CONSTRUCTION CODES & LICENSING DIVISION
BUILDING CODES & STANDARDS
443 Lafayette Road No.
St. Paul, MN 55155-4341
http://www.doli.state.mn.us/buildngcodes.html

Minnesota Department of Labor and Industry

(651) 284-5068
TTY: (651) 297-4198

PROCEDURES FOR PLAN SUBMITTAL AND INSPECTIONS

OF PREFABRICATED HOMES - MSBC (CHAPTER 1360)

Plan Submittal Must Include:

Elevations- exterior
Floor plan
Basement plan
Wall section
Stair section

The drawings are to be labeled and dimensioned sufficiently so all components and room sizes can be identified. The enclosed code references should help identify the various areas of concern that we would have when reviewing the plans. The plans are also to include a nailing schedule as well as a drawing or instructions to the purchaser as to how the home is to be secured to the foundation. We are often asked as to why the need for a basement or foundation plan? Even though you are providing the home (typically) from the floor joists and up the home owner is to have information as to the support of their home , as well as , being made aware of the minimum life safety requirements of the code. The basement must have information indicating the type of reinforcing (R 404.1 or 1303.1900), location and size of supporting members, smoke detector locations and escape/egress windows.

Required inspections during construction shall consist of:

Rough in -	Structural -	BCS Personnel (Building Codes and Standards)
	Plumbing -	BCS Personnel
	Mechanical -	BCS Personnel
	Electrical -	State Board of Electricity Personnel
Insulation -	Vapor Barrier -	BCS Personnel
Final -	Structural -	BCS Personnel
	Plumbing -	BCS Personnel
	Mechanical -	BCS Personnel
	Electrical -	State Board of Electricity Personnel

The BCS inspections shall be arranged two weeks in advance of the actual time of the inspection to accommodate schedules. The BCS inspections are to be arranged through Duane DeLonais 651.284.5859, Larry Johnson 651.284.5894 or Randy Vogt 651.284.5875. The electrical contractor shall schedule their inspections as normal through the local state electrical inspector.

The builder of the prefabricated home is responsible for procuring the seal and data plate. The seal is certification to all agencies, instrumentalities, and municipalities of this state of code compliance of the home. The enclosed seal request form is to be used in ordering the seal and data plate. The seal and data plate will be issued after the final inspection has been completed. The seal will be sent with a data plate, the seal is to be engraved and installed under the kitchen sink, and the data plate is also be completed and the various copies distributed as required. The original (top copy) of the data plate is to be returned to our office, and the owners copy (sticky back) is to be installed near the seal. **Note any violation of the building code is a misdemeanor,** as per Minnesota Statute 16B.69.

encl: Request for seal and Data Plate
Approval Checklist
Code reference checklist

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APPLICATION FOR SEALS AND CERTIFICATES

Firm Name	Telephone No. (Include Area Code)
Address	City, State Zip

Amount	Description	Unit Cost	Total $
	Prefabricated Building One & Two Dwelling Compliance Seals and Certificates	$30.00	$

☐ Check if address or telephone number has recently changed.

NOTE: Make check or money order payable to: Minnesota Labor and Industry

Building Codes and Standards Division-00004-03 (97/98)
Revised 11/08/05

Plan Approval Number: PB_____

PREFABRICATED HOME CONSTRUCTION
PROCEDURE / APPROVAL CHECK LIST

- ■ **Submit plans and documentation (3-sets)**
- ■ **Receive plan approval**
- ■ **Start to build**
- ■ * **First inspections. (rough in structural - house framed and roofed, rough in plumbing, and rough in electrical)**
- ■ * **Second inspections. (insulation and vapor barrier)**
- ■ * **Third and final inspection at building site. (done at the time the home is completed or at the point of completeness before the home is being moved)**
- ■ **Request seal for home. ($ 30.00 payable to Minnesota Department of Labor and Industry)**
- ■ **Engrave, fill out and apply seal and Data Plate.**
- ■ **Return "State Copy" of data plate to:**
  Building Codes and Standards Unit
  443 Lafayette Rd. North
  St. Paul, MN 55155-4341

*** Anticipate the inspection date approximately two weeks prior to the actual date so we can coordinate inspections with other locations or inspectors to keep your costs to a minimum. Plan review time and inspection time as well as travel time is invoiced to the manufacturer / contractor / lumber yard / builder at $ 45.00 per hour.**

ONE AND TWO FAMILY DWELLINGS
PREFABRICATED BUILDING PLAN SUBMITTAL CHECKLIST AND GUIDE

This checklist covers the items to be included with plan submittals of Residential One and Two Family Dwellings and Townhouses.

