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MO RH Guide 7
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UNITED STATES DEPARTMENT OF AGRICULTURE
RURAL DEVELOPMENT

Position 6

DESCRIPTION OF MATERIALS

Single Family Housing

Sample Form Only - See Certified Plans and Specifications

Property Address _____ City _____ County _____

Contractor _____ (name) _____ (address)

1. CODES:

- Codes:** All single family homes are required to meet the requirements of USDA RD, IRC 2000, NEC 1999 or more current if adopted by the local municipality and any locally adopted municipal codes and ordinances. If more than one code applies to any given situation, the most restrictive requirement shall apply. All code references in the following document refer to IRC 2000.
- Town or Garden Houses:** "Zero lot line" needs to have two hour fire separation assembly and foundation wall between units from ground to roof deck. Common wall can not contain plumbing, mechanical, or vents. To be classified as single family for loan consideration the unit must have separate access and entrance, be structurally independent from the other unit, and provide complete independent living facilities. See IRC 2000 for more details and options.

2. SITE:

- Exterior Concrete Slabs:** Slabs, sidewalks, driveways, garage floors, or any concrete slab that is exposed to the elements shall be constructed with 3500 psi concrete and reinforced with 6x6 #10/10 welded wire mesh (WWM) or #4 rebar on a 36" grid, minimum. Construction joints not to exceed 20'.
- Driveway:** 12' width with flared edges at street. Provide 4" sand or clean gravel base; 4" 3500 psi concrete w/ 6x6 #10/10 WWM.
- Culvert:** In extreme conditions (steeply sloped site) provide drainage culvert at road entrance is to be designed to minimize erosion.
- Side walks:** 4' width, 3500 psi conc. with 6x6 #10/10 WWM. Stairs to have 7 3/4" riser max with 11" min. tread (if nosing is not provided). Provide walk from driveway to front door.
- Landscaping, Planting and Finish Grading:** Dwelling to be finish graded, raked smooth, large rocks removed, seeded and mulched. Grade to be 8" below top of foundation and 6" below siding. Slope grade 6" minimum in first 10', away from dwelling on all sides. Topsoil from site only. Plantings shall include two 8' trees and three 2-gallon medium growing shrubs.

3. EXCAVATION:

- Bearing Soil, Type:** Clay/Hardpan - 2000 psf. If soil bearing pressure is questionable at footing areas, the allowable bearing pressure may be determined by a soils investigation. If other than 2000 psi: design footing/foundation accordingly.
- Footing Depth:** Below frost line of area and on undisturbed soil. Frost line/footing depths are set at 36" north of the I-70 corridor and 30" south of the I-70 corridor unless otherwise prescribed by the local municipality. If using locally established frost line, provide documentation showing local frost line requirement.
- Additional Information:**

4. FOUNDATIONS: (note: see Section 28 full foundation insulation requirements)

- Footings:** 16"x 8" min., 3000 psi conc. min. (5 1/2 bag, 6 gal mix). 2 - #4 Rebar horizontal, min.
- Foundation Wall:** 8"x 8", 3000 psi conc. #4 Rebar 4' o.c. vertically; top, bottom, and middle horizontally, min.
- Stem Wall (crawl space):** 6", 3000 psi conc. #4 rebar top, bottom horizontally; 4' o.c. vertical rebar if over 4' high.
- Foundation Vents (crawl space):** if crawl space is unconditioned, provide (8) 8"x 16" vents, 3' from corners. If crawl space is conditioned and crawl space walls are insulated, foundation wall ventilation openings are not required.
- Crawl Space (conditioned or not):** Provide 6 mil vapor barrier over full ground surface in crawl space, lap edges 6" min. Seal and tape lapped edges when vapor barrier is provided at a crawl space with conditioned air (heated/cooled). Provide area drain or sump pump in crawl space with positive drain to daylight.
- Columns:** 3" steel posts or 6"x6" pressure treated lumber.
- Piers:** 3000 psi conc., 24"x 24"x 10" w/ rebar.
- Girders:** (3)2 x 10 or (4)2 x 8, #2, 8'-0" o.c. Splice girder beams over columns only
- Sill Anchors:** 1/2"x 10" "J" bolts, 6' o.c. 12" from corners. Bolts are to be imbedded 7" into concrete.

