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County Executive

Macomb County

Housing Rehabilitation Standards

INTRODUCTION

The Housing Rehabilitation Standards (HRS) adopted by Macomb County shall apply to all housing projects involving rehabilitation, assisted by the Macomb HOME Consortium (MHC) for the HOME Investment Partnerships Program (HOME), or by Macomb County for the Community Development Block Grant (CDBG) program.

The HRS defines a standard and code compliance level for rehabilitation necessary to correct health, safety and building code violations to achieve decent, safe and sanitary affordable housing. The HRS utilizes the Michigan Building Code, Michigan Residential Code, Michigan Uniform Energy Code, Michigan Electrical Code, Michigan Rehabilitation Code for Existing Buildings, Michigan Mechanical Code, and Michigan Plumbing Code and local ordinances as applicable, and is intended to provide the minimum acceptable standards for existing single family household dwellings rehabilitated whole or in part with HOME or CDBG funding. All housing rehabilitated with HOME or CDBG funding must meet the MHC's HRS and comply with applicable local ordinances and zoning ordinances at the time of project completion.

All rehabilitation repairs deemed necessary under the HRS must be completed in compliance with the MHC Housing Rehabilitation repair specification. These specifications cover the minimum acceptable products or types of products to be installed and the minimum amount of accessories that must be included and installed with the item. All items shall be new and the workmanship shall be of the highest quality of the respective trades. Individual direction and/or comments on the Housing Rehabilitation Job Specification (Work Write Up) will supersede the minimum specifications on specific projects when discrepancies occur. The contractor will be responsible for following the job specifications on that specific project. These specifications are subject to change by this office with due notice to the Contractors. Any change made would not affect jobs under construction or jobs out for bid before the effective date of the change.

Accessibility
Accessibility
Property Standard
Assisted housing must meet the accessibility requirements in 24 CFR part 8, which implements Section 504 of the Rehabilitation Act of 1973 (29 U.S.C. 794), and Titles II and III of the Americans with Disabilities Act (42 U.S.C. 12131-12189) implemented at 28 CFR parts 35 and 36, as applicable. Rehabilitation may include improvements that are not required by regulation or statute that permit use by a person with disabilities.
Rehabilitation Standard
<p>Ramps shall be constructed of treated wood, when wood construction is specified and poured concrete, when masonry is specified. Shall have maximum slope of 1 foot of rise for every 12 foot of run. Shall be 48 inches wide with 48 inch by 96-inch landings where ramp changes direction. Shall have a minimum 48 inch by 48 inch landing at all doorways. Shall include handrails installed on both sides of ramp installed at a height that is comfortable for the handicapped member of the household. Shall comply with all barrier free access design codes.</p> <p>Grab bars shall be stainless steel or have baked enamel finish. Shall be 1 ½" inch diameter round or of proper design to comply with all handicapped/disabled person requirements, and shall only be attached to wall surfaces and framing that provide adequate support. Shall be installed in all bathtub/shower areas to assist handicapped person of the household, when specified.</p>

Health and Safety (Site, Bldg Ext., Bldg Systems)
Asbestos
Property Standard
Housing rehabilitation projects will only be evaluated for the presence of asbestos where asbestos looking material is evident and in a friable condition, or being disturbed as part of the housing rehabilitation project. Non-friable intact asbestos materials that are not creating a hazard such as cementitious exterior wall shingles may be left intact.
Rehabilitation Standard
Friable asbestos components such as boiler or pipe insulation, badly deteriorated cementitious shingles or deteriorated flooring will be removed and, if necessary, replaced with non-hazardous materials

Health and Safety (Site, Bldg Ext., Bldg Systems)	
Mold	
Property Standard	
Visible mold growth will be abated. When the cause of mold growth can be determined, steps to reduce or eliminate the cause will become part of the housing rehabilitation project work scope. Standard operating procedure will not include mold testing for housing rehabilitation projects.	
Rehabilitation Standard	
N/A	

Health and Safety (Site, Bldg Ext., Bldg Systems)	
Lead Based Paint	
Property Standard	
Any dwelling constructed prior to 1978 will undergo a lead based paint inspection/risk assessment to identify lead hazards. All lead hazards will be abated by certified lead based paint abatement contractors. In cases where estimated costs to abate all lead based paint hazards exceed program guidelines, the project may not proceed.	
Rehabilitation Standard	
N/A	

Health and Safety (Site, Bldg Ext., Bldg Systems)	
Fire Safety (Egress, Flammable Materials)	
Property Standard	
No bedrooms shall be located in attics or basements unless egress requirements are met. All flammable/combustible material shall be properly stored as part of homeowner responsibility.	
Rehabilitation Standard	
When necessary, egress for such situations will become part of the work scope for the housing rehabilitation project.	

Health and Safety (Site, Bldg Ext., Bldg Systems)	
Bulk Debris and Clutter	
Property Standard	
All dwellings participating in the Housing Rehabilitation Program will be free of excessive debris and clutter. While exterior debris and clutter may become part of the housing rehabilitation project, interior debris and clutter will be the responsibility of the homeowner prior to participation in the program to ensure a safe and accessible work environment.	
Rehabilitation Standard	
Homeowner responsibility.	

Health and Safety (Site, Bldg Ext., Bldg Systems)	
Electrical Hazards	
Property Standard	
All dwellings participating in the Housing Rehabilitation Program will be evaluated for electrical hazards.	
Rehabilitation Standard	
All electrical hazards will become part of the housing rehabilitation project work scope.	

Health and Safety (Site, Bldg Ext., Bldg Systems)	
Trip Hazards	
Property Standard	
All dwellings participating in the Housing Rehabilitation Program will be evaluated for trip hazards.	
Rehabilitation Standard	
Tripping hazards greater than 1.5" will be addressed. Where trip hazards exist, every effort will be made to remedy them within the housing rehabilitation project work scope.	

**Health and Safety
(Site, Bldg Ext., Bldg Systems)**

Fire and Carbon Monoxide Alarms

Property Standard

All dwellings participating in the Housing Rehabilitation Program will receive required smoke and carbon monoxide alarms as determined by applicable building codes.

Rehabilitation Standard

Shall be installed within each sleeping area, just outside each sleeping area, and on each additional story of the dwelling including basements and cellars. Basements having partition walls separating heating system from the stairwell area shall have smoke detectors installed both near the furnace and near the bottom of the stairs. Shall be "hard wire" installed (when specified) and be interconnected in such a manner that the actuation of one will activate all alarms within the unit. The power source for these hard wire units shall be obtained from the permanent building wiring, and shall be provided with battery back-up protection within or battery operated; see specifications.

**Health and Safety
(Site, Bldg Ext., Bldg Systems)**

Vermin / Insects

Property Standard

All dwellings participating in the Housing Rehabilitation Program will be free of excessive vermin and insects as part of homeowner responsibility.

Rehabilitation Standard

When insect or other treatment is specified, all structures on the property are to be treated. The "treatment" shall be that treatment recommended by a bonded, licensed, exterminator to rid the structures of any and all insects or other pests and shall carry a minimum guarantee of one year. Chemicals used shall be those that will cause the least inconvenience to the property owner. Any damage to the structure, interior or exterior, or to the property caused by the pest treatment shall be repaired or replaced by the contractor.

Site Review	
Unsafe Structures	
Property Standard	
<p>Unsafe and blighted structures, including outbuildings, will be removed if not financially feasible to complete the repairs required to make them structurally sound, leak-free, with lead hazards abated. Outbuilding repairs and removal are only included with the housing rehabilitation project and will not be the primary focus for housing rehabilitation.</p>	
Rehabilitation Standard	
N/A	

Site Review	
Fencing	
Property Standard	
<p>Where necessary, repairs to existing fencing systems may be included in the housing rehabilitation project. Where fencing is beyond repair, removal may be included in the housing rehabilitation project scope of work.</p>	
Rehabilitation Standard	
Repairs to existing fencing systems shall maintain the design and function of the existing unit.	

Site Review	
Swimming Pools	
Property Standard	
<p>Swimming pool repair or replacement will not be included in the housing rehabilitation scope of work.</p>	
Rehabilitation Standard	
N/A	

Site Review	
General Provisions	
Property Standard	
General site provisions must be maintained on all housing rehabilitation projects.	
Rehabilitation Standard	
The Contractor shall be responsible for the cleanup and removal from the site of all trash, debris, and surplus materials generated during the course of the work. This shall include all debris and trash throughout the dwelling. The Contractor shall protect the adjacent areas so as not to damage any property in the surrounding area. The dwelling shall be left broom clean and the site raked clean after the completion of construction.	

Site Review	
Trees and Shrubbery	
Property Standard	
Trees that present a safety hazard because electrical wiring runs through them must be trimmed as directed. Trees or shrubbery that could damage the structural integrity of an adjoining building above or below the foundation should be removed. Trees that are dead, dying, or hazardous may be removed.	
Rehabilitation Standard	
N/A	

Site Review	
Grading	
Property Standard	
The ground around the dwelling shall be sloped away from foundation walls to divert water away from the structure.	

Grading Continued
Rehabilitation Standard Continued
Any and all fill dirt shall be free from topsoil, vegetable matter, roots, debris, and other deleterious material. Stumps, roots, brush, etc., shall be removed prior to filling. Excess fill material to remain on-site only when specified (i.e., mounded areas over trenches, etc.)

