



# SPECIFICATIONS

## GENERAL

All homes are to be certified "Green Built" through the Wisconsin Environmental Initiative's Green Built Home program. Green built Home TM is a voluntary green building initiative that reviews and certifies new homes and remodeling projects that meet sustainable building and energy standards.

Information about certification requirements and free consultation services may be obtained at [www.greenbuilthome.org](http://www.greenbuilthome.org). A "Green Built Home" New Home Checklist is provided with these specifications and will serve as a guideline for successful certification.

These specifications and architectural drawings are capable of achieving "Green-Built" certification. It will be the General Contractor's responsibility to file the necessary paperwork and, to cover the costs of certification for each home as a part of this project. The architect, and the Green Built Home program will be available for consultation through the completion of this project.

The goal of this project is to create an environmentally sound housing development for Lower income families.

---

---

## SITE WORK

Grading and Clearing (may be adjusted for site conditions); The front yard is finished to the street. The side yards are finished to the property lines or easement. Rear Lots are finished 24 feet from the home. Existing trees to remain if they are more than 24 feet from the home (if possible with final grades). The final grades will be determined by the General Contractor, Architect, and Civil Engineer.

- A. EROSION CONTROL:** Submit plan required for building permits by the local municipality.
- 
- 

## RECYCLING:

Builder must recycle cardboard as required by state law and use at least one recycled-content material (minimum 50% recycled content) in the construction of the home. See Green built home checklist or call 608-280-0360 for clarification.

## FOUNDATION:

### A. GENERAL:

- a. Verify foundation structural design with Menasha Community Development Department prior to construction. For bidding purposes, provide pricing per included specs and architectural drawings.
- b. Use recycled fly ash concrete (minimum 15% fly ash content) in all cement.
- c. Low toxicity form release agents used on concrete form work.
- d. Foundation drainage system tied to sealed sump pit for potential radon mitigation.

### B. FOUNDATION WALL FOOTING:

- a. A continuous poured concrete footing with a minimum 2,500 psi standard mix concrete to a minimum depth of 8" and a minimum width of 24" w/ (2) #5 rebar continuous.
- b. Drainage bleeders through footings to interior and exterior drain-tile.

### C. FOUNDATION WALLS

- a. POURED BASEMENT WALLS: 3,000 psi concrete 8" thick w/#4 rebar 2'-0" o/c horizontal & 4'-0" o/c vertical. The minimum Standard basement wall height is 4'-0" from the top of footing to the underside of the first floor framing. (Verify height of concrete walls on site during excavation procedures. (Note: All full basements will have 4'-0" high concrete knee wall beneath a 4'-0" high wood stud knee wall.
- b. CRAWLSPACE WALLS and PIERS: 3,000 psi concrete 8" thick w/ #4 rebar 2'-0" o/c horizontal & 4'-0" o/c vertical. Verify wall height requirements with Mechanical Contractor.
- c. POST PAD FOOTINGS: Sized per architectural plans.
- d. 2" rigid, tongue and groove Dow foam insulation board and waterproofing membrane on exterior of all foundation walls.

### D. CONCRETE SLABS

- a. **Basement**: 4" thick smooth finished 2,500 PSI concrete, reinforce with 6x6 #10/10 welded wire fabric, over: 6 Mil. poly vapor barrier, 2" thick Dow Foam insulation board, and minimum 4" clean gravel base. Grade beams are located and reinforced per plan. Control joints not to exceed 15'x15' in dimension.
- b. **Crawlspace**: 3" thick, course finished, 2,500 PSI concrete, reinforce with 6x6 #10/10 welded wire fabric, over: a 6 Mil. poly vapor barrier, 2" Dow Foam insulation board, and minimum 4" clean gravel base.
- c. **Garage**: 4" thick smooth finished 3000 PSI concrete reinforced with 6x6 #10/10 welded wire fabric, over: a poly vapor barrier, 2" thick Dow foam insulation board, and minimum 4" clean gravel base. Include a water break at the garage door(s).
- d. Termite treatment (not required)

