Chapter 3: Specifications for Rehabilitation

Chapter 3: Specifications for Rehabilitation

01. General Information

.01 The Contractor shall visit the site and make him/her self familiar with existing conditions prior to bid submittal.

.02 The Contractor shall provide all necessary labor, materials, and transportation, to complete the project, including all fees, permits, plans, etc., as required.

.03 All work shall meet City of Greensboro minimum Housing codes, State of North Carolina Building code(s), Federal Housing Rehab Standards and all other applicable codes or standards.

.05 The Contractor shall include all demolition work, including transportation from the site, and legal disposal of materials, as a part of this work. The City of Greensboro shall have the first choice to keep any salvageable materials. Non-salvageable materials shall be disposed of properly. Provide the City of Greensboro with a receipt when disposing of asbestos, or oil tanks.

.06 All materials furnished shall be new unless written instructions are given to reuse materials or to install used equipment in the Work Write-up or through an approved Change Order.

.07 All work shall be performed in a neat and workmanlike manner.

.08 The Contractor shall maintain the job site in a clean and neat fashion, free of discarded building materials, at all times.

.09 The Contractor shall guarantee all materials, equipment, and workmanship (except new roof coverings) for a minimum of one (1) year from the date of final acceptance by the owner, unless otherwise required in these Specifications. New roof coverings (shingles, rolled roofing, membrane coverings, and flashing) shall be guaranteed for a period of two (2) years from the date of Final Closing. Any defective part or parts of the work during the applicable guarantee period will be repaired and/or replaced without cost to the Owner.

.10 The Contractor shall deliver to the Advisor at the completion of the job, all manufacturer's warranty paperwork for **all** products installed (ie, doors, windows, appliances, HVAC systems, equipment, fans, plumbing fixtures, siding, roofing, flooring, etc.)

.11 These Specifications in the Contractor's Handbook are incorporated by reference in the Work Write-Up (which is incorporated as a part of the Contract for Rehabilitation work).

.12 The Department of Planning and Community Development promotes the concept of "universal design". Therefore, Rehabilitation work should where practicable, should be performed in accordance with universal design principles, including but not limited to, things such as wheelchair accessible HVAC controls, thermostats and filters, and mechanical ventilation controls and switches.

02. Pest Control

.01 Provide termite inspection and treatment by a licensed and bonded exterminator. The termite treatment shall include the following guarantees:

A. A one-year damage warranty.

B. Renewable Bond: The option for the homeowner to renew and pre-pay annually, for a fixed price, an inspection and guarantee, with treatment for re-infestation covered under the bond.

The Owner shall be furnished with a Certificate of Treatment warranty for these treatments. Treatment shall conform to current N.C. Department of Agriculture Pest Control Division's minimum requirements.

.02 Provide powderpost beetle treatment shall be by a licensed and bonded exterminator. Treatment shall conform to current N.C. Department of Agriculture Pest Control Division minimum's requirements. If the structure has floor insulation, this insulation is to be removed before treatment and replaced upon completion of treatment.

.03 Provide roach treatment by a licensed and bonded exterminator. Treatment shall conform to current N.C. Department of Agriculture Pest Control Division's minimum requirements. Recommend the use of baiting versus toxic chemicals in treatment in occupied dwellings. Contractor shall pre-pay for (4) four, recurring and pre-scheduled follow-up treatments or baiting.

03. Site Improvements

.01 Chain link fencing shall have corner posts of at least 2½" in diameter. Line posts shall be not less that 2" in diameter and be spaced not more than 10' apart. Posts shall be set in concrete filled holes at least 6" in diameter and 24" deep. Top rail shall be not less that 1⅝" in diameter. Wire fabric to be 11½ gauge and either galvanized steel or aluminum alloy.

.02 All lot drainage shall be away from the structure wherever possible. Construct a swale to channel runoff away from the structure and to a suitable outlet point, per Work Write-Up. Swale shall have a minimum slope of 0.5% to allow for positive flow. All swales and other bare areas affected by the work shall be promptly and properly seeded and covered with straw mulch.

.03 Areas to be seeded shall be loosened to a depth of at least (2) two inches. Apply materials at the following rates:

Lime	10 lbs / 100 square feet
Kentucky Tall Fescue	.5 lb / 100 square feet
10-10-10 Fertilizer	2 lbs / 100 square feet
Straw	¼ bale / 100 square feet

In areas of high shading, Bluegrass is a suggested replacement for Fescue. Materials shall be distributed uniformly over areas to be seeded. Lime and fertilizer are to be disked into the soil to a minimum of 4" inches. After seeding, the area is to be rolled or compacted to ensure the seed is pressed into contact with soil surface. All seeded areas to be covered with straw mulch.

04. Concrete Work

.01 All concrete slab-on-grade floors shall consist of #57 stone placed directly on the compacted sub-grade under concrete. Stone base shall be 4" in compacted thickness. Vapor barrier shall be .006 mil polyethylene, with joints lapped at least 12". Joint fillers shall be non-extruding, asphalt impregnated, ½" fiberboard. Slab-on-grade floors shall be insulated around the perimeter of the floor with rigid type insulation with R-rating per NC Building code. Insulation shall extend 24" under the slab and turn up at the foundation wall. Concrete to receive a smooth troweled finish.

.02 Cement shall be light gray Portland Cement, Type I or Type II. Sand shall be clean, sharp siliceous material, free from silt, loam, clay or other deleterious materials. Coarse aggregate shall be crushed rock or washed gravel, dense and hard and graded from coarse to fine. Maximum size of coarse aggregate shall be 1½" in footings and 1" in all finished concrete (walks, porches, etc.). Concrete shall have fiberglass particulate as part of the mix when called for in Work Write-up. Mixing water shall be clean and potable.

Whenever the temperature of the surrounding air is below 40° degrees Fahrenheit, all concrete placed in the forms shall have a temperature of between 40° and 90° degrees F. and shall be maintained at a temperature of not less than 50° degrees F. for at least 72 hours for normal concrete and 24 hours for high-early strength concrete, or for as much time as is necessary to

secure proper rate of curing and designed compressive strength. Concrete shall be kept in a moist condition for at least 72 hours after placement. Concrete to have a troweled finish and be level (+/-) ½" except where floor drain is installed. All concrete shall receive an application of curing compound, "Clear Bond" or equal, applied according to manufacturer's instructions. (*note: curing compounds cannot be added to fiber mixed concrete). All exposed surfaces of concrete shall be protected from premature drying and freshly placed concrete shall be protected from rain. Minimum specified compressive strength shall be 3,500 psi. at 28 days. Concrete shall be ready-mixed, batched, mixed and properly transported. **DRY MIXED CONCRETE SHALL NOT BE USED UNLESS APPROVED BY REHAB ADVISOR**.

After removal of forms, backfill, fine grade and seed affected areas. Protect all shrubbery and adjoining property. Repair all affected areas. **Staff shall be notified prior to any concrete pour.**

.03 Sidewalk and driveway concrete to receive light broom finish. Walks shall be scored at intervals of approximately 5 feet. Driveways to have deep machined expansion relief control joints at intervals of every 10 lineal feet and true ½" fiber joints at intervals of every 30 lineal feet. There should never be more than 100 square feet of pour without expansion relief in driveway areas.

.04 Wire mesh reinforcing shall be 6 x 6 – W1.4 x W1.4, welded steel wire fabric. Sides and ends shall be lapped at least 6 inches.

.05 Remove existing concrete or masonry porch flooring; fill and tamp in 6" layers under floor if required. Form edges of floor; pour a minimum of 4" thick concrete floor, reinforced with wire mesh or fiberglass. Concrete floor should project approximately 1½" beyond foundation wall, and provide ⅛" slope per foot away from the house for drainage. Use smooth trowel finish on slab and edges. **Honeycombing in concrete will not be accepted on any exposed surface.**

.06 Porch Floor: Install ledge on exterior sills. Install temporary supports (doubled 2"x6") on the same pitch or level as the ledges on the sills and the bottom of the forming board at the front, at intervals as required to prevent over spanning and sagging of the metal decking. Install heavy gauge corrugated metal panning or decking, cut to fit the length and width of the slab. Install wire mesh reinforcement over the entire slab; mesh to be no larger than 6x6. Place concrete of the type specified in and in accordance with Rehabilitation Specification number (04.02). Temporary 8"x8"x16" block piers may be required as a temporary support. Allow to cure for 72 hours before remove all temporary supports and leave crawl space clean and free of debris. Concrete to receive a light broom finish.

05. Footings and Walls

.01 Wall footings shall meet N.C. Building Code.

Concrete shall meet the following standards:

a. Portland cement shall be ASTM approved Type 1.
b. Coarse aggregate shall be hard, durable, uncoated crushed stone or gravel free from foreign substances and conforming to ASTM provisions; well graded, minimum size ¼", maximum size 1½" or ¾ the distance between reinforcing or 1/5 the minimum dimension of the forms, whichever is smaller.
c. Fine aggregate shall be clean, sharp sand conforming to ASTM provisions, and graded from No. 4 to No. 100.
d. Mixing water shall be clean and free from oil, acid, vegetation matter, alkalis or other foreign substances.
e. Minimum specified compressing strength shall be 3,000 psi. at 28 days.

Concrete shall be ready-mixed, batched, mixed and properly transported. **DRY, PREMIXED CONCRETE SHALL NOT BE USED UNLESS APPROVED BY REHAB ADVISOR.**

Whenever the temperature of the surrounding air is below 40° degrees Fahrenheit, all concrete when placed shall have a temperature of between 40° an 90° degrees F. and shall be maintained at a temperature of not less than 50° degrees F. for at least 72 hours for normal concrete and 24 hours for high-early strength concrete, or for as much time as is necessary to secure proper rate of curing and designed compressive strength. Concrete shall be kept in a moist condition for at least 72 hours after placement. Concrete to have a troweled finish and be level (+/-) ½" except where floor drain is installed. All exposed surfaces of concrete shall be protected from premature drying and freshly placed concrete shall be protected from rain. Minimum specified compressive strength shall be 3,000 psi. at 28 days.

.02 Pier footings shall conform to N.C. State Building Code. Reinforcing bars shall conform to ASTM A615, Grade 40. Metal shall be clean and free from scale or coatings that will reduce bond. Backfill around footings after piers or walls are built.

.03 Exterior foundation damp proofing shall include not less than ⅜" Portland cement parging, applied per manufacturer's specifications. The parging shall be covered with a bituminous coating, 3 pounds per square yard of acrylic modified cement, ⅛" coat of surface-bonding mortar, or any material permitted for waterproofing in the NC Building Code.

.04. Exterior foundation water proofing shall include a pipe and gravel system installed at the bottom of the footing, and a pipe and gravel system installed below grade, but above footing. Perforated drain piping shall be sleeved. Foundation shall be waterproofed with a membrane extending from the top of the footing to the finished grade. The membrane shall consist of 2-ply hot-mopped felts, 55 lb. pound roll roofing, 6-mil polyvinyl chloride (PVC), 6-mil polyethylene or 40-mil polymer-modified asphalt. The joints in the membrane shall be lapped and sealed with an adhesive compatible with the waterproofing membrane, or sealed per manufacturer's instructions.

06. Masonry Work

.01 Face brick shall conform to ASTM C 62, Grade MW. All brick and block shall match adjacent work unless wall is to be painted or parged.

Concrete block shall be autoclave cured, nominal modular size, free of cracks, chips, or other spoils.

Patented mortar shall be used, equal to "Flamingo Brixment" and mixed in correct proportions as recommended by the manufacturer for desired color.

NO PREMIX BAGS WILL BE ALLOWED UNLESS MIXED WITH BRIXMENT or APPROVED BY ADVISOR.

Use method of measuring material at job so that specified proportions of mortar materials can be accurately controlled. Prepare mortar in batches of volume that will be used before initial set takes place, in no case longer than 45 minutes before delivery to mason's mortarboard at points of use.

All masonry work shall be protected against freezing for at least 48 hours. Masonry exposed to weather shall not be laid when temperature is below 32° degrees F. **ANTI-FREEZE COMPOUNDS OR OTHER ADMIXTURES WILL NOT BE PERMITTED unless APPROVED BY ADVISOR.**

Lay masonry units with full mortar coverage on all horizontal and vertical joints. All exposed joints to be tooled concave. Clean masonry as work progresses.

Walls shall be reinforced with standard "Dur-O-Wall" or equal, 16" on center. Back up units shall be sized so as to bond with four units.

Steel lintels, if specified, shall be painted with metal paint before installation. Lintels shall bear on wall at least 4" at each end.

Walls and piers shall be capped with solid masonry in conformance with the N.C. State Building Code. New work shall be tooled into existing walls.

.02 Pointing shall be done only after joints have been raked out to a minimum depth of ½" and wetted with a bonding agent per manufacturer's instructions. All joints shall be completely filled with mortar and shall match existing joints. New mortar shall match color and consistency of existing mortar. Face of brick shall be kept clean of any mortar. Adjoining areas shall be left clean and free of mortar.

.03 Pointing of masonry in a building of historic age shall be done with high white lime mortar. Pointing shall be done only after mortar has been cleanly removed from the brick (leaving square corners at the back of the cut, and on the brick faces), to a minimum depth of ½". Before pointing is begun, all loose particles shall be removed with compressed air, and the joints shall be wetted, but no excess water shall be present. All joints shall be completely filled with mortar, and shall match existing joints. New mortar shall match color of existing mortar. New mortar shall be of the following mix:

1 bag hydrated white lime
¼ bag white portland cement
3 cubic feet of sand (to match original mortar mix)

Modify this mix as required to produce a mortar that matches the visual and physical characteristics of the existing mortar. Face of brick shall be kept clean of any mortar. Adjoining areas shall be left clean and free of mortar.

.04 Parging shall be done with Brixment or equal, sand to be clean and regular in consistency, similar to that used for masonry, and free of foreign compounds. Hydrate lime may be used, but shall not exceed 10% percent by weight nor 25% percent by volume of the Brixment used. The temperature of the surrounding air shall not be less than 40° degrees Fahrenheit during application and for at least 48 hours thereafter. Apply in two ¼" thick coats; the second coat shall not be applied sooner than 24 hours after the first coat. Before applying first coat, completely cover surfaces with a bonding agent, Acryl 60 or equal, applied according to manufacturer's specifications. Before applying second coat, the surface shall be dampened evenly with bonding agent (according to manufacturer's specifications) to obtain uniform suction. Minimum thickness shall be ½".