Code references: 2003 Minnesota State Building Code, 2000 International Residential Code, 2000 International Mechanical Code and 2000 International Fuel Gas Code, 2003 Minnesota State Plumbing Code, and 2005 National Electrical Code.

REQUIRED CONSTRUCTION DETAILS

EXTERIOR ELEVATIONS

Chimney Terminations (Masonry)	R 1001.6
Footing Depths	MSBC 1300.5500 R 403.1.4
Gas Vent Terminations	IMC 802.5, 617.5
Grade/Landscaping to Wood Separation	R 323.1
Grade Definition	R202
Guardrail	R 316
Landings	MSBC 1309.0312
Handrails	MSBC 1309.0315
Lighting: exit-stair-room	NEC 210-70(a)
Roof Drainage	R 801.3
Stairs	MSBC 1309.0314
Skylights	
Glass	R 308.6
Plastic	R 308.6
Safety glazing	R 308
Soil Stack Terminations	MPC 4715.2530 supt.1
Ventilation	
Attic	R 806.1
Crawl Space	MSBC 1309.0202
Weather Protection and Flashing	MSBC 1309.0703

FOUNDATION & BASEMENT PLANS

Anchor Bolts	MSBC 1309.0403. R403.1.6
Anchoring Joist and Blocking in Bearing Wall Plate	R 324.3, R 323.1,(2),(3)
Blocking First Joist Spaces Bridging/Blocking	R502.7.1
Column/Posts (Location, Size, and Species or Grade)	R407, R323.1
Crawl Space Access	R 408.3
Escape or Rescue Window	MSBC 1309.0310

Foundation (cont.)

Foundation Wall Insulation	MEC 7670.0470 subpart 9B(1)
Foundation Wall Reinforcement (Size and Placement)	MSBC 1303.1900 R404.1.1 (2) & (3) & (4)
Foundation Walls (Type and Size)	MSBC 1309.0404 & MSBC 1303.1900
Headers/Beams (Size and Species or its Grade)	R 502.1, R 602.7, R 502.5(1) & (2)
Interior/Intermediate Footing Design (Size and Reinforcement)	R 403.1.1
Interior/Intermediate Support Systems (Type and Location)	R 106.1.1, R 502, R 602.3(5)
Joist Spaces to Sill,	MSBC 1303.1900, R502.7, R602.3 (1)
Joists (Grade, Size, Species, and Spacing of Joists)	R502.1, R502.3
Notching of Joists	R 502.8. R 502.8.2 or Per Manufacturer (If “I” Joist)
Parallel to Foundation ,	MSBC 1303.1900, R 502.4
Perimeter Footings Design	R 403.1
Sill Plate	R323
Smoke Detector	MSBC 1309.317
Soil Bearing	R 401.4.1
Stair Handrails	MSBC 1309 315
Window Wells (Egress/Escape Windows)	MSBC 1309.310

FLOOR PLANS (MAIN AND UPPER LEVELS)

Attic Access	R 807
Bath and laundry ventilation and Ducting	MEC 7670.0325 s 30, R 303.3
Braced Wall Lines	R 602.10.1
Egress or Rescue Window (Manufacturer, Catalog Number, Installation Requirements, flashing, Back-caulking)	R 308.1, R 613, R 703.8
Exits Width and Height	R 311.1, R 311.3
Fire Blocks and Draft Stops	R 502.12, R 502.13, R 602.8
Grade and Species of Plates	R 602.1, R602.3.2, R 602.3.4
Grade, Species, and Size of Headers	R 602.1, R 602.7
Grade, Species, and Spacing of Joist	R 602.1, R 502.3
Grade, Species, and Spacing of Rafters	R 602.1, R 802.4, R 802.3
Grade, Species, and Spacing of Studs	R 602.1, R 602.3.1
Guardrails	MSBC 1309.0316

Floor Plans (cont.)

