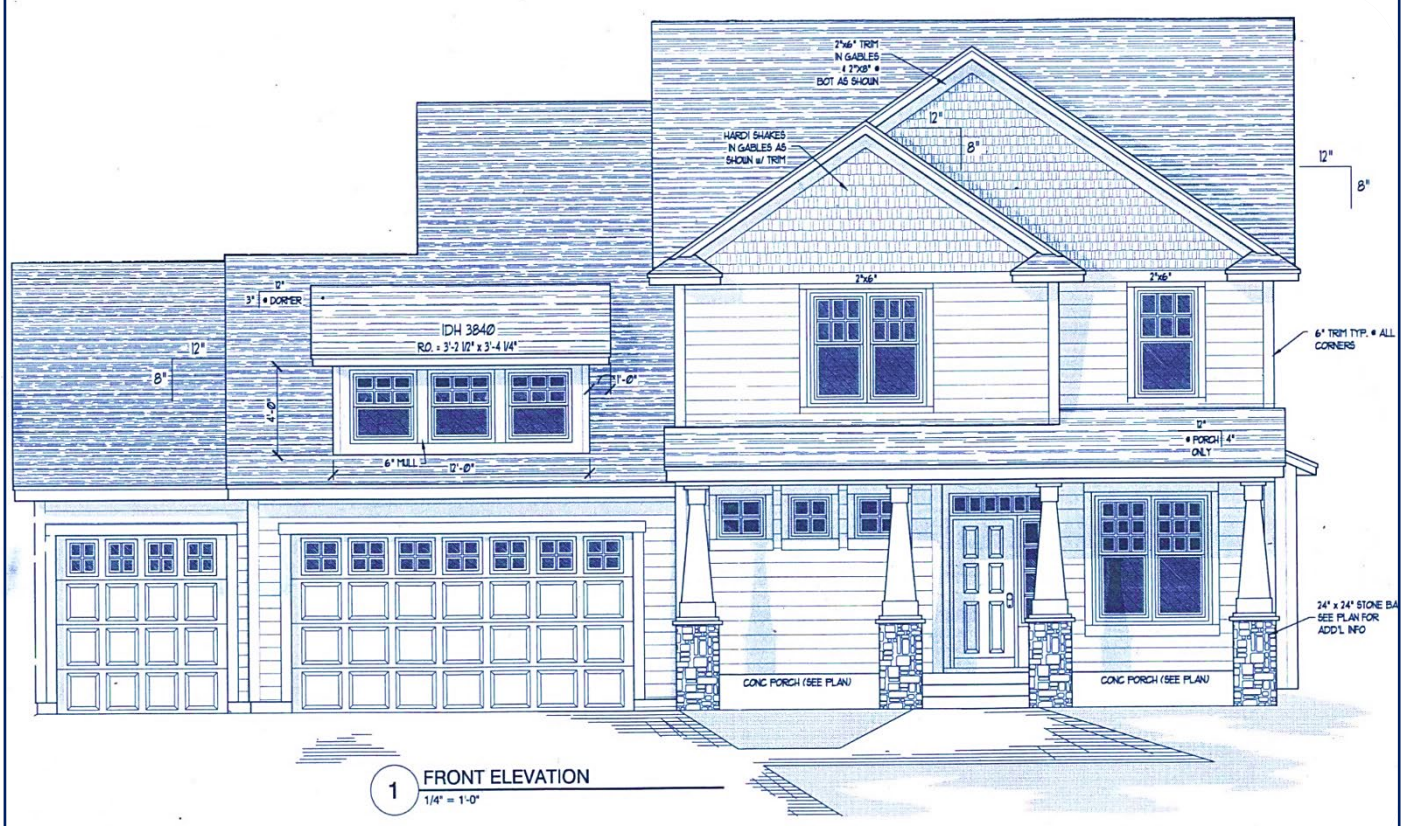
CODE ADMINISTRATION MANUAL

Eleventh Edition March 2024



MINNESOTA DEPARTMENT OF LABOR AND INDUSTRY

Construction Codes and Licensing Division
443 Lafayette Road North
St. Paul, MN 55155
Phone: 651-284-5068 Fax: 651-284-5749
Code Services

Contents

CHAPTER 1 - INTRODUCTION

PURPOSE

The Code Services (CS) staff of the Construction Codes and Licensing Division (CCLD) has created this manual to assist individuals new to the building code industry in their administration of the Minnesota State Building Code. Although the information contained within this manual has been reviewed to ensure its accuracy, building officials must always use the official statutes and rules adopted into the Minnesota State Building Code when applying the code for a municipality.

Code Services has staff available to meet with code officials to review delegation agreements, policies, procedures, forms, record keeping, plan review, inspections, appeals process, and code interpretations.

CONSTRUCTION CODES AND LICENSING CONTACTS

Code services contact information

Scott Wheeler, Supervisor, 651 284-5876, scott.wheeler@state.mn.us

Tim Manz, Construction Code Representative, 651 283-5286, timothy.manz@state.mn.us

Franklin Martin, Construction Code Representative, 651-529-0779, franklin.martin@state.mn.us

Adam Schminski, Construction Code Representative, 320-815-2314, adam.schminski@state.mn.us

Paul Swett, Construction Code Representative, 651-303-2584, paul.h.swett@state.mn.us

Construction Codes and Licensing Division
Department of Labor and Industry
443 Lafayette Road N, St. Paul, M 55155
Phone: 651-284-5012 Fax: 651-284-5749
www.dli.mn.gov/

The CCLD Phone and email directory will connect you to all our staff members.

STATE AGENCY AND BUILDING INDUSTRY RESOURCES

Units within CCLD

- code services (CS)
- education
- plan review building
- manufactured structures
- plumbing and engineering
- board of electricity
- boilers, pressure vessels and boats for hire
- high pressure piping licensing and inspection including ammonia
- elevator licensing and inspection
- electrical licensing and inspection
- residential contractors and remodelers
- rulemaking

Code responsibilities of CCLD

- accessibility
- boiler and boats for hire
- building official certification
- building plan review and inspections
- code administration
- code development
- commercial
- education
- elevator
- fire protection systems
- high pressure piping
- manufactured structures
- mechanical (heating, cooling, ventilation, make up air and exhaust
- plumbing plan review and inspections
- recertification of building officials
- residential
- radon

OTHER BOARDS, DEPARTMENTS AND ORGANIZATIONS AFFILIATED WITH CCLD

Boards

- Board of Architecture, Engineering, Land Surveying, Landscape Architecture, Geoscience and Interior Design (AELSLAGID):
  85 East 7th Place; Suite 160
  St. Paul, MN 55101
  651-296-2388
  Board Mission: Requiring anyone practicing or offering to practice architecture, engineering, land surveying, landscape architecture, geology or soil science be licensed and continue to maintain professional competence.

Departments

- Minnesota Department of Public Safety State Fire Marshal Division
  Minnesota Department of Public Safety
  445 Minnesota Street, Suite 145
  St. Paul, Minnesota 55101-5145
  651-201-7200
  The State Fire Marshal Division is responsible for the Minnesota State Fire Code, sprinkler contractor licensing and plan review and pipeline safety.

- Minnesota Department of Agriculture
  Minnesota Department of Agriculture
  625 Robert St. North
  St. Paul, Minnesota 55155
  651-201-6000
  Department mission: To enhance Minnesotan's quality of life by ensuring the integrity of our food supply, the health of our environment, and the strength of our agricultural economy.

- Minnesota Department of Commerce
  Minnesota Department of Commerce Energy information center
  85 7th Place East, Suite 500
  St. Paul, Minnesota 55101
  651-539-1600
  The department regulates Minnesota's insurance industry, financial institutions, securities, real estate sector, and has a major role in overseeing the electric, natural gas and telephone sectors, energy conservation and efficiency, and administering low-income energy transactions in Minnesota's economy.

- Minnesota Department of Human Services
  Minnesota Department of Human Services
  444 Lafayette Road
  St. Paul, Minnesota 55155
  651-431-2000
  The Minnesota Department of Human Services ensures that certain minimum standards of care are met in private and public settings for children and vulnerable adults. DHS also provides direct service through our regional offices for people who are deaf or hard of hearing.

- Minnesota Department of Health
  Health Regulation-Facilities and Professions
  P.O. Box 64975
  St. Paul, MN 55164-0975
  651-201-5000
  The Health Regulation Division licenses and enforces regulations for most health care facilities, some health care professions, and some health-related occupations.

Local organizations

- AIA – American Institute of Architects (aia-mn.org) – Minnesota
- AMBO – Association of Minnesota Building Officials (ambomn.com)
- AMC – Association of Minnesota Counties (www.mncounties.org)
- HOUSING FIRST MINNESOTA (www.housingfirstmn.org)
- BAM – Builders Association of Minnesota (www.bamn.org)
- FMAM – Fire Marshal's Association of Minnesota (www.fmam.org)
- LMC – League of Minnesota Cities (www.lmc.org)

Monthly building official/inspector meetings

Monthly Inspector Meetings

National organizations

- FAB (Federal Accessibility Board) (www.access-board.gov)
- ADAAG – Americans with Disabilities Act Accessibility Guidelines ANSI – American National Standards Institute (www.ada.gov)
- ASTM – American Society for Testing and Materials (www.astm.org)
- BOMA – Building Owners and Managers Association (www.boma.org)
- DOJ – Department of Justice (www.justice.gov)
- HUD – Department of Housing and Urban Development (www.hud.gov)
- ICC – International Code Council (www.iccsafe.org)
- NAHB – National Association of Home Builders (www.nahb.org)
- NIBS - National Institute of Building Sciences (www.nibs.org)
- NFPA – National Fire Protection Association (www.nfpa.org)
- ANSI – American National Standards Institute (www.ansi.org)
- ASCE – American Science and Engineering (www.rapiscan-ase.com)

ACCESS TO MINNESOTA STATE BUILDING CODES

[View 2020 residential code (Espaňol)]

To Purchase codes from others

Please note the code publications are amended or updated periodically and verification through the applicable organizations is necessary to have the most current published.

ICC (International Code Council) Headquarters:
200 Massachusetts Avenue NW, Suite 250
Washington, DC 20001
https://shop.iccsafe.org/state-and-local-codes/minnesota.html

NFPA (National Fire Protection Association)
1 Battery March Park
Quincy, MA 02169-7471
https://catalog.nfpa.org/

ASME (American Society of Mechanical Engineers)
1828 L Street NW, Suite 510
Washington, DC 20036-5104
www.asme.org

IAMPO (International Association of Plumbing and Mechanical Officials)
5001 East Philadelphia Street
Ontario, CA 91761
http://www.iapmo.org

ASTM International
Formerly American Society for Testing and Materials
100 Barr Harbor Drive
PO Box C700
West Conshohocken, PA 19428-2959
http://www.astm.org

CODE BOOKS AND REFERENCE BOOKS

2020 Minnesota State Building Code

- The Minnesota State Building Code (MSBC) consists of many Minnesota rule chapters. MAKEUP OF THE MINNESOTA STATE BUILDING CODE

2020 Minnesota State Building Code (Rules/Chapters)

- 1300 – Minnesota Building Code Administration
- 1301 – Building Official Certification
- 1302 – State Building Code Construction Approvals
- 1303 – Special Provisions
- 1305 – Minnesota Building Code
- 1306 – Special Fire Protection Systems
- 1307 – Elevators and Related Devices
- 1309 – Minnesota Residential Code
- 1311 – Minnesota Conservation Code for Existing Buildings
- 1315 – Minnesota Electrical Code
- 1322 – Residential Energy Code
- 1323 – Commercial Energy Code
- 1325 – Solar Energy Systems
- 1335 – Floodproofing Regulations
- 1341 – Minnesota Accessibility Code
- 1346 – Minnesota Mechanical and Fuel Gas Code
- 1350 – Manufactured Homes
- 1360 – Prefabricated Structures
- 1361 – Industrialized / Modular Buildings
- 1370 – Storm Shelters (Manufactured Home Parks)
- 4714 – Minnesota Plumbing Code
- 5230 – Minnesota High Pressure Piping System

Optional enforcement

The following provisions are not mandatory unless specifically adopted locally by a code enforced jurisdiction.

- International Building Code Appendix J (Grading). See Minnesota Rules, part 1300.0060.
- 1306 – Special Fire Protection Systems to choose between 1306.0020, subpart 2 (existing and new buildings) or adopt by local ordinance subpart 3 (new buildings only).

Required code manuals, state rules and national standards for proper application, administration, and enforcement of the 2020 Minnesota State Building Code (https://www.dli.mn.gov/business/codes-and-laws/2020-minnesota-state-building-codes) These codes have specific statutory authority and with limited exception, are mandatory throughout the entire state SEE CODE PUBLICATION AVAILABILITY
• 2020 Minnesota Building Code incorporating the 2018 International Building Code with MN amendments
• 2020 Minnesota Residential Code incorporating the 2018 International Residential Code with MN amendments
• 2020 Minnesota Fire Code incorporating the 2018 International Building Code with amendments
• 2020 Minnesota Mechanical Code incorporating the 2018 International Mechanical Code with MN amendments
• 2020 Minnesota Fuel Gas Code incorporating the 2018 International Fuel Gas Code with MN amendments
• 2023 National Electrical Code incorporating 2023 NFPA 70 with MN amendments
• 2020 Minnesota Conservation Code for Existing Buildings incorporating the 2018 International Conservation Code for Existing Buildings
• 2024 Commercial Energy Code incorporating the ASHRAE 90.1-2019 with MN amendments
• 2015 Minnesota Residential Energy Code incorporating the 2012 International Energy Conservation with MN amendments
• 2020 Minnesota Accessibility Code with MN amendments from IBC Chapter 11 and detailed technical provisions from ICC/ ANSI A117.1-2009
• 2020 Minnesota Plumbing Code incorporating Chapters 2 to 11, 16, and 17 of the 2018 edition of the Uniform Plumbing Code (UPC), and UPC Appendices A, B, and I, with Minnesota amendments
• ACI 318-2014 Building Code Requirements for Structural Concrete
• TMS 402 (2016) and 403 (2017) Building Requirements for Masonry Structures
• TMS 602 - 2016 Specifications for Masonry Structures
• ANSI/ASHRAE/IES Standard 90.1-2019
• ANSI/ASHRAE 15 – 2016 Safety Standard for Refrigeration Systems
• ANSI/ASHRAE 34 – 2016 Designation and Safety Classification of Refrigerants
• SMACNA/ANSI – 2016 HVAC Duct Construction Standards – Metal and Flexible
• SMACNA –2010 Fibrous Glass Duct Construction Standards
• NFPA 45 – 2015 Standard on Fire Protection for Laboratories Using Chemicals
• NFPA 96 – 2017 Ventilation & Fire Protection for Commercial Cooking Hoods
• NFPA 58 – 2017 Liquefied Petroleum Gases
• NFPA 13 – 2016 Installation of Fire Sprinklers
• NFPA 13R – 2016 Installation of Fire Sprinklers for Multifamily
• NFPA 13D – 2016 Installation of Fire Sprinklers for Dwellings
• NFPA 72 – 2016 Installation of Fire Alarm Systems
• NDS – 2018 National Design Specification for Wood Construction
• ICC 300 – 2017 ICC Standard on bleachers, folding & telescoping seating and grandstands.

Recommended manuals, handbooks and/or national standards for proper application, administration and enforcement of the 2020 Minnesota State Building Code SEE CODE PUBLICATION AVAILABILITY
• 2018 IBC® Code and Commentary Combo, Vol. 1 & 2
• 2018 International Building Code Illustrated Handbook
• 2018 Significant Changes to the International Building Code®, 2018 Edition
• 2018 IRC® Code and Commentary Combo, Volumes 1 & 2
• 2018 IMC® Code and Commentary
• 2018 IFGC® Code and Commentary
• 2018 IBC Structural/Seismic Design Manual Volume 1
• 2015 GA 600 Fire Resistance Design Manual – 21st edition
• 2010 Fire Protection Handbook
• NFPA 13: Automatic Sprinkler Systems Handbook, 2016 Edition
• 2016 Hazardous Materials Guide
• NFPA 13 - Automatic Sprinkler Systems Handbook, 2016 Edition
• NFPA 80 – 2016 Installation of Fire Resistive Doors & Windows
• NFPA 101- 2012 Life Safety Code
• 2021 ICC Performance Code for Buildings and Facilities
• ASME A17.1/CSA B44-2016 Safety Code for Elevators and Escalators
• ASME A17.3-2017 Safety Code for Existing Elevators and Escalators
• ASME A17.5-2019 Electrical Equipment
• ASME A17.7/CSA B44.7-2007 Performance-Based Safety Codes for Elevators and Escalators;
• ASME 18.1-2017 Safety Standard for Platform Lifts and Stairway Chairlifts
• ASME A90.1-2015 Safety Standard for Belt Man lifts
• ASME B20.1-2015 Safety Standard for Conveyors and Related Equipment
• Minnesota Building Official Disaster Preparedness Manual
• Legal Aspects of Code Administration (Most current edition)
• Architectural Graphic Standards (Most current edition)
• Webster's Dictionary (Most current edition)
• U.L.'s and/or Warnock Hersey's Fire Resistive Directories, Building Materials Directories, Roofing Materials & System's Directories, etc.
• Permanent Wood Foundation Design & Construction Guide
• MN Rule 7511 - 2020 Minnesota Fire Code
• MN Rule 1800 & 1805 Board of Architecture and Engineering Rules
• MPCA Rules 7080, 7081, 7082, 7083 – On-Site Septic System Rules

CHAPTER 2 - MINNESOTA STATE BUILDING CODEEFFECTIVE

DATES OF MINNESOTATE STATE BUILDING CODE ADOPTIONS

Effective date -	Code type
July 1, 1971 -	Surcharges
July 1, 1972 -	State Building Code applies statewide; supersedes and takes the place of the building code of any municipality. Specifically, the code applied to any municipality which as of May 28, 1971, had a building code and further applies to any municipality choosing to adopt a building code thereafter. The State Building Code adopts the 1970 Uniform Building Code by reference.
October 1972 -	Minnesota Uniform Fire Code adopted the 1973 Uniform Fire Code.
June/July 1973 -	Amendments to 1972 (SBC).
January 14, 1974 -	1973 Uniform Building Code adopted by reference.
October 3, 1975 -	Minnesota Uniform Fire Code adopted the 1973 Uniform Fire Code.
November 18, 1975 -	Adoption of the Handicapped Code, Chapter 55, and new Uniform Building Code Section 1717, Foam Plastics.
January 14, 1976 -	1976 State Building Code January.
January 30, 1976 -	Energy Conservation in Buildings.
October 29, 1977 -	Solar Energy Code.
September 19, 1978 -	1978 State Building Code adopted the 1976 Uniform Building Code by reference; the Energy Conservation in Buildings code is amended.
October 27, 1978 -	1978 National Electric Code.
September 9, 1980 -	1980 State Building Code adopted the 1979 Uniform Building Code.
October 20, 1980 -	Elevator Rules – Home Energy Disclosure Rules.
April 6, 1981 -	1981 National Electric Code.
March 1, 1983 -	Amended 1980 State Building Code adopted the 1982 Uniform Building Code.
April 11, 1983 -	Minnesota Uniform Fire Code adopted the 1982 Uniform Fire Code.

Effective date -	Code type
April 25, 1983 -	Optional Appendix “E”, Automatic Fire Suppression Systems.
January 1, 1984 -	Energy Conservation in Buildings adopted the 1983 Model Energy Code.
January 14, 1985 -	Rules adopted updating the State Building Code and governing Handicapped Accessibility, Electrical, Elevators and Plumbing.
February 18, 1986 -	Amended Energy Code Rules and Rental Housing Energy Standards.
February 17, 1987 -	1985 State Building Code adopted the 1985 Uniform Building Code.
January 11, 1988 -	Adopted the Group E Division 3 Rules.
April 15, 1988 -	Adopted Rules relating to Manufactured Home Park Storm Shelter Design.
October 1, 1989 -	1989 Minnesota Uniform Fire Code adopted the 1988 Uniform Fire Code.
July 2, 1990 -	1990 National Electrical Code.
July 16, 1990 -	1990 State Building Code adopted 1988 Uniform Building Code, 1988 Uniform Mechanical Code, 1987 ANSI Code for Elevators, Minnesota Plumbing Code.
May 13, 1991 -	1991 Minnesota Energy Code adopted the 1989 Model Energy Code.
September 7, 1992 -	1992 Minnesota Energy Code. (1989 Model Energy Code).
August 9, 1993 -	1993 National Electrical Code.
August 23, 1993 -	1993 Minnesota Uniform Fire Code adopted the 1991 Uniform Fire Code.
June 16, 1994 -	1994 Minnesota Energy Code.
July 12, 1994 -	Amended Building Official Certification Rules. (Accessibility Specialist, Building Official – Limited).
September 19, 1994 -	1994 Minnesota Plumbing Code.
December 19, 1994 -	1994 Minnesota Mechanical Code adopts 1991 Uniform Mechanical Code.
March 20, 1995 -	1995 Minnesota State Building Code adopts the 1994 Uniform Building Code.
January 23, 1996 -	New Accessibility rules – chapter1340.
April 29, 1996 -	Adopted Rules updating chapters 1300, 1310, 1315, 1325, 1360 and 1361.
July 1, 1996 -	1996 National Electrical Code adopted.

Effective date-	Code type
June 29, 1998 -	Minnesota Fire Code adopted the 1997 Uniform Fire Code.
October 5, 1998 -	1997 Uniform Building Code adopted with state amendments. October 5, 1998 1998 Plumbing Code amendments adopted.
May 3, 1999 -	1996 ASME A17.1, A17.3, A17.5, B.20.1 and 1997 A90.1 Elevators and Related Devices adopted with amendments.
July 6, 1999 -	1999 National Electrical Code adopted.
July 20, 1999 -	Minnesota Energy Code adopted – chapter 7676 and 7678.
April 15, 2000 -	Minnesota Energy Code adopted – chapters 7672 (with option of chapter 7670 and 7674.
June 26, 2000 -	Rules relating to Manufactured Homes updated.
September 16, 2002 -	2002 National Electrical Code adopted.
March 31, 2003 -	2000 International Building Code adopted with state amendments.
March 31, 2003 -	Guidelines for the Rehabilitation of Existing Buildings adopted with state amendments.
March 31, 2003 -	Adopted rules updating chapters 1300, 1301, 1303 and 1306.
September 20, 2004 -	International Mechanical and Fuel Gas Codes, chapter 1346.
July 1, 2005 -	2005 National Electrical Code adopted.
January 29, 2007 -	Elevators and Related Devices ASME A17.1-2004 with addenda and supplement, A17.3-2002, A17.5-2004, A18.1-2005, A90.1-2003 and B20.1-2003, chapter 1307.
July 10, 2007 -	2006 International Fire Code adopted with state amendments, new chapter 7511.
July 10, 2007 -	2006 International Building Code adopted with state amendments, chapter 1305.
July 10, 2007 -	2006 International Building Code adopted with state amendments, chapter 1309.
July 10, 2007 -	Adopted Rules updating chapters 1300, 1303, 1306 and 1341.
September 15, 2008 -	2008 National Electrical Code adopted.
June 1, 2009 -	Minnesota Residential Energy Code adopted – chapter 1322.
June 1, 2009 -	Minnesota Commercial Energy Code adopted – chapter 1323.
October 26, 2009 -	Minnesota Mechanical and Fuel Gas Codes (2006 International Mechanical and Fuel Gas Codes), chapter 1346.
October 26, 2009 -	Minnesota Plumbing code, chapter 4715.
December 29, 2009 -	Manufactured Homes (1350.6710 effective4/1/2009).

Effective date-	Code type
August 8, 2011 -	2011 National Electrical code adopted.
July 1, 2014 -	2014 National Electrical code adopted.
January 24, 2015 -	Adopted rules updating chapters 1300, and 1303 (except for the Radon Code provisions that were moved from chapter1322).
January 24, 2015 -	2010 ASME A17.1/CSA B44-2010, A17.3-2011, A17.5-2011, A18.1-2011, A90.1-2009, B20.1-2009, and A17.4-1999 adopted with state amendments-chapter 1307.
January 14, 2015 -	2012 International Residential Building Code adopted with state amendments – chapter 1309.
January 24, 2015 -	2012 International Existing Building Code adopted with state amendments chapter 1311.
January 24, 2015 -	Minnesota Accessibility Code adopted – chapter 1341 – amends 2012 International Building Code, chapter 11 (is based upon ICC/ANSI A117.1.
January 24, 2015 -	2012 International Mechanical and Fuel Gas Codes adopted with state amendments – chapter 1346.
February 14, 2015 -	Adopted rules updating and moving the Radon Code to chapter 1303.
February 14, 2015 -	2012 International Energy Conservation Code (Residential Provisions) adopted with state amendments – chapter 1322.
June 2, 2015 -	2012 International Building Code adopted with state amendments – chapter 1305
June 2, 2015 -	2012 International Energy Conservation Code (Commercial Provisions) adopted with state amendments.
January 23, 2016 -	Minnesota Plumbing Code, chapter 4714.
May 2, 2016 -	2012 International Fire Code adopted with state amendments – chapter 7511
March 31, 2020 -	Rules updating chapter 1300
	2018 International Building Code with amendments – chapter 1305
	2018 International Residential Code with amendments – chapter 1309
	2018 International Existing Building Code adopted with amendments – chapter 1311
	2018 International Energy Conservation Code (commercial provisions) with amendments – chapter 1323
	Minnesota Accessibility Code adopting and amending 2018 International Building Code, chapter 11; 2018 International Existing Building Code, section 305; and ICC/ANSI A117.1-2009 – chapter 1341

Effective date-	Code type
	2018 International Fire Code adopted with amendments – chapter 7511
April 6, 2020 -	2018 International Mechanical Code and 2018 International Fuel Gas Code with amendments – chapter 1346
July 31, 2020 -	Rules updating part 1303.2200
September 28, 2020 -	ASME A17.1/CSA B44-2016; ASME A17.3-2015; ASME A17.5-2014; ASME A17.7/CSA B44.7-2007; ASME A18.1-2017; ASME A90.1-2015; and ASME B20.1-2015 adopted – chapter 1307
November 17, 2020 -	2020 National Electrical Code
December 17, 2021 -	2018 Uniform Plumbing Code with Amendments – chapter 4714
July 1, 2023	2023 National Electrical Code
January 5, 2024	ANSI/ASHRAE/IES Standard 90.1-2019 Energy Standard for Buildings Except Low-Rise Residential Buildings with amendments – Chapter 1323

MINNESOTA ENERGY CODE HISTORICAL DEVELOPMENT

Early development (pre-1982)

In 1975 Minnesota enacted a law that required the Commissioner of the Department of Administration to "provide building design and construction standards consistent with the most efficient use of energy." The first energy code became effective January 30, 1976, as part of the state building code. The energy code was subsequently revised in 1977 and 1978. The latter revision adopted the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) Standard 90-75 "Energy Conservation in New Building Design" by reference. During this period, residential energy standards could generally be met with R-19 attic and R-13 wall insulation and double (clear) glazing. The period was also characterized by sporadic enforcement of the new energy standards.

Model energy code phase (1982 - 1992)

In 1982, Minnesota statute was amended to transfer authority for the energy code rules to the "Energy Agency" (later to become the Energy Division of the Department of Public Service). The department revised the energy code in 1983 to adopt the 1983 edition of the Model Energy Code published by the Council of American Building Officials (CABO). The department revised the energy code in 1984 — adopted HUD minimum property standards for residential construction — including foundation wall insulation. During this period, residential construction was generally 2x6 walls (R-19 batts) and R-38 ceilings. A 1991 revision of the Minnesota Energy Code adopted the 1989 edition of the CABO Model Energy Code by reference.

Beyond the model energy code (1994-2000)

In 1991, several Minnesota statutes set high goals for the energy code, requiring that the commercial code requirements for commercial buildings be at least as stringent as ASHRAE Standard 90.1-1989. Another simply required that the energy code must be equal to or exceed the most stringent standard adopted by any other state in the nation.

In September 1992 the Energy Code was revised to require higher efficiency levels. In June 1994, the rules were amended to adopt the criteria of ASHRAE Standard 90.1-1989. For the low- rise residential sector (including one- and two- family dwellings), the minimum standard was identified as "Category 2," with the only increased air tightness requirement over previous code was to require sealed recessed light fixtures. A voluntary "Category 1" standard was included that included additional air tightening and a mechanical ventilation system - with no detail other than sizing. To comply with the statutory mandate that the code be the most stringent in the country, a provision was added (and subsequently repealed as the "2000 code" was adopted), that all new residential buildings must meet the requirements of the Canadian Home Builders Association "R-2000" program.

Additional provisions for ventilation and protection against backdrafting

In late 1997, the department proposed code amendments that included requirements for additional air tightening, ventilation, and protection against back drafting for one- and two-family dwellings only and repealed the Category 1 and Category 2 provisions. After five days of public hearing, Administrative Law Judge Richard Luis recommended adoption of a strategy for ventilation and protection against back drafting proposed by Minnesota building scientists and endorsed by the department. A 1999 statute moved the proposed effective date of the one- and two-family dwelling code (Chapter 7672) from June 1999 to April 2000. As the effective date neared, a statute was enacted to retain the Category 1 standard with added provision to protect against back drafting, as an alternative to Chapter 7672. Authority for energy code rulemaking was also transferred from the state energy office to the Department of Administration, Building Codes and Standards Division.

Additional provisions for addressing building durability and moisture management

Beginning in 2002, Minnesota Statutes 326B.118 states that the commissioner of the Department of Labor and Industry may not adopt all, or part of, a model energy code relating to the construction of residential buildings without research and analysis that addresses, at a minimum; air quality, building durability, moisture, enforcement, enforceability cost benefit, and liability. This statute is why the department has, and will continue, to research foundation systems durability when we adopt a new Residential Energy Code.

MAKEUP OF THE MINNESOTA STATE BUILDING CODE

Makeup of the Minnesota state building code

The Minnesota State Building Code (MSBC) consists of many Minnesota Rule chapters. Some of them adopt by reference, amended model codes or standards that have been developed by a code-making organization. The remaining chapters contain provisions that have been written specifically for Minnesota. All the following Minnesota Rule Chapters are required to be enforced. The chapters below are sorted first by rule chapters that do not incorporate by reference another published document, followed by rule chapters that do incorporate by reference another published code or standard, and including any necessary amendments to the documents.

MSBC rule chapters that – DO NOT – incorporate by reference other published documents

Minnesota Rule Chapter:

- 1300 – Minnesota Building Code Administration
- 1301 – Building Official Certification
- 1302 – State Building Code Construction Approvals
- 1303 – Special Provisions of the Minnesota State Building Code
- 1306 – Special Fire Protection Systems
- 1325 – Solar Energy Systems
- 1350 – Manufactured Homes
- 1360 – Prefabricated Structures
- 4714 – Minnesota Plumbing Code

MSBC rule chapters that – DO – incorporate by reference other published codes/standards

Minnesota rule chapter:

- 1305 – Adoption of the International Building Code
- 1307 – Elevators and Related Devices
- 1309 – Adoption of the International Residential Code
- 1311 – Minnesota Conservation Code for Existing Buildings
- 1315 – Adoption of the National Electrical Code - National Electrical Code (NEC)
- 1322 – Residential Energy Code
- 1323 – Commercial Energy Code
- 1335 – Flood Proofing Regulations
- 1341 – Minnesota Accessibility Code
- 1346 –Mechanical and Fuel Gas Code
- 1361 – Industrialized / Modular Buildings
- 1370 – Storm Shelters (Manufactured Home Parks)
- 5230 – Minnesota High Pressure Piping Systems

Optional enforcement

The following two provisions are not mandatory unless specifically adopted locally by a code enforced jurisdiction.

- International Building Code Appendix J (Grading) See Minnesota Rules, part 1300.0060
- *1306 – Special Fire Protection Systems to choose between 1306.0020, subpart 2 (existing and new buildings) or adopt by local ordinance subpart 3 (new buildings only)

Specific code application changes of model codes adopted by Minnesota

Minnesota rules, chapter 1305 – Minnesota building code

The mandatory chapters of the ***2018 International Building Code (IBC)*** include chapters 2 through 35. Several chapters in this code have not been adopted but the Minnesota State Building Code provides mandatory provisions elsewhere to replace some of the chapters not adopted here. The information relative to provision changes to these chapters is as follows:

- For provisions relative to chapter 1, please refer to Minnesota Rules, chapter 1300, Minnesota Building Code Administration.
- For provisions relative to chapter 11, please refer to Minnesota Rules, chapter 1341, the Minnesota Accessibility Code.
- For provisions relative to chapter 30, please refer to Minnesota Rules, chapter 1307, Elevators and Related Devices.
- For information relative to chapter 34, please refer to Minnesota Rules, chapter 1311, Minnesota Conservation Code for Existing Buildings.
- All the IBC appendices are deleted. Optional Appendix Chapter J (Grading) may be adopted by reference. See Chapter 1300, Optional Administration.
- For provisions related to flood proofing, please refer to Minnesota Rules, chapter 1335, Floodproofing Regulations.
- "Information related to seismic loads shall be shown **regardless** of whether seismic loads governing the design of the lateral force-resisting system of the structure (Sec. 1603.1.5, 2020 MSBC)."
- For a complete description of all applicable chapters and related information in this code, please refer to Minnesota Rules, 1305.0011.

Minnesota rules, chapter 1309 – Minnesota residential code

Mandatory chapters of the ***2018 International Residential Code (IRC)*** include chapters 2 through 10, chapter 44, Section P2904. The following two appendixes are not mandatory unless specifically adopted locally by a code enforced jurisdiction: Appendix K, and Appendix Q. Several chapters in this code have not been adopted because the Minnesota State Building Code provides mandatory provisions elsewhere to replace the chapters not adopted here. The information relative to provision changes to these chapters is as follows:

- For provisions relative to chapter 1, please refer to Minnesota Rules, chapter 1300, Minnesota Building Code Administration.
- For provisions relative to chapter 11, please refer to Minnesota Rules, chapter 1322, Residential Energy Code.
- For provisions relative to chapters 12 through 24, please refer to Minnesota Rules, chapter 1346, Minnesota Mechanical Code.
- For provisions relative to chapters 25 through 33, please refer to Minnesota Rules, chapter 4714, Minnesota Plumbing Code.
- For information relative to chapters 34 through 43 (other than section R314 Smoke Alarms), please refer to Minnesota Rules, chapter 1315, Minnesota Electrical Code.
- For provisions related to floodproofing, please refer to Minnesota Rules, chapter 1335, Floodproofing Regulations.

For a complete description of all applicable chapters and related information in this code, please refer to Minnesota Rules, part 1309.0010.

Minnesota rules, chapter 1311 – Minnesota conservation code for existing buildings

Mandatory chapters of the ***2018 International Existing Building Code (IEBC)*** include chapters 2 through 16. IEBC Chapter 15 is replaced with Chapter 33 of the Minnesota State Building Code. Accessibility provisions throughout Chapter 1311 of the Minnesota Conservation Code for Existing Buildings now references Section 305 ACCESSIBILITY FOR EXISTING BUILDINGS. Section 305 requirements are found in Minnesota Rules, Chapter 1341, the Minnesota Accessibility Code, as amended by Minnesota Rules, part 1341.0030. Provisions cited in section 305 of Minnesota Rules, chapter 1341 apply, unless otherwise stated or deleted. Any seismic or earthquake provisions in this code are deleted and not required.

For a complete description of all applicable chapters and related information in this code, please refer to Minnesota Rules, sections 1311.0010 and 1311.0020.

Minnesota rules, chapter 1315 – Minnesota electrical code

The National Electrical Code is incorporated by reference and made part of the Minnesota State Building Code.