.05 Parging shall be done with Surwall or Quikwall Surface bonding cement, or equal. The temperature of the surrounding air shall not be less than 40° degrees Fahrenheit during application and for at least 48 hours thereafter. Apply in coats whose thickness meets the specifications as determined by manufacturer's recommendations. Preparation of surface and application of product must follow manufacturer's specifications.

07. Crawl Space

.01 Access doors to have 2" x 6" pressure treated pine frames, ¾" B-C exterior plywood doors, T-strap hinges sized to fit door, hasp and turnbuckle. Size of opening shall comply with all local and state building code requirements; unless replacing an existing door. Install 2" x 2" box and cross bracing on back of new plywood door. Paint doors, frames and trim with two coats of paint, inside and out. Caulk frame where it meets masonry.

.02 Foundation vents shall be 16" x 8" in size, die cast aluminum with #8 mesh screens. Vents shall have three slide shutters. Tool into or saw existing brick/block underpinning to fit new vent as needed for a clean job. Vents are to be secured with mortar. Clean adjacent areas.

.03 Foundation vents shall be 16" x 8" in size, with #8 mesh screens. Vents shall be automatic foundation ventilators, equipped with bi-metal coil or equivalent. Tool into or saw existing brick/block underpinning to fit new vent as needed for a clean job. Clean adjacent areas. Vents shall be shimmed tightly to fit each opening.

.04 Vent wells shall be half-round galvanized steel bolted to the foundation. Excavate 6 inches below foundation vent and fill with small gravel.

.05 Install a 6-mil polyethylene moisture barrier in the crawl space, providing 100% coverage of the ground surface. When installing the barrier, lap adjoining edges approximately 12" inches and tape or seal all seams. Edges shall lap onto and up the foundation a minimum of 12" and shall be fastened mechanically or either with an adhesive.

.06 Interior crawl space water containment system shall include excavation at interior foundation walls to footing, along entire perimeter of foundation. Install gravel and perforated pipe system along perimeter of foundation, through foundation and terminated at low area of yard. This does not include the installation of crawl space sump pumps and yard catch basins. These will be specified as needed.

08. Floor Framing

.01 New joists and girders shall be No. 2 - Douglas Fir, Construction Grade, or No. 2 - Southern Yellow Pine. Lumber shall be air or kiln dried, with moisture content not exceeding 19% percent. Floor framing under bathrooms and other areas exposed to excessive moisture shall be pressure treated Southern Yellow Pine. All joist and girder material shall be free of bows, cupping, and all other defects. Pressure treated Southern Yellow Pine should

be used when joist to grade clearance is less than 18", and girder to grade clearance is less than 12".

Drop girders should be jacked to stiffen floor. Care should be taken when jacking the drop girder to prevent excessive upward deflection in the existing floor framing. Insure that each joist is contacting the girder by shimming each joist as needed. Pressure treated Southern Yellow Pine should be used when drop girder to grade clearance is less than 12".

.02 Sills should be replaced with members of nominal size, which will match as closely as possible to the existing, and shall be shimmed to fit properly. **Span and timber size must comply with the Building Code**. Shims shall be placed, lapped in pairs, in a manner so as to ensure no settlement of the wood (i.e., to be placed parallel with the length of the beam). Sills shall have wood preservative treatment to protect against decay and insect attack. Treatment shall be in accordance with the specifications of the American Wood Preservers Association.

09. Subflooring

.01 Urea-formaldehyde FREE plywood and MDF or other similar product(s) that are ANSI A208.1 and A208.2 compliant are the preferred products for subflooring.

.02 Subflooring shall be of nominal thickness to match the thickness of the existing floor. Plywood or OSB thickness shall be structurally adequate to span between floor joists, as labeled on panel identification. Install subfloor with outer plies at right angles to the joists and staggered such that the end joints in adjacent panels bear on different joists. Secure plywood subflooring to joists at each bearing point with 2" underlayment screws, 8d common nails or #6 ring shank nails spaced 6" on center along all edges, and 10" on center along intermediate members.

10. Partitions

.01 Framing shall be 2"x4" wood studs, sole plates, and double top plates, with not more than 19% moisture content, No. 2 - Douglas Fir, construction grade or No. 2 - Southern Yellow Pine, spaced not more than 16" on center. Cover with ½" thick gypsum wallboard on both sides unless otherwise noted. Tie into existing house walls and ceiling. Finish seams with joint tape and compound. Install base and shoe molding to match existing base and shoe in remainder of room. Install ceiling molding to match existing in remainder of

room. Exterior wall cavities that are opened shall be insulated to meet the Building Code.

.02 In clothes closets, install 12" deep painted wood shelf with a minimum of 12" clear space above shelf. Install ¾" diameter galvanized pipe, or 1" full round, wood clothing rod with a minimum of 2" clearance below shelf.

.03 In linen closets, install five 16" deep painted wood shelves, spaced approximately 12" on center. The bottom shelf shall be between 18" and 24" above the floor and the top shelf shall have at least 12" of clear space above.

.04 Any relocation or removal of partition(s) wall(s), includes the relocation and/or removal of all piping, plumbing fixtures and electrical wiring.

11. Porches, Columns and Railings

.01 Porch floor decking shall be 25/32" by 3¼", kiln dried, tongue and groove wood decking, spaced tightly. No joints permitted in runs under 10 feet. All flooring members shall be primed on top and all edges / sides prior to installation. Finish with two coats of paint as indicated in the Paint Specifications after installation.

.02 Remove, cut, renail, patch, and perform any and all work required to obtain a smooth surface on existing porch ceiling. Remove any ceiling molding. Install ⅜" B-C exterior plywood, spacing joints as evenly as possible. Trim perimeter edges with 2" bed mold. Caulk joints before priming. Prime and paint entire ceiling and trim with two coats as per Painting Specifications.

.03 Wrought iron corner columns shall have 1" square framing members with scroll design and socket mounts; each side of the column assembly shall be at least 9" wide. Columns shall be prefinished and touched up after installation, or primed and painted as per painting specifications. When mounting to a masonry slab, drill a minimum 2" hole and set assembly using industry approved filler. Mass produced steel railings as purchased through building suppliers are not acceptable unless specified in the work write up.

.04 Wood box columns shall be constructed of new, finish grade, wood lumber of 1" nominal thickness. New wood shall be free of bowing, cupping, and other defects. Boards shall be primed on top and all edges / sides prior to installation. Paint with two coats of finish paint as indicated in the Paint Specifications after installation. New columns shall be square and true.

Securely block internally such that individual boards act as one post. New post size, configuration and detail shall match existing.

.05 Wood porch columns shall be a minimum nominal 4" x 4" treated wood columns. New wood columns shall be primed on all four sides prior to installation. Paint with two coats of finish paint as indicated in the Painting Specifications after installation. Install new wood columns on premanufactured metal base as designed for such posts, so as to provide an air spaced clearance between the wood columns and the porch floor. Anchor column to base, and base to floor, as indicated by the base manufacturer's instructions.

.06 Wrought iron porch railings shall have 1" top and bottom channels, 1" x 1" columns, 1¾" detail top rail, and ½" square spindles spaced to meet the building code, and intermediate supports spaced not more than 5 feet apart. The railings shall be anchored to the house, the columns, or the floor, as applicable. When mounting to a concrete slab, drill a minimum 2" hole and set posts using industry approved filler. Railings and intermediate supports shall be prefinished and touched up after installation, or primed and painted as per Painting Specifications. Mass produced steel railings as purchased through building suppliers are not acceptable unless specified in the Work write up.

.07 Rescreen porch using woven, aluminum, wire screen. All laps shall run vertical and sections shall be secured and stapled to the wood frame according to manufacturer's specifications. Cover edge of material with prepainted continuous wood parting strips nailed every 6" inches.

.08 Replace porch screening using the Screen-Tight brand or equal, all vinyl track system. Screen mesh shall be fiberglass with a 10 yr warranty.

12. Steps

.01 Wood steps to be made of (2) two, 2"x 6" boards for treads. Treads shall overhang the front of the stringer 1", and both sides of the stringers 1½". Use (3) three stringers, supported on a concrete footing or pad at ground level. Wood for treads and stringers shall be pressure treated Yellow Pine. Stringers to be 2" x 12" treated lumber.

.02 Wrought iron stair rail to be installed to meet the height requirements of the building code. Railings shall have 1" top and bottom channels, 1" x 1" columns, 1¾" detail top rail, and ½" square spindles spaced to meet the building code, and intermediate supports spaced not more than 5 feet apart. The railings shall be anchored to the house, the columns, or the floor, as applicable. When mounting to a concrete slab, drill a minimum 2" hole and

set posts using industry approved filler. Railings and intermediate supports shall be prefinished and touched up after installation, or primed and painted as per Painting Specifications. Mass produced steel railings as purchased through building suppliers are not acceptable unless specified in the work write up.

.03 Wood handrail or safety rail height shall meet the requirements set in the NC Building Code. Railing shall have a maximum 2"x 4" top and bottom rails, with a 2"x 2", wood spindles, and spaced 6" on center per NC Bldg. Code. Wood pickets that are fastened to vertical mounting rails shall be chamfered and secured with two fasteners top and bottom. Handrail supports shall be 4"x 4" wood posts, spaced no more than 5 feet apart. All wood members shall be pressure treated.

.04 Stair handrail shall be constructed of 2" iron pipe and fittings. Handrail height shall meet the NC Building Code. Handrail supports shall be 2" iron pipe and fittings, spaced no more than 5 feet apart. Securely anchor iron supports to steps and porch. All iron pipe and fittings shall be primed and painted with two coats of finish paint as indicated in Painting Specifications.

.05 Construct handicapped access ramp using a minimum 2"x10" stringers, 4"x4" supporting posts, set in concrete, 2"x4" top rail and 2"x4" bottom rail and 2"x2" chamfered pickets spaced 6" on center, all per NC Building Code. Ramp handrails shall be on both sides of ramp. Use 5/4"x6" deck material for ramp surface. Use pressure treated wood throughout. Care should be taken to ensure a ramp slope not to exceed 1:12. Railing, ramp, and porch landing at entry door to meet all HUD/ANSI, ADA and NC Handicap Standards.

.06 All pressure treated lumber shall be coated with a water repellent such as Thompsons Water Seal, Dulux Clear Water Preservative or equal.

13. Roof Trim

.01 Fascia, gutter, frieze, rake and corner boards must be clear or finger-jointed materials, Red Wood, Douglas Fir, or Hemlock; Grade B or better, or Southern Yellow Pine #1. All wood shall be knot free. Rafter ends shall be trimmed as necessary before installation of fascia boards so as to obtain a straight line. The fascia boards shall be nailed to each rafter end with two 8d galvanized or aluminum nails. Finger-jointed boards shall be primed with one coat of oil-base primer on front and back sides and top and bottom edges. Clear solid wood members shall be primed with one coat of oil-base primer on front side and top and bottom edges.

.02 Exterior rated Hardi Plank or other cement and wood fiber-based, exterior rated composite trim shall be supplied in like dimensions, including thickness for all exterior trim applications including fascia, gutter, frieze, rake, soffit and corner boards. Product shall carry a minimum 30-year manufacturer's warranty. All composite trim shall be primed and painted per manufacturer's instructions and recommendations.

.03 Soffit boards shall be ⅜" B-C exterior plywood. Soffits shall be fastened to 2" x 4" lookout boards at each rafter with galvanized or aluminum nails. A smooth horizontal surface shall be maintained. Soffits shall be primed with one coat of oil-base primer immediately after installation.

.04 Soffit vents shall be a minimum of 4" x 12" aluminum with baked-on enamel paint finish.

.05 Remove existing wood, soffit material prior to installation of vented vinyl soffit, if necessary, to provide a continuous air space to the rafters above. New vinyl soffit shall completely cover all openings in the soffit. Vented soffit shall be spaced 36" on center unless otherwise specified. Vinyl soffit material shall be a minimum of 0.019" thick or greater, perforated continuous soffit of integral color, rib or V-groove type. Color shall be selected by the Owner. Vinyl product shall have a 20-year manufacturer's warranty or guarantee. Soffits shall be installed according to manufacturer's specifications. Nailing shall be done in a manner so as to allow for expansion and contraction of the material. A smooth horizontal surface shall be maintained.

14. Interior Trim

.01 All interior trim material shall be clear Select or Better Grade, White Pine or Poplar. Where wood is to be painted, finger-jointed trim is acceptable. All new trim shall match existing as closely as possible. Millwork shall be accurately milled with clean-cut moldings and profiles. Millwork shall be planed, scraped and/or mill sanded to produce proper surface for painting or varnishing. All joints shall be carefully fitted (mitered or coped). Use 8d finish nails to fasten door and window casings and aprons and baseboards. Use 1½" casing nails or brads to fasten door and window stops. Stools shall be blind nailed to the ends with 3d finish nails so that the side casings will conceal the nailheads. Finish nails shall be properly set and holes filled with wood or painters putty. **Millwork with numerous hammer indentations or blemishes is not acceptable.**

15. Attic Access

.01 Attic Access Scuttle: Cut in and frame out attic access scuttle to provide clear opening complying with NC Bldg Code; minimum opening size 20"x30". Install ¾" B-C or better plywood door panel. Trim with casing matching other existing casing in room and carefully mitering all corners. Cracks between wood trim or molding and ceiling finish materials around perimeter of opening shall be caulked. Prime all wood surfaces, then paint with two coats of semi-gloss enamel, with color to match ceiling. Access doors and trim **shall not** be painted with spray texture.

Installation of attic access opening shall include the installation of a switch controlled overhead light in attic. Switch to be located in hall near attic opening.