10. **Window Wells:** Windows below grade need a well with drain to daylight. If an egress window, see Section 20: Windows.
11. **Basement Walls Waterproofing:** Bituminous coat with 6 mil poly adhered, mop joints.
12. **Footing Drains:** 4" perforated tile in 12"x 12" bed of washed gravel with positive drain to daylight.
13. **Slab on Grade:** Provide 4" washed gravel or sand base w/ 6 mil poly vapor barrier under slab. Slab to be 4" thick 3000 psi concrete reinforced with 6x6 #10/10 WWM or #4 rebar 3' o.c.
14. **Termite Protection:** Certified applicator to Treat soil under and around structure and send termite certification to Rural Development. (HUD letter)
15. **Porch/stoop Foundations:** Porch foundation to be below frost line. Porch slabs shall be poured against flashing next to dwelling (if poured against framing framing). Siding to be 4" above porch or deck. Minimum porch size to be 4'x 6'.
16. **Basement Head Clearance:** 6'- 8" under all ductwork. 6'-4' head clearance beneath girder.
17. **Garages:** Slope garage floor 2" from rear to overhead door. Garage floor to be 12" min. higher than street or have special design allowing for run-off. Garage floor shall be 4" lower than finished floor areas. Garage floor to be 1" higher directly behind door to prevent driving rains from forcing water into garage.
18. **Additional Information:**

5. STRUCTURAL:

1. **Seismic Requirements:**
 - i. All Seismic design work is to be certified and plainly shown on the plans for applicable areas (see Figure R301.2(2) for IRC 2000 Seismic Design Category areas)
2. **Decks:** decks shall be positively anchored to the primary structure and designed for both vertical and lateral loads as applicable (R502.2.1). Where this cannot be verified, decks shall be self supporting.
3. **Engineered Wood Products:** for engineered wood products, cuts, notches and holes bored in trusses, laminated veneer lumber, glue laminated members or I-joists are NOT permitted unless the effects of such penetrations are specifically considered in the design of the member (R502.8.2).
4. **Steel Framing:**
 - i. Specifications for Steel Floor Framing are found in Section R505.
 - ii. Specifications for Steel Wall Framing are found in Section R603.
 - iii. Specifications for Steel Roof Framing are found in Section R804.
5. **Additional Information:**

6. CHIMNEYS:

1. **Gas Vents or Flues:** UL approved, sized and installed in accordance with manufacturer's instructions.
2. **Roof Flashing:** Step flashing where brick or siding meets roofing. Cricket required.
3. **Additional Information:**

7. FIREPLACES:

1. **Prefabricated Units:** UL approved and installed in accordance with manufacturer's instructions.
2. **Additional Information:** Specifications for Pellet fuel-burning appliances shall be applied as per R1001.8.4.

8. EXTERIOR WALLS: Note: see Item 28 for insulation requirements.

1. **Wall Framing:** Selected #3 or better 2x4's or 2x6's @ 16" o.c or other approved materials.
2. **Corner Bracing: Metal "T",** let-in 1x4 or channel bracing on corners (bracing not to exceed 25' o.c.) when foam board insulation used to meet insulation requirements. NOTE: let-in bracing is not allowed in all Seismic Design Category D areas.
3. **Sheathing:** R-5 rigid insulation board, wood structural panel (5/16" min. w/ 16" o.c. stud spacing), or black board (assure wall R-Value not compromised).
4. **Wood/Wood Product Siding:** 7/16" No. 1, exterior grade plywood or hardboard siding (tempered), fastened with 8d galvanized nails. Siding to be a min. of 6" above adjacent grade.
5. **Vinyl Siding:** Must meet ASTM D 3679-88, 4 NBS PS55-72 and be 44 mil thick and a light integral color. All vinyl to be from same lot number (color tint integrity).
6. **Masonry Veneer:** This material must be applied over a vapor barrier with ties at 24" o.c. vertically and 16" o.c. horizontally. Weep holes 33" o.c. max.
7. **Mortar and Joints:** Type N mortar mix. Concave tool joint to prevent water from collecting on brick edge.
8. **Exterior Paint:** Acrylic primer with latex final coat(s). All exterior paint to have 10 year warranty.
9. **Insulation:** All exterior framing, to include corners and partition connections, shall allow for insulation in corner cavities.
10. **Garages:** Garage O.H. door jack studs are to be treated lumber if in contact with concrete.
11. **Additional Information:**