## **FOUNDATION (continued):**

### **E. WATERPROOFING**

- a. **Basement & Crawlspace:** Bentonite clay waterproofing membrane, or Polymer-modified asphalt waterproofing membrane (60 mils thickness minimum) applied to exterior face of walls; 4" slotted drain pipe installed at the base of the foundation footing (interior and exterior) with bleeders thru footing, exterior drain pipe covered with minimum of 36" deep ¾" dia. clean stone and filter fabric. Run to daylight or sump pump (determined by General Contractor)
  - b. **Crawlspace venting:** crawl spaces are insulated, conditioned spaces. Ventilation is to be mechanically operated in conjunction with the home ventilation system.
- 

## **FRAMING**

- A. **SILL PLATE:** Pressure treated lumber, rated for contact with concrete, and anchored to the foundation with either foundation straps or anchor bolts per building code. Sill seal insulation foam under all plates in contact with concrete. Caulk as noted below.
- B. **FLOOR JOIST AND RIM BOARD:** 2X10 Doug Fir spaced 16" o/c supported by: beams, framed walls and/or structural posts. No structural lumber to be larger than 2x10 other than engineered products.
- C. **SUB FLOOR:** ¾" Plywood or OSB; tongue & groove, glued and nailed to the floor structure.
- D. **WOOD STUDS:**
  - a. **2x4x92 5/8"** Standard and Better" grade or equivalent studs spaced **24" on center** with a double top plate at exterior walls of single story, 2<sup>nd</sup> floor walls and all interior walls unless noted otherwise on drawings. (**Option bid:** single top plate construction)
  - b. **2x4x92 5/8"** Standard and Better" grade or equivalent studs spaced **16" on center** at 1<sup>st</sup> story walls of two story dwelling.
  - c. **2x6** "standard and Better" grade at 24" o/c for knee walls of exposed basements.
  - d. **INTERIOR WALLS: 2x4 @ 24" ON CENTER**
- E. **EXTERIOR WALL SHEATHING:** 2" tongue and groove Dow Foam insulation board
- F. **LATERAL BRACING:** 22ga metal cross bracing cut into exterior side of stud walls. See elevations for locations and quantity required.
- G. **HEADERS:** #2 standard or better 2x4, 2x6, 2x8 and/or 2x10 and engineered laminated veneer lumber beams (LVL) based on spans and residential Building Codes. No structural lumber to be larger than 2x10 other than engineered products.
- H. **ROOF DECKING:**
  - a. **Shingle roof:** Standard grade 1/2" OSB (Oriented Strand Board) with "H-clips" between each truss.
  - b. **Metal roof:** 5/8" Tongue & Groove Plywood (opaque stain finish)

## **FRAMING (continued)**

- I. **AIR SEALING:** Builder to provide advanced sealing practices in addition to basic sealing practices (sealing at top and bottom plates, corners, between cavities at penetrations, at wood wall/concrete joints, etc).
  - a. All penetrations to the exterior are sealed with appropriate caulk or silicone. Window frames from the interior are sealed with aerosol can spray foam. Sill plate sealed with caulk at both sill plate to foundation concrete and rim board to sill plate.

---

---

## **ROOFING**

- A. **UNDERLAYMENT:** #15 asphalt impregnated felt.
- B. **SHINGLES:** 30 year Dimensional Asphalt Shingles, Certainteed "Landmark" series, "Driftwood" color.
- C. **"TIN ROOFING":** Galvalume with 5V Crimp seam, 29ga minimum
- D. **VENTILATION:** Shingled ridge vents combined with vented aluminum soffit. 48" long Proper vents installed between each truss.
  - a. Gable end venting per architectural elevations. Use gable end vents for Multi-port fan system exhaust.
- E. **Gutters & Downspouts:** To be provided as an **Optional Bid** for all homes. (Note: some homes have required gutters and Downspouts, see drawings) Downspouts to terminate six feet from home onto appropriate splash block. The Horizontal leg of downspout along grade shall be hinged at the home so unit can be tilted up and away for lawn maintenance. All metal to be pre-finished white in color. Gutters to attach to 4" metal fascia. Components of system are sized by others.