.02 Disappearing attic stairs shall be made of kiln-dried clear pine. They shall have two metal support arms and wood handrail. Hinges shall be concealed. Steps shall have steel spring counterbalances. **Framed unit shall be anchored in rough opening per manufacturer's detailed instructions.** Install and trim with casing mold, mitering all corners. Cracks between wood trim or molding and ceiling finish materials around perimeter of opening shall be caulked. **ANY REQUIRED FRAMING SHALL COMPLY WITH THE N.C. STATE BUILDING CODE.** Prime all wood surfaces, then paint with two coats of semi-gloss enamel, color to match the ceiling. Disappearing attic stairs and trim shall not be painted with spray texture. If truss(es) are cut during the installation, plans containing an Engineer's Seal will be required by the Building Inspections Department, and shall be supplied by the Contractor as a part of the contract.

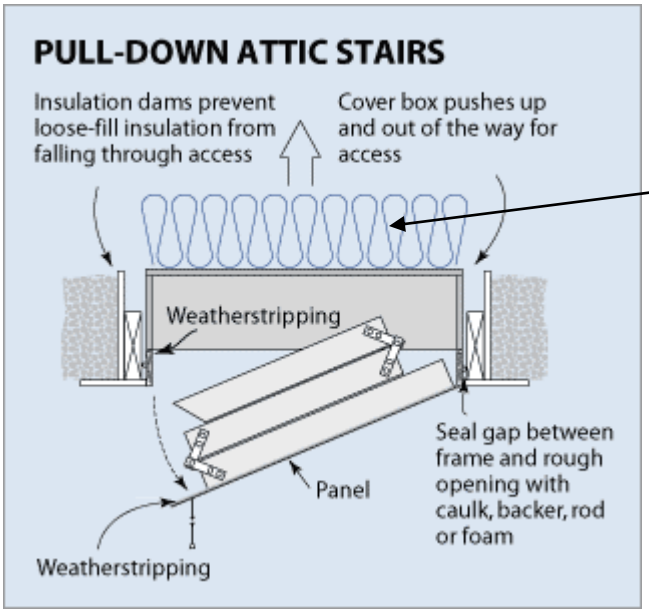
Installation of disappearing attic stairs shall include the installation of a switch controlled overhead light in attic. Switch to be located in hall near attic opening.

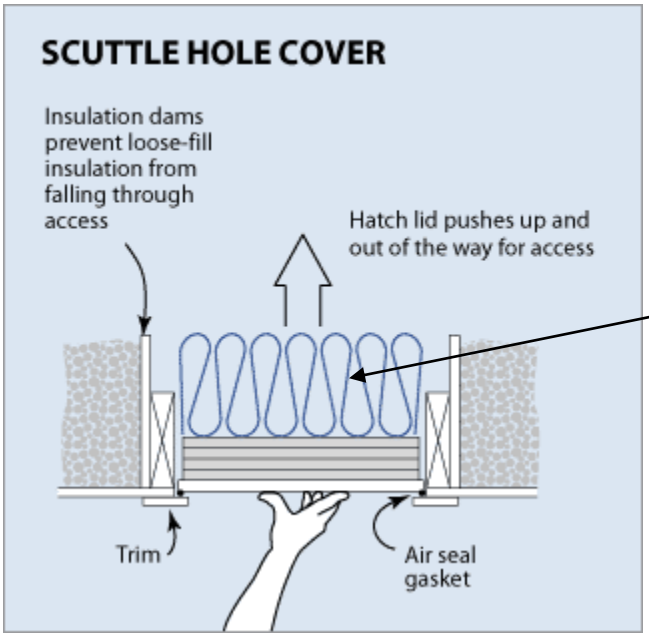
.03 Frame up access opening with a plywood "box" or dam, around attic access opening or pull down stair case frame, to allow full R-38 value of insulation to be blown up to the edge of the opening.

.04 Attic access points located in conditioned areas shall be insulated with a minimum of R-38 batt insulation and weatherstripped with vinyl bulb weatherstripping. The insulation batt shall be stapled or glued (vapor barrier down) to the top of the access covering. Cracks between wood trim or molding and ceiling finish materials around the perimeter of the opening shall be caulked.

.05 Disappearing attic stairs are to be insulated with rigid foam board or batt insulation (non-compressed) and weatherstripped with vinyl bulb

weatherstripping. Cracks between wood trim or molding and ceiling finish materials around the perimeter of the opening shall be caulked.





16. Cabinet Work

.01 Cabinets shall comply with the requirements of the American National Standards Institute ANSI/KCMA A161.1 *"Recommended Minimum Construction and Performance Standards for Kitchen Cabinets"*. An exception to this standard is the cabinet bottoms shall have a 3/8" minimum thickness. This requirement is a local decision and does exceed the acceptable cabinet bottom thickness described in ANSI/KCMA A161.1. If you decide to use one of the manufactured cabinets with a 1/4" or 5/16" bottom, these bottoms shall be let into the stiles, backs and end walls, and they shall have a center support of some type that will prevent the bottom from sagging under load. This center support shall be installed in an inconspicuous manner. Cabinets shall be installed plumb and true, in accordance with the manufacturer's specifications. Cabinets must have fronts and side walls of solid wood, or finished plywood; pressboard walls or fronts are not permitted. Cabinets shall be securely fastened with screws to studs or other framing members. Trim out all joints between cabinets and wall and ceiling with prefinished trim; box out to ceiling if specified in Work Write-Up. All new cabinets shall be color matched. If there is more than one choice of cabinet color, the owner should be given the opportunity to view the cabinets at a supplier showroom or by brochure before their purchase. Base cabinets shall have an avg lineal foot material cost allowance of $75 and wall cabinets shall have an avg. lineal foot material cost allowance of $50 .

.02 Medicine cabinets shall have at least two plastic or glass shelves and a hinged door with mirror. Cost of cabinet must be within 95% of the Work Write-Up allowance.

.03 New countertops shall have a plastic laminate finish, such as "Formica" or "Wilsonart" with a **Style "D"** front edge (where the laminate wraps around and under the front edge of the countertops).

Underside and edges of countertops shall be sealed with a water preservative coating at kitchen sink and dishwasher. Tops to have 4" high, rolled, integral backsplash and ends shall be laminated with matching material. Where countertops terminate into a side wall, an endsplash constructed of matching material must be installed. Mitered cuts must be treated with a water preservative and glued with waterproof glue. Miters must fit flush. Raised mitered fits will not be accepted. **NEW TOPS SHALL BE SCRIBBED AND TRIMMED TO FIT UNDULATING AND OUT OF SQUARE WALLS.**

.04 Install plastic laminate as a wall covering extending between the top of the backsplash and the bottom of the wall cabinets, with contact cement or other approved adhesive.

17. Insulation

(See Chapter 4 for installation guidelines)

.01 Ceiling assembly insulation shall provide a thermal resistance factor of R-38. If not using fiberglass batt insulation, our program recommends blown cellulose over blown fiberglass; thickness for R-38 rating as specified by manufacturer's ratings schedule. (*see Chap 4 for installation guide*)

Insulation shall be installed according to manufacturer's specifications. Prior to blowing insulation, install baffles between roof rafters and the attic floor joist to allow for a full R-38 to be blown over the top plate, yet insuring that there is no blockage of the soffit ventilation (1" minimum clearance above insulation). Insulation shall be installed level across the attic. Compression of insulation will not be permitted.

At existing chimneys and other masonry stacks, pull back any existing blown cellulose insulation at least 3" from masonry work prior to installation of new insulation work. At existing knob and tube wiring assemblies, pull back any existing insulation from knobs, tubes and wiring, such that all assemblies are exposed to view. Installation of new insulation shall leave all such assemblies exposed to view upon completion of insulation work.

Fireproof blocking materials shall be installed prior to installation of insulation to prevent insulation (existing or new) from coming within 3" of contacting recessed fans, recessed light fixtures, and any other recessed electrical fixtures. Fireproof blocking materials shall also be installed prior to installation of insulation around vent pipes, chimneys, and other heat generators.

At existing vent pipes for gas or oil fired units, pull back any existing blown cellulose insulation at least 9" from piping prior to installation of new insulation work. New insulation shall be installed as determined by the specifications for the installed vent pipe.

All insulation (existing or new) shall be at least 3" away from any attic furnace units upon completion of insulation work.

Batts or blankets with attached vapor barrier shall not be installed over existing insulation unless the vapor barrier facing is removed.

.02 Wall assembly insulation shall provide a thermal resistance factor of R-15. If not using fiberglass, batt insulation, our program recommends blown, dense pack cellulose over blown fiberglass or spray foam; thickness for R-15 rating as specified by manufacturer's ratings schedule. (*see Chap 4 for installation*

guide) Insulation to be installed according to manufacturer's specifications. Batts shall be cut to fit with a small amount of friction fit. Compression of insulation will not be permitted. Care shall be taken to seal all wiring, plumbing, and ductwork penetrations and **sealing must be approved by Advisor prior to insulation installation.**

.03 Floor assembly insulation shall provide a thermal resistance factor of R-19. (*see Chap 4 for installation guide*) Fiberglass faced batt insulation shall be installed between joists under floors of all conditioned areas over basements, cantilevers, or crawlspaces. Foil or vapor barrier facing to be installed to the warm (heated) side of the house. Batt insulation to be secured to joists with tiger-teeth. Care shall be taken such that insulation is not compacted. Floor insulation shall not be installed where it is likely to become wet.

.04 All insulation in attics and crawl spaces shall include an Installer's Insulation Card or Certification and record of materials posted in a conspicuous area readily seen at the entrances to the areas worked.

.05 Energy Star Home Sealing is designed to improve the envelope of the home and make it more comfortable and energy efficient. Blower door testing and infra red camera scan of the building envelope will dictate the actual scope of work.

Open stud cavities should be plugged, interior dropped soffits, chase ways, chimney chases and other openings between conditioned and unconditioned space shall be capped with OSB or drywall and /or sealed with caulk or foam. See Rehab Advisor for thermal images and pressure diagnostic information. *See Chapters 4 & 5 for further guidance*. Both pre and post Blower door construction testing along with a thermal camera scan will be conducted to verify all major air leaks and thermal chases have been properly sealed.

18. Roofs

(See Chapter 4 for installation guidelines)

.01 Remove and haul off old roofing, paper, nails, etc. from site in a timely manner. Protect shrubbery, yard, and house from this work. Repair all damage caused by this work.

.02 Use 15# builders felt with 2" top lap and 4" side lap. Fiberglass shingles to be 215#, self-sealing, conforming to Federal Specifications SS-S-294 A Type 1 and SS-S-001534 Class A Type 1; furnish a minimum 20-year manufacturer's warranty. Install with galvanized or aluminum nails, of a size recommended by the manufacturer. **Stapling of shingles is not accepted**. If

pneumatic nailing is used, insure that nails are driven straight and do not break through the shingle. Four nail all shingles. Metal eave strips shall be of 0.019" or thicker aluminum with baked-on enamel finish, and shall be installed around the entire perimeter of the roof edge, installed over felt along the rake, and directly to roof along eaves. Where the sheathing is exposed in open rafter roofs, use proper length nails to prevent splitting out of sheathing.

Install Weather Guard at all valleys and 18" in on vertical edges and 36" on horizontal edges around entire roof line perimeter as a supplement to the builders felt and use in place of felt on decks with less than 4:12 pitch. **Contractor to provide a two-year labor and material warranty; work shall not be considered complete until written guarantees have been submitted.**

NOTIFY REHAB ADVISOR PRIOR TO ROOF INSTALLATION.

.03 Slanted roof vents (#770) to have throat openings of 10" minimum. Space as directed on roof, near ridge of the house. Ventilators to have a baked-on enamel finish, color to match roof as closely as possible.

.04 Ridge vents shall be shingle-over polyvinyl or high-density co-polymers. Vents should be self-aligning and have nail reference lines. End caps should be used at the end of all vent runs. Install the venting in a continuous manner from eave to eave. Cut back sheathing as required for installation of vent. Sheathing removal should not continue past the gable walls. Install in accordance with manufacturer's instructions. Apply shingle cap over ridge vent, observing the proper nailing location and length of nails. Do not use pneumatic fastening equipment to nail shingles over ridge vents. Ridge cap shingles shall be lapped in the opposite direction of prevailing area winds (S, SW or W) to prevent lift.

.05 Power roof ventilators to be installed on roof near the ridge of the house. Installation includes all flashing, wiring, manual on/off switch and automatic, adjustable thermostat. Motor must be permanently lubricated and thermally protected, and have Underwriters Laboratories approval. Hood shall be constructed of aluminum or flame-retardant ABS plastic. Air outlet shall be screened. Ventilators shall be a minimum of 1420 CFM and warranted for 10 years on parts and 1 year on labor.

.06 Remove existing roof to sheathing, and repair sheathing as needed. Install non-asphalt fiberboard on sheathing as per manufacturer's recommendations. Install black 60-mil ethylene propylene diene monomer (EPDM) membrane system to be fully adhered and installed in strict accordance with manufacturer's specifications by company certified by manufacturer for EPDM roofing installation. Replace metal flashing, and install new flashing

as required by manufacturer for a complete watertight installation. Provide blackboard and termination strips.

.07 Remove existing roof to sheathing, and repair sheathing as needed. Prior to installation of base sheet, insure that surface is firm, dry, smooth and free of debris and loose materials. Base sheets must be installed if recommended by manufacturer of the type roofing material being used on the job. Install a heat welded, fire-retardant, plastomeric, mineral or smooth surfaced modified bitumen sheet. Smooth surface sheets must be protected from UV rays by the application of a compatible roof coating. Application of the system must meet the specifications and recommendations as prepared by the manufacturer.

.08 Use 15# builders felt with 17" exposure with 6" minimum end lap, or double-lap. Roll roofing to be 90# mineral asphalt; choice of color by the owner. Seams to be blind nailed and cemented with asphalt roofing cement. All nailing shall be staggered horizontally. No joints shall be stacked, offset to at least a 5" interval. Install with aluminum or galvanized nails, of a size as recommended by the manufacturer. Roofing to be turned and nailed at eaves and rake.

