EXAMPLES OF RESIDENTIAL BUILDING METHODS
AND BASIC CONSTRUCTION CODES

These examples are a general outline for residential construction. Refer to your 2009 Michigan Residential Code Book and other resources for actual methods and code specifications, as they apply to your specific project.

BUILDING FRAMING

WALL/FLOOR FRAMING

Treated wood framing on exterior walls closer than 6” from exposed earth
Treated wood on girders closer than 12” to ground
Treated wood on joists closer than 18” to ground
Treated wood on sills or sleepers on a concrete slab that is in direct contact with the ground
Beam construction & span between support posts
Allowable spans for joist cantilevers
Allowable joist spans
Allowable joist notching – not more than 1/6 of joist depth, not longer than 1/3 joist depth, more than 1/3 joist depth
Floor sheathing
Correct fastening of structural sheathing & wall plates
Stud grade spacing
Double top plates
Single top plates – 3x6 steel plate with six 8d nails per side at joints, corners & intersecting walls;
with rafters & joists centered over studs with a tolerance of 1” maximum
Stud notching not exceeding 25% of its width for bearing walls and 40% in non-bearing walls
Stud drilling no more than 60% of stud width, with edge no closer than 5/8” to stud edge; Studs in exterior walls drilled over 40% up to 60% shall be doubled with no more than two successive studs willed; otherwise, rated mechanical structural repair bracket(s) must be installed
Corner (T) bracing at corners & every 25’ of wall or structural (OSB) sheathing
Maximum spans for headers
Maximum spans for garage door headers
Required number of jack-studs, typically double for openings over 60”
Framing around chimneys – 2” clearance from front & sides and 4” from back to combustible materials
Habitable rooms, hallways, bathrooms, kitchens – minimum ceiling height is 7’
Loft area rooms min. side wall height 60”
Passageways – minimum clear width of 36”
Egress windows: minimum 5.7 sq.ft. opening, minimum 24” net clear height, minimum 20” net clear
Windows over 72” above finished grade – the lowest part of the clear opening must be 24” above the finished floor
Exit door – minimum size 3’0” x 6’8” side hinged door (cannot exit through a garage)
Required siding, soffit, facia
Required site address plainly visible from the road
Correct fasteners
Rafter/truss bearing – 1 ½” on wood, 3” on masonry or approved joist hangers
Truss installation – manufacturer’s truss drawings must be submitted or available on site
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ROOF FRAMING
Roof assemblies shall have roof rafters or trusses attached to their supporting wall assemblies by connections capable of providing resistance required in Table R802.11, or per manufacturer requirements; minimum connection rating must be 175 lbs
- Truss bottom cord bracing every 10’
- Permanent diagonal truss bracing – in gable ends & every 20’
- Allowable spans for rafters
- Roof sheathing – spans & clips
- Felt underlayment for shingles
- Ice shields required that extend 24” inside exterior wall line of building
- Flashing required: wall & roof intersections, chimneys, vents, change of slope or direction
- Re-roof: remove existing when 2 layers already exist
- Roof space ventilation
- Access to attics: minimum size 22” x 30”, minimum 30” headroom required over access

FIRE SEPARATION & STOPS
One hour rating for exterior walls less than 5’ from the property line/building (rated both sides of wall)
No openings in exterior walls less than 3’ from the property line/building
Garage dwelling separation: ½” gypsum on the garage side; if habitable living above, then 5/8”
- type X gypsum on the ceiling and ½” all walls
- 1 3/8” minimum solid wood door, 20 minute fire rated door, or 1/3/8” steel door separating
Garage floor – an approved non-combustible material with floor slope to overhead door or floor drain
Concealed wall spaces at the ceiling & floor level and at 10’ intervals
Connection between horizontal & vertical spaces (for example: soffits, dropped ceilings)
Ceilings & floor openings (vents, pipes, wiring holes, ducts, chimneys, fireplaces)
Enclosed areas under stair space must be entirely covered with 1/2” minimum gypsum

SMOKE DETECTORS
Basement & one per floor above basement level
One in each bedroom
Outside each separate sleeping area in the immediate vicinity of bedrooms
Additions, alterations & repairs to existing dwellings constructed prior to 11/6/74 shall result in installation of smoke detectors for the entire dwelling as required for new dwellings; exception is permitted for the usage of 5-year battery-operated smoke detectors where wiring is technically infeasible in existing areas
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SAFETY GLAZING
Glazing adjacent to doors within a 24” arc of the door in a closed position whose bottom edge is less than 60” above the floor
Glazing in walls enclosing bathtubs, showers, whirlpools, etc. where bottom edge of glazing is less than 60” above a standing or walking surface
Glazing in fixed panels in excel of 9 sq.ft., with the bottom edge less than 18” above the floor, top edge greater than 36” above the floor, walking surface within 36” (all conditions must be met)
Glazing within, or adjacent to, stairways within 60” horizontally of the bottom tread in any direction when the exposed surface of the glass is less than 60” above the tread nose of floor

Stairs, Landings
Door swing cannot be over steps and where doors open onto ramp or at change in direction
Landing minimum size 36” wide x 36” long, with maximum of 7” from top of landing to top of threshold.
Stairway minimum width = 36”
Winder stairs: width of treads at a point not more than 12” from the side where the treads are narrower must be 10” minimum & minimum width of any tread must not be less than 6”
Spiral stairs: minimum width of 26” with each tread having a 7 1/2” minimum tread width at 12” from the narrow edge
Stairway illumination required, switches at top & bottom of stairway
Minimum 36” height guardrails for balconies, open sides of stairs or raised floor surfaces more than 30” above the floor
Tread & bottom rail of the guard – 4 3/8” for guards on the sides of stair treads
Maximum openings of 4” on stair backers for any steps over 30” above floor or grade below
Handrails required for four or more risers
Handrail height – 34” minimum, 38” maximum
Handrails must be a graspable style 2 1/4” dia. and run continuous from the bottom step nose to top step nose.

MICHIGAN UNIFORM ENERGY CODE 2003 (Effective 10/24/2008)
Exterior wall assemblies R-21
Exterior window and door openings-fenestration openings U=0.35 (R=2.85)
Attic ceiling assemblies R-49, note: vaulted or cathedral ceilings may be R-38
Floors over unconditioned basements or crawl spaces R-21
Exterior basement walls with conditioned interior space R-10
Exterior crawl space walls with conditioned interior space R-10
Monolithic concrete foundation (heated dwelling), R-10 ridged foam insulation top of slab to 4’ below grade.
*Insulation installed to the interior of basement and crawl space walls must meet Fire Code requirements to be exposed.
Note: An acceptable alternative is to providing the building department with a prescriptive performance RESCHECK document showing positive compliance with the 2009 International Energy Code.