Site Review
Paving and Walks
Property Standard
Essential paving, such as front sidewalks and driveways with minor defects, will be repaired to match. Non-essential, highly deteriorated paving, such as sidewalks that are unnecessary will be removed and appropriately landscaped. Un-repairable essential sidewalks and driveways will be replaced.
Rehabilitation Standard
<p>No concrete is to be placed over grass, roots, or foreign material. Concrete must be placed on uniformly firmed soil composition and compaction. Remove all organic matter such as tree roots, leaves, and wood. All reinforcing rod shall be deformed, as per A.S.T.M. Designation per type of work or as required by the current Michigan Residential Code. Isolation joints are required where the new concrete abuts existing structures such as buildings, steps, walls, existing slabs, and other fixed objects to avoid bonding to the structure. Fill sand shall be clean, compacted, and free of deleterious material. For drainage, the grade must be sloped a minimum of 1/8th inch per foot from all structures. Contractor to call for Open Form Inspection by Municipality, when required. All materials used for concrete forms shall be removed after concrete has set. Any voids in exposed concrete are to be filled and dressed smooth. Contractor to include compacted topsoil following removal of forms. The program suggests that the contractor inform the homeowner of maintenance & care instructions for the new concrete. These maintenance & care instructions should be in writing. Michigan is a SEVERE WEATHERING REGION and proper placing and maintaining concrete is critical.</p> <p>Driveways and Approaches – Design & dimension of new to match existing, unless otherwise specified. Approach to be flared to 12 feet or greater at street, per Municipal Building Requirements. Driveway to be a full 4 inch thick concrete and be reinforced with 6 inch by 6 inch, #10 gauge welded wire mesh, when specified. Driveway approach and Municipal sidewalk across the driveway to be a full 6 inches in thickness. To include placement of concrete on a firmly compacted sand or gravel base and pitching concrete away from house foundation, porches, garages, etc. Open Form Inspection to be performed by Municipality, where required. Concrete to be 6-bag mix unless otherwise specified and receive hand troweling (or similar) with light broom finish. To include control joints (saw cut recommended) approximately every 10 feet or so.</p>

Paving and Walks Continued
Rehabilitation Standard Continued
Sidewalks – Both Municipal and Private to be a full 4 inch thick concrete. To be as wide as existing or minimum 36 inches for private walk, with Municipal walk replacement matching width of existing, unless otherwise specified. To consist of 6-bag mix and receive once-over hand troweling (or similar) with light broom finish or float finish.

Exterior Building Surfaces (Major System)	
Exterior Railings	
Property Standard	
Existing handrails must be structurally sound. Sound railings may be repaired where it is possible to maintain the existing style and structural integrity. Exterior railing repair or replacement shall become part of the housing rehabilitation project where required by building code.	
Rehabilitation Standard	
Metal handrails and guard rails shall be of black wrought iron or aluminum design, unless otherwise specified and be securely anchored to porch caps, deck, columns, sidewalk, etc. Wood handrails and guardrails to be of pressure treated materials, unless otherwise specified. All railings to meet current Residential Code Requirements.	

Exterior Building Surfaces (Major System)	
Exterior House Numbers and Mailboxes	
Property Standard	
All dwellings shall have house numbers clearly displayed and an appropriate mail storage container.	
Rehabilitation Standard	
N/A	

Exterior Building Surfaces (Major System)	
Exterior Steps, Porches and Decks	
Property Standard	
Existing steps, porches and decks will be structurally sound, reasonably level, with smooth and even surfaces. Where deteriorated steps, porches and decks exist but are unnecessary, removal may be included as part of the housing rehabilitation project.	
Rehabilitation Standard	
<p>All masonry porch stoops and elevated porch structures are to have a 42-inch deep by 8-inch wide masonry foundation. Porch foundations above grade are to be 8-inch concrete block, unless otherwise specified. Exposed joints to be raked. Interior of foundations may be filled with masonry debris (i.e., broken block, brick, stone, etc.) with the balance receiving properly compacted sand fill. Contractor to request open form Inspection by Municipality when required. Concrete to be 6-bag mix unless otherwise specified. All pre-cast step components shall be properly installed and anchored over a concrete slab, 3 ½ inches thick, minimum. Poured concrete steps shall be properly formed and poured with 2,500 PSI concrete over firm undisturbed soil. The treads shall have a non-skid finish. Include filling any voids when forms are removed, including adequately sized foundation to step structure. Porch cap to be 4 inch thick concrete and be pitched away from the house. To overhang porch 1 ½ inch. To receive once-over hand troweling with light broom or similar non-slip finish. Porch cap to be caulked between house and concrete. To include approved railings at porch cap and steps when required per current Residential Code, see specifications for details.</p> <p>Replacement of wood porches and steps to have treated wood posts or concrete piers installed 42 inches deep. Wood posts to be a minimum 4-inch by 4-inch pressure treated and space per code and Municipal requirements. When Building Departments require masonry pier footings, use of rigid form tubes is recommended. Framing, decking, railings, and steps to be pressure treated and constructed to meet all current Residential Building Codes. Typical railing design to consist of: 4 x 4 corner and intermediate posts – spans not to exceed 6 feet unless Municipally permitted. 2 x 2 square spindles (with tapered ends) attached to 2 x 4 top and bottom horizontal rails installed on edge. 2 x 4 top cap, attached to the top horizontal 2 x 4 of the spindle section. All fasteners to be weather / rust resistant type. Exterior steps to meet local codes with hand rail.</p> <p>Repair of existing wood frame porches and steps are to have rotted, deteriorated, and/or damaged portion (as identified by Program Inspector) replaced with new of similar dimension and design. New materials to be of pressure treated type, unless otherwise specified. If non-pressure treated wood is to be used, all sides of the new wood are to receive prime coat of paint with finish paint / sealer to be the responsibility of the homeowner. If replacement of any steps, railings, posts, or other framing and/or decking is required, all newly constructed components are to meet the current code requirements and be approved by Local Building Official. All vertical wood support posts and/or columns atop masonry porch caps or concrete surfaces are to be anchored using galvanized standoff post bases. Any blocking shall be of 2x material and adequately fastened to support intended loads.</p>	

Exterior Building Surfaces (Major System)	
Exterior Cladding	
Property Standard	
Siding and trim will be intact and weatherproof. Exterior walls shall be weather tight and not permit entry of water, snow, or wind into the interior.	
Rehabilitation Standard	
<p>Replace damaged siding and trim with new materials to match existing size and type as close as possible. Adjacent end joints shall be staggered a distance of at least two studs. Properly attach siding and trim with corrosion resistant nails as specified in the applicable Building Codes. All new wood installed is to be properly primed and homeowner to finish paint, stain or be responsible for protection, unless otherwise specified.</p> <p>Aluminum or Vinyl Siding and Trim – When installed aluminum siding to be .024 inch in thickness and aluminum trim to be .019-inch thickness. Vinyl siding to be “LP – Waterford” or equivalent with thickness measuring no less than .042 of an inch. To include “J” channel, door channel, utility trim, inside and outside corners, starter strips, finish moldings, and other siding accessories for proper fit & finish (i.e. light blocks, address block, outlet blocks, hose-bib blocks). Mechanical fasteners to be of similar color as material being fastened. Vinyl siding to be standard single “B”, double 4 inch, double 5 inch, or triple 3-inch horizontal panels, unless otherwise specified. Homeowner to be given choice of standard beveled or Dutch lap design as well as available colors and texture. To include aluminum box casing on all openings with overlapping single cut miters at window and door trim. To include covering all wood window jambs up to the blind stop with aluminum, unless noted otherwise. To include covering the entire window-sills up to the window sash with aluminum. To include wrapping all exterior wood fascia, frieze, and related trim boards with aluminum. Soffit areas to receive ventilated vinyl or aluminum soffit panels. Wood frame support posts and headers of non-enclosed porches are to receive aluminum trim wrap with soffit areas receiving solid vinyl soffit panels. Homeowner to be given choice of available colors. To include ½” foam insulation underlayment under siding on the entire house, unless otherwise noted to create a flat surface for installing new siding. To include attached garages and attached storage areas, unless otherwise specified.</p> <p>Soffit and Fascia – When installed to include enclosing the indicated areas or identified rafter tails with the use of new wood framing followed by vinyl, aluminum, or wood soffit material. New framing to be installed level, perpendicular to the exterior wall, unless otherwise specified. To include installation of new sub-fascia, wrapping with aluminum trim or the installation of a wood fascia board having finish applied for protection from the elements. All sub-fascia used beneath aluminum is to be #2 or better white pine. Exposed wood fascia, when specified, to be of a natural weather resistant type (i.e., cedar, redwood, etc.), it is to receive a coat of quality primer paint, Homeowner responsible for any finish work / paint.</p> <p>Masonry Repair – All joints shall be cleaned of loose mortar and shall be tuck-pointed with new mortar to match existing mortar color as close as possible. All chipped block or brick shall be patched with mortar, unless replacement specified.</p>	

Exterior Cladding Continued
Rehabilitation Standard Continued
When specified, all structurally damaged block or brick shall be removed and replaced with new components properly set in a new bed of mortar. Type, design, and color of new to match existing as close as possible.

Foundations and Structure (Major System)	
Foundation Moisture	
Property Standard	
In extreme cases where excessive foundation moisture visually appears to be causing structural damage to the residence, moisture mitigation may become part of the housing rehabilitation project work scope.	
Rehabilitation Standard	
Each housing rehabilitation project work scope will specify interior or exterior moisture mitigation procedures for each individual project.	