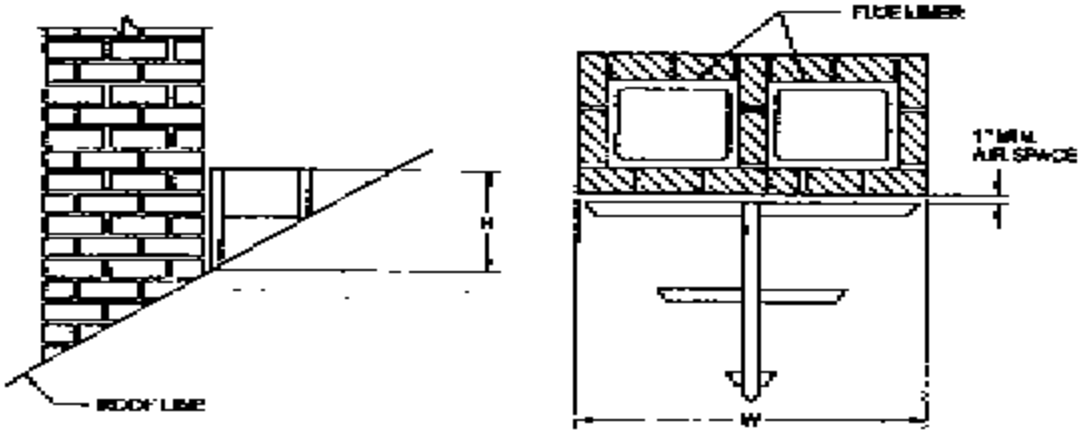
.09 Metal flashings to be installed at all chimneys, and at all junctions of roofs with walls. Flashing shall be 26 gauge or thicker galvanized steel, treated with bonding agent and painted, or 0.019" or thicker aluminum. Flashing shall be installed at all vent stacks, and at all other roof penetrations. All chimneys to be flashed and counterflashed as required by Building Code. Counterflashing shall be keyed into masonry joints, and base flashing shall be turned up under counterflashing a minimum of 3". (See Exhibit on next page). Any nails, wedges, etc. used to anchor into chimney shall be covered by the counterflashing, a minimum of 1". All flashing shall be sealed with silicone caulking to match flashing on roof cover. **ALL FLASHINGS TO BE REPLACED.**

.10 Gable power ventilators shall be mounted behind the current louvered gable vent. Anchor ventilator using the attached pre-punched brackets and screws. Additional blocking may be required to provide a surface for mounting. Locate the thermostat in attic. Wire and set thermostat per manufacturers recommendation. Ventilator shall be 1600 CFM, Leslie Locke PSG3, or equal. **FURNISH WARRANTY**.

.11 Construct and install cricket behind chimney, including all step and counter flashing. Crickets to be sized as follows:

CRICKET DIMENSIONS

ROOF SLOPE	H
12 - 12	1/2 of W
8 - 12	1/3 of W
6 - 12	1/4 of W
4 - 12	1/6 of W
3 - 12	1/8 of W



19. Exterior Walls

(See Chapter 4 for installation guidelines)

.01 Hardboard lap siding shall match existing, and be factory primed "Masonite", "Georgia Pacific", "Weyerhaeuser", or equivalent. The bottom edge shall be at least 7/16" thick. Face lap shall be 1" minimum. Existing walls shall be made as even as possible by furring, blocking and cutting prior to application of hardboard siding. Vertical wood strip corner boards shall be installed at

all outside corners. Wood corner strips shall be installed at all inside corners. Caulk all butt joints and at all inside and at all outside corner boards, and at all doors and windows. Fasten siding with 8d galvanized or aluminum nails with 3/16" heads or per manufacturer's recommendations. Set and caulk over nail heads. Paint with two coats of paint, as per paint specifications.

.02 Aluminum trim shall be "Alcoa", "Alcan" or equal. Aluminum shall be seamless, with PVC coated finish, minimum thickness of .019". Color shall be as selected by the Owner. Coated finish shall have a 20-year guarantee. This work includes all items where applicable such as corner boards, fascia boards, eave or gutter boards, gable trim, window trim and sills, soffits and louver trim. This item is meant to cover all exposed wood trim on the house. Perforated soffits shall be used at intervals recommended by the manufacturer or designated by the Building Inspector. Include all accessories, shims, or leveling boards, and aluminum breathing felt. Caulk with sealant as necessary, color to match existing siding.

.03 Vinyl siding shall be "Alsco", "Bird", "Certainteed", "Wolverine", "Ashland Davis", or approved equal. Color shall be as selected by the Owner. Color of siding shall extend through entire piece. Color veneered siding panels are not acceptable. Siding shall have a minimum guarantee of 40 years. Siding shall have a minimum thickness of .040". Existing walls shall be made as even as possible by furring, blocking and cutting prior to application of siding. Siding shall be applied according to manufacturer's instructions. Install all necessary corners, angles, stops at windows, doors, etc., and all matching accessories (in matching colors), to make a first-class job. Nailing shall be at 16" intervals with aluminum or galvanized nails. Siding posts and trim shall be installed strictly in accordance with manufacturer's instructions.

.04 Backer board shall be ¼" or thicker Fan Board or Foam-Core board or equivalent. Install in strict accordance with manufacturer's written instructions. Corners shall be creased, not cut, and special attention shall be taken at intersection of backer board with all windows and doors such that a neat and flush installation is provided. All seams shall be taped and sealed per board manufacturer's recommendations.

.05 Soffits shall be 0.019" thick, rib or V-groove type, perforated continuous ventilated vinyl soffit material of integral color; "Alcoa", "Alcan", "Certainteed", or equal. The Owner shall select color of the material. Exposed surface shall have a 40-year or greater guarantee. Soffits shall be applied according to manufacturer's specifications. Nailing shall be done in a manner so as to allow for expansion and contraction of the material. A smooth horizontal surface shall be maintained. Remove existing wood soffit material prior to installation of vinyl soffit so that a continuous airspace of at least 4" in width shall be provided to the rafters above. New vinyl soffit material shall completely cover all openings in the soffit.

20. Gutters and Downspouts

.01 Aluminum gutters and downspouts shall have a baked-on enamel finish with a 20-year paint guarantee. Use continuous, seamless lengths, unless otherwise specified. Use standard K- Style, 5" gutters *(5" across top and 4" across bottom)*. Use standard 3"x 4" downspouts. Securely fasten gutters to house or roof approved hidden, internal aluminum hangers that mechanically fasten to structure with screws. Hangers or other approved anchors, are to be spaced not more than 24" apart in the gutter board, or 48" apart in the rafter tails. Apply gutter sealant at all joined sections such as corner miters and end caps. Metal gutter wedges shall be used on all eaves that are not plumb. Include provide splash blocks under each downspout,

21. Sealants and Caulking

.01 The following listed Exterior caulk products are all similar and provide the following specifications:

Shrink proof, crack proof and remain flexible
Mildew/Mold resistant
Paintable
Superb adhesive qualities
30+ year manufacturer's warranty

Brands to be used on exterior work, especially coil work:
DAP - Dynaflex 230 elastomeric sealant (not to be confused with Alex 230)
Dupont - Exterior Window and Door Sealant with Kevlar
GE - XST Silicone II – *paintable formula
NP1 - polyeurethane
Polyseamseal Exterior Ultra
Siroflex - Duo-Sil (Urethane Acrylic) - gold color label

Caulk shall be applied uniformly and in a workmanlike manner. Fill all gaps, seams, and holes on all exterior walls and around all windows and doors in order to seal the house envelope.

100% Silicone caulking should only be used as a flexible sealer of cracks and gaps behind finished trim pieces, under aluminum coil as an adhesive during lead jobs or against brick and masonry edges. 100% Silicone caulk shall have a minimum 30-year life expectancy.

.02 Caulking shall be applied around all window and door casings.

.03 Caulking or other sealant shall be applied where the exterior siding meets the foundation wall. Use backer material as required.

.04 Caulking or other material shall be applied where pipes, ducts or wires pass through exterior walls, floors or ceilings. Large cracks and holes shall be filled with foam strips or closed cell expanding foam, such as Great Stuff Pro or Fireblock that is NFPA 286, FM 4880, UL104 or UL1715 compliant, then top caulked. (*see spec 21.01*). Regular urethane based Great Stuff shall not be used.

.05 All surfaces shall be cleaned prior to application of caulk. Silicone-type caulks shall not be used on the interior side of any wall or weatherizing assembly.

22. Doors

.01 Work includes removal of existing door, jambs and casings and the installation of new door, jamb, casings (both sides), trim, butt hinges, lockset, deadbolt, peephole (solid door only), door, doorstop, wide aluminum threshold with vinyl insert and weather-stripping at exterior doors, and any required repairs to the adjoining surfaces. Install sufficient blocking behind all hinges and keeper. Some additional framing may be required to create a properly sized opening. All woodwork and repaired adjoining surfaces to be finished. Prehung units shall be insulated between jamb and framing. Door sill shall be set on a bead of silicone caulking.

.02 Exterior doors shall be 1¾" thick solid core, constructed of Ponderosa Pine or Douglas Fir. Doors shall be primed on all edges and sides immediately following installation, then painted or stained with two coats minimum of paint as per Painting Specifications.

.03 Exterior doors shall be 1¾" thick insulated metal clad door units, with specified profile. Doors shall have a self-sealing bottom door sweep and weather-stripping. Doors shall have a minimum insulation of a least R-14.5 factor. Doors to have baked-on enamel finish. Doors to be primed and painted with minimum two coats of paint. Doors shall have a minimum 10-year warranty.

.04 Hardware for exterior doors shall be medium grade or better by Stanley, Corbin, Norton, Yale, Sargent, Schlage, Kwikset, or approved equal. Replacement parts shall be readily available for all installed hardware. All exterior doors shall be hung on three 4" x 4" butt hinges and shall be provided with floor mounted doorstop. All exterior doors shall be provided with "key in knob" locksets, keyed alike for all exterior doors.

All exterior doors shall be provided with deadbolt locksets, keyed alike for all exterior doors. Deadbolt locks to have case-hardened rim and throw bolt at

least 1" long. Locks on solid doors shall have a thumb-turn on the inside. Locks on doors with glass windows that are accessible, to be keyed on both sides unless otherwise specified. All solid doors to have wide-angle viewers install at a height approved by the homeowner.

.05 Pre-hung door units are to be complete with trim to match the existing molding, all new hardware hinges and doorstop. Door openings are to be no larger than 1½" in the rough than the new door. Proper shims behind hinges and keeper shall be installed. Paint or stain as directed.

.06 Interior doors shall be 1⅜" thick. Interior doors shall be hollow-core masonite or Luann, as indicated in the work write-up. Interior doors shall be installed with (2) two, new, butt hinges, 3½" x 3¼", new locksets, and new baseboard or hinge mounted doorstop. Bathroom doors and bedroom doors shall be provided with "privacy-style" locksets. Closet doors shall be provided with "passage-style" locksets.

.07 Hardware for interior doors shall be medium grade or better by Stanley, Corbin, Norton, Yale, Sargent, Schlage, Kwikset, or approved equal. Replacement parts shall be readily available for all installed hardware. All interior doors shall be hung on two 3½" x 3¼" butt hinges and shall be provided with floor mounted doorstops. Bathroom doors and bedroom doors shall be provided with "privacy-style" locksets. Closet doors shall be provided with "passage-style" locksets.

23. Storm and Screen Door

.01 Aluminum storm and screen combination doors shall be prehung on the frame. Extruded doorframe shall be at least 1" thick, with solid core frame and top rail and stiles at least 2" wide. Minimum thickness of structural members shall be .055". Doors shall be fully weatherstripped. Storm door glazing shall be tempered glass or acrylic plastic. Screening shall be included. Glass and screen shall be triple track with each component held in place by spring pin, or equal. This specification includes installation of all hardware including continuous or 4, separate hinges, latch lock and storm check. Storm doors shall have a baked-on enamel finish unless otherwise specified. Install trim or caulk at jambs as needed to make weather tight. Doors to be Larson, Better-Bilt, or equal.

.02 Wood Screen doors shall be 1⅛" thick wood and have two sections with metal grill at bottom, new primed hinges, door closer, rod brace at bottom, and lock set. Wood stiles and top rail shall be 3⅝" wide. Bottom rail shall be 7¼" wide. Center rail shall be 3⅝" wide, minimum. Screening shall be aluminum wire. Prime and paint as per painting specifications.

24. Storm Windows and Screens

.01 Aluminum storm windows with screens shall be of the triple-track type, fully weatherstripped and with interlocking inserts. Frames shall be of extruded aluminum. Minimum thickness of structural members shall be .045". Storm window glazing shall be "B" quality or better. Screening shall be 14 x 18 or finer mesh size. Windows shall be capable of being locked in at least four positions. This specification includes installation according to the manufacturer's specifications. Storm windows shall have a baked-on enamel finish unless specified otherwise. Storm windows shall have weep-holes at the sill. These weep-holes are not to be caulked.

.02 Screening shall be 14x18 or finer mesh size.

25. Windows

(See Chapter 4 for installation guidelines)

.01 Wood Window installation includes frame, casing, stops, sashes, weatherstripping, glass and hardware, i.e., a completely installed job. Windows shall match existing windows in detail and dimension unless otherwise specified. Windows shall be made of Ponderosa Pine, White Pine, or Douglas Fir. Caulk with sealant (*see spec. 21.01*) the joints between all exterior window head casings, side casings, sill casings, and the adjacent building siding material to provide a completely airtight installation. Caulk with sealant the interior joints between the window head, jamb, sill, and the framed rough opening, to provide a completely airtight installation, prior to the installation of the interior casings and stool. Silicone-type caulks shall not be used on the interior of the window installation. Prime paint windows immediately upon installation; follow with two coats of paint in accordance with painting specifications. (*see spec. 32.01)*

.02 Glass shall be clear single-strength, (grade "B" or better). Do not set glass until all rabbets have been cleaned and primed with linseed oil. Putty shall be DAP glazing compound or approved equal. Glazing shall be white or natural color. Glazing work shall be neat and at a 45° degree angle. Glass shall be secured in place with glazing points and face puttied. All excess putty shall be removed, and the glass left clean. Follow with two coats of paint over the glazing compound in accordance with painting specifications.

.03-SP Wood Sash Packs: Window sash shall match existing window sash in detail and dimension unless otherwise specified. Windows shall be made of Ponderosa Pine, White Pine, or Douglas Fir. Sash pack kits shall be weather-stripped , **ENERGY STAR** rated, Low-E, ⅝" insulated glass units supplied with jamb liners and include sash compression trough/sill seals, cam action sash locks, vinyl bulb or compression seals. Approved brands meeting these

specs are: Marvin, Anderson, M&W, Lincoln & Weatherking. **Other brands may be approved, but require full documentation submittal to Department Staff prior to order or use.** Prime paint windows immediately upon installation; follow with two coats of paint in accordance with painting specifications. Installation to include full screen with hardware. Sash Pack units shall carry a minimum 20-year warranty.

