

HOUSING REHABILITATION
LEAD STANDARD SPECIFICATIONS

JUNE, 2010



Kriss Lowry & Associates, Inc.

HOUSING REHABILITATION LEAD SPECIFICATIONS

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I. GENERAL REQUIREMENTS

A. SPECIFICATIONS

1. All work is to be in accordance with the current edition of the Kentucky Residential Code, the Kentucky State Plumbing Code, the National Electric Code and the National Fuel Gas Code, International Property Maintenance Code, the June 2010 Housing Rehabilitation Lead Specifications, and any applicable state and local codes. Any new construction, replacement of entire building components (such as exterior porch) or installation of new systems (HVAC system) shall be done in accordance with October 2008 New Housing Standard Specifications.
2. All work involving lead paint shall follow lead paint safe work practices and the guidelines in the HUD document “Lead Paint Safety – A Field Guide for Painting, Home Maintenance and Renovation Work”. This document may be downloaded at <http://www.hud.gov/offices/lead/>. **All work shall be done in compliance with the EPA’s Lead-Based Paint Renovation, Repair and Painting Final Rule Program requirements.**
3. The Work Write-Up shall take precedence over the Housing Rehabilitation Lead Specifications. When there is a conflict between the two or ask for clarification from the project manager.
4. The Drawings, if any, of floor plans are for diagram and illustrations only, they are not to scale, nor do they show exact dimensions or construction details. It is the contractors responsibility to verify dimensions.

B. OTHER REQUIREMENTS

1. Contractors shall provide samples of the following to the Project Manager: carpet, vinyl or ceramic flooring, windows, shutters, cabinets, counter tops, vinyl siding, interior and exterior paint and shingles before any construction begins. Project Manager will have owner to select colors from samples provided. If there are no house numbers on the house, provide 3” metal or wood (no stick on numbers) house numbers on front of house at location that can be seen from street.
2. All work is to be done in a professional, workmanlike manner taking care to protect the owner's property, using drop cloths, carpet covers, dust curtains, etc. The contractor is responsible for any damage caused during the execution of the work.
3. No changes are to be made without written consent of the owner and the rehabilitation specialist.
4. Construction debris is to be cleaned up daily to keep exits, traffic areas, walks, etc. safe for workers, residents, and visitors. All debris is to be properly disposed of in accordance with state regulations.
5. Unless otherwise noted in the Write-up, “install” shall mean “furnish and install.”
6. The repair of any hidden item such as plumbing or wiring shall include the repair of all incidental damage to a finished condition.

7. Installation of and item requiring a finish shall include finishing unless otherwise noted.
8. Installation of any item shall include all necessary related hardware, trim, prep work, finish, etc. Materials shall be new, in good condition and or the grade required by code or specifications.
9. Where multiple locks are installed, they shall be keyed alike. All exterior doors shall have a lock and a dead bolt keyed alike.
10. For any brand name specified, another brand of equal quality may be substituted. Consult with the rehabilitation specialist before making substitutions.
11. Disturbed areas of grade for swales, ditches, etc. shall be graded smooth, all large rocks and debris removed, clods broken up and covered with sod.
12. Any item installed, which does not have final protective finish, is to include proper coating as part of the installation.
13. **All adhesives, sealants and primers used on the interior of the building shall comply with South Coast Air Quality Management District Rule #1168. Acceptable volatile organic compound (VOC) limits are listed in the tables below:**

| Architectural Applications | Current VOC Limit |
|-------------------------------------|-------------------|
| Indoor Carpet Adhesives | 50 |
| Carpet Pad Adhesives | 50 |
| Outdoor Carpet Adhesives | 150 |
| Wood Flooring Adhesive | 100 |
| Rubber Floor Adhesives | 60 |
| Subfloor Adhesives | 50 |
| Ceramic Tile Adhesives | 65 |
| VCT and Asphalt Tile Adhesives | 50 |
| Dry Wall and Panel Adhesives | 50 |
| Cove Base Adhesives | 50 |
| Multipurpose Construction Adhesives | 70 |
| Structural Glazing Adhesives | 100 |
| Single Ply Roof Membrane Adhesives | 250 |

| Substrate Specific Applications | Current VOC Limit |
|---------------------------------|-------------------|
| Metal to Metal | 30 |
| Plastic Foams | 50 |
| Porous Material (except wood) | 50 |
| Wood | 30 |
| Fiberglass | 80 |

| Sealants | Current VOC Limit |
|-----------------|-------------------|
| Architectural | 250 |
| Sealant Primers | Current VOC Limit |
| Architectural | |
| Non Porous | 250 |
| Porous | 775 |