Foundations and Structure (Major System)	
Foundations	
Property Standard	
Foundations will be sound, reasonably level and free from movement. Foundations constructed of unacceptable materials may be evaluated for replacement or repair.	
Rehabilitation Standard	
Footings and foundations shall have a minimum compressive strength of 2,500 psi at 28 days. Poured footings shall be 8 inches high by 16 inches wide for 8-inch basement walls. Shall be 10 inches high by 20 inches wide for 12-inch basement walls, unless otherwise specified. Shall be formed to retain concrete when soil is not sufficiently firm to retain the concrete. Shall not have concrete poured over grass, roots, or foreign matter. Foundations shall be 8 inches wide by 42 inches deep for structures on crawl spaces with 8-inch block walls. Foundations shall be 12 inches wide by 42 inches deep for 12-inch block walls or 8-inch walls with brick veneer.	
Crawl space ventilation shall be provided through crawl space walls.	

Foundations Continued

Rehabilitation Standard Continued

The minimum net area of ventilation openings shall not be less than 1 square foot for each 150 square feet of under-floor space area. Openings shall be so screened as to prevent the entrance of rodents, with corrosion resistant wire mesh having openings no greater than ¼ inch. Vents shall be of standard builder grade manufacturer for material. All vents shall have some provisions for closing of the vent during winter.

All crawl spaces shall have an access opening no less than 18 inches tall by 24 inches wide with an operable latched door that can be easily opened and closed. To be prefabricated metal design, sized as large as possible for greatest access, unless otherwise specified. Units are to be mechanically fastened within openings, then caulked or set into and sealed up with mortar. To be constructed of a ¾ inch pressure treated plywood door or panel attached to or hinged within its own pressure treated wood frame. Include latching hardware.

**Foundations and Structure
(Major System)**

Walls (structural)

Property Standard

Structural framing and masonry will be visually inspected, significant damage shall become part of the housing rehabilitation project.

Rehabilitation Standard

Wood framing shall be 2-inch by 4-inch nominal dimension lumber for studs and top and bottom plates, unless otherwise specified. New wall framing shall receive diagonal bracing where necessary to meet Michigan Residential Code, unless otherwise specified. Shall have studs placed on 16-inch centers. Shall have double top plates on all load bearing walls. Shall have double headers over all openings in accordance with the spans stated in the Michigan Residential Code. Sole plates in contact with masonry or concrete shall be pressure treated lumber. All wood in contact with concrete, earth, or within 18 inches of ground shall be pressure treated or of a decay resistant type. Furring strips applied to masonry shall be 1 inch by 2 inch pressure treated No. 2 Yellow Pine or other approved materials. All structural timbers shall be No. 2 Yellow Pine or other approved materials. All studs shall be No. 2 grade spruce or No. 2 Yellow Pine or other approved materials. Exterior exposed woodwork: No. 2 Sterling White Pine or other approved materials. Interior wood work and trim: No. 2 Sterling White Pine, Ponderosa Pine or clear, ship grade pine or other approved materials. All girders and other structural support members' shall be capable of supporting as designed and live loads imposed on them, without sagging or buckling.

Foundations and Structure (Major System)	
Roofing (structural)	
Property Standard	
Structural framing will be visually inspected, significant damage shall become part of the housing rehabilitation project.	
Rehabilitation Standard	
<p>All damaged or deteriorated rafters shall be completely removed and replaced with new to match dimension of existing, unless otherwise specified. If replacement of a structural member is required, municipal open roof Inspection is required. New rafter tails shall be extended a minimum of 4 feet back from the outer edge of the wall and shall be securely nailed to the existing rafter. Rafters shall not be spiced. When replacing rafter tails, old rafters shall be cut flush with exterior siding. Approved engineered trusses are to be used when specified. Collar ties shall be installed on all new rafters. Ties shall be 1 inch by 6-inch pine or fir and located in the top third of the rafter length. Ceiling joists and rafters shall be nailed to each other, where possible. Ceiling joists shall be continuous or joined together over a partition wall to provide a continuous tie across the building. When replacing fascia board, its length shall be sufficient to reach a minimum of 3 rafter tails, unless otherwise permitted by program. All saw cuts on roof framing and rafters shall be to the line and closely fitted. All framing shall comply with the applicable codes.</p> <p>Plywood sheathing shall be ½ inch minimum thickness O.S.B. or other approved exterior grade plywood or structural sheathing when installed directly over roof framing members or 7/16" when installed over existing roof boards/decking. Check with Municipality as to possible requirement to use only ½ inch CDX plywood. Plywood H-Clips/cups to be installed, where applicable. Individual roof boards or strip sheathing shall be a minimum ¾ inch x 6 inch and shall have all end joints made over rafters and adjacent joints shall be staggered. Spans shall be as stated in Michigan Residential Code.</p>	

Foundations and Structure (Major System)	
Additions	
Property Standard	
All existing additions to residential structures must be on a properly constructed foundation and must not evidence separation from the original structure. Adding an addition to an existing dwelling is not an allowable housing rehabilitation measure.	
Rehabilitation Standard	
N/A	

Foundations and Structure (Major System)	
Floors (structural)	
Property Standard	
Structural flooring will be visually inspected, significant structural damage shall become part of the housing rehabilitation project.	
Rehabilitation Standard	
<p>Joists shall be supported at their extreme ends by either resting them atop walls/headers or an approved ledger or with the use of metal joist hangers. Shall not be toe nailed or spiced between supports. Shall be of No. 2 Southern Yellow Pine or other approved materials. Shall be the same dimensions as the old joists, unless otherwise specified. Shall have minimum bearing of 1-½ inches on wood or metal and 3 inches on masonry. Shall be positioned so that the top edges provide an even plane for the installation of sub floors and finished floors. Shall not be notched in the top or bottom to a depth greater than one-sixth the depth of the joist. Shall not be notched in the center of the span. Shall have holes bored a minimum of 2 inches from top or bottom of the joist with diameters not to exceed one-third the depth of the joist. Shall be jacked and leveled as near as job conditions permit.</p> <p>Concrete Slabs Shall be minimum 3 ½ inches thick for interior floors, unless otherwise specified. Shall be 6-bag mix. Shall have 6 inch by 6 inch #10 gauge welded wire mesh, when specified. To include sand or gravel fill, when specified, properly compact prior to placement of concrete. Shall have 6 mil. Visqueen (polysheet) installed under slabs for living areas. Shall receive open form Inspections by the Local Building Department, when required.</p>	

Windows and Doors (Major System)	
Basement Windows	
Property Standard	
Basement windows may be replaced with glass block or replacement windows when the existing window is deteriorated and permitting the infiltration of air, snow or rain.	
Rehabilitation Standard	
To include complete removal of existing window frames, unless specified otherwise. To be a minimum 3-inch thick glass block units. To be set in mortar or silicone sealant per manufacturer's specifications. To include a minimum of two vented units as per required for cross-flow ventilation. To be a standard "Decora" design, unless otherwise specified.	

Windows and Doors (Major System)	
Windows	
Property Standard	
<p>Primary windows are not to be replaced unless they are rotted or deteriorated and are permitting the infiltration of air, snow or rain. Windows that are not repairable may be replaced. Primary windows may be replaced as a lead-based paint abatement measure.</p>	
Rehabilitation Standard	
<p>All windows shall be provided with a drip cap and an exterior sill, where applicable. All windows and frames shall be thoroughly insulated and caulked at the time of installation. Windows shall be of an approved type and shall have a positive locking device, aluminum or fiberglass screen, permanent weather-stripping and aluminum or vinyl-glazing bead. Aluminum or vinyl awning and jalousie windows shall have a torque-bar operator. All windows shall properly fit openings. Any framing necessary to accomplish this is to be included, unless otherwise specified. Installation to include both exterior and interior trimming of units with materials, as specified. Shall have a U-Rating of a minimum of .35.</p> <p>Replacement vinyl clad or aluminum clad wood windows when installed shall be equal to “Anderson – Tilt Wash”, or as specified by program. To have minimum of ¾ inch insulated double-glazing with Low-E glass and Argon Gas filled. To include full screens over all operable sashes. To be completely trimmed on interior with clear grade pine casing, stool, and apron. Casing trim to be standard 2-1/4 inch, unless otherwise specified. Existing trim to be re-installed only when specified. To be appropriately trimmed on outside with aluminum trim, unless otherwise specified. To include repairing damage to interior or exterior walls resulting from window installation. To be completely insulated around the entire perimeter, then caulked. To include supplying program with copy of manufacturer’s warranty.</p> <p>Vinyl Replacement Windows – When installed to be double-glazed with minimum of ¾ inch insulated glass and to include Low-E glass and Argon Gas filled. To have fusion welded corners, adequate latches, with full screens over all operable sashes. To be installed per manufacturer’s specifications. Perimeter around the installed window to be air sealed and properly insulated. Exteriors finished with site-fabricated aluminum trim stock as follows: Properly installed to produce uniformity and symmetry. Sill areas pitched properly to shed water away from window structure. All new aluminum trim installed to be adequately backed by wood. Trim to be secured and caulked with “Solar Seal – 900” or equal sealant / adhesive, incorporating aluminum trim nails only when and where necessary. Homeowner choice of standard coil stock color. To be trimmed / finished on the interior as follows: New stain-grade pine stop moldings, unless otherwise noted. New stain-grade extension jambs, when specified, constructed of clear pine or quality grade ¾ inch birch plywood with new stain-grade 2 ¼” pine casing. Style of casing to match that within the room, unless noted otherwise. Homeowner responsible for painting or staining of new materials. To include repair of any damage to interior and exterior wall surfaces as a result of window replacement. Interior walls receiving repairs are to be patched and primed, homeowner responsible for final painting.</p>	

Windows and Doors (Major System)	
Overhead Garage Doors	
Property Standard	
All overhead garage doors shall be in good repair, weather tight and operate properly.	
Rehabilitation Standard	
New sectional roll-up doors are to be “Wayne-Dalton” brand or equal, non-insulated steel units - unless specified differently) complete with all necessary installation hardware. Door to have standard embossing, be a standard material color, and exclude any windows or decorative features - unless otherwise specified. All doors to include exterior vinyl weather-stripping. Installation to include any / all related carpentry necessary for converting tilt-out doors to roll-up design – when conditions warrant the need. New doors to be installed per all manufacturers’ instructions. Power opener (when specified) to be a “Lift Master” brand or equal, ½ horsepower with chain drive, have Inferred Safe-T Beam protection and two remote control units.	

