

Habitat for Humanity of Michigan

New Construction Design & Plan Checklist

Revised July 2015



PLAN INFORMATION	
Affiliate name:	
Project address:	
Plan description:	
Contact name:	
Contact phone, email:	

PLAN CHECKLIST - CRITERIA 1-10 ARE <u>REQUIRED</u> :	
<input type="checkbox"/>	1. Home is designed to meet current ENERGY STAR certification standards – Download the ENERGY STAR Plan Review Checklist at: http://www.energystar.gov/index.cfm?c=bldrs_lenders_raters.nh_designed_earn
<input type="checkbox"/>	2. House plan size meets HFHI criteria for living space. Area is calculated from exterior dimensions and includes cantilevered floors and stairwells to basements, but not stairwells to upper floors. <ul style="list-style-type: none"> • 900 sq. ft. for a 2-bedroom plan (one bath allowed) • 1,070 sq. ft. for a 3-bedroom plan (one or one and one half baths allowed) • 1,230 sq. ft. for a 4-bedroom plan or house with five or more people (up to two baths allowed) *Note: Plan size may exceed these limits to extent necessary to achieve even exterior dimensions for efficient layout, or to meet local minimum size requirements
<input type="checkbox"/>	3. Plan does not include a garage or carport unless required by local code or ordinance. (Plan may show future garage option).
<input type="checkbox"/>	4. Plan shows at least one no-step entrance from an accessible route , including drawings or notations for ALL of the following: <ul style="list-style-type: none"> • Threshold of ½ inch or less on a 36” wide entry door at the no-step entry • Minimum 5’ X 5’ clear space landing at floor level outside the no-step entry • Navigable route leading to the no-step entry not steeper than 1:12 slope
<input type="checkbox"/>	5. Plan shows or notes at least one main floor covered entrance. *Note: This is preferably also the no-step entrance noted in #4 above.
<input type="checkbox"/>	6. Plan shows that: <ul style="list-style-type: none"> • Main floor passage hallways without doors to rooms are at least 3’-5” wide (rough-to-stud) • Main floor hallways with doors to rooms are at least 3’-7” (3’-8” or more preferred).
<input type="checkbox"/>	7. Plan shows that main floor passage and privacy doors are usable by someone in a wheelchair with a minimum 32” net clear opening when door is fully open (90 degrees for swinging doors). *Note: clear opening must include stop, hinges, locks, latches, etc. - 36” doors are ideal.

<input type="checkbox"/>	8. Plan shows at least one wheelchair-usable half-bathroom on the main floor with: <ul style="list-style-type: none"> • A 30" X 48" clear floor space centered on and contiguous to the sink • A 30" X 48" clear floor space parallel or head-on to the toilet <p>*Note: Neither space can be encroached by the swing path of the bathroom door.</p>
<input type="checkbox"/>	9. All environmental controls and switches are noted on plan to be located: <ul style="list-style-type: none"> • At least 18 inches above the finished floor • No more than 48 inches above the finished floor
<input type="checkbox"/>	10. Blocking is shown or noted on plan for <i>future</i> grab bar installation at main floor toilet: <ul style="list-style-type: none"> • Integrated in walls extending at least 48" along the side and 42" along the back of the toilet • Solid blocking that allows for grab bar installation spanning from at least 33" to 36" inches above finished floor (to allow for variable height needs)

ADDITIONAL UNIVERSAL ACCESSIBILITY FEATURES INDICATED ON PLAN:

<input type="checkbox"/>	11. At least one main floor bedroom or otherwise suitable space for sleeping.
<input type="checkbox"/>	12. Laundry, HVAC, water heater, electrical panel, and mechanical ventilation unit located on the accessible main floor with adequate clear space for access and servicing from a wheelchair.
<input type="checkbox"/>	13. Unobstructed 30"X48" floor spaces are shown on plan centered on all fixtures, either parallel or perpendicular to fixture: <ul style="list-style-type: none"> • At kitchen sink, range, and refrigerator • In front of main floor laundry and utility tub • In front of all appliances, electrical panel, and utility devices
<input type="checkbox"/>	14. An unobstructed 60" diameter clear floor space turning circle is shown in main floor bath and kitchen (and in all main floor rooms when feasible). *Note: wheelchair footrests may pass below small portion of sink or toilet recesses.
<input type="checkbox"/>	15. An unobstructed 36" X 60" clear floor space is shown in front of main floor bath tub/shower unit.
<input type="checkbox"/>	16. Main floor bath and kitchen sink plumbing is shown or specified to be roughed into the wall, not the floor, for wheelchair footrest clearance. *Note: plumbing at exterior wall may be roughed-in as close to wall as is feasible to still allow access to plumbing from inside cabinet.
<input type="checkbox"/>	17. Plan notes or specifies that heating ducts are NOT to be placed in floor or toe kick area beneath or in front of sinks, appliances, or other spaces where a wheelchair may roll.
<input type="checkbox"/>	18. Blocking is shown or specified in main floor bath for future wall-hung lavatory and at shower/tub unit for future grab bar and fold-down seat installation.
<input type="checkbox"/>	19. The main floor accessible toilet is located 1'- 6 ½" to center from rough-framed side wall.
<input type="checkbox"/>	20. The refrigerator door can swing open past 90 degrees without being impeded by a wall or object.
<input type="checkbox"/>	21. At least 1'-6" of clear wall space is provided on the latch side of all in-swing doors to allow the door to be pulled open from a wheelchair.

<input type="checkbox"/>	22.	Notes or specifications on plan include rocker-type electrical switches and lever style handles, faucets, door hardware, and latches.
<input type="checkbox"/>	23.	Firm finished flooring surfaces are specified on main floor and noted to be installed under sink cabinets prior to cabinet installation for future wheelchair use.
<input type="checkbox"/>	24.	Kitchen cabinet plan includes one 24" cabinet next to sink for future dishwasher. Plumbing and electrical rough-in specs can simplify future appliance installation.
	*	See " Helpful Dimensions and Tips to Design for Universal Accessibility " for more information

ADDITIONAL ENERGY AND RESOURCE EFFICIENCY FEATURES:

<input type="checkbox"/>	25.	Exterior dimensions are 2-foot increments measured rough-to-stud to minimize lumber waste. *Note: 4-foot increments can be even more efficient use of standard materials and also aligns with 24", 19.2" and 16" on-center layouts
<input type="checkbox"/>	26.	Plan utilizes in-line (stacked) framing on 24" centers: floor, exterior and interior wall, and roof framing members are vertically aligned creating a direct load path.
<input type="checkbox"/>	27.	Plan utilizes a single top plate with connector plates rather than double top plates.
<input type="checkbox"/>	28.	Plan wall section shows raised-heel trusses to ensure full attic insulation depth on top of exterior walls (typically 12" to 16" heel).
<input type="checkbox"/>	29.	Details specify air sealing to prevent wind washing through attic insulation at raised heels.
<input type="checkbox"/>	30.	Window and door rough openings utilize a regular 24" on-center stud as a king stud on one side of the opening when possible, or a jack stud on a non-load bearing wall without a header.
<input type="checkbox"/>	31.	Load-bearing headers are sized for actual load with maximum insulation levels integrated into header. Properly sized single header material may be used in place of multiple members.
<input type="checkbox"/>	32.	Plan or documents show that non load-bearing walls do not utilize structural headers. Includes interior walls and gable walls (when standard truss is used as gable truss) *Note: verify with inspectors
<input type="checkbox"/>	33.	Plan specifies two-stud (i.e. California corner) framing at corners, or equivalent substitute for standard corners, with drywall clips, 1X material, or scrap lumber used for drywall backing.
<input type="checkbox"/>	34.	Drywall clips, 1X material, framing ladders, scrap material, or a combination of these methods are shown to be used in place of dimensional lumber wall bucks and for ceiling drywall nailers.
<input type="checkbox"/>	35.	Plan details note that nailers and blocking for handrails, closet rods, grab bars and cabinets are to be site-placed from scrap materials.
<input type="checkbox"/>	36.	Roof overhangs are designed to provide winter passive solar gain and summer shading.
<input type="checkbox"/>	37.	Roof pitch is designed to minimize roof framing and sheathing waste.
<input type="checkbox"/>	38.	Single trimmer (jack) studs are shown to be used on typical openings. They may be split at sill to eliminate extra cripple studs (wider openings or heavy snow loads may require double per code).