II. LEAD GENERAL REQUIREMENTS

A. APPLICABLE LEAD-SPECIFIC DEFINITIONS

1. **Abatement:** The measures used to permanently control lead-based paint or lead based paint hazards for at least 20 years. Building abatement methods include component replacement, paint removal, enclosure and encapsulation. Soil abatement methods include soil removal, soil cultivation and paving.
2. **Adhesion:** The ability of an encapsulant to attach to or remain fixed on a surface without blistering, flaking, cracking or being removed by tape.
3. **CRF - The Code of Federal Regulations:** The basic component of the Federal Register publication system. The CRF is a codification of the regulations of the various Federal Agencies.
4. **HEPA - High Efficiency Particulate Air:** A filter capable of filtering out particles of 0.3 microns or greater from a body of air at 99.97% efficiency or greater.
5. **Interim Controls:** A set of measures designed to temporarily control lead-based paint hazards.
6. **µg - Micrograms:** The prefix "micro" means "1/1,000,000 of" (one millionth of). A microgram is 1/1,000,000 of a gram.
7. **Standard Treatments:** A complete set of interim control measures that, when used together, temporarily control all potential lead-based paint hazards in a dwelling unit. Standard treatments require safe repair of deteriorated paint, providing smooth and cleanable horizontal surfaces, correcting conditions in which painted surfaces are rubbing, binding or otherwise producing dust, covering or restricting access to bare soil and specialized cleaning.
8. **Work Area:** The area where lead hazard reduction or related work is performed, which is defined and/or isolated to prevent the spread of lead dust or debris and entry by unauthorized personnel.
9. **XRF Analyzer:** An instrument that determines lead concentration in milligrams per square centimeter (mg/cm²) using the principle of x-ray fluorescence (XRF). The XRF analyzer refers to portable instruments manufactured to analyze paint and does not refer to laboratory-grade units or portable instruments designed to analyze soil.

B. LEAD-SPECIFIC LAWS, RULES, REGULATIONS AND GUIDELINES

1. The execution of this work shall comply with all applicable federal, state, and local laws, rules, regulations and guidelines for lead dust environments. Some of these include:

2. OSHA 29 CFR 1926 - Construction Industry Standards; 29 CFR 1926.62- Construction Industry Lead Standard; 29 CFR 1910.1200 – Hazard Communication Standard; 40 CFR Part 745 - EPA Regulations; 24 CFR Part 35 -HUD Regulation on Lead-Based Paint Hazards in Federally Owned Housing and Housing Receiving Federal Assistance; and HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing.

C. OCCUPANT PROTECTION PLAN

1. Unless otherwise noted in the Information for Bidders or Work Write-Up, the property occupants and their possessions will be temporarily relocated from the structure during rehabilitation work. A Notice to Proceed will not be issued until the occupants have vacated the structure. **If the work is not completed by the date specified in the Notice to Proceed or any approved extensions, it shall be the Contractor's responsibility to pay any additional rent or storage costs incurred by the occupants due to the Contractor's failure to complete the work on time. Such costs will be deducted from the final payment.**

2. Contactor is to maintain a lead free entry into the house. Children and pregnant women are specifically prohibited from entering the dwelling unit at any time during lead hazard reduction activities, including times when work is not in progress.

3. If the house is still occupied, remove furniture, area rugs, curtains, food clothing and other household items from areas where lead hazard reduction activities will take place until cleanup is complete. Items that cannot be removed shall be tightly wrapped in 6 mil polyethylene plastic and sealed with duct tape until all work and cleanup is complete. Turn off forced air heating and air conditioning systems during remodeling or renovation. Cover heating and air conditioning vents with a layer of 6 mil polyethylene plastic sheeting. Cover exposed surfaces that cannot be removed such as floors, carpeting, counter-tops and shelves with 6 mil polyethylene plastic sheeting.

D. PROHIBITED PAINT REMOVAL METHODS

The following paint removal methods are prohibited on all HUD-funded projects (24 CFR Part 35.140).

1. Open flame burning or torching;
2. Machine sanding or grinding without a HEPA local exhaust control;
3. Abrasive blasting or sandblasting without a HEPA local exhaust control;
4. Heat guns operating above 1,100 degrees Fahrenheit or charring the paint;
5. Dry sanding or dry scraping, except dry scraping in conjunction with heat guns or within one (1) foot of electrical outlets, or when treating defective paint spots

totaling no more than two (2) square feet in any one interior room or space, or totaling no more than 20 square feet on exterior surfaces; and

6. Paint stripping in a poorly ventilated space using a volatile stripper that is a hazardous substance in accordance with regulations of the Consumer Product Safety Commission and/or a hazardous chemical in accordance with the Occupational Safety and Health Administration.

E. REQUIRED SUBMITTALS

1. The contractor shall provide the following Contractor Submittals prior to the Pre-construction Conference: Copies of individual Kentucky approved lead training certifications for workers and/or supervisors; EPA Renovator and Renovation Firm certifications. Site specific General Liability certificates with the property owners listed as the certificate holder and other appropriate individuals or organizations listed as Additionally Insured; Worker's Compensation insurance certificate.

2. All contractors performing lead abatement shall provide a copy of their EPA certification and state licenses for the designated lead abatement supervisors and all lead abatement workers working on the project prior to commencement of the work.

F. CLEARANCE EXAMINATION BEFORE FINAL ACCEPTANCE

1. Prior to final acceptance of the lead hazard reduction work and all rehabilitation work, the property shall be visually inspected for any remaining paint chips, dust and debris and lead dust wipe samples shall be obtained from floors, window sills and window troughs.

