Surrey Township Building Department

Michigan Uniform Energy Code Compliance Form

(Must be completed for all new homes, additions, and residential alterations)

There are two ways to comply with the Energy Code. Idicate which method has been/will be used to provide documentaion of code compliance.

1. Prescriptive Method (see Table 402.1.1)

2. System Analysis Method (see Table 2)

Table N1102.2.2 (R402.1.1)

Insulation and Fenestration Requirements by Component

*Surrey Township is in Climate Zone 6A

011		G1 11 1 .	0.11		Mass Wall	Floor	Basement	Slab	Crawl Space
Climate	Fenestration	Skylight	Ceiling	Wood Frame Wall R-Value	Mass wall		Wall	R-Value &	Wall R-
Zone	(U-Factor)	U-Factor	R-Value		R-Value		R-Value	Depth	Value
5A	0.32	0.55	38	20 or 13+5	13/17	30	10/13	10, 2 ft	15/19
6A*	0.32	0.55	49	20 or 13+5	15/20	30	15/19	10, 4 ft	15/19
7	0.32	0.55	49	20 or 13+5	19/21	38	15/19	10, 4 ft	15/19

a. R-Values are minimums. U-Factors are maximums. When insulation is installed in a cavitiy which is less than the label or design thickness of the insulation, the installed R-Value of the insulation shall not be less than the R-Values specified in the table.

b. The fenestration U-Factor column excludes skylights.

c. "15/19" means R-15 continuous insulation on the interior or exterior of the home or R-19 cavity insulation at the interior of the basement wall. "15/19" may be met with R-13 cavity insulation on the interior of the basement wall plus R-5 continuous insulation on the interior or exterior of the home. "10/13" means R-10 continuous insulation on the interior or exterior of the home or R-13 cavity insulation at the interior of the basement wall.

d. R-5 shall be added to the required slab edge R-Values for heated slabs.

e. Or insulation sufficient to fill the framing cavity, R-19 minimum.

f. First value is cavity insulation, second is continuous insulation or insulated siding, so "13+5" means R-13 cavity insulation plus R-5 continuous insulation or insulated siding. If structural sheathing covers 40% or less of the exterior, continuous insulation R-Value may be reduced by no more than R-3 in the locations where structural sheathing us used to maintain a consistent total sheathing thickness.

g. The second R-Value applies when more than half the insulation is on the interior of the mass wall. R 408.30547d

Table 2 (Systen Analysis)

	Compliance with the Michigan Energy Code can be accomplished with the use of the following programs:
	1. Michigan Uniform Energy Code - 2015 (Detached 1 & 2 Family dwellings)
ł	2. Meeting the design, construction, and certification requirements under the United States EPA Energy Star Homes Program
ł	3. Meeting the design and construction guidelines of the Home Energy Rating System (HERS) with a minimum test score of 85
	4. Achieving an approval using the insulation requirements in RES check using software version 4.4.1

401.3 Certificate: A permanent certificate shall be posted on or in the electrical distribution panel, and shall meet all of the following:

a. Be affixed or attached so it does not cover or obstruct the visibility of the circuit directory label, service disconnect label, or other required labels.b. Be completed by the builder or registered design professional.

c. List the predominat R-Values of insulation in or on ceiling/roof, walls, foundation (slab, basement wall, crawlspace wall and/or floor) and ducts outside conditioned spaces and U-Factors for fenestration. If there is more than 1 value for each component, then the certificate shall list the value covering the largest area.

d. List the types and efficiencies of heating, cooling and service water heating equipment.

e. If a gas fired unvented room heater, electric furnace, or baseboard electric heater is installed in the residence, then the certificate shall list "gasfired unvented room heater" as appropriate. An efficiency shall not be listed for gas-fired unvented room heaters, electric furnaces, or electric baseboard heaters.

R 408.31061

Signature

1000

Date

For individuals with disabilities, reasonable accommodations are available upon request.