Windows and Doors (Major System)	
Interior Doors	
Property Standard	
Baths, bedrooms and closets will have operable doors. All interior doors shall be capable of affording the privacy for which they are intended.	
Rehabilitation Standard	
All interior doors should fit ½” above finish floor. When replaced or installed doors shall be standard 6’-8” in height, hollow core pre-hung design having 1 3/8” thick doors, three hinges, and passage or privacy hardware; type and style of door, hardware, trim casing, and finish of units to be that as specified. Doors to be installed plumb and level, adding any/all shims necessary for a true and secure installation. Installation to include cutting of door bottoms when necessary for adequate clearance above floor coverings (carpet, rugs, mats, etc.). Casing to be standard 2 ¼” stain grade pine unless noted otherwise, with homeowner responsible for painting or finishing – unless it too is specified otherwise. When a door (slab only) is to be replaced or installed, new unit to match that of existing as close as possible, be type and style as specified and is to include the specified hardware. Homeowner responsible for application of finish – unless otherwise noted. Pocket doors used as passage doors are to be installed per the manufacturer’s instructions and are to be trimmed/cased in an appropriate manner.	
Bi-Fold or By-Pass doors when replaced or installed should match design, size and type of existing – unless otherwise specified.	

Interior Doors Continued
Rehabilitation Standard Continued
To include complete new installation hardware. To be installed plumb and level to fit and operate properly within the existing openings. To include cutting bottoms of doors, if necessary, to allow for proper ½” clearance above the finish floor. To include 2 ¼” stain grade pine casing trim, with style of trim matching other with in the room – unless specified otherwise. Homeowner is responsible for applying finish to the doors – unless it too is specified otherwise.

Windows and Doors (Major System)	
Exterior Doors	
Property Standard	
All exterior doors shall be in good repair, weather tight and operate properly with lockable hardware.	
Rehabilitation Standard	
<p>New construction units to be Stanley or equal steel clad 1 ¾” insulated design. To include hinges (3 ½ or 4 inch), “Schlage” or equal lockset, single cylinder dead bolt and strike plates. To include double-glazed window when specified or peep viewer as minimum. To be primed inside and out including all edges or factory primed. To include complete weather-stripping of jamb and threshold. To include new interior stain grade pine casing, unless otherwise specified. To include all related carpentry and all wall repairs as a result of door installation.</p> <p>When storm doors are installed to be 1 ¼ inch, Fox or Trapp or equal. To include closer (two closers on designs requiring such), door check and standard handle/latch assembly. To include screen and be caulked with Silicone or Butyl caulking behind jamb, when required. Homeowner has choice of standard colors.</p> <p>When an exterior door-wall is installed it shall be standard color double-glazed, hollow frame constructed with fusion-welded corners, installed level and plumb. Shall include Low-E glass & Argon Gas. To include quality rolling screen, security latch and toe operated deadbolt. To include trimming interior with stain grade pine casing and extension jambs when specified. To receive stain grade pine interior trim molding (1/4 round or similar), unless extension jambs are specified. To have exteriors trimmed with aluminum, unless otherwise specified.</p>	

Roofing (Major System)	
Roofing	
Property Standard	
<p>All roofs will be visually inspected for a useful life of five (5) years. Roofs that do not visually appear to have a useful life of five (5) years or greater shall be replaced as part of the housing rehabilitation project. Missing or leaking shingles and flashing shall be repaired on otherwise functional roofs.</p>	
Rehabilitation Standard	
<p>All roofing shall be applied in conformance with the applicable Roofing Code and the manufacturer's instructions. Roof replacements requiring the replacement of deck sheathing or structural framing will require "Open-Roof" inspections by the local building department. Contractor is responsible for requesting such inspection by the local Building Official. If work is performed outside the normal business day hours, sufficient proof (i.e. Photos, video, etc.) is to be provided to the Municipality indicating the added materials and labor were / were not needed. All deteriorated or otherwise damaged materials revealed upon tear-off of roof covering are to be replaced under the program's "Change-Order" procedure. All roofing shall be flashed in accordance with the code requirements of each location for which the protection is provided. Roof structures which lack overhangs and have inadequate roof deck surface to allow protection of the exterior walls, are to receive at a minimum, a pressure treated 1x2, held flush with decking – flowed by metal drip edge around the entire perimeter. Ice protection, in the form of a self-adhering polymer modified bitumen sheet, shall be installed at all starter edges, valley areas, chimney locations, and other transition areas of roof surfaces. On roof slopes below 4 units vertical in 12 units horizontal, the decking shall have either a double layer of ice & water shield or low slope roof materials; this will be specified in the job specifications. All new asphalt shingles installed; are to have a manufacturers' warranty period of no less than 25 years, consist of either standard three-tab design or "dimensional" design when specified by program inspector. All asphalt shingles are to be installed over a layer of asphalt impregnated building felt (15# minimum) and the roof structure is to be vented to meet the current code requirements. When new roofing is installed, sagging portions of roof shall be inspected and repaired if possible. Purlins or sole plates shall be used when necessary. All fasteners are to be of a corrosion resistant type and be sized and installed per the manufacturer's instructions as well as per the applicable code. All roof coverings installed are to be of the type specified and are to be installed per their manufacturer's instructions and respective codes. Homeowner to be given choice of standard colors for all roofing materials.</p>	

Roofing (Major System)	
Gutters and Downspouts	
Property Standard	
<p>Gutters and downspouts must be in good repair, leak free and able to divert storm water from all lower roof edges. The system must move all storm water away from the building and prevent water from entering the structure.</p>	
Rehabilitation Standard	
<p>Gutter Systems are to be installed or replaced on all residential structures and accessory buildings when local ordinances require. To be 5 inch "K" style design, seamless aluminum with baked enamel finish complete with an adequate number of downspouts. Gutters are to be installed with the use of "hidden hanger" type fasteners with screws attached to the fascia. Standard gutter spikes and ferrules are not recommended unless used to install additional gutters to an existing system, but are an approved method. New system to include 5-foot downspout extensions at each downspout location. If extensions impede primary walkways, downspouts are permitted to be discharged directly on to cement slabs if they can effectively carry water away from the foundation a distance of at least 5 feet. Unless noted otherwise, installation or replacement of new gutter / downspout system is to include capping off or plugging of any municipal storm drain conduits with masonry. Contractor to field measure the system to be installed or replaced. Homeowner to be given choice of standard colors.</p> <p>Gutter System repairs to include replacing and / or installing specific components of the existing gutter / downspout system, as specified. Color, style, and routing of new components to match that of existing, as close as possible. Existing gutter system to be disconnected from municipal storm drain conduits, and conduits are to be then capped off with a "masonry plug" of mortar. All gutter downspout locations to receive 5-foot extensions, unless they terminate onto concrete that will safely carry water away from the foundation a distance of at least 5 feet. No downspouts are to be discharged directly onto primary walkways.</p>	

Roofing (Major System)	
Flat and Low-Slope Roofing	
Property Standard	
<p>All roofs will be visually inspected for a useful life of five (5) years. Roofs that do not visually appear to have a useful life of five (5) years or greater shall be replaced as part of the housing rehabilitation project. Reconstruction of low-slope roof framing may occur whenever the area is leaking, and the leaking cannot be prevented by installation of rolled roofing or rubberized roofing membrane.</p>	
Rehabilitation Standard	

Flat and Low-Slope Roofing Continued

Rehabilitation Standard Continued

EPDM (Ethylene Propylene Diene Monomer) is the general type of roofing material specified to be used on low-slope applications. Products include torch down or “peel-n-stick” type products. See manufactures specifications for proper installation. Contractor shall be held to standards as set forth by product manufacturer.

Insulation and Ventilation (Major System)	
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Roof Ventilation

Property Standard	
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Existing roof structures will be evaluated for inadequate or damaged roof venting. Replaced roof structures will be vented to code where applicable.

Rehabilitation Standard

Provide adequate ventilation of attic spaces and roof structures as defined by the “Roof Ventilation” of the Michigan Residential Code. Individual roof ventilators are to be the “Lomanco – 700 Series” design or equal, a slant back type vent. Ridge ventilation (when specified) to be of the “Shingle Vent II” external baffle or equal. Soffit ventilation (when possible) to be of the type most suitable for its location. All shall be installed in accordance with ventilation requirements for roof and attic structures.

Insulation and Ventilation (Major System)	
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Kitchen Ventilation

Property Standard	
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All kitchens should have an operable window and/or a functional exhaust vent fan.