2. The contractor shall re-clean all applicable components and surfaces and pay for all additional clearance examinations if any dust sample results exceed the thresholds of 40 µg/SF for floors, 250 µg/SF for window sills and 400 µg/SF for window troughs.

3.

III. LEAD WORKER PROTECTION

A. LEAD WORKER - PROTECTION

1. Persons carrying out lead hazard reduction activities must comply with all applicable federal, state, local laws and regulations related to safety in the workplace, including the respiratory protection program-based personal protection found in the OSHA Construction Standard (29 CFR 1926.62).

B. EYE WASH STATION REQUIREMENT

1. During all operations using caustic or volatile chemical paint removal products, an emergency eye wash station meeting ANSI Z358.1-1990 standard, rated at 15 minutes of flow, must be placed on this work site.

C. PROHIBITED WORKER ACTIVITIES

1. To minimize the potential for worker exposure to lead dust, the following activities are prohibited in any lead hazard reduction work area or space: eating; drinking; chewing gum or tobacco; smoking, and applying cosmetics.
2. Post an OSHA compliance notice to workers as follows: "Warning - Lead Work Area - Poison - No Smoking or Eating."

D. WORKER PROTECTIVE CLOTHING

1. Each worker shall be provided with disposable, hooded and footed coveralls during demolition, surface preparation, and paint removal activities. Impervious rubber boots, gloves, face shield, and chemical-resistant coveralls must be provided when dangerous paint stripping chemicals are used.
2. Provide workers with an appropriate area to put on and take off protective clothing with washing facilities.

E. WORKER TRAINING REQUIREMENTS

1. All persons conducting "interim controls" and/or "standard treatments" lead hazard reduction activities must either be supervised by a trained and certified lead abatement supervisor or provide proof of completion of a HUD-approved worker training course in lead hazard awareness, self protection and safe work practices prior to commencement of work. They must also be a EPA Certified Renovator or have been trained in lead safe work practices by a EPA Certified Renovator.
2. All workers conducting "abatement" lead hazard reduction activities must be trained and certified as lead abatement workers and provide proof of valid state licenses or certificates. All persons acting as supervisors during "abatement" lead hazard reduction activities must be trained and certified as lead abatement supervisors and provide proof of valid state licenses or certificates.

F. GROUND FAULT INTERRUPTOR REQUIRED

1. Due to the requirement to work "wet" during lead hazard reduction activities, all electric circuits and extension cords in use must be protected by GFCI with integral test buttons.

G. WORKER RESPIRATORS

1. All employees engaging in lead hazard reduction activities shall be fit tested and provided with personal respirators and filters as appropriate to task under a respirator program in accordance with 29 CFR 1910.134 and 29 CFR 1926.62.

H. LEAD EXPOSURE MONITORING

1. Whenever Class I Tasks (e.g, manual demolition, manual scraping or sanding, using heat guns or power tools with a HEPA local exhaust control) are specified, the contractor must provide full worker protection or exposure monitoring data.
2. Contractors shall hire an outside firm to perform a determination of worker exposures using personal air sampling at a nominal flow rate of 2 liters per minute and a sampling train consisting of a 0.8u pore size filter housed in a closed-face

37mm cassette. Alternately, contractors may use data from previous jobs that are similar in objective data, as specified in the OSHA standard, to establish the personal protective equipment requirement.

IV. LEAD WORK SITE PREPARATION

A. DAILY OCCUPANT RELOCATION

1. No occupants, pets or other persons may enter the dwelling during interior lead hazard reduction activities unless they have received the appropriate lead hazard training.
2. Occupants or other untrained persons may enter the structure after completion of daily work activities only after a thorough cleaning using a HEPA vacuum has been performed in all rooms or other areas of work and the worker entrance. All occupants and pets must be out of the room or area while lead hazard reduction activities are being performed.
3. Children and pregnant women are specifically prohibited from entering the dwelling unit at any time during lead hazard reduction activities, including times when work is not in progress.

B. SECURE SITE

1. After the relocation of the occupants, the contractor shall assume responsibility for securing the site against theft, vandalism, fire and other dangers.

C. MINI CONTAINMENT

1. Construct a dust-tight space surrounding the work area or room with 6 mil. polyethylene sheeting and 2" duct tape. HEPA vacuum all visible work and containment surfaces after work is completed. Create a 5' x 6' walk-off mat at the work site exit with 2 layers of 6 mil. polyethylene sheeting.

D. SET UP INTERIOR CONTAINMENT

1. Make applicable notifications to state or local agencies, post job site signage and secure lead hazard reduction sites.
2. Pre-clean floors, window sills, window troughs and other areas of dust build-up with a HEPA vacuum.
3. Seal all floors with two continuous layers of 6 mil. polyethylene sheeting taped to baseboard and 4' beyond door openings with 2" wide, easy release masking tape.
4. Close and seal HVAC registers with polyethylene sheeting. Wrap all built-in furniture, cabinetry and fixed appliances with polyethylene sheeting and tape to create an airtight seal.