Minnesota rules, chapter 1322 – Minnesota residential energy code

Minnesota rules, chapter 1323 – Minnesota commercial energy code

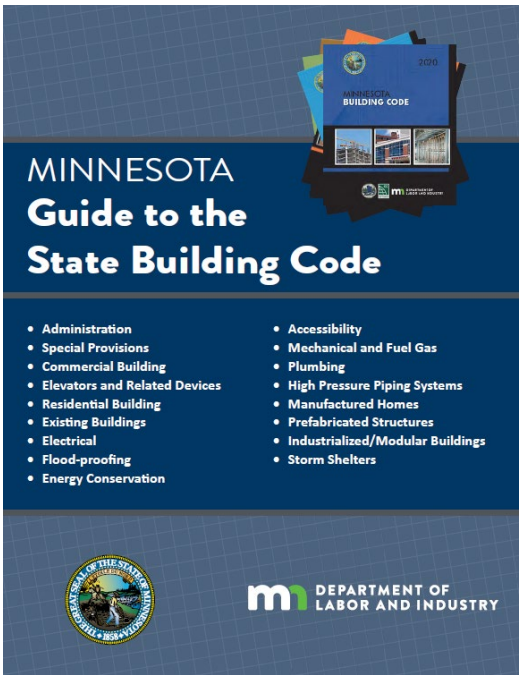
Minnesota rules, chapter 1346 – Minnesota mechanical and fuel gas code

Mandatory chapters of the 2018 International Mechanical Code include chapters 2 through 15, as amended. Mandatory chapters of the 2018 International Fuel Gas Code include chapters 2 through 8, as amended.

For a complete description of all applicable chapters and related information in this Code, please refer to Minnesota Rules, parts 1346.0050 and 1346.5050.

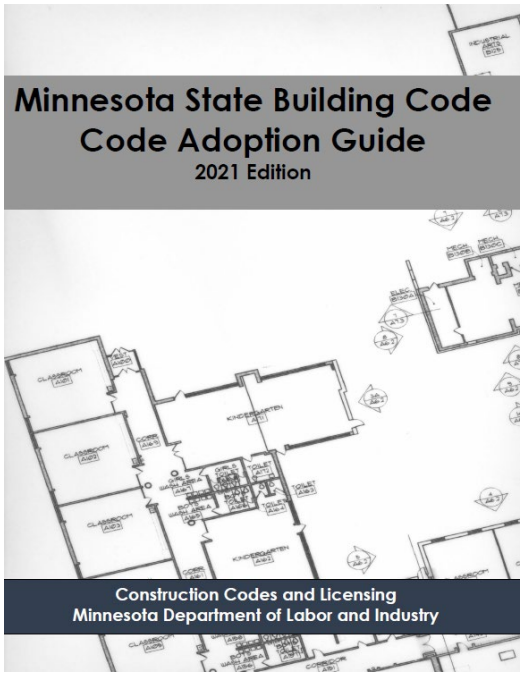
MINNESOTA GUIDE TO THE STATE BUILDING CODE

The purpose of this guide is to inform and educate regulators, government officials and policy makers about the State Building Code and how it serves the public's interest by providing for the safe use of buildings. Because one of the most important roles of government is to protect its citizens, it is our responsibility to ensure this occurs in the construction of buildings. View the Minnesota Guide to the State Building Code here.



MINNESOTA STATE BUILDING CODE ADOPTION GUIDE

Considering adoption of the Minnesota State Building Code? This document has been prepared to assist you in your decision. It provides answers to some of the common questions we receive and helps identify some of the benefits to your community by having a well-run code enforcement program. The document also provides a brief history of the code and its purpose, along with information on the code adoption process, code application, fees to cover your costs, appropriate staffing and related statutory requirements. View the Minnesota State Building Code Adoption Guide here.



CHAPTER 3 - FEES

Each municipality must determine its own permit fee schedules. The State Building Code does not establish fee schedules.

1300.0160 FEES

Subpart 1. Schedule of permit fees, the applicant of a permit for a building, electrical, gas, mechanical, or plumbing system or alterations requiring a permit shall pay the fee set forth by a fee schedule adopted by the municipality.

When submittal documents are required to be submitted by this chapter, a plan review fee shall be required. The plan review fee shall be established by the fee schedule adopted by the municipality.

Exception: The fee schedule adopted by the municipality may exempt minor work from plan review fees (e.g. 'flat-fee' or 'over-the-counter' permits).

Subpart 2. Fees commensurate with service Fees established by the municipality must be by legal means. Additionally, fees must be fair, reasonable, and proportionate to the actual cost of the service provided.

Subpart 3. Building permit valuations, the applicant for a permit shall provide an estimated permit value at the time of application. Permit valuations shall include total value of all construction work, including materials and labor, for which the permit is being issued, such as electrical, gas, mechanical, plumbing equipment, and permanent systems. Building permit valuation shall be verified by the building official.

Exceptions: Building permit valuations for the following structures shall be based on the valuation of on-site work only:

- Manufactured homes containing a Housing and Urban Development (HUD) certification label; or
- Prefabricated buildings with a Department of Labor and Industry prefabrication label; or
- Industrialized/modular buildings with an Interstate Industrialized Buildings Commission (IIBC) label.

Subpart 4. Building permit fees Building permit fees shall be based on valuation.
Exceptions:

- One- and two-family dwelling maintenance permits for roofing, siding, windows, doors, or other minor projects may be charged a fixed fee; and
- Permits for plumbing, mechanical, electrical, or other building service equipment systems may be based on valuation or charged a fixed fee.
- Subpart 5. Plan review fees for similar plans. When submittal documents for similar plans are approved under subpart 6, plan review fees shall not exceed 25 percent of the normal building permit fee established and charged by the jurisdiction for the same structure.

Subpart 6. Plan review of similar plans

Any number of similar buildings may be built from a master plan if:

- Plan review fees have been paid for the master plan;
- A code change has not occurred that impacts the design of a master plan;
- The similar building has the same physical dimensions and structural design as the master plan;
- Exception: The following modifications to the master plan are not considered to be significant modifications, according to Minnesota Statutes, section 326B.106, subdivision 1, and are permitted for dwelling units and their accessory structures built to the International Residential Code, and residential occupancies built to the International Building Code that are three stories or less in height and their accessory structures:
  - foundation configurations of walkout, lookout, and full basements;
  - alternate foundation materials approved by the building official;
  - roof design changed by a revised truss plan approved by the building official; and
  - other modifications approved by the building official;
- Occupancy groups other than those identified in the exceptions listed in part 1300.0160, subpart 6, item A, subitem (3), must be the same type of construction and occupancy classification and must have the same exit system;
- Exception: Minor changes to the exit access; and
  - the similar plan is based on a master plan for which the municipality has issued a permit within the last 12 months.

Plan review fees for similar building plans must be based on the costs commensurate with the direct and indirect cost of the service but must not exceed 25 percent of the normal building permit fee established and charged by the municipality for the same structure.

The plan review fee charged for similar building plans applies to all buildings regulated by the code regardless of occupancy classification including industrialized/modular buildings constructed under a program specified in Minnesota Statutes, section 326B.194.

The applicant must submit a new plan set and other information as required by the building official for each building reviewed as a similar building.

Subpart 7. Payment of fees A permit shall not be issued until the fees prescribed by the municipality have been paid.

Subpart 8. Work commencing before permit issuance If work for which a permit is required by the code has been commenced without first obtaining a permit, a special investigation shall be made before a permit may be issued for the work. An investigation fee established by the municipality shall be collected whether or not a permit is issued and is in addition to the required permit fees, but it may not exceed the permit fee. The investigation fee must comply with requirements for fees in subpart 2.

Subpart 9. Fee refunds The municipality shall establish a permit and plan review fee refund policy.

Subpart 10. State surcharge fees All municipal permits issued for work under the code are subject to a surcharge fee. The fees are established by Minnesota Statutes, section 326B.148. Reports and remittances by municipalities must be filed with the commissioner.

Surcharge fees imposed by the state are in addition to municipal permit fees. Surcharge report forms and information may be obtained by writing the commissioner.

FEE TABLES

As stated in Minnesota Rules 1300.0120, permits are required to construct, enlarge, alter, repair, move, demolish, or change the occupancy of a building or structure, or to erect, install, enlarge, alter, repair, remove, convert, or replace any gas, mechanical, electrical, plumbing system, or other equipment, the installation of which is regulated by the code; or cause any such work to be done, shall first make application to the building official and obtain the required permit.

Example: For a single family dwelling you would issue a building permit, mechanical permit, plumbing permit, electrical permit, plumbing permit, and other work may require separate permits such as a fireplace or garage unit heater.

In the example above regarding a single-family dwelling you would issue separate permits, or you may be using an all-inclusive permit. In either case you would separate the fees and charge the surcharge fee for each individual permit. The following is an example of an all-inclusive permit showing the fee breakdown.

Permit fees are based on valuation with the exception of the following:

• Plan review	65% of Bldg. Permit Fee
• Plan review of similar plans meeting 1300.0160, subpart 6	25% of Bldg. Permit Fee Plumbing fee
	$5.00 per opening & .50 surcharge
• Mechanical (residential)	$25.00 & .50 surcharge
• Air conditioning installations	$25.00 & .50 surcharge
• Air conditioning that's part of mechanical installation	$10.00 & .50 surcharge
• Gas piping (that's not part of mechanical installation)	$25.00 & .50 surcharge
• Fireplace (gas or wood)	$30.00 & .50 surcharge
• Re-roofing (residential)	$25.00 & .50 surcharge
• Re-siding	$25.00 & .50 surcharge
• Window replacement (in existing opening)	$25.00 & .50 surcharge
• Demolition	$50.00 & .50 surcharge
• Other maintenance or minor project as determined by the building official.	$25.00 & .50 surcharge

Commercial heating, ventilating, and air conditioning shall be based on valuation. Investigation fee shall be equal to the permit fee.

Fee ordinance considerations

- Fee table, see Examples of Permit Fee Schedules
- Fixed fees for permits preferably not based on valuation (see 1300.0160 Subpart 4).
  - one- and two-family dwelling maintenance permits for roofing, siding, windows, doors, or other minor projects may be charged a fixed fee; and
  - permits for plumbing, mechanical, electrical, or other building service equipment systems may be based on valuation or charged a fixed fee.
- Plan review fee where applicable and plan review fee reduction for similar plans if charging a review fee.
- Investigation fee for work starting prior to permit issuance.

- Fee refunds for permit and plan review, which can be by policy but recommend incorporating into the fee ordinance.
- Re-inspection fee if requiring.
- Permit and plan review expiration. When either expires and a new permit or fee is required would that fee be the full fee or something other than?
- The building permit valuation shall be set by the building official. Some incorporate the fees into their fee ordinance for use in valuating construction work in a manner that treats everyone in a similar / fair manner.

Permit and plan review fee refund policy

See if your municipality has a written policy. The municipality shall establish a permit and plan review refund policy.

Plan review fees

When submittal documents are required by the building official, a plan review fee shall be paid. The plan review fee shall be established by the fee schedule adopted by the municipality. The plan review fees are separate fees from the permit fees and are in addition to the permit fees.

When submittal documents are incomplete or a change in the plans requires additional plan review, plan review fees must be based on the costs commensurate with the direct and indirect cost of the service, but must not exceed 25 percent of the normal building permit fee established and charged by the municipality for the same structure per 1300.0160, subpart 6(B).

Expiration

Every permit issued expires unless the work authorized by the permit is commenced within 180 days after its issuance. The building official shall grant, in writing, extension of time, for periods not more than 180 days each if the applicant demonstrates justifiable cause for the extension of the building official.

326B.153 BUILDING PERMIT FEES

Statute 326B.153 is for example purposes only; the municipality will need to develop their own fee schedule.

Subdivision 1. building permits

- Fees for building permits submitted as required in section 326B.107 include:
  - the fee as set forth in the fee schedule in paragraph (b) or as adopted by a municipality; and
  - the surcharge required by section 326B.148.
- The total valuation and fee schedule is:
  - $1 to $500, $29.50;
  - $501 to $2,000, $28 for the first $500 plus $3.70 for each additional $100 or fraction thereof, to and including $2,000;
  - $2,001 to $25,000, $83.50 for the first $2,000 plus $16.55 for each additional $1,000 or fraction thereof, to and including $25,000;
  - $25,001 to $50,000, $464.15 for the first $25,000 plus $12 for each additional $1,000 or fraction thereof, to and including $50,000;
  - $50,001 to $100,000, $764.15 for the first $50,000 plus $8.45 for each additional $1,000 or fraction thereof, to and including $100,000;
  - $100,001 to $500,000, $1,186.65 for the first $100,000 plus $6.75 for each additional $1,000 or fraction thereof, to and including $500,000;
  - $500,001 to $1,000,000, $3,886.65 for the first $500,000 plus $5.50 for each additional $1,000 or fraction thereof, to and including $1,000,000; and
  - $1,000,001 and up, $6,636.65 for the first $1,000,000 plus $4.50 for each additional $1,000 or fraction thereof.
- Other inspections and fees are:
  - inspections outside of normal business hours (minimum charge two hours), $63.25 per hour;
  - reinspection fees, $63.25 per hour;
  - inspections for which no fee is specifically indicated (minimum charge one-half hour), $63.25 per hour; and
  - additional plan review required by changes, additions, or revisions to approved plans (minimum charge one-half hour), $63.25 per hour

    a) If the actual hourly cost to the jurisdiction under paragraph (c) is greater than $63.25, then the greater rate shall be paid. Hourly cost includes supervision, overhead, equipment, hourly wages, and fringe benefits of the employees involved.

Subdivision 2. plan review Fees for the review of building plans, specifications, and related documents submitted as required by section 326B.106 must be paid based on 65 percent of the building permit fee required in subdivision 1.

Subdivision 3. surcharge Surcharge fees are required for permits issued on all buildings including public buildings and state licensed facilities as required by section 326B.148.

Subdivision 4. distribution

- This subdivision establishes the fee distribution between the state and municipalities contracting for plan review and inspection of public buildings and state licensed facilities.
- If plan review and inspection services are provided by the state building official, all fees for those services must be remitted to the state.
- If plan review services are provided by the state building official and inspection services are provided by a contracting municipality:
  - the state shall charge 75 percent of the plan review fee required by the state's fee schedule in subdivision 2; and
  - the municipality shall charge 25 percent of the plan review fee required by the municipality's adopted fee schedule, for orientation to the plans, in addition to the permit and other customary fees charged by the municipality.
- If plan review and inspection services are provided by the contracting municipality, all fees for those services must be remitted to the municipality in accordance with their adopted fee schedule.

SURCHARGE REQUIREMENT AND COMPUTATIONS

326B.148 surcharge

Subdivision 1. Computation. To defray the costs of administering sections 326B.101 to 326B.194, a surcharge is imposed on all permits issued by municipalities in connection with the construction of or addition or alteration to buildings and equipment or appurtenances after June 30, 1971. The commissioner may use any surplus in surcharge receipts to award grants for code research and development and education.

If the fee for the permit issued is fixed in amount the surcharge is equivalent to one-half mill (.0005) of the fee or $1, except that effective July 1, 2010, until June 30, 2015, the permit surcharge is equivalent to one-half mill (.0005) of the fee or $5, whichever amount is greater. For all other permits, the surcharge is as follows:

- if the valuation of the structure, addition, or alteration is $1,000,000 or less, the surcharge is equivalent to one-half mill (.0005) of the valuation of the structure, addition, or alteration;
- if the valuation is greater than $1,000,000, the surcharge is $500 plus two-fifths mill (.0004) of the value between $1,000,000 and $2,000,000;
- if the valuation is greater than $2,000,000, the surcharge is $900 plus three-tenths mill (.0003) of the value between $2,000,000 and $3,000,000;
- if the valuation is greater than $3,000,000, the surcharge is $1,200 plus one-fifth mill (.0002) of the value between $3,000,000 and $4,000,000;
- if the valuation is greater than $4,000,000, the surcharge is $1,400 plus one-tenth mill (.0001) of the value between $4,000,000 and $5,000,000; and
- if the valuation exceeds $5,000,000, the surcharge is $1,500 plus one-twentieth mill (.00005) of the value that exceeds $5,000,000.

Subdivision 2. Collection and reports. All permit surcharges must be collected by each municipality and a portion of them remitted to the state. Each municipality having a population greater than 20,000 people shall prepare and submit to the commissioner once a month a report of fees and surcharges on fees collected

during the previous month but shall retain the greater of two percent or that amount collected up to $25 to apply against the administrative expenses the municipality incurs in collecting the surcharges. All other municipalities shall submit the report and surcharges on fees once a quarter but shall retain the greater of four percent or that amount collected up to $25 to apply against the administrative expenses the municipalities incur in collecting the surcharges. The report, which must be in a form prescribed by the commissioner, must be submitted together with a remittance covering the surcharges collected by the 15th day following the month or quarter in which the surcharges are collected.

A municipality that fails to report or submit the required remittance to the department in accordance with this subdivision is subject to the remedies provided by section 326B.082.

Subdivision 3. Revenue to equal costs. Revenue received from the surcharge imposed in subdivision 1 should approximately equal the cost, including the overhead cost, of administering sections 326B.101 to 326B.194.

LOCAL GOVERNMENT BUILDNG VALUATION

Fees commensurate with service. Fees established by the municipality must be by legal means and must be fair, reasonable, and proportionate to the actual cost of the service for which the fee is imposed.

Building permit valuations. The applicant for a permit shall provide an estimated permit value at time of application. Permit valuations shall include total value of all construction work, including materials and labor, for which the permit is being issued, such as electrical, gas, mechanical, plumbing equipment, and permanent systems. Building permit valuation shall be set by the building official.

See Minnesota Rules, Chapter 1300.0160 regarding permit fee regulations, including permit fee schedules adopted by the municipality, permit fees commensurate with service, building permit valuations, permit fees based on valuation and plan review fees for similar plans.

CHAPTER 4 - SUBMITTAL DOCUMENTS

APPLICATIONS, PLANS AND SUPPORTING DOCUMENTS

Minnesota rules chapter 1300.0130 construction documents

Subpart 1. Submittal documents Construction documents, special inspection and structural observation programs, and other data shall be submitted in one or more sets with each application for a permit.

> **Exception:** The building official may waive the submission of construction documents and other data, if the nature of the work applied for is such that, reviewing of construction documents is not necessary to obtain compliance with the code.

The building officer may require plans or other data be prepared according to the rules of the Board of Architecture, Engineering, Land Surveying, Landscape Architecture, Geoscience and Interior Design, Minnesota Rules Chapter 1800, and Minnesota Statutes, sections 326.02 to 326.15, and other state laws relating to plan and specification preparation by occupational licenses. If special conditions exist, the building official may require additional construction documents to be prepared by a licensed design professional.

Subpart 2. Information on construction documents Construction documents shall be dimensioned and drawn upon suitable material. Electronic media documents are permitted to be submitted when approved by the building official. Construction documents shall be of sufficient clarity to indicate the location, nature, and extent of the work proposed and show in detail that it will conform to the code and relevant laws, ordinances, rules, and regulations, as determined by the building official.

Subpart 3. Manufacturer's installation instructions When required by the building official, manufacturer's installation instructions for construction equipment and components regulated by the code, shall be available on the job site at the time of inspection.

Subpart 4. Site plan The construction documents submitted with the application for permit shall be accompanied by a site plan drawn to scale, showing the size and location of new construction and existing structures on the site, distances from lot lines, the established street grades, and the proposed finished grades, and it shall be drawn according to an accurate boundary line survey. In the case of demolition, the site plan shall show construction to be demolished and the location and size of existing structures and construction that are to remain on the site or plot. The building official may waive or modify the requirement for a site plan if the application for permit is for alteration or repair or when otherwise warranted.

Subpart 5. Examination of documents The building official shall examine or cause to be examined the accompanying construction documents to ascertain whether the construction indicated and described complies with the requirements of the code and other pertinent laws and ordinances.

Subpart 6. Approval of construction documents

- If the building official issues a permit, the construction documents shall be approved in writing or by a stamp, stating "Reviewed for Code Compliance," dated, and signed by the building official or an authorized representative. One set of the construction documents that were reviewed shall be retained

by the building official. The other set shall be returned to the applicant, kept at the site of the work, and open to inspection by the building official or an authorized representative.

- Any code deficiencies identified by the building official during the plan review process for construction documents that are prepared by a design professional who is licensed or certified under Minnesota Statutes, sections 326.02 to 326.15, must be itemized by the building official through a comprehensive plan review letter only. Any code deficiencies identified by the building official during the plan review process for construction documents that are not prepared by a licensed or certified design professional may be marked directly on the document or itemized by the building official through a comprehensive plan review letter. The issuance of a permit based on construction documents and other data does not prevent the building official from requiring the correction of errors in the construction documents and other data. All sets of required construction documents, including the site copy, municipality copy, or inspector copy, must be marked identically by the building official, with one copy retained by the building official after construction is completed. Work regulated by the code must be installed according to the reviewed construction documents. Work that does not comply with approved construction documents must not proceed until the applicant submits changes that are approved by the building official.

Subpart 7. Previous approvals The code in effect at the time of application shall be applicable.

Subpart 8. Phased approval The building official may issue a permit for the construction of foundations or any other part of a building or structure before the construction documents for the whole building or structure have been submitted, provided that adequate information and detailed statements have been filed complying with pertinent requirements of the code. The holder of the permit for the foundation or other parts of a building or structure shall proceed at the holder's own risk with the building operation and without assurance that a permit for the entire structure will be granted.

Subpart 9. Design professional in responsible charge

- The building official may require the owner to engage and designate on the building permit application a licensed design professional who shall act as the licensed design professional in responsible charge. If the circumstances require, the owner shall designate a substitute licensed design professional in responsible charge who shall perform the duties required of the original licensed design professional in responsible charge. The building official shall be notified in writing by the owner if the licensed design professional in responsible charge is changed or is unable to continue to perform the duties.
- The licensed design professional in responsible charge shall be responsible for reviewing and coordinating submittal documents prepared by others, including phased and deferred submittal items, for compatibility with the design of the building.
- When structural observation is required by the code, the inspection program shall name the individual or firms who are to perform structural observation and describe the stages of construction at which structural observation is to occur.
- For the purposes of this part, deferred submittals are defined as those portions of the design that are not submitted at the time of the application and that are to be submitted to the building official within a specified period. Deferral of any submittal items shall have the prior approval of the building official. The licensed design professional in responsible charge shall list the deferred submittals on the construction documents for review by the building official.

- Submittal documents for deferred submittal items shall be submitted to the licensed design professional in responsible charge who shall review them and forward them to the building official with a notation indicating that the deferred submittal documents have been reviewed and that they have been found to be in general conformance with the design of the building. The deferred submittal items shall not be installed until their design and submittal documents have been approved by the building official.
- Work regulated by the code shall be installed according to the reviewed construction documents, and any changes made during construction that are not in compliance with the approved construction documents shall be resubmitted for approval as an amended set of construction documents.

PERMIT APPLICATION REQUIREMENTS
Minnesota Rules 1300.0120 permits subpart 7 & 8

Subpart 7. Application for permit. To obtain a permit, the applicant shall file an application in writing on a form furnished by the Department of Building Safety for that purpose. The application shall:

- identify and describe the work to be covered by the permit for which application is made;
- describe the land on which the proposed work is to be done by legal description, street address, or similar description that will readily identify and definitely locate the proposed building or work;
- indicate the use and occupancy for which the proposed work is intended;
- indicate the type of construction;
- be accompanied by construction documents and other information as required by the code;
- state the valuation of the proposed work;
- be signed by the applicant, or the applicant's authorized agent; and
- give other data and information required by the building official.

Subpart 8. Action on application. The building official shall examine or cause to be examined applications for permits and amendments within a reasonable time after filing. If the application or the construction documents do not conform to the requirements of pertinent laws, the building official shall reject the application and notify the applicant of the reasons. The building official shall document the reasons for rejecting the application. The applicant may request written documentation of the rejection and the reasons for the rejection. When the building official is satisfied that the proposed work conforms to the requirements of the code and applicable laws and ordinances, the building official shall issue a permit.

Subpart 7 and 8 requirements for building permits

- Permit is an official document or record issued by the building official;
- Building official shall determine the formatting of permit document issued to the permit applicant;
- Building official may determine that the signed permit application inspection record card or a separate document shall be the official “building permit” for issuance.
- The following items shall be identified on the building permit that you develop:
  - Legal description of the property;
  - Street address, or similar description that of the proposed building or work;
  - Scope of work being permitted;
  - Name of the contractor;
  - Name and address of the owner of the structure;
  - Signature of the building official authorizing the issuance of the permit;
  - Date of the issuance of the permit; and Permit number.

PERMIT APPLICATION SAMPLES (BUILDING, PLUMBNG AND MECHANICAL)

CITY LOGO

CITY ADDRESS

BUILDING PERMIT/APPLICATION

DATE RECEIVED (Office Use Only):	RECEIVED BY (Office Use Only):	PERMIT # (Office Use Only):

PROJECT ADDRESS:	OR PID#
PROPERTY OWNER:	PHONE #
OWNER ADDRESS:	CITY: / ZIP CODE:
GENERAL CONTRACTOR	LICENSE # / ONE.#

PROPOSED USE OF PROJECT	☐ NEW DWELLING	☐ PRIVATE GARAGE	☐ ADDITION/REMODEL (RESIDENTIAL)	☐ DECK	☐ FINISH BASEMENT
☐ COMMERCIAL (NEW)	☐ COMMERCIAL (ADDITION)	☐ COMMERCIAL (REMODEL/RENOOVATE)	☐ STRUCTURE		
☐ FIREPLACE (Installation)	☐ WATER HEATER (Replacement)	☐ FURNACE (Replacement)	☐ REROOF (Replacement)	☐ SIDIING (Replacement)	☐ OTHER:

DESCRIPTION OF PROJECT:

DIMENSIONS:	USE AND OCCUPANCY:	TYPE OF CONSTRUCTION:	ESTIMATED VALUE:	LOT SIZE/DIMESIONS:

This permit becomes null and void if work or construction authorized is not commenced within 180 days, or if construction or work is suspended or abandoned for a period of 180 days at any time after work has commenced. I hereby certify that I have read and examined this application and know the same to be true and correct. All provisions of laws and ordinances governing this type of work will be complied with whether specified herein or not. The granting of a permit does not presume to give authority to violate or cancel the provisions of any other state or local law regulating construction or the performance of construction.

CONTRACTOR'S SIGNATURE	DATE
PROPERTY OWNER'S SIGNATURE	DATE
BUILDING INSPECTOR'S SIGNATURE	DATE

PLANNING/ZONING REVIEW (OFFICE USE ONLY BELOW THIS LINE) ☐ DATE REVIEWED_____ INITIALS _____

ZONING DISTRICT:	MINIMUM SETBACKS REQUIRED: FRONT:_____ SIDE: _____ REAR: _____	ROAD RIGHT OF WAY:	OTHER:

SUBJECT TO THE FOLLOWING CONDITIONS:

BUILDING PLAN REVIEW ☐ DATE REVIEWED_____ INITIALS _____

SUBJECTION TO THE FOLLOWING CONDITIONS:

FEES

BUILD PERMIT FEE:	PLAN REVIEW FEE:	STATE SURCHARGE FEE:	**TOTAL DUE:**	RECEIPT #

DATE ISSUED:	ISSUED BY:	CALL XXX-XXX-XXXX TO SCHEDULED INSPECTIONS AND FOR QUESTIONS ON CODE ITEMS

Plumbing permit/application sample

CITY LOGO
CITY ADDRESS

PLUMBING PERMIT/APPLICATION

DATE RECEIVED (Office Use Only):	RECEIVED BY (Office Use Only):	PERMIT # (Office Use Only):

PROJECT ADDRESS:		OR PID#	
PROPERTY OWNER:		PHONE #	
OWNER ADDRESS:		CITY:	ZIP CODE:
PLUMBING CONTRACTOR	LICENSE #	PHONE #	
CONTRACTOR ADDRESS		Y	CODE

PROPOSED USE OF PROJECT	☐ RESIDENTIAL (NEW)	☐ RESIDENTIAL (ADDITION)	☐ OTHER:
☐ COMMERCIAL (NEW)	☐ COMMERCIAL (ADDITION)	☐ COMMERCIAL (REMODEL/RENOOVATION)	

DESCRIPTION OF PROJECT:

	USE AND OCCUPANCY:	TYPE OF CONSTRUCTION:	ESTIMATED VALUE:	

This permit becomes null and void if work or construction authorized is not commenced within 180 days, or if construction or work is suspended or abandoned for a period of 180 days at any time after work has commenced. I hereby certify that I have read and examined this application and know the same to be true and correct. All provisions of laws and ordinances governing this type of work will be complied with whether specified herein or not. The granting of a permit does not presume to give authority to violate or cancel the provisions of any other state or local law regulating construction or the performance of construction.

CONTRACTOR'S SIGNATURE	DATE
PROPERTY OWNER'S SIGNATURE	DATE
CONTRACTORS INSPECTOR'S SIGNATURE	DATE

PLUMBING PLAN REVIEW ☐ DATE REVIEWED_____ INITIALS _____

SUBJECTION TO THE FOLLOWING CONDITIONS:

FEES

PLUMBING PERMIT FEE:	PLAN REVIEW FEE:	STATE SURCHARGE FEE:	**TOTAL DUE:**	RECEIPT #

DATE ISSUED:	ISSUED BY:	CALL XXX-XXX-XXXX TO SCHEDULED INSPECTIONS AND FOR QUESTIONS ON CODE ITEMS

Mechanical permit/application sample

CITY LOGO
CITY ADDRESS

MECHANICAL PERMIT/APPLICATION

DATE RECEIVED (Office Use Only):	RECEIVED BY (Office Use Only):	PERMIT # (Office Use Only):

PROJECT ADDRESS:	OR PID#

PROPERTY OWNER:	PHONE #

OWNER ADDRESS:	CITY:	ZIP CODE:

MECHANICAL CONTRACTOR	MN BOND ID #	PHONE #

CONTRACTOR ADDRESS	Y	CODE

PROPOSED USE OF PROJECT	☐ RESIDENTIAL (NEW)	☐ RESIDENTIAL (ADDITION)	☐ OTHER:

☐ COMMERCIAL (NEW)	☐ COMMERCIAL (ADDITION)	☐ COMMERCIAL (REMODEL/RENOOVATION)

DESCRIPTION OF PROJECT:

	USE AND OCCUPANCY:	TYPE OF CONSTRUCTION:	ESTIMATED VALUE:	

This permit becomes null and void if work or construction authorized is not commenced within 180 days, or if construction or work is suspended or abandoned for a period of 180 days at any time after work has commenced. I hereby certify that I have read and examined this application and know the same to be true and correct. All provisions of laws and ordinances governing this type of work will be complied with whether specified herein or not. The granting of a permit does not presume to give authority to violate or cancel the provisions of any other state or local law regulating construction or the performance of construction.

CONTRACTOR'S SIGNATURE	DATE

PROPERTY OWNER'S SIGNATURE	DATE

CONTRACTORS INSPECTOR'S SIGNATURE	DATE

MECHANICAL PLAN REVIEW ☐ DATE REVIEWED_____ INITIALS _____

SUBJECTION TO THE FOLLOWING CONDITIONS:

FEES

MECHANICAL PERMIT FEE:	PLAN REVIEW FEE:	STATE SURCHARGE FEE:	**TOTAL DUE:**	RECEIPT #

DATE ISSUED:	ISSUED BY:	CALL XXX-XXX-XXXX TO SCHEDULED INSPECTIONS AND FOR QUESTIONS ON CODE ITEMS

RESIDENTIAL COMBUSTION AIR CALCULATION WORKSHEET E-1

IFGC Appendix E, Worksheet E-1
Residential Combustion Air Calculation Method
(for Furnace, Boiler, and/or Water Heater in the Same Space)

Step 1: Complete vented combustion appliance information.
Furnace/Boiler:
__ Draft Hood (Not fan assist) Fan Assisted & Power Vent Direct Vent Input:__Btu/hr
Water Heater:
__ Draft Hood (Not fan assist) Fan Assisted & Power Vent Direct Vent Input:_____Btu/hr

Step 2: Calculate the volume of the Combustion Appliance Space (CAS) containing combustion appliances.
The CAS includes all spaces connected to one another by code compliant openings CAS volume:____ft³

Step 3: Determine Air Changes per Hour (ACH)[1]
Default ACH values have been incorporated into Table E-1 for use with method 4b (KAIR Method).
If the year of construction or ACH is not known, use Method 4a (Standard Method).

Step 4: Determine Required Volume for Combustion Air.
4a. Standard Method
Total Btu/hr. input of all combustion appliances Input:__Btu/hr
(DO NOT COUNT DIRECT VENT APPLIANCES)
Use Standard Method column in Table E-1 to find Total Required Volume (TRV) TRV:___ft³
If CAS Volume (from Step 2) is greater than TRV, then no outdoor openings are needed.
If CAS Volume (from Step 2) is less than TRV, then go to Step 5.
4b. Known Air Infiltration Rate (KAIR)Method
Total Btu/hr input of all fan-assisted and power vent appliances Input:___ Btu/hr
(DO NOT COUNT DIRECT VENT APPLIANCES)
Use fan-Assisted Appliances column in table E-1 to find
Required Volume Fan Assisted (RVFA) RVFA:__ft³
Total Btu/hr input of all non-fan-assisted appliances Input:__Btu/hr
Use Non-Fan-Assisted Appliances column in Table E-1 to find
Required Volume Non-Fan-Assisted (RVNFA) RVNFA:_ft³
Total Required Volume (TRV) = RVFA+ RVNFA TRV =__+ _ _____= _____ ft³
If CAS Volume (Step 2) is greater than TRV, then no outdoor openings are needed.
If CAS Volume (Step 2) is less than TRV, then go to Step 5.

Step 5: Calculate the ratio of available interior volume to the total required volume.
Ratio = CAS Volume (from Step 2) divided by TRV (from Step 4a or Step 4b) Ratio =__/_____= _____

Step 6: Calculate Reduction Factor (RF).
RF = 1 minus Ratio RF = 1 -_=_____

Step 7: Calculate single outdoor opening as if all combustion air is from outside.
Total Btu/hr input of all Combustion Appliances in the same CAS (EXCEPT DIRECT VENT) Input:____Btu/hr
Combustion Air opening Area (CAOA):
Total Btu/hr divided by3000 Btu/hr per in² CAOA =_/ 3000 Btu/hr per in² =___in²

Step 8: Calculate Minimum CAOA.
Minimum CAOA = CAOA multiplied by RF Minimum CAOA =_____x_____=_____in²

Step 9: Calculate Combustion Air Opening Diameter (CAOD)
CAOD = 1.13 multiplied by the square root of minimum CAOA CAOA = 1.13 x √‾ Minimum CAOA = in

[1] If desired, ACH can be determined using ASHRAE calculation or blower door test. Follow procedures in Section 304.

MAKEUP AIR QUANTITY FOR EXHAUST EQUIPMENT TABLE 501.4.1

Table 501.4.1 Procedures to Determine Makeup Air Quantity for Exhaust Equipment in Dwelling				
	One or multiple power vent or direct vent appliances or no combustion appliances[A]	One or multiple fan-assisted appliances and power vent or direct vent appliances[B]	One atmospherically vented gas or oil appliance or one solid fuel appliance[C]	Multiple atmospherically vented gas or oil appliances or solid fuel appliances[D]
1. Use the Appropriate Column to Estimate House Infiltration				
a) pressure facture (CFM/SF)	0.15	0.09	0.06	0.03
b) conditioned floor area (sf) (includes unfinished basements)				
Estimated House Infiltration (cfm) [1a x 1b]				
2. Exhaust Capacity				
a) clothes dryer (cfm)	135	135	135	135
b) 80% of largest exhaust rating (cfm): (Not applicable if recirculating system or if powered makeup air is electrically interlocked and matched to exhaust)				
c) 80% of next largest exhaust rating (cfm): (Not applicable if recirculating system or if powered makeup air is electrically interlocked and matched to exhaust)	Not applicable			
Total Exhaust Capacity (cfm): [2a + 2b + 2c]				
3. Makeup Air Requirements				
a) Total Exhaust Capacity (from above)				
b) Estimated house infiltration (from above)				
Makeup Air Quantity (cfm) [3a – 3b) (if value is negative, no makeup air is needed)				
4. For *Makeup Air* Opening Sizing. Refer to Table 501.4.2				

A Use this column if there are other than fan-assisted or atmospherically vented gas or oil *appliances* or if there are no *combustion appliances*.