Rehabilitation Standard

Exhaust fans shall be sized adequately for the size of the room. A minimum rate of 100 cfm for intermittent ventilation is required. Shall be ceiling or wall mounted as specified. Shall be vented directly to the outside air. Shall be controlled by it's own switch.

Insulation and Ventilation (Major System)	
Exterior Wall Insulation	
Property Standard	
Exterior wall insulation may become part of the housing rehabilitation project work scope when the wall framing is exposed. Exterior wall insulation R-value will be determined by the depth of the cavity and building code.	
Rehabilitation Standard	
When the stud cavities of exterior wood frame walls are exposed during the rehabilitation process, new kraft faced fiberglass insulation, having a minimum R- value of 13, is to be installed as specified. If exterior siding work or repair work of wood frame exterior walls reveals a lack of proper wall insulation, blown-in or batten type insulation is to be installed from the exterior as specified. When siding installation or replacement is specified on masonry exterior walls, ¾” dense foam insulation is to be installed between the furring strips. The entire wall shall be covered with an approved house wrap materials attached to the furring strips. Tyvek or approved equal.	

Insulation and Ventilation (Major System)	
Foundation Insulation	
Property Standard	
Foundation insulation – When basements are unfinished the rim joist around the house shall be insulated with un-faced fiberglass insulation. Insulation within floor joist cavities or on the interior of the perimeter wall in crawl spaces may be considered and become part of the housing rehabilitation project work scope. In some instances perimeter crawl space insulation may be necessary to ensure that the mechanical and plumbing systems located within the crawl space are preserved.	
Rehabilitation Standard	
When specified – crawl space areas are to receive a minimum of R-21 batten type fiberglass insulation between the floor joists with the vapor barrier side applied against the bottom of the sub-flooring. Interior surfaces of crawl space perimeter walls are to be insulated to an R-value of 19 with materials specified on the housing rehabilitation project work scope. Foam board insulation with a minimum thickness of 4 inches with an R-value of 20 or greater, is preferred where building code allows. Batt or blanket insulation with an R-value of 19 in the bond (rim joist / header) between joists around perimeter. Six (6) mil polyethylene sheeting is to be installed over the entire “floor” surface of the crawl space area – after the earth has been cleaned of any debris and is raked smooth and relatively level. Edges of plastic sheeting to be adequately lapped, sealed and extended up the perimeter walls and all floor penetrations.	

Insulation and Ventilation (Major System)	
Infiltration	
Property Standard	
All dwellings evaluated for the Housing Rehabilitation Program will be visually inspected for obvious infiltration areas that unwanted air, moisture and vermin may enter the dwelling. Elimination of infiltration of such undesired substances will fall within the work scope for the dwelling through the Housing Rehabilitation Program.	
Rehabilitation Standard	
Infiltration areas identified during the housing rehabilitation inspection will become part of the housing rehabilitation work scope and identified therein.	

Insulation and Ventilation (Major System)	
Bathroom Ventilation	
Property Standard	
All bathrooms should have an operable window and/or a functional exhaust vent fan.	
Rehabilitation Standard	
Exhaust fans shall be sized adequately for the size of the room. A minimum rate of 50 cfm for intermittent ventilation is required. Shall be ceiling or wall mounted as specified. Shall be vented directly to the outside air. Shall be controlled by it's own switch.	

Insulation and Ventilation (Major System)	
Attic Insulation	
Property Standard	
Attic Insulation may become part of the housing rehabilitation project work scope when deemed necessary to preserve the dwelling and/or ensure occupant comfort. Attic insulation R-value will be determine by the depth of the space and building code.	
Rehabilitation Standard	

Attic Insulation Continued
Rehabilitation Standard Continued
<p>New insulation is to provide a minimum R-value of 38, and proper foam or cardboard baffles are to be used to ensure ventilation of the roof/attic system is not compromised by new insulation. All insulation installed must meet the manufacturer's instructions and proper guards/protection must be incorporated around and over the top of recessed lighting and similar fixtures, which can create heat build-up. Installation contractor is required to provide a certificate, identifying the type, volume and R-value of the materials installed. Note – If the attic area presently has knob-and-tube wiring atop the ceiling joists, program is to be notified (If not already specified to be addressed within electrical work of the contract). Knob and tube wiring will require its replacement with Romex type wiring prior to being covered by insulation. Attic access covers/panels/doors are to receive insulation (fiberglass batten, styrofoam, etc) providing R-values respective to their locations.</p>

Interior Standards
Interior Handrails and Guardrails
Property Standard
Interior handrails and guardrails shall comply with residential building code.
Rehabilitation Standard
Interior wood hand / grab railings to be of accepted design, be properly supported and anchored with use of adequate hardware, be sanded smooth and have their ends returned to walls and/or posts. Returned end portions are to be secured to the grab railing with the use of glue and screws. Interior wood guardrails to comply with residential code and to be constructed, as specified by Program.

Interior Standards
Flooring
Property Standard
Damaged or deteriorated flooring on habitable levels of the dwelling will be repaired or replaced with new like materials. Where trip hazards exist, every attempt to correct the hazard will be made. Bathroom, kitchen and other water-susceptible floor areas will be covered with water-resistant flooring that is free from tears or tripping hazards.
Rehabilitation Standard

Flooring Continued

Rehabilitation Standard Continued

Floor sheathing shall be $\frac{3}{4}$ inch thick D.F.P.A. under-layment grade, tongue and groove plywood or O.S.B. sheathing, when installed new directly on joists. Shall be group 1, interior, for use under resilient flooring and carpet. Shall be $\frac{5}{8}$ inch thick, D.F.P.A. under-layment grade plywood or O.S.B. sheathing, when applied over existing flooring. Shall have existing floorboards repaired, when necessary, before applying sheathing or under-layment. Allowable spans shall be as stated in Michigan Residential Building Code for floor sheathing.

Floor repair shall replace all damaged, loose, or broken sub flooring prior to installation of finished floor. Shall have end joints of strip flooring occurring over floor joists. Shall have end joints of adjacent flooring staggered. Shall have replacement-flooring match existing as close as possible in size, quality, and finish. Shall extend into closets or storage areas when part of the same room. Shall have base and shoe moldings replaced upon repair of floor and replacement of floor covering.

Floor covering sheet vinyl to be seamless where feasible. To be caulked with Silicone or Butyl rubber caulking at tubs and toilet. To include shoe molding installed around the entire perimeter of rooms except bathroom. Installation to include metal trim at flooring transitions/seams. To include vinyl base moldings in bathrooms. To be installed under toilets, stoves, refrigerators, washers, dryers, and water heaters. To be equal to Mannington or Armstrong. Homeowner has choice of color and style. Materials supplied by contractor shall be of standard or builders grade as a minimum spec material. To include sealing all seams with seam-sealer per manufacturer's instructions. To be installed on proper under-layment as specified by manufacturer, which shall be properly installed to sub-floor. See 21.2 (luan or multi-ply) Contractor to supply homeowner and program with maintenance instructions and warranty information.

Under-layment to be installed over existing flooring in all areas to be covered with sheet vinyl, unless otherwise specified. Work to include cutting any door bottoms affected by increasing floor height. To be luan plywood or multi-ply under-layment, $\frac{1}{4}$ inch in thickness, unless otherwise specified. To be nailed or stapled every 6 inches on joist and every 4 inches around perimeter and joints. To include filling all joints and depressions with appropriate leveling compound.

Carpet to include removal and disposal of existing carpet and pad when replacement is specified. To include installation of new tack strip as needed. Then, installation of 7/16" re-bond pad with a Stain-Master or equal carpet. All materials shall be of builders grade or better. To include covering the floors of any closets of the room covered, unless otherwise specified. To include metal carpet strips at flooring transitions or where carpets end in door or archways. To include supplying Program and Homeowner with carpet warranty.

Vinyl floor tile to be 12 inch by 12 inch square design, self-adhering tile by Armstrong or equal. Must also use flooring adhesive in addition to pre-stick. To be installed over new layer of $\frac{1}{4}$ inch luan under-layment, unless otherwise specified.

Ceramic floor tile to be installed over mortar bed, cement board, or appropriate sub floor when covering wood floors. Tile shall equal or exceed the Standard Grade Requirements of the U.S. Department of Commerce. Method of installation shall adhere to manufacturer's recommendations.