Residential Frame Built (Roof, Walls, Floor, and Foundation) Shingles Felt Roof: -Ice Barrier Pitch -Rafter Roof Sheathing Shingles -OT Truss Felt -Ice Barrier -Ceiling Joist -Roof Sheathing -Truss - Yes No - Clear Span, to the opposite support If No Answer The Following Rafter Size - _____ Rafter Spacing - _____ Headers Rafter Clear Span -Rafter Species -____ Siding Building Paper (Tyvek)-Ridge -Sheathing -Ceiling Joist Size Ceiling Joist Spacing-Insulation -Ceiling Joist Species-_____ Insulation -Wall Framing ----Roof Ventilation -Interior Finish -Walls: Sidina -Sheathing -Bldg. Paper (Tyvek)_____ Insulation -Walls Framing -Headers -Interior Finish -Ceiling Height -Floor: Sub-Floor -Sub-Floor Floor Joist Size-Floor Joist Spacing -Floor Joist Floor Joist Clear Span - _____ Distance Floor Joist Species -From Grade Beam Type & Size - _____ Clear Span, to the opposite support Distance From Grade -Foundation: Sill Plate Anchor Type -Anchor Spacing -Foundation Anchor Sill Plate -Poured Wall Size -Foundation Wall -Block Wall Size -Vertical Reinforcement - #_____ o.c. Vertical Reinforcement -Concrete Floor Thickness -Vapor Barrier -Concrete Floor Column Pad Size - x x Column Spacing-Footing Width - _____ Footing Height -Vapor Barrier / Footing Footing Depth Below Grade -

	Appendix B
Residential Garages & Accessory Structures	
Roof Pitch -	
Roof Covering -	
Underlayment -	
Truss or rafter ties may be required	
Roof Deck	
Trusses – Yes No	
If no, fill in the following:	
Size of Ridge	
Size of Rafters -	
Rafter Spices of Lumber	
Rafter Spacing	
Ceiling Joist	
Wall Materials	
Size of Studs -	
Top Plates -	
Bottom Plates -	
Stud Spacing -	\times III
Garage Door Header -	$\Lambda \Pi$
Garage Door Header Span	
Service Door	
Service Door Header Span	
Window Header	
Window Header Span -	
Insulation Type	
Interior Finish -	
Sheathing	
Siding	
Building Paper (Tyvek)	
Foundation	
Foundation Anchor Type – Bolt Strap	
Foundation Anchor Spacing -	L <u>A</u>
Foundation Size -	
Footing Width	
Footing Depth	
Concrete slab-on-ground floors shall be a minimum 3 ½ inches thick	
Attached garages and other attached accessory structures	
shall have exterior footings and foundation systems that	
extend 42 inches below actual grade. Detached garages and other accessory structures that exceed 400 square feet shall	

Roof Deck -
Trusses – Yes - No
If no, fill in the following:
Size of Ridge -
Size of Rafters -
Rafter Spices of Lumber -
Rafter Spacing -
Ceiling Joist -

Wall

Size of Studs
Top Plates
Bottom Plates -
Stud Spacing
Garage Door Header
Garage Door Header Span
Service Door
Service Door Header Span
Window Header
Window Header Span -
Insulation Type
Interior Finish -
Sheathing -
Siding -
Building Paper (Tyvek)

Found

Foundation Anchor Type – Bolt Strap
Foundation Anchor Spacing
Foundation Size -
Footing Width
Footing Depth

Attached garages and other a shall have exterior footings a extend 42 inches below actua other accessory structures that have exterior footings and foundation systems that extend 42 inches below actual grade



Residential Deck Specifications



Deck Stairways

Stairways shall not be less than 36 inches in clear width. The maximum riser height shall be 8 ¹/₄ inches and the minimum tread depth shall be 9 inches.

Deck Stairway Handrails

All required handrails shall be continuous the full length of stairways with 3 or more risers on at least 1 side of stairways. Handrails shall be placed not less that 34 inches or more than 38 inches above the nosing of the treads. The handgrip portion of handrails shall have a circular cross section of 1 ¹/₄ inches minimum to 2 5/8 inches maximum. Other handrail shapes that provide an equivalent grasping surface are permissible. Edges shall have a minimum radius of 1/8 inch. Open sides of stairs with a total rise of more than 30 inches above the floor or grade below shall have guards not less than 34 inches in height measured vertically from the nosing of the treads.