---

---

## **INSULATION**

- A. **2" tongue and groove Dow Foam rigid insulation board, or similar**
  - a. Areas of use: exterior of stud walls, exterior of foundation walls, under all concrete slabs
- B. **1.5" Dow Foam rigid insulation board**
  - a. Areas of use: between 24" o/c interior 2x2 wood furring at finished basement areas. Insulation board to fit tightly between studs, add aerosol spray-foam to any gaps between wood framing and rigid foam for complete seal.
- C. **Loose Fill Insulation (recycled content)**
  - a. Areas of use: Attic areas over conditioned spaces
  - b. Achieve R-49 insulation value (approx. 18" depth)
  - c. No insulation in garage roof trusses
- D. **Fiberglass Batts (Formaldehyde free)**
  - a. **R-11 BATTs:** 2x4 exterior stud walls and Interior sound walls (bedrooms and bathrooms).
  - b. **R-19 BATTs:** 2x6 exterior stud walls and Floor joists over crawl space basements (Kraft-faced).
  - c. **R-38 Kraft-faced BATTs:** Cantilevered floors housing conditioned spaces (compress to fit in joist depth).

## INSULATION (continued)

- E. **CLOSED CELL SPRAYFOAM:** (Provide pricing as Alternative insulation package for exterior stud walls only):
    - a. APEX "Earthseal" foam or Equal
    - b. 1" thickness between studs on exterior walls and walls between home and garage with R-11 batt insulation as above. Exterior garage walls are not insulated (except for 2" Dow foam over studs). 2" Dow foam on home walls to be included with spray foam alternative)
  - F. **Builder to provide advanced sealing practices in addition to basic sealing practices (sealing at top and bottom plates, corners, between cavities at penetrations, at wood wall/concrete joints, etc).**
- 

## WINDOWS

- A. **Windgate Alliance windows:**
    - a. ENERGY STAR qualified or having a U value  $\leq .35$  (NFRC label)
    - b. Low-E coating on glass facing East and West (not windows under covered porches) with NFRC label "SHGC" (solar heat gain coefficient) less than .40.
    - c. Lifetime window warranty
    - d. All vinyl
    - e.  $\frac{3}{4}$ " insulated glass
    - f. Divided lites (muntin bars) as shown elevations (Note: not all windows have muntins unless they are standard with window and without up-charge in cost)
    - g. Screens provided with all operable windows
    - h. Extension jambs for finished wall thickness of 6 1/8". (wall construction: 2" exterior foam, 2x4 wd stud, 5/8" interior gyp brd.)
  - B. **SHUTTERS:** per architectural elevations. Color to match windows.
- 

## EXTERIOR DOORS

- A. **GARAGE DOOR AND OPENERS:**
  - a. **Garage door(s)-** Flush panel insulated steel; factory baked on finish; finger pinch-resistant design; manufacturer's 15-year limited performance warranty against cracking, splitting and rust-through.
  - b. **Openers(s) Pre-Wiring-** Each opening is pre-wired to accept garage door opener.
- B. **FRONT DOOR:** 3-0x6-8 Fiberglass composite, insulated single panel door or as drawn on elevations; weather stripping and an adjustable threshold.
- C. **SIDE AND REAR DOORS:** Insulated steel doors with insulated glass or as shown on the elevations. Sized per plan.
- D. **HARDWARE:**
  - a. Emtek or Similar
    - i. Door Pull
    - ii. Dead bolt
- E. **COLOR:** All door colors to be selected by owner.