E. EXTERIOR VERTICAL CONTAINMENT

1. When vertical containment is required, after installation of appropriate exterior ground containment, hang a disposable reinforced plastic sheet from 3' above the highest proposed workstation on metal tube scaffolding secured to withstand a 40

mph wind gust. Maintain containment until final clearance has been achieved. Create an outer barrier of flags or plastic tape 3' on center, 20' from work site. Close and lock all windows and doors from the interior on the work site elevation. Remove and replace daily.

F. EXTERIOR GROUND CONTAINMENT

1. Attach two layers of 12' wide 6 mil polyethylene sheeting to the building perimeter with staples or furring strips extending 10' past the work area. Construct a work site perimeter curb of 4" x 4" timbers wrapped under the containment. Create an outer barrier of flags or plastic tape 3' on center, 20' from work site. Close and lock all windows and doors from the interior on the work site elevation. Remove and replace daily.

G. FINAL CLEANING - THREE STEP PROCESS

1. After completion of all lead hazard reduction activities, wet mist, fold and remove all containment polyethylene sheeting, with floors last. Placing such sheeting in 6 mil. plastic garbage bags, goose neck and then tape shut.
2. HEPA vacuum all visible surfaces including walls, floors and ceilings from the top down.
3. Detergent scrub all horizontal surfaces in small sections using a 3-bucket system, changing rinse water every 250 SF. Completely rinse with clean water and new equipment. After surfaces are dry, HEPA vacuum all visible surfaces except the ceiling.

H. STEAM CLEAN CARPET

1. Clean carpet with a HEPA vacuum using a beater bar at 4 min. per every 10 sq. ft. of carpet. Using a truck mounted steam generator, clean carpet using the steam extraction method. HEPA vacuum after the carpet dries at a rate of 1 minute per every 10 sq. ft.

I. COMMERCIAL CLEAN DRAPES

1. Remove, package and send drapes to a professional cleaning plant for removal of all surface dirt and dust. Re-install after final clearance has been achieved.
2. Washable curtains may be washed and dried and replaced after all lead work is complete.

J. FURNACE FILTER - REPLACE

1. After completion of lead work, dispose of the furnace filter. HEPA vacuum the return grill, housing and visible ductwork.
2. Replace with a high efficiency furnace filter after completion of all lead hazard reduction work.

K. LEAD WASTE DISPOSAL

1. Ensure that all waste, both hazardous and non-hazardous, is managed in accordance with state regulations.

L. DAILY CLEAN-UP

1. At the end of each work shift, as appropriate, wet mist and wrap all large debris in 6 mil. polyethylene sheeting and remove to the designated storage area.
2. Wet mist small debris and sweep to 6 mil plastic garbage bags, goose neck and tape shut.
3. Mist and fold exterior ground containment polyethylene sheeting prior to storage or disposal. Place in 6 mil plastic garbage bags, goose neck and tape shut.

V. INTERIM CONTROL STANDARD TREATMENTS

A. PAINT STABILIZATION GENERAL REQUIREMENTS (24 CFR PART 35.1330).

1. Any physical defect in the substrate of a painted surface or component that is causing the deterioration of that surface or component shall be repaired before treating the surface or component. Examples of defective substrate conditions include dry-rot, rust, moisture related defects, crumbling plaster, missing siding or other components that are not securely fastened.
2. Before applying new paint, all loose paint and other loose material shall be removed from the surface to be treated. Acceptable methods for preparing the surface to be treated include wet scraping, wet sanding and power sanding performed in conjunction with a HEPA filtered local exhaust attachment operated according to the manufacturer's instructions.
3. Dry sanding or dry scraping is permitted only for electrical safety reasons or for specific minor amounts of work (see Prohibited Paint Removal Methods above).
4. Paint stabilization shall include the application of a new protective coating or paint. The surface substrate shall be dry and protected from future moisture damage before applying a new protective coating or paint. All protective coatings or paint shall be applied in accordance with the manufacturer's recommendations.
5. All paint stabilization work shall incorporate the use of safe work practices in accordance with 24 CFR 35.1350.

B. REPAIR PAINT

1. After establishing any required floor containment with polyethylene sheeting, mist defective paint with water to the point of saturation without dripping on the floor.
2. Aggressively scrape all loose paint, wallpaper and plaster with a draw scraper. Feather edges with a wet 100-grit sponge sanding block.
3. Spot prime then paint entire surface with one coats of premium acrylic latex paint appropriate to the surface.

C. STABILIZE AND PAINT WALLS, PAINTED WINDOWS, TRIM OR CEILINGS

1. After establishing any required floor containment with polyethylene sheeting, mist defective paint with water to the point of saturation without dripping on the floor.
2. Aggressively scrape all loose paint, wallpaper and plaster with a draw scraper. Feather edges with a wet 100-grit sponge sanding block.
3. Detergent wash, rinse, allow to dry and HEPA vacuum all visible paint chips, dust and debris.
4. Spot prime then paint entire surface with two coats of premium acrylic latex paint. Use semi-gloss on kitchen, bathroom and laundry room walls and ceilings and all wood doors and trim. Use washable satin finish on all other interior walls and none textured ceilings.
5. All interior window sills and window troughs that are rough, pitted or porous shall be covered with a smooth cleanable covering or coating such as 0.27" aluminum coil stock, two coats of polyurethane or other material approved by project manager.