For 3,000# per sqft soil capacity							
Duilding Width	Pole Spacing for Single-Story Buildings						
Building width	4 ft	6 ft	8 ft	10 ft	12 ft	14 ft	16 ft
16 ft	6" x 12"	6" x 12"	6" x 14"	6" x 14"	8" x 16"	8" x 18"	8" x 18"
20 ft	6" x 12"	6" x 12"	6" x 14"	8" x 16"	8" x 18"	10" x 20"	10" x 20"
24 ft	6" x 12"	8" x 16"	8" x 16"	8" x 18"	10" x 20"	10" x 22"	10" x 22"
28 ft	6" x 12"	8" x 16"	8" x 18"	10" x 20"	10" x 22"	10" x 22"	12" x 24"
32 ft	6" x 12"	8" x 16"	8" x 18"	10" x 20"	10" x 22"	12" x 24"	12" x 26"
36 ft	6" x 12"	8" x 18"	10" x 20"	10" x 22"	12" x 24"	12" x 26"	12" x 28"
40 ft	6" x 14"	8" x 18"	10" x 20"	12" x 24"	12" x 26"	12" x 28"	12" x 28"
44 ft	8" x 16"	8" x 18"	10" x 22"	12" x 24"	12" x 26"	12" x 28"	14" x 30"
48 ft	8" x 16"	10" x 20"	10" x 22"	12" x 26"	12" x 28"	14" x 30"	14" x 32"
52 ft	8" x 16"	10" x 20"	12" x 24"	12" x 26"	12" x 28"	14" x 30"	14" x 32"
56 ft	8" x 18"	10" x 22"	12" x 24"	12" x 28"	14" x 30"	14" x 32"	16" x 34"
60 ft	8" x 18"	10" x 22"	12" x 26"	12" x 28"	14" x 30"	16" x 34"	16" x 36"
64 ft	8" x 18"	10" x 22"	12" x 26"	12" x 28"	14" x 32"	16" x 34"	16" x 36"

Footing Sizes for Pole Buildings

Footing Concrete

Footing	Approximate Number of Redi-Mix Bags of Concrete*					
SILC	80# Bags		50# Bags			
6" x 12"	3/4		1			
6" x 14"	1		1-1/4			
8" x 16"	1-1/2		2-1/4			
8" x 18"	2		3			
10" x 20"	2-3/4		4-1/2			
10" x 22"	3-1/2		5-1/2			
12" x 24"	4-3/4		7-3/4			

Footing	Approximate Number of Redi-Mix Bags of Concrete*					
SIZC	80# Bags		50# Bags			
12" x 26"	5-3/4		9			
12" x 28"	8-1/2		10-1/2			
14" x 30"	8-3/4		14			
14" x 32"	10		15-3/4			
16" x 34"	12-3/4		20-1/2			
16" x 36"	14-1/4		23			

* Numbers are rounded to nearest 1/4 bag. 1-1/2 - 80 lb bags or 2-1/2 50 lb bags equal approximately 1 cubic foot of mixed concrete, based on information provided by Quickrete® Concrete Supply Company.

Carrier Sizes for Pole Buildings

For Spruce / Pine / Fir #1 or Better, Dressed Lumber

Building Width		Pole Spacing for Single-Story Buildings						
		4 ft	6 ft	8 ft	10 ft	12 ft	14 ft	16 ft
16	ft	2 - 2" x 4"	2 - 2" x 6"	2 - 2" x 8"	2 - 2" x 10"	A* 2 - 2"x12"	C* 3 - 2"x12"	C* 3 - 2"x12"
20	ft	2 - 2" x 6"	2 - 2" x 8"	2 - 2" x 8"	2 - 2" x 10"	A* 2 - 2"x12"	C* 3 - 2"x12"	4 - 2" x 12"
24	ft	2 - 2" x 6"	2 - 2" x 8"	2 - 2" x 10"	2 - 2" x 10"	A* 2 - 2"x12"	C* 3 - 2"x12"	4 - 2" x 12"
28	ft	2 - 2" x 8"	2 - 2" x 10"	A* 2 - 2"x12"	C* 3 - 2"x12"	4 - 2" x 12"		
32	ft	2 - 2" x 8"	A* 2 - 2"x12"	A* 2 - 2"x12"	C* 3 - 2"x12"	4 - 2" x 12"		
36	ft	2 - 2" x 8"	A* 2 - 2"x12"	C* 3 - 2"x12"	4 - 2" x 12"	4 - 2" x 12"		
40 ft		2 - 2" x 10"	B* 3 - 2"x10"	C* 3 - 2"x12"	4 - 2" x 12"			の大学を行うで
44	ft	2 - 2" x 10"	B* 3 - 2"x10"	4 - 2" x 10"	4 - 2" x 12"			
48	ft	A* 2 - 2"x12"	C* 3 - 2"x12"	4 - 2" x 12"				
52	ft	A* 2 - 2"x12"	C* 3 - 2"x12"	4 - 2" x 12"	М	UST BE EN	VGINEERE	D
56	ft	A* 2 - 2"x12"	C* 3 - 2"x12"	4 - 2" x 12"				
60 ft		B* 3 - 2"x10"	4 - 2" x 10"					
64 ft		B* 3 - 2"x10"	4 - 2" x 10"					
	2 21 1		1 1 60	01 101			10.0	
A*	A* 3 - 2" x 10" may be used instead of 2 - 2" x 12"			Buildings with posts spaced 8 ft on center and				
B*	B* 4 - 2" x 8" may be used instead of 3 - 2" x 10"			- 2" x 10"	a wall height between 11 ft and 14 ft MUST			
C* 4 - 2" x 10" may t		" may be use	d instead of 3	- 2" x 12"	use 6" x 6" posts			