## PLUMBING

- A. WATER DISTRIBUTION:** Interior lines are flexible PEX tubing or similar. Exterior lines are 1.5" or larger CPVC from the meter to the house.
- B. DRAINAGE & WASTE:** Non-corrosive Schedule 40 PVC. City Sewer
- C. FIXTURES**
- a. **Water heater:** 1-50 gallon (4 bedroom) or 1-40 gallon (2 & 3 bedroom); gas; sealed combustion; Energy Star rated
    - i. Insulate all hot water lines to minimum of R-4
    - ii. Water heater timer installed
    - iii. Provide **Optional Bid Pricing** for (Tankless) On Demand hot water delivery system.
  - b. **Toilet:** Kohler or equivalent; Non-corrosive Schedule 40 PVC. City Sewer
  - c. **Kitchen Sink:** American Standard Americast or equivalent; white; large single bowl. Self rimming.
    - i. **Garbage disposal: provide as Optional component in bid.**
  - d. **Lavatories:**
    - i. American Standard Americast or equivalent; white; self rimming
    - ii. Pedestal in powder rooms only
  - e. **Tubs:** Single piece fiberglass or acrylic tub/shower combo w/ metal curtain rod
  - f. **Showers:** Single piece fiberglass or acrylic unit w/ metal curtain rod.
- D. FAUCETS** (GPM= gallons per minute)
- a. **Kitchen:** white single lever faucet w/ sprayer; GPM less than code
  - b. **Powder Room:** Double lever; chrome; GPM less than code
  - c. **Lavatories:** Single lever; chrome; GPM less than code
  - d. **Tubs:** Single lever; chrome Tub filler; GPM less than code
  - e. **Shower heads:** GPM less than code
- E. MISCELLANEOUS:**
- a. 1 hose bib (inside garage attached to home)
  - b. Refrigerator and washing machine connections.
  - c. Grinder, Ejection pump and pit required
- 
- 

## HEATING & AIR CONDITIONING

- A.** Document proper sizing of HVAC system using Manual J or equivalent.
- B. VENTILATION:** Multi-port fan system to replace air to air heat exchanger. System to incorporate 275 cfm fan with two 5" intakes (one in bathroom and one in kitchen) and one 6" exhaust vented outside. Basement areas to have similar system. Fan to be turned on any of three different ways, either by a three way switch in both the bath and kitchen, or by a 24 hour time clock located in the basement by the electrical panel. The system is set to come on automatically for two hours a day via the time clock, and

## HEATING & AIR CONDITIONING (continued)

replaces both the bath fan and a vented range hood. No make up air is required because homes to flow 500-600 cfm on door blower test, and no negative pressure back drafting to be detected on gas appliances. This system is to meet Energy Star ventilation requirements.

- a. Use gable end vents for Multi-port fan system exhaust, custom fabrication required, coordinate with general contractor for detailing.
  - b. Ventilate the home after each new finish is applied.
  - c. Clean ducts and furnace thoroughly just before the homeowner moves in.
- C. FURNACE:** (2 zone) 90% or better efficiency furnace (Energy Star Rated); equipped with an Electronically Commutated Motor (ECMs) – (variable speed motor), to be located to minimize the total length of duct runs.
- D. AIR CONDITIONER:** No A/C in standard bid; **Bid option pricing** for High efficiency air conditioner with minimum 14 SEER.
- E. DUCTS:** All ductwork joints sealed with water based, low V.O.C. mastic (<30g/l) or metalized tape, Ductwork in unconditioned space to be insulated (R-13 minimum).
- F. THERMOSTAT(S):** Electronic programmable thermostats with an “on switch to circulate air.
- G. CONDENSATE DRAIN:**
- a. Attic Unit: PVC gravity drain to outside with a metal drip pan under the unit.
  - b. Crawl/Basement Unit: PVC gravity drain if possible; condensate to sump pump if necessary.
- H. GAS LINES:** Schedule 40 steel pipe.

---

---

## WATER HEATING

- A. Direct vent, gas water heater with an energy factor of more than 0.62
- B. Water heater to be located within 20 pipe feet of the dishwasher and clothes washer, when feasible.
- C. All hot water lines insulated with R-4 insulation.
- D. Insulate hot and cold water pipes 3 feet from the hot water heater.
- E. Install water heater timer.

---

---

## ELECTRICAL

- A. **All materials to be UL approved and wired to meet or exceed National Electric Code (NEC) specifications.**
- B. **SERVICE PANEL:** 200 amps
- C. **RECEPTACLES:** White; GFCI as required in all designated wet areas. The actual location of the receptacles may vary from the electrical plan if necessary to meet the NEC & Local Codes.
- D. **CABLE TV:** RG-6 cable per plan.
- E. **TELEPHONE:** CAT5 4 pair wiring per plan.

