring balanced and weather-stripped).

d) Aluminum Window Screens – Storm Windows – as specified in work write-up, with aluminum screen wire, wool pile weather stripping.

e) Aluminum Replacement Windows – as specified in work write-up.

f) Glass

(1) Windows shall be glazed or reglazed, where required by the work write-up with single strength clear glass, grade B.

(2) Putty shall consist of pure linseed oil, pure whiting, and at least 10 percent pure lead, natural color, or standard grade glazing compound, Dap or equal.

(3) Prime all wood sashes before the placing of putty or glazing compound.

(4) Glass shall be bedded in putty and secured in place with glazier points and face putties. All excess putty shall be removed and all glass left clean.

8. Exterior Cornices shall be repaired, removed or replaced as required in the work write-up.
 - a) Cornices to be repaired shall have all rotted or deteriorated parts removed and replaced with new parts matching original work as closely as possible.
 - b) Where cornices are to be removed, the work write-up will describe the treatment of the wall exposed by such removal.
 - c) Where a new cornice is called for in the work write-up, it shall be composed of a minimum of three (3) moulding members, a plain fascia, a soffit, and a shingle moulding.
9. Linen Closet – where required by the work write-up shall be:
 - a) According to the dimensions provided, and
 - b) According to the plan if provided.
10. Clothes Closet – where required by the work write-up shall be:
 - a) According to dimensions provided and
 - b) According to plan if provided.
 - c) Construction – 2"x4" studs max. 24" on center, ½" sheetrock both sides applied as per manufacturer's specifications, taped and bedded, ready for final finish.
 - d) Door(s) linen closet as per write up specification or plan.
 - e) Hardware – as stated per item 7, Hardware.
 - f) Shelf and Rod – Minimum of one shelf and rod with at least 8" clear space above shelf. The center of the rod shall be a minimum of two (2") inches from the bottom of the shelf. Shelf - minimum width shall be 12" nominal dimension; shelf and rod over four (4') feet in length shall have a center support.

H. ROOFING, SHEET METAL, CAULKING

1. Roofing will be per adopted City Code.
 - a) Built-up roofs – See specification and warranty in work write-up.

- b) Where "recoating of existing roof" is called for in the work write-up, all flashings shall be checked and made watertight; all bubbles in existing roofing shall be cut out and secured and at least one coat of tar and one ply of saturated felt shall be applied.
 - c) Composition shingles – New 235# composition shingles shall not be laid over more than two previous shingle layers and shall be installed in exact accordance with the manufacturer's directions, and shall be "C" class shingles.
 - d) Any full or split roll roofing shall be applied in accordance with the manufacturer's directions.
 - e) Wood Shingles – All new roofs with slopes of four (4") inches in 12 to five (5") inches in 12 shall be installed with no more than 4 ½" exposed and shall be installed over more than one existing wood shingle roof.
 - f) Tile roof
 - g) Metal roof
2. Gutters – shall be no less than 26 gauge and 5" galvanized metal securely fastened.
 3. Downspouts – shall be no less than 26 gauge and 5" galvanized metal securely fastened.
 4. Caulk around all door and window frames, window panes, or other locations where called for or needed to make a watertight job.
 - a) Material and application – Use standard commercial brands of caulking compound delivered to the job in unopened packages, applied in exact accordance with the manufacturer's directions. Gun application for gun grade or knife application for knife grade.

IV. INTERIOR STRUCTURE

A. STUCCO, PLASTERING AND WALL BOARD

1. Stucco
 - a) Mortar for all applications shall consist of one part of Portland Cement to not less than 3 nor more than 5 parts used but shall not exceed 10 percent by weight nor more than 25 percent by volume of the cement used.
 - b) The temperature of the surrounding air shall not be less than 40 degrees Fahrenheit during application and for at least 48 hours thereafter.
 - c) Surfaces to be stuccoed shall be covered with 3.4 per square yard metal lath lapped, at end and sides a minimum 1" and nailed 16" o.c. vertically and 6" o.c.

horizontally. Wood surfaces to be covered with 15 lb. felt prior to application of metal lath.

d) Apply in 2 or 3 coats – the final coat shall not be applied sooner than 7 days after the preceding coat. Before applying the final coat, the surface shall be dampened evenly to obtain uniform suction.

(1) Apply 2 coats on masonry to a minimum thickness of 5/8".