Interior Standards	
Interior Walls and Ceilings	
Property Standard	
Holes and cracks in walls and ceilings must be repaired and precautions taken to prevent future damage.	
Rehabilitation Standard	
<p>Whenever existing walls and ceilings are to be repaired, the damaged material shall be completely removed, and new material shall be installed to match and blend in with the surrounding wall and ceiling finish as close as possible. All repairs shall be done in a workmanlike manner and properly prepared to receive the finish application. Damaged or loose plaster or drywall is to be repaired with patching or joint compound. New repair shall be struck level with surrounding surface and finished to match existing walls. Repair area to receive prime coat of paint with homeowner responsible for final painting – unless otherwise noted.</p> <p>New gypsum wallboard to be ½” in thickness and new drywall shall be taped, mudded, and sanded smooth; and to receive prime coat of latex base paint only – unless otherwise noted. All gypsum wallboard used in areas subject to excess moisture, shall be moisture resistant type. Existing baseboard, window or door trim shall be removed and replaced with new. Existing trim to be reinstalled only when specified. When installing new sheetrock in conjunction with new windows, trim shall be eliminated and sheet rock returned to the windows using metal corner bead and imitation marble sills, or other specified materials. All openings without doors and all corners shall be finished with metal corner bead.</p> <p>Wood paneling shall be of the pre-finished type and shall be either pre-stained luan or veneered wood on plywood backing. All paneling shall be a minimum of ¼ inch thick if applied over drywall or another adequate surface. Installation shall include matching inside and outside corner trim, window, and door trim, cove molding and base trim. Homeowner responsible for painting / staining of trim – unless otherwise noted. When installing paneling in conjunction with new windows, paneling shall return to the windows unless otherwise specified.</p> <p>New ceramic wall tile to be installed over moisture resistant cement board or if specified on drywall (green board) or it may be applied directly over an existing surface – but only when permitted or specified. Tile to be installed level and plumb, regardless of the trueness of the surface(s) upon which it is applied. All exposed edges to be finished with bull-nose tile or edging if specified. Tile to be properly grouted and wiped clean of grout residue. Contractor responsible for any re-grouting needed (as result of shrinkage) with in one-year warranty period. Tile shall equal or exceed the Standard Grade Requirements of the U.S. Department of Commerce.</p> <p>All enclosed and semi-enclosed bathtub / shower areas receiving new ceramic tile or tile replacement, walls are to be covered with ½” cement board (“Durock” brand or equal). New ceramic tile to be standard 4 ¼” square design, installed with the use of the thin-set method.</p>	

Interior Walls and Ceilings Continued

Rehabilitation Standard Continued

All new tile to be properly grouted and cleaned of any grout residue. Tile to extend vertically, a minimum of 6 feet above the floor of the tub or shower area and extend a minimum of 3 inches out from the face of the tub or enclosure – unless otherwise specified. To include ceramic soap dish and towel bar having ceramic brackets – unless otherwise specified. Homeowner to be given choice of standard tile and grout color.

Whenever existing ceilings are to be repaired, the damaged materials shall be completely removed, and new materials to be installed to match and blend in with the surrounding ceiling finish as close as possible. New materials to be installed with the use of screws. All repairs shall be done in a workmanlike manner and repair areas are to be properly prepared to receive final finish. Repair areas are to receive prime coat of paint at a minimum. Finish painting shall be done only when specified. When installation of new drywall is specified, it is to receive taping and finishing (minimum of two coats of joint compound – third when necessary), be properly sanded and then receive a prime coat of paint. Homeowner will be responsible for final painting unless it is noted otherwise. When texture coated ceilings are to receive repair work, the new materials installed are to receive only a prime coat of paint with the homeowner responsible for applying any texture coat.

Any gypsum wallboard used on ceilings is to be ½” standard drywall unless otherwise specified. When installed within bathrooms, kitchens, or other areas where water damage or humidity may be a factor, moisture resistant (green board) drywall is to be used. When a new layer of drywall is to be installed over an existing ceiling material, adequate length screws are to be used and perimeter edges are to be taped and finished at the ceiling/wall juncture or stain grade wood moldings are to be installed as specified. When ceilings are to be replaced, all old materials are to be removed totally with new drywall applied directly to the ceiling joists. Ceiling/wall juncture to be taped and finished or have stain grade wood moldings installed as specified. Moldings used at wall/ceiling juncture are to be; stain grade (clear) pine, of a standard cove design, be joined in a professional manner with mitered or coped corners, be full length when possible and are to be sized as specified. Unless specified otherwise, Homeowner will be responsible for the finishes applied to the moldings installed.

Suspended acoustical to be of an exposed T-bar design and installed in accordance with manufacturer's instructions. To consist of standard 2'x2' or 2'x4' grid design. To have drop-in lighting when/where specified. Ceiling panels / tiles to be of the thickness and type specified. To be installed at the greatest height permissible or to that which is specified.

Fibrous 12"x12" ceiling tiles to be ½” thickness with tongue and groove or interlocking design. Linen in color unless noted otherwise. To be installed over 1x3 wood furring strips installed 12” on center. To be secured with staples or adhesive as specified. To include trimming perimeter edges with stain grade pine moldings or with manufacturers recommended ceiling molding. If wood trim is used to finish the perimeter, homeowner will be responsible for the finish of such – unless otherwise specified.

Interior Standards	
Kitchen and Bathroom Cabinets and Countertops	
Property Standard	
<p>All kitchen and bathroom cabinets and countertops shall be decent, safe, sanitary and of adequate size to function as intended. Where existing cabinets and countertops are not found to be decent, safe, sanitary and of adequate size, replacement shall become part of the housing rehabilitation project work scope.</p>	
Rehabilitation Standard	
<p>When bathroom vanities are to be installed they are to be “Merillat – Spring Valley Oak” or equal cabinet with a “Marblite” brand or equal, preformed, artificial marble top having a built in 4” backsplash and a “Delta” or equal, single handle chrome faucet with pop-up waste. To be securely anchored to the wall(s) with screws, adding wood shims as / where needed to plumb and level the cabinetry. Top to be properly secured to the cabinetry with adhesive. To include new wood trim moldings at floor and walls as needed. Moldings to be pre-finished when possible or painted/stained by the contractor prior to installation. Top to be neatly caulked to the wall(s) with “PolySeamSeal” brand or similar latex caulk. End splashed are to be included when vanity tops abut sidewalls, then caulked as well. To include new braided stainless steel supply lines to the faucet and new plastic P-trap waste line assembly. Size of new cabinet to match that of existing unless otherwise specified. Cabinet design to incorporate drawers when possible and Homeowner to be given choice of standard cabinet finishes; also door/drawer hardware if specified.</p> <p>When pre-formed countertop/sink is to be installed it is to be equal to “Marblite” brand. To include single handle chrome faucet with pop-up waste, Delta or equal when specified. To include new, plastic P-trap assembly with braided stainless steel supply lines. To include built-in 4-inch backsplash and matching end splashes when side(s) of top abuts wall(s). To be caulked to walls. To be firmly fastened to vanity with adhesive caulk. Homeowner’s choice of standard colors.</p> <p>When medicine cabinets are to be installed they are to be of the size and make as specified. To be surface mounted or recessed as specified.</p> <p>When base kitchen cabinets/countertops are to be installed they are to be of “Merillat – Spring Valley Oak” or equal units measuring a standard 24” deep. Layout of new base units to match that of existing cabinetry unless otherwise specified. Location of kitchen sink, cook range, refrigerator, and other existing appliances to remain undisturbed – unless specified otherwise. To be installed level and plumb – adding shims beneath units when necessary. Faces of cabinets to be held flush with adjacent units and be attached to each with a minimum of three (3) screws per side. Installation to include cut-outs and related adjustments for plumbing, heating, or electrical. To be standard design units having upper drawer(s), single or double doors with raised panels and self-closing hinges with a single shelf within as well. To receive toe kick panel trim when installation complete, then also receive a shoe mold or similar trim. Dimension of molding to be sufficient enough to cover any voids left by removal of old cabinets.</p>	

Kitchen and Bathroom Cabinets and Countertops Continued

Rehabilitation Standard Continued

When wall cabinets are to be installed they are to be “Merillat – Spring Valley Oak” or equal units measuring a standard 12” deep. Layout of new wall units to match that of existing cabinetry unless otherwise specified. Location of range hoods, refrigerator and related appliances to remain undisturbed – unless otherwise specified. To be installed level and plumb – shimming units when necessary. Faces of cabinets to be held flush with adjacent units and be attached to each with a minimum of two (2) screws per side. To be standard design units with adjustable shelves and raised-panel doors. Homeowner to have choice of cabinet finish, door style, as well as door and drawer hardware. To include upper ¼ round molding when wall units meet soffits and ceilings. Type of finish on molding to match that of the cabinets.

Countertops are to be Formica brand or equal post-formed 25 inch self-edged with 4 inch backsplash or; custom build to be constructed out of ¾ inch high-density particle board (industrial grade). To include 1 ½ inch deep exposed edge. To be 1/16 inch, high pressure plastic laminated (Formica, Wilsonart or equal). To include 4 inch backsplash and caulked at backsplash and walls with “Poly Seam Seal” or equal. To be firmly attached to cabinets with screws. To be homeowner selected color, from standard stock, smooth Formica colors and patterns.

Electric (Major System)

Ground Fault Circuit Interrupter

Property Standard	
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Non-functioning GFCIs will be replaced. Kitchen counter, bathroom and laundry receptacles shall be replaced with a GFCI-protected receptacle or protected by a GFCI device where required by code. All exterior outlets will be GFCI protected.

Rehabilitation Standard

GFCI protected outlets are to be installed according to applicable building code. When receptacle outlets are replaced or installed they are to be GFCI protected when present or installed in the following locations: Bathrooms, Kitchen Countertops (all convenience outlets), Wet Bars, Unfinished Basements, Garages – both attached and detached, Crawl Spaces – Convenience Outlets, Structure Exteriors (to include while-in-use covers) Outdoor Receptacles (to include while-in-use covers) to be grounded. To be GFCI in bathroom (15 amp circuit) To include repairing any damage caused by installing outlets and fixtures. To include installing romex type NM-B in walls where feasible and using wire mold conduit in habitable rooms where wiring must be exposed.

Electric (Major System)	
Passage Lighting	
Property Standard	
Homes that are participating in the Housing Rehabilitation Program will be properly illuminated. Where proper illumination does not exist, lighting shall become part of the housing rehabilitation project work scope.	
Rehabilitation Standard	
Proper illumination will be specified in the housing rehabilitation project work scope.	