.03-H Historic Wood Windows: Installation includes frame, casing, trim, stops, sashes, weather-stripping, Low-E, ⅝" insulated glass and hardware for a complete installed unit. All replacement windows must meet or exceed ***ENERGY STAR*** performance criteria and ratings (*see spec. 25.06*). Windows shall match existing windows in detail and dimension unless otherwise specified. Windows shall be made of Ponderosa Pine, White Pine, or Douglas Fir. Approved brands meeting these specs are: Marvin, Anderson, M&W and JeldWen, Lincoln & Weatherking. **Other brands may be approved, but require full documentation submittal to Department Staff prior to order or use.** Seal with low expansion foam, all joints between exterior window frame and rough structure opening prior to installation of trim. Caulk all joints inside and out between header, casings, sill and adjacent surfaces to provide a completely airtight installation. (*see spec 21.01*). Prime paint windows immediately upon installation; follow with two coats of paint in accordance with painting specifications. Installation to include full screen with hardware. Windows shall carry a minimum 20-year warranty.

.04 Vinyl Replacement windows must meet or exceed ***ENERGY STAR*** performance criteria and ratings (*see spec. 25.06*). Replacement windows shall be manufactured by Certainteed, PGT 2300 series, Dove, WeatherLok 3200 series, American Craftsman, Ever-Weld series, or approved equal. **Other brands may be approved, but require full documentation submittal to Department Staff prior to order or use.** Color to be selected by owner. Replacement windows shall be extruded, high impact resistant, rigid polyvinyl chloride (PVC), double-hung, windows unless otherwise specified in the Work Write-up. The installation includes all necessary operating hardware, wall anchors, and trim. Units shall be shimmed and leveled to allow proper operations of the windows. Glazing shall be Low-E, ⅝" double insulated glass. Frame and sash members shall be a multi-chamber design, with walls a minimum of 5/64" thick. Frames shall be 3¼" deep and sash shall be 1⅜" deep. All corners of the frame and sash shall be miter or butt jointed, fusion welded and steel reinforced; welds to be dressed and finished to match surrounding surface. Provisions for pressure equalization and baffled internal weepage shall be incorporated into the system. All units shall be double tilt-in, complete with full screens. Seal with low expansion foam all joints between exterior window frame and rough structure opening prior to installation of any trim. Caulk all joints inside and out between header, casings, sill and adjacent surfaces to provide a

completely airtight installation. Window shall carry a minimum 30-year warranty.

.05 Replace jambs, sills and trim on windows, using materials to match existing. When replacing sills, insure adequate slope to assure proper drainage to the outside.

.06 ***ENERGY STAR rated windows*** shall be labeled and have the following Ratings as specified for our geographical location by NFRC and approved by US Dept. of Energy: *(see Chapter 5 for more information)*

U-factor ≤ 0.32
SHGC ≤ 0.40
Low-E, ⅝" insulated glass or double Low-E
PPG ⅝" warm edge insulated glass with Solarban 60.

26. Weather-stripping and Seals

.01 Weather-stripping materials used shall be durable, high quality materials with a minimum life expectancy of ten (10) years. Material used shall be appropriate for the type of opening. Spring strips and V-strips may be used in compression joints. Replacement pile may be used in sliding joints and storm doors. Vinyl bulb type materials are best suited for use in compression joint. **Neoprene-coated foam strips, felt strips, metal wrapped felt strips, and open-cell foam tapes MAY NOT BE USED**.

.02 Existing windows that still have loose sash units after adjusting or replacing the window stop shall be weatherstripped. Metal-backed, tube (bulb) type, or spring metal weather-stripping shall be installed around the sash in such a way that the sashes still work properly.

.03 All exterior doors shall be weather-stripped. Install new weather-stripping similar to the style used in new, pre-hung door units. These systems either have an aluminum, (bronze or white) metal extrusion with a vinyl bulb, or a wood extrusion, which must be painted, and the vinyl bulb. These systems provide more sealing surface against the door and tend to do less damage to freshly painted door sashes.

.04 All exterior doors shall have an adequate threshold. Install approved vinyl bulb threshold. The threshold shall fit snugly against both door jambs, and shall be sealed with caulk. Doors that do not seal properly with a threshold alone shall receive a new door sweep, installed on the inward opening side of the door.

27. Plaster

.01 If lathing is in sound condition, nail and secure as necessary and apply plaster. Wood lath shall be wetted down prior to applying plaster. If lath is in poor condition, remove and replace with expanded metal lath. Use 4-mesh rib lath, installed according to manufacturer's directions. Nail to studs or block out with 2" x 4" lumber as needed. Fasten with 4d nails spaced approximately 6" on center. Gypsum plaster materials shall be standard commercial brands. Mixing and application of gypsum plasters shall be in accordance with American Standards Association No. A42.1, American Standard Specifications for gypsum Plastering. Apply plaster in 3 coats or in 2 coat, double-up work, minimum thickness shall be ½".

28. Gypsum Wallboard (Sheetrock)

.01 Wallboard shall be gypsum wallboard with tapered edge. All wallboard installed in bathrooms shall be rated, moisture-resistant gypsum board. Wallboard shall be installed at right angles to the supporting structural members in as long a length as possible. Wallboard shall be fastened per the following schedule:

If installed without Adhesive

Screws (type S or W) length sized to penetrate framing members by ⅝"	place every 12" on framing
Nails (13 gauge, annular ringed) length sized to penetrate framing members by ⅝"	Pair of (2) nails spaced every 12" and 2" apart in center and single nail every 7" around perimeter

If installed with Adhesive

Screws (type S or W) length sized to penetrate framing members by ⅝"	place every 16" on framing
Nails (13 gauge, annular ringed) length sized to penetrate framing members by ⅝" perimeter	Pair of (2) nails spaced every 12" and 2" apart in center and single nail every 7" around

Never use less than ½" wallboard for ceilings. (note: joists must be 16" oc oif texturing ceiling)

Joint tape and compound shall conform to the American Society of Testing Materials Standard C-475, Treatment Materials for Gypsum Wallboard, and

be applied according to manufacturer's specifications. A minimum temperature of 55° degrees Fahrenheit shall be maintained in the room where the work is done and is completely dry. The tape over joints shall be embedded in joint compound and covered with a thin layer of compound; a second and third coat shall be applied. Cover nails with 3 (three) applications of joint compound. Each coat shall be completely dry before applying the next coat. Each coat shall be feather-edged, and extended beyond the next coat. The finish coat shall be sanded lightly and any imperfections filled-in prior to any painting. Caution shall be used to avoid roughening of wallboard surface.

Inside corners shall be reinforced with tape embedded in joint compound. Galvanized L-type edge trim wallboard corner beads shall protect outside corners. Corner beads shall be finished with 2 (two) coats of joint compound.

Extend electrical outlets, switch boxes, and all recessed mounted boxes to accommodate the installed thickness of gypsum wallboard.

.02 When applying wallboard over existing plaster, install with 2½" long sheetrock screws to allow a minimum penetration of 1" into framing members.

29. Water Resistant Wall Finishes

.01 Masonry tile backer shall be Durock Cement Board or equal installed according to manufacturer's recommendations. Joints of tile backer shall be reinforced with the proper tape and mortar or adhesive.

.02 Install prefabricated tub enclosure unit. Tub enclosure unit shall consist of 1/16" thick or thicker molded fiberglass, consisting of (2) two or (3) three panels with integral soap dish. Unit shall be installed strictly in accordance with manufacturer's recommendations to a sound underlayment.

.03 Tile shall be 4¼" x 4¼", glazed tile, standard grade, as defined by the National Standards Institute. Tile to be set in mastic adhesive used for cement board such as multipurpose thin set, Latipoxy 300 or equal. Extend tile to 72" above tub unless otherwise specified. Install one ceramic tile soap dish. Install mudcap or bullnose for a smooth, finished edge flush with wall surface. Joints to be filled using a polymer fortified grout. Clean up and buff surface to a gloss finish. Install a permanently attached shower rod unless otherwise specified.

.04 Tool and remove all grout from joints taking care not to damage tile surfaces. Joints should be removed to a depth that will allow new grout to adhere. Grout all joints using a smooth, polymer fortified grout. Special attention

should be taken to maintain a grout joint that will resemble a joint expected for new installation. Wide joints will not be accepted. Clean up and buff surface to a gloss finish.

30. Ceiling Finishes

.01 Install 1" x 4" pine furring strips spaced 16" on center, running perpendicular to ceiling joists; pre-drill and fasten to each ceiling joist using 2 (two), 2" coarse wood screws. Shim furring strips as necessary to provide a level surface. Install 12" x 12" x ½" thick mineral fiber or wood fiber tile, similar to Armstrong. Ceiling tile shall have a Class C flame resistance. Tile to be white or off-white, with surface pattern to be selected by the Owner. Tile to have tongue and groove edge and be blind stapled to wood furring in accordance with manufacturer's recommendations, using (4) four ½" or 9/16" length staples per tile. Lay out ceiling tiles so that the border tiles on the opposite sides of the room are of equal width. Seams in tiles shall be staggered. Install 3" wide molding at joint between the walls and the ceiling to produce a finished ceiling job.

.02 Install 1" x 4" pine furring strips spaced 16" on center, running perpendicular to ceiling joists; fasten to each ceiling joist with two 8d or longer nails. Shim furring strips as necessary to provide a level surface. Install ½" gypsum board ceiling. **Never use less than ½" wallboard for ceilings.**

Wallboard shall be gypsum wallboard with tapered edge. All wallboard installed in bathrooms shall be rated moisture-resistant gypsum board. Wallboard shall be installed at right angles to the furring strips in as long a length as possible. Wallboard to be screwed to the joists (through the furring strips) with 2" sheetrock screws installed 7" on center. Screws to be installed with their shanks perpendicular to the face of the board and seated below the face of the board without breaking the paper. Screws to be installed at least ⅜" from panel ends and edges. **Never use less than ½" wallboard for ceilings.**

	If installed without Adhesive
Screws (type S or W) length sized to penetrate framing members by ⅝"	place every 12" on framing
Nails (13 gauge, annular ringed) length sized to penetrate framing members by ⅝"	Pair of (2) nails spaced every 12" and 2" apart in center and single nail every 7" around perimeter

	If installed with Adhesive
Screws (type S or W) length sized to penetrate framing members by ⅝"	place every 16" on framing
Nails (13 gauge, annular ringed) length sized to penetrate framing members by ⅝" perimeter	Pair of (2) nails spaced every 12" and 2" apart in center and single nail every 7" around

Joint tape and compound shall conform to the American Society of Testing Materials Standard C-475, Treatment Materials for Gypsum Wallboard, and be applied according to manufacturer's specifications. A minimum temperature of 55° degrees Fahrenheit shall be maintained in the room where the work is done until the cement is completely dry. Over joints, tape shall be embedded in joint compound and covered with a thin layer of cement; a second and third coat shall be applied. Each coat shall be completely dry before applying the next coat. Each coat shall be feather-edged, and extended beyond the next coat. The finish coat shall be sanded lightly and any imperfections filled-in prior to any painting or decorating. Caution shall be used to avoid roughening of wallboard surface. Cover screws with three applications of joint compound, allowing time to dry between each coat. The final coat shall be sanded lightly before application of paint or other decoration. When applying wallboard over existing plaster, install with 2-½" long sheetrock screws to allow a minimum penetration of 1" into framing members. Extend electrical outlets, switch boxes, and all recessed mounted boxes to accommodate the installed thickness of gypsum wallboard.

31. Floor Finishes

.01 Wood Flooring:
Refinish existing wood floors. Set all exposed nail heads to recess below wood surface. Sand floors to remove existing finish, using a fine sandpaper for final sanding. Carefully vacuum and tack to remove all traces of dust before applying finish. Apply polyurethane finish in two coats, allowing ample time to dry between first and second coats. Care should be taken to ensure no bubbles nor trash in finish and that adequate heat/air circulation temperatures are available for proper curing.

.02 Underlayment:

.02A Underlayment shall be ⅜" underlayment grade plywood, having no core voids, knotholes, or soft or hard spots. Plywood shall be graded for use as underlayment and bonded for exterior or interior use. Underlayment shall be sanded on both sides. Floor should be clean and free of debris before installing flooring. Underlayment shall be

installed full floor unless existing fixtures are to remain. New and existing commodes shall be removed and reset with new wax seal on raised flange. *(see fastening schedule below)*

.02B Underlayment shall be ¼" luann plywood, having no core voids, knotholes nor soft or hard spots. Plywood shall be graded for exterior or interior use. Underlayment shall be sanded on both sides. Seams, joints and fastener voids shall be filled smooth with an approved compound. Floor should be clean and free of debris before installing flooring. Underlayment shall be installed full floor unless existing fixtures are to remain. New and existing commodes shall be removed and reset with new wax seal. *(see fastening schedule below)*

.02A & .02B Required Fastening Schedule

Resin, rosen, or cement-coated nails are not designed for underlayment fastening and are not recommended because they have been known to stain resilient floor covering.

The quickest method for fastening ⅜" (9.5mm) and ¼" underlayment panels is the use of narrow crown staples applied with a manual or pneumatic stapler. For underlayment thicker than ⅜" (9.5mm), ring-shanked nails should be used. With all underlayments, the fastener should penetrate the underfloor by ¾" (1.9cm), but not protrude through the underfloor by more than ⅛" (3.2mm). If the underlayment is being installed over an old floor covering, the thickness of the flooring should be taken into consideration when selecting nail and staple length. It is advisable to use staples set 1/32" (.8mm) below the surface to fasten the underlayment. If it is necessary to use nails, also set the heads 1/32" (.8mm) below the surface; filling nail holes is not recommended.