B Use this column if there is one fan-assisted *appliance* per venting system. Other than atmospherically vented *appliances* may also be included.

C Use this column if there is one atmospherically vented (other than fan-assisted) gas or oil *appliance* per venting systems or one solid fuel *appliance*.

D Use this column if there are multiple atmospherically vented gas or oil *appliances* using a common vent or if there are atmospherically vented gas or oil *appliances* and solid fuel *appliances*.

TABLE 501.4.2 MAKEUP AIR OPENING SIZING TABLE NEW/EXISTING DWELLINGS

TABLE 501.4.2 MAKEUP AIR OPENING SIZING TABLE FOR NEW AND EXISTING DWELLING					
TYPE OF OPENING OR SYSTEM	ONE OR MULTIPLE POWER VENT OR DIRECT VENT APPLIANCES OR NO COMBUSTION APPLIANCES[A]	ONE OR MULTIPLE FAN-ASSISTED APPLIANCES AND POWER VENT OR DIRECT VENT APPLIANCES[B]	ONE ATMOSPHERICALLY VENTED GAS OR OIL APPLIANCE OR ONE SOLID FUEL APPLIANCE[C]	MULTIPLE APPLIANCES THAT ARE ATMOSPHERICALLY VENTED GAS OR OIL APPLIANCES OR SOLID FUEL APPLIANCES[D]	PASSIVE MAKEUP AIR OPENING DUCT DIAMETER[E, F, G]
	(cfm)	(cfm)	(cfm)	(cfm)	(inches)
Passive opening	1-36	1-22	1-15	1-9	3
Passive opening	37-66	23-41	16-28	10-17	4
Passive opening	67-109	42-66	29-46	18-28	5
Passive opening	110-163	67-100	47-69	29-42	6
Passive opening	164-232	101-143	70-99	43-61	7
Passive opening	233-317	144-195	100-135	62-83	8
Passive opening with motorized damper	318-419	196-258	136-179	84-110	9
Passive opening with motorized damper	420-539	259-332	180-230	111-142	10
Passive opening with motorized damper	540-679	333-419	231-290	143-179	11
Powered makeup air[H]	> 679	> 419	> 290	> 179	Not applicable

A Use this column if there are other than fan-assisted or atmospherically vented gas or oil *appliances* or if there are no *combustion appliances.*

B Use this column if there is one fan-assisted *appliance* per venting system. Non-atmospherically vented *appliances* may be included.

C Use this column if there is one atmospherically vented (other than fan-assisted) gas or oil *appliance* per venting system or one solid fuel *appliance*.

D Use this column if there are multiple atmospherically vented gas or oil *appliances* using a common vent or if there are atmospherically vented gas or oil *appliances* and solid fuel *appliances.*

E An equivalent length of 100 feet of round smooth metal duct is assumed. Subtract 40 feet for the exterior hood and ten feet for each 90-degree elbow to determine the remaining length of straight duct allowable.

F If flexible duct is used, increase the duct diameter by one inch. Flexible duct shall be stretched with minimal sags.

G Barometric dampers are prohibited in passive *makeup air* openings when any atmospherically vented *appliance* is installed.

H Powered *makeup air* shall be electrically interlocked with the largest exhaust system.

1322.0103 ENERGY CODE CONSTRUCTION DOCUMENTS

1322.0103 construction documents. Construction documents shall be drawn to scale upon suitable material. Electronic media documents are permitted to be submitted when approved by the building official. Construction documents shall be of sufficient clarity to indicate the location, nature, and extent of the work proposed, and show in sufficient detail pertinent data and features of the building, systems, and equipment as herein governed. The details shall include the following when applicable:

- Insulation materials and their R-values;
- Fenestration U-factors and SHGCs;
- Area-weighted U-factor and SHGC calculations;
- Mechanical system design criteria;
- Mechanical and service water heating system and equipment types, sizes, and efficiencies;
- Equipment and systems controls;
- Fan motor horsepower (hp) and controls;
- Duct sealing, and the location and insulation of ducts and pipes;
- Lighting fixture schedule with wattage and control narrative; and
- Air sealing details.

MN Residential Energy Code (RE) Section R401.3 Building certificate. A building certificate shall be posted on or in the electrical distribution panel by the builder or design professional and posted in a manner that does not cover or obstruct the visibility of the circuit directory label, service disconnect label, or other required labels. The “New Construction Energy Compliance Certificate” (pictured on the next page) could be also be used to satisfy the submittal requirements of 1322.0103

ENERGY CODE COMPLIANCE CERTIFICATE

New Construction Energy Code Compliance Certificate

Per R401.3 Certificate. A building certificate shall be posted on or in the electrical distribution panel.	Date Certificate Posted	Place your logo here
Mailing Address of the Dwelling or Dwelling Unit	City	
Name of Residential Contractor	MN License Number	

THERMAL ENVELOPE

Insulation Location	Total R-Value of all Types of Insulation	Type: Check All That Apply								Other Please Describe Here
		Non or Not Applicable	Fiberglass, Blown	Fiberglass, Batts	Foam, Closed Cell	Foam Open Cell	Mineral Fiberboard	Rigid, Extruded Polystyrene	Rigid, Isocynurate	
Below Entire Slab										
Foundation Wall										
Perimeter of Slab on Grade										
Rim Joist (1st Floor)										
Rim Joist (2nd Floor+)										
Wall										
Ceiling, flat										
Ceiling, vaulted										
Bay Windows or cantilevered areas										
Floors over unconditioned area										
Describe other insulated areas										

RADON CONTROL SYSTEM

- ☐ Passive (*No Fan*)
- ☐ Active (*With fan and monometer or other system monitoring device*)

Location (or future location) of Fan:

Building Envelope Air Tightness:		Duct System Air Tightness:	

Windows & Doors		Heating or Cooling Ducts Outside Conditioned Spaces
Average U-Factor (*excludes skylights and one door*) U:		☐ Not applicable, all ducts located in conditioned space
Solar Heat Gain Coefficient (SHGC):		☐ R-value

MECHANICAL SYSTEMS

Appliances	Heating System		Domestic Water Heater		Cooling System	
Fuel Type						
Manufacturer						
Model						
Rating or Size	Input in BTUS:		Capacity in Gallons:		Output in Tons:	
Efficiency	AFUE or HSPF%				SEER /EER	
Residential Load Calculations	**Heating Loss**		**Heating Gain**		**Cooling Load**	

Make-up Air *Select a Type*

- ☐ Not required per mech. code
- ☐ Passive
- ☐ Powered
- ☐ Interlocked with exhaust device. Describe:
- ☐ Other, describe:

Location of duct or system:

- ☐ CFMs
- ☐ " round" duct OR
- ☐ " metal " duct

MEHCANICAL VENTILATION SYSTEM

Describe any additional or combined heating or cooling systems if installed: (e.g. two furnaces or air source heat pump with gas back-up furnace):

Select Type

☐	Heat Recovery Ventilator (HRV) Capacity in CFMs:	Low:		High:	
☐	Energy Recovery Ventilator (ERV) Capacity in CFMs:	Low:		High:	
☐	Balanced Ventilation Capacity in CFMs:				
☐	Location of fans(s), describe:				
☐	Capacity of continuous ventilation rate in CFMs:				
☐	Total ventilation (intermittent + continuous) rate in CFMs:				

Combustion Air *Select a Type*

- ☐ Not required per mech. code
- ☐ Passive
- ☐ Other, describe:

Location of duct or system:

- ☐ CFMs
- ☐ "round" duct OR
- ☐ "metal" duct

Builders Association of Minnesota version 101014

ARCHITECTURE AND ENGINEERING REQUIREMENTS

1300.0130 Construction documents

Subpart 1. Submittal documents.

Construction documents, special inspection and structural observation programs, and other data shall be submitted in one or more sets with each application for a permit.

Exception: The building official may waive the submission of construction documents and other data if the nature of the work applied for is such that reviewing of construction documents is not necessary to obtain compliance with the code.

The building official may require plans or other data be prepared according to the rules of the Board of Architecture, Engineering, Land Surveying, Landscape Architecture, Geoscience and Interior Design, chapter 1800, and Minnesota Statutes, sections 326.02 to 326.15, and other state laws relating to plan and specification preparation by occupational licenses. If special conditions exist, the building official may require additional construction documents to be prepared by a licensed design professional.

The following pages are excerpts from Minnesota Rules 1800.

Building Officials' Quick Reference to Professional Licensing Statutes and Rules

This overview does not address all details or circumstances. Refer to the statutes and rules, or contact the Board office, for additional information.

1. Professional Practice Requirements for commercial structures.
   a. Drawings, specifications, plats, reports, and other documents (i.e. shop drawings for reinforcing steel, embedment plates, welded studs, structural steel, pre-fabricated concrete, spray-on fire protection systems, cold form steel framing systems, plan addenda or changes, requests for information [RFIs], and others similar) for construction (new commercial or remodel) shall be prepared by, or under the direct supervision of, Minnesota licensed professionals, unless specifically exempted by statute or rule.

   Exception: Minnesota Rules 1800.5900 CLASSES OF BUILDINGS. In accordance with Minnesota Statutes, sections 326.02, subdivision 5, and 326.03, subdivision 2, click on the 1800.5900 link to see the following classes of buildings that are exempt subject based on the limitations of listed elements.

   b. Such documents shall be certified by the responsible licensed professional, including required "I hereby certify…" language, printed name, license number, signature, and date.
   c. Minimum expected documentation contents for code official submission: definition of scope of work, building code compliance, life safety, architectural barriers, structural integrity, mechanical and electrical systems.
   d. Incidental practice is not authorized. For example, architects cannot practice professional engineering, and engineers cannot practice architecture.
   e. Minnesota does not license engineers by discipline. Adequate engineering documents may not be rejected merely because the responsible engineer tested in a discipline other than that embodied in the documents.
2. Statutory Exceptions (Minnesota Statutes. §§ 326.02, Subdivision 5 and 326.03, Subdivision 2)
   a. Projects for exclusive occupancy or use by preparer
   b. Shop Drawings
   c. Planning for work of licensed electrical contractor or master plumber, where such work is within the scope of such licensed activity and not within the practice of professional engineering or architecture

d. Dwellings for single families, and associated outbuildings such as barns and private garages
e. Two family dwellings
f. Any farm building or accessory thereto
g. Temporary buildings or sheds used exclusively for construction purposes, not exceeding two stories in height, and not used for living quarters

3. Remodeling or Renovation Exceptions. (Minnesota Rule 1800.5200 Subpart 3)
   a. Any remodeling or renovation to part or all of an existing building, structure, or work which does not:
      1) change the load on its mechanical or electrical systems or change the live or dead load on its structural systems, in either case, in such a manner that a violation of the MSBC might occur;
      2) change the building's access or exit pattern in such a manner that a violation of the MSBC might occur; or
      3) change the MSBC occupancy classification of the building.
   b. Any remodeling or renovation, of any kind, in a building in the MSBC occupancy classes and consistent with the size, dwelling unit, and number of stories and basement thresholds specified in part 1800.5900.
4. Classes of building exceptions. (Minnesota Rule 1800.5200 Subpart 4) Any new construction of or new addition to a building in the specified MSBC occupancy classes and consistent with the size, dwelling unit, and number of stories and basement thresholds specified in part 1800.5900, provided that an exemption under this subpart shall not apply:
   a. For a second new building to be constructed by the same person on the same parcel or a contiguous parcel to a new building previously exempted hereunder or for a second addition to the same building where a prior addition was exempt hereunder, in either case, within 24 calendar months after the date of building permit issuance. "Same person" means the same owner or same general contractor, or ownership or general contractor entity having one or more participants in common with the owner or general contractor of the first building. The person seeking a building permit shall certify that the same person has not utilized this exemption within the prior 24 month period. "Parcel" means a non-subdivided tract of land.
   b. For an addition to an existing building where the existing building exceeds the exemption size thresholds under this subpart if the addition results in either of the effects set forth in part 1800.5200, subpart 3, item A, subitem (1) or (2), regardless of the size of the new addition proposed.
   c. For new construction within a larger building (e.g., individual shops within a shopping center) where the larger building exceeds the exemption size thresholds under this subpart if the new construction results in either of the effects set forth in part 1800.5200, subpart 3, item A, subitem (1) or (2), regardless of the size of the new construction proposed.
5. Plans Supplied to Building Official. (Minnesota Rule 1800.5300) 1800.5300 The exceptions in part 1800.5200, subparts 3 and 4 shall be available only if the building permit applicant supplies the responsible building official with two sets of plans and specifications for the building or remodeling. The name and address of the preparer of the plans and specifications shall appear thereon. The plan preparer shall certify that reasonable care has been given to compliance with applicable laws, ordinances, and building codes relating to design.

6. The Minnesota Board of **AELSLAGID** – (Architecture, Engineering, Land Surveying, Landscape Architecture, Geoscience and Interior Design) oversees the regulation, licensure and enforcement of Minnesota Licensed Design Professionals.

Contact the Board office to:
Verify the status of a professional license. or
File a complaint.
Contact Information:
Minnesota Board of AELSLAGID
85 E. 7th Place, Suite 160
St. Paul, MN 55101-2113
Office hours: Monday-Friday, 8:00 a.m. to 4:30 p.m. (Closed on most federal and all state holidays)
Main phone: 651-296-2388
General email: aelslagid@state.mn.us
The language in Minnesota Statutes and Rules controls and is subject to periodic change. Please refer to the current statutes and rules, which are available at the Board's Web site.

GUIDELINES FOR SPECIAL INSPECTION AND TESTING

Purpose: To provide a method for complying with requirements of the Minnesota State Building Code 2020, Section 1704 – Special Inspections.

Before permit issuance: The architect or engineer of record shall prepare and submit a Special Structural Testing and Inspection Program to the building official. The Program may be included in the contract documents or as a separate submittal document. The completed Program Summary Schedule should include the following:

- A specific listing of the items requiring special inspection (observation and testing).
- The associated technical scope sections, which define the applicable standard to judge conformance of construction work and describe the duties of special inspectors.
- The type of special inspector required for each item.
- The frequency of reporting (i.e., weekly, monthly, per test/inspection, per floor, etc.).
- The parties responsible for performing the special inspections.
- Acknowledgements by each designated party.

Requirements: "Special Inspection" includes inspection (work requiring observation and engineering judgment) and testing (work analyzing materials in accordance with approved standards). Special Inspection shall meet the minimum requirements of the *Minnesota State Building Code,* which includes IBC Section 1704, and the approved drawings and specifications. Special inspectors shall be employed by the owner or engineer/architect of record, but not the contractor. Special Inspection shall not relieve the contractor of responsibility to complete the work in accordance with the approved drawings and specifications. Where the owner is acting as the contractor, they are permitted to employ the approved agencies.

Guideline program: To assist with standardization of Special Inspections and Testing, the Council of American Structural Engineers/Minnesota Chapter (CASE/MN) developed a *Guideline Program for Special Structural Testing and Inspection, 5th Edition*. The document is intended to identify items critical to the structural integrity of buildings and clearly outline the responsibilities of parties involved in design, construction, testing, and inspection. An excerpt regarding responsibilities is included in the following

paragraph. Copies of this **voluntary-use** document can be obtained through the American Council of Engineering Companies/Minnesota (ACEC/MN) office at (952) 593-5533.

1.06 Responsibilities

A. Structural Testing and Special Inspection

1. Special Inspectors:

   a. Sign the Structural Testing and Special Inspection Summary Schedule in conjunction with other responsible parties prior to commencement of construction.

   b. If requested, attend a pre-construction meeting to review the scope of structural testing and special inspection.

   c. Test and/or inspect the work assigned for conformance with the building department approved design drawings, specifications and applicable material and workmanship provisions of the Code. Perform testing and inspection in a timely manner to avoid delay of work.

   d. Bring discrepancies to the immediate attention of the contractor for correction, confirm that they are corrected and, if uncorrected after a reasonable period of time, bring to the attention of the Structural Engineer of Record, the Building Official, and to the Architect.

   e. Submit test and/or inspection reports to the Building Official, Contractor, the Structural Engineer of Record, and other designated persons in accordance with the Structural Testing and Special Inspection Summary Schedule.

   f. Submit a final signed report stating whether the work requiring special inspection was, to the best of the inspector's knowledge, in conformance with the approved plans, specifications and the applicable workmanship provisions of the Code.

2. Testing Agency:

   a. Sign the Structural Testing and Special Inspection Summary Schedule in conjunction with other responsible parties prior to commencement of construction
   b. If requested, attend a pre-construction meeting to review the scope of structural testing and special inspection.
   c. When engaged as a special inspector, provide structural testing and special inspection services as previously described.

3. Architect of Record (or other prime consultant):

   a. Complete and sign the Structural Testing and Special Inspection Summary Schedule in conjunction with other responsible parties prior to commencement of construction. Provide a completed copy of the schedule to all signed parties including Building Official.
   b. If appropriate, arrange and attend a pre-construction meeting to review the scope of structural testing and special inspection. Include Contractor, Building Official, SER, Testing Agency and other parties concerned.
   c. Coordinate the flow of reports and related information to expedite resolution of construction issues.

4. Structural Engineer of Record (SER):

   a. Identify items requiring structural testing and special inspection including special cases.
   b. Define "type" of special inspector required for "description" of work indicated on the structural testing and special inspection schedule.

c. Complete and sign the Structural Testing and Special Inspection Summary Schedule prior to commencement of construction.
d. If requested, attend a pre-construction meeting to review the scope of structural testing and special inspection.
e. Review reports submitted by special inspectors.
f. If engaged as a special inspector, provide structural testing and special inspection services as previously described.

5. Contractor:

a. Sign the Structural Testing and Special Inspection Summary Schedule in conjunction with other responsible parties prior to commencement of construction.
b. If requested, attend a pre-construction meeting to review the scope of structural testing and special inspection.
c. Post or make available the Structural Testing and Special Inspection Summary Schedule within its office at the job site. Also, provide adequate notification to those parties designated on the schedule so they may properly prepare for and schedule their work.
d. Provide the special inspectors access to the approved drawings and specifications at the job site.
e. Review reports submitted by special inspectors.
f. Retain at the job site all reports submitted by the special inspectors for review by the building official upon request.
g. Correct in a timely manner, deficiencies identified in inspection and/or testing reports.
h. Provide the special inspector safe access to the work requiring inspection and/or testing.
i. Provide labor and facilities to provide access to the work and to obtain, handle and deliver samples, to facilitate testing and inspection and for storage and curing of test samples.
j. Verification of conformance of the work within specified construction tolerances is solely the Contractor's responsibility.

6. Fabricator:

a. Sign the Structural Testing and Special Inspection Summary Schedule in conjunction with other responsible parties prior to commencing construction.
b. Submit a Certificate of Compliance to the Building Official, Special Inspector, and Structural Engineer of Record that the work was performed in accordance with the approved plans and specifications.

7. Building Official (Typical responsibilities noted for information only):

a. Determine work, which in the Building Officials opinion, involves unusual hazards or conditions in accordance with the IBC.
b. Review special inspector qualifications.
c. Accept and sign the completed Structural Testing and Special Inspection Summary Schedule.
d. Review all fabricators who perform work in their shop, which requires special inspection.
e. Review reports and recommendations submitted by the special inspectors.
f. Review the "final signed reports" submitted by the special inspector(s). These documents should be accepted and approved by the building department prior to issuance of a Certificate of Occupancy.

8. Owner:

a. Establish direct funding to provide for cost of structural testing and special inspection services.
b. Provide special inspector with approved design drawings, specifications, and approved shop drawings.
c. Provide special inspectors and testing agencies with full access to site at all times.
d. Sign the Structural Testing and Special Inspection Summary Schedule in conjunction with other responsible parties prior to commencement of construction.

SPECIAL STRUCTURAL TESTING AND INSPECTION SCHEDULE PROGRAM SUMMARY SCHEDULE

Project Name _____ Project No. _____

Location _____

_____ Permit No. _____

Technical (2)		*Description (3)*	Type of Inspector (4)	Report Frequency (5)	Assigned Firm (6)
Section	**Article**				

Notes: This schedule shall be filled out and included in the Special Structural Testing and Inspection Program.

(1) Permit No. to be provided by the Building Official.
(2) Referenced to the specific technical scope section in the program.
(3) Use descriptions per Minnesota State Building Code Chapter 17
(4) Special Inspector - Technical, Special Inspector - Structural.
(5) Weekly, monthly, per test/inspection, per floor, etc.
(6) Firm contracted to perform services.

ACKNOWLEDGEMENTS

Each appropriate representative shall sign below:

Owner:	Firm:	Date:
Contractor	Firm:	Date:
Architect:	Firm:	Date:
SER:	Firm:	Date:
SI-S:	Firm:	Date:
SI-T:	Firm:	Date:
TA:	Firm:	Date:
F:	Firm:	Date:

If requested by engineer/architect of record or building official, the individual names of all prospective special inspectors and the work they intend to observe shall be identified.

Legend:

SER = Structural Engineer of Record
SI-T = Special Inspector – Technical
TA = Testing Agency
SI-S = Special Inspector – Structural
F = Fabricator

Accepted for the Building Department by: _____ Date: _____

ALTERNATIVE METHODS AND MATERIALS PROPOSALS

Construction methods, materials and technologies are always evolving. Building codes, however, are static in nature, as they are developed and adopted on cyclical basis that perpetuates "outdated" code provisions even upon their most recent adoption. To that end, the State Building Code provides for "alternative means and methods" to allow the code official an opportunity to review or examine modern conditions, materials or methods not specifically addressed or allowed by the code. To consider an alternative method or material is an option. An applicant always has the opportunity to request this; as such, the code official must consider it. This is supported by Minnesota statute 326B.101 where it states in part, "the code shall provide for the use of modern methods, devices, materials, and techniques which will in part tend to lower construction costs." In the Minnesota State Building Code, Minnesota Rule 1300.0110, Subpart 13 states:

"The code is not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by the code, provided that any alternative has been approved. An alternative material, design, or method of construction shall be approved where the building official finds that the proposed design is satisfactory and complies with the intent of the code, and that the material, method, or work offered is, for the purpose intended, at least the equivalent of that prescribed in the code in quality, strength, effectiveness, fire resistance, durability, and safety. The details of any action granting or denying approval of an alternate shall be recorded and entered in the files of the Department of Building Safety. The permit applicant may request written documentation of the denial, including the reasons for the denial."

The building code (and state statute) mandate that the code official considers an alternate design request, but it is up to the code official to determine if the proposal meets with the intent of the code. The code official may deny a proposal if they determine that it does not meet with the prerequisites of what is minimally expected by the code for an alternate design, method, material, or work offered.

Under an alternate design application, the code official should receive the following minimal information with the alternate request:

- An application for a request to use an alternate design or method of construction (see attached), or a letter from the applicant/design profession specifically requesting the code official consideration of the request.
- Identifies the exact project and site address where the alternate would be used.
- The request must clearly identify the design condition and building areas affected by the proposal.
- The request must detail the exact code sections the proposed alternate or modification would violate the code.
- The request must include exact information on what is being proposed in lieu of the specific code requirement(s).
- The request must include supporting information/documentation to substantiate that the alternate material, method, or work offered is, for the purpose intended, at least equivalent of that prescribed in the code in terms of suitability, strength, effectiveness, fire-resistance, durability, safety, and sanitation. This may include testing criteria, manufacturers data, history of a materials performance results, etc.
- If other elements or components are to be "built-in" or included with the alternate proposal, those items should also be identified. Examples include life safety elements that are installed in addition to what the code would otherwise minimally require, like alarms or sprinklers, or fire resistive construction, etc.

- If special or third-party testing is proposed or required, the applicant should identify this and provide an outline that would include information such as who would do the inspections, what inspections would be performed, the times and intervals of inspections, performance expectations, final reporting, costs, etc.
- If regular or annual maintenance is required or expected, the applicant should identify the conditions. Operational and/or maintenance agreements or contracts should also be proposed and submitted along with the schedules.
- The applicant needs to sign and date the request and submit all data to the code official for their consideration.

The code official needs to review the application and supporting documentation and make the final determination on its acceptance. If deemed necessary, the code official may use third party consultants and/or testing agencies to assist in making a final determination. Whether accepted or not, the code official must provide a written document outlining his/her conclusion on the proposal. All documentation must then be filed in the municipal property files and maintained indefinitely.

It should be noted that because the building department is a regulatory agency, by virtue of its function, it is vulnerable and susceptible to legal attack at any time. The refusal to consider an alternate design proposal could, in itself, precipitate a legal action. Notwithstanding, the basis for accepting or denying an alternate design proposal should therefore be exercised under considerable thought, regardless of the outcome.

Checklist of items that must be addressed in a proposal for an "alternative material, design, or method of construction"

Requirements

1300.0110, Subpart 13. Alternative materials, design, and methods of construction and equipment.
"The code is not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by the code, provided that any alternative has been approved. An alternative material, design, or method of construction shall be approved where the building official finds that the proposed design is satisfactory and complies with the intent of the code, and that the material, method, or work offered is, for the purpose intended, at least the equivalent of that prescribed in the code in quality, strength, effectiveness, fire resistance, durability, and safety. The details of any action granting approval of an alternate shall be recorded and entered in the files of the Department of Building Safety."

Appropriately prepared "Alternative"

In accordance with the above, a completed alternate must document how the design *…complies with the intent of the code, and [how] the material, method, or work offered is…at least the equivalent of that prescribed in the code in quality, strength, effectiveness, fire resistance, durability, and safety.*

This must be contained in the form of a **written request** that includes the following information:

- An overview statement that summarizes the request.
- Name of project and site address or location.
- Specifics about the building or structure including the: type of construction; occupancy classification; number of stories; floor area; and other code features relevant to the issue.
- Citation and description of the specific code requirement and how it applies in this building.
- The negative result(s) by literally complying with the code requirement. Elaborate on each and include details regarding costs, hardships, difficulty, and/or impracticality of literal code compliance.
- Specifics of the alternate being proposed. Include technical details and plans if necessary.
- How this alternate complies with the intent of the code
- How this alternate material, method, or work is at least the equivalent of that prescribed in the code in quality, strength, effectiveness, fire-resistance, durability, and safety.
- Applicable test results, product listing, or alternate compliance standards.
- Signature and date of the applicant. Applicant must be the architect or engineer of record if the alternate is a modification of an original licensed design. However, alternates may reference work prepared by consultants.

Project Name: _____ No. _____

ALTERNATE DESIGN/METHOD/MATERIAL APPLICATION FORM

Page 1 of 2 - See page two for required submittal of evidence for proposed alternate design

SITE	Project Title		County
	Project Site address		City, Zip
OWNER	Owner		Contact Person
	Owner Address		Phone No ( )
	City, State, Zip		Fax No ( )
CONTR.	Contractor	Contractor License No	Contact Person
	Contractor Address		Phone No ( )
	City, State, Zip		Fax No ( )
DESIGN FIRM	Designer		Contact Person
	Firm Address		Phone No ( )
	City, State, Zip		Fax No ( )
APPLICANT	Alternative Provision Applicant Is: ☐ Owner ☐ Designer ☐ Contractor ☐ Other; specify		
	Applicant's Printed Name		Applicant's Phone No ( )
	Applicant's Address		Applicant's Fax No ( )
	City, State, Zip		Applicant's License No (If Applicable)
ALTERNATE	Permit Number:	Current Code Edition:	Date:
	Description of Alternate Design/Method/Material:		

Pursuant to MSBC 1300.0110, Subpart 13, I hereby apply for authorization to deviate from the standard minimum requirements of the Minnesota State Building Code by use of an alternate material, design, and/or method as described in this application. I acknowledge that information in this submittal is complete and accurate; that this is not a permit; that the work will be performed in accordance with the conditions of this authorization, the approved plans and specifications, and the Minnesota State Building Code; and, that I will cause the work to remain accessible and exposed for inspection purposes. I also acknowledge that this design alternative privilege may be revoked at any time upon evidence that the alternative construction condition has been violated in any way.

Applicant Signature	Date

An alternative design, method or material must be shown to meet the intent of the code and be equivalent to the code in terms of quality, strength, durability, effectiveness, fire-resistance, safety, and sanitation. If these are not, or cannot be evidenced, then the alternate design, method or material shall not be accepted. Acceptance of this provision is not intended to represent a "variance" to minimum building code standards.		
ALTERNATE DESIGN/METHOD/MATERIAL	Clearly identify the specific code section(s) this alternative relates to:	
	Identify the original intent of the code provisions identified above:	
	Describe the elements of those provisions where an alternative is desired:	
	Identify why this specific alternative is being proposed:	
	Substantiate how the proposed alternate provides an equivalency in terms of quality, strength, effectiveness, fire resistance, durability and/or safety when compared to the specific requirement(s) of the code. (Attach additional information if necessary.)	
SYNOPSIS OF DESIGN	Please attach all information evidencing or demonstrating that the proposed alternate meets accepted standards, testing, certification, guidelines, or computability with conditions required by code. Engineering computations, modeling, references, assumptions, factors of safety and data input and anticipated output should also be documented.	
	If Special or Third-Party Inspection is required, the applicant shall specify exactly where and when said inspections are required, and who will be performing each required inspection. If necessary, a Special Inspections Agreement must be completed and submitted with this application.	
	Where building use functions or restrictions are required (e.g., yard limitations, maintenance schedules, special security measures, training, periodic inspections etc.), said conditions shall be documented with a schedule identifying the intricacies and relationships of the proposal. Copies of proposed Deed restrictions shall also be submitted for review.	
	The Building Department has the responsibility to review design submittal(s) for compliance with the current adopted codes and department procedures. If the Department does not have the technical expertise to make a thorough and competent review, a third party or other resource may be used. If so, costs associated with the review will be charged to the applicant.	
For Office Use Only		
Building Official Approval:	Assigned Alternate Number:	Date:
Conditions of Approval:		Expiration of Approval:

CHAPTER 5 - PLAN REVIEW

PLAN REVIEW SUMMARY

The building official of a municipality is charged with enforcing the Minnesota State Building Code. The designer and builder should know before costly outlays, what changes to the design must be made to conform to the State Building Code. This reason alone is sufficient justification for conducting a plan review prior to work on site. The building official is legally required to examine the construction documents of a structure for code compliance before a permit is issued for construction according to Minnesota Rule 1300.0130 subpart 5.

Most projects requiring a building permit must be accompanied with building plans and specifications regardless of the size and scope of the project. Construction documents shall be dimensioned and drawn upon suitable material. Electronic documents are permitted to be submitted when approved by the building official. Construction documents shall be of sufficient clarity to indicate the location, nature, and extent of the work proposed, and show in detail that it will conform to the code and relevant laws, ordinances, rules, and regulations as determined by the building official. A thorough plan review can head off problems that may arise in the field later. (MN rules 1300.0130)

DEPARTMENT PLAN REVIEW PROCESS AND REQUIREMENTS

"Front Counter" interaction and plan review effectiveness

- Identify yourself/department personnel (names/numbers, etc.).
- Define required submittals completely.
- Review plan review process and inspections requirements thoroughly.
- Identify required/necessary time frames for plan review and inspections.
- Verify submittal document accuracy/completeness.
- Verify project alternatives/summary (scope of project).
- Identify customer contact method (when/how).
- Identify "known" code issues up front – right away.
- Identify "other" required agency reviews (state/local) and time constraints if known. Let the applicant know if they need to submit plans to other agencies as well as your own.
- Identify who will disburse required submittals to other agencies as/if required.
- Document date/time plan submittal received on application and plans (initial).
- Identify/verify required licensing (state or local).
- Identify process for notification of "issues" and how applicant is expected to respond.
- Identify process for plan review/construction authorization and building permitting.
- Apply and interpret codes and process uniformly/consistently.
- Permit Application Form(s)
- Identify and describe the work to be covered by the permit for which application is made.
- Describe the land on which the proposed work is to be done by legal description, street address, or similar description that will readily identify and locate the proposed building or work.
- Indicate the use and occupancy for which the proposed work is intended.
- Indicate the type of construction.
- Be accompanied by construction documents and other information as required by the code.

- State the valuation of the proposed work.
- Be signed by the applicant, or the applicant's authorized agent.
- Give other data and information required by the building official. Property address and legal description.

Beneficial plan review procedures and practices

- Identify land use/zoning issues immediately (at front counter is necessary).
- Prior to the start of any large-scale project, promote a preliminary plan review meeting to correct and identify major code issues as soon as possible.
- If a "third-party" review will be required, notify applicant immediately. Discuss the processes, timeframes, costs, etc.
- Identify project summary (in specs) and accepted project alternates for proper review.
- Attach plan review letter(s) to approved plans.
- Write in legible drafting style lettering outside the plans' drawings, dimensions, details, legends, etc.
- Date stamp and initial each plan submittal (application and plan set) as soon as it is received. Also date stamp and initial the plans at the time you start the actual review.
- Date stamp every deferred submittal, addenda, change order, RFP, etc. when received by department.
- If using plan stamps, keep to a minimum – nobody will read them otherwise. Make construction notes on the plan for your field inspector(s) and the contractor(s) as well as for yourself as the plan reviewer.
- Make a reference note on the plan itself if code review comments are contained on a separate letter document. Tell contractor to see these letters for additional code requirements.
- Make sure commentary is clear when indicating what is wrong and what is expected for correction.
- If accepting deferred submittals, make notes on plan referencing what is required so designer can coordinate schedule for submittal.
- If additional plans or specifications are needed, notify applicant immediately.
- If a "large-scale" code issue is found, notify applicant immediately.
- Maintain accurate, dated documentation on all conferences, phone calls, e-mails, faxes, meetings, etc. Keep all records for the file.
- Define permitting requirements and/or construction authorization conditions clearly (for each trade).

RESIDENTIAL DOCUMENT SUBMITTALS

The following is a partial summary of plan review for a single-family dwelling and should include, but not be limited to, the following items:

- Provide a survey/site plan showing lot size, building size, setbacks from property lines, other buildings, sewer/ water, septic systems, wells, and any other items required by code or ordinance.
- Two sets of complete plans and specifications to be reviewed and approved. One for the building department and one to be on site.
- Energy code compliance certificate.
- Minimum ventilation requirements Minnesota Energy Code 1322 Chapter 4.
- Residential combustion air calculations in Minnesota Mechanical Code Chapter 1346 304.1, Minnesota Mechanical Code Chapter Appendix E, worksheet E-1.
- Residential makeup air calculations. MN Mechanical Code Sect. 501.4. 1, I.M.C. Chapter 5 Table 501.4.1

- Provide floor plans for all levels. Include room size, room use, kitchen and bathroom layout, dimensions of stairway and location, window and door location with sizes, and decks and porches.
- Provide all exterior elevations showing top of foundation in relation to final grade, grading and drainage, windows, doors, siding type, roof pitch, roof covering, decks and miscellaneous.
- Provide a typical wall section or section through the building. The following items should include but not limited to:
    - Footing size and reinforcing if required
    - Foundation size, type, height, and reinforcing
    - Foundation anchor size, type, and spacing
    - Foundation drainage (drain tile)
    - Foundation waterproofing (membrane)
    - Foundation insulation type, R value, and vapor retarder
    - Rim joist insulation type, location, and sealing
    - Floor joist type, size, and spacing
    - Subfloor type, size, and thickness
    - Stud, size, and spacing
    - Wall sheathing type and size
    - Water- Resistive Barrier (Building paper/house wrap)
- Exterior wall finish type and application:
    - Insulation type and R value
    - Vapor retarder type
    - Interior wall finish
    - Roof rafter or trusses, size, and spacing
    - Sub-fascia/fascia type and size
    - Soffit system type and size
    - Eave Baffle (wind wash barrier)
    - Soffit ventilation
    - Roof pitch indicator
    - Roof underlayment and eave protection
    - Roof covering
    - Roof/attic ventilation
    - Roof Sheathing
- Structural:
    - Provide all header, beams, post size, location of braced wall lines, braced wall panel design,
    - And all structural elements should be specified.
    - Certified roof truss drawings floor truss drawings and all engineered drawings shall be required.
    - Truss drawings and all engineered drawings are required on site at the framing inspection.
- Non-structural:
    - Show location and specification of smoke detectors
    - Show location and specification of handrails, guardrails, and rise and run of stairways
    - Verify location and requirements for egress windows and/or doors
    - Verify requirements for safety glazing and location
    - Verify bathrooms for minimum space requirements
    - Verify ventilation requirements for bathroom
    - Verify fire protection as required for common wall between house and garage and floor system.