(2) Apply 3 coats over wood surfaces to a minimum thickness of 7/8".

e) One-coat application will require prior approval from the Rehab Specialist.

2. Interior Floors

Floor finishing when called for in the work write-up shall be done in the following manner.

a) Sand floors

b) If open grain wood, apply filler, and wipe off excess.

c) Finish flooring with: (owner's selection)

(1) One coat sealer and 2 coats wax; or

(2) stain and 2 coats wax; or

(3) one coat shellac or varnish and one coat wax; or

(4) two coats shellac or varnish; or

(5) two coats floor paint and one coat wax.

d) Where carpeting is to be used (wall to wall) flooring may be left unfinished.

3. Carpeting

When called for in the work write-up shall be FHA approved type, color and style to be selected by owner.

a) Gypsum Lath shall not be used as a base for Portland Cement Plaster.

b) Gypsum Lath shall be applied with long dimension across supports and with end joints staggered.

(1) Nailing – Nail with 12 or 13 gauge lathing nails approximate 3/8" heads spaced not more than 4" on center with a minimum of 4 nails in each lath. Use 6 nails for 24" lath. Length of nail shall be that which will provide at least 1" penetration in horizontal supports and 3/4" penetration into vertical supports.

- c) Wood Lath – Existing wood lath shall be securely nailed and wetted down, prior to application of plaster.
- d) Metal Lath – shall be applied according to manufacturer's directions, whether used for patching or new work.

4. Wall Board – shall be tape joint gypsum board, carefully fotted and sized prior to nailing in place.

- a) Nails shall be driven with their shanks perpendicular to the face of the board and seated below the surface of the board without breaking the paper, in accordance with the adopted IBC.
- b) Tape Mix shall comply with the recommendation of the manufacturer. A minimum temperature of 55 degrees Fahrenheit shall be maintained in the room where the work is done until the cement is completely dry.
- c) Tape Application – Follow manufacturer's directions.

(1) Over joints the tape shall be embedded in cement covered with a thin layer of cement. A second and third coat shall be applied. Each coat shall be dry before applying the next coat. Each coat shall be featheredged and extended beyond the previous coat, approximately 2". The finish coat shall be sanded lightly and any imperfections filled in prior to any painting or decorating.

(2) Cover nails – check to see that all nails have been driven so that their heads are below the surface of the board, leaving a dimple in the surface without breaking the paper. Cover nails with 3 applications of cement, allowing time to dry between each coat. The final coat shall be sanded lightly before application of paint or other decoration.

(3) Inside corners shall be reinforced with tape imbedded in cement finished as specified, "Over Joints."

(4) Outside corners shall be protected by wood moulding, or metal corner reinforcement as required in the work write-up. Metal corner reinforcement shall be finished with two coats of cement, as specified.

B. PAINTING AND DECORATING

1. Preparation of surfaces

- a) Wood surfaces to be painted shall be cleaned by best means possible to remove loose and scaly paint and rough spots and any obvious oil and/or grease that may be covering existing wood or paint. Where previous coats have chipped and peeled, the edge shall be sanded down to obtain a smooth surface before new paint is applied.
- b) Plaster or Wall Board surfaces to be painted or papered shall be sound, smooth and free from holes, cracks, or irregularities. All loose wall paper shall be entirely removed unless otherwise specifically noted in the work write-up. All gypsum board (sheetrock) shall be sized before all paper application.
- c) No paint shall be applied until all nail holes have been filled and sanded, and all defects in woodwork have been eliminated as much as possible.

2. Application

- a) Do not apply oil base exterior or Alkyd base paints in damp weather.

(1) Apply all exterior paints to manufacturer's specifications, for full coverage.

(2) Finished work shall be uniform, of approved color, smooth and free from runs, saps and defective brushing or rolling. All edges adjoining other materials or colors shall be sharp and clean cut.

(3) Metal Surfaces

(a) Remove all dirt, grease etc.

(b) Acidize all new galvanized metal or rough surface up prior to paint application.

- b) Number of coats to be applied

(1) New Wood – 1 prime, 2 finishes or paint with primer (2 finishes)

(2) Portions sanded to bare wood – 1 prime 2 finish or paint with primer (2 finishes)

(3) Existing painted surfaces – one or two coats as called for in work write-up, in order to secure acceptable finish.