Guidelines for **staple & 12-½ ga. ring shank nail placement:**

- APA underlayment grade plywood – Place fasteners every 6" in the body of the sheet and 3" apart at the perimeter approximately ⅜" from the panel edge.
- Lauan plywood – Place fasteners every 4" in the body of the sheet and 2" apart at the perimeter approximately ⅜" from the panel edge.
- Other underlayment products – Follow the panel manufacturers' recommendations for fastener placement.

.03 Vinyl Flooring:

.03A Install cushioned, no wax, sheet vinyl flooring with:
minimum wear layer thickness of $\geq$ 10 mils
minimum overall thickness of $\geq$ 12 mils

Color and pattern of cushioned sheet vinyl flooring to be selected by Owner. Flooring shall be adhered with a total coverage, full glue. Flooring brands approved are by Armstrong, or Tarkett, or approved equal. **NOTE: Interflex flooring is not permitted.** Flooring shall be installed under all fixtures and cabinets that are removed, prior to setting of the fixtures or cabinets. Before spreading adhesive, ensure the underlayment is completely clean and dry. Use water-resistant adhesive recommended by flooring manufacturer and apply in accordance with manufacturer's instructions. Seams will be permitted only if the room dimensions are larger than stock sizes of flooring material. Seams shall be placed in inconspicuous locations, away from heavy traffic areas, and all seams shall be welded together and clear sealed. Fitting and cutting shall be done carefully so as to produce a workmanlike job. Caulk where flooring is cut around doorjambs and casings. Use aluminum or wood edge trim at doors and entryways. Install new ¾" x ½" shoe molding, which shall be painted or stained (by Owner's choice), prior to installation. Miter or cope all corners and joints. Reinstall any fixtures removed. Thoroughly clean floor of any adhesive. **PROVIDE MINIMUM 10 YEAR MANUFACTURER'S WARRANTY OR GREATER**.

.03B Install cushioned, no wax, sheet vinyl flooring with:
minimum wear layer thickness of $\geq$ 10 mils
minimum overall thickness of $\geq$ 12 mils
Color and pattern of cushioned sheet vinyl flooring to be selected by Owner. Flooring shall be felt backed and installed fully glued. Flooring shall be installed under all fixtures and cabinets that are removed, prior to replacement of the fixture or cabinet. Before spreading adhesive, be sure that the underlayment is completely clean and dry. Use water-resistant adhesive recommended by flooring manufacturer and apply in accordance with manufacturer's instructions. Seams will be permitted only if the room dimensions are larger than stock sizes of flooring material. Any seams shall be placed in inconspicuous locations, away from heavy traffic areas, and all seams shall be welded together and clear sealed. Fitting and cutting shall be done carefully so as to produce a workmanlike job. Caulk where flooring is cut around doorjambs and casings. Use aluminum or wood edge trim at doors and entryways. Install new ¾" x ½" shoe molding, which shall be painted or stained (by Owner's choice), prior to installation. Miter or cope all corners and joints. Reinstall any fixtures removed. Thoroughly clean floor of any adhesive. **PROVIDE MINIMUM 10 YEAR MANUFACTURER'S WARRANTY OR REATER**.

.04 Color and pattern of vinyl tiles to be selected by the Owner. Flooring shall be installed under all fixtures that are removed, as indicated. Before

spreading adhesive, be sure that the underlayment is completely clean and dry. Use water-resistant adhesive recommended by the flooring manufacturer and apply in accordance with manufacturer's instructions. Tile shall be carefully laid out such that the first row of tile on the opposite sides of each room is of the same width. Lay tile straight and true. Fitting and cutting shall be done carefully so as to produce a workmanlike job. Install new ¾" x ½" shoe molding, painted or stained (by Owner's choice), prior to installation. Miter or cope all corners and joints. Reinstall any fixtures removed. Thoroughly clean floor of any adhesive. After floors have set sufficiently to become seated, wash with a neutral cleaner, apply one coat of high-grade water emulsion wax, and buff.

On concrete floors, remove grease, dirt and other substances from concrete base. Patch any cracks, holes or other irregularities using a mastic underlayment containing Portland, gypsum or aluminous cement with a chemical binder such as latex, asphalt or polyvinyl acetate resins. Trowel to a smooth, hard finish. Prime concrete in accordance with manufacturer's recommendations after patches are completely set.

.05 Carpeting

.05A Carpet padding and carpet shall comply with the following rehabilitation specifications and FHA Standards UM-44A, "Use of Materials" for moderate traffic areas. <u>The more stringent specification will apply:</u>

Fiber or Materials:	Nylon or Olefin only (**No Polyester)**
Fiber Weight:	≥ 35 oz. / sq yd
Pile Density:	≥ 2200
Stitches per Inch:	≥ 7 per inch
Twists per Inch:	≥ 5.75 per inch
Durability Rating (P.A.R)	≥ 3.5
Performance Appearance Retention Rating	
Warranty:	min. 10 yr. Wear and 5 yr. Stain
Padding Type:	cellular rubber
Padding Weight:	6 lb / yd
Padding Thickness	min. 7/16"

Install new tack strips along all walls. Cut off doors as necessary to clear carpet. Install metal carpet transition strips where carpet abuts other types of flooring surfaces. Carpet to be installed in closets of rooms where carpet is specified. Professional carpet installers shall do all installation. **<u>All carpet shall be power-stretched at installation</u>**. ***Note****: that the measurements shown in the Work Write-Up constitutes square footage based upon room dimensions. Contractor must make all allowances for carpet waste and closet floor areas are not included in square footage measurements.*

Provide manufacturers warranty and specification sheet.
Polyester fiber is not acceptable.

Carpet terminology and specification details:

Tuft Twist: *The tuft twist number is the key to having your carpet retain its like new appearance longer. The tuft twist is based on the number of twists per lineal inch per tuft. The twist numbers range from 3 to 9. With plush styles of carpets, the tufts of fibers are twisted in the same way that people curl their hair. The carpet fibers are grouped together into tufts and twisted while heat is applied to "set" the fibers permanently, hence the term "heat set". The tighter the fibers are twisted the better. Lower twist carpets (3 to 4) tend to untwist or "blossom" at the yarn tips creating a worn out or matted down appearance more quickly. For this reason a carpet with a higher twist count will retain its like-new appearance longer. When comparing carpets side by side, you must consider the tuft twist to help you determine which carpet is the better choice. Inexpensive carpets with low tuft twist will lose their "twist" quickly and will mat down and look ugly.*

Carpet Pile Density: *Carpet density is the key to having a carpet retain its like new appearance longer. The higher the density the more durable the carpet will be. Pile density ranges from 1000 to 6000 and a good quality nylon frieze will have a density of about 2000 or more. For nylon plush and textured styles a pile density of 2500 or more is considered excellent. Density is determined by pile yarn weight, pile thickness and pile height. Think of it like a densely wooded forest where the trees are thick and close together. The higher the density the more durable the carpet will be. But there is a limit to the durability if the carpet pile is too tall.*

The Carpet Specification Label: *On the back of every carpet sample should be a manufacturer's label that shows the type of fiber used to make the pile, the pile density rating and the tuft twist count. Other information shown should reveal if anti-stain or anti-static treatments have been applied, the manufacturer and the style and color names. This is the critical information you need to help you determine how durable the carpet is and whether or not it would be a good choice for your needs, goals and lifestyle.*

The Durability Rating or Performance Appearance Retention (P.A.R.) *is the most important because this rating is based on industry standards to show how the carpet retains its original appearance based on a predetermined traffic amount**;** 3.5 or higher is ideal for high traffic.*

.05B Deleted (referred back to: see .05A)

.05C Deleted (referred back to: see .05A)

.05D Use of "approved equal" will require the following submissions for staff approval, prior to installing any work:
1. Pad

A factory sample of pad to be used, and letter from manufacturer stating weight and thickness with cross-reference to the "pads" name or stock number as shown on submitted sample.

2. Carpet
Each contractor shall maintain, at the rehab office, a sample board that represents the current carpet selection offered to the homeowners. This sample will need to define yarn type, weight and warranty information. *(**Note**: Any change in type of carpets used will require new sample boards and staff approval prior to installing any work).*

06. Owners shall select vinyl flooring from actual sample boards. Selections made from booklets will not be accepted. When the flooring is to be installed, the owner should be shown the actual flooring to make sure that the flooring being installed in the one they remember selecting. Any problems should be brought to the immediate attention of the Rehab Staff. When submitting your warranty papers for vinyl flooring, provide the retail cost certification and the manufacturers warranty and specification for all carpet and square yardage purchased if cost allowance is used.

32. Painting

.01 Exterior wood surfaces to be painted shall be thoroughly scraped and sanded to remove loose, cracked, and scaly paint and rough spots. Where previous paint coats have chipped and peeled, the edge shall be sanded down to obtain a smooth surface before new paint is applied. Thoroughly wash siding before painting. Scrub any areas with mildew using chlorine bleach or TSP.

Before painting exterior windows, remove loose or shrunken glazing compound or putty. Thoroughly clean the rabbets and prime using one coat of linseed oil. After primer is dry, reglaze as per specification number 25.02.

Reset any loose nails; fill holes with putty, and sand. Caulk around all windows and doors with acrylic latex or butyl type compound using caulking gun, applying in a uniform manner. Caulking must be a paintable surface.

Masonry surfaces to be painted shall be scraped; wire brushed, cleaned, and allowed to dry thoroughly.

Metal surfaces to be painted shall be scraped, wire brushed, and sanded to remove loose paint, rust, and scale.

Interior walls to be painted shall have all cracks and indentations filled with spackling or joint compound and then sanded to provide a smooth surface. Interior painting includes all surfaces (wall, trim, doors, and windows), and any closets serving rooms to be painted.

Interior wood surfaces shall be cleaned of all grease and dirt using a mild alkaline such as TSP; rinse thoroughly. Remove all loose, blistered, or otherwise defective paint. Fill in all cracks and other minor irregularities. Sand thoroughly, and prime all bare wood. Special care shall be used when applying a new coating over an enamel surface so as to secure proper adhesion. New wood should be primed with enamel undercoat.

All paint and other finished materials shall be of best quality as shown on the Paint Schedule page. **FEDERAL REGULATIONS PROHIBIT THE USE OF ANY LEAD-BASED PAINT**. All paint shall conform to Federal Regulations regarding mercury content. All paint shall be delivered to the site in the manufacturer's sealed containers. Each container shall be labeled, giving manufacturer's name, type of paint, color, and instructions. **PAINT SHALL BE APPLIED WITHOUT THINNING**. Paint shall be applied in dry weather, to dry surfaces, within a mean temperature of 50° degrees to 95° degrees Fahrenheit. Finish work shall be uniform, in an owner-approved color, smooth and free of runs, sags, and defective brushing and rolling. Make edges of paint adjoining other materials or colors sharp and clean. All paints are subject to inspection and approval prior to application.

All areas not being painted shall be protected at all times with drop cloths. Any surfaces damaged by painters shall be repaired or replaced. All window glass shall be scraped clean and washed. All windows shall be in operable condition.

Before proceeding with paint purchases, color samples shall be submitted to the owner for his/her selection and approval. Only one wall color, one trim color, and one ceiling color shall be designated for each room. Owner shall initial selection(s) as proof of his/her decision.

Contractor shall be responsible for sealing any greasy or soiled surfaces prior to painting as necessary, to prevent any bleeding effect.

Spraying of paint is not allowed for the exterior finish. Spraying of finish coats are not allowed for interior. Ensure that painting subcontractor understands the increased liability of spraying.

PAINT SCHEDULE

Type/Location	Primer	Coats	Finish	Coats
Interior Walls/Ceilings	Latex Primer	1	Latex Flat Wall Paint	2
Interior Trim	Oil or Latex Primer	1	Latex or Oil Semi-Gloss Enamel	2
Clear Finish	Clear Wood Sealers	1	Clear Wood Sealer or Varnish	1
Painted	Enamel	1	Alkyd Gloss Floor	1
Wood Floors	Undercoat		Enamel	
Wood Siding	Oil Exterior Primer	1	Oil Base Paint or Exterior Latex	2
Iron	Zinc Chromate	1	Metal Enamel	2
Galvanized Steel	Zinc Chromate	1	Alkyd Trim Enamel	2
Masonry	Alkali Resistant	1	Masonry Enamel	2
Concrete Floors	None	--	Alkyd (Oil) Gloss Enamel	2
Kitchen/Bath Walls/Ceilings	Latex Primer	1	Alkyd (Oil) or Latex Semi-Gloss Enamel	2
Exterior Trim	Oil Primer	1	Alkyd (Oil) or Latex Semi Gloss Trim Enamel	2

ADDITIONAL COATS MAY BE REQUIRED TO PROPERLY COVER ALL SURFACES.

Approved Paints by Brand

NOTE: Must use either NO or LOW VOC paints.

NOTE: The use of Lead-Based Paints are PROHIBITED.

Surface Type & Finish	**Dulux / Glidden** *Home Depot*	**Duron**	**Sherwin Williams**	**Valspar** *Lowes*
INTERIOR				
Walls (Latex - Flat)	Life Master Latex	Genesis Latex	Harmony Acrylic Latex	Ultra Premium Interior
Trim (Latex - Semi-Gloss)	Life Master Enamel	Genesis Latex	Pro-Classic water-based Acrylic - Alkyd	Ultra Premium Interior
Wood Sealer/Varnish	Spread Urethane	(see others)	Wood Classics	Minwax
Floor Enamel	Floor Enamel	Porch & Floor Acrylic	Porch & Floor Enamel	Porch & Floor Enamel
EXTERIOR				
Siding / Walls (Latex - Flat)	Fortis 450 (Glidden Professional)	Signature Lifetime	Duration Exterior Acrylic Latex or Resilience Exterior	Duramax Exterior
Trim (Acrylic - Satin or Semi-Gloss)	Fortis 450 (Glidden Professional)	Signature Lifetime	A-100 Acrylic Latex	Duramax Exterior
Trim (Oil - Satin or Semi-Gloss)	Fortis 450 (Glidden Professional)	Superior House & Trim	SWProfesstional Alkyd	Valspar Ext. Oil Based Primer - then - Exterior Latex
Metal work	Bond Prep Primer - then - Fortis 450 Glidden Professional	Duration Exterior Acrylic Latex	Duration Exterior Acrylic Latex	Duramax Exterior
Porch Floor Enamel	Glidden Profressional Acrylic Floor Enamel	Porch & Floor Acrylic	Porch & Floor Enamel latex	Porch & Floor Enamel latex
Masonry Surfaces - Alkalai	Bond Prep Primer - then - Fortis 450 Glidden Professional	Bond Prep Primer - then - Fortis 450 Glidden Professional	Loxon Masonry Primer - then - Duration Exterior Acrylic	Duramax Elastomeric Exterior Masonry

33. Wall Paneling and Wallpaper

.01 Wood paneling shall be ¼" or thicker, prefinished plywood. Composition, MDF or pressboard paneling is not acceptable. Prefinished paneling shall conform to the standards of the United States Department of Commerce PS-51-71 for Hardwood and Decorative Plywood, and have a Class C flame spread rating. Paneling shall be applied in accordance with manufacturer's specifications. Fasten with 1¼" long nails spaced 6" on center at edges and 12" on center elsewhere. Use prefinished, color coordinated nails and cover holes with stick putty made to match paneling. Apply adhesive with caulking gun. Extend electrical outlets and switch boxes to accommodate new paneling. Molding shall match existing molding as applicable, and be stained to match paneling.