Hallway Width	R 311.4
Handrails	MBSC 1309.315
Natural Light	R303.1
Natural Ventilation	R303.1
Occupancy Separation and Labeled 20 Minute Door	R 309.1
Room Sizes	R304
Safety Glazing	R 308
Sanitation	MSPC 4715.0200(C)
Smoke Detector Locations and Interconnection	MSBC 1309.317 & NEC 110.3
Spacing and Specifications for Engineering Trusses	R 502.11.4
Stair Design	MSBC 1309.0314
Stair Width	MSBC 1309.0314
Tub Trap Access Required if Basement Finished	MSPC 4715.0940
Wall Finishes	R 319
Water Resistant Gypsum Board	R 702.4.2

CROSS SECTION

Anchor Bolts (Size, Spacing, and Embeddment)	MSBC 1309.0403 & R 602.11.1
Anchoring Joist and Blocking in Joist Spaces to Sill	MSBC 1303.1900, (Use Joist Hangers if "I" Joist, no Nail to Sill Only—NO NAILS INTO BOTTOM FLANGE OF "I"- JOIST)
Blocking First 2 Joist Spaces Parallel to Foundation	MSBC 1303.1900 & R 502.4
Ceiling Heights	MSBC1309.0305
Damp-proofing	R 406.1, R 406.3
Fastening and Anchoring Requirements for Trusses	R 802.11
Foam Insulation Protection	MSBC 1309.0318
Foundation Drainage System (Size, Placement, Infiltration Barrier)	MSBC 1303.1900, R405
Foundation Wall (Type, Size, and Reinforcement Size and Spacing)	MSBC 1303.1900 R 404, R 404.1.1(1),(2),(3)
(Type, Size, and Reinforcement Size and Spacing)	MSBC 1303.1900 R 404, R 404.1.1(1),(2),(3)
Frost Depth	MSBC 1300.5500 R 301.2(1)
Grade & Species of Rafters	R 802.1
Grade and Species Floor Joists	R 502.1, R 502.3
Grade and Species of Plates	R 602.1
Grade and Species of Studs	R 602.1
Grade and Species of Window & Door Headers	R 602.1
Grade to Wood Separation	R 404.1.6, R 323

Cross Section (cont.)

Insulation R Values	
Foundation Wall	MEC 7670.0470 Sub 9.B. (1)
Ceiling	MEC 7670.0475
Rim	MEC 7670.0470
Walls	MEC 7670.0475
Interior/Intermediate Footing Design (Size and Reinforcement)	MSBC 1309.0403
Joist Bearing	R 502.6, R 502.7
Nailing Schedule	R 602.3(1)
Perimeter Footings Design (Size and Reinforcement)	R 403, R 403.1, R 403.2, R 403.1.4
Roof Coverings	R 905
Roof Ice Build-up	R 905.2.7.1
Roofing Underlayment	R 905.2.3, R 905.2.7, R 905.3.3
Sheathing Span Index	
Sub-floor	R 503.1
Wall bracing	R 602.10
Roof	R 803.2.2, R 503.2.1.1 (1)
Fastening Requirements	R 602.3 (1)
Sill Plate	R 323, R 324
Sill Seal	MEC 7670.0470. Sub.6.,C&D.
Soil Bearing	R 401.4.1
Spacing and Specifications for Engineered Trusses	R 802.1
Vapor Barrier	MEC 7670.0470 Sub 6.,B.& C.&
Vapor Barrier (Under concrete slab)	MSBC 1309.0506
Ventilation	
Attic	R 806.1
Foundation	R 408.1
Wall and Ceiling Finishes	R 319.1
Wall and Ceiling Openings Sealed (Wall and Ceilings) (Electrical, Plumbing, & Heating)	MEC 7670.0470 Subpart 6., C.
Wall Bracing	R 602.10.1
Weather Protection	MSBC 1309.0703
Windows/Doors (Manufacturer, Catalog Number, Installation Requirements, Flashing, and Caulking/Back-Caulking)	R 613, R 703.1, R 703.8
Windwash Barrier at Trusses	MEC 7670.0470 Subpt 6., D. (1)

STAIR SECTION

Framing	MSBC 1309.0314
Interior or Exterior	
General Design	MSBC 1309.0314
Guardrail	MSBC 1309.0316
Handrails	MSBC 1309.0315
Headers	R 502.10
Headroom	MSBC 1309.0314
Landing	MSBC 1309.0312
Rise and Run, and Maximum Differential	MSBC 1309.0314
Useable Space Under-Stair	MSBC 1309.0314

FLOOR FRAMING PLAN

CONVENTIONAL FRAMING

Anchoring Joist and Blocking in Joist Spaces to Sill	MSBC 1303.1900 R 502.9, R 602.3(1)
Blocking	R 502.7, R 502.4
Blocking First 2 Joist Spaces parallel to Foundation	MSBC 1303.1900 R 502.4
Bridging	R 502.7.1
Double Joists	R 502.4
Framed Openings	R 502.10
Girder	R 502.5, R 502.5(1) & (2)
Hangers	R 502.6.2
Headers	R 602.7
Joist Lap	R 502.6.1
Joists	R 502.1
Notching & Drilling	R 502.8