3. Exterior Wall Paint – All exterior paint shall be as specified in work write-up.

All paints to be shelf stock delivered to job in sealed labeled gallon containers and apply 1, 2 or more coats to secure full coverage according to manufacturer's specifications after

inspection of material by Rehabilitation Specialist. Where primer is required, see work write-up. Owner's selection of colors.

4. Interior Paint – All interior paint as specified in work write-up. All interior paint shall be of a single color and applied to secure full coverage. Walls and ceilings in kitchen and bath and all interior trims shall be semi gloss enamel.

V. FIXTURES (PLUMBING)

VI. All plumbing fixtures which are to remain shall be placed in good working order as required by the work write-up. Replace missing or damaged parts and trim or replace entire set.

A. WATER SUPPLIES – *to each water closet shall have stop valves to permit removal without service cut off.*

B. *All plumbing fixtures and trim called for in the work write-up shall be of standard grade. When required the brand and model number in each case shall be specified in the work write-up.*

C. *Within the above limitations, the following individual criteria shall apply:*

- 1.** Bathtub: White, minimum 4 ½ foot tub, fiberglass/tub and shower complete with faucets, trip waste, and shower head.
- 2.** Lavatory: Cultured marble top – see work write-up for dimensions – owner to select color.
- 3.** Water Closet: White, free standing, vitreous china, close coupled, reverse trap bowl, complete with tank, cover, and fittings.

VII. PLUMBING (GENERAL)

All plumbing work and material shall meet the adopted City Code.

A. WATER HEATERS – *Water heaters shall be installed as per adopted City Code. Capacity shall be specified in write-up. A pressure relief valve to the exterior shall be provided on all installations.*

B. ACCESSORIES – *When called for in work write-up:*

- 1.** Shower curtain rod.
- 2.** Toilet paper holder at water closet.
- 3.** Towel bar.

4. Mirror and medicine cabinet or equivalent enclosed shelf space.

VIII. HEATING

A. ALL HEATING UNITS – to be installed according to Manufacturer’s specifications.

1. Central Heating Plant System – existing and to remain, shall be thoroughly cleaned and all worn and/or damaged parts, fittings, and accessories replaced, and the entire system tested and left in perfect working condition, including thermostat, wiring, and all necessary controls.
2. Central Heating, New System – when called for in the work write-up, shall comply with the adopted City Code and manufacture’s specifications and in accordance with the utility company requirements.

IX. ELECTRIC

All electrical materials and equipment and the method of installation thereof shall be in conformity with the provisions of the adopted City Code.

A. EXISTING EQUIPMENT

1. Existing electrical equipment throughout the building which becomes superfluous shall be disconnected and removed.
2. Existing materials and equipment found to be in good condition but not complying with code requirements may be upgraded to meet the adopted City Code.
3. Existing materials and equipment found to be in poor condition shall not be upgraded. Structures in this category shall be completely rewired for compliance with the adopted City Code.

B. WIRING DEVICES

1. All switches, single pole, three, and four way, shall be any brand which is U.L. approved.
2. Laundry – shall have a separate circuit.
3. Wall switches – are required in every room and for all outside lights.
4. Any appliance – over 10 amps – must have a separate circuit.
5. Plates – for all switches and receptacles shall be U.L. approved non-conductive type (including screws).
6. Service Feeder and Safety Switches – shall be U.L. approved. GFCI and arch fault protection shall be installed per adopted City Code.

C. PANEL BOXES

1. Panel Boxes – shall be enclosed in 16 gauge or code sheet steel cabinets with doors and catches providing a minimum of 12 circuit capacity for habitable structures of 500 square feet or more.
2. Panel Circuits – shall be protected by automatic circuit breakers minimum 100 AMP service or as specified in work write-up.