9. FLOOR FRAMING:

1. **Joists:** See plans and refer to the 2000 International Residential Code span chart (R502.3). **Prefabricated wood I-joists shall be installed per the manufacturer's instructions.**
2. **Bridging:** required on joists exceeding a nominal 2" x 12"; spacing not to exceed 8'-0". (R502.7.1)
3. **Girder Lap:** Joists shall lap 4" and bear 1-1/2" on wood or 3" on conc.
4. **Double Joists:** Under all bearing parallel interior walls.
5. **Sills:** 2 x 6 treated w/ 1/2"x 10" bolts, 6' o.c., and 12" from corner.
6. **Additional Information:**

10. SUBFLOORING:

1. **Subflooring:** 3/4" (21/32") T & G OSB or CDX APA rated plywood, Glue and nail (screws recommended).
2. **Additional Information:**

11. FINISH FLOORING:

1. **Wood Flooring:** each bundle or package of wood flooring shall bear a label identifying the grade & species.
2. **Laminate (wood) Flooring:** must meet ANSI/HPMA LFH-87
3. **Ceramic Tile Flooring:** must meet ANSI A137.1-88, installation to meet ANSI A1081.A-92.
4. **Vinyl, Sheet or Tile:** 3/32" integral composition vinyl tile or .050 gauge integral composition sheet vinyl. 10 mil min. wear thickness. Install per manufacturer's recommendations.
5. **Vinyl Underlayment:** Hardboard (ANSI/AHA A135.4-88), particle board (grade 1-M-1, ANSI A208.1-89, ASTM D 1037-89) or plywood (PS 1-83). Install material in accordance with manufacturer's instructions.
6. **Carpet:** In compliance with HUD/FHA UM 44d-93
7. **Carpet Pad:** In compliance with HUD/FHA UM 72a-93.
8. **Certification Proof:** Leave samples showing stamp or provide certification literature on HUD/FHA UM standards.
9. **Additional Information:**

12. PARTITION FRAMING:

1. **Studs:** 2 x 4 select #3 or better, 16"o.c.
2. **Headers:** 2 x10 double header on exterior and load bearing walls.
3. **Additional Information:**

13. CEILING FRAMING:

1. **Joists:** See plans and refer to an engineered span chart.
2. **Truss:** See engineered plans.
3. **Attic Access:** 22 x 30 access with 30" of headroom.
4. **Additional Information:**

14. ROOF FRAMING:

1. **Rafters:** See plans and refer to an engineered span chart.
2. **Truss:** Must be stamped design by engineer.
3. **Raised Rafter/Truss:** A raised rafter or raised truss design is recommended for full insulation depth around attic perimeter.
4. **Attic Ventilation:** Provide 1:150 ventilation to attic area (including eaves). 50% to 80% of venting to be provided in upper half of attic space.
5. **Air Chutes:** If full area of air/soffit vent is compromised by insulation installation, provide air chutes as required to maintain full required attic ventilation.
6. **Rafter Bracing/Stiff Back:** Mid span if stick built framing. 2 x 6 continuous purlins with 2 x 4 struts 4' on center.
7. **Hurricane Brackets:** Connect every rafter/truss to top plates.
8. **Additional Information:**

15. ROOFING:

1. **Sheathing:** 7/16" min. CDX or OSB, APA rated (3 ply plywood not acceptable).
2. **"H" Clips:** Required if sheathing is 7/16" or 1/2" with 24" o.c. framing.
3. **Roof Overhang:** 24" min. at eaves, 12" min. at gables or other RD approved option.
4. **Asphalt Roofing:** Asphalt/fiberglass shingles, fire rated class A or C; 12 x 36 three-tab seal down type with 25-year warranty or architectural shingle with 25-year warranty. 3:12 min. slope (R905.2)