RESIDENTIAL ONE-AND TWO-FAMILY DWELLING PLAN SUBMITTAL CHECKLIST AND GUIDE

This checklist covers items to be included with plan submittals of residential one-and two-family dwellings and townhouses. This list may not be inclusive of all items required.

Code references: 2020 Minnesota State Building Code, 2018 International Residential Code, 2018 International Mechanical Code and 2018 International Fuel Gas Code, 2020 Minnesota State Plumbing Code, and 2020 National Electrical Code, 2012 International Energy Conservation Code as amended.

Required construction details

GENERAL	COMPLIES		
Referenced Sections of the Minnesota Residential Code	YES	NO	N/A
Zoning Approval			
Site Plan Review			
Foundation Elevation, Sec. R403.1.7.3			
Site Address, Sec. R319			
Chimney Terminations (Masonry), Sec. R1003.9			
Exterior Decks, Sec. R507			
Footing Depths, MSBC 1303.1600 & Sec. R403.1.4.1			
Fuel Burning Appliances Vent Terminations IMC 802 and IFGC 503.5.4 &.6.5			
Grade/Landscaping to Wood Separation, Sec. R317.1			
Grade Definition, Sec. R202			
Guards, Sec. R312.1			
Handrails, Sec. R311.7.8			
Stairways, Sec. R311.7			
Lighting: Interior stair, Sec. R303.7 NEC 210-70 (A) (1) (2) & (3)			
Lighting: exterior stair, Sec. R303.8 NEC 210-70 (A)(2)			
Skylights and Sloped Glazing, Sec. R308.6			
Skylights, Approved Rigid Plastic, Sec. R308.6			
Safety Glazing, Sec. R308.1 – R308.6.9			
Soil Stack Terminations, MPC MN Rule Chapter 4714			
Attic Ventilation, Sec. R806			

FOUNDATION AND BASEMENT PLANS	COMPLIES		
Referenced Sections of the Minnesota Residential Code	YES	NO	N/A
Anchor Bolts, Sec. R403.1.6, R606.11			
Anchoring Joist and Blocking in Bearing Wall Plate, Sec. R602.4 & Table R602.3 (1)			
Blocking First 3 Joist Spaces, Sec. R404.1 & Table R404.1(1) Footnote F			
Bridging/Blocking, Sec. R404.1 and R502.7.1			
Column/Posts (protection), Sec. R407.1 and R317			
Under Floor/Crawl Space Access, Sec. R408.4			
Escape or Rescue Window, Sec. R310.1 - R310.6.1			
Foundation Wall Insulation, MSBC 1322.0402 (Building Thermal Envelope)			
Foundation Wall Reinforcement (Size and Placement), Sec. R404.1.1 through R404.1.9			
Foundation Walls (Type and Size), Sec. R404			
Headers/Beams (Size and Species or its Grade), Sec. R502.1, R602.7 & R502.5			
Interior/Intermediate Footing Design (Size and Reinforcement), Sec. R403.1.1			
Footing concrete compressive strength, Table R402.2			
Interior/Intermediate Support Systems (Type and Location), Joists tables (Grade, Size, Species, and Spacing of Joists) Sec. R502.1, R502.3 thru R502.3.3			
Specifications for Engineered Trusses, Sec. R502.11.4			
Wood Floor Framing, Sec. R502.1			
Cutting, Drilling and Notching of Joists, Sec. R502.8			
Joists Under Bearing Partitions, Sec. R502.4			
Perimeter Footings Design, Sec. R403.1, R403.1.4, and R403.1.4.1			
Concrete Strength, Table R402.2			
Sill Plate, Sec. R403.1.6			
Smoke Alarms, Sec. R314			
Fire Protection of Floors, Sec. R302.13			
Soil Load-Bearing Values (PSF) Table R401.4.1			
Stair Handrails, Sec. R311.7.8			
Window Wells (Egress/Escape Windows), Sec. R310.2			

Radon Control Passive, MSBC 1303.2402			
Radon Control Active, MSBC 1303.2403			
Attic Access, Sec. R807.1			
IRC Ventilation Requirements, IMC Sec. 401.2.1			

FLOOR PLANS (MAIN AND UPPER LEVELS)	**COMPLIES**		
Referenced Sections of the Minnesota Residential Code	**YES**	**NO**	**N/A**
Duct Construction and Installation IMC 603 with MN Amendments			
Braced Wall Lines, Sec. R602.10.1			
Emergency Escape and Rescue Opening, Sec. R310			
Exterior Windows and Doors, Sec. R609			
Flashing and Pan Flashing, Sec. R703.4, R703.4.1			
Egress Door Width and Height, Sec. R311.2			
Draftstopping and Fireblocking, Sec. R502.12, R502.13 & R602.8			
Grade and Species of Wood, Sec. R602.1, through R602.3.4			
Grade, Species, and Size of Headers, Sec. R602.2 & R602.7			
Grade, Species, Spacing, and Spans of Joists, Sec. R502.1 & R502.3			
Grade, Species, Spacing, and Spans of Rafters and Ridge, Sec. R602.1, R802.4, & R802.3			
Grade, Species, and Size, Height, and Spacing of Studs, Sec. R602.1 & R602.3.1			
Guards, Sec. R312.1			
Window Fall Protection, Sec. R312.2			
Hallway Width, Sec. R311.6			
Stair Handrails, Sec. R311.7.8			
Light, Ventilation and Heating, Sec. R303.1			
Dwelling – Garage Separation, Sec. R302.5 & R302.6			
Minimum Room Areas, Sec. R304			
Glazing, Sec. R308			
Sanitation, Sec. R306			
Smoke Alarms, Locations and Interconnection, Sec. R314			
Carbon Monoxide Alarms, Sec. R315			

Stair Design (Rise 7.75” max, Run 10” min.), Sec. R311.7			
Stair Width, Sec. R311.7.1.2			
Under-stair Protection, Sec. R302.7			
Slip Joint Connections (Trap Access [Required if joints are mechanical and not glued together]), Sec. 402.10, 2020 Minnesota State Plumbing Code			
Wall and Ceiling Finishes, Sec. R302.9, R316.4, and R316.5.10			
Water Resistant Gypsum Board, Sec. R702.3.7			

CROSS SECTION	**COMPLIES**		
Referenced Sections of the Minnesota Residential Code	**YES**	**NO**	**N/A**
Anchor Bolts (Size, Spacing, and Embedment), Sec. R403.1.6, R602.11			
Anchoring Joist and Blocking in Joist Spaces to Sill, Table 404.1(1)			
Blocking First 3 Joist Spaces Parallel to Foundation, Sec. R404.1 (#4) and R502.4			
Ceiling Height~~s~~, Sec. R305.1			
Foundation Waterproofing and Dampproofing, Sec. R406			
Fastening and Anchoring Requirements for Trusses, Sec. R802			
Foam Plastic, Sec. R316			
Foundation Drainage (Size, Placement, Infiltration Barrier) Sec. R405			
Foundation Wall (Type, Size, and Reinforcement Size and Spacing) Sec. R404, Tables R404.1.1 (1-7)			
Frost Depth R403.1.4, R403.1.4.1, MSBC 1303.1600 (Footing Depth for Frost Protection)			
Grade, Species, and Spans of Rafters and Ridge, Sec. R802.4 & R802.3			
Grade, Species, and Spans of Floor Joists, Sec. R502.1 & R502.3			
Grade, Species and Spacing of Studs, Sec. R602.1 & R602.3.1			
Grade and Species of Plates, Sec. R602.1, R602.3.2 & R602.3.4			
Grade and Species of Window & Door Headers, Sec. R602.1 & R602.7			
Grade to Wood Separation, Sec. R317.1			

Insulation R Values & Fenestration Values for: Foundation Wall, MSBC 1322.0402, IECC Table R402.1.1 Ceiling, MSBC 1322.0402, IECC Table R402.1.1 Rim, MSBC 1322.0402, IECC Table R402.1.1 Walls, MSBC 1322.0402, IECC Table R402.1.1 Windows, MSBC 1322.0402, IECC Table R402.1.1			
Interior/Intermediate Footing Design (Size and Reinforcement), R403.1 & Compressive Strength of Concrete, Table R402.2			
Joist Bearing, Sec. R502.6			
Fastening Schedule, Table R602.3(1)			
Perimeter Footings Design (Size and Reinforcement), Sec. R403, R403.1, R403.1.4, R403.1.4.1, and R403.2			
Requirements for Roof Coverings, Sec. R905			
Ice Barriers, Sec. R905.1.2			
Roofing Underlayment, Sec. R905.2.3, R905.2.7 & R905.3.3			
Sheathing Span Index Sub-floor, Sec. R503.1, Tables R503.2.1.1 (1) & (2)			
Wall Sheathing, Tables R602.3 (1 – 6)			
Wall bracing, Sec. R602.10.1.3 and Tables R602.10.3 (1 - 4) & Table R602.10.4			
Roof Sheathing, Sec. R803.1, Table R503.2.1.1 (1)			
Fastening Schedule, Tables R602.3 (1) & (2)			
Sill Plate, Sec. R404.3 & R403.1.6 and Sill Seal, MREC 1322, R402.4 and Table R402.1.1			
Soil Bearing, Sec. R404.1 and Table R401.4.1			
Spacing and Specs for Wood Trusses, Sec. R802.10			
Roof/ceiling assemblies min. 6-inch energy heel, MREC 1322 Table R402.1.1(j)			
(Eave Baffle) Wind-wash Barrier at Trusses, MREC 1322 & R402.2.3			
Below-grade Moisture Barrier, Sec. R406.3.2			
Ventilation Attic, Sec. R806			
Ventilation Foundation, Sec. R408.1			
Fire-resistant Construction and Ceiling Finishes, Sec. R302 & R805			
Toilet, Bath, and Shower Spaces and Wall Finishes, Sec. R307.2, & R702			
Wall and Ceiling Openings Sealed - (Wall and Ceilings) (Electrical, Plumbing, & Heating), MREC 1322 R402.4 & R402.2.4			
Wall Bracing, Sec. R602.10			

STAIR SECTION	COMPLIES		
Referenced Sections of the Minnesota Residential Code	YES	NO	N/A
Framing Interior or Exterior, Sec. R311.7			
Guards, Sec. R312			
Handrails, Sec. R311.7.8			
Framing of Openings, Sec. R502.10			
Headroom, Sec. R311.7.2			
Landing, Sec. R311.7.6			
Stair Treads and Risers – Rise and Run, and Maximum Differential, Sect. R311.7.5			
Under-Stair Protection, Sec. R302.7			

FLOOR FRAMING PLAN	COMPLIES		
Referenced Sections of the Minnesota Residential Code	YES	NO	N/A
Anchoring Joist and Blocking in Joist Spaces, Sec. R502.9 & Table 602.3(1)			
Blocking, Sec. R502.7 & R502.4			
Blocking First 3 Joist Spaces parallel to Foundation Table R404.1, footnote “f”, R 502.4			
Bridging, Sec. R502.7.1			
Joists Under Bearing Partitions, Sec. R502.4			
Framing of Openings, Sec. R502.10			
Allowable Girder and Header Spans, Sec. R502.5 - Tables R602.7(1), R602.7(2) and R602.7(3)			
Joist Framing (Hangers), Sec. R502.6.2			
Headers, Sec. R602.7			
Floor Systems (Joist Lap), Sec. R502.6.1			
Wood Floor Framing (Joists), Sec. R502.1			
Cutting, Notching and Drilling, Sec. R502.8			
Wood Trusses (Floor), Sec. R502.11.1			
Truss Design Drawings (Framing Details), Sec. R502.11.4			
Draftstopping, Sec. R502.12			

Fireblocking, Sec. R502.13			
Fire protection of floors, Sec. R302.13			

ROOF FRAMING PLAN	COMPLIES		
Referenced Sections of the Minnesota Residential Code	YES	NO	N/A
Blocking, Sec. R802.5.2.3			
Fastening Schedule, Table R602.3(1)			
Ceiling Joists, Sec. R802.5			
Hips and Valley Rafters, Sec. R802.4.3			
Purlins, Sec. R802.4.5			
Rafters, Sec. R802.4			
Ridge, Sec. R802.3			
Design - ENGINEERED ROOF SYSTEM - All Truss Designs are to be certified by MN Registered Structural Engineer, Sec. R802.10.2			
Alterations to Trusses, Sec.R802.10.4			
Roof tie-down, Sec. R802.11			
Nailing Schedule, Sect. R802.11 & Table 602.3(1)			
Roof Tie-down and Bracing Requirements, Sec. R802.11 & R802.10.3			
Combustible Insulation Clearance (to heat-producing appliances), Sec. R302.14			

MECHANICAL DETAILS	COMPLIES		
Referenced Sections of the Minnesota Residential Code	YES	NO	N/A
Ventilation, MN 1322 Table R403.5			
Combustion Air, ASHRAE Standard 62.2 -2019, IMC Chapter 7, MN 1346.5304, IFGC Sect. 304 (Combustion, Ventilation, and Dilution Air)			
Specific Room Exhaust, ASHRAE Standard 62.2 -2019			
Drilling and Notching of Joist and Studs, IMC 302.3, R502.8 & R602.6			
Clothes Dryers, Vents, and Terminations, IMC 504 (electric), IFGC 613 & 614 (gas)			
Energy Design Minnesota Energy Code, MSBC Chapter 1322			
Plenums, IMC Sec. 602			

Location of Equipment, IMC/IFGC Sect. 303, and Access and Service Space IMC/IFGC Sec. 306			
Mechanical Ventilation (Introduction of Outside Air and Removal of Inside Air) Vent Terminations, MSBC 1322.0403.5, IMC 501.3.1, IMC 802.4 & .5, IMC 804.3, IFGC 503.5.4, IFGC 503.6.4, IFGC 503.7.3, IFGC 503.8			

ENERGY CODE	**COMPLIES**		
Referenced Sections of the Minnesota Residential Code	**YES**	**NO**	**N/A**
Air Barrier Continuous to the Interior of the Building Envelope, MN Rule Chapter 1322 (MREC), R402.4			
Ducting in Unconditioned Spaces, MN Rule Chapter 1322			
Mechanical Ventilation, (Introduction of Outside Air and Removal of Inside Air), MN Rule 1322, 403.5			
Energy building certificate, (MREC), R401.3 (MN website)			
Skylight Insulation Supported on Unconditioned side, MN Rule Chapter 1322			
Wall and Ceiling Openings Sealed, (Wall and Ceilings), (Electrical, Plumbing, and Heating), MN Rule 1322 R402.4			
Radon Prevention, MSBC 1303.2400			
Radon Control (PASSIVE), MSBC 1303.2402			
Radon Control (ACTIVE), MSBC 1301.2403			

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

RESIDENTIAL COMBUSTION AIR CALCULATION WORKSHEET E-1

IFGC Appendix E, Worksheet E-1
Residential Combustion Air Calculation Method
(for Furnace, Boiler, and/or Water Heater in the Same Space)

Step 1: Complete vented combustion appliance information.
Furnace/Boiler:
__ Draft Hood (Not fan assist) Fan Assisted & Power Vent Direct Vent Input:__Btu/hr
Water Heater:
__ Draft Hood (Not fan assist) Fan Assisted & Power Vent Direct Vent Input:_____Btu/hr

Step 2: Calculate the volume of the Combustion Appliance Space (CAS) containing combustion appliances.
The CAS includes all spaces connected to one another by code compliant openings CAS volume:____ft³

Step 3: Determine Air Changes per Hour (ACH)[1]
Default ACH values have been incorporated into Table E-1 for use with method 4b (KAIR Method).
If the year of construction or ACH is not known, use Method 4a (Standard Method).

Step 4: Determine Required Volume for Combustion Air.
4a. Standard Method
Total Btu/hr. input of all combustion appliances Input:__Btu/hr
(DO NOT COUNT DIRECT VENT APPLIANCES)
Use Standard Method column in Table E-1 to find Total Required Volume (TRV) TRV:___ft³
If CAS Volume (from Step 2) is greater than TRV, then no outdoor openings are needed.
If CAS Volume (from Step 2) is less than TRV, then go to Step 5.
4b. Known Air Infiltration Rate (KAIR)Method
Total Btu/hr input of all fan-assisted and power vent appliances Input:___ Btu/hr
(DO NOT COUNT DIRECT VENT APPLIANCES)
Use fan-Assisted Appliances column in table E-1 to find
Required Volume Fan Assisted (RVFA) RVFA:__ft³
Total Btu/hr input of all non-fan-assisted appliances Input:__Btu/hr
Use Non-Fan-Assisted Appliances column in Table E-1 to find
Required Volume Non-Fan-Assisted (RVNFA) RVNFA:_ft³
Total Required Volume (TRV) = RVFA+ RVNFA TRV =__+ _ _____= _____ ft³
If CAS Volume (Step 2) is greater than TRV, then no outdoor openings are needed.
If CAS Volume (Step 2) is less than TRV, then go to Step 5.

Step 5: Calculate the ratio of available interior volume to the total required volume.
Ratio = CAS Volume (from Step 2) divided by TRV (from Step 4a or Step 4b) Ratio =__/_____= _____

Step 6: Calculate Reduction Factor (RF).
RF = 1 minus Ratio RF = 1 -_=_____

Step 7: Calculate single outdoor opening as if all combustion air is from outside.
Total Btu/hr input of all Combustion Appliances in the same CAS Input:__
Btu/hr
(EXCEPT DIRECT VENT)
Combustion Air opening Area (CAOA):
Total Btu/hr divided by3000 Btu/hr per in² CAOA =_/ 3000 Btu/hr per in² =___in²

Step 8: Calculate Minimum CAOA.
Minimum CAOA = CAOA multiplied by RF Minimum CAOA =_____x_____=_____in²

Step 9: Calculate Combustion Air Opening Diameter (CAOD)
CAOD = 1.13 multiplied by the square root of minimum CAOA CAOA = 1.13 x √‾ Minimum CAOA = in

[1] If desired, ACH can be determined using ASHRAE calculation or blower door test. Follow procedures in Section 304.

MAKEUP AIR QUANTITY FOR EXHAUST EQUIPMENT TABLE 501.4.1

Table 501.4.1 Procedures to Determine Makeup Air Quantity for Exhaust Equipment in Dwelling				
	One or multiple power vent or direct vent appliances or no combustion appliances[A]	One or multiple fan-assisted appliances and power vent or direct vent appliances[B]	One atmospherically vented gas or oil appliance or one solid fuel appliance[C]	Multiple atmospherically vented gas or oil appliances or solid fuel appliances[D]
1. Use the Appropriate Column to Estimate House Infiltration				
a) pressure facture (CFM/SF)	0.15	0.09	0.06	0.03
b) conditioned floor area (sf) (includes unfinished basements)				
Estimated House Infiltration (cfm) [1a x 1b]				
2. Exhaust Capacity				
a) clothes dryer (cfm)	135	135	135	135
b) 80% of largest exhaust rating (cfm): (Not applicable if recirculating system or if powered makeup air is electrically interlocked and matched to exhaust)				
c) 80% of next largest exhaust rating (cfm): (Not applicable if recirculating system or if powered makeup air is electrically interlocked and matched to exhaust)	Not applicable			
Total Exhaust Capacity (cfm): [2a + 2b + 2c]				
3. Makeup Air Requirements				
a) Total Exhaust Capacity (from above)				
b) Estimated house infiltration (from above)				
Makeup Air Quantity (cfm) [3a – 3b) (if value is negative, no makeup air is needed)				
4. For *Makeup Air* Opening Sizing. Refer to Table 501.4.2				

A Use this column if there are other than fan-assisted or atmospherically vented gas or oil *appliances* or if there are no *combustion appliances*.

B Use this column if there is one fan-assisted *appliance* per venting system. Other than atmospherically vented *appliances* may also be included.

C Use this column if there is one atmospherically vented (other than fan-assisted) gas or oil *appliance* per venting systems or one solid fuel *appliance*.

D Use this column if there are multiple atmospherically vented gas or oil *appliances* using a common vent or if there are atmospherically vented gas or oil *appliances* and solid fuel *appliances*.

TABLE 501.4.2 MAKEUP AIR OPENING SIZING TABLE NEW/EXISTING DWELLINGS

TABLE 501.4.2 MAKEUP AIR OPENING SIZING TABLE FOR NEW AND EXISTING DWELLING					
TYPE OF OPENING OR SYSTEM	**ONE OR MULTIPLE POWER VENT OR DIRECT VENT APPLIANCES OR NO COMBUSTION APPLIANCES[A]**	**ONE OR MULTIPLE FAN-ASSISTED APPLIANCES AND POWER VENT OR DIRECT VENT APPLIANCES[B]**	**ONE ATMOSPHERICALLY VENTED GAS OR OIL APPLIANCE OR ONE SOLID FUEL APPLIANCE[C]**	**MULTIPLE APPLIANCES THAT ARE ATMOSPHERICALLY VENTED GAS OR OIL APPLIANCES OR SOLID FUEL APPLIANCES[D]**	**PASSIVE MAKEUP AIR OPENING DUCT DIAMETER[E, F, G]**
	(cfm)	**(cfm)**	**(cfm)**	**(cfm)**	**(inches)**
Passive opening	1-36	1-22	1-15	1-9	3
Passive opening	37-66	23-41	16-28	10-17	4
Passive opening	67-109	42-66	29-46	18-28	5
Passive opening	110-163	67-100	47-69	29-42	6
Passive opening	164-232	101-143	70-99	43-61	7
Passive opening	233-317	144-195	100-135	62-83	8
Passive opening with motorized damper	318-419	196-258	136-179	84-110	9
Passive opening with motorized damper	420-539	259-332	180-230	111-142	10
Passive opening with motorized damper	540-679	333-419	231-290	143-179	11
Powered makeup air[H]	> 679	> 419	> 290	> 179	Not applicable

A Use this column if there are other than fan-assisted or atmospherically vented gas or oil *appliances* or if there are no *combustion appliances.*

B Use this column if there is one fan-assisted *appliance* per venting system. Other than atmospherically vented *appliances* may also be included.

C Use this column if there is one atmospherically vented (other than fan-assisted) gas or oil *appliance* per venting system or one solid fuel *appliance*.

D Use this column if there are multiple atmospherically vented gas or oil *appliances* using a common vent or if there are atmospherically vented gas or oil *appliances* and solid fuel *appliances.*

E An equivalent length of 100 feet of round smooth metal duct is assumed. Subtract 40 feet for the exterior hood and ten feet for each 90-degree elbow to determine the remaining length of straight duct allowable.

F If flexible duct is used, increase the duct diameter by one inch. Flexible duct shall be stretched with minimal sags.

G Barometric dampers are prohibited in passive *makeup air* openings when any atmospherically vented *appliance* is installed.

H Powered *makeup air* shall be electrically interlocked with the largest exhaust system.

New Construction Energy Code Compliance Certificate

Per R401.3 Certificate. A building certificate shall be posted on or in the electrical distribution panel.	Date Certificate Posted	Place your logo here
Mailing Address of the Dwelling or Dwelling Unit	**City**	
Name of Residential Contractor	**MN License Number**	

THERMAL ENVELOPE

Insulation Location	Total R-Value of all Types of Insulation	Type: Check All That Apply								Other Please Describe Here
		Non or Not Applicable	Fiberglass, Blown	Fiberglass, Batts	Foam, Closed Cell	Foam Open Cell	Mineral Fiberboard	Rigid, Extruded Polystyrene	Rigid, Isocynurate	
Below Entire Slab										
Foundation Wall										
Perimeter of Slab on Grade										
Rim Joist (1st Floor)										
Rim Joist (2nd Floor+)										
Wall										
Ceiling, flat										
Ceiling, vaulted										
Bay Windows or cantilevered areas										
Floors over unconditioned area										
Describe other insulated areas										

RADON CONTROL SYSTEM

	Passive (*No Fan*)
	Active (*With fan and monometer or other system monitoring device*)
Location (or future location) of Fan:	

Building Envelope Air Tightness:	**Duct System Air Tightness:**

Windows & Doors		**Heating or Cooling Ducts Outside Conditioned Spaces**	
Average U-Factor (*excludes skylights and one door*) U:			Not applicable, all ducts located in conditioned space
Solar Heat Gain Coefficient (SHGC):			R-value

MECHANICAL SYSTEMS

Appliances	Heating System		Domestic Water Heater	Cooling System	
Fuel Type					
Manufacturer					
Model					
Rating or Size	Input in BTUS:		Capacity in Gallons:	Output in Tons:	
Efficiency	AFUE or HSPF%			SEER /EER	
Residential Load Calculations	**Heating Loss**		**Heating Gain**	**Cooling Load**	

MEHCANICAL VENTILATION SYSTEM

Describe any additional or combined heating or cooling systems if installed: (e.g. two furnaces or air source heat pump with gas back-up furnace):
Select Type

	Heat Recovery Ventilator (HRV) Capacity in CFMs:	Low:		High:	
	Energy Recovery Ventilator (ERV) Capacity in CFMs:	Low:		High:	
	Balanced Ventilation Capacity in CFMs:				
	Location of fans(s), describe:				
	Capacity of continuous ventilation rate in CFMs:				
	Total ventilation (intermittent + continuous) rate in CFMs:				

Make-up Air *Select a Type*

	Not required per mech. code
	Passive
	Powered
	Interlocked with exhaust device. Describe:
	Other, describe:
Location of duct or system:	
	CFMs
	" round" duct OR
	" metal " duct

Combustion Air *Select a Type*

	Not required per mech. code
	Passive
	Other, describe:
	Location of duct or system:
	CFMs
	"round" duct OR
	"metal" duct

Builders Association of Minnesota version 101014

Minnesota Residential Energy Code (RE) Section R401.3 Building certificate. A building certificate shall be posted on or in the electrical distribution panel by the builder or design professional and posted in a manner that does not cover or obstruct the visibility of the circuit directory label, service disconnect label, or other required labels.

STAMPS FOR RESIDENTIAL PLANS

The following are *samples* of rubber stamps that may be useful during plan review. Prior to ordering, verify that the stamps comply with the current code and local ordinances.

CERTIFICATE OF OCCUPANCY
is required prior to any use or occupancy.

ADDRESS NUMBERS shall be provided for all new buildings in such a position as to be plainly visible and legible from the street or road fronting the property.

CEILING HEIGHT for habitable space 7'-0" minimum.

GUARD HEIGHT 36" minimum, openings less than 4".

ATTIC ACCESS minimum 22" X 30" is required when an attic has 30" or greater vertical clear headroom.

PROVIDE ROOF AND FLOOR TRUSS SPECIFICATIONS ON-SITE

FIELD COPY
(TO BE KEPT ON THE JOB SITE AT ALL TIMES)
NAME: _____
ADDRESS: _____

OFFICE COPY
NAME: _____
ADDRESS: _____

The floor RIM JOIST framing must be insulated and sealed per the Energy Code.

7 3/4" ma
a

NOTICE
Plan review was done in accordance with the current Minnesota Building Code. Plan review does not waive any additional code compliance issues found on site.

HOUSE/GARAGE WALL SEPARATION

One layer of 1/2" gypsum board is required on the garage side of the common wall from the floor to the roof sheathing. If the firewall terminates at the underside of the ceiling the walls and columns supporting the ceiling must have the same protection. Doors between the house and garage shall be a 1-3/8 inch solid wood door, solid or honeycomb steel doors not less 1-3/8 inch in thickness or 20 minute fire rated label.

BELOW GRADE INSULATION REQUIREMENTS

Provide a minimum of R- 15 insulation on all foundations [see minimum required on energy code calculations]. Foam insulation on the exterior must be protected above grade and six inches below grade. Most foam insulation installed on the interior require protection of 1/2 inch sheet rock or other approved material.

RESIDENTIAL GUARDS

Unenclosed floor and roof opening, open and glazed sides of landings and ramps, balconies, decks, or porches which are more than 30" above grade or floor below, require a guard with a minimum 36" height. Open guardrails must have intermediate rails or an ornamental pattern so that a sphere 4" in diameter cannot passthrough.

FIREPLACES/WOODSTOVES

MASONRY FIREPLACES: Combustible material shall not be placed within 2" of fireplace, smoke chamber or chimney walls. HEARTHS shall extend at least 16" in front of and 8" beyond each side of the fireplace opening. Fireplace openings 6 sq. ft. or larger require min. 20" hearth. MANUFACTURED FIREPLACES/WOODSTOVES: Install to specifications, provide specifications on site

EMERGENCY EGRESS REQUIREMENTS

Basements with habitable space and every sleeping room shall have at least one openable emergency escape and rescue window or exterior door opening for emergency escape or rescue. Minimum window requirements: net clear open area = 5.7 sq. ft., min. width 20" min. height 24", max. height off floor to the sill of 44". (Exception: grade floor windows)

REVIEWED for CODE COMPLIANCE

PLAN CHECKED BY _____

DATE _____

UNDER STAIR PROTECTION

If enclosed, provide one layer of 1/2" gypsum on the walls and ceilings on the underside of the stairway.

PENETRATIONS

FLASH AND SEAL ALL EXTERIOR OPENING TO PREVENT THE ENTRY OF WATER INTO THE WALL CAVITY.

WEATHER RESISTIVE BARRIER REQUIRED ON ALL EXTERIOR WALLS OF ALL BUILDINGS, INCLUDING GABLE ENDS

EXTERIOR STAIRWAY ILLUMINATION

Exterior stairways shall be provided with an artificial light source located in the immediate vicinity of the top landing of the stairway. The illumination of exterior stairs shall be controlled from the dwelling unit.

STAIRWAYS

Stairways 7 3/4" maximum rise, 10" minimum run; Install a handrail on one side of the stair 34" to 38" high, continuous and uninterrupted full length of stairs, handrail ends shall be returned or shall terminate in a newel post of safety terminal, minimum 6'-8" headroom.

FOOTINGS AND FOUNDATIONS

Minnesota Rules 1309, Chapter 4 of the Minnesota Residential Code (MRC) covers footings and foundations. **The following references are not intended to be inclusive of all applicable code sections.**

Foundation references

Footings: Sec. R403

Soils: Sec. R401.2, R401.4, R401.4.1, R401.4.2, Table R-401.4.1

Concrete/Masonry Foundations: Sec. R401, R402.2, R402.3, R402.4, R404, R404.1, R406.2

Wood Foundations: Sec. R401, R401.2, R402.1, R403.2, 404.2, R404.2.3, R405.2, R406.3, R406.3.1, R406.3.2, R406.3.3, R406.3.4

Insulated Concrete Forms [ICF]: MN Rules 1309.0404

Frost Protected Shallow Foundations: Sec. R403.3, R403.3.1

Grading/Drainage: Sec. R401.3, R403.3._3, R404.1.6, R405, R405.2.3, R408.6

Damp-proofing/Waterproofing: Sec. R406 and R406.2

Concrete Floors: Sec. R506

*This is a partial list of referenced material. Refer to IRC Chapters 4 and 6, for additional information not included in this summary.

MSRC section R301.1 design

Application. Buildings and structures, and all parts thereof, shall be constructed to safely support all loads, including dead loads, live loads, roof loads, flood loads, wind loads, and seismic loads as prescribed by this code. The construction of buildings and structures in accordance with the provision of this code shall result in a system that provides a complete load path that meets the requirements for the transfer of loads from their point of origin through the load-resisting elements **to the foundation**. Buildings and structures constructed as prescribed by this code are deemed to comply with the requirements of this section.

1309.0301 SECTION R301, DESIGN CRITERIA

TABLE R301.2(1) CLIMATIC AND GEOGRAPHIC DESIGN CRITERIA is amended to read as follows:

ROOF SNOW LOAD[f]	WIND DESIGN		SEISMIC DESIGN CATEGORY[l]	SUBJECT TO DAMAGE FROM			WINTER DESIGN TEMP[e]	ICE BARRIER UNDERLAYMENT REQUIRED[h]	FLOOD HAZARDS[g]	AIR FREEZING INDEX[i]	MEAN ANNUAL TEMP[j]
	Speed[d] (mph)	Topographic effects[k]		Weathering[a]	Frost line depth[b]	Termite[c]					
p_f = 0.7 * p_g	115	Yes	A	Severe	See MRpart1303.1600	See Footnote "c"	See MR Chapter 1322	Yes	See MR Chapter 1335	See Table R403.3 (2)	See Footnote "j"

For SI: 1 pound per square foot = 0.0479 kPa, 1 mile per hour = 0.447 m/s.

a. Weathering may require a higher strength concrete or grade of masonry than necessary to satisfy the structural requirements of this code. The weathering column shall be filled in with the weathering index, “negligible,” “moderate,” or “severe,” for concrete as determined from the Weathering Probability Map Figure R301.2(4). The grade of masonry units shall be determined from ASTM C34, C55, C62, C73, C90, C129, C145, C216 or C652.

b. See Minnesota Rules, part 1303.1600, Footing Depth for Frost Protection, to verify whether the county requires Zone I or Zone II frost protection.

c. The jurisdiction shall fill in this part of the table to indicate the need for protection depending on whether there has been a history of local subterranean termite damage.

d. See wind speed map Figure R301.2 (5) A. Wind exposure category shall be determined on a site-specific basis in accordance with Section R301.2.1.4.

e. See Minnesota Rules, Chapter 1322, Climate Data Design Conditions, to verify by city.

f. The ground snow loads to be used in determining the design snow loads for buildings and other structures are given in Minnesota Rules, part 1303.1700, Ground Snow Load to verify by county. The roof snow load is a uniform load on the horizontal projection of the roof.

g. See Minnesota Rules, Chapter 1335, Flood Proofing Regulations.

h. In accordance with Sections R905.1.2, R905.2.7, R905.4.3.1, R905.5.3.1, R905.6.3.1, R905.7.3.1 and R905.8.3.1, where there has been a history of local damage from the effects of ice damming.

i. The jurisdiction shall fill in this part of the table with the 100-year return period air freezing index (BF-days) from Figure R403.3(2) or from the 100-year (99 percent) value on the National Climatic Data Center data table “Air Freezing Index-USA Method (Base 32°F)” at www.ncdc.noaa.gov.sites/default/files/attachments/Air-Freezing-Index-Return-Periods-and-Associated-Probabilities.pdf.

j. The jurisdiction shall fill in this part of the table with the mean annual temperature from the National Climatic Data Center data table “Average Mean Temperature Index” at www.ncdc.noaa.gov.sites/default/files/attachments/Air-Freezing-Index-Return-Periods-and-Associated-Probabilities.pdf.

k. In accordance with Section R301.2.1.5.

l. Assigned to allow the application of the least restrictive topographic provisions of the code.

Table of steel reinforcement equivalent area

The following table was developed to assist in determining equivalent areas.