D. INTERIOR DOOR – STABILIZE, PLANE AND ADJUST

1. After establishing any required floor containment with polyethylene sheeting, remove door at hinge pins and take to a fully-contained lead work room or site. Place pins in plastic bag on jamb for safekeeping.
2. Plane door edges and adjust the hasp and stike plate to minimize door/jamb friction and contact.
3. Mist deteriorated paint with water to the point of saturation without dripping on the floor. Wet scrape door, jamb and trim.
4. Clean and de-gloss door, jamb and trim with detergent. Wash, rinse, allow to dry and HEPA vacuum all visible paint chips, dust and debris.
5. Spot prime then paint entire surface with premium acrylic latex semi-gloss paint.
6. Install door stops as necessary to prevent door from striking any walls or baseboards.

VI. DEMOLITION

1. All demolition work shall be done in a safe and workmanlike manner. Contractor is to verify that all utilities have been turned off and properly sealed or disconnected before proceeding with demolition work.
2. When removing any painted components presumed to have lead paint such as doors, windows or trim, establish any required floor containment with polyethylene sheeting. Lay additional layer of polyethylene over floor containment and place removed components on this layer. Wrap removed components in polyethylene and seal per clean up specifications. Dispose of in accordance with state regulations. Clean area of removal using three step cleaning process.

3. Demolition debris shall be removed as it accumulates and shall not be stored on site. All debris shall be disposed of in accordance with state and Federal regulations. Open dumping of waste is strictly prohibited. Debris shall not be burned on site.

4. All old existing walls, floors, curbs, footers, piers, pavements and other improvements shall be entirely removed from the location of new footings and foundations and removed to a minimum of six inches below existing grade or required subgrade for other locations. Clean out any existing wells, cisterns, abandoned manholes, catch basins, septic tanks, sink holes and similar structures and fill with granular material, firmly compacted. Plug with concrete or masonry the open ends of abandoned sewers, manholes or catch basins encountered in any excavation. Break up masonry or concrete bottoms of existing structures to permit drainage.

5. All disturbed areas are to be graded smooth, seeded or covered with sod.

VII. EXTERIOR

A. TERMITE TREATMENT

1. All new houses, room reconstructions or additions shall be pre-treated for termites to provide a protective barrier. New porches and new outbuildings shall be pre-treated for termites unless pressure treated lumber is used or there is no wood (metal building on a concrete floor).

2. All termite treatment shall be done by a licensed pest control operator. Treatment shall include a minimum five-year warranty, which covers re-treatment and repair of any damage at no cost to the owner.

B. TUCK POINTING

1. Clean out all loose and adjacent mortar in the area to be repaired. Using a cold chisel, clean the joint of loose mortar and chisel out the adjacent mortar in the repair area to a depth of 3/4" to 1". Place the chisel at the edge of the brick and chisel toward the center of the mortar joint. Do not drive the chisel toward the brick or you may crack off a piece of the brick face.

2. Mix a small amount of mortar at one time using clean drinkable water. Mix with a liquid latex binder to improve adhesion and reduce cracking and shrinking.

3. Pack mortar into the open joint with the tip of a pointing trowel. Keep the mortar off the face of the brick. Pack the open joint with mortar then scrape any extra mortar so the mortar in the joint is flush with the brick. As the mortar begins to stiffen, strike the joints with a joint strike tool. Tool the vertical joints first, then the horizontal joints. Keep the tuckpoint repair damp by misting with clean water to allow the mortar to cure properly. Keep the area misted with water for 3 days.

C. ROOF SPECIFICATIONS

1. Strip Roof: Remove all roof covering down to sheathing. Re-nail loose sheathing. Remove all debris from premises and from accessible attic spaces. All shrubs, trees, flowers, and other plants are to be protected from damages from

debris. Replace damaged sheathing (150 SF maximum) using materials that match existing.

2. Roof Sheathing (New): Sheathing shall be 7/16" O.S.B. or 1/2" CDX plywood for slopes of 2/12 or greater. Sheathing shall be 5/8" CDX plywood for slopes of less than 2/12. Sheathing shall be fastened and installed in accordance with recommendations of the manufacturer.

3. Roof Coverings: Roof coverings shall be installed according to manufacture directions. Roofing shall only be applied when the supporting roof construction is dry and clean. All roof work is to include all necessary flashing and gutters and downspouts along all drip edges to replacement standards.

a) Slopes of 4/12 or greater: install one layer of No. 15 felt, metal drip edge and 3-tab self-sealing, fiberglass based asphalt, strip shingles, owners choice of color. Felt underlayment shall be laid parallel to the eaves with a 2-inch top lap and 4-inch end lap nailed sufficiently to hold it in place. Shingles shall be self sealing ULI Class A, a minimum of 210 lbs. per square with 20-year warranty.

b) Slopes less than 4/12, but not less than 2/12: install two layers of No. 15 felt laid parallel to eaves with 19 inch top lap and 12 inch end lap, with end laps located at least 6 feet from end laps in the preceding course and blind nailed sufficiently to hold in place.. Install metal drip edge and 3-tab self-sealing asphalt shingles (nominally double coverage). All 3-tab shingles to be nailed with a minimum of 1-1/4" galvanized roofing nail.