## ELECTRICAL (continued)

- F. **EXTERIOR LIGHTING:** (2) Motion sensors, one on rear yard fixture and one on front yard garage light fixture.
  - G. **SMOKE DETECTORS:** 110V electrical with 9V battery back up; wired in series.
  - H. **INTERIOR LIGHTING**
    - a. Allowance for customer selected lighting, Energy Star rated (ceiling fans and wall mounted sconce lighting)
    - b. All others selected by electrical contractor in accordance with electrical floor plan.
    - c. Install minimum (4) ENERGY STAR light fixtures
    - d. Furnish 5 compact fluorescent light bulbs to homeowner. (Energy Star label encouraged)
    - e. No recessed can lights.
  - I. **VENTILATION:** (see Heating and Air Conditioning) for wiring.
  - J. **Garbage disposal:** Provide wiring for fixture regardless if component is to be installed or not.
- 
- 

## APPLIANCES

- A. ENERGY STAR rated appliances, or appliances performing in top 10% of the Energy Guide rating.
    - a. Dishwasher, refrigerator, microwave, slide-in range (provide a recirculation vent hood), washing machine, clothes dryer, garbage disposal (optional component chosen by owner)
  - B. Provide gas rough-in for appliances
- 
- 

## Gypsum Board

- A. **WALLS:** 5/8" USG or equivalent gypsum board over studs spaced @ 24" o/c; tape and mud seams
  - B. **CEILING:** ½" High density "no sag"
  - C. **FINISH:** Painted (one coat water-based primer, one coat low VOC paint)
    - a. Supply Manufacturer info to architect for color selection.
- 
- 

## EXTERIOR FINISHES

- A. **PAINT:**
  - a. Deck railings, posts, and soffit brackets, (2) coat oil based primer, (1) coat exterior latex paint (porch and floor enamel)
  - b. Supply Manufacturer info to architect for color selection
- B. **SIDING:**
  - a. 6" lap, vinyl siding
  - b. 4x8 smooth panel fiber cement board
  - c. Supply Manufacturer and supplier info to architect for selection.

## EXTERIOR FINISHES (continued)

### C. TRIM

- a. 6" white vinyl lineal trim per elevations
- b. Azek trim per elevations (pre-finished and touch-up painted after installation)

### D. COIL STOCK:

- a. 24" roll, continuous around building perimeter and garages- at grade: install behind siding and into grade 6".
- b. Color to match aluminum roof fascia and soffit.

### E. DECKS:

- a. plastic/wood fiber composite deck boards
  - i. Supply Manufacturer info to architect for color selection
- b. rubber membrane over pressure treated plywood where floor joists are cantilevered out from homes.

### F. DECK RAILINGS and SPINDLES:

- a. #5 rebar spaced horizontally at 4" o/c, left unfinished for natural patina, per Arch. Elevations
- b. Wood top and bottom rails per Arch. Elevations.
- c. 2x2 pressure treated wood spindles per Arch. Elevations.

### G. GUTTERS: 4" Pre-finished aluminum (to match window color) w/ downspouts & splash blocks. Provided only on 2<sup>nd</sup> floor of Banebury residence and at covered entry roofs.

---

## INTERIOR FINISHES

### A. CABINETS:

- a. Pre-finished, Flush panel doors and drawers
  - i. **BID OPTION:** Wheat or strawboard materials used in place of particleboard
- b. Hardware: brushed metal
- c. Stain color: Mocha brown, Clear, Redwood, or similar.
  - i. Supply Manufacturer info to architect for color selection

### B. COUNTER TOPS:

- a. Laminate
- b. 2" backsplash, Typical
- c. Colors to contrast cabinets, if cabs are dark, countertops are light, and vice-versa.
  - i. **BID OPTION:** "paperstone" recycled content countertops (e.g. Environ, Richlite):
    - 1. [www.richlite.com](http://www.richlite.com)
    - 2. [www.environmentalhomecenter.com](http://www.environmentalhomecenter.com)
- d. Supply Manufacturer info to architect for color selection

## INTERIOR FINISHES (continued)

### **C. TRIM:**

- a. 2" Paint grade window and door trim:
- b. Casing Paint grade
- c. 3 1/4" Paint Grade Base trim
- d. Style: Plain mission style without routing.
- e. Color: Pre-finished, Eggshell white to match windows