	Spacing O.C.								
	8”	**16”**	**24”**	**32”**	**40”**	**48”**	**56”**	**64”**	**72”**
#3 .11in²	.0138	.0069	.0046	.0034	.0028	.0023	.0020	.0017	.0015
#4 .20in²	.0250	.0125	.0083	.0063	.0050	.0042*	.0036	.0031	.0028
#5 .31in²	.0388	.0194	.0129	.0097	.0078	.0064	.0055	.0048	.0043
#6 .44in²	.055	.0275	.0183	.0138	.0110	.0091	.0078	.0069	.0061

From Table #4 @ 48” o.c. * (Eq. Area = 0.2in2/48in = 0.0042 in2/in)

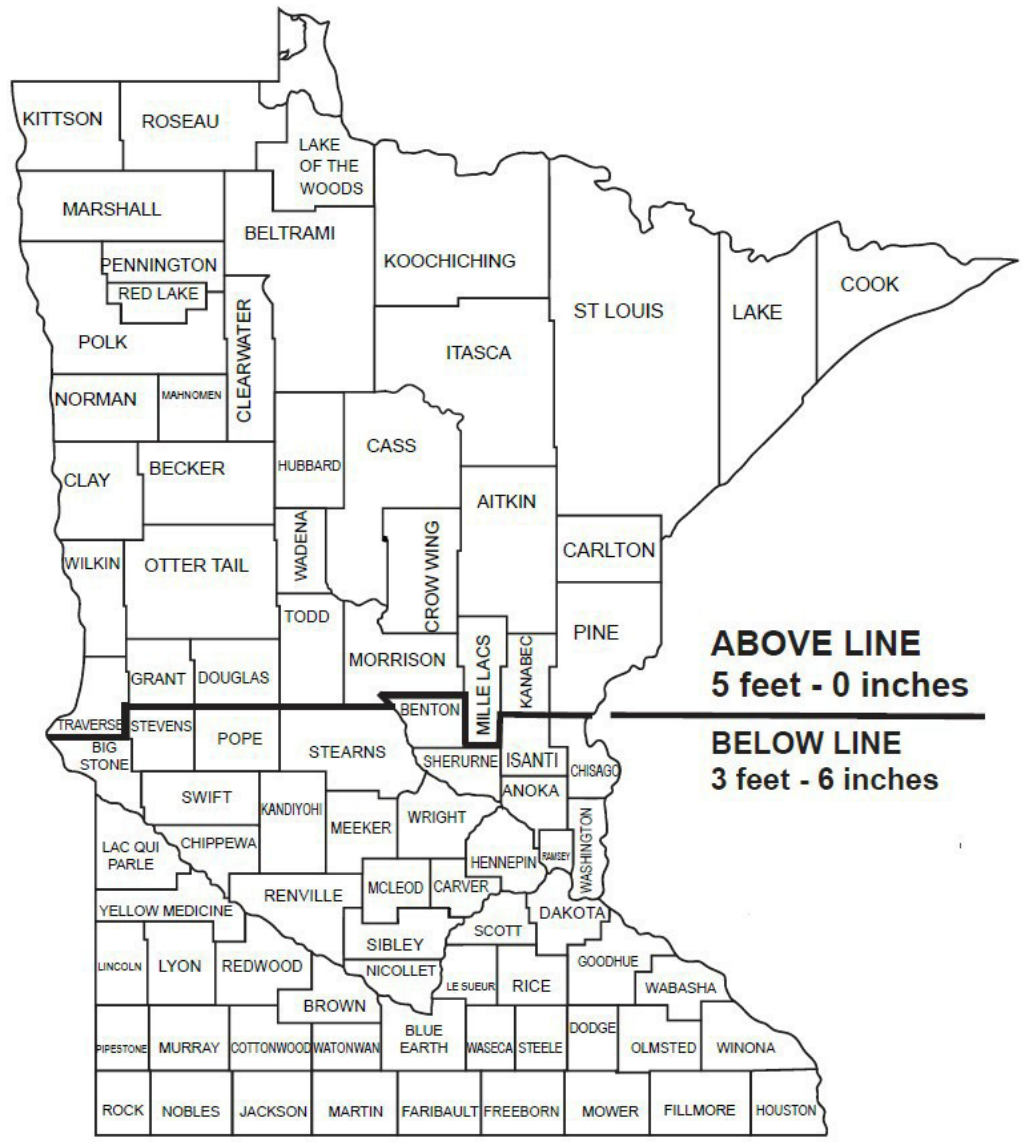
From Table #5 @ 72” o.c. = .0043 in2/in

From Table #3 @ 24” o.c. = .0045 in2/in

Sample: From the table above: if #4 rods @ 48” o.c. have an area of .0042. Equivalent area from the table could be #3 rods @ 24” o.c. or #5 rods @ 72” o.c..

FROST LINE DEPTH FOR FOUNDATIONS

Minimum footing depth. In the absence of a determination by an Minnesota licensed engineer competent in soil mechanics, the minimum allowable footing depth from bottom of footing to finish grade is 5 feet (1424 mm) in Zone I and 3.5 feet (1067 mm) in Zone II due to freezing. Zone I is th depicted on the map below as the northern portion of Minnesota and Zone II is depticted as the southern portion of Minnesota.

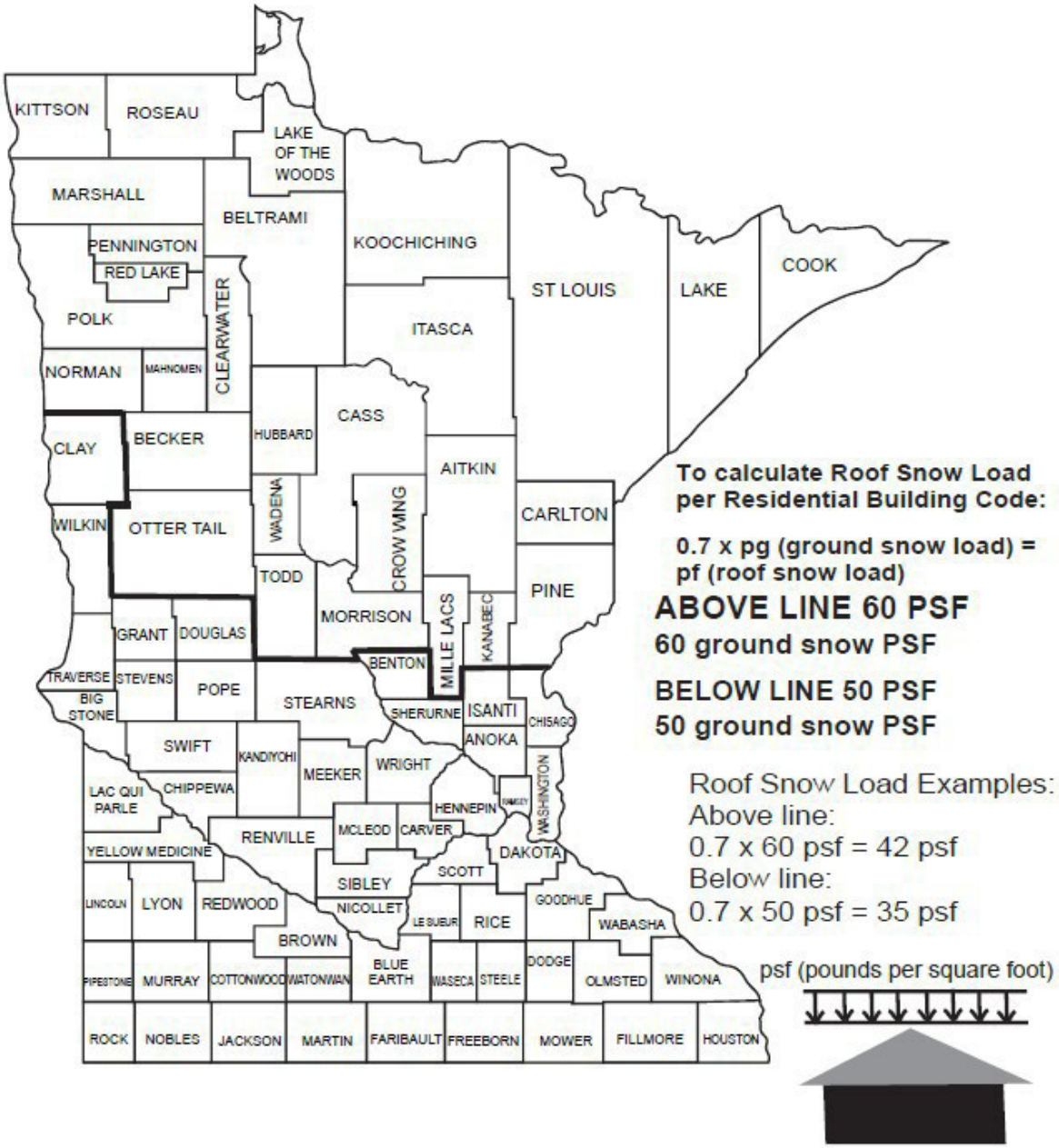


FROST PROTECTED FOUNDATIONS FOR NORTHERN MINNESOTA

The Minnesota Residential Code and the Minnesota Building Code both recognize and allow a less traditional method of reducing the required foundation depth in accordance with American Society of Civil Engineers - ASCE 32 - Standard for Frost Protected Shallow Foundations. Click on the subject tite above for more information.

SNOW LOAD

MSBC RULES 1303.1700 table R301.2(1)



RESIDENTIAL PLAN REVIEW GUIDE FOR SQUARE FOOTING SIZING

	Footing Sizes	Footing	Area	Required (Min.) Soil Bearing Capacity (PSF) Total Column Loading				
	Square Footing Size	Footing Sq. In. Area	Footing Sq. Ft. Area	1000 PSF Soil Brg.	1500 PSF Soil Brg.	2000 PSF Soil Brg.	2500 PSF Soil Brg.	3000 PSF Soil Brg.
8" Ftg. Thickness – Min.	8 x 8	64	0.44	444	667	889	1111	1333
	9 x 9	81	0.56	563	844	1125	1406	1688
	10 x 10	100	0.69	694	1042	1389	1736	2083
	11 x 11	121	0.84	840	1260	1681	2101	2521
	12 x 12	144	1.00	1000	1500	2000	2500	3000
	13 x 13	169	1.17	1174	1760	2347	2934	3521
	14 x 14	196	1.36	1361	2042	2722	3403	4083
	15 x 15	225	1.56	1563	2344	3125	3906	4688
	16 x 16	256	1.78	1778	2667	3556	4444	5333
10" Ftg.	17 x 17	289	2.01	2007	3010	4014	5017	6021
	18 x 18	324	2.25	2250	3375	4500	5625	6750
	19 x 19	361	2.51	2507	3760	5014	6267	7521
	20 x 20	400	2.78	2778	4167	5556	6944	8333
12" Ftg. Thickness - Minimum	21 x 21	441	3.06	3063	4594	6125	7656	9188
	22 x 22	484	3.36	3361	5042	6722	8403	10083
	23 x 23	529	3.67	3674	5510	7347	9184	11021
	24 x 24	576	4.00	4000	6000	8000	10000	12000
	25 x 25	625	4.34	4340	6510	8681	10851	13021
	26 x 26	676	4.69	4694	7042	9389	11736	14083
	27 x 27	729	5.06	5063	7594	10125	12656	15188
	28 x 28	784	5.44	5444	8167	10889	13611	16333
	29 x 29	841	5.84	5840	8760	11681	14601	17521
	30 x 30	900	6.25	6250	9375	12500	15625	18750
14" Footing	31 x 31	961	6.67	6674	10010	13347	16684	20021
	32 x 32	1024	7.11	7111	10667	14222	17778	21333
	33 x 33	1089	7.56	7563	11344	15125	18906	22688
	34 x 34	1156	8.03	8028	12042	16056	20069	24083
	35 x 35	1225	8.51	8507	12760	17014	21267	25521
	36 x 36	1296	9.00	9000	13500	18000	22500	27000

Shaded total load numbers may require special column types and/or additional footing reinforcement.

RESIDENTIAL PLAN REVIEW GUIDE FOR ROUND FOOTING SIZING

	Footing Sizes	Footing	Area	Required (Min.) Soil Load Bearing Capacity (PSF) Total Column Loading				
	Dia. Inches	Footing Sq. In.	Footing Sq. Ft.	1000 PSF	1500 PSF	2000 PSF	2500 PSF	3000 PSF
8" Ftg. Thickness – Min.	8	50.27	0.35	349	524	698	873	1047
	9	63.62	0.44	442	663	884	1104	1325
	10	78.54	0.55	545	818	1091	1364	1636
	11	95.03	0.66	660	990	1320	1650	1980
	12	113.10	0.79	785	1178	1571	1964	2356
	13	132.73	0.92	922	1383	1844	2304	2765
	14	153.94	1.07	1069	1604	2138	2673	3207
	15	176.72	1.23	1227	1841	2454	3068	3682
	16	201.06	1.40	1396	2094	2793	3491	4189
10" Ftg.	17	226.98	1.58	1576	2364	3153	3941	4729
	18	254.47	1.77	1767	2651	3534	4418	5301
	19	283.53	1.97	1969	2953	3938	4922	5907
	20	314.16	2.18	2182	3273	4363	5454	6545
12" Ftg. Thickness - Minimum	21	346.36	2.41	2405	3608	4811	6013	7216
	22	380.13	2.64	2640	3960	5280	6600	7919
	23	415.48	2.89	2885	4328	5771	7213	8656
	24	452.39	3.14	3142	4712	6283	7854	9425
	25	490.88	3.41	3409	5113	6818	8522	10227
	26	530.93	3.69	3687	5531	7374	9218	11061
	27	572.56	3.98	3976	5964	7952	9940	11928
	28	615.75	4.28	4276	6414	8552	10690	12828
	29	660.52	4.59	4587	6880	9174	11467	13761
	30	706.86	4.91	4909	7363	9818	12272	14726
14" Footing	31	754.77	5.24	5241	7862	10483	13104	15724
	32	804.25	5.59	5585	8378	11170	13963	16755
	33	855.30	5.94	5940	8909	11879	14849	17819
	34	907.92	6.31	6305	9458	12610	15763	18915
	35	962.12	6.68	6681	10022	13363	16703	20044
	36	1017.88	7.07	7069	10603	14137	17672	21206

Shaded total load numbers may require special column types and/or additional footing reinforcement.

NOTE: The previous two tables should only be used as a guide for establishing square column footing pad sizes. When the actual column type, size and total loading has been determined, each column footing condition should be reviewed to determine the required square footing size and thickness. Although actual concrete compressive strength (PSI) may vary, it is assumed that at a minimum, Plain Structural Concrete (2500 PSI) will be used for column footings sized herein. Soil types and bearing capacities must also be verified at each site. Consult with the local Building Code Official prior to using this table. BCSD-MH008-042503

FORMULA FOR CALCULATING FOOTING SIZES - GUIDE USE ONLY

Verify local requirements, using 50# ground snow load for this example (50# x 0.7 = 35 psf)

Formula:

Roof Area x Roof Loading = Concentrated Load on Footing

½ of Roof Span (20'-0") + Overhang (1'-0) =

21' 21' x 50# (roof loading) = 1050 PLF

1050 x 8' (Post Spacing) = 8400# (Total Concentrated Load)

Footing Size per Chart:

Round Footing: 28" x 12" (8552) > 8400

Square Footing: 25" x 25" x 12 (8681) > 8400

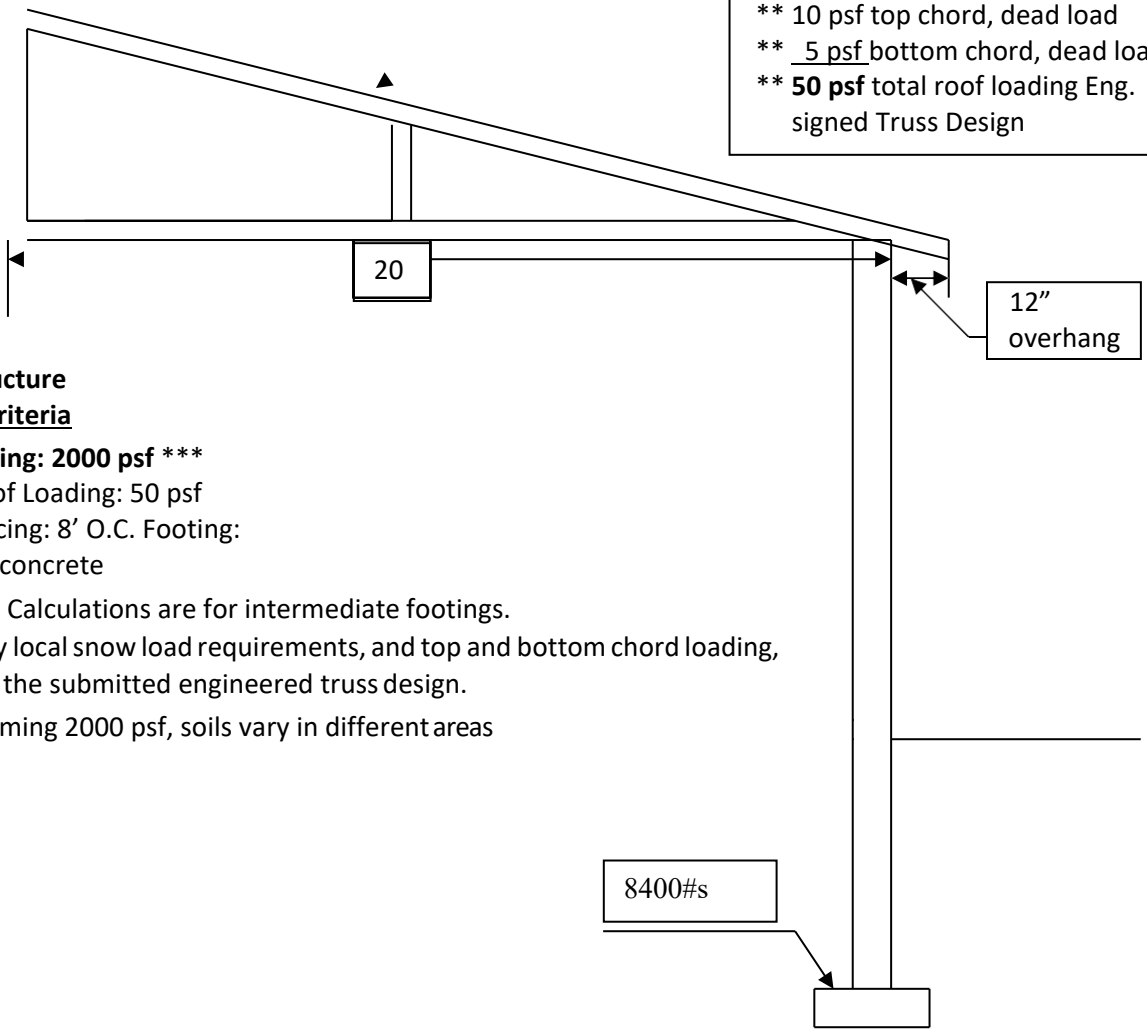
Example Truss Design

** 35 psf top chord, live load

** 10 psf top chord, dead load

** 5 psf bottom chord, dead load

** **50 psf** total roof loading Eng. signed Truss Design



Pole Structure

Design Criteria

Soil Bearing: 2000 psf ***

Total Roof Loading: 50 psf

Post Spacing: 8' O.C. Footing:

2500 psi concrete

* Note: Calculations are for intermediate footings.

** Verify local snow load requirements, and top and bottom chord loading, from the submitted engineered truss design.

*** Assuming 2000 psf, soils vary in different areas

Example to size footing

Design Criteria - Roof Load			**Design Criteria – Floor Load**	
Live Load:		42 psf	Live Load:	40 psf
Dead Load Top Chord:	+	10 psf	Dead Load:	+ 10 psf
Dead Load Bottom Chord:		**+ 5 psf**	**Total Load:**	**50 psf**
Total Load:		**57 psf**		

60 pound ground snow load (60# x 0.7 = 42 psf)

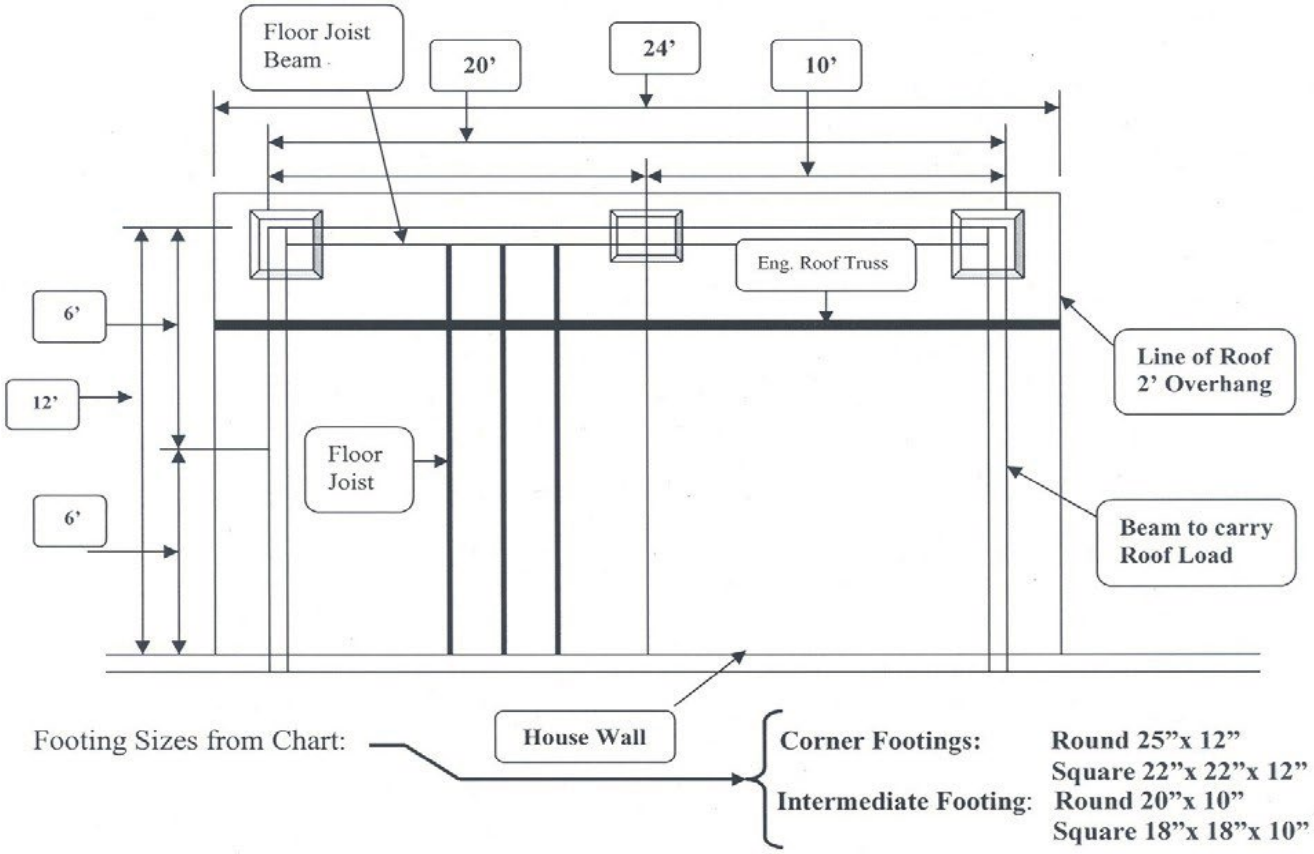
Soil Bearing Capacity: 2000 psf
Concrete: 2500 psi

Formula
½ Roof Span + Roof Overhang x Total Load x ½ Beam Span = Total Roof Load on Footing
½ Floor Joist Span x Total Load x ½ Beam Span = Total Floor Load on Footing

Total Load on Footing
Corner Footings:
Roof Load: 10' + 2' = 12'x 57 psf = 684 x 7 (6' + 1' overhang) = 4788 # Total Roof Load
Floor Load: 6' x 50 psf = 300 x 5' = 1500 # Total Floor Load
6288 # Total Load

Intermediate Footing:
Roof Load: * 2'x 57 psf = 114 x 10'(½ the beam each way) = 1140 # Total Roof Load
Floor Load: 6' x 50 psf = 300 x 10'(½ the beam each way) = 3000 # Total Floor Load
4140 # Total Load

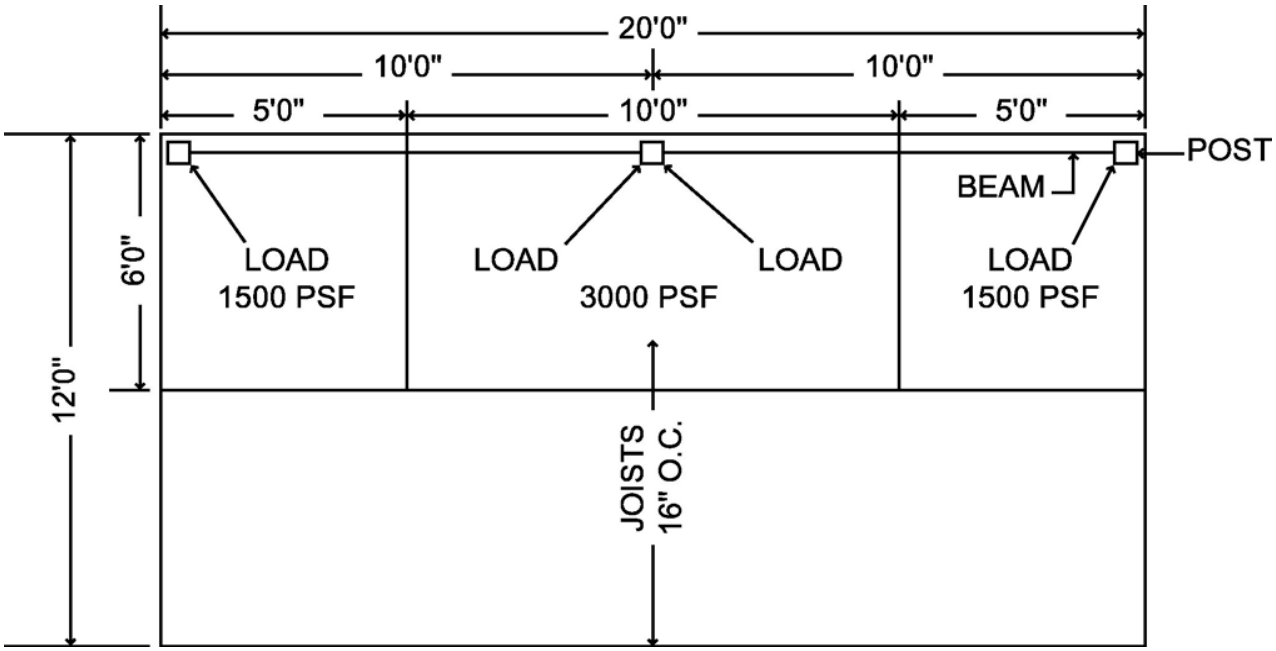
***(The above roof load span of 2' is the 1' overhang + 1' to nexttruss)**



Example to size footing

DESIGN CRITERIA:
FLOOR LOAD 40# LL. 10# D.L. TOTAL LOAD 50# PSF
SOIL BEARING CAPACITY 2000 PSF CONCRETE: 2500 PSI UNREINFORCED
FORMULA:
½ SPAN x LOAD x ½ POST SPAN
CORNER POSTS: 6'-0" x 50# = 300 x 5'-0" = 1500 PSF TOTAL LOAD
CENTER POST 6'-0" x 50 = 300 x 10'-0" = 3000 PSF TOTAL LOAD
FOOTING SIZE FROM CHART:
CORNER FOOTING – ROUND 12" x 8" SQUARE FOOTING 11" x 11" x 8"

CENTER FOOTING ROUND 17” x 10” SQUARE FOOTING 15” x 15” x 8”

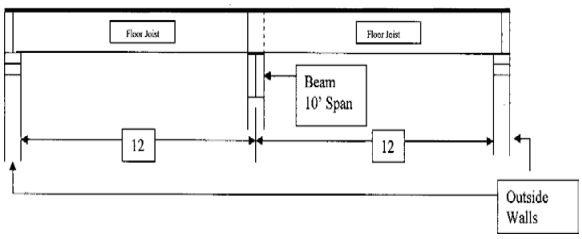


BEAM SIZING EXAMPLE

Beam Sizing Example 10’ Beam Span for Floor Load Only

Determine the amount of floor load bearing on the beam, example below.

(½ x 12’ = 6’) + (½ x 12’ = 6’) = 12’ of floor bearing on beam.



Determine Load: 40 psf live load + 10 psf dead load = 50 psf (pounds per square foot)

50 psf x 12’ = 600 plf (pounds per lineal foot) of beam
Determine Total Beam Load:

600 plf x 10’ (beam length) = 6000 total pounds

Using the Allowable Total Loads for Beams Supporting Floors table, look at 10’ span on chart.

Example: Using the Hem-Fir Floor Beam Chart below, it indicates as you go across the 10’ span line, a 3 – 2x12’s beam will carry 6202 Total Pounds, which is greater than the total beam load above. Therefore, 3 – 2x12’s Hem-Fir would work in this situation.

TABLE R602.7(2)

GIRDER SPANS[a] AND HEADER SPANS[a] FOR INTERIOR BEARING WALLS
(Maximum spans for Douglas fir-larch, hem-fir, southern pine and spruce-pine-fir[b] and required number of jack studs)

HEADERS AND GIRDERS SUPPORTING	SIZE	BUILDING Width[c] (feet)					
		12		24		36	
		Span[e]	NJ[d]	Span[e]	NJ[d]	Span[e]	NJ[d]
One floor	2-2 × 4	4-1	1	2-10	1	2-4	1
	2-2 × 6	6-1	1	4-4	1	3-6	1
	2-2 × 8	7-9	1	5-5	1	4-5	2
	2-2 × 10	9-2	1	6-6	2	5-3	2
	2-2 × 12	10-9	1	7-7	2	6-3	2
	3-2 × 8	9-8	1	6-10	1	5-7	1
	3-2 × 10	11-5	1	8-1	1	6-7	2
	3-2 × 12	13-6	1	9-6	2	7-9	2
	4-2 × 8	11-2	1	7-11	1	6-5	1
	4-2 × 10	13-3	1	9-4	1	7-8	1
	4-2 × 12	15-7	1	11-0	1	9-0	2
Two floors	2-2 × 4	2-7	1	1-11	1	1-7	1
	2-2 × 6	3-11	1	2-11	2	2-5	2
	2-2 × 8	5-0	1	3-8	2	3-1	2
	2-2 × 10	5-11	2	4-4	2	3-7	2
	2-2 × 12	6-11	2	5-2	2	4-3	3
	3-2 × 8	6-3	1	4-7	2	3-10	2
	3-2 × 10	7-5	1	5-6	2	4-6	2
	3-2 × 12	8-8	2	6-5	2	5-4	2
	4-2 × 8	7-2	1	5-4	1	4-5	2
	4-2 × 10	8-6	1	6-4	2	5-3	2
	4-2 × 12	10-1	1	7-5	2	6-2	2

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

a. Spans are given in feet and inches.
b. Spans are based on minimum design properties for No. 2 grade lumber of Douglas fir-larch, hem-fir, Southern pine, and spruce-pine-fir.
c. Building width is measured perpendicular to the ridge. For widths between those shown, spans are permitted to be interpolated.
d. NJ = Number of jack studs required to support each end. Where the number of required jack studs equals one, the header is permitted to be supported by an approved framing anchor attached to the full-height wall stud and to the header.
e. Spans are calculated assuming the top of the header or girder is laterally braced by perpendicular framing. Where the top of the header or girder is not laterally braced, tabulated spans for headers consisting of 2 × 8, 2 × 10, or 2 × 12 sizes shall be multiplied by 0.70 or the header or girder shall be designed.

FLOOR AND RAFTER SPAN TABLES OF THE MINNESOTA RESIDENTIAL CODE

FLOOR SPAN TABLES (online here)

TABLE R502.3.1(1) FLOOR JOIST SPANS FOR COMMON LUMBER SPECIES
(Residential sleeping areas, live load = 30 psf, L/Δ = 360)

TABLE R502.3.1(2) FLOOR JOIST SPANS FOR COMMON LUMBER SPECIES
(Residential living areas, live load = 40 psf, L/Δ = 360)

TABLE R505.3.2 ALLOWABLE SPANS FOR COLD-FORMED STEEL JOISTS—**SINGLE OR CONTINUOUS SPANS**

RAFTER SPAN TABLES (online here)

TABLE R802.4.1(1) RAFTER SPANS FOR COMMON LUMBER SPECIES
Roof live load = 20 psf, ceiling not attached to rafters, L/Δ = 180)

TABLE R802.4.1(2) RAFTER SPANS FOR COMMON LUMBER SPECIES
(Roof live load = 20 psf, ceiling attached to rafters, L/Δ = 240)

TABLE R802.4.1(3) RAFTER SPANS FOR COMMON LUMBER SPECIES
(Ground snow load = 30 psf, ceiling not attached to rafters, L/Δ = 180)

TABLE R802.4.1(4) RAFTER SPANS FOR COMMON LUMBER SPECIES
(Ground snow load = 30 psf, ceiling attached to rafters, L/Δ = 240)

TABLE R802.4.1(5) RAFTER SPANS FOR COMMON LUMBER SPECIES
(Ground snow load = 50 psf, ceiling not attached to rafters, L/Δ = 180)

TABLE R802.4.1(6) RAFTER SPANS FOR COMMON LUMBER SPECIES
(Ground snow load = 50 psf, ceiling attached to rafters, L/Δ = 240)

TABLE R802.4.1(7) RAFTER SPANS FOR COMMON LUMBER SPECIES
(Ground snow load = 70 psf, ceiling not attached to rafters, L/Δ = 180)

TABLE R802.4.1(8) RAFTER SPANS FOR COMMON LUMBER SPECIES
(Ground snow load = 70 psf, ceiling attached to rafters, L/Δ = 240)

TABLE R802.5.1(1) CEILING JOIST SPANS FOR COMMON LUMBER SPECIES
(Uninhabitable attics without storage, live load = 10 psf, L/Δ = 240)

TABLE R802.5.1(2) CEILING JOIST SPANS FOR COMMON LUMBER SPECIES
(Uninhabitable attics with limited storage, live load = 20 psf, L/Δ = 240)

DECK CONSTRUCTION REQUIREMENTS

Any deviation or alternative methods to the following requirements require approval from the Building Department prior to construction and may require additional plan submissions or engineering.

This deck information is intended only as a guide and is based in part on the 2020 Minnesota Residential Code, city ordinances and good building practice. It is the responsibility of the permit applicant to design and construct a deck that is compliant with all applicable Minnesota Building Code requirements and local ordinances of the jurisdiction. For specific questions regarding code or ordinance requirements, contact the local Building Department.

Deck building permits

Building permits are required for decks. Building permits may be obtained from the Building Department by filling out all application documents and submitting them along with construction documents.

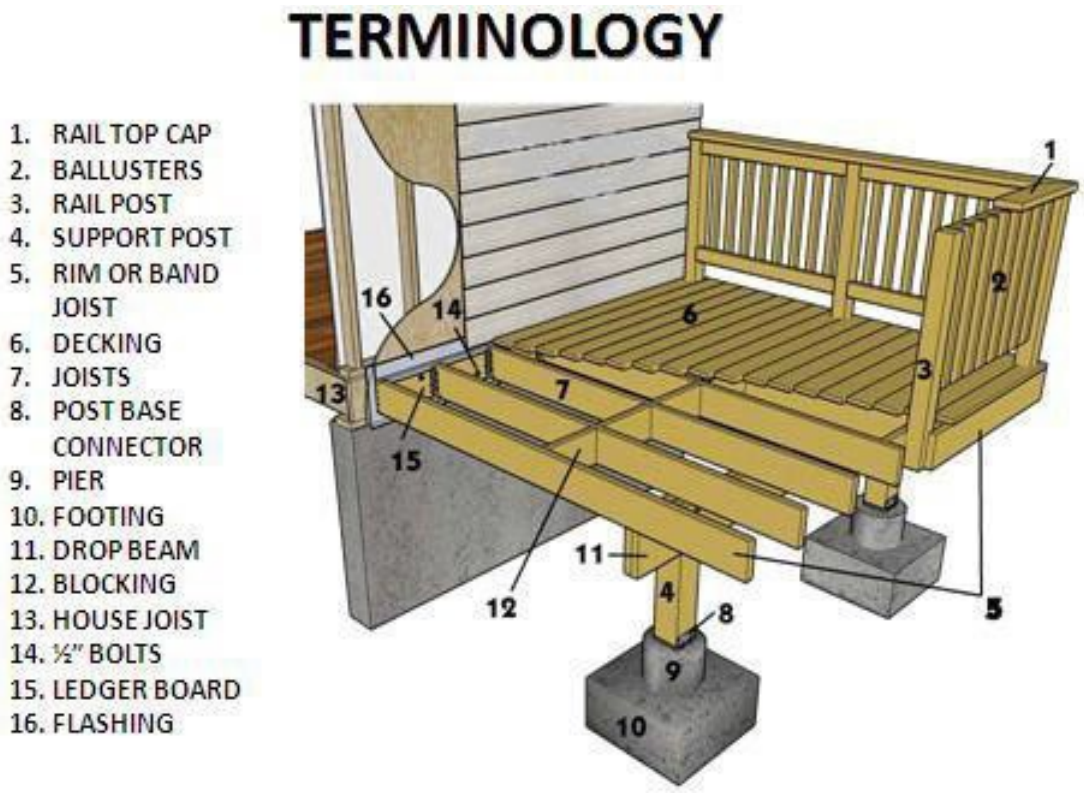
The following permit exemption for a deck or platform permit does not authorize work to be done in any manner in violation of the code or any other laws or ordinances of this jurisdiction. Decks and platforms regardless of size, not more than 30 inches (762 mm) above adjacent grade, not attached to a structure with frost footings and which is not part of an accessible route are exempt from a building permit. Freestanding decks do not require frost protected per the requirements of R507.3.2 exceptions #1 & #2. Building permits are not required for patios made of concrete or pavers on grade.