Electric (Major System)	
Interior Electric Distribution	
Property Standard	
Wiring will be free from hazard and all circuits shall be properly protected at the panel. Every room shall have a minimum of two duplex receptacles, placed on separate walls and one light fixture or receptacle switched at each room entrance. Where the source wiring circuit is accessible (e.g., first floor above basements, in gutted rooms, etc.), receptacles shall be grounded. All accessible switch, receptacle and junction boxes shall have appropriate cover plates.	
Rehabilitation Standard	
<p>When fixtures are replaced or installed they are to be switch operated unless otherwise specified. Pull chain fixtures are permitted within basements, closets, attics, crawl spaces and similar locations. To be of an approved type for their locations with proper globes where required. Exterior fixtures are to be adequately protected from the weather and security lighting is to be installed when/where specified. To be controlled by the required number of switch locations – with respect to the purpose and location of the lighting fixture.</p> <p>When electrical outlets are replaced or installed they are to be grounded. To include repairing any damage caused by installing outlets and fixtures. To include installing romex type NM-B in walls where feasible and using wire mold conduit in habitable rooms where wiring must be exposed.</p> <p>When electrical wiring is to be replaced or installed it shall be sized, fastened and encased in an appropriate material according to applicable building code.</p>	

Electric (Major System)	
Electrical Service Panel	
Property Standard	
Whole house main electrical service panels shall have a main disconnect, at least 10 circuit-breaker-protected circuits, a 100-amp minimum capacity and be adequate to safely supply existing and proposed devices.	
Rehabilitation Standard	
To be of sufficient size to leave 2 extra circuits open for future use. To include new meter box, if necessary. To include new service entrance cable. To include pipe riser, if necessary. To include grounding. To include bonding water meter if necessary. To include incorporating all existing panel boxes into new service panel. To include repairing any damage caused by installing the service panel. To be installed according to applicable building code.	

Plumbing System (Major System)	
Water Heaters	
Property Standard	
Each dwelling shall have water-heating equipment (water heater and hot water supply lines) that is free of leaks, connected to the source of fuel or power, and is capable of supplying hot water for general usage.	
Rehabilitation Standard	
Gas fired water heaters are to be American Gas Association certified. Electric water heaters are to be Underwriter Laboratory approved and have proper wiring to the unit. To include supplying the Housing Rehabilitation Program with a completed copy of warranty and providing both original warranty and owner's manual to the homeowner.	
When water heaters are replaced or installed they are to be 40 gallon for gas fired and 50 gallon for electric, or as specified. To include new fume pipe for gas fired water heaters. To include temperature and pressure relief valves and have di-electric unions incorporated in piping when dissimilar metals are present. To include new ¾" copper overflow pipe to within 4" of floor. Overflow pipe to discharge through the floor with sight cup, when water heater is installed over a crawl space. To include gas line shut-off valve, AGA approved, and include installation of proper gas piping and drip leg where required.	

Plumbing System (Major System)	
Drain, Waste and Vent Lines	
Property Standard	
<p>All dwelling plumbing systems shall be capable of safely and adequately providing wastewater disposal for all plumbing fixtures. Existing drain, waste and vent lines will be visually inspected for obvious deterioration and/or damage. Repair and/or replacement shall become part of the housing rehabilitation project work scope where necessary.</p>	
Rehabilitation Standard	
<p>When waste lines are replaced or installed they are to be schedule 40 PVC or other approved piping material. To be at a uniform pitch of at least 1/8" per foot. To be protected from freezing. Any damage to walls, floors, ceilings, etc. caused by the installation is to be repaired. To be routed as/where specified.</p> <p>When vent stacks are replaced or installed they are to be minimum schedule 30 PVC plastic unless otherwise specified. To be sized in accordance with all applicable codes. Shall be 3" PVC plastic when terminating through roofs and extend a minimum of 12" above roof line. Shall be flashed properly and sealed tight at the roof. To be concealed within walls or chases (when specified) and include repair to walls, floors, ceilings resulting from installation.</p> <p>Routing Drains and Sewers – When done To be cleaned with power-driven rotary clean-out apparatus, from each fixture, to the main waste exiting the home – except where hand operated is required to reduce risk of damage to piping. To be routed from clean-out to septic tank or municipal sewers. Contractor to provide certificates from sub-contractor that lines are routed.</p> <p>Municipal Sanitary Sewer Connection – When replaced or installed to include cost of municipal tap-in fee and inspections. To include excavating from the house to the municipal sewer line. To include new PVC plastic from the municipal riser, to the point where the main waste exits the home. New line to be sized per municipal requirements and have clean-outs incorporated within. To include the same requirements under Municipal Water Service.</p> <p>Septic Tank and Field – When replaced or installed to be sized according to the household and Macomb County Health Department requirements. To include all materials and labor for a complete system, as defined within the specifications set forth by the Health Department. Change Orders will not be accepted – unless the Health Department determines (after the commencement of the work) that there is a definite need to change the scope of the project. To include reasonable protection of driveways, sidewalks, structures, yards, trees and shrubs, etc. that are directly affected by the removal of the old system and/or the installation of a new system. To include lift pump and related electrical, when gravity system is not possible and a pump is ordered by the Health Department. Installation of such pump system to include all related piping, alarm set-up and electrical. All electrical to be run below grade with alarm installed within the home whenever possible. If conditions are such that adequate electrical power is not available, a Change Order will apply. Contractor to provide the homeowner and the Housing Rehabilitation Program with lift pump warranty information and owner's manual.</p>	

Drain, Waste and Vent Lines Continued

Rehabilitation Standard Continued

To include proper grading of new materials installed. Grading to include the uniform installation of adequate topsoil (or on-site material – if accepted by the Macomb County Health Department) over the new septic area as well as any adjacent yard area disturbed by the work done. Note: Homeowner is responsible for final hand raking and any grass seeding and mulch or the installation of sod – following site work by the contractor. Contractor will only be responsible for final raking, seeding and mulching when the Housing Rehabilitation Program specifications call for such. To include the reinstallation of any fences or gates, removed by the contractor to facilitate the system replacement or installation. To be inspected and approved by the Macomb County Health Department. Contractor to provide such approval to the Housing Rehabilitation Program.

When a sump pump is to be replaced or Installed it is to be 1/3 horsepower minimum pedestal or submersible style. To be equipped with an approved back flow preventing check valve. To have minimum sized discharge line of 1 ¼” schedule 30 PVC plastic from the pump to exterior, then with larger piping to municipally accepted location. To include separate circuit and outlet. To include furnishing the Housing Rehabilitation Program with completed warranty information and providing homeowner with original.

When a sump pump basin is installed it is to be a minimum of 22 gallon capacity, constructed of Polyethylene and have both weep holes and 4” knock-outs for weep tile. To have tight fitting plastic cover. To include installation of perimeter weep tile – when and where specified.

Plumbing System (Major System)	
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Plumbing Fixtures	
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Property Standard	
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All plumbing fixtures shall be in good condition, free of cracks and defects and capable of being used for the purpose in which they were intended.

Rehabilitation Standard

Water Closet – When replaced or installed it is to be vitreous china. To include close coupled tank. To include water saver flush assembly. To include wax ring, supply line and fixture stop. To include plastic seat. To be equal to Briggs or American standard toilets. Homeowner choice of standard colors. To be caulked with Silicone or Butyl Rubber Caulking around the base. Contractor to notify program if closet flange replacement is also needed.

Bathtubs – When replaced or installed to be porcelain enameled steel or fiberglass, which is to be equal to Briggs or American Standard Steel tubs or Owens Corning fiberglass tub. To have non-skid floor. To include chrome plated faucets, Delta or equal. Products shall be single handle units with anti-scalding temperature control valve. Install of large cover plates as necessary. To include new shower head if there is an existing showerhead, Delta or equal.

Plumbing Fixtures Continued

Rehabilitation Standard Continued

To include new trap and fixture stops as necessary. To be caulked with Silicone or Butyl Rubber Caulking at walls and floors. Homeowner choice of standard colors.

Lavatories – When replaced or installed to be porcelain enameled cast iron with overflow, which is to be equal to Briggs or American Standard. To include center pull faucets and pop-up waste, Delta or equal. To include fixture stops and supply lines as necessary. To be securely fastened to wall with hanger and two adjustable chrome finish legs at front corners. To include “P” trap with marvel connections and waste line as necessary. To be caulked with Silicone or Butyl Rubber Caulking at walls. Homeowner choice of standard colors.

Kitchen Sinks – When replaced or installed to be minimum of 7 ½” deep, double bowl, quality polished stainless steel construction (“Elkay” – Celebrity Classic series or equal), undercoated for sound deadening and be equipped with quality stainless steel strainer baskets having removable cups, unless noted otherwise. To include new double plastic waste, new plastic P-trap assembly and new marvel connection. To include new “Delta” – Signature series or equal (manufacturer #N440-WF) with spray attachment), single handle, swing type, chrome faucet with new braided stainless steel supply lines. To be securely attached and caulked to the countertop with PolySeamSeal or equivalent. To include replacement or installation of stop valves – but only when specified.

Garbage Disposal – When replaced or installed to be ½ horsepower, “In-Sink Erator” Brand or equal, residential unit having minimum of 2-year warranty. To be Underwriter Laboratory approved. To be firmly mounted on a sound deadening mount and be properly connected to sink waste piping. To include proper wiring and switch above countertop. To include supplying the Housing Rehabilitation Program with a completed copy of warranty and providing both original warranty and owner’s manual to the homeowner.