ENGINEERED FLOOR SYSTEM

All items to be reviewed by a Minnesota Certified Structural Engineer
(MN Statutes Chapter Parts 326.02 thru 326.15)

Floor Truss Engineering	R 502.11.1
Framing Details	R 502.11.4
Hangers	R 502.11.4
Nailing/Bolting Schedules	R 502.11.4
Anchoring Joist and Blocking in Joist Spaces to Sill	MSBC 1303.1900, R 502.9, R 602.3(1)

ROOF FRAMING PLAN

CONVENTIONAL FRAMING

Blocking	R 502.4
Ceiling Joists	R 802.4
Hip Rafters	R 802.3
Purlins	R 802.5.1

Rafters	R 802.5
Ridge Beam	R 802.3
Valley Rafters‘	R 802.3
Live Load	MSBC 1303.1700, 1309.0301

ENGINEERED ROOF SYSTEM

All Truss Designs are to be Certified by Minnesota Registered Structural Engineer (MN Statutes Chapter Parts 326.02 thru 326.15)

Drawings to be provided	R 802.10
Common Trusses	R 802.10.2
Dormers	R 802.10.4
Girder Trusses	R 802.10.2
Hangers	R 802.11
Hips Trusses	R 802.10.2
Nailing Schedule	R 802.11
Valleys	R 802.10.2
Fastening/Anchoring Requirements of Trusses	R 802.11, R 802.10.3
Live Load	MSBC 1303.1700, 1309.0301

ELECTRICAL LAYOUT

Arc Fault Protection	NEC 210.12(B)
Conductor Protection	NEC 300.4
Damp or Wet Locations	NEC 406.8
GFCI Receptacle	NEC 210.8 (A)
Lighting Required (Rooms & exits)	NEC 210.70(A)
Flush or Recessed Light Fixtures	NEC 410.64 & .65 & .66
Notching and Drilling	R 502.8
Panel Location and Clearances	NEC 384.4 & 110.26
Receptacles Required (Note changes in 210.52)	NEC 210.52 & 210.63
Weather Proof Receptacle Cover	NEC 406.8(B)
Dimmer Switches	NEC 404.14(E)

PLUMBING DETAILS

Anti-Scald Shower Valves	MPC 4715.1380 subp.5
Distance from Trap to Vent	MPC 4715.2620 subp4
Materials	
DWV	MPC 4715.0580
Water Distribution	MPC 4715.0520
Minimum Supply Branch Sizes	MPC 4715.1730 subp2
Notching and Drilling of Joist and Studs	R 502.8
Plastic Pipe Protection	MPC 4715.1440
Plastic Pipe Support	MPC 4715.1430 subp 3 & 4 (F)
Pressure Temperature Relief Valve	MPC 4715.2210
Shower Wall Finish	R 702.4
Shower-Inside Clearance	MPC 4715.1380 subpart(4)
Sill Cocks	MPC 4715.1800 sub.7&1730sp

Soil Stack Terminations	MPC 4715.2530
Stack: 3” Most Remote	MPC 4715.2330
Tests	
DWV Rough In & Final	MPC 4715.2820 subp2&3
Supply Lines	MPC 4715.2820 subp5
Trap Protection-Vents	MPC 4715.0920
Valves Required	MPC 4715.1800
Vent Grades and Connections	MPC 4715.2540
Washing Machine Stand Pipe	MPC 4715.1590 subp 4
Water Closet (1.6 Gallon Flush)	MN Statute 326.37 subdivision 2
Water Closet Clearances	MPC 4715.1220subpart(1)
Whirlpool Tubs Install ANSI 112.19.7 &19.8	MPC 4715.1240subpart(2)

MECHANICAL DETAILS

Bath and Laundry Ventilation	IMC Table 403.3
Combustion Air	IMC Chapter 7, MSBC 1346.0602-608
Drilling and Notching of Joist and Studs	IMC 302.3
Dryers Vents and Terminations	IMC 504
Energy Design	Minnesota Energy Code
Environmental Ducts	IMC Chapter 6
Location of Equipment	IMC 303, MSBC 1346.0807-809
Mechanical Ventilation (Introduction of Outside Air and Removal of Inside Air)	MEC 7670.350
Vent Terminations	IMC 802.5, 617.5, MSBC 1346.0906

ENERGY CODE

Air Barrier Continuous to the Interior of the Building	MEC 7670.0470 Subpart 6. C.
Ducting in Unconditioned Spaces	MSBC 1346.1005 (a) and (b)
Mechanical Ventilation, (Introduction of Outside Air and Removal of Inside Air)	MEC 7670.0450
Skylight Insulation Supported on Unconditioned side	MEC 7670.0470 Subpart 6. D.
Wall and Ceiling Openings Sealed, (Wall and Ceilings), (Electrical, Plumbing, and Heating)	MEC 7670.0470 Subpart 6. C
Walls Framing at Corners and Partitions, (Framed to Allow Insulation Installation from Interior)	MEC 7672
Wind Wash at Attic Edge	MEC 7670.0470 Subp 6., D. (1)
Wind Wash at Canted Floors and Bay Windows	MEC 7670.0470 Subp 6., D.