Plans

Plans submitted must be detailed, neat and be of a scale of at least ¼" = 1'. Computer generated plans from home stores are acceptable provided all additional required information is included. Composite decking/rail materials may be used only when meeting ASTM D7032 or when approved by the Building Department. Product reports on composite materials can be found on the manufacturers' website or "Acceptance Reports" may be found on the ICC Evaluation Service website. *Stair stringer spacing for composite stair treads must comply with the product's span rating.

Inspections

- Call a minimum 24 hours in advance to schedule an inspection.
- Have the address, permit number, and type of inspection (ex. footing) ready when calling.
- Footing Inspection - Holes dug, loose material/water removed. Have plans and permit card on-site.
- Framing Inspection - Required if any portion of structural framing will be covered prior to Final Inspection; or if permit holder requests framing inspection prior to installing decking.
- Final Inspection - All work complete and all stairs, handrails, and guards in place. Have plans and permit card on-site. Have installation instructions for composite decking/railing onsite.
- If work is found in compliance with the Code, the inspector will sign the inspection record card.
- An inspection record will be left on site with an approval to continue work or with listed corrections to be completed before work continues. The inspector will note if a re-inspection is required.
- Call the Building Department at xxx-xxx-xxxx with questions and progress inspections may be requested.



Think you might enclose your deck in the future?

Deck plans are approved on the assumption that the deck will be used only as a deck for the life of the structure. Footing sizes, setbacks, structural supports, and other deck components require a design change if the deck is converted into an enclosed space at a future date. Current deck design is to comply future loads and meet setbacks and other rules if the deck is intended to be enclosed in the future.

Zoning Regulations

Decks are permitted as an addition to a dwelling in a side or rear yard or as a freestanding structure. An accurate site plan/survey showing the deck location must be submitted with the construction plans for review. Setbacks are routinely checked as a part of the plan review and again at the time of the footing inspection. Unless otherwise permitted by the building department, lot lines must be marked, and survey markers exposed. A site inspection may be required to verify actual deck/stair locations. Easements, wetland buffers and other lot restrictions may require greater setbacks and will be directed to the Planning and Zoning Office.

Examples of clearances:

Well:	3 feet to footing or deck overhang
Septic Tank:	10 feet
Drain field:	20 feet
Overhead Electrical:	10 feet including drip leg
Existing Intakes/Exhausts:	Maintain manufacturers clearances

Electrical

NEC 210.52(E)(3) Balconies, decks, and porches, that are attached to the dwelling unit and are accessible from inside a dwelling unit shall have at least one receptacle outlet accessible from the balcony, deck, or porch. The receptacle outlet shall not be located more than 6 ½ feet above the balcony, deck or porch walking surface. R303.7 Exterior stairways shall be provided with a means to illuminate the stairs, including the landings and treads. Exterior stairways shall be provided with an artificial light source located in the immediate vicinity of the top landing of the stairway.

Materials

Fasteners Nails and other hardware must be hot-dipped zinc-coated (galvanized), stainless steel or equal. Screws should be either hot-dipped galvanized or electroplated with a polymer coating. The American Wood Preservation Association (AWPA) provides technical information pertaining to Standards, and general information regarding treated wood and wood protection. 12d nails are recommended on nominal 2-inch decking. 10d nails are recommended for 5/4" decking. With lag screws, use a flat washer under the head. Use washers under the nut and head of machine bolts and just under the nut of carriage bolts.

Lumber All wood used in deck construction must be pressure treated lumber or wood that is naturally resistant to decay such as redwood or cedar. Wood used aboveground, in contact with the ground, or below ground requires different degrees of treatment. Check the labels of the material you are buying to determine where it can be used. *Because some preservative treatments are very corrosive, make sure that any fasteners or metal connectors used in the construction of your deck are approved by the manufacturer for use with treated wood.*

Decking

Materials commonly used for decking include standard dimension lumber (either 2X4 or 2X6), radius-edged decking, or a manufactured decking product. Radius-edged Patio Decking (5/4 decking) has been specifically developed for outdoor decks. *Redwood and cedar patio decking is intended to be used flat-wise in load-bearing applications where joist spans do not exceed 16" o.c. (12"o.c. when installed diagonally to joists). Southern pine decking may span 24" o.c. or 16" o.c. when installed diagonally to joists.*

DECKING MATERIAL TYPE AND NOMINAL SIZE	MAXIMUM ON-CENTER JOIST SPACING	
	Decking perpendicular to joist	Decking diagonal to joist [a]
1 ¼ -inch-thick wood	16 inches	12 inches
2-inch-thick wood	24 inches	16 inches
Plastic composite	In accordance with Sect. R507.2	In accordance with Sect. R507.2

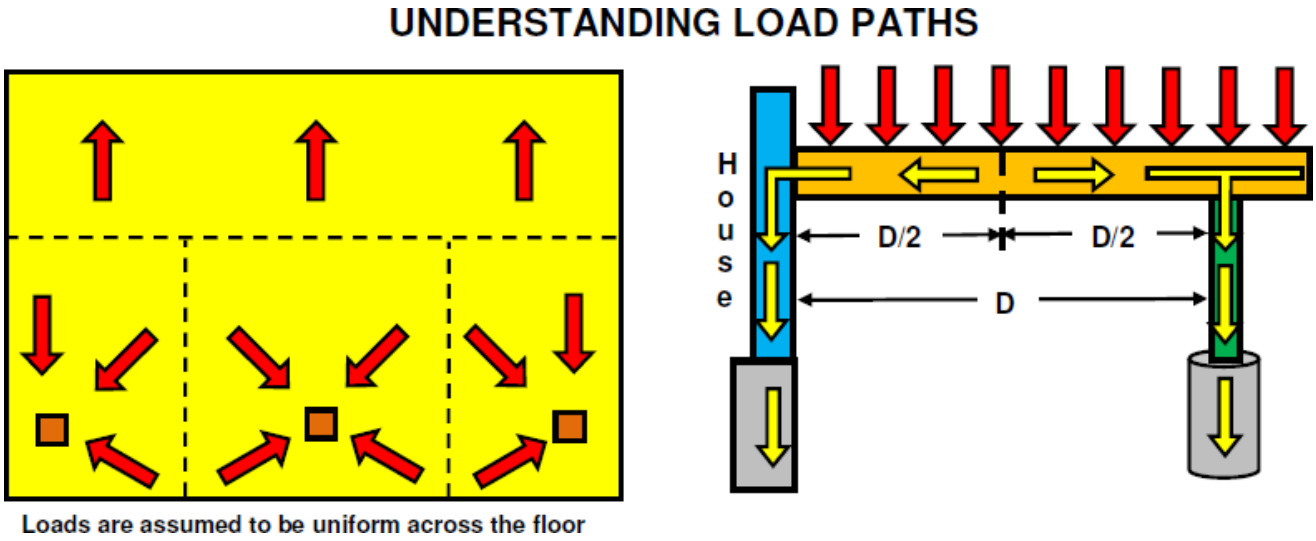
a. Maximum angle of 45 degrees from perpendicular for wood deck boards.

Manufactured decking products may be used only when meeting ASTM D 7032 or when approved by the Building Department. Approval is based on the material carrying an ICC Evaluation Services Report. Product reports on composite materials can be found on the manufacturers' website or "Acceptance Reports" may be

found on the ICC Evaluation Service website. Decking without a report may not be approved. Caution– some manufactured deck products are approved for decking but not for stair treads. In some cases where *manufactured decking is approved for stairs, the spacing of supports maybe significantly reduced compared to use on the deck itself. Read the research report for further information.*

Footings

Deck footings should be sized according to the following table. Footings must extend *below the* frost line as explained in FROST LINE DEPTH FOR FOUNDATIONS earlier in this chapter; except for decks that are not connected to a dwelling. *The minimum compressive strength of concrete used for deck footings is 2500 psi.* Footings supporting a 4x4 column must be not less than 6-inch diameter. Post footings supporting columns larger than 4x4 must be 8-inch diameter or larger. The bottom of post footings may be "belled" to achieve the desired minimum bearing area. Rebar is recommended. Center the column on the footing secured by a connector. Posts imbedded in the ground must be 60% C.C.A. or equal. Using a fiberboard tube will allow elevation of the top of the footing above finished grade to provide protection of the wood post from lawn mowers and trimmers.

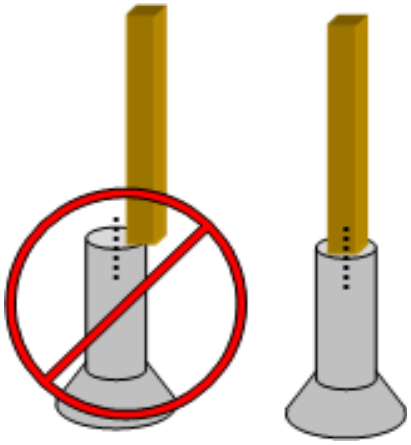


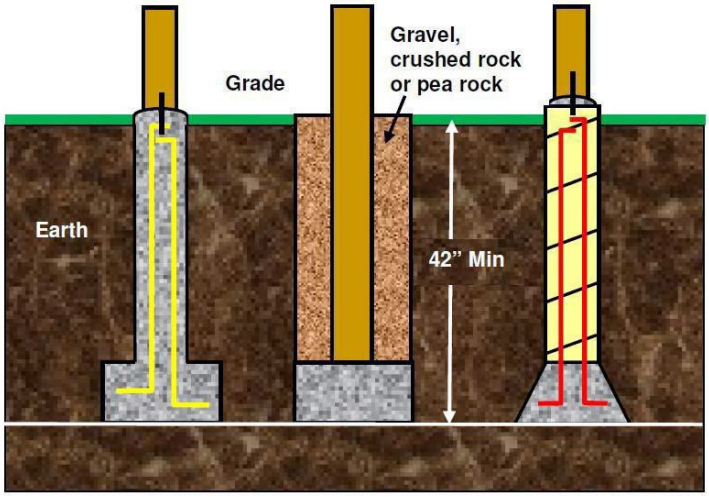
Required footing sizes are determined by calculating the area of the deck supported by each footing. Loads shall be assumed to be equally shared between the supporting elements. *Don t overlook cantilevers.* The minimum size of concrete footings shall be in accordance with Table R507.3.1, based on the tributary area and allowable soil-bearing pressure in accordance with Table R401.4.1

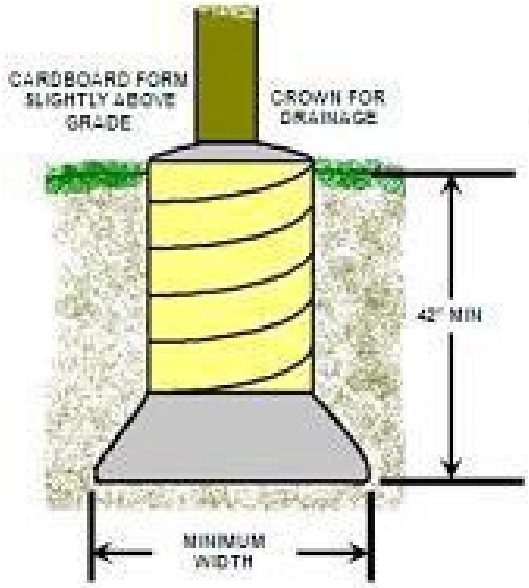
The minimum compressive strength of concrete used for deck footings is 2500 psi.

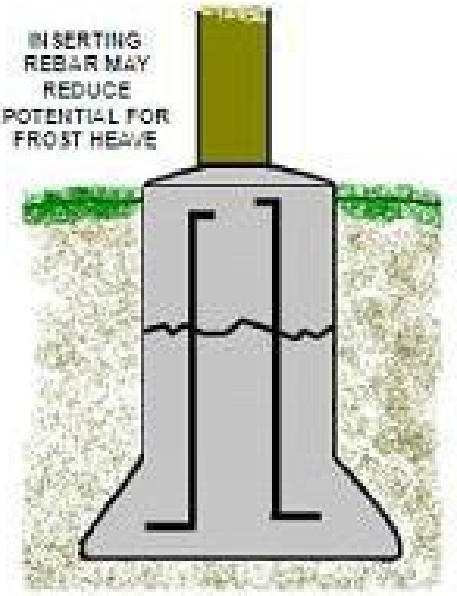
Contact Gopher State One Call for utility locations at least two working days before you dig – 1-800-252-1166 or 651- 454- 0002. Or 811 or visit their website at www.gopherstateonecall.org

The required area of the column should fully bear on the footing

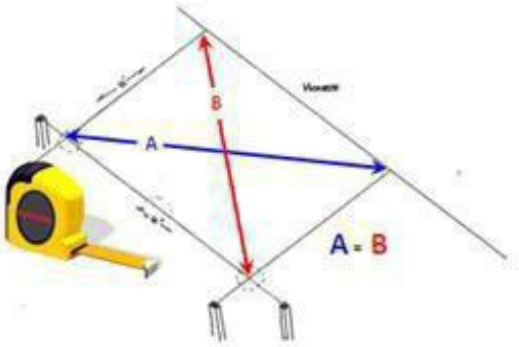




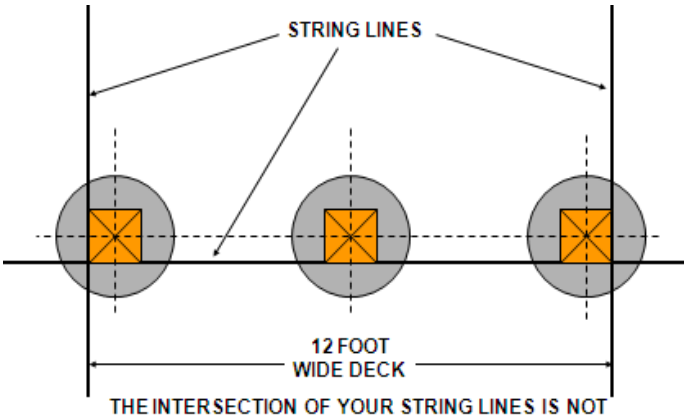




WHERE DO I PUT MY FOOTINGS?

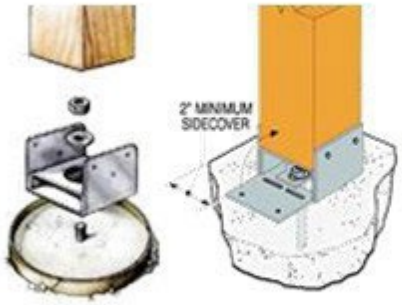


STRING LINES TO SQUARE DECK

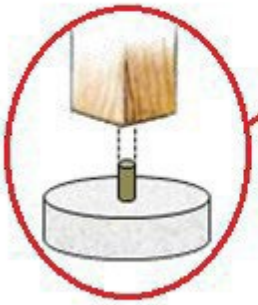


THE INTERSECTION OF YOUR STRING LINES IS NOT THE CENTER OF THE FOOTING. ADJUST ACCORDING TO THE LOCATION AND SIZE OF YOUR COLUMN.

ANCHORING POST BASE



Follow manufacturers installation specifications.



Not allowed - connection must be made using a field inspectable means of connection.

Deck framing attachment of ledger board to *wood joists (2X6, 2X8, 2X10, 2X12)*

TABLE R507.9.1.3(1)

FASTENER SPACING FOR ASOUTHERN PINE OR HEM-FIR DECK LEDGER AND A 2-INCH-NOMINAL SOLID- SAWN SPRUCE-PINE-FIR BAND JOIST [c, f, and g] Deck live load = 40 psf, deck dead load = 10 psf

JOIST SPAN	6' and less	6'1" to 8'	8'1" to 10'	10'1" to 12'	12'1" to 14'	14'1" to 16'	16'1" to 18'
Connection Details	On-center spacing of fasteners						
½ inch diameter lag screw with ½ inch maximum sheathing [b, c]	30	23	18	15	13	11	10
½ inch diameter bolt with ½ inch maximum sheathing [c]	36	36	34	29	24	21	19
½ inch diameter bolt with 1 inch maximum sheathing [d]	36	36	29	24	21	18	16

Ledgers shall be flashed in accordance with Section R703.4 to prevent water from contacting the house band joist.
The tip of the lag screw shall fully extend beyond the inside face of the band joist.
Sheathing shall be wood structural panel or solid sawn lumber.
Sheathing shall be permitted to be wood structural panel, gypsum board, fiberboard, lumber, or foam sheathing. Up to $^1/_2$-inch thickness of stacked washers shall be permitted to substitute for up to $^1/_2$ inch of allowable sheathing thickness where combined with wood structural panel or lumber sheathing.

TABLE 507.9.1.3(2)

PLACEMENT OF LAG SCREWS AND BOLTS IN DECK LEDGERS AND BAND JOISTS

MINIMUM END AND EDGE DISTANCES AND SPACING BETWEEN ROWS

	TOP EDGE	BOTTOM EDGE	ENDS	ROW SPACING
Ledger [a]	2 inches [d]	¼ inch	2 inches [b]	1⅝ inches [b]
Band Joist [c]	¾ inch	2 inches	2 inches [b]	1⅝ inches [b]

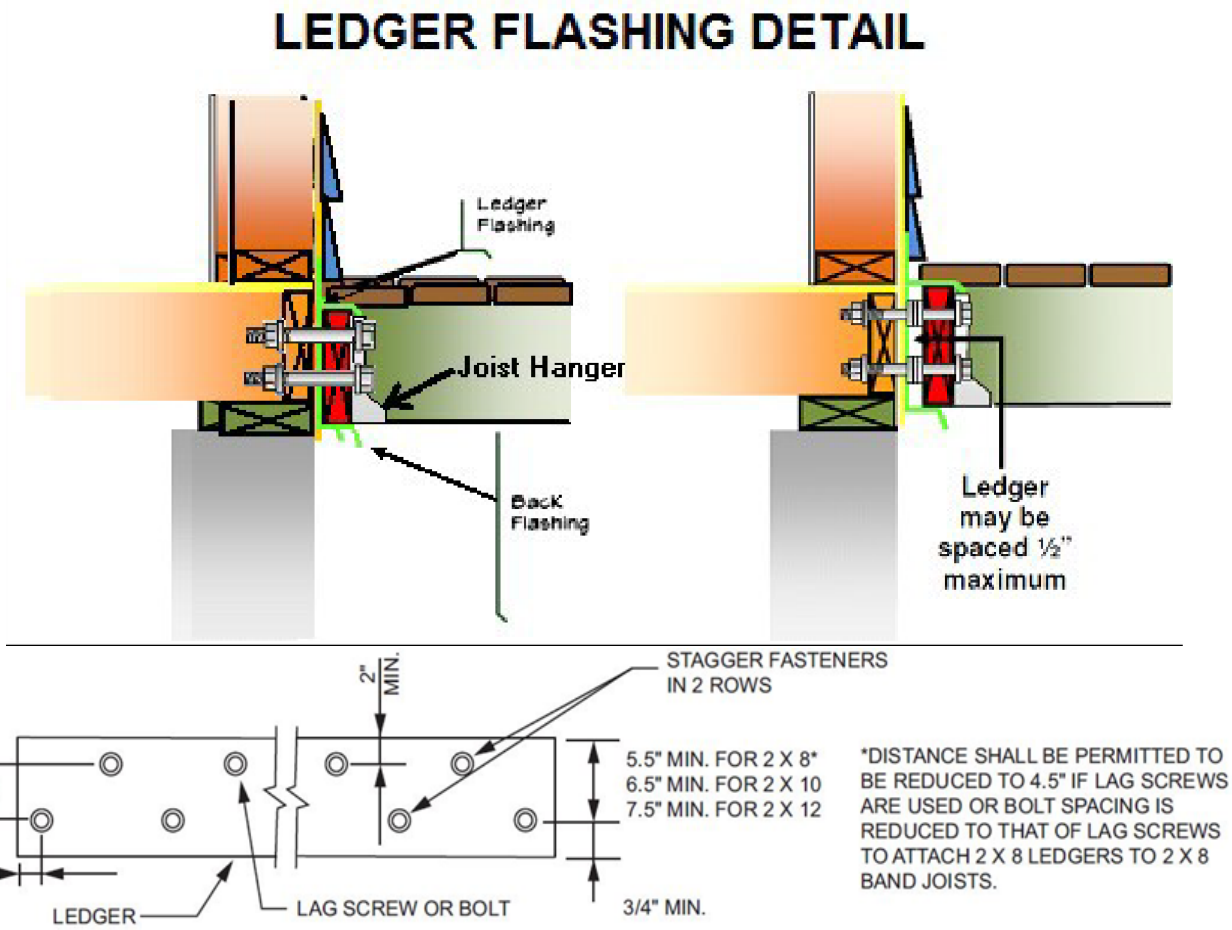
a. Lag screws or bolts shall be staggered from the top to the bottom along the horizontal run of the deck ledger in accordance with Figure R507.2.1(1).
b. Maximum 5 inches.
c. For engineered rim joists, the manufacturer's recommendations shall govern.
d. The minimum distance from bottom row of lag screws or bolts to the top edge of the ledger shall be in accordance with Figure R507.2.1(1).

(Caution: 2x6 and 2x8 joists will require underside floor protection with 5/8" treated plywood)

Make sure the ledger is securely attached to the dwelling. Install metal flashing at top and caulk sides

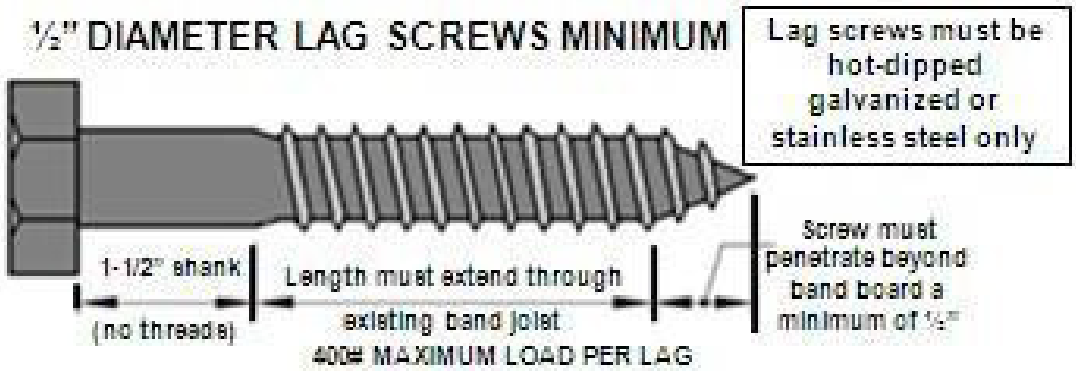
Capacity of or carriage bolts shall not exceed 400 lbs per bolt unless design provided.

PLACEMENT OF LAG SCREWS AND BOLTS IN BAND JOISTS

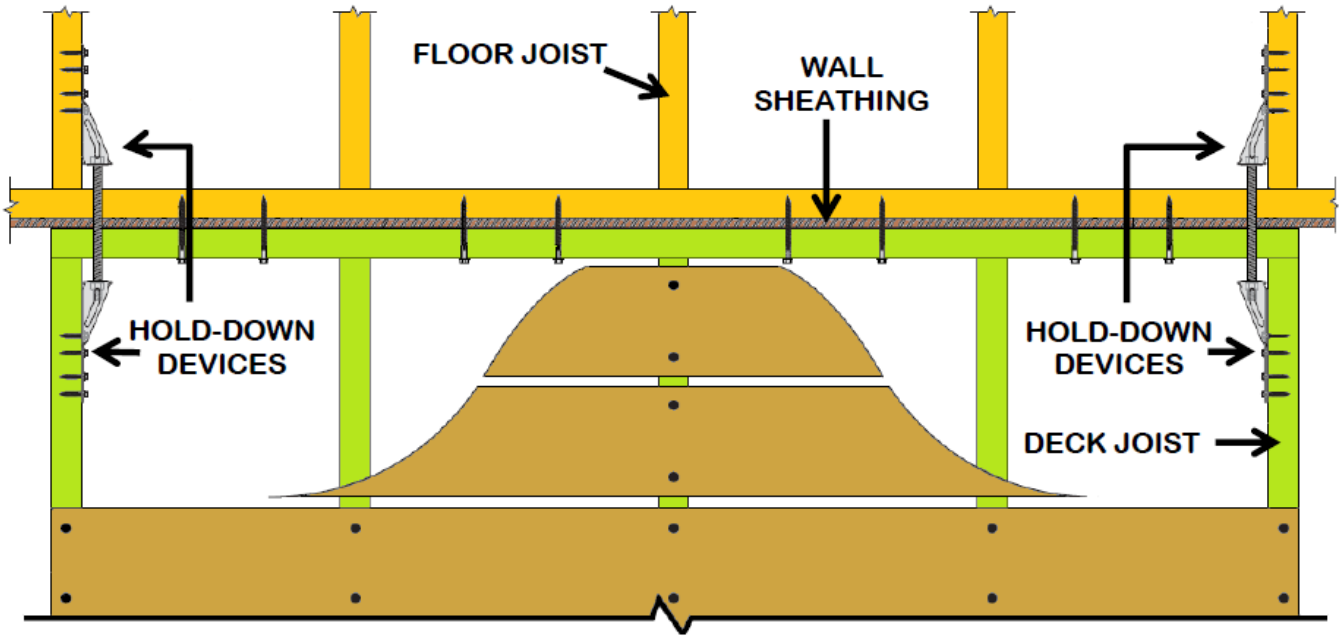


For SI: 1 inch = 25.4 mm.

FIGURE R507.9.1.3(1)
PLACEMENT OF LAG SCREWS AND BOLTS IN LEDGERS

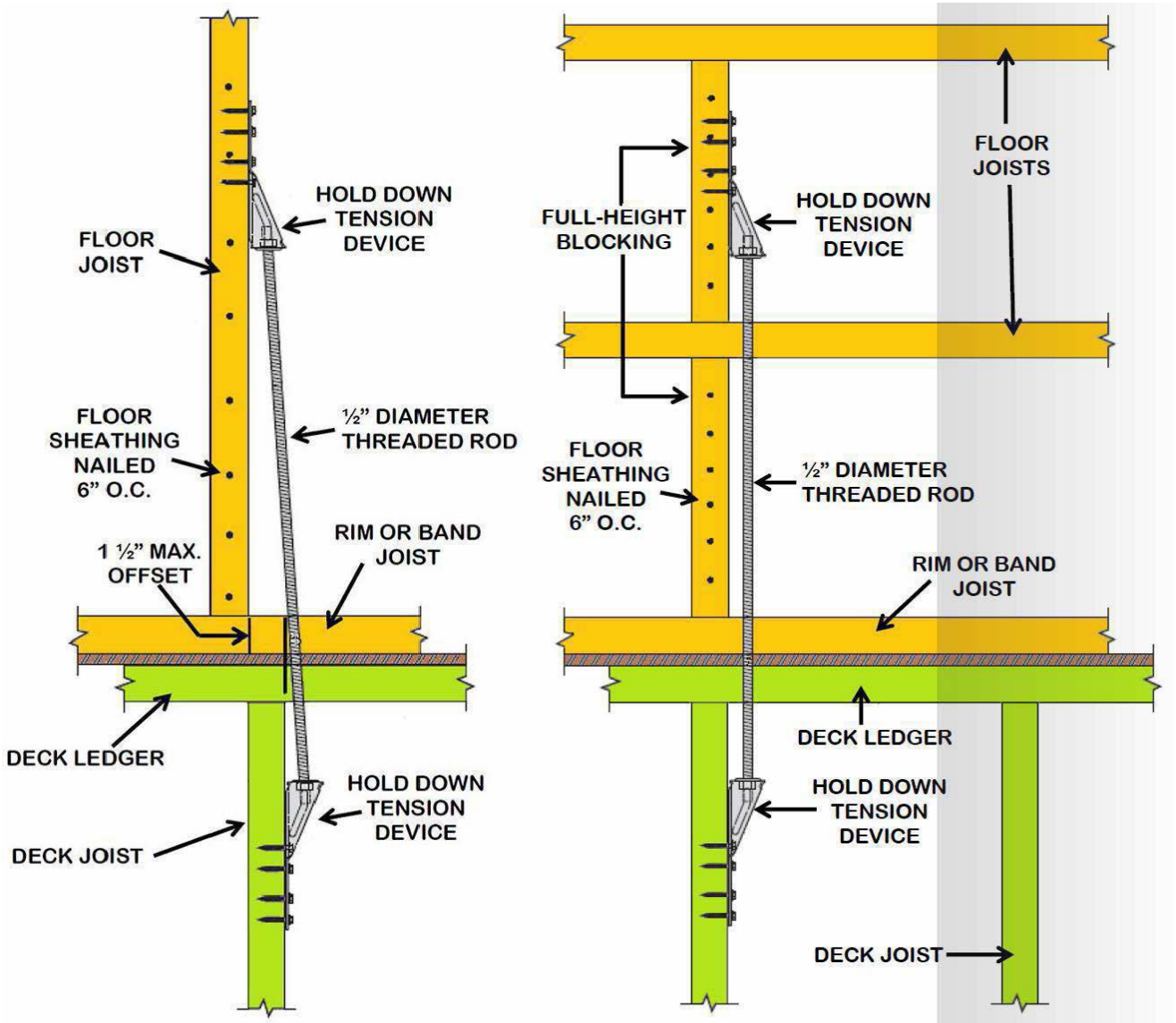


LATERAL LOAD CONNECTIONS TWO MINIMUM PER DECK

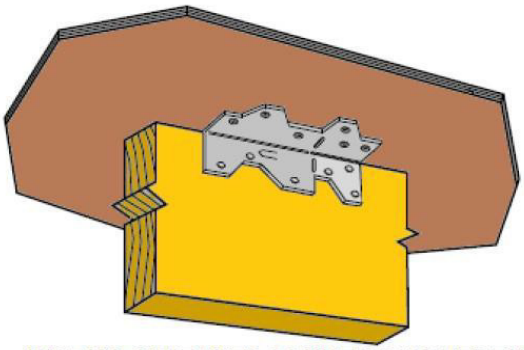


- HOLD-DOWN TENSION DEVICES MUST BE INSTALLED IN NOT LESS THAN TWO LOCATIONS PER DECK
- EACH DEVICE MUST HAVE AN ALLOWABLE STRESS DESIGN CAPACITY OF NOT LESS THAN 1500 POUNDS.
- FLOOR SHEATHING IN THE DWELLING MUST BE NAILED TO THE JOISTS TO WHICH HOLD DOWNS ARE CONNECTED AT 6" MAXIMUM O.C.
- ALTERNATIVELY THE DECK MAY BE DESIGNED TO BE SELF SUPPORTING OR A DESIGN MAY BE PROVIDED BY A LICENSED DESIGN PROFESSIONAL.

Floor joists perpendicular to deck ledger and floor joist parallel to deck ledger



WHEN THERE IS NO ACCESS TO THE TOP OF THE FLOOR SHEATHING



INSTALL APPROVED CONNECTORS PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS

IN ALL CASES, MANUFACTURER'S INSTALLATION INSTRUCTIONS MUST BE FOLLOWED

Alternative deck lateral load connectors (or approved equivalent)

USP STRUCTURAL CONNECTORS MiTek

LTS19-TZ
Deck Lateral Load Connector

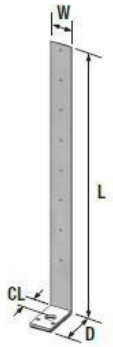
The LTS19-TZ holdown can be used to build stronger, safer, deck structures. It will meet the new lateral connection requirements outlined in the 2015 International Residential Code (IRC) by attaching deck floor joist members to the main structure. The LTS19-TZ can also be used for deck rail post reinforcement.

Materials: Strap: 16Ga G-185 galvanizing
Washer - 3Ga USP primer

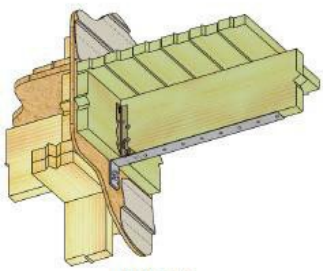
Codes: ER-200, FL14500

Installation:

- The LTS19-TZ must be installed flush to the surface of the outside wall of the home.
- Use the building code specified 3/8" lag screw and washer to secure the base of the LTS19-TZ to the main house structure. The minimum embedment depth for the lag screw is 3".
- Tighten lag screw until snug to the base of the LTS19-TZ, with a wrench or socket, to prevent loosening of the lag screw.
- Use all specified 10d common nails to attach the strap portion of the connector to the bottom of the deck floor joist.
- See additional installation instructions on detail drawing.



LTS19-TZ


LTS19-TZ
Application

SIMPSON Strong-Tie

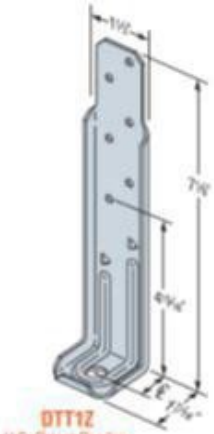
Decks & Fences

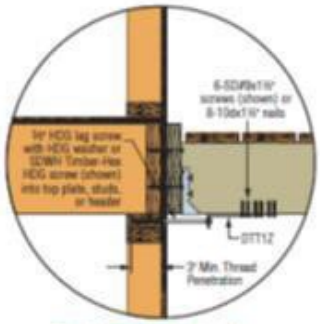
DTT Deck Tension Ties

DTT tension ties are safe, cost-effective connectors designed to meet or exceed code requirements for deck construction. These versatile DTT connectors are also load rated as a holdown for light-duty shearwalls and braced wall panel applications.

For new construction or to make an existing current deck code-compliant, the DTT1Z can be used as a tension-tie to satisfy the 2015 IRC provision for a 750 lbs. lateral load connection to the house at four locations per deck. This new code detail permits the lateral connection from the deck joists to be made to top plates, studs, or headers within the supporting structure, which eliminates the need to access to the floor joists inside the home.

The new DTT1Z fastens to the narrow or wide face of a single 2x with Simpson Strong-Tie® Strong-Drive® SD Connector screws or nails and accepts a ⅜" machine bolt, anchor bolt, or lag screw *(washer required)* or can be installed with the new Strong-Drive SDWH Timber-Hex HDG screw with an integral washer. The DTT2 fastens easily to the wide face of a single or double 2x using Simpson Strong-Tie Strong-Drive SDS Heavy-Duty Connector screws (included) and accepts a ½" machine bolt or anchor bolt.