.02 Existing trim (except ceiling) shall be left in place, and paneling shall be carefully fitted around all door and window casings and butted against the baseboard.

.03 Wallpaper shall be fabric backed solid vinyl or vinyl laminated to paper, and has a Class-C or better flame spread rating. Use paste specified for use by manufacturer of wallpaper. Apply according to standard practice, including joining of seams. Paper shall be carefully trimmed where it meets all adjoining surfaces. Carefully match patterns at all seams.

.04 Note: measurements shown in the Work Write-Up constitute square footage's based upon room dimensions. Contractor must make all allowances for waste.

34. Handicap Facilities

.01 Bathroom grab bars shall be 1½" in diameter, 18-gauge type 304, stainless steel, satin finish, with concealed screw end flanges. Rails shall be mounted parallel to the floor, 33" to 36" above finished floor, with 1½" clear space between rail and wall, unless otherwise specified by the Advisor. Rails shall be fastened to the wall framing so as to support a 250 lb pound load. All work to meet N.C. Handicap Code and comply with HUD/ANSI recommendations. **Location of rails to be approved by homeowner**.

.02 Roll-in shower enclosure shall be GlasTec Model 60HS or equal. Unit shall be thermoformed from a continuously cast acrylic sheet and be reinforced with a flame retardant fiberglass polyester resin. Unit shall meet ANSI A117.1, Z124.1, Z124.2 UFAS, and the requirements of state codes. Inside dimensions of 56¼" x 36" x 80", with outside dimensions of 60" x 36¼" x 84". Unit shall be installed in a pit 2" deep by 62" wide by 37" front to back

so that the finished floor will be level with the top of the 2" threshold. Wall finish materials (i.e., sheetrock) shall be installed over the mounting flange. Unit shall be complete with either molded seat or fold-up seat (as specified in write-up), corner soap trays, two 20" stainless steel grab bars, hand held shower set (personal hand shower, vacuum breaker, on-off control, 60" flex hose, swivel, connector, and wall supply elbow), wall brackets, and brass drain housing with stainless strainer.

35. Plumbing

.01 Plumbing fixtures and materials shall comply with and be installed in accordance with the ICC Plumbing Code with NC Amendments. All piping shall be installed in a manner that does not cause critical damage to structural members. All fixtures shall be supplied and installed with supply tubing and stop valves. Sinks and lavatories shall also be provided with tailpieces and P-traps. Where concealed, the supply tubing, valves, tailpieces and traps may be rough finished but where exposed, they shall be bright chrome plated. **All penetrations through walls and floors shall be sealed air tight with approved foam insulation or caulk** (*see spec. 21.04*). Single piece chrome plated escutcheon plates shall be installed on all water piping penetrations through walls, floors and ceilings. All fixtures, fittings, piping and materials shall be new and NSF approved whenever applicable.

.02 Kitchen sink shall be a (2) two compartment, 20 gauge stainless steel, self rimming and fully undercoated, sized 33" x 22" x 7" deep, with approved chrome plated brass strainer baskets and stoppers.

.03 Kitchen Faucets:

.03A Single lever Kitchen faucet shall be washerless design with chrome finish over solid brass housing, with an 8" long swing spout, and hand spray attachment. ***Faucets with plastic waterways or whose principal components are plastic may not be used.***

.03B Two-handle Kitchen faucet shall be washerless design with chrome finish over solid brass housing, with an 8" long swing spout, and hand spray attachment. ***Faucets with plastic waterways or whose principal components are plastic may not be used.***

.04 Water Heaters:

.04A Electric water heaters shall be 40-gallon capacity, with two interlocking heating elements. The voltage shall be 240/220v unless the job requirements dictate otherwise. The tank shall be glass lined and be warranted for a period of not less than (12) twelve years. The tank shall be fully insulated. The unit shall be UL listed and shall

comply with HUD and NC Building Codes. Works to include installation of an electrical service disconnect. Install dielectric unions at water connections to the heater. Pressure relief valve shall be piped to within 6" of the floor or ground. Set water temperature at 120° F, unless factory set. (*See Section 35.04C for additional installation requirements when water heaters are installed in unheated areas*.)

.04B Gas water heaters shall be 40-gallon capacity, with 35,000 BTU gas burner capacity. The tank shall be glass lined and be warranted from leaks for a period of not less than (10) ten years. The tank shall be fully insulated and shall meet the latest energy efficiency requirements of ASHRAE 90-A. The unit shall be UL listed and shall comply with HUD and NC Building Codes. Install dielectric unions at water connections to the heater. Pressure relief valve shall be piped to within 6" of the floor or ground. Connect gas piping to the heater and provide a shut-off cock valve and install UL, Type B flue piping, properly flashed with approved weather cap. Set water temperature at 120° F. (*See Section 35.04C for additional installation requirements when water heaters are installed in unheated areas*.)

.04C Water heaters in accessible, unconditioned spaces shall be insulated to R-11 (minimum) using commercial kits with foil – or vinyl – faced batts (fit facing outside). Access plates to heating elements and thermostat controls shall not be covered with insulation; nor shall junction boxes, cover plates, or pressure-relief or drain valves be covered. Insulation shall be positioned approximately (2) two inches above the floor; all batts should be butted together at the seams and taped leaving no gaps. Compression of insulation is not acceptable.

.04D Tankless water heater shall be rated:

Gas models at no less than 6.1 gpm at 60° degree rise in temperature with an energy factor of not less than 85% AFUE.

Electric models at no less than 4.0 gpm at 40° degree temperature rise with an energy factor of not less than 90.

Temperature to be set at not greater than 120° degrees. Install dielectric unions at water connections. Units to have a minimum (10) ten year warranty. Include ducted intake and exhaust flues if gas unit. Connect gas piping to the heater and provide a shut-off cock valve and install UL, Type B flue piping, properly flashed with approved weather cap

.05 Washing machine connection box shall be plastic or polyvinylchloride (PVC), with ½", hot and cold, water connections, and 2" vertical drain and trap with venting as required. Work to include provision of single receptacle duplex 110v outlet, UL listed.

.06 Hose bibbs shall be the nonfreeze type with vacuum breakers to prevent back siphonage, made of chrome plated brass housing.

.07 Countertop lavatory shall be vitreous china, self rimming, counter top lavatory with concealed antisplash rim, soap depression, front overflow and faucet holes on 4" centers. Include metal pop-up drain assemblies with tailpiece. The lavatory shall be white unless otherwise specified.

.08 Lavatory Faucets

.08A Two-handle lavatory faucet shall be washerless design with chrome finish over solid brass housing, with metal pop up drain assembly and ½" IPS supply connections 4" on center. ***Faucets with plastic waterways or whose principal components are plastic may not be used.***

.08B Single lever lavatory faucet shall be washerless design with chrome finish over solid brass housing, with metal pop up drain assembly and ½" IPS supply connections 4" on center. ***Faucets with plastic waterways or whose principal components are plastic may not be used.***

.09 Water Closets

.09A Water closet shall be a floor mounted, vitreous china, siphon jet, close coupled unit complying with U.S. government Standard CS 20-63. Water closets shall be set complete with wax seal, water tank, supply tubing, stop valve, ball-cock valve and any other required fittings. Also include toilet seat of molded wood construction with a chrome or white metal hinged style lid.

.09B Handicapped water closets shall be a minimum of 16½" to 19½" high. Water closet shall be a floor mounted, vitreous china, siphon jet, close coupled unit complying with U.S. government Standard CS 20-63. Water closets shall be set complete with wax seal, water tank, supply tubing, stop valve, ball-cock valve and any other required fittings. Also include toilet seat of molded wood construction with a chrome or white metal hinged style lid.

.10 Water closet seats shall be of molded wood construction with a chrome or white metal hinged style lid.

.11 Bathtubs:

.11A Bathtubs shall be white, acid resisting enameled steel with slip resistant surface. Tubs shall be American Standard or approved equal. Spout and valve assembly shall be washerless design with chrome finish over solid brass housing either single or two handle, bath valve with O.T.R. chrome plated spout and showerhead; Include new tub stopper assembly with overflow trim and gasket.

.11B Bathtubs shall be cast iron, and porcelain coated with slip resistant surface. Tubs shall be Kohler approved equal. Spout and valve assembly shall be washerless design with chrome finish over solid brass housing either single or two handle, bath valve with O.T.R. chrome plated spout and showerhead; Include new tub stopper assembly with overflow trim and gasket. ***Pull/push waste stopper is not approved.***

.11C Bathtubs shall be a gel-coated fiberglass with slip resistant surface. Tubs shall be Universal Rundle, Lasco or approved equal. Spout and valve assembly shall be washerless design with chrome finish over solid brass housing either single or two handle, bath valve with O.T.R. chrome plated spout and showerhead; Include new tub stopper assembly with overflow trim and gasket. ***Pull/push waste stopper is not approved.***

.12 Fiberglass tub/shower unit shall be gel-coated fiberglass, with two or three piece-interlocking surround with integral soap dish molded into surround. Tub shower shall be Eljer, Universal Rundle, Lasco or approved equal. Spout and valve assembly shall be washerless design with chrome finish over solid brass housing either single or two handle, bath valve with O.T.R. chrome plated spout and showerhead; Include new tub stopper assemble with overflow trim and gasket. ***Pull/push waste stopper is not approved.***

.13 New fittings for bathtubs and tub/showers shall be as specified for tubs and tub/showers (11 and 12).

.14 Domestic main water service shall be ¾" Type L seamless copper tubing or polyethylene (PEX) installed in accordance with code standards and city requirements. Work that shall be included as part of replacing the water service will be all piping from the water meter to the main valve in the building including excavation and backfilling required and reseeding, strawing and fertilizing the areas disturbed by the work.

.15 Sump pump shall be installed at the lowest point underneath the house. Install the pump in an 18" diameter by 24" reservoir with grated lid, unless specified otherwise. Set the top of the flue liner at or just below floor or grade level so that water is free to flow into it. Install 6" inches of #3 washed

stone under the liner. The pump shall have a ⅓ hp motor and be controlled by a float activated switch and check valve. The discharge line shall be run to an inconspicuous location to the outside unless otherwise noted. Provide a 110v, GFCI outlet with amperage rating compatible to pump amperage that meets the NC Electrical Code.

.16 Sanitary piping shall be ABS-DWV or PVC-DWV with direct waste vent pattern fittings of the same material. Vent piping shall be the same material as the sanitary piping. Flash all vent penetrations through the roof watertight.

.17 Water Piping:

.17A Domestic water piping within the building shall be Type L seamless hard copper with soldered joints or polyethylene (PEX) piping. Solder containing lead is prohibited. Any transitions from polyethylene to copper must be made prior to entering a wall cavity. All water lines shall be properly secured to joists and wall studs. If copper or galvanized piping is being replaced with polyethylene piping, plumbing contractor must obtain and pay for the services of a licensed, qualified electrician to provide a new ground for the electrical system, unless a grounding rod is present at meter location.

.17B All water piping in unconditioned space(s) shall be insulated with ½" wall thickness flexible closed cell insulation equal to Armaflex meeting minimum requirements described in Standards ASTM C592-80 & ASTM E84.

.18 Shower/tub faucet with diverter valve shall be Delta or approved equal washerless design with chrome finish over solid brass housing either single or two handle with tub spout and solid brass diverter valve.

.19 Chrome fittings for tub/shower units shall be washerless design with chrome finish over solid brass housing either single or two handle, bath valve with O.T.R. chrome plated spout and showerhead; Include new tub stopper assemble with overflow trim and gasket. ***Pull/push waste stopper is not approved.***

.20 Bathtub waste and overflow assembly shall be 20 gauge chrome plated brass or approved equal trim lever unit with chrome finished exposed parts. ***Pull/push waste stopper is not approved.***

.21 Provide aluminum dryer venting and all piping as specified in Work Write-up. Vent to exterior of house. Terminate and include exhaust hood with damper. Piping shall meet the NC Mechanical Code.

36. Heating and Air Conditioning

.01 All mechanical work shall comply with the NC Building Codes and applicable NFPA standards. All materials shall be new unless making repairs to existing equipment. All work shall be performed in a neat and workman-like manner. All penetrations through the structure shall be sealed air tight with approved foam insulation or caulk (*see spec 21.04*). Air distribution devices shall be installed flush and tight to the wall, floor or ceiling surface. All refrigeration compressors shall have a (5) five-year guarantee.

.02 Furnace installation shall include a new wall mounted thermostat, low voltage control wiring, gas or oil piping, ductwork, duct insulation, supply and return grilles, gas or oil furnace units (as directed), combustion air ducts (for gas furnaces installed in enclosed rooms), connection of oil or gas piping, service light with switch, electrical wiring and connections, and all lines necessary to connect to supply source. Gas furnaces shall have a minimum AFUE rating of 80%. Oil furnaces shall have a minimum AFUE rating of 80%. The size of the unit shall be determined by Manual J (heat gain/loss methods) as a minimum and the contractor shall submit a copy of the load sheet prior to installation.