- i. **Underlayment:** 1 layer #15 asphalt impregnated building paper if slope of roof is 4:12 or greater. 2 layers #15 asphalt impregnated building paper if slope is less than 4:12. Overlap joints 6". (R905.2.7)
- 5. **Metal Roofing:** Alum. Zinc alloy coated steel to meet ASTM a 792 AZ50 (see R905.10.3 for other min. standards). Install over solid sheathing unless panel designed for spaced supports. 3:12 min. slope (lapped nonsoldered). Install roof edge.
 - i. **Underlayment:** 30# felt
- 6. **Flashing:** Aluminum or corrosion resistant; step flashing against siding. "D" style drip fascia flashing.
- 7. **Soffit:** Perforated baked enamel aluminum or 3/8" vented plywood soffit.
- 8. **Additional Information:**

16. GUTTERS AND DOWNSPOUTS:

- 1. **Gutters:** Continuous (seamless) baked enamel aluminum, 26 gauge, 5" min.
- 2. **Downspouts:** Continuous (seamless) baked enamel aluminum, 26 gauge, 2"x 3" rectangle min., provide at each roof corner.
- 3. **Splash Blocks:** A 12"x 30" conc. splash block at each downspout.
- 4. **Additional Information:**

17. DRYWALL:

- 1. **Drywall:** 1/2" gypsum board on walls. Ceilings with 16" framing 1/2", Ceilings with 24" framing 5/8".
- 2. **Joint treatment:** Tape with 3 coats plaster, sand smooth and level, ready for paint.
- 3. **Water Resistant Drywall:** 1/2" water resistant gypsum board on all walls of bathroom.
- 4. **Basement Garage:** Provide taped 1/2" drywall on garage side of wall and ceiling and over all supporting structure.
- 5. **Attached Garage:** Provide taped 1/2" gypsum board at garage side of all interior walls (ie: between house and garage). Gypsum board to either go to roof sheathing (along wall(s)) or be provided at garage ceiling. Exterior walls of attached garage, if insulated, need to be drywalled.
- 6. **Additional Information:**

18. INTERIOR PAINTING & DECORATING:

- 1. **Painting:** 2 coats paint or more shall be applied. Drips, flaws, shadowing, or inferior work will not be acceptable.
- 2. **Wood Primer:** Acrylic.
- 3. **Metal Primer:** Rust inhibiting.
- 4. **Kitchen/Bath:** Latex enamel.
- 5. **General:** Paint shall be applied in accordance with manufacturer's instructions.
- 6. **Wallpaper:** Bathroom/Kitchen wallpaper shall be vinyl coated.
- 7. **Ceiling Finish:** Acoustic material.
- 8. **Additional Information:**

19. INTERIOR DOORS & TRIM:

- 1. **Doors:** 1-3/8", NWMA-IS-I, No. 1, birch/mahogany/hardboard, pre-primed, hollow core, pre-hung and pre-drilled. Basement door can not lock someone in basement if only door out of basement.
- 2. **Door at Attached Garage:** Provide 20 minute door, may be solid wood or steel. If provided, a door lite must have 20 minutes rating.
- 3. **Finish:** 2 coats min., latex enamel or semi-gloss final coat encouraged for easy cleaning.
- 4. **Door Stops:** 1 required for each door. Hinge type not acceptable.
- 5. **Privacy Locks:** Master bedroom and bathrooms.
- 6. **Additional Information:**

20. WINDOWS:

- 1. **Glazing Requirements:** All glazing (doors and windows) to have U-factor of 0.40, IAW ANSI C236 standards.
- 2. **Bedrooms:** Every bedroom requires an exterior door or emergency egress window with a minimum 5.7 sq. ft. net opening (5.0 sq. ft. on grade level) with 24" height min. and 20" width min.(IRC 2000 R310.1.2) Window sill/clear opening not to exceed 44" above finished floor.
- 3. **Head Flashing:** 28 ga. aluminum at gable end walls.
- 4. **Weather-stripping:** Compression type with air-tight seal.
- 5. **Wood Windows:** Acrylic primer with enamel finish coat.
- 6. **Vinyl Windows:** Light colored frame.
- 7. **Basement Windows:** Dual paned (framed walls) or storm sash with screen (concrete walls).
- 8. **Insect Screen:** Vinyl or aluminum screens.
- 9. **Basement Windows:** All basements with habitable space shall have an openable emergency egress window or exterior door opening (R310.1). Window wells required for emergency escape shall have a minimum net clear area of 9 square feet with a minimum horizontal projection and width of 36 inches. Window wells with a depth greater than 44" shall be equipped with a permanent ladder or steps. (R310.2) Bars, grills, screens or other obstructions placed over egress windows shall be releasable/removable without tool or key.
- 10. **Bathrooms:** Bathrooms shall be provided with either an operable exterior window or mechanical fan exhaust.