D. LIGHTING FIXTURES – *The Contractor shall provide all lighting fixtures complete with lamps, glassware, mounting hardware, frames, and trim, stems ballasts, sockets, etc. to provide a complete operating fixture at each location called for in the work write-up.*

E. FURNACE CONNECTION – *Electrical connections required for the heating plant are to be made by this contractor and included in the heating contract.*

F. CUTTING, FITTING AND PATCHING – *All cutting of walls, floors, ceilings, partitions, etc., for the passage of electrical work; closing of superfluous openings around same in connection with the work under this item; including the removal of all debris caused thereby, shall be performed by the contractor performing the electrical work.*

G. Note: *All electrical work shall conform to the current Electrical Code, except where exceeded by these basic general specifications.*

X. KITCHEN CABINETS, CABINET TOP, FLOOR COVERING

A. READY-MADE CABINETS – *Where required and specified in the work write-up.*

B. CABINET TOP – *shall be Formica or equal laminated plastic with 1-1/8" minimum Formica self-edge. Backsplash shall be Formica or equal laminated to 3/8" plywood or suitable material. See work write-up for height. Owner, to select color.*

C. FLOOR COVERINGS – *All vinyl floor covering shall be specified in work write-up with top set 2 inch rubber base. Vinyl tile is to be 1/16". Carpets shall be 20 ounce, double jute backed. Owner's selection of color. Single color for entire house.*

D. RANGE HOODS – *Range hoods called for in the work write-up shall specify size and color.*

XI. COOLING EQUIPMENT

When an air conditioner or evaporative cooler is called for, it shall be as specified in the work write-up, installed in conformance with the adopted City Code.

XII. WEATHERIZATION STANDARDS

All OOHR projects shall comply with the ADOH Guidance on New Weatherization Standards. A pre-construction energy audit and a post construction compliance inspection will be conducted and coordinated between a Certified Weatherization Professional or a certified

Building Professional Institute Professional and the Housing Rehabilitation Specialist. When applicable, the following standards will apply to the OOHR project. HOME funded projects will meet weatherization requirements.

A. AIR BARRIER/THERMAL BARRIER

1. The whole house leakage should not exceed .35 ACH.
2. The Thermal Barrier must be installed in complete contact with and effective air barrier, and to IECC 2009 (or adopted) installation standards and levels specific to the climate zone the home is in as defined by the IECC Climate Map.

B. WINDOWS

Any replacement windows must meet the minimum requirements for IECC 2009 (or adopted) codes per the Climate Zone Map.

C. ROOFING

1. Whenever a roof replacement is scoped that involves removing the existing decking, the new decking must have a factory installed radiant barrier. (Climate Zones 2, 3, 4), (use Climate Zone 2 for Casa Grande).
2. When replacing shingles, special consideration should be given to "high reflectivity and high emissivity" shingles in Climate Zone 2.
3. All powered attic ventilation fans must be removed, (including solar powered).

D. ROOM PRESSURE BALANCING

No room in the home (including CAZ) shall exceed +/- 3Pa of pressure. In the case where passive return or a live return system must be installed to correct these issues, the goal should be to accomplish as close to a zero Pascal (0.0Pa) as possible.

E. HVAC STATIVE PRESSURE

1. *Static pressure test* must be taken after all work is complete and the pressures must not exceed manufacturer's specifications.
2. AC systems should all be verified to have proper charge and airflow by a licensed AC technician.

F. DUCT LEAKAGE

1. All accessible joints, seams and connections in the duct system must be sealed using UL 181 approved duct mastic.

2. All Boot-Sheetrock gaps must be sealed.
3. All supply or return ducts on the roof that are exposed to direct sunlight must be painted with white elastomeric paint after they are sealed.

G. AIR CONDITIONING

A Manual J must be completed and followed reflecting any of these listed measures that will be done to that home and the report submitted to the Housing Rehabilitation Specialist for any new Air Conditioning replacement.

H. DUCT REPLACEMENT

In the case of a comprehensive duct System replacement in conjunction with an AC replacement, a Manual D report must be followed and a copy of that report given to the Housing Rehabilitation Specialist.

I. VENTILATION

Ventilation must be installed to meet the ASHRAE 62.2-2010 Standards.

J. APPLIANCES

All appliances should be replaced with Energy Star approved appliances.

K. HOT WATER SYSTEMS

1. When replacing an electric water heater in a garage with a home occupancy of no less than 4 people, a Hybrid Heat Pump water heater must be used.
2. Low flow faucet aerators and shower heads (1.5GPM shower head) must be installed in all faucets and showers.

L. LIGHTING

Light bulbs that are typically used for a minimum of 2 hours per day or more (limit 10) must be replaced with Energy Star Rated CFL or LED light bulbs with equivalent or better Lumen output.

M. CAZ TEST

If the home is occupied during the rehab process a CAZ test MUST be completed at the end of each day that work is done to the home.