Laundry Tray – When replaced or installed to be one piece fiberglass. To be double compartment, when specified. To include swing type stainless steel or brass faucets. To include strainers and strainer plugs. To include “P” traps and waste line as necessary. To be firmly fastened to the floor. To include vacuum breaker on faucet if hose thread is installed. To include washer outlets with proper shut off valves & arrestors. Lift pumps to have self-contained automatic switches.

Plumbing System (Major System)	
Plumbing Minimum Equipment	
Property Standard	
Every dwelling unit will have a minimum of one sink with hot and cold running water in the kitchen and at least one bathroom containing a sink, and a shower/tub unit, both with hot and cold running water, and a toilet.	
Rehabilitation Standard	

Plumbing Minimum Equipment Continued

Rehabilitation Standard Continued

Where dwellings participating in the Housing Rehabilitation Program do not have a minimum of one sink with hot and cold running water in the kitchen and at least one bathroom containing a sink, and a shower/tub unit, both with hot and cold running water, and a toilet, installation of these items will become part of the housing rehabilitation project work scope.

Plumbing System (Major System)	
Water Supply	
Property Standard	
<p>Each dwelling shall be connected to an approved (by the jurisdiction having authority) potable water source. Water supply lines within the home shall be sized appropriately, free from leaks, made from a material suitable for potable water supply and installed according to code.</p>	
Rehabilitation Standard	
<p>Municipal Water Service – When installed to include cost of municipal tap-in fee and inspection. Unless otherwise noted, homeowner responsible for making application with municipality for new water service and for paying any related application fee. To include excavation and installation of 1” copper line from the house to the tap-in location. Trench depth is to be safely below the frost line. New line to house is to be connected to the home’s distribution piping along with the installation of a municipally supplied water meter. Contractor to patch any holes in house foundation or basement wall resulting from new service. Note: Municipality will be responsible for addressing actual service tap-in and will install stop box, then connect the 1” copper, supplied by the contractor. Following inspection, excavated trench to the house to be backfilled with approved fill compacted as much as possible, then left slightly mounded (approximately 4-6 inches) for future settlement. Any excavated material, not suitable for reinstallation, is to be removed totally from the site and replaced with clean fill sand. Under normal circumstances, homeowner will be responsible for adding additional dirt/topsoil if trench area should require such. If excessive settlement results within the Housing Rehabilitation Program warranty period of one year, the program will order the contractor back to the property to address the situation. To include reasonable protection of driveways, sidewalks, trees and shrubs within the excavation area. To also include reinstallation of any fences or gates removed to facilitate the installation of the new water service.</p> <p>Water Well Pump – When replaced or installed to be of submersible or jet type as specified and be of sufficient capacity to serve household. To be equal to Red Jacket or Meyers brand pumps and include wiring and water piping from within the well to the house. To include pressure tank and switch, gauge and air volume control. To include all necessary piping and valves to connect to water lines. To include separate 15 amp, 110/120 volt circuit or 20 amp, 220/240 volt circuit.</p>	

Water Supply Continued

Rehabilitation Standard Continued

To be inspected and approved by the Macomb County Health Department. To include furnishing Housing Rehabilitation Program with copy of warranty and original warranty & operating manual being supplied to homeowner.

Water Well – When installed to be installed by well driller recognized and in good standing with the State of Michigan as well as the Macomb County Health Department. Location of new well to be determined by site conditions (i.e., septic location, property line set-backs, etc.). To include reasonable protection of lawns, drives, ditches, etc. from residue created by drilling, surging, jetting, and testing well. To also include reinstallation of any fences removed. To include “plugging” existing well – if specified. To be inspected and approved by the Macomb County Health Department. To include furnishing Housing Rehabilitation Program and Homeowner with copies of water well record and warranty information on well pump installed.

Water Lines – When replaced or installed to be copper pipe with sweated solder joints and fittings, unless otherwise specified. To be ¾” I.D. copper for main supply with ½” branch supplies. All piping to be adequately supported and system to be installed in such a manner that it can be drained. Also, replacement to include all existing horizontal and vertical runs unless otherwise specified. To be valved on main supply to the home and on each branch supply at fixtures. Air chambers are to be installed where required. To incorporate di-electric unions when dissimilar piping materials are to be joined. To be protected from freezing where necessary with pipe insulation and to incorporate frost-free anti-siphon sill cocks at all exterior locations. To include repairing damage to walls, ceilings, cabinets, etc. caused by the work – unless it has been specified otherwise. To be completed in compliance with all applicable building codes.

HVAC (Major System)

Combustion Appliance Venting

Property Standard	
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Every combustion appliance, including fireplaces, burning solid, liquid or gaseous fuels shall be vented in a safe manner to the exterior of the dwelling according to manufacturer's suggestions and applicable building code. Where chimney flues exist they shall be of such design to assure proper draft and shall be adequately supported. Unsound chimneys shall be repaired or removed.

Rehabilitation Standard

The housing rehabilitation project work scope will include the repair/replacement/installation of all deficient combustion appliance venting. All work will be completed according to all applicable residential building codes.

HVAC (Major System)	
Air Conditioning	
Property Standard	
<p>Non-working or improperly functioning central air conditioning systems may be replaced as part of the housing rehabilitation project work scope. The installation of a central air conditioning system, where one currently does not exist, is permissible where feasible, practical and deemed necessary. New air conditioning installations shall not be a priority unless project funds are available.</p>	
Rehabilitation Standard	
<p>The installation of a central air conditioning systems shall be completed according to all applicable residential building codes.</p>	

HVAC (Major System)	
HVAC Distribution System	
Property Standard	
<p>All accessible ductwork, steam pipe and hot water pipe shall be free of leaks and shall function such that an adequate amount of heat is delivered where intended.</p>	
Rehabilitation Standard	
<p>Ductwork – When installed or replaced to have minimum thickness of 26 gauge for exposed galvanize. All other factory-made ductwork shall be approved for the use intended. Non-metallic ductwork, if used, shall meet the requirements for the use intended. Both supply and return air ducts shall be sized in accordance with the manufacturer’s installation instructions. Shall be properly supported. Non-metallic ducts to be supported in accordance with the manufacturer’s instructions. Bonnet to include a vibration isolator, fabricated of approved materials measuring no more than 10” in length. Combustible materials within the bonnet area to receive fire protection as required by code. All warm air supply ductwork shall have dampers, grills, or registers installed for the purpose of controlling airflow. Return air ductwork to receive fixed grills over each opening. Floor joist and wall cavities used for return air are to be enclosed with metal stops or wood and shall meet all related requirements. When insulated, all insulating materials must meet the requirements for their intended use. To include repairing any damage to ceilings, walls, etc. resulting from the installation or replacement of the ductwork. To include the construction of ductwork chases, using framing and drywall or other specified materials, when exposed ductwork requires enclosure. To include vacuuming/cleaning of existing ductwork, when specified, by qualified individuals.</p>	

HVAC Distribution System Continued

Rehabilitation Standard Continued

Gas Service and Piping – To include making application to utility company and paying the utility company for the installation. To include installation of the meter template and all interior gas piping for each gas fired appliance. Installation of all piping to meet all related code requirements. To include repairing any holes that are made in the walls when the gas line is installed. To include municipal inspection of all new gas piping within the home. To include installation or replacement of shut-off valves when/where specified, with proper AGA approved type. To include installation of proper “hard” gas piping to appliances as specified; incorporating new AGA approved shut-off valve.

HVAC (Major System)

Heating System

Property Standard	
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All heating systems shall be capable of safely and adequately heating all living space. All existing heating systems, including but not limited to chimneys, flues, ducts, piping, etc. that are not being replaced shall be visually inspected to be in a safe and proper functioning condition for an estimated five years.

Rehabilitation Standard

Gas Fired Forced Air Furnaces – When replaced or installed to be of sufficient BTU rating to adequately heat the dwelling, To be 95% efficiency rated unless otherwise specified. To be installed per all of the manufacturer’s instructions and to include all bonnet and ductwork modifications necessary, immediately at the furnace location, to convert new furnace to the existing ductwork system. To include supplying combustion air to the new furnace when required. To include installation or replacement of flue liner when required. To include all related gas piping, AGA approved shut-off and proper drip leg. To be installed on its own electrical circuit with on/off switch and to include installation of a new thermostat. To include standard replacement type filter installed within the return air ductwork near the furnace. Contractor to instruct the homeowner as to how to replace the furnace filter. Require municipal inspection and approval. Manufacturer of furnace to provide a minimum of a 20-year warranty on the heat exchanger with 5 years on parts. Contractor to provide homeowner with the original warranty information (identifying model and serial numbers as well as date of installation) and a copy of such is to be supplied to the program with final paperwork. Boilers – When replaced or installed to be sufficient BTU rating to properly heat the dwelling. To include zone valves, piping, connectors, expansion chamber and automatic water make-up fill system. To include new fume piping with thermally activated damper where required. To include temperature/pressure relief valve for boiler. To include electronic ignition with new thermostat. Require municipal inspection and approval. To have manufacturer’s warranty of five (5) years on the boiler itself with a minimum of one (1) year on parts.

Heating System Continued
Rehabilitation Standard Continued
Contractor to provide homeowner with warranty information (identifying model and serial numbers as well as date of installation) and a copy of such is to be supplied to the Program with final paperwork.