11. **Shutters:** Fixed weather resistant material.
12. **Additional Information:**

21. ENTRANCES & EXTERIOR DETAIL:

1. **Exterior Doors:** 36" wide, solid wood or 1-3/4" insulated steel, pre-primed/hung/drilled w/ steel or solid wood frame.
2. **Weather-stripping:** Compression/magnetic type with air-tight seal.
3. **Head Flashing:** 28 ga aluminum on gable end.
4. **Storm Door:** 1-1/4" exterior door with operable glazing and vinyl or aluminum insect screen.
5. **Exterior Trim:** Solid durable wood species primed with acrylic latex paint. Hardboard not acceptable for trim/fascia.
6. **Glazed Doors:** Atrium, sliding, or patio doors - overall U-value average of 0.40. Flash exterior, watertight seals.
7. **Additional Information:**

22. CABINETS & INTERIOR DETAIL:

1. **Kitchen Cabinets:** Certified to be in compliance with ANSI A-161 with water resistant finish (waiver possible).
2. **Soffit:** Enclose kitchen soffit with drywall for fire stopping.
3. **Cabinet Fasteners:** Screws (nails not acceptable.)
4. **Countertops:** Provide 4" min. high backsplash; seal all joints between counter and wall(s).
5. **Built-ins:** Vanity in baths; shelf and closet rod in each closet.
6. **Medicine Cabinets:** Standard recessed model, or if vanity has drawers, a 30"x 36" mirror only.
7. **Additional Information:**

23. STAIRS:

1. **Stairs:** are defined as being one or more risers. Must have 3/4" riser material; 7-3/4" riser max; 10" tread min w/ 3/4 inch to 1 1/4 inch nosing – if solid riser and no nosing, provide 11 inch minimum tread; 3' x 3' landing minimum.
2. **Stringers:** 3 - 2 x 12, CCA/fir.
3. **Headroom:** 6'- 8" min. clear.
4. **Joist Hangers:** Spans in floor joists or headers exceeding 6' need to be attached with joist hangers.
5. **Guardrail:** must be provided at all stairs with a rise of 30" or more and landings and walkways 30" or more above adjacent floor/grade. Guardrail spindles to have not more than 4" clear space between them. Guardrails shall not be less than 34" or more than 38" high.
6. **Handrail:** Stairs within a dwelling unit with more than one riser must be provided with a minimum of one handrail. Handgrip portions of handrails with a circular cross section shall not have a diameter between 1-1/4' to 2", mounted 34" to 38" above nosing of tread and shall be continuous. Guardrails may serve as handrails. (see IBC 1003.3.3.11 for additional info)
7. **Open risers** are permitted, provided the opening between the treads does not permit the passage of a 4-inch diameter sphere.
8. **Stair width:** Stairway width shall be no less than 36 inches. Handrails may encroach into the 36" clear space 4.5" at each side.
9. **Enclosed accessible space** under stairs shall have walls and soffits protected on the enclosed side with 1/2" gyp. bd.
10. **Additional Information:**

24. PLUMBING: note: all plumbing fixtures to meet IRC 2000 P2701.1 min.

1. **Kitchen:** 1 stainless steel or cast iron sink w/ water saving 2.2 gpm flow rate faucet. 1 garbage disposal (optional).
2. **Bathroom:** 1 sink, 1 toilet, 1 bathtub/shower one piece certified ANSI Z 124.1, shower curtain rod.
3. **Toilets:** Water conserving low consumption 1.6 gallons per flush. The minimum distance from the center of a commode to an adjoining wall or tub is 15 inches (R307.1).
4. **Sump Pump:** If needed, install IAW manufacturer's instructions and cover with lid; high water indicating alarm.
5. **Sump Pump Drain:** provide positive drain to daylight at an area where erosion and drainage can be controlled.
6. **Washer Rough-in:** 1 in basement or laundry closet.
7. **3/4 Bath:** Rough-in a 3/4 bath in the unfinished basement.
8. **Water/Septic System:** Permitted/approved by Dept. of Health or approved authority.
9. **Shut-off Valves:** Shut-off valves and air chambers required at each fixture unless using a PEX manifold type system.
10. **Hose Bibbs:** One anti-siphon frost proof bibb on front and back of house.
11. **House Drain:** Sch 40 PVC/DWV.
12. **Vent Stack:** Plumbing fixtures within 5' of stack.(through roof)
13. **House Sewer:** Sch 40 PVC/DWV or SDR 35.