Note: Items listed under categories do not necessarily have to be detailed on that particular drawing but are to be indicated somewhere on the plan documents.

PLAN COMMENTS

Exterior Elevations

1. Flash and weatherize all building materials—valleys, chimneys, plumbing and heating terminations, roofline changes, roof edges, roof and wall junctures, window and door openings, flower pot shelves, wall and stoop junctures and connections, and deck and wall junctures and connections. IRC RR703.8
2. Approved weather-resistant material shall be provided applied to all exterior walls. Weather-resistant material shall consist of 1 layer of No. 15 asphalt felt complying with ASTM D226 for type I felt or other approved weather-resistant material. Felt or other weather-resistant material shall be applied horizontally with a minimum of a 2-inch lap and areas located over joints must contain a minimum 6-inch lap. IRC RR 703.2
3. Provide 6" of separation from the earth or landscaping to untreated wood, wall sheathing, and siding materials. IRC RR323.1
4. Masonry fireplace flues shall be installed to a finished height where the top of the flue extends 2'-0" above the highest point within 10'-0". IRC Table RR1003.1
5. Landings shall be provided at each exterior door—inclusive of sliding/gliding doors. Landing may be installed a maximum 8" below the finished floor level inside the structure and shall be a minimum 36" x 36" in dimension. IRC RR312.1
6. A continuous grippable handrail is required for stairs when there are more than 2 risers. The grippable handrail shall be installed at 34" to 38" above the nose of the stair treads. Ends of the grippable handrail shall terminate in posts or safety terminals. IRC RR315.1
7. Guardrails are required on landings and the open side of stairways, when the top of the finished landing or stair is 30" or more above the floor level or grade below. IRC RR316.1
8. Guardrails shall have openings less than 4" such that a 4" sphere cannot pass through them. IRC RR316.2
9. Openings between the stair guardrail and the stair shall be less than 6" such that a 6" sphere cannot pass through them. IRC RR509.3
10. Grade is defined as the finished ground level adjoining the building at all exterior walls. IRC RR202
11. Sheathing, siding or other building materials shall be placed a minimum 6" from earth—sod or landscaping materials. IRC RR323.1 , RR404.1.6
12. Footings shall be installed a minimum 42" below grade in all counties south of, and including the counties of, Big Stone, Stevens, Pope, Stearns, Benton, Sherburne, Isanti, and Chisago counties. Footing shall be installed to a minimum 60" below grade in all counties north of these counties. MSBC 1303.1600 and IRC RR403.1.4
13. Mechanical terminations shall be in Accordance with UMC 905 & MSBC 1346.0807-809 --- IMC M 804.3.4, M804.3.5 (IMC not yet adopted):
    A. A minimum 12" above grade for combustion air inlet.
    B. A minimum 4'- 0" below doors, windows, or gravity air inlets.
    C. A minimum 4'- 0" horizontally from doors, windows, or gravity air inlets
    D. A minimum 12" above doors, windows, or gravity air inlets.
    E. A minimum 3'- 0" above a forced-air inlet located within 10'- 0" and at least 4'- 0" from a property line.
14. Hand-framed portions roofs supported by engineered truss roof systems shall be constructed in accordance with the truss manufacturer's requirements. At a minimum, hand-framed roof joist shall be supported by cripples every 4'- 0" on center. Cripples shall be positioned over the engineered roof trusses. The bottom, valley end, of each hand-framed roof joist shall be supported by a 2" framing member running the full length of the valley. IRC RR802.9 and MN Statutes 326.02 thru 326.15
15. Provide roof truss drawing signed and sealed by a Minnesota certified structural engineer. IRC RR802.10 and MN Statute 326.02 thru 326.15.