Informational - Only Applies to Pole Barns

2015 Michigan Residential Code N1102.4.1.2 (R402.4.1.2) Testing (Blower Door)

N110 2.4.1.2 (R402.1.2) Testing (prescriptive). The building or dwelling unit shall be tested and verified as having an air leakage rate of not exceeding 4 air changes per hour. Testing shall be conducted with a blower door at a pressure of 0.2 inches w.g. (50 pascals). Where required by the code official, testing shall be conducted by a certified independent third party. Certification programs shall be approved by the state construction code commission. A written report of the results of the test shall be signed by the party conducting the test and provided to the code official. Testing shall be performed at any time after creation of all penetrations of the building thermal envelope. During testing:

- 1. Exterior windows and doors, fireplace and stove doors shall be closed, but not sealed, beyond the intended weatherstripping or other infiltration control measures;
- 2. Dampers including exhaust, intake, makeup air, backdraft and flue dampers shall be closed, but not sealed beyond intended infiltration control measures;
- 3. Interior doors, if installed at the time of the test, shall be open;
- 4. Exterior doors for continuous ventilation systems and heat recovery ventilators shall be closed and sealed;
- 5. Heating and cooling systems, if installed at the time of the test, shall be turned off; and
- 6. Supply and return registers, if installed at the time of the test, shall be fully open.

Table N1102.4.1.1 (402.4.1.1) Air Barrier and Insulation Installation

Component	Criteria (a)				
	A continuous air barrier shall be installed in the building envelope.				
	Exterior thermal envelope contains a continuous air barrier.				
Air Barrier and Thermal Barrier	Breaks or joints in the air barrier shall be sealed.				
	Air-permeable insulation shall not be used as a sealing material				
	The air barrier in any dropped ceiling / soffit shall be aligned with the insulation and any gaps in the air barrier sealed				
Ceiling / Attic	Access openings, drop down stair, or knee wall doors to unconditioned attic spaces shall be sealed				
	Corners and headers shall be insulated and the junction of the foundation and sill plate shall be sealed.				
	The junction of the top plate and the top of exterior walls shall be sealed				
Walls	Exterior thermal envelope insulation for framed walls shall be installed in substantial contact and continuous				
	alignment with the air barrier.				
	Knee walls shall be sealed.				
Windows, Skylights, and Doors	The space between window / door jambs and framing, and skylights and framing shall be sealed.				
Rim Joists	Rim joists shall be insulated and include the air barrier.				
Floors (including above garage and	Insulation shall be installed to maintain permanent contact with underside of subfloor decking.				
contilevered floors)	The air barriier shall be installed at any exposed edge of insulation.				
Crawl Space Walls	Where provided in lieu of floor insulation, insulation shall be permanently attached to the crawlspace walls.				
Clawi Space wans	Exposed earth in unvented crawl spaces shall be covered with a Class I vapor retarder with overlapping joints taped.				
Shafts, Penetrations	Duct shafts, utility penetrations, and flue shafts opening to exterior or unconditioned space shall be sealed.				
Narrow Cavities	Batts in narrow cavities shall be cut to fit, or narrow cavities shall be filled by insulation that on installation readily conforms to the available cavity space.				
Garage Separation	Air sealing shall be provided between the garage and conditioned spaces.				
Recessed Lighting	Recessed light fixtures installed in the building thermal envelope shall be air tight, IC rated, and sealed to the drywall.				
Plumbing and Wiring	Batt insulation shall be cut neatly to fit around wiring and plumbing in exterior walls, or insulation that on installation readily conforms to available space shall extend behind piping and wiring.				
Shower / Tub on Exterior Wall	Exterior walls adjacent to showers and tubs shall be insulated and the air barrier installed separating them from the showers and tubs.				
Electrical / Phone Box on Exterior Walls	The air barrier shall be installed behind electrical or communication boxes or air-sealed boxes shall be installed.				
HVAC Register Boots	HVAC register boots that penetrate the building thermal envelope shall be sealed to the subfloor or drywall.				
Fireplace	An air barrier shall be installed on fireplace walls.				
a. In addit	ion, inspection of log walls shall be in accordance with the provisions of ICC-400.				

R 408.30547d