D. FLASHING

1. Valley flashing shall be aluminum and shall extend at least 8" from the centerline each way. Before installing metal valley, install a 36-inch wide strip of asphalt saturated felt over primary underlayment, centered in valley and secured with only enough nails to at outer edges to hold it in place until metal valley is installed. Sections of flashing shall be overlapped a minimum of 8 inches and joined to provide water lock. Valleys to be open type unless noted otherwise.

2. Flashing against vertical sidewall shall be by the step flashing method.

3. Chimney flashing shall be by the step flashing method and cap flashing method. Chimney flashing to be galvanized sheet metal. Solder all overlaps of cap flashing and imbed at least 1/2" into mortar joints. Seal mortar joints with mortar or silicone caulk. Do not cover flashing with roof cement.

4. All vertical projections and vents shall be flashed in accordance with shingle manufacturer's printed instructions.

E. ROOF VENTILATION

1. Vent roof in accordance with Kentucky Residential Code.

2. Roof vents shall not be located on front or street side of house.

F. CORNICE

1. Repair cornice: Replace all deteriorated parts with new parts matching existing original work. This includes fascia, frieze, soffit and rake mold. Replace fascia and frieze boards using 1" redwood unless fascia is to be wrapped with aluminum. If cornice is to be wrapped, replace fascia and frieze boards with 1" No. 2 pine. Replace deteriorated soffit with 1" redwood or 3/8" A.C. plywood. Bottom surfaces of soffit shall be on same level. Repair framework as necessary for proper attachment. All visible cornice to be attached with corrosion resistant fasteners.
2. Wrap cornice: Prepare cornice for wrap by replacing damaged wood and installing nailers where needed. If soffit to be covered is not open, install holes for adequate attic ventilation. Vinyl soffit to be run perpendicular to house.
3. Fascia and frieze wrap shall be baked enamel finish on 0.019 gauge coilstock aluminum. Soffit wrap shall be perforated, v-grooved vinyl soffit.

G. SIDING

1. Repair siding: All siding repairs to be made using materials to match existing as closely as possible. Siding shall be attached with corrosion resistant fasteners.
2. Replace siding: Replacement siding shall be double 4", .042 gauge vinyl siding with 20 year minimum warranty, owners choice of colors. Installation to include vinyl corners, J-channels, and starter strips. Wrap all cornice, corner, and door and window trim. Installation to be in accordance with recommendations of the manufacturer. Install dense foam backing.
3. Prior to installation of siding, all surfaces shall be repaired to create solid, even surface for installation of siding.
4. All wiring, fixtures, hardware, etc. shall be reattached per Code after installation.

H. GUTTERS

1. Replace gutters: Remove existing gutters, downspouts and nails. Install 5" OGEE seamless aluminum gutters and aluminum downspouts. Caulk and pop rivet all corners, drops and endcaps. Pop rivet all downspout sections. Nail gutters using aluminum spikes and ferrules into rafter tails at a minimum of 36" intervals.
2. Downspouts to be secured to drop tubes and to be fastened to building with at least two straps or approved hangers per story. Instal splashblocks at each downspout.
3. Reline box gutters:
 - a) Linings shall extend 6" under roof covering, and be adhered to roof covering with tar.
 - b) Option 1 - Remove existing metal lining. Repair frame work and install No. 28 gauge galvanized metal. Solder overlaps.
 - c) Option 2 - Install rubber membrane lining on top of existing. Lining shall include metal drip caps.
 - d) Relining shall include new drop tubes, downspouts and splash blocks (if missing).