Basement Plan View

1. All footings including those located near a landing at the bottom of the stair from the garage to the basement shall be installed to a depth below the frost line elevation. IRC RR403.1.4
2. Foundations shall be constructed in accordance with IRC RR 404.1, One and Two Family Dwelling Code 404, or the MSBC 1309.0404. Foundations shall be engineered by a State of Minnesota licensed structural engineer, or MSBC 1309.0404 shall be used as the design criteria, when the soil load exceeds 30 pounds per cubic foot fluid weight and when the fill differential exceeds the design, MN Statute 326.02 thru 326.15. The size and placement of vertical reinforcement is determined by soil type and fill differential. Hallow core masonry foundation blocks shall be reinforced and core filled below the ends of girders B-1 and C-1. IRC RR 404.1
3. The details for the construction of wood foundations shall be reviewed "signed" and "sealed" by a State of Minnesota licensed structural engineer. IRC RR404.2
4. Ends of untreated wood beams or girders resting upon concrete or masonry shall be placed upon by treated materials and have not less than 3" of end bearing. IRC RR502.6
5. The beam shall not be cantilevered beyond the support more than the depth of the beam.
6. The joints/splices in girders or beams shall occur over supports. IRC RR301.1
7. Foundation sills on concrete or masonry shall be of treated material. IRC RR402.1.2
8. Provide floor truss drawing signed and sealed by a Minnesota certified structural engineer. IRC RR502.11.1 and MN Statute 326.02 thru 326.15.
9. Floor truss shall be properly supported when transporting the home to its site of installation. These two trusses require support at 2'-0" o.c. (See engineered drawings supplied by the truss manufacturer's designer). IRC RR301.1, RR301.1.1 and MN Statute 326.02 thru 326.15
10. Full depth blocking between is required in the first 2 joist spaces parallel to the foundation at each anchor bolt location—because the anchor bolt locations are unknown at this time blocking installed at 48" on center is an acceptable alternate. Anchor the blocking in the first joist space to the foundation sill plated using an 18 gage bracket. MSBC 1303.1900
11. Anchor the joist perpendicular to the foundation at each anchor bolt location using an 18-gage bracket. MSBC 1303.1900
12. At least one smoke detector shall be provided on the basement level of the home. Smoke detectors shall be installed in each sleeping room, outside each sleeping area in the immediate vicinity of the bedrooms, and on each additional story of the dwelling. Smoke detectors shall be wired without disconnect except for over-current protection, provided with battery back up, and be interconnected for audibility in all locations simultaneously upon smoke detection. IRC RR317.1
13. At least one egress window shall be provided from the basement level and from each sleeping room from the basement level. Egress windows shall provide a minimum 5.7 square feet of clear opening, a minimum clear opening width of 20", a minimum clear opening height of 24", and shall be not more that 44" above the finished floor to the sill of the window. IRC RR310.1

14. Window wells shall provide in accordance with IRC RR310.2:
    A. A minimum 9 square feet of finished inside area.
    B. Minimum inside dimensions measuring at least 36”
    C. A minimum 36” from the inside of the window well to the egress window sash in an open egress position.
    D. A ladder shall be provided when the finished grade inside the window well is more than 44” below the top of the window well.

Main Floor Plan View

1. Smoke detectors shall be installed in each sleeping room, outside each sleeping area in the immediate vicinity of the bedrooms, and on each additional story of the dwelling. Smoke detectors shall be wired without disconnect except for over-current protection, provided with battery back up, and be interconnected for audibility in all locations simultaneously upon smoke detection. IRC RR317.1
2. Glass or glazing in openings, doors and enclosures for hot tubs, whirlpools, saunas, steam rooms, bathtubs and showers that are within 60” of the standing surface and the drain inlet shall be constructed with safety glazing. IRC RR308.4
3. All electrical box openings in the exterior walls and ceilings directly below unheated spaces and wires into those boxes must be sealed or gasketed. MEC 7670.0900
4. All plastic and copper water piping and tubing passing through studs or plates that are within 1 ¼” of the outside of the stud or plate shall be protected by 1/16” or .060 mild steel plate on the outside of the stud or plated. MPC 4715.1440
5. Access to the tub and shower trap shall be provided. This access may be from the hall, or from the living room, or through the ceiling from below. MPC 4715.0910
6. Drop-in bathtubs and whirlpools shall have a factory-applied flange for installations against walls, or space shall be provided for the maintenance of the sealed joint/space between the tub/whirlpool and the platform that it rests upon. ANSI 112.19.7 and the MPC 4715.1240
7. Each plumbing fixture shall be separately trapped. Traps shall be installed in a manner as to be readily accessible for cleaning, maintenance, and repair. MPC 4715.0900.
8. All plumbing pipe penetrations through floors, ceilings, and into exterior walls shall be sealed/gasketed. MEC 7670.0470 Subpart 6. C.
9. All heating mechanical pipe penetrations through floors, ceilings, and into exterior shall be sealed/gasketed. MEC 7670.0470 Subpart 6. C.
10. Mechanical ventilation shall be provided so as to introduce outside air into the habitable space, and to remove inside air at a rate of 15 cubic feet per minute per bedroom plus an additional 15 cubic feet per minute, or at .35 air changes per hour. MEC 7670.04.
11. 2-2 x 6 trimmer studs are required at the ends of beams and girders over window openings in excess of; 9’- 6” for 26’- 0” homes, 8’- 6” for 28’- 0” homes, and 8’- 0” for 30’- 0” wide homes. Blocking is required between floor joist and at rims below point loads. IRC RR 602.3.3
12. The vertical web of the roof trusses from the flat to vaulted ceiling and at skylight openings (vertical walls) shall be insulated with R-19 insulation and be so installed to have an air infiltration barrier installed on the cold side of the web. This air barrier shall extend the full height of the web. There shall also be an insulation dam installed in all vaulted locations to prevent the insulation from falling to the lower ceiling level. MEC 7670.0475.
13. The door from the garage to the dwelling shall be have a 20-minute listing and a self-closing device that brings the door to a locking position. IRC RR309.1