DTT1Z
U.S. Patent Pending


Typical DTT1Z Deck-to-House Lateral Load Connection
For more information on lateral load connections, see technical bulletin T-DECKLATLOAD

MATERIAL: 14 gauge
FINISH: DTT1Z/DTT2Z—ZMAX® coating; DTT2SS—Stainless steel; see Corrosion Information, pages 13-15.
INSTALLATION:

- Use all specified fasteners. See General Notes.
- A standard cut washer *(included)* must be installed between the nut and the seat.
- Simpson Strong-Tie Strong-Drive SDS Heavy-Duty Connector screws install best with a low speed high torque drill with a ⅜" hex head driver.
- Strong-Drive SD Connector screws install with a ¼" hex head driver.
- Strong-Drive SDWH Timber-Hex HDG screws install with a ½" hex head driver.

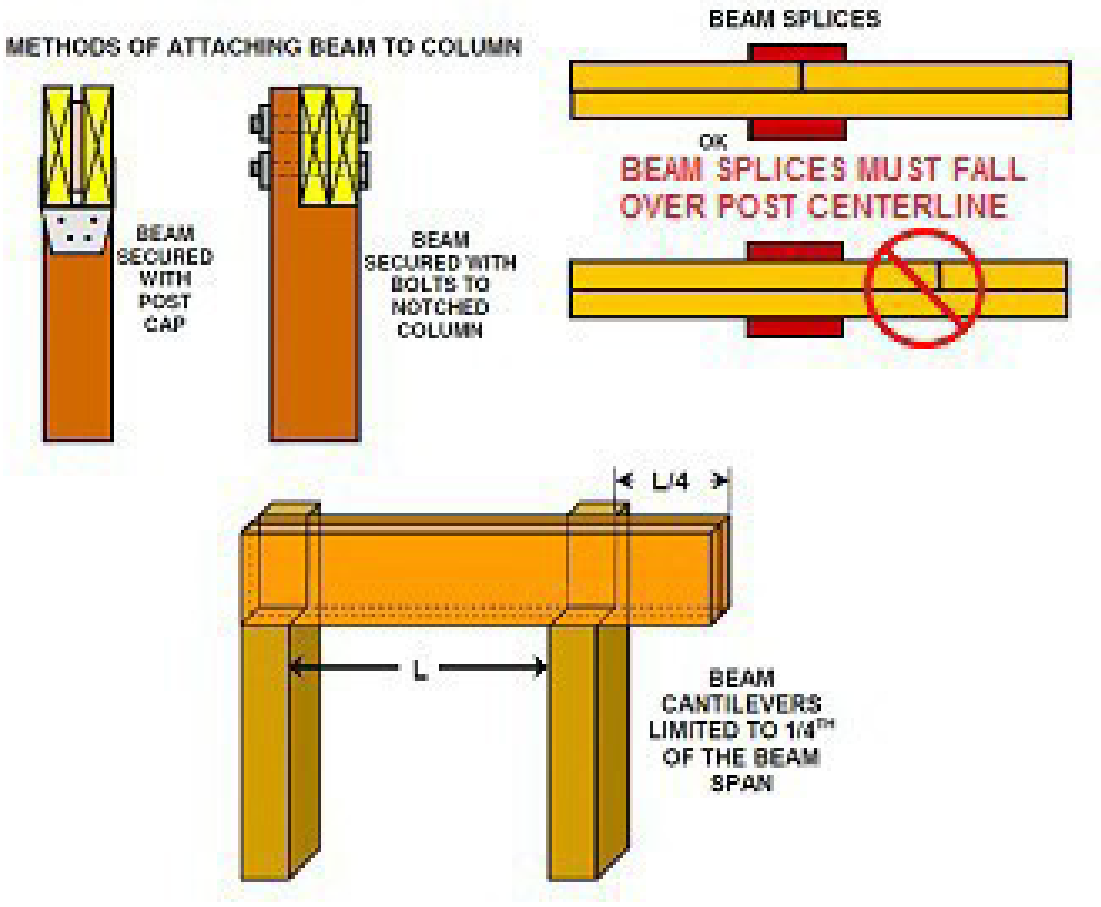
Beams

Construct beams using two or more 2-inch nominal pieces of lumber. Nail beams together using 10d nails at 32 inches o.c. along each edge of the beam and staggered. A spacer may be used to fir the beam to a 3½ -inch width. Beams should be installed with any arch or crown facing up. Attachments to columns should be with post caps designed for such use. Splices must occur over columns.

BEAM SPANS (WET SERVICE)
TABLE R507.5 DECK BEAM SPAN LENGTHS[a, b, g] (feet - inches)

Species	Size[d]	Joist Spans Less Than or Equal To: (feet)						
		6’	8’	10’	12’	14’	16’	18’
Southern Pine	1 – 2 × 6	4-11	4-0	3-7	3-3	3-0	2-10	2-8
	1 – 2 × 8	5-11	5-1	4-7	4-2	2-10	3-7	3-5
	1 – 2 × 10	7-0	6-0	5-5	4-11	4-7	4-3	4-0
	1 – 2 × 12	8-3	7-1	6-4	5-10	5-5	5-0	4-9
	2 – 2 × 6	6-11	5-11	5-4	4-10	4-6	4-3	4-0
	2 – 2 × 8	8-9	7-7	6-9	6-2	5-9	5-4	5-0
	2 – 2 × 10	10-4	9-0	8-0	7-4	6-9	6-4	6-0
	2 – 2 × 12	12-2	10-7	9-5	8-7	8-0	7-6	7-0
	3 – 2 × 6	8-2	7-5	6-8	6-1	5-8	5-3	5-0
	3 – 2 × 8	10-10	9-6	8-6	7-9	7-2	6-8	6-4
	3 – 2 × 10	13-0	11-3	10-0	9-2	8-6	7-11	7-6
	3 – 2 × 12	15-3	13-3	11-10	10-9	10-0	9-4	8-10
Douglas fir-larch[e], hem-fir[e], spruce-pine-fir[e], redwood, western cedars, ponderosa pine[f], red pine[f]	3 × 6 or 2 – 2 x 6	5-5	4-8	4-2	3-10	3-6	3-1	2-9
	3 × 8 or 2 – 2 × 8	6-10	5-11	5-4	4-10	4-6	4-1	3-8
	3 × 10 or 2 – 2 × 10	8-4	7-3	6-6	5-11	5-6	5-1	4-8
	3 × 12 or 2 – 2 × 12	9-8	8-5	7-6	6-10	6-4	5-11	5-7
	4 × 6	6-5	5-6	4-11	4-6	4-2	3-11	3-8
	4 × 8	8-5	7-3	6-6	5-11	5-6	5-2	4-10
	4 × 10	9-11	8-7	7-8	7-0	6-6	6-1	5-8
	4 × 12	11-5	9-11	8-10	8-1	7-6	7-0	6-7
	3 – 2 × 6	7-4	6-8	6-0	5-6	5-1	4-9	4-6
	3 – 2 × 8	9-8	8-6	7-7	6-11	6-5	6-0	5-8

a. Live load = 40 psf, dead load = 10 psf, L/Δ = 360 at main span, L/Δ = 180 at cantilever with a 220-pound point load applied at the end.
b. Beams supporting deck joists from one side only.
c. No. 2 grade, wet service factor.
d. Beam depth shall be greater than or equal to depth of joists with a flush beam condition.
e. Includes incising factor.
f. Northern species. Incising factor not included.
g. Beam cantilevers are limited to the adjacent beam’s span divided by 4.



Columns

R507.4 Deck posts.

For single-level wood-framed decks with beams sized in accordance with Table R507.5, deck post size shall be in accordance with TABLE R507.4 DECK POST HEIGHT[a]

DECK POST SIZE	MAXIMUM HEIGHT[a, b] (feet-inches)
4 × 4	6-9[c]
4 × 6	8
6 × 6	14
8 × 8	14

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa.

a. Measured to the underside of the beam.

b. Based on 40 psf live load.

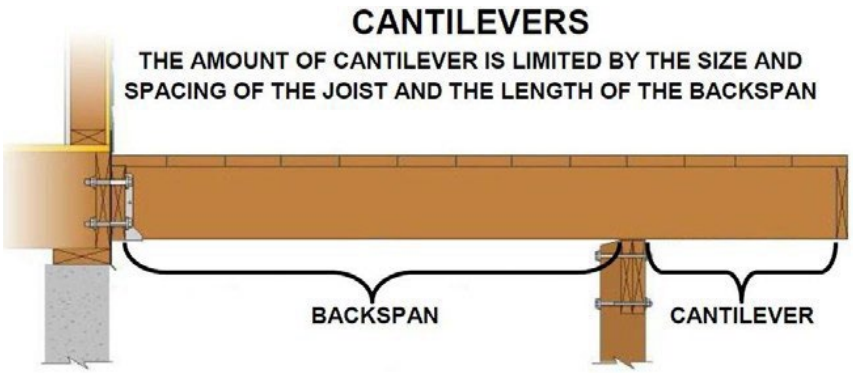
c. The maximum permitted height is 8 feet for one-ply and two-ply beams. The maximum permitted height for three-ply beams on post cap is 6 feet 9 inches.

Joists

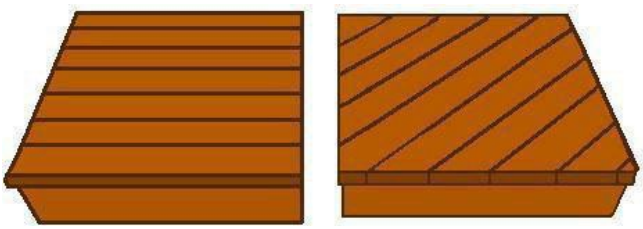
TABLE R507.6 - DECK JOIST SPANS FOR COMMON LUMBER SPECIES (ft. - in.)

SPECIES[a]	SIZE	ALLOWABLE JOIST BACK SPAN[b]			MAXIMUM CANTILEVER[c, f]		
		SPACING OF DECK JOISTS (inches)			SPACINGOF DECK JOISTS WITH CANTILEVERS[c] (inches)		
		12	16	24	12	16	24
Southern pine	2 × 6	9-11	9-0	7-7	1-3	1-4	1-6
	2 × 8	13-1	11-10	9-8	2-1	2-3	2-5
	2 × 10	16-2	14-0	11-5	3-4	3-6	2-10
	2 × 12	18-0	16-6	13-6	4-6	4-2	3-4
Douglas fir-larch[d], hem-fir[d] spruce-pine-fir[d],	2 × 6	9-6	8-8	7-2	1-2	1-3	1-5
	2 × 8	12-6	11-1	9-1	1-11	2-1	2-3
	2 × 10	15-8	13-7	11-1	3-1	3-5	2-9
	2 × 12	18-0	15-9	12-10	4-6	3-11	3-3
Redwood, western cedars, ponderosa pine[e], red pine[e]	2 × 6	8-10	8-0	7-0	1-0	1-1	1-2
	2 × 8	11-8	10-7	8-8	1-8	1-10	2-0
	2 × 10	14-11	13-0	10-7	2-8	2-10	2-8
	2 × 12	17-5	15-1	12-4	3-10	3-9	3-1

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa, 1 pound = 0.454 kg.
a. No. 2 grade with wet service factor.
b. Live load = 40 psf, dead load = 10 psf, L/Δ = 360.
c. Live load = 40 psf, dead load = 10 psf, L/Δ = 360 at main span, L/Δ = 180 at cantilever with a 220-pound point load applied to end.
d. Includes incising factor.
e. Northern species with no incising factor.
f. Cantilevered spans not exceeding the nominal depth of the joist are permitted.

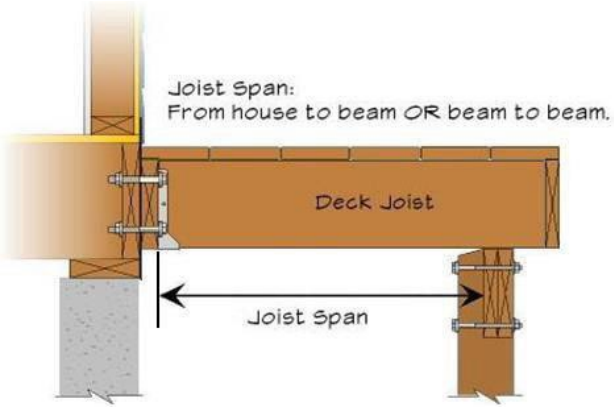


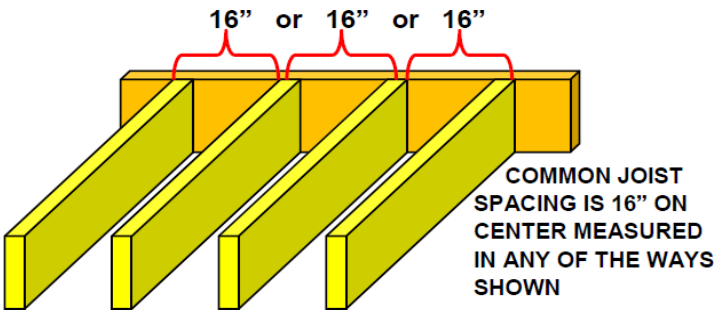
Wood decking

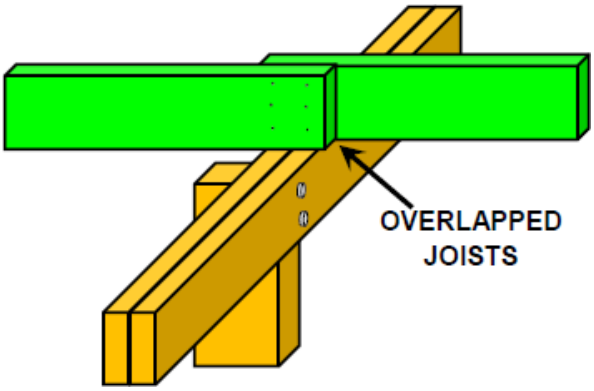


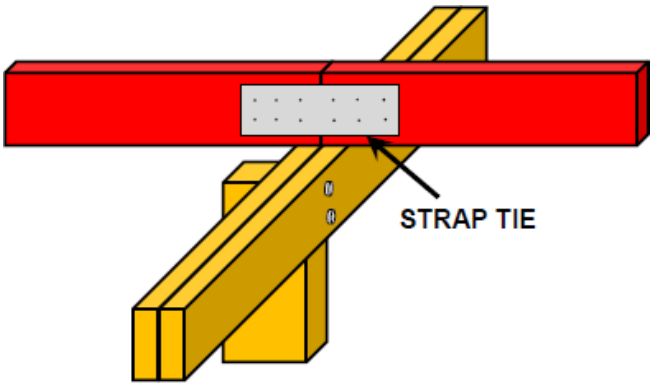
Joist details

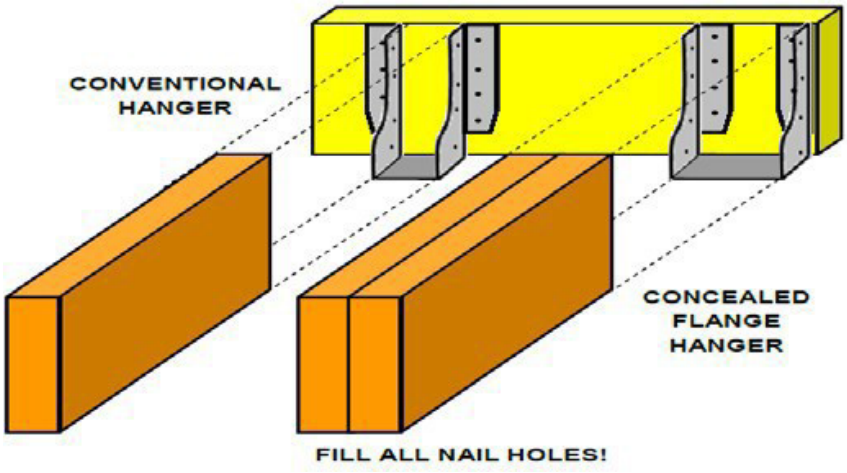
Joist spacing is determined by the type of decking used. 16” o.c. spacing must be used with 5/4 decking or when 2x6 or 2x4 decking is used at a 45° angle. 12” o.c. spacing required when 5/4 decking is used at a 45° angle. Joists must bear on a beam, ledger strip, or joist hangers. Joist hangers must be installed in accordance with the manufacturer’s recommendations. ***Fill all nail holes in joist hangers.***



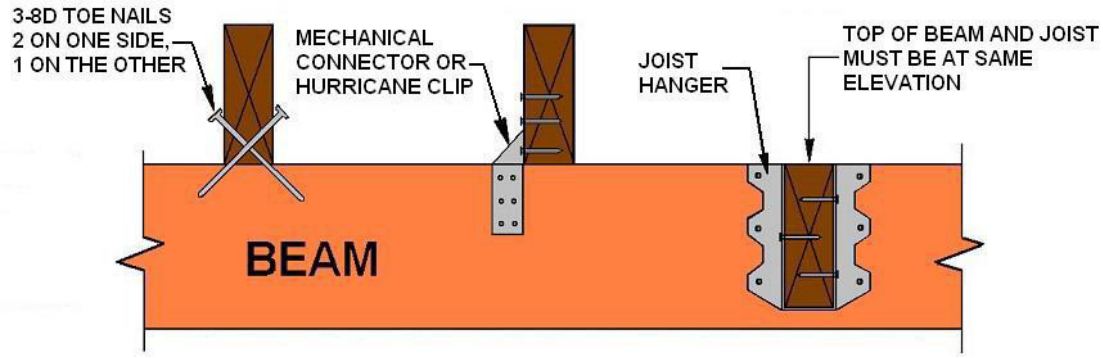


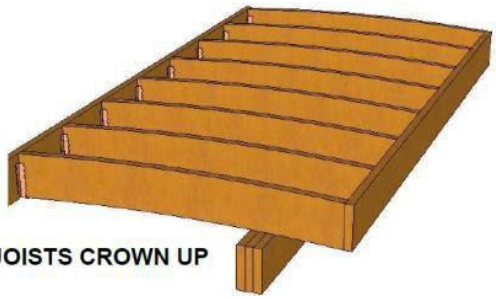


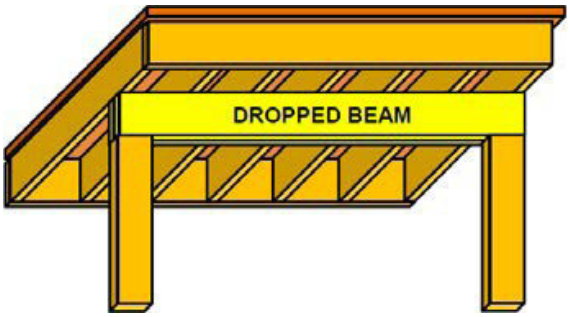


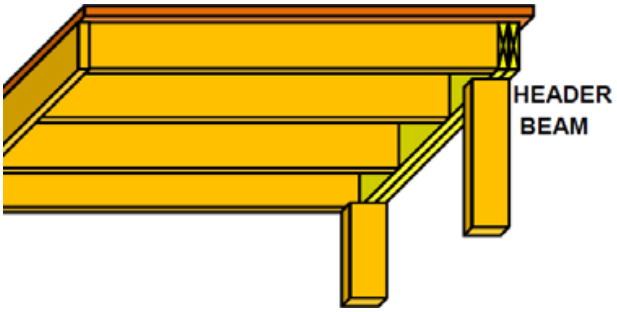


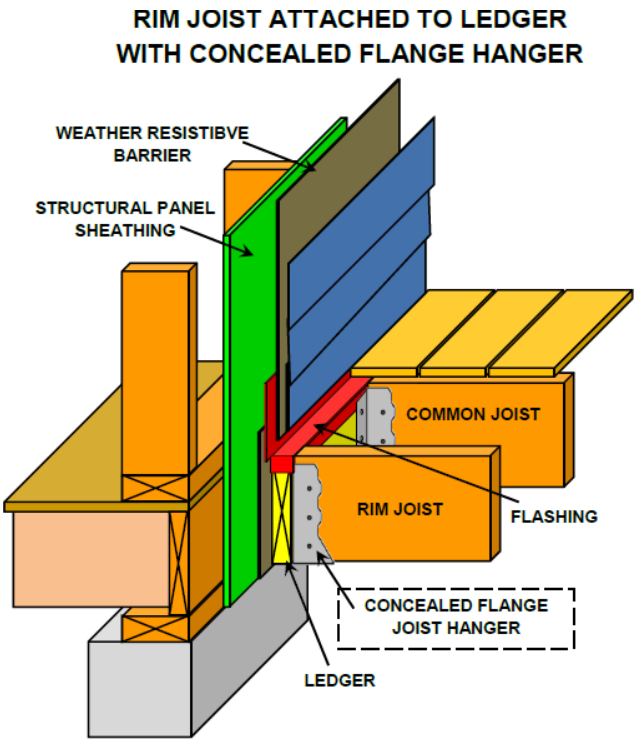
Joist to beam and joist to ledger attachments

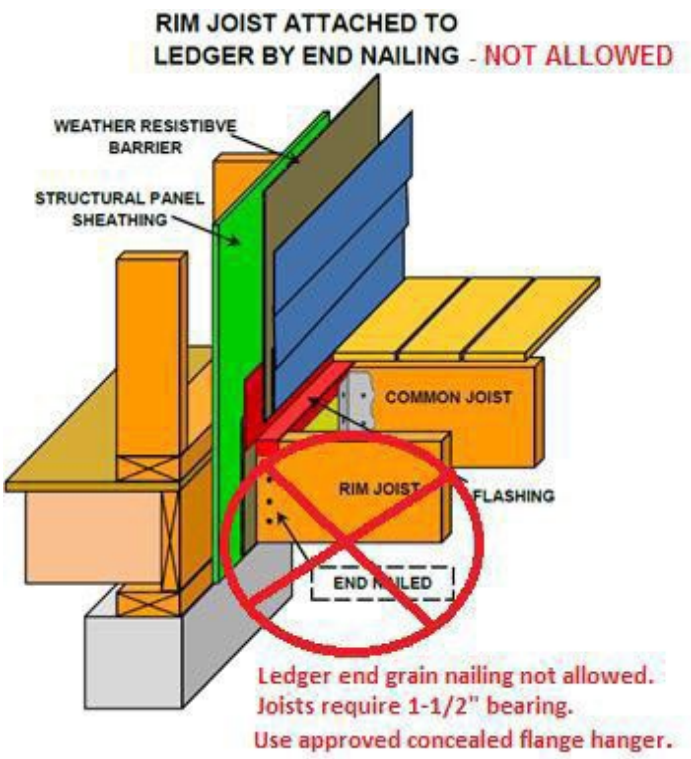




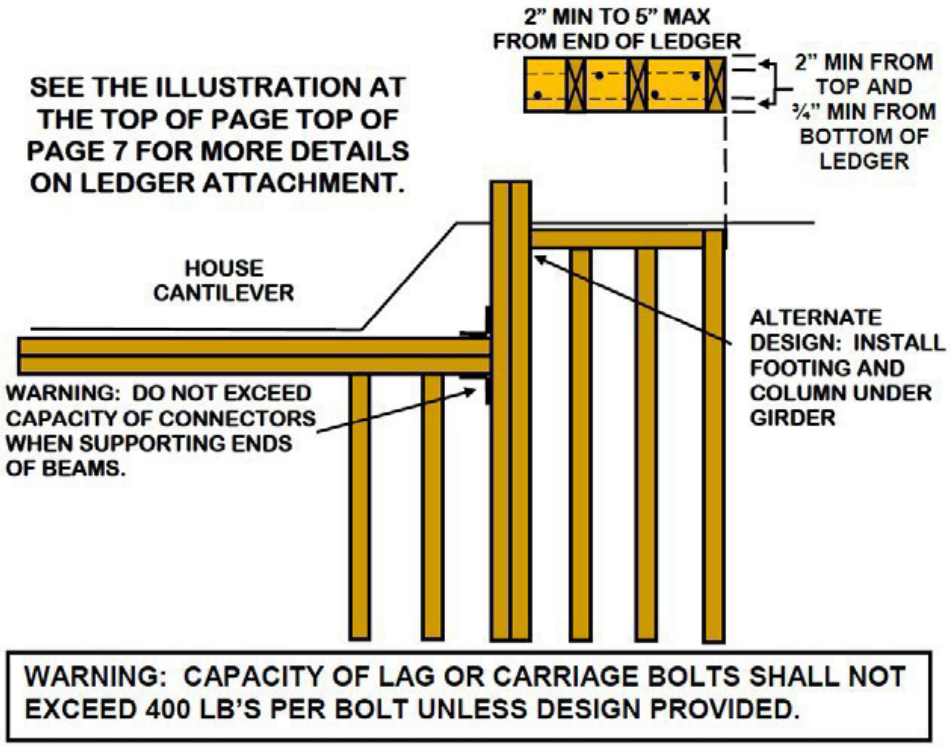


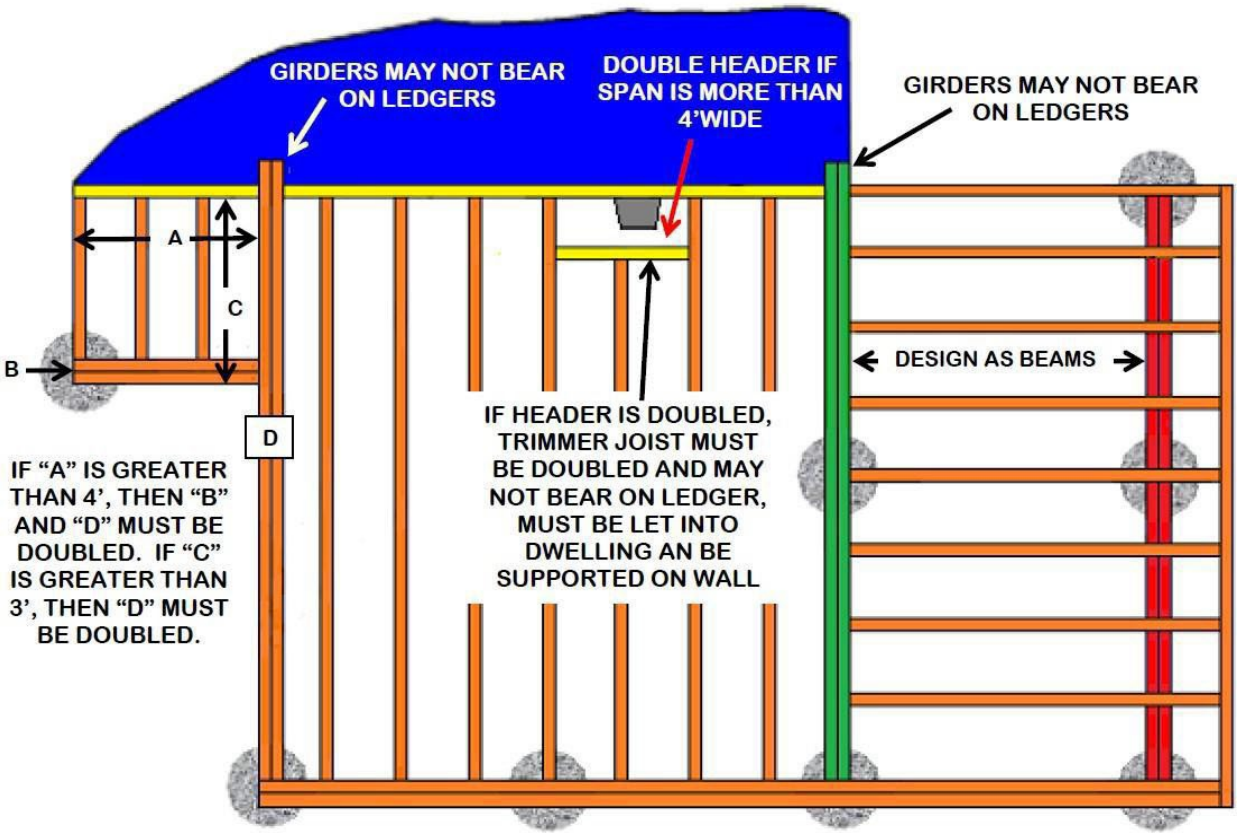




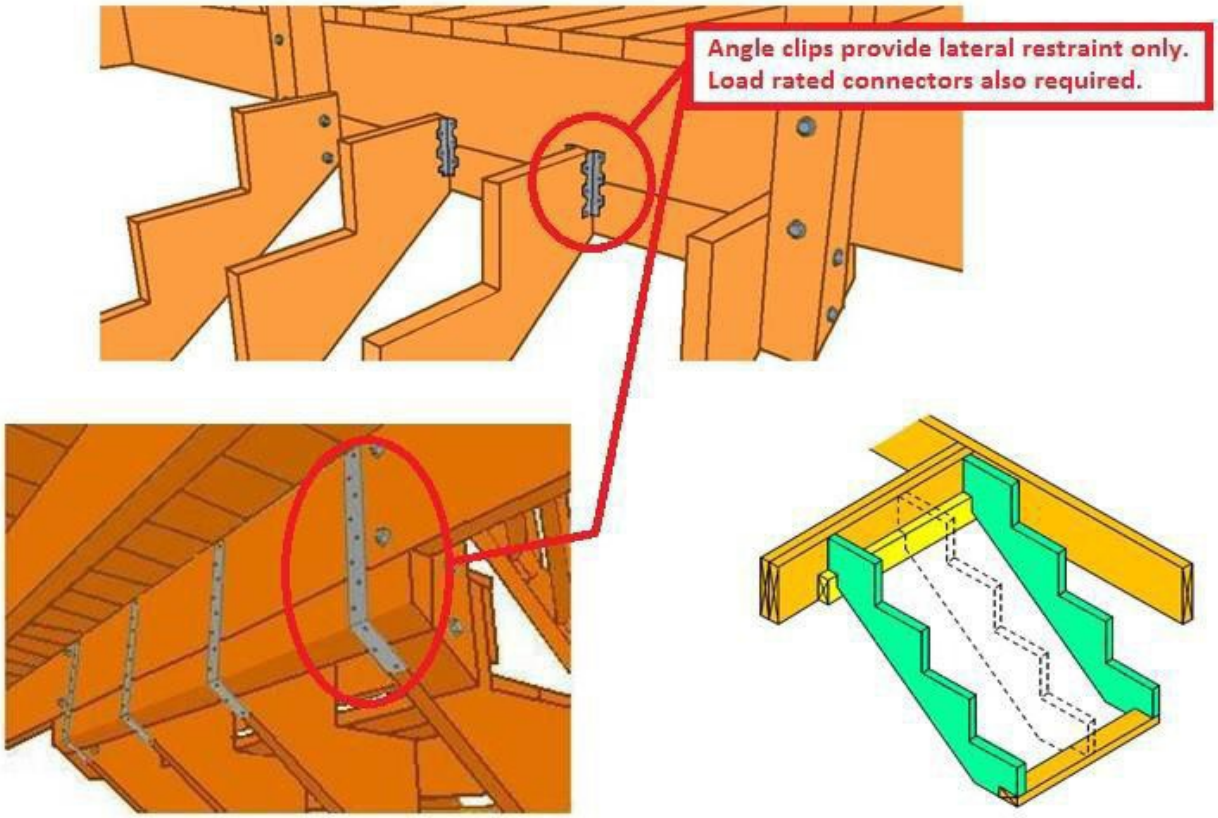


SPECIAL FLOORFRAMINGDETAILS





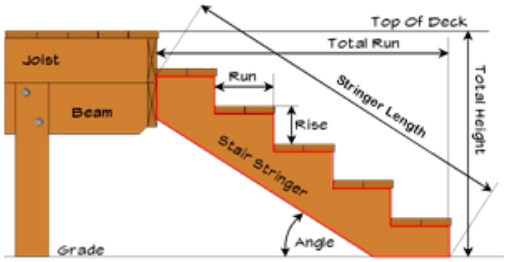
Stair attachments



Determining rise and run of stairs

Stairs must have a maximum rise of 7 3/4 inches and a minimum run of 10 inches measured as shown. The greatest riser height within any flight of stairs shall not exceed the smallest by more than ⅜ inch. The greatest tread depth within any flight of stairs shall not exceed the smallest by more than ⅜ inch. Open risers are permitted provided that a 4” diameter sphere will not pass between the treads when stairs are over 30” above grade. Stairs must be a minimum of 36 inches wide above the handrail and 31½ inches below the handrail.

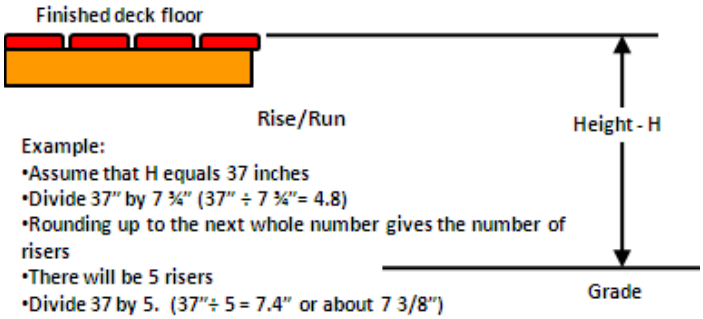
STAIR TERMINOLOGY



Stair Basics

- The maximum riser height is 7 ¾ inches
- The minimum tread run is 10 inches
- Treads and risers should be approximately equal with the largest not exceeding the smallest by more than ⅜ inch.