VIII. WEATHERIZATION

A. WINDOWS AND DOORS

1. Rework windows: means all repairs and parts necessary to make window weather tight, easily operable, lockable and able to stay open without props. Bottom sash only, to be operable unless noted otherwise. Paint or stain and seal windows as needed to achieve proper protection of wood. Wrap window exteriors.
2. If window is sticking, remove window sash or pane, repaint and reinstall or install a new window. If window is painted shut, mist and cut window joint with utility knife. Then, open joint between sash and stop with a window opener. Mist while working. Mist and remove stop molding from sides and heads. If counterweight cord or chain is attached to the sash, knot it or tie it to a stick when removing from sash so it does not get pulled into weight compartment. Mist and remove parting bead, then remove top sash. Wet scrape any loose paint, reglaze and repair as necessary, Wet sand, prime and paint sash and jamb. Seal but do not paint sash edges. Repair jamb as necessary. Jambs may be lined with vinyl jamb liners.
3. Replace exterior door: exterior replacement doors to be pre-hung, minimum of 1 3/4 " thick insulated steel with locust and deadbolt. Installation of doors includes all necessary prep, trim, hardware, opening preparation and two coats of paint. **All plastic window trim on exterior doors must receive two coats of light colored paint.** Any necessary jamb extensions are to be installed at the exterior edge under the brickmold. Install replacement screen door to fit.
4. Install Replacement windows: Replacement windows to be Low-E double glazed vinyl with full screens. They shall have a U-Value of 0.30 or less and an SHGC of 0.30 or less. New windows to be same dimensions as existing unless otherwise specified and include all necessary hardware, trim and finish, including necessary alterations to previous trim wrap. In historic housing, replacement windows are to be wood windows with insulated double pane glass. There are to be no divider lights unless approved by project manager to match existing windows. Jambs are to be vinyl. Paint or stain windows in accordance with manufacture's recommendations. Bathrooms to have obscured bottom glass. Repair or replace any interior or exterior areas affected by the installation of the new window. Replacement windows shall meet the ANSI/AAMA 101-93 standard.
5. Install storm windows: Storm windows to be good quality 1 1/4" thick aluminum, triple track, mill finish. Storm doors shall be pre-hung in aluminum frame, including hinges, closer, latch, and aluminum screen and weather-stripping. Installation to include preparation of opening for proper fit.
6. Weather Strip door: Weather-stripping for doors shall be jamb-up types with solid back and silicon or vinyl bulb.
7. Window and door trim wrap shall be 19-gauge coilstock aluminum. Caulk all seams and joints.

B. INSULATION

1. Except for floors which should have no vapor barrier, insulation shall have a vapor barrier on the conditioned side whenever possible.
2. Insulation shall fill all spaces equally to specified R-value. If R-value is not specified, use R-15 in 2x4 walls, R-19 in 2x6 walls and under floors and R-38 in attic spaces. R-38 is minimum twelve inches of blown-in insulation.
3. When insulating attics, take care not to block ventilation path at edges. Attics shall have markers to indicate depth of insulation per Kentucky Residential Code.
4. Under floor insulation shall be held in place with wire keepers.
5. All new exterior walls and any exterior walls exposed during work shall be insulated to R-15.

IX. HANDRAIL, GUARDRAILS AND RAMPS

1. See Sept. 2008 New housing Construction Specifications for handrails, Guardrails and Ramps.

X. INTERIOR

A. GYPSUM DRYWALL

1. Install drywall only after framing, wiring plumbing and insulation have been inspected.
2. Drywall shall be a minimum of 1/2 inch thick. Use water-resistant drywall in entire bathroom except on ceiling and behind sink in kitchen.
3. Install new drywall means complete operation, from removal of old covering to finish ready for paint. It includes preparation of substrate such as furring where necessary to match trim.
4. Clad with drywall means all of the above except removal and includes special treatments at edges such as J-channel, ceiling molding or flat taping to cover raw edges. Use 3/8 inch drywall over existing drywall or plaster. Mechanically fasten drywall through old drywall or plaster to studs. Seal the perimeter, particularly the bottom edge. Avoid removing existing base unless drywall will extend out over base. Where drywall will end above existing base, install shoe or cove molding into bead of caulk to seal. If drywall comes close to flush with base face, a strip of lattice bedded in caulk can be used to seal joint. Where base must be replaced, install new base similar in style to old. Bed the new base in bead of caulk on back and bottom. Then, bed shoe molding in a bead of caulk to seal.
5. Patching or repairing drywall or plaster means removal of all loose or damaged material, reattaching edges and joints, mudding and taping of all seams or cracks, and three (3) coats of mud over tape or until smooth. When patching plaster, cracks should be keyed or widened, and moistened before applying mud and tape. Finish sanding should be checked carefully for unsanded edges, the patch should not be visible after paint has been applied. Seal with primary and one or two coats of paint as necessary.

B. PAINTING: INTERIOR AND EXTERIOR

1. Painting is to include all necessary prep work to provide proper adhesion, stain blockage, uniform coverage and smooth appearance. Exterior painting also includes caulking of window and door frames siding abutments or other joints or seams which would allow air infiltration. Exterior window painting includes the replacement of all deteriorated glazing compound and glazier points.
2. When painting adjacent to glass, scrape glass clean before painting. Glass is to receive an eighth inch paint bead for proper seal. If excess paint has to be scraped off windows, the seal must be painted.
3. Unless otherwise specified the following types of paint will be used:
 - a) All interior trim- washable latex enamel semi-gloss
 - b) Interior walls and ceilings - latex satin finish (washable).
 - c) Exterior wood - latex semi-gloss.
 - d) Metal - rust resistant enamel.
4. All painting called for will be two complete coats and will include proper priming where necessary such as painting over oil base with acrylic or stain kill over mildew.
5. Proper precautions should be taken to prevent paint from getting on unpainted surfaces. Any mishaps should be removed immediately. The contractor is responsible for any damage caused by stray paint or other finishes. Spray painting of interior is not allowed.
6. Colors are to be picked by owner but not to exceed two exterior or three interior colors.
7. Contractor shall comply with CFR, Title 24, Sub-Part C, 35.25 concerning Lead-Based Paint Standards. Lead-based paint will not be used.