<input type="checkbox"/>	39.	Plumbing fixtures are clustered and/or stacked to maintain short water and waste line runs.
<input type="checkbox"/>	40.	Water heater is located close to fixtures to minimize plumbing runs and wasted water.
<input type="checkbox"/>	41.	Interior wall lengths are even numbers (or just short of even numbers) to minimize drywall waste.
<input type="checkbox"/>	42.	Air-sealing details of critical thermal bypasses are noted and shown on plan including at the bathtub on an exterior wall and the attic hatch insulation, gasket, and latch.
<input type="checkbox"/>	43.	House plan layout is simple and compact with minimal wall exposure per square foot of living space.
<input type="checkbox"/>	44.	Plan specifies recycling containers instead of dumpsters on site to minimize waste.
<input type="checkbox"/>	45.	Plan specifies the orientation of the home that maximizes passive solar gain.
ADDITIONAL DURABILITY AND HEALTH & SAFETY FEATURES:		
<input type="checkbox"/>	46.	Plan documents specify and show radon-resistant details and passive mitigation system.
<input type="checkbox"/>	47.	Plan or wall section shows structural or mechanical pest control details.
<input type="checkbox"/>	48.	Plan shows location of heat recovery or energy recovery whole-house mechanical ventilation systems.
<input type="checkbox"/>	49.	Wall assembly is designed to maximize performance and durability per building science principles with continuous thermal barrier and moisture management details.
<input type="checkbox"/>	50.	Water management details are shown on plan or specifications for all of the following: <ul style="list-style-type: none"> • Gutters and downspouts • Grading sloped away from house • Kick-out flashing • Drainage plane behind siding • Window and door flashing installation • Foundation drainage • Waterproofing/damp proofing
ADDITIONAL FEATURES:		
<input type="checkbox"/>	51.	Specifications include the use of sustainably harvested and engineered lumber.
<input type="checkbox"/>	52.	Plan shows details for future tie-in of renewable energy systems.
<input type="checkbox"/>	53.	Construction documents specify materials that maintain healthy indoor air quality.
<input type="checkbox"/>	54.	Plan is versatile and flexible for use in multiple settings and orientations, and facade matches or blends into neighborhood.
<input type="checkbox"/>	55.	BONUS: House is sized below HFHI guidelines.

***Note: EPA's Indoor Air Plus program recommended: <http://epa.gov/iaplus01/>**

Questions, comments, or to share additional ideas and recommendations for this evolving list, please contact Thom Phillips, Sustainable Building Specialist, Habitat for Humanity of Michigan, 269-270-2397 tphillips@habitatmichigan.org

Helpful Dimensions and Specifications to Design for Universal Accessibility

Wheelchair and accessibility allowances:

- 36" minimum clear width for general single passage
- 60" minimum clear width for general double passage
- 32" minimum clear opening width for doorways
- 60" clear floor space turning circle provided in all rooms
- 30" X 48" minimum clear floor spaces at all fixtures, appliances, cabinets, etc.
- 80" minimum clear head room provided at all transitions
- 42" minimum width is required to turn wheelchair 90 degrees (more is better)
- 15" minimum, 48" maximum height for forward reach (18" and 42" is better)
- 9" minimum, 54" maximum height for side reach (15" and 48" is better)
- 27" high by 30" wide by 19" deep clear knee space at sinks
- 6 ½" maximum sink bowl depth
- 28" to 34" high table and counter top height
- 4" maximum protruding objects between 27" and 80" above floor
- 9" to 12"- height of adult wheelchair footrests
- 25" to 39" – height of adult wheelchair armrests
- 8' wide parking space with 5' wide access aisle (8' X 8' for van)
- 1:50 maximum slope for parking vehicle (2% slope)
- 1:20 maximum slope for path of travel (5% slope)
- 1:12 maximum slope for ramps, curb cuts (8.33% slope)
- 1:2 maximum slope for short bevels and inserts at threshold (¾" max. height)
- 30" maximum rise for any ramp run (level landing min. every 30" rise)
- At 1:12 maximum ramp slope, maximum length for any ramp run is 30'
- 60" clear length level intermediate landing and at top of any sloped route or ramp run
- 72" clear length level landing at bottom of any sloped route or ramp run
- Intermediate landings are at least as wide as required route or ramp
- 60" X 60" level landing at top termination or if ramp changes direction
- 6" high curb along ramp edges and landings when drop-off is 4" or more
- 1:50 maximum slope for cross slopes (2% slope)
- ¼" maximum change in elevation without beveling
- ½" maximum carpet pile thickness
- 60" height to center line of signage
- 33" to 36" height to centerline of grab bars
- 34" to 38" height to centerline of handrails (both sides of ramps over 1:20 slope)
- 1 ¼" to 1 ½" diameter handrails and grab bars (or cross-sectional equivalent)
- 1 ½" minimum clear space between handrails or grab bars and wall
- Handrails extend minimum of 12" level distance beyond top and bottom of ramp
- Handrail ends return to wall or railing
- 17" to 19" height to top of toilet seat ("comfort" level)
- 44" maximum height flush controls on wide side of toilet area (not toward wall)
- 36" grab bar behind toilet 6" from corner, 42" grab bar aside toilet 12" from corner
- 40" maximum bottom edge of mirror above floor
- 48" maximum closet rod height, or 54" for side approach

Extemporaneous Commentary, Reminders, and Tips:

- There may be alternatives to 60" turning circles for maneuvering wheelchairs such as a "T" turn, but the circle is usually better for the user
- Ends of handrails and grab bars must return smoothly into wall
- 2'-10" doors usually give necessary 32" clear opening, but 3'-0" doors are better
- Install blocking for wall-hung lavatories, handrails, grab bars, and closet rods during framing for future use
- Take digital photos and measurements of blocking locations and leave with homeowners
- Use easy-to-grasp lever faucets, door locksets, and cabinet pulls that can be operated with a closed fist
- Slide-in doors on vanity cabinets make bathrooms look less adapted and still allow for adequate wheelchair knee space
- Install plumbing in walls to leave floor space available for wheelchair access
- Insulate piping below sinks to prevent scrapes and burns
- Install firm, finished flooring prior to cabinets in the kitchen and bath under sink cabinets so that if the cabinet must be removed, the flooring is complete
- Use slip-resistant flooring surfaces whenever possible
- Install anti-scald temperature controlled faucets and shower valves in reachable locations
- Design in a main floor bedroom and laundry whenever feasible
- Use grading and concrete sidewalks to provide a no-step entrance rather than ramps or bridges whenever possible. A reverse brick ledge at the accessible entry area of the foundation helps achieve this measure
- Use a primary covered entrance as the no-step entrance whenever possible
- Side-by-side refrigerators are typically easiest to use for mobility impaired and wheelchair users
- Use windows that are easy to open and close and have lock mechanisms within reachable range. Casements and sliders tend to be better than double-hung units
- Provide a direct outside emergency exit from main floor bedroom(s) whenever possible
- Install audio and visual smoke detectors
- Install a telephone outlet in the bathroom for use in emergencies

Please share your ideas, comments, and recommendations for this ever-changing document.
Contact Thom Phillips: tphillips@habitatmichigan.org