Section View

1. The details for the construction of wood foundations shall be reviewed “signed and sealed” by a State of Minnesota licensed structural engineer. IRC RR404.1
2. Foundation drainage is required and shall be installed in accordance with MSBC 1303.1900 and IRC RR405.1:
    A. Install drainage piping below the adjacent floor elevation
    B. A minimum 2” rock base below the drain piping.
    C. A minimum 6” rock cover above the drain piping.
    D. Infiltration barrier over the rock cover.
3. Anchor bolts shall be installed within 12” of corners and ends of sill plates and a maximum 6’- 0” on center. Anchor Bolts shall be placed in reinforced and grouted cores. Anchor bolts shall have a minimum 1” grout between the bolt and the inside face of the block. IRC 403.1.6
4. R-19 insulation shall be installed in the rim area of the structure and covered on the warm side of the insulation with a perm/vapor barrier. MEC 7670.0475 Subpart 2. B.
5. Seal or gasket the treated foundation sill to foundation. MEC 7670.0470 Subpart 6. C.
6. A moisture barrier shall be installed on the foundation wall between the wall and the insulation, from the floor to grade minimum. MEC 7670.0470 Subp. 9.
7. Foundation walls enclosing conditioned spaces shall be insulated with insulation having a minimum R-value of R-10. MEC 7670.0470 Subp. 9.
8. The foam plastic insulation detailed on the interior of the foundation wall and exposed to the interior of the structure shall be provided with, or covered by, an material having a minimum thermal barrier index of 15. 1 ½” of mineral fiber insulation, ¼” plywood or hardboard or gypsum wall board, or sheet metal having a thickness of .4 mm are materials that will provide the required thermal barrier. IRC RR404.4.7 , RR318.1.2
9. An exterior air infiltration barrier shall be installed at the entire perimeter of the home. Sheathing materials spliced over framing materials meets the intent of this requirement. Spliced end or side joints shall be sealed or gasketed at rims, sills, corners, cants, and at bow or bay windows. MEC 7670.0470 Subpart 6. C,
10. A wind wash barrier, or intrusion barrier, shall be installed at the attic’s edge, between the roof trusses, and shall extend to the underside of the roof sheathing or to the bottom side of the attic air chute. MEC 7670.0470 Subp. 6. D.
11. The exposed portions of the exterior foam foundation insulation shall be protected from physical and ultraviolet light damage. This foam rating shall have a flame-spread rating of less than 75 and a smoke developed rating less than 450. IRC 318.1
12. The 2 x 12 stair stringers shall be reinforced with a one-piece 2 x 4 member If the stair stringers are not anchored to any wall studs IRC Table RR301.4 Footnote C.
13. A plywood stair hanger, or equal, is required to secure the stringers to the framing at the stair opening. The Stringers shall be secured to the stair hanger, and the plywood to the stair opening framing with 3-8d nails per stringer. IRC Table RR602.3(1)
14. Treated separation is required between the stringers and the concrete floor. IRC RR 323.1
15. 10” minimum tread length, measured from nose to nose of adjacent treads, is required. IRC RR 314.2
16. Risers shall not measure more than 7,3/4”. IRC RR314.2
17. A maximum 3/8” differential is permitted from the largest to the smallest tread, or the largest to the smallest riser. IRC RR314.2
18. Minimum stair headroom is 6’- 8”. This headroom requirement is measured at a right angle from the front edge--nose--of the finished tread to the finished ceiling above. IRC RR314.3