C. FLOOR COVERING

1. Install new vinyl flooring: Vinyl flooring shall be sheet flooring Congoleum Prelude, Armstrong Initiator, Domco Customflor or Mannington Vega II or better, owners' choice of style and color. Minimum 5 year warranty and comply with ASTM F 1303, Type I. Floor tiles are not acceptable.
2. Remove old vinyl and old underlayment and inspect subfloor for soundness prior to putting down new underlayment. Underlayment shall be luan or as recommended by manufacturer of vinyl (no particleboard). Underlayment may be fastened down with 1" long staples or nailed with 1-1/4" ring shank nails. Fill over nail dents and fill cracks in accordance with manufacturer's recommendations. Sand filler and clean floor.
3. Vinyl shall be laid smooth (too much glue causes lumps). Fit neatly against tub and baseboards and door casings. Vinyl must be laid under commodes with new wax ring. Joints in vinyl must be sealed and edges of vinyl must be caulked at tubs and

door casings. Install primed and painted toeshoe molding or 4" high .080 gauge vinyl base molding with matching end stops and pre-formed corner units at all baseboards to prevent roll up of edges. Metal edge strips shall not be used, except at joints with dissimilar floor covering.

4. Install Carpeting: See New Housing Specifications for carpet.

D. CABINETS

1. See New Housing Specifications for Cabinets and Countertops.

E. KITCHEN EQUIPMENT

1. See New Housing Specifications for Refrigerator, Range and Range Hood specifications.

XI. PLUMBING

A. FIXTURES

1. All toilets installed shall be a complete assembly, which includes a new seat, supply line, shutoff, wax ring, and closet bolts. Toilets are to be one of the following brands: American Standard, Koler, Crane, Elgier or Mansfield.

2. Kitchen sinks are to be double bowl, stainless steel units with at least 7 1/2" deep bowls. Sinks are to be installed with new metal basket strainers and a new continuous waste. Seal rim at countertop with silicon.

3. Lavatories shall be counter type vitreous china, 19" by 17". Synthetic marble ready-formed counters with integral lavatories may be used in bathroom in place of plastic laminate top. All medicine cabinets shall be wood with built in light or decorative light bar and same width as cabinet for sink.

4. **All faucets shall be single levers, brass Delta washerless faucets. Kitchen faucets shall include a spray assembly.** Tub faucets shall be scald guard tub and shower combination valves. All faucets shall be installed with new supplies and shutoffs. Plastic faucets are not acceptable.

B. BATHTUBS

1. All tubs installed shall be fiberglass or stamped steel 60" units with new chrome on brass waste and overflows. Tub surrounds for stamped steel tubs shall be vinyl or fiberglass and must contain integral molded soap dishes (an exception of the last specification is when windows or other surface irregularities would make the use of tub surrounds with integral molded soap dishes impractical). If fiberglass tubs are used, their tub walls must match the tub's color. A two-piece fiberglass tub is one that has matching fiberglass tub walls that are produced by the same manufacturer.

2. Walls around tub area shall be masonry board 3' high.

C. WATER HEATERS

1. Water heater - Furnish and install hot water heater with glass lining, high recovery, insulated, temperature and pressure relief valve with discharge tube to

within 6" of floor or drained to outside of structure in safe location. Water heater to have a five-year warranty, and be equal to that manufactured by Jackson or A. O. Smith. Provide all electrical or gas and plumbing connections to hot water heater. There must be a water shutoff on the cold water supply to the heater. Gas water heaters must have a gas cock and drip leg installed next to the gas valve. Provide double wall venting through roof or wall for gas hot water heater, ceiling and roof thimbles, collars, strapping, raincap, and all else to comply with National Fuel Gas Code. Dispose of old water heater in permitted landfill.

2. Water heaters shall be minimum 40-gallon capacity unless otherwise specified.

D. WATER LINES

1. All new interior or exterior water lines shall be run out of copper tubing. Installation of new lines shall include shut off valves and new supplies. All water lines in unconditioned spaces shall be insulated with foam pipe insulation.

XII. MECHANICAL

1. See New Housing Specifications for HVAC system specifications. **All houses to have programmable thermostat per the specifications if new furnace is installed.**

XIII. ELECTRICAL

1. All wiring to be done in accordance with National Electrical Code. Contractor is required to obtain inspection by certified electrical inspector. **All light bulbs are to be compact florescent bulbs (CFL's). Use globe type CFL's in bathroom light bar.**

2. Required fixtures shall be standard grade, decorative globe type with bulbs provided. Open bulb types may be used only in utility areas.

3. Code requires that all houses be equipped with ACDC smoke detectors. They shall be interconnected with battery backup. As a minimum, install one smoke detector in each bedroom near door, one in hallway near sleeping area and one in living room away from kitchen. There should be at least one smoke detector on each story including basements.

4. Panel boxes must be Square D or equal, minimum 20 circuits, provide 200 amp. Service. Breaker panels must have all circuits labeled.

5. Electrical outlets shall be no lower than 15" from floor.