14. **Water Supply Lines (above grade):** CPVC, Type M copper, all with approved fittings.
15. **Water Heater:** 40 gallon cap. min., R-16 min. manufacturer insulation or equiv.; pressure release piped directly to the exterior or indirect waste receptor (P2803.6.1) Provide 2 x 4 treated wood blocking under unit. Fuel fired water heaters shall not be installed in a room used as a storage closet (M2005.2).
16. **Scald Guard:** Tub/shower mixing valve max. temperature of 120 degrees and a max. flow rate of 2-1/2 gpm.
17. **Pipe installation:** Plumbing through holes or notches in studs, joists or similar members less than 1 1/2 inches from the edge member shall be protected by shield plates, minimum of 0.062 inch-thick steel plate (P2603.2.1).
18. **Bathroom Accessories:** 2 - 24" towel bars, 1 tp holder.
19. **Additional Information:**

25. HVAC:

1. **Furnace:** Provide forced air system. Gas furnace to have 80% AFUE min. with electronic ignition.
2. **Venting:** For energy efficiency and to reduce initial costs, consider direct venting from the outside.
3. **Furnace Size:** In accordance with heat loss calculations.
4. **Air Conditioning:** To have a minimum SEER of 13. Air condenser unit to be installed on concrete pad per manufacturer's recommendations.
5. **Duct:** Insulation for ducts in unconditioned space to be 2", 3/4 pound density wrap or 1", 1 1/2 pound liner.
6. **Duct Joints:** Mechanically joined and permanently sealed against air leaks/infiltration (duct tape not acceptable).
7. **Garage Duct work:** Duct work in garage to be insulated and drywalled/taped. Ducts in the garage and ducts penetrating the walls or ceilings separating the dwelling from the garage shall be constructed of a minimum No. 26 gage sheet steel or other approved material and shall have no openings in the garage (R309.1.1).
8. **Thermostat:** Standard wall mount
9. **Gas Valve(s):** Gas valve with in 6' of appliance and ahead of unions.
10. **Kitchen Exhaust Fan:** Smooth vent pipe, double dampered and vented to outside with 1" clearance to combustibles.
11. **Bath Exhaust Fan:** Bathrooms shall be provided with either an operable exterior window or mechanical fan exhaust. Bath fans shall be a minimum of 50 CFM; dampered, vented to the exterior with vent pipe insulated (R303.3)
12. **Additional Information:**

26. ELECTRIC WIRING:

1. **Wiring:** 12/2 Ga. wire with ground, copper, min; (14/2 w/ ground from switch to light).
2. **Range Wire:** Electric range wire 8/3 Ga. copper min.
3. **Panel:** 150 amp min. with gas heat; 200-amp min. with electric heat.
4. **Doorbell:** Provide a doorbell at the front door. Provide clear workspace in front of panel board of 36 inches, 30 inches wide and 6.5 feet measured from the floor. (R3305.2).
5. **Smoke Detector:** AC/DC smoke detector in each bedroom, hall outside bedroom(s), in basement, each level, - interconnect all.
6. **Basement Receptacles:** Provide a receptacle on each wall (wiring in conduit if walls not drywalled).
7. **GFCI:** Provide GFCI receptacles or GFCI protected circuit at Kitchen counter, bath vanity, 2 exterior - front and back of house, garage, crawl space and basement (except for appliance dedicated receptacles, i.e. freezer, refrigerator, sump pump). (E3802)
8. **Circuits:** Provide three 20 ampere circuits to serve the general kitchen and dining area(s); provide an additional individual 15- or 20- ampere branch circuit for the refrigerator receptacle. A minimum of one 20 ampere circuit shall be provided to serve the laundry area only and one 20 ampere circuit shall supply the bathroom outlet (for a single bathroom other equipment within the same bath may be permitted) (E603.2 through E 602.4).
9. **Additional Information:**