ENERGY STAR *Requirements*

Heat Pumps	min SEER rating of 14	HSPF of 8.0 or greater
Central AC	min SEER rating of 14	
Oil Furnace	AFUE of 85% or greater	
Gas Furnace	AFUE of 90% or greater	

A. Ducting (metal ducting preferred) shall have an insulated value of R-8.
B. All room supply ducts shall have balancing dampers installed at the plenum and the system properly balanced to within 10% of Manual J & D designed air flow for each room.
C. Duct design shall be in accordance with ACCA Manual D standards.
D. All joints and boot to floor/wall or ceiling penetrations shall be sealed with mastic.
E. Duct testing will be performed by Rehab Staff and new duct systems will be expected to meet the following standard: at 25 Pascals, air leakage must not exceed 3% of the conditioned floor space of building.
F. Programmable thermostat shall be installed as part of the package.
G. The interior of all rooms except the bathroom and laundry room(s) shall not exceed +/- 3 Pascals with reference to the building space outside rooms with doors closed and the HVAC system operating.

NOTE: Manual J unit sizing calculation work sheet and Manual D copy of the duct design drawings and calculations **must be** provided to and **approved by Rehab Advisor prior to installation.**

.03 Packaged central air conditioning installation shall include the packaged air conditioner with gas or electric heat (as directed), wall mounted heat/cool thermostat, gas piping, supply and return grilles, concrete pad for mounting the unit, electric circuit, wiring and connections and all wall penetrations and repairs required to run the ductwork. The size of the unit shall be determined by Manual J (heat gain/loss) methods as a minimum and the contractor shall submit a copy of the load sheet prior to installation to justify the size of the units to be installed. Air conditioners shall have a minimum SEER rating of 14.0. Heat pumps shall have a minimum HSPF rating of 8.0. Gas heating units shall have a minimum AFUE of 90%.

.04 Split system air conditioning installation shall include the outdoor condensing unit, the indoor unit consisting of either gas or electric heat (as directed), air handler, and evaporative cooling coil, wall mounted thermostat, gas piping, supply registers and return grilles, concrete pad for mounting the outdoor unit, refrigerant piping with ½" Armaflex or approved equal insulation, condensate piping, combustion air ducts and flue piping (if a gas furnace is installed in an enclosed room), electric circuit, wiring and connections and all wall penetrations and repairs required to run the ductwork. The size of the unit shall be determined by Manual J (heat gain/loss) methods and the contractor shall submit a copy of the load sheet prior to installation. Air conditioning units shall have a minimum SEER rating of 14.0. Heat pumps shall have a minimum HSPF rating of 8.0 and a minimum SEER of 14.0. Gas furnaces shall have a minimum AFUE rating of 90%. Units shall be inspected for any refrigerant leaks and corrected.

.05 Ductwork:

.05A Ductwork shall be either galvanized, insulated sheetmetal, or flexible ducting (R-4.2) installed in accordance with SMACCNA Low Pressure Duct Standards. This value may be obtained with external duct insulation or internal liner or a combination of both. Ducts shall be sized in accordance with the ASHRAE guide. Ductwork outside the conditioned building envelope shall have R-8 insulation. Ductwork shall be concealed unless otherwise authorized in writing. Duct insulation shall include a vapor barrier on the outside surface, have a flame-spread rating not greater than 25, and have a smoke density not greater than 50. **Use of foil-faced or batt insulation as duct insulation is prohibited.** Staples used to secure duct insulation shall be minimum ½" outward-clinching heavy-duty staples.

.05B The ductwork system shall be designed per Manual D, to deliver air quietly, efficiently and in sufficient volumes to maintain a consistent temperature throughout the house. **"Spider System" ductwork designs are not allowed.** Size the return air duct for minimum noise.

Locate the return grill centrally, wherever possible. Minimize crimping or sharp bends in ducts. Locate registers at perimeter portions of house. All joints are to be sealed using mastic and fiberglass tape applied per manufacturer's specifications or approved equal. Ductwork outside the conditioned building envelope shall have R-8 insulation. **The use of duct tape is not permitted.**

.06 Install an appliance connector, dirt leg and shut-off cock valve at each gas-consuming appliance. Gas piping shall be Type K copper tubing or schedule 40 black steel with malleable iron fittings installed in accordance with NFPA 54.

.07 Oil piping and tanks shall be installed in accordance with NFPA 31. Oil piping shall be Type K copper. Oil tanks shall be sturdily mounted on a steel frame. The tank and frame shall be painted with two coats of aluminum paint. A filter and shut-off cock valve shall be installed in the supply line at the tank.

.08 Electric baseboard heaters shall be UL listed and be installed in accordance with manufacturer's specifications and the National Electrical Code. They shall be securely fastened to the wall and provided with trim covers. Install complete with wall mounted line voltage thermostats unless otherwise specified.

.09 Electric wall heaters shall be located as far as practical from plumbing fixtures and at least 30" from the openings / edges of tubs or showers. Wall heaters shall be UL listed and have a polished reflector, aluminum grill and a line voltage thermostat with "off" position.

.10 Old, Unused, above-ground, oil tanks are to be removed from the property and disposed of in accordance with Local, State, and Federal regulations, by a firm licensed to dispose of used oil tanks. Receipt must be provided to the Rehabilitation Advisor evidencing proper disposal of tank(s) prior to final closing.

37. Electrical

.01 All electrical work shall comply with the National Electrical Code (NEC) with NC Amendments. All wiring and devices shall be UL listed and NEMA listed for the applicable installation where such listings exist. All work shall be performed in a neat and workman-like manner. Wiring shall be concealed to the maximum extent, unless written permission is given otherwise. All cutting of walls, floors, ceilings and partitions for the passage of electrical work, and the closing of such openings in connection with electrical work and the removal of all debris caused thereby, shall be performed by the

Contractor performing the electrical work. Wiring shall be routed parallel or perpendicular to walls and shall be protected and supported in accordance with the NEC.

.02 Provide a new main service panel and meter can (for service change), complete with breakers, as specified in the Work Write-up. The minimum amperage for the new service shall be 200 amps. Connect all existing and new circuits, balancing the load to the breakers. Provide at least 10% spare breakers and 10% spaces. Provide a neatly labeled index on the inside of the panel door. Provide feed to new panel from the power company's meter. Include riser, mast and weather head if applicable.

.03 Provide new receptacles, lights, outlets, circuits and wiring for air conditioning units, furnaces, appliances and etc. All devices and fixtures shall be wired and properly installed in accordance with the latest edition of the National Electrical Code. All devices and fixtures shall be UL listed.

.04 Ground Fault receptacles shall be installed for all exterior receptacles, basement, kitchen and bathroom(s) with location, protection and spacing as required by NEC.

.05 Conductors shall be copper non-metallic sheath covered. Wiring shall be concealed in the building. The wiring of the building shall include cutting and patching of walls, floors and ceilings as required for the passage of electrical equipment as well as the removal of all trash and debris resulting from the work.

.06 **ENERGY STAR** rated lighting fixtures shall be provided complete with wiring, lamps, latches, lenses, covers, mounting hardware, frames, trim, stems, ballasts, fluorescent or CFL screw-in bulbs, and sockets as required to provide a complete operating fixture. Fixtures shall be UL listed and approved for the application intended. All light fixtures shall be operated from wall switch located near the room entrance. Where there are multiple entries to a room, the lighting circuit shall be three-way with switches at each entrance.

.07 Smoke detectors shall be of the ionization type-dual chamber, located in accordance with code requirements, and have UL approval. Detectors shall be interconnected and permanently wired to 120-volt electrical system, with a 9V-battery backup and LED to indicate power on. Detectors shall have provisions for testing. Detectors shall carry a one-year limited warranty. Detectors must meet N.C. State Dept. of Insurance requirements. Where there is no access for hard-wiring and interconnecting of smoke detectors, battery operated smoke detectors with wireless technology to provide coverage and alerts to all units will be permitted.

.08 Range hoods shall provide minimum 100 cfm discharge and be suitable for vertical or horizontal venting with two speed fan motor, grease filters and switches, sized to fit the cabinetry. Color shall be as approved by the owner. Install with wall or roof discharge cap and interconnecting metal ductwork, properly installed, insulated and flashed. Provide all necessary wiring and or new circuit for complete job.

.09 The Bath exhaust fan shall be **ENERGY STAR** rated, provide minimum 50 cfm and no greater than 1 sone, or as specified in the Work Write-up and UL listed. Installation shall be complete with all wiring, hard or flexible metal ductwork and wall discharge cap or roof discharge cap as applicable, properly installed, insulated and flashed. Fan shall be installed and controlled via an independent switch. Provide all necessary wiring and or new circuit for complete job. Fan shall discharge direct through to the exterior. **Discharging through gable or soffit vents is prohibited.**

.10 Install an **ENERGY STAR** rated **Panasonic Whisper Green** series continuous bath/fan light combination with 24 volt DC motor providing a min. of continuous 27 cfm operation. Full speed operation shall be a minimum 80 cfm with a maximum sone rating of .5 or less. Installation shall be complete with all wiring, hard or flexible metal ductwork and wall discharge cap or roof discharge cap as applicable, properly installed, insulated and flashed. Fan shall be installed and controlled via an independent switch. Provide all necessary wiring and or new circuit for complete job. Fan shall discharge direct through to the exterior. **Discharging through gable or soffit vents is prohibited.**

.11 Install new ceiling fans. Fans will light kits shall include CFL bulbs sized and rated for ceiling fan use. Fan style and finish color(s) shall be selected by the owner. Size fan(s) as follows, based on area controlled:

Room Size	Fan Size
75 sf area	36”
76 - 144 sf area	42”
145 - 400 sf area	52”

GLOSSARY OF TERMS

1. Apron: The flat member of the inside trim of a window placed against the wall immediately beneath the stool.

2. Back band: A simple molding sometimes used around the outer edge of plain rectangular casing as a decorative feature.

3. Balusters: Small vertical members in a railing used between a top rail and the stair treads or bottom rail.

4. Balustrade: A railing made up of balusters, top rail, and sometimes bottom rail, used on the edge of stairs, balconies, and porches.

5. Barge board: A decorative board covering the projecting rafter (fly rafter) of the gable end. At the cornice, this member is a fascia board.

6. Baseboard: A board placed against the wall around a room next to the floor to finish properly between floor and wall.

7. Base molding: Molding used to trim the upper edge of baseboard.

8. Batten: Narrow strips of wood used to cover joints or as decorative vertical members over plywood or wide boards.

9. Bed mold: A molding in an angle, as between the overhanging cornice, or eaves, of a building and the sidewalk.

10. Blind stop: A rectangular molding used in the assembly of a window frame. Serves as a stop for storm and screen or combination windows and to resist air infiltration.

11. Bridging: Small wood or metal members that are inserted in a diagonal position between the floor joists at mid-span.

12. Casting: Molding of various widths and thicknesses used to trim door and window openings at the jambs.

13. Collar beam: Members connecting opposite roof rafters, used to stiffen the roof structure.

14. Corbel : To build out one or more courses of brick or stone from the face of a wall, to form a support for timbers.

15. Corner boards: Used as trim for the external corners of a house against which the ends of the siding are finished.

16. Cornice:	Overhang of a pitched roof at the eave line, usually consisting of a fascia board, a soffit for a closed cornice, and appropriate moldings.
17. Counter flashing:	A flashing usually used on chimneys at the roofline to cover shingle flashing and to prevent moisture entry.
18. Cove molding:	A molding with a concave face used as trim or a finish interior corners.
19. Crawl space:	A shallow unfinished area below a house. (other than a basement)
20. Cricket :	A small diverting roof structure of single or double slope, placed at the junction of larger surfaces that meet at an angle such as above a chimney.
21. Doorjamb:	The surrounding case into which and out of which a door closes and opens. It consists of two upright pieces, called side jambs, and a horizontal head jamb.
22. Dormer:	An opening in a sloping roof, the framing of which projects out to form a vertical wall suitable for widows or other openings.
23. Downspout:	A pipe, usually of metal, for carrying rainwater from roof gutters.
24. Drip cap:	A molding placed on the exterior top side of a door or window frame to cause water to run beyond the outside of the frame.
25. Eaves:	The margin or lower part of a roof projecting over the wall.
26. Fascia:	A flat board, band, or face, used sometimes by itself but usually in combination with moldings, often located at the outer face of the cornice.
27. Flashing:	Sheet metal or other material used in roof & wall construction to protect a building from water infiltration.
28. Fly rafters:	End rafters of the gable overhang supported by roof sheathing and lookouts.

29. Frieze: A horizontal member connecting the top of the siding with the soffit of the cornice.

30. Furring: Strips of wood or metal applied to a wall or other surface to even it and serve as a fastening base for finish material.

31. Gable: In house construction, the portion of the roof above the eave line of a double-sloped roof.

32. Girder: A principal beam of wood or steel used to support concentrated loads at isolated points along its length.

33. Header: A beam placed perpendicular to joists and to which joists are nailed framing for chimney, stairway, or other opening.

34. Hearth: The inner or outer floor of a fireplace, usually made of brick, tile, or stone.

35. Hip roof: A roof that rises by inclined planes from all four side of a building.

36. Joist: One of a series of parallel beams, used to support floor and ceiling loads, and supported in turn by larger beams, girders, or bearing walls.

37. Landing: A platform between flights of stairs or at the termination of flight of stairs.

38. Ledger strip: A strip of lumber nailed along the bottom of the side of a girder on which joists rest.

39. Lintel: A horizontal structural member that supports the load over an opening such as a door or window.

40. Lookout: A short wood bracket or cantilever to support an overhang portion of a roof or the like, usually concealed from view.

41. Louver: An opening with a series of horizontal slats so arranged as to permit ventilation but to exclude rain, sunlight, or vision.

42. Mantel: The shelf above a fireplace, or the decorative trim around a fireplace opening.

43. Muntin: A small member which divides the glass or openings of sash or doors.

44. Newel: Any post to which a railing or balustrade is fastened.

45. Ogee: A molding with a profile in the form of a letter “S” having the outline of a reversed curve.

46. Outrigger: An extension of a rafter beyond the wall line. Usually a smaller member nailed to a larger rafter to form a cornice or roof overhang.

47. Parting strip: A small wood piece used tin the side and head jambs of double-hung window to separate upper and lower sash.

48. Shoe mold: Molding used at the edge of the floor along the bottom of the baseboard.