19. An unobstructed air space of 1 ½" is required between the handrail and the wall or other obstructions. IRC RR315.1

Plumbing

1. Plumbing terminations shall be in Accordance with MPC 4715.2530, 2330 and 2350:
   A, A minimum 2" through roof.
   B, A minimum 12" above the roof.
   C One 3" minimum through the roof—this 3" vent shall be full size from the fixture inlet.
   D. A minimum 10'- 0" from any opening—inclusive of any vented opening.
2. Anti-siphon devices are required for hose bibs. MPC 4715.1800 subpart. 7 &1730 subpart. 2.
3. ½" water piping shall not serve more than 3 fixtures. MPC 4715.1730 subpart. 1.
4. Waste piping for up to three Water Closets is a minimum 3". MPC 4715.2310 subpart. 2.
5. Vent piping for Water Closets shall be a minimum 2", and installed a maximum 4'- 0" from the fixture inlet. MPC 4715.2620
6. Waste and trap piping for the domestic washing machine shall be a minimum 2". The washing machine trap shall be installed a minimum 6" above the floor. The washing machine riser shall be a minimum 18" above, and not more than 30" above the trap weir. MPC 4715.2300 Subpart 3. & 4715.1590 Subpart 4.
7. Vents shall be provided for each trap to protect the trap from siphoning. The maximum dimension from the trap weir to the vent shall be as follows in accordance with MPC 4715.2620:
   A. 1 ¼" piping from trap to vent shall not exceed 2'- 6".
   B. 1 ½" piping from trap to vent shall not exceed 3'- 6"
   C. 2" piping from trap to vent shall not exceed 5'- 0".
   D. 3" piping from trap to vent shall not exceed 6'- 0".
   E. 4" piping from trap to vent shall not exceed 10'- 0".
8. Vent pipes shall be taken off the pipe above the center line of the waste pipe and shall be installed at not more than 45 degrees from the vertical to a point not less than six inches above the flood level rim of the fixture vented. MPC 4715.2540.

Electrical

1. 20 amp branch circuits shall be provided for receptacles located in kitchens, bathrooms and laundry rooms. NEC 210.11, 210.52
2. Exterior lighting shall be provided at all exterior entrances. NEC 210.70(a)
3. Weatherproof exterior receptacles at the front and rear of the dwelling are required, outlet is to be weatherproof while in use. Each receptacle shall be provided with GFIC protection. NEC 210.8(a)
4. Provide arc-fault protection for all openings in the bedroom areas. NEC 210.12

Mechanical

1. Joints, penetrations, and all other such openings in the building envelope that are sources of air leakage must be sealed. MEC 7672.0600
2. Recessed lights must be 1)Type IC rated, or 2) installed inside an appropriate air-tight assembly with a 0.5" clearance from the combustible materials. If non-IC rated, the fixture must be installed with a 3" clearance from insulation. MEC 7672.0600
3. A vapor retarder is required on the warm-in-winter side of all non-vented framed ceilings, walls and floors. MEC 7672.0600 subp. 6.
5. Materials and equipment must be identified so that compliance can be determined
6. Manufacturer manuals for all installed heating and cooling equipment and service water heating equipment must be provided.7672.0300 subp.1
7. Insulation R-values and glazing U-factors must be clearly marked in the building plans and specifications. MEC 7672.0300 subp. 2.
8. Ducts in the unconditioned spaces must be insulated to R-5. MEC 7672.0900
9. Ducts outside the building must be insulated to R-8 MEC 7672.0900
10. All ducts must be sealed with mastic and fibrous backing tape. Pressure sensitive tape may be used for fibrous ducts. Duct tape is not permitted. MEC 7672.0900 subp.3

Energy

1. Joints, penetrations, and all other such openings in the building envelope that are sources of air leakage must be sealed. MEC 7672.0600
2. Recessed lights must be 1)Type IC rated, or 2) installed inside an appropriate air-tight assembly with a 0.5" clearance from the combustible materials. If non-IC rated, the fixture must be installed with a 3" clearance from insulation. MEC 7672.0600
3. A vapor retarder is required on the warm-in-winter side of all non-vented framed ceilings, walls and floors. MEC 7672.0600 subp. 6.
4. Materials and equipment must be identified so that compliance can be determined
5. Manufacturer manuals for all installed heating and cooling equipment and service water heating equipment must be provided.7672.0300 subp.1
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