27. LIGHTING FIXTURES:

1. **Fixtures:** Switched light fixtures shall be provided for each room. Exterior fixtures shall be provided at each entry with interior controls.
2. **Basement:** Provide minimum 4 light fixtures in the basement.
3. **Stairs:** Provide lights at top and bottom landings with switched controls at top and bottom of stairs. Exterior stairs must have top landing illuminated with interior controls.
4. **Attic & Crawl Space:** Provide switched lights for attic and crawl space and for access around mechanical areas.
5. **Additional Information:**

28. INSULATION:

OPTION #1 (Prescriptive):

1. **Floor Insulation:** R-19 for all floors over unconditioned crawl spaces or over unconditioned basements with uninsulated basement walls.
2. **Rim joists to be insulated to R-19 for all types of construction.**
3. **Crawl Space:** If floor insulation is not provided and crawl space is conditioned (and not vented to the exterior), provide R-10 continuous insulation or R-13 cavity insulation plus R-5 wall sheathing at crawl space walls.

4. **Basement Knee Walls (above grade, provide at conditioned space or unconditioned space if floor insulation is not provided):** provide 2x4's with R-13 insulation plus R-5 wall sheathing or 2x6 with R-19 insulation (Cover insulation in knee walls with gyp. bd.). All walls to have 6mil poly vapor barrier.
 5. **Basement Walls (below grade, conditioned space or unconditioned space if floor insulation is provided):** Insulate walls to R-10; provide 6 mil vapor barrier to warm side and drywall. The ductwork and first level floor do not need to be insulated if this option is chosen.
 6. **Attic:** R-38, provide at full attic floor over top of exterior wall plate.
 7. **Attic Access Panel:** insulate to R-38.
 8. **Attic fan:** If provided, box and insulate cover to R-38. Provide removable or hinged cover to prevent air infiltration.
 9. **Exterior Walls:** 2x4's with R-13 insulation plus R-5 wall sheathing or 2x6's with R-19 insulation
 10. **Air Infiltration Barrier:** Provide an air infiltration barrier at
 11. **Slab-on-Grade Perimeter Insulation:** Provide R-10 minimum perimeter insulation for a depth of 2'-0" at slab-on-grade construction.
 12. **Water lines (unconditioned crawl space):** insulate all water lines in unconditioned crawl space.
 13. **Basement Garage:** Wall between garage and basement insulated to R-13; garage ceiling insulated to R-19.
 14. **Attached Garage:** Wall between attached garage and dwelling R-19.
 15. **Foam Insulation:** Seal all penetrations or voids in exterior walls to prevent air infiltration.
 16. **Certification:** Ceiling insulation certification to be posted near access or in mechanical closet or depth of blown insulation identified with markers.
 17. **Additional Information:**
- OPTION #2: (Overall U-value)**
1. In lieu of meeting all of the individual standards listed above, submit a copy of the calculations showing the overall "Ua" U-factor of the house in accordance with 2000 International Residential Code (IRC) or REScheck (www.energycodes.gov). Calculations must indicate the R-value/U-factor for each assembly.

29. MISCELLANEOUS:

2. **Hardware:** Approved numbers or addresses shall be provided for all new buildings in such a position as to be plainly visible from the street or road fronting the property (R325.1). All doors shall be keyed alike.
3. **Ramps:**
 - i. Any ramp (non-accessible – see IBC for accessibility guidelines) shall have a maximum slope of one unit in eight units horizontal (12.5-percent slope). (R313.1)
 - ii. Handrails shall be provided on at least one side of all ramps exceeding a slope of one unit vertical in 12 units horizontal. (R313.2)
 - iii. A minimum 3-foot x 3-foot landing shall be provided at the top and bottom of ramps, where doors open onto ramps and where ramps change directions (R313.3).

The plan and specification certifier, builder, and owner do hereby agree to construct this dwelling in accordance with Rural Development accepted plans and specifications and in accordance with the 2000 International Residential Code for One and Two-Family Dwelling, the 1992 Model Energy Code, the 1999 National Electrical Code and local, state, and federal laws and Rural Development regulations.

date	signature of certifier
date	signature of builder
date	signature of applicant