### **D. PAINT:**

- a. Low V.O.C. paints (<250 g/l for water based, < 380 g/l for solvent based) used through out.
- b. One coat, Water-based primer, typical
- c. One coat, Interior Latex, Eggshell, white, **(Ceilings, Trim and Casing)**
- d. One coat, Interior Latex, Flat , Earth-tones or pastels, **(Walls)**
- e. (1) wall color per home.
- f. **Supply Manufacturer and supplier info to architect for selection**

### **E. STAIN:**

- a. Water-based stains and sealers
- b. Mocha brown, Clear, Redwood, or similar
- c. **Supply Manufacturer info to architect for color selection**

### **F. INTERIOR DOORS:**

- a. Solid core, Maple or Birch, Flush panel, Stained and sealed.
- b. Hardware: Emtek leversets – Passage- Hammered Knob or Hammered lever with Hammered Rosette, or similar

### **G. CLOSET SHELVING**

- a. 3/4" x16" white laminate Melamine or similar.
  - b. Metal clothes hanging poles and brackets
- 

## FLOOR COVERINGS

[www.greenfloors.com](http://www.greenfloors.com)

### **A. LINOLEUM FLOORING:** (no vinyl flooring or base trim)

- a. Marmoleum or similar (Floating floor)
- b. Construction: click-lock tongue-groove flooring planks with built-in Cork underlayment or Jute backing.
- c. Installation: Float over sub-floor or use a moisture barrier and float over concrete. No glue or nails required.
- d. Color by owner, light colors encouraged for light reflectance.

### **B. CARPET:**

#### **a. General:**

- i. Carpet and Rug Institute IAQ (Indoor Air Quality) label on all interior carpet used.
- ii. **Supply Manufacturer info to architect for color selection**

## FLOOR COVERINGS (continued)

### b. Interior Carpet:

#### i. Basement:

1. Recycled content carpet tiles over concrete floors, no glue

#### ii. Upper Levels:

1. Short and tight Level loop, Nylon Berber or similar durable weave.
2. Recycled content carpet pad (100% of pad): pre-attached pad, or 40 ounce rubberized jute pad, or 22-28 ounce/sq.yd felted synthetic fiber pad.
3. Recycled content carpet – tacked not glued (minimum 50% of carpet installed)

### c. Exterior Carpet:

- i. High grade grass carpet for fully-exposed outdoor decks, locations as noted on architectural drawings. (option bid grass carpeting with marine backing)
- ii. Install with indoor/outdoor adhesive (no double sided tape permitted)

## C. TRANSITION STRIPS

- a. Brushed Aluminum transition strips at all floor material transitions.
- 

## DRIVEWAY

- A. Provide cost per square foot for material and installation:
    - a. Bid option pricing for both asphalt drives and self-binding gravel drives.
    - b. No curb cuts will be necessary for driveways.
  - B. Final driveway layouts will be provided on individual site plans.
- 

## LANDSCAPING

- A. STONE: ¾" to 1.5" dia. River-stone landscape bed, 26" to 32" wide and 2" deep, **under roof eaves** (no gutters on home, stone bed to capture runoff and drain away from home).
  - B. MULCH: Cedar mulch landscape bed, serpentine shape not less than 18" nor more than 60" from house structure **at gable ends**.
  - C. Trench edges around all landscape beds so that landscape material remains 1" below grass edge.
  - D. LANDSCAPE FILTER FABRIC under all landscape topping and wrapped beneath the bottom edge of perimeter trench.
  - E. TREES: (1) new deciduous tree(s) provided on south side and (1) evergreen tree(s) on west side of house such that when mature they will shade the house. Native species, min. 1" caliper, approx. 2'-0" high
  - F. Native landscape plantings
-

## CONTACTS

### City of Menasha

Community Development Department Tel: 920- 967-5103

### Architect

CANTILEVER STUDIO Tel: 920- 339-9061

Green Built Home Tel: 608-280-0360 Fax# 608-280-0361 Web: [www.GreenBuiltHome.org](http://www.GreenBuiltHome.org)