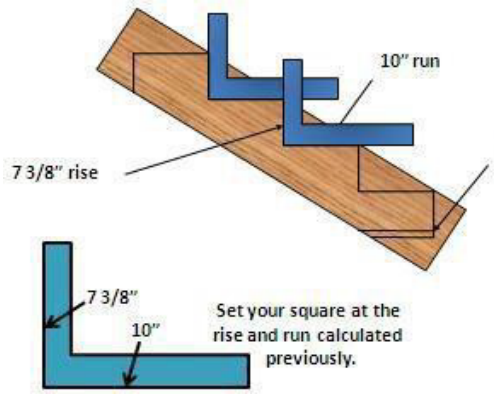
DETERMINING RISE/RUN



Example:

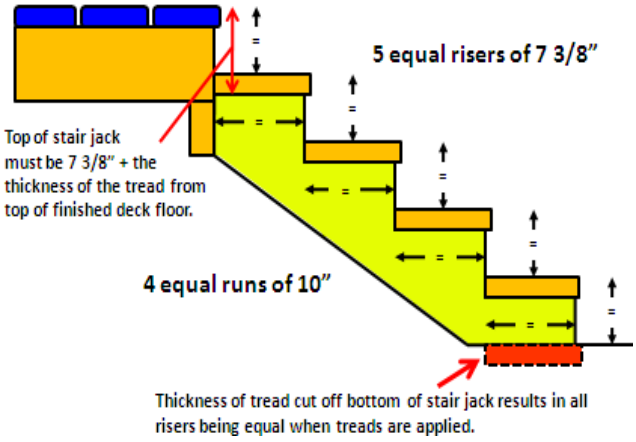
- Assume that H equals 37 inches
- Divide 37” by 7 ¾” (37” ÷ 7 ¾”= 4.8)
- Rounding up to the next whole number gives the number of risers
- There will be 5 risers
- Divide 37 by 5. (37”÷ 5 = 7.4” or about 7 3/8”)
- Each riser will be 7 3/8”
- For 5 risers there will be 4 treads
- Since each tread must be at least 10”, the length of the stair from the face of the deck to the face of the bottom riser will be at least 40” (10” X 4 treads = 40”)

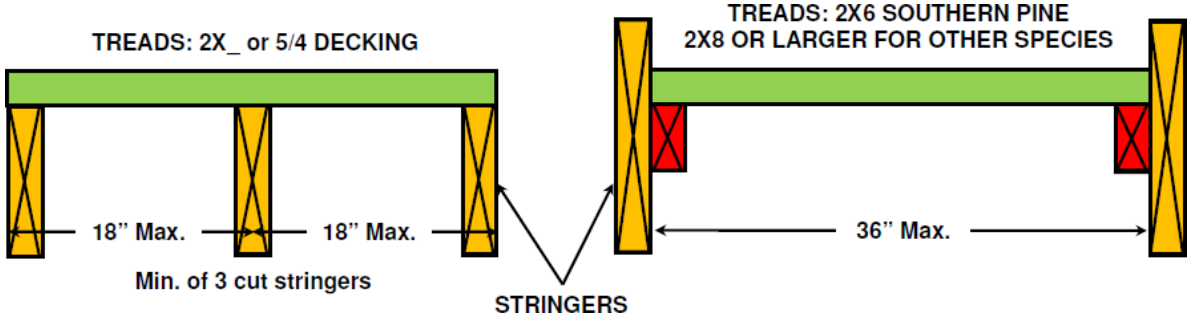
LAYING OUT STAIR JACKS

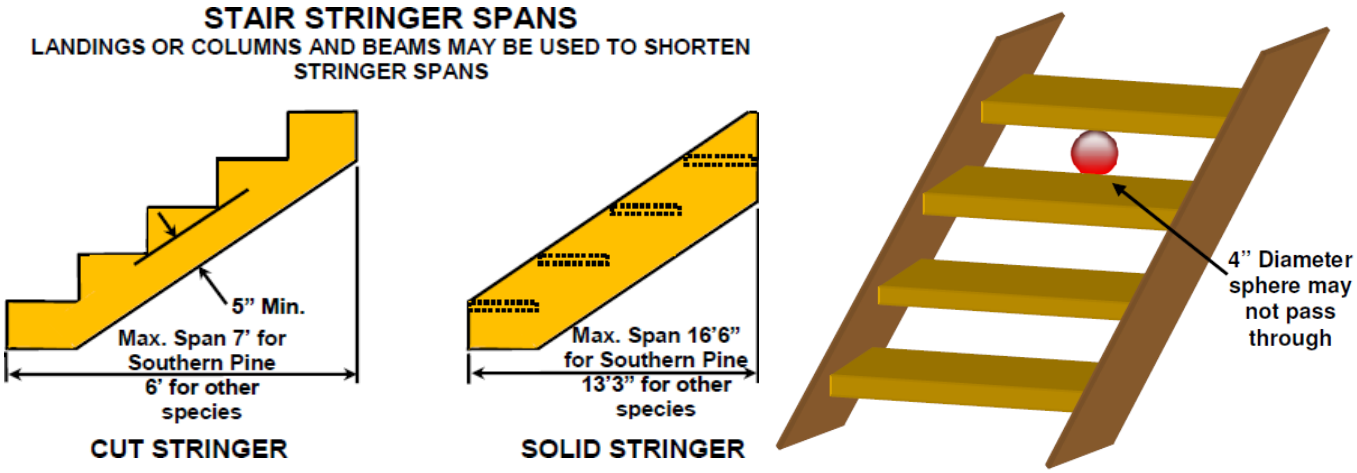


Cut an amount equal to the thickness of the tread from the bottom of the stair jack

THE COMPLETED STAIR





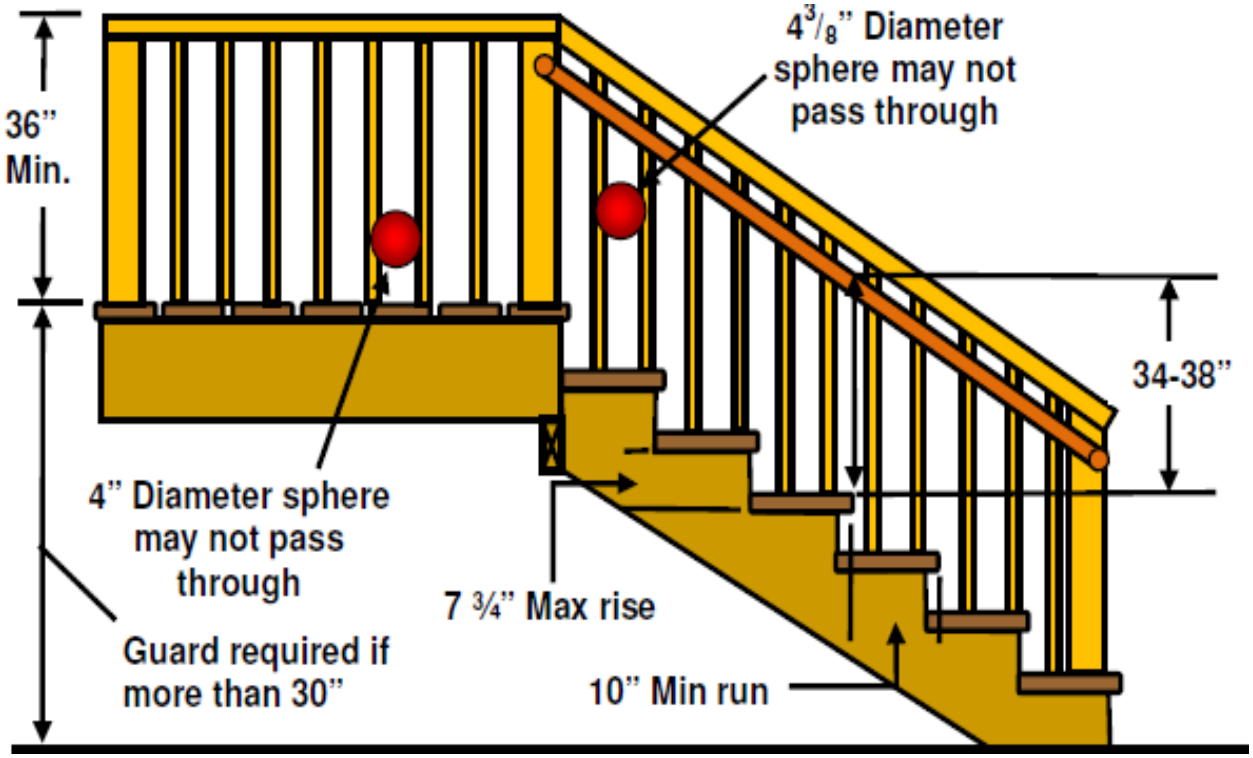


Guards and handrails

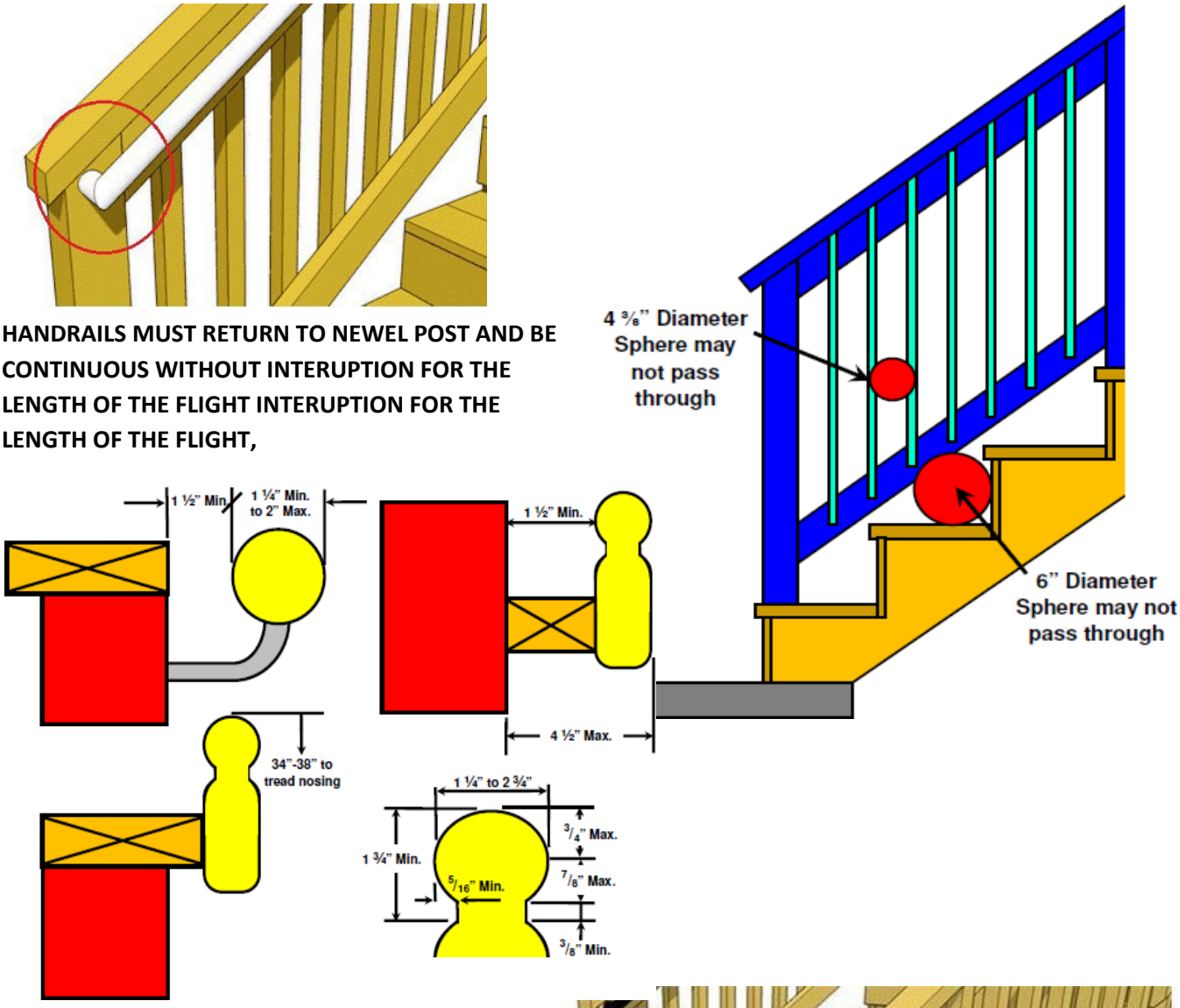
Guards and handrails must be provided as shown on the following illustrations. Guards must continue downstairs where the stair is more than 30 inches above grade. The height of guards **on stairs** must be 34 inches minimum and 36 inches minimum on horizontal surfaces.

Handrails must be provided on at least one side when there are four or more risers. **Handrails must be continuous for the entire length of the stairs and may not be interrupted by newel posts except at landings**. Handrails must have returns on each end or terminate into a newel post. Other handrail shapes having an equivalent gripping shape may be used with prior approval of the Building Department.

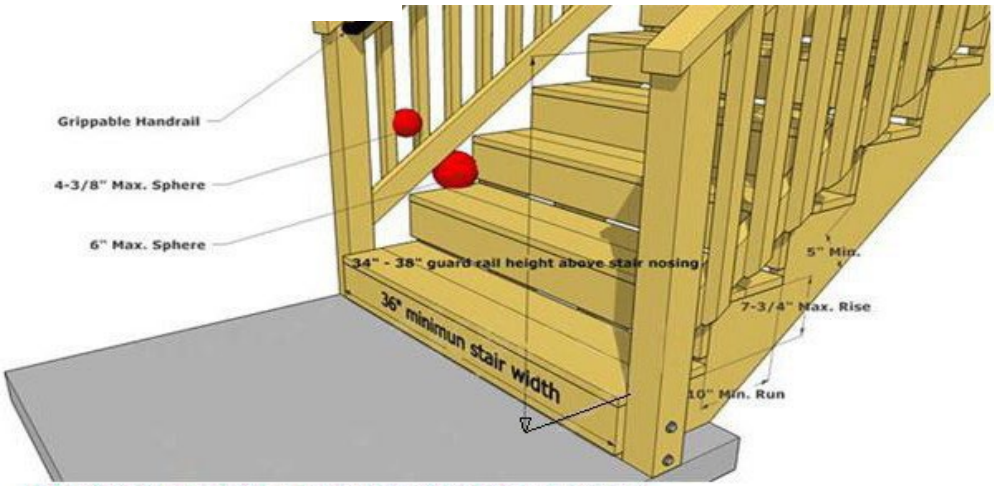
Handrails and guards must be designed to support a 200lb load applied in any direction at any point along the top of the guard or rail.



HANDRAILS MUST RETURN TO NEWEL POST AND BE CONTINUOUS WITHOUT INTERUPTION FOR THE LENGTH OF THE FLIGHT INTERUPTION FOR THE LENGTH OF THE FLIGHT,



Stair landings



LANDING SHALL SPAN FULL WIDTH OF STAIRS & EXTEND A MINIMUM OF 36 INCHES IN THE DIRECTION OF TRAVEL.

STAIRS MUST BEAR ON STRUCTURAL MATERIAL (i.e. treated lumber, concrete, gravel) AND BE PERMANENTLY RESTRAINED FROM LATERAL MOVEMENT.

Composites and other deck railing products

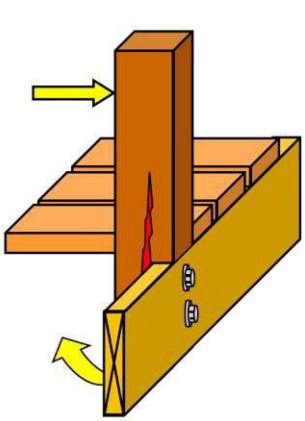
Wood/plastic composites used for exterior deck boards, stair treads, handrails and guardrail systems must bear labels indicating compliance with ASTM D 7032 or a current ICC Evaluation Services Report must be made available.

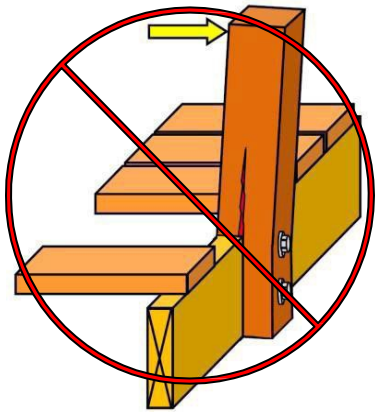
Wood/plastic composites complying with ASTM D7032 must be installed in accordance with the manufacturer's written installation instructions.

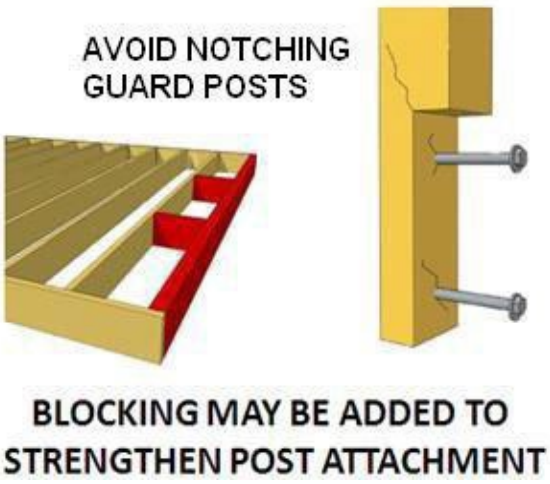
Wood/plastic composites having an ICC ES Report must be installed in accordance with the manufacturer's installation instructions and the report.

READ THE INSTRUCTIONS AND THE REPORTS CAREFULLY. ALL PRODUCTS HAVE SPECIFIC REQUIREMENTS FOR STAIR TREADS. SOME ARE LIMITED TO INSTALLATION PERPENDICULAR TO JOISTS ONLY.

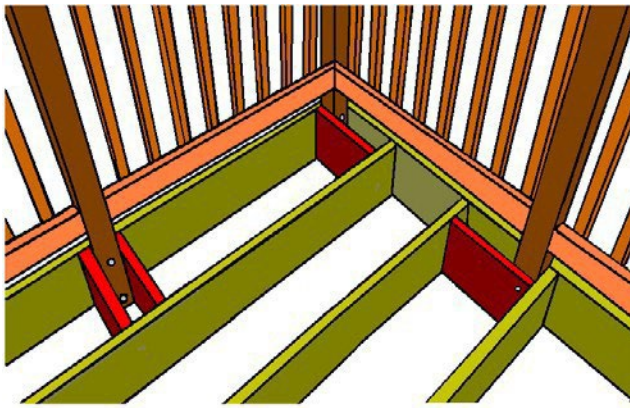
Deck post attachment

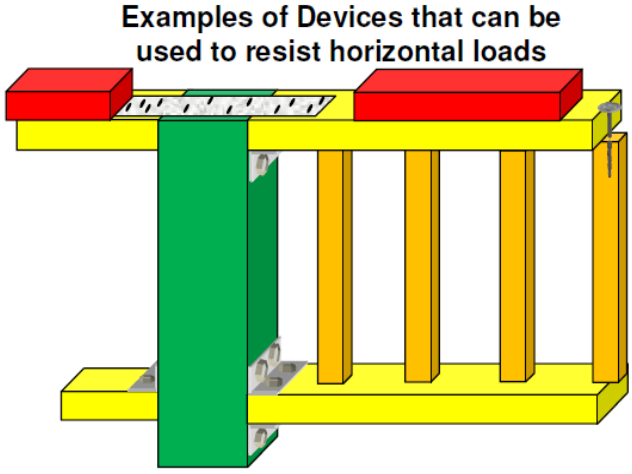






BLOCKING MAY BE ADDED TO STRENGTHEN POST ATTACHMENT





ACCESSIBILITY SUMMARY – COMMERICAL BUILDINGS

Minnesota rules chapter 1341.0005 and incorporation of chapter 11 of the 2018 international building code by reference

For purposes of this chapter, "IBC" means the 2018 edition of the International Building Code as promulgated by the International Code Council, Inc., Washington, D.C. Chapter 11 of the IBC is incorporated by reference and made part of the Minnesota State Building Code except as amended in this chapter. Portions of this rule chapter reproduce excerpts from the 2018 IBC, International Code Council, Inc., Washington, D.C., copyright 2017, reproduced with permission, all rights reserved. The IBC is not subject to frequent change and a copy of the IBC, with amendments for use in Minnesota, is available in the office of the commissioner of labor and industry.

For purposes of this chapter, “IEBC” means the 2018 edition of the *International Existing Building Code* as promulgated by the International Code Council, Inc., Washington, D.C. Section 305 of the IEBC is incorporated by reference and made part of the *Minnesota State Building Code* except as amended in this chapter. Portions of this rule chapter reproduce excerpts from the 2018 IEBC, International Code Council, Inc., Washington, D.C., copyright 2017, reproduced with permission, all rights reserved. The IEBC is not subject to frequent change and a copy of the IEBC, with amendments for use in Minnesota, is available in the office of the commissioner of labor and industry.

Minnesota rules chapter 1341.0010 referenced standard

For purposes of this chapter, "ICC A117.1" means the 2009 edition of ICC/ANSI A117.1 as promulgated by the Accredited Standards Committee A117 on Architectural Features and Site Design of Public Buildings and Residential Structures for Persons with Disabilities. The ICC/ANSI A117.1-2009 edition is approved by the American National Standard Institute (ANSI) and owned by the International Code Council, Inc. ICC A117.1 is incorporated by reference in IBC chapter 11 and made part of the Minnesota State Building Code except as amended in this chapter. Portions of this chapter reproduce text and tables from the ICC A117.1. The ICC A117.1 is not subject to frequent change and a copy of the ICC A117.1, with amendments for use in Minnesota, is available in the office of the commissioner of labor and industry. The ICC A117.1 is copyright 2010 by the International Code Council, Inc., all rights reserved.

Alterations to areas containing a primary function

As part of the requirements of Scoping Section 305 for alterations, additions and changes of occupancy, Section 305.7 requires that where an alteration affects the accessibility to or contains area of primary function, the route to the primary function area shall be accessible, to the maximum extent feasible. The accessible route to the primary function area shall include toilet facilities, parking facilities, and drinking fountains serving the area of primary function. For the purpose of complying with this section, an area of primary function shall be defined as an area which provides a major activity for which the facility is intended.

Exceptions:

- The costs of providing the accessible route are not required to exceed 20 percent of the costs of the alterations affecting the area of primary function.
- This provision does not apply to alterations limited solely to windows, hardware, operating controls, electrical outlets, and signs.
- This provision does not apply to alterations limited solely to the electrical systems, mechanical systems, installation or alteration of fire protection systems, and abatement of hazardous materials.
- This provision does not apply to alterations undertaken for the primary purpose of increasing accessibility of a facility.
- This provision does not apply to altered areas limited to Type B dwelling and sleeping units.
- This provision does not apply to alterations undertaken by the tenant where the accessible route, toilet facilities, parking facilities, telephones, and drinking fountains are outside the tenant space.

Summary of accessibility code section 305

When an area of primary function is altered, consideration is given to the route of travel leading to the altered area and to the toilet rooms, parking facilities and drinking fountains, which are utilized by the occupants of the altered primary function area. These elements (route, toilet rooms, parking, and drinking fountains) must be made accessible providing the cost does not exceed 20% of the cost of the alteration. The funds attributed to making these elements accessible are in addition to the original expenditure for the alteration. Whether the entire, a portion of, or none of the 20% cost is added to the project cost will be determined for each project based on the degree of alteration necessary to make any or all the elements accessible. If, for example, all the elements currently comply with the accessibility requirements for those elements, none of the additional funds must be applied to the project. The elements shall be made accessible according to the following priority; route, toilet room, parking, and drinking fountain. Only those elements, which are most likely to be used by the occupants of the primary function area, are required to be made accessible because of this section. Similar elements within the facility but not associated with the altered primary function area are not required to be made accessible due to this rule.

Buildings may have, and usually do have, multiple primary function areas. When several primary function areas are combined into a single alteration project, the total cost of all the altered primary function areas is used to calculate the 20% cost. This entire cost can be applied to one or more of the primary function areas until the funds are exhausted.

Alterations pertaining only to windows, building facades, HVAC systems, re-roofing, painting, etc. are not alterations to primary function areas and do not require upgrading accessibility to and elements in the building. However, when an area of primary function is altered and it affects any of those elements (windows, building facades, HVAC systems, re-roofing, painting, etc.), the costs of modifying those elements are not deducted when calculating the 20% cost.

Also, alterations undertaken for the specific purpose of improving accessibility do not trigger these provisions.

When a tenant undertakes the alteration to a primary function area, neither the tenant nor the landlord is responsible to upgrade the route, toilet rooms, parking, and drinking fountains, which are not within the control of the tenant. However, the tenant is responsible for those elements which are within the tenant space. When an alteration is undertaken by the landlord, the landlord is subject to the additional 20% cost, whether or not the elements subject to modification, are within a lease space.

This document provides basic and fundamental information for facilities and elements. It is not intended to replace or substitute for the requirements found in the Minnesota Accessibility Code.

Parking

Each parking area shall provide accessible parking spaces in accordance with the following table. (Note: parking for apartments, hospitals and rehabilitation facilities do not use this table. See IBC Section 1106 for those facilities.)

Table 1106.1 accessible parking spaces

TOTAL PARKINGSPACES PROVIDED IN PARKING FACILITIES	REQUIRED MINIMUM NUMBER OFACCESSIBLE SPACES
1 to 25	1
26 to 50	2
51 to 75	3
76 to 100	4
101 to 150	5
151 to 200	6
201 to 300	7
301 to 400	8
401 to 500	9
501 to 1,000	2% of total
1,001 and over	20, plus one for each 100, or fraction thereof, over 1,000

- Each accessible parking space must be 8 feet wide.
- All accessible parking spaces must have an adjacent 8-foot-wide access aisle.
- Each access aisle shall be marked as “no parking”.
- Each access aisle shall connect to an accessible route.
- The slope of each accessible parking space and access aisle shall not exceed 1:48.
- Accessible spaces shall be located as near as possible to an accessible entrance.
- Each accessible space must have a sign showing the International Symbol of Accessibility and notification that violators are subject to a fine of up to $200.

- Each sign shall be centered at the head end of the space and mounted between 60 inches to 66 inches above the parking surface.
- One in six accessible parking spaces shall be van accessible (having a height clearance of 98 inches minimum).
- Where not all accessible spaces have a 98-inch height clearance, van accessible spaces must provide a sign indicating "van accessible".

Exterior access

- An exterior accessible route connecting accessible parking with a building entrance shall be at least 4 feet wide with a slope not to exceed 1:20.
- An exterior accessible route connecting accessible building entrances shall be at least 4 feet wide with a slope not to exceed 1:20.
- Other exterior accessible routes can have a maximum slope of 1:12.
- The surface of the exterior accessible route shall be stable, firm and slip resistant.
- The exterior accessible route shall be the shortest, most direct route possible and shall coincide with the general route of travel.

Curb ramps

- Curb ramps shall have a maximum slope of 1:12.
- A landing measuring at least 3 feet in length shall be provided at the top of the curb ramp.
- The slope of surfaces adjoining the curb ramp shall not exceed 1:20.
- The transition from curb ramp to adjoining surface shall be flush and free of abrupt changes in height.
- The minimum width of the curb ramp shall be 36 inches excluding flared sides.
- Accessible Building Entrances
- At least 60% of public entrances shall be accessible.
- Accessible doors shall have a minimum clear opening of 32 inches measured with the door open 90 degrees.
- The threshold shall be no higher than 1/2inch.
- Two doors in series must be separated by at least 48 inches plus the width of any door swinging into the space. A five-foot diameter circle shall be provided between the doors.
- Door hardware shall be operable with one hand and not require tight grasping, pinching, or twisting of the wrist.
- Level landings shall be provided on both sides of the door (exterior landings may slope 1/4 inch per foot).

Interior circulation

- Hallways shall have a minimum clear width of 36 inches (building code may require wider hallway depending on number of occupants).
- Public counters and service windows shall have a 36-inch-long portion that is no more than 36 inches above the floor on the public side of the counter. The employee side of the accessible counter area can be up to a height of 43 inches maximum.
- Objects along the accessible route between 27 inches and 80 inches above the floor shall protrude no more than 4 inches from the wall.
- Accessible doors shall have a minimum clear opening of 32 inches measured with the door open 90 degrees.

- The threshold shall be no higher than 1/2inch.
- Two doors in series must be separated by at least 48 inches plus the width of any door swinging into the space. A five-foot diameter circle shall be provided between the doors.
- Door hardware shall be operable with one hand and not require tight grasping, pinching, or twisting of the wrist.
- Level landings shall be provided on both sides of the door.

Elevator

- Hall call buttons shall be located no more than 48 inches above the floor.
- Floor numbers shall be identified by raised and brailed numbers provided on both hoist way jambs and located no more than 60 inches above the floor to the top of the number.
- Raised and Braille characters shall be located to the left of control panel buttons. Control panel buttons shall be mounted no higher than 48 inches above the floor; 54 inches if car serves more than 16 openings.

Interior ramp

- The ramp slope shall not exceed 1:12.
- The surface of the ramp shall be stable, firm and slip resistant.
- Intermediate landings at least 5 feet in length must be provided for every 30-inch rise.
- Landings at least 5 feet in length must be provided at both the top and bottom of the ramp.
- Handrails must be provided on both sides of the ramp when the rise is greater than 6 inches.
- The minimum width of a ramp is 36 inches measured between handrails.

Signage

- The International Symbol of Accessibility shall be displayed at: accessible toilet, bathing, dressing, fitting and locker rooms where not all such rooms are accessible; accessible lockers in recreational facilities where not all lockers are accessible, accessible entrances where not all entrances are accessible; accessible parking spaces; and areas of rescue assistance.
- Building entrances which are not accessible shall provide directional signage indicating the shortest route to an accessible entrance.
- Raised and Braille signage must be provided at toilet, bathing, dressing, fitting and locker rooms, room numbers or names, and adjacent to each door to an egress stairway, exit passageway and the exit discharge.
- Directional or informational signs shall have lettering which contrasts in color from the background (building directories are not included in this requirement).

Toilet rooms

- All newly constructed and altered toilet rooms must be accessible (see the Minnesota Accessibility Code for multiple unisex toilet/bathrooms). At least one of each type fixture or element provided in the room must be accessible (see urinals below).

Entry

- Entrance doors shall have a minimum clear opening of 32 inches measured with the door open 90 degrees.

- Two doors in series must have a minimum separation of 48 inches plus the width of the door swinging into the space. A five-foot diameter circle shall be provided between the doors.
- Door hardware must be operable with one hand, not require tight grasping, pinching, or twisting of the wrist.
- A door shall not swing over the floor space for any fixture unless the room is for individual use and a 30 inch by 48-inch clear floor space is provided within the room that is clear of the swing of the door.

Water closet (toilet)

- The first accessible compartment in each accessible toilet room shall be a side transfer compartment.
- A side transfer compartment shall be 5 feet wide minimum.
- The depth of a side transfer compartment shall be 78 inches minimum measured from the wall behind the water closet to a wall or obstruction in front of the water closet, or 48 inches minimum of floor space shall be provided in front of the water closet.
- The water closet in a single use room shall have the same clear floor space as a water closet in a side transfer compartment.
- The water closet shall be centered 16 inches to 18 inches from a side wall or partition.
- The seat height shall be between 17 inches and 19 inches above the floor.
- The compartment door shall provide a 32-inch clear opening measured with the door open 90 degrees.
- Compartment door hardware shall be operable with one hand, not require tight grasping, pinching, or twisting of the wrist.
- A horizontal grab bar shall be mounted alongside of the water closet. The bar shall be a minimum of 42 inches long, mounted between 33 inches and 36 inches above the floor to the top of the gripping surface, beginning 12 inches from the rear wall.
- A vertical grab bar shall be mounted 39 inches to 41 inches above the floor to the side of the water closet. The vertical grab bar shall be a minimum of 18 inches in length and be centered between 39 inches and 41 inches from the rear wall.
- A 36-inch-long horizontal grab bar shall be mounted behind the water closet, 33 inches to 36 inches above the floor to the top of the gripping surface, beginning 6 inches from the side wall.
    - Operable parts of toilet paper dispensers and sanitary product receptacles shall be located within an area 12 inches minimum and 40 inches maximum from the rear wall, and 18 inches minimum above the floor and 1 ½ inches minimum below the horizontal grab bar.

Sink

- The higher of the rim of the sink or the countertop shall be a maximum of 34 inches above the floor.
- A clear floor space 30 inches by 48 inches shall be positioned for a forward approach to the sink.
- Knee clearance at the front edge of the counter or lavatory shall be at least 27 inches above the floor and extend back a minimum of 8 inches.
- Plumbing beneath the sink shall be insulated or otherwise configured to avoid contact.
- Faucets shall be operable with one hand, not require tight grasping, pinching, or twisting of the wrist, and operate with no more than 5 lbs. of force.

Urinal

- Where more than one urinal is provided in a room, at least one shall be accessible.
- The rim of the urinal shall be no more than 17 inches above the floor.
- A clear floor space 30 inches by 48 inches shall be positioned for a forward approach to the urinal.

Accessories

- Accessories such as towel, soap and product dispensers shall be mounted so that the highest operable part of the device is no more than 48 inches above the floor.
- Mirrors located above lavatories shall be mounted with the bottom edge of the reflecting surface no higher than 40 inches above the floor. Mirrors not located above lavatories, sinks or counters shall be mounted with the bottom edge of the reflecting surface 35 inches maximum above the floor.
- If a diaper changing table is provided, it shall be mounted no more than 34 inches above the floor to the working surface. Knee and toe clearance shall be provided beneath the open changing table.

Bathing facilities

See section on Toilet Rooms for fixtures and elements common to toilet rooms and bathing rooms.
Shower

- A transfer type shower shall have a finished inside dimension of 36 inches by 36 inches.
- A roll-in type shower shall be 30 inches minimum by 60 inches minimum.
- Thresholds shall be 1/2-inch-high maximum.
- A seat is required in an accessible shower.
- Horizontal grab bars, mounted between 33 inches and 36 inches above the floor to the top of the gripping surface, shall be located on the wall adjacent to the seat and on the wall opposite the seat. The grab bar located on the wall adjacent to the seat shall start at the front edge of the seat and extend to within 6 inches of the corner. The grab bar on the wall opposite the seat shall begin within 6 inches of the corner and extend the length of the wall.
- An 18-inch minimum length vertical grab bar shall be mounted in a transfer shower 3 inches to 6 inches above the horizontal grab bar on the wall opposite the seat and be centered 4 inches maximum from the entry of the shower.
- A shower spray unit with a hose at least 60 inches long that can be used both as a fixed shower head and as a hand-held shower head shall be provided.
- Faucets shall be operable with one hand, not require tight grasping, pinching, or twisting of the wrist, and operate with no more than 5 lbs. of force.

Bathtub

- A seat, capable of being securely mounted, shall be provided.
- Horizontal grab bars shall be mounted on all three walls surrounding the tub 33 inches to 36 inches above the bathroom floor measured to the top of the gripping surface. A second horizontal grab bar shall be mounted on the rear wall 9 inches above the rim of the tub.
- An 18-inch minimum length vertical grab bar shall be mounted 3 inches to 6 inches above the horizontal bar at the foot end of the tub centered 4 inches maximum from the entry of the tub.
- The faucet control shall be mounted at the foot end of the tub below the horizontal grab bar near the entry side of the tub.
- Faucets shall be operable with one hand, not require tight grasping, pinching, or twisting of the wrist, and operate with no more than 5 lbs. of force.
- A shower spray unit with a hose at least 60 inches long that can be used both as a fixed shower head and as a hand-held shower head shall be provided.

Drinking fountain

If only one drinking fountain location is provided on a floor, the drinking fountain shall provide a spout for wheelchair users and one for standing individuals.
If more than one drinking fountain location is provided on a floor, one-half of the fountains shall be mounted at the wheelchair accessible height and one-half at the standing height.
Wheelchair accessible height drinking fountains shall meet the following criteria:

- The spout shall be no more than 36 inches above the floor.
- Operating controls shall be at the front or near the front edge of the drinking fountain.
- A clear floor space positioned for a forward approach shall be provided and appropriate knee and toe clearance shall be provided.

Drinking fountains for standing persons shall meet the following criteria:

- The spout shall be located between 38 inches and 43 inches above the floor.
- Operating controls shall be at the front or near the front edge of the drinking fountain.

Public telephones

- One public telephone per floor, or one phone per phone bank, must be accessible.
- The highest operable part of the telephone shall be 48 inches maximum above the floor.
- The cord from the handset to the telephone shall be at least 29 inches long.
- All public telephone shall be equipped with volume control.
- Government buildings with public telephones shall provide at least one TTY on each floor providing a public telephone. In other buildings having four or more public telephones, at least one TTY shall be provided in the building and on each floor having four or more public telephones. See Minnesota Rules, chapter 1341 for hospitals, rest stops and transportation facilities.

Assembly seating

TABLE 1108.2.2.1 ACCESSIBLE WHEELCHAIR SPACES

CAPACITY OFSEATING INASSEMBLY AREAS	MINIMUM REQUIRED NUMBER OFWHEELCHAIR SPACES
4 to 25	1
26 to 50	2
51 to 100	4
101 to 300	5
301 to 500	6
501 to 5,000	6, plus 1 for each 150, or fraction thereof, between 501 through 5,000
5,001 and over	36 plus 1 for each 200, or fraction thereof, over 5,000

A single wheelchair seating location shall have a minimum clear width of 36 inches.

- Two adjacent wheelchair seating locations shall have a minimum clear width of 66 inches.
- The depth of wheelchair seating locations entered from the front or from behind shall be 48 inches minimum.
- The depth of wheelchair seating locations entered from the side shall be 60 inches minimum.
- Wheelchair seating locations shall be level.
- Wheelchair seating locations shall provide for companion seating adjacent to the wheelchair seating.
- When the total seating capacity exceeds 150 persons, the wheelchair seating locations must be dispersed to more than one location.
- Assistive listening systems are required in assembly areas.

Building plans, specifications, addenda, change orders, etc.

- Code record (Document of applicable codes, height, area and yard computations, type of construction, occupancies, etc.)

Specification manuals (arch./struct./mech./elect./specialties, etc. – signed by Minnesota licensed design professionals)

- Survey (legal land survey)
- Civil (utilities & grading)
- Architectural site plan
- Architectural footing/foundation plan
- Architectural floor plans (each floor)
- Architectural reflected ceiling plans
- Architectural roof plan(s)
- Architectural building sections
- Architectural interior room-finish elevations (restrooms, special conditions, etc.)
- Architectural wall sections (exterior walls, interior walls, stairs, and other special conditions.)
- Architectural construction details (typical details and all special conditions)
- Architectural schedules (window/openings, door, room finish, etc.)
- Structural design plans (design specification, codes, material specs, schedules, special insp./testing, etc.)
- Structural footing/foundation plan(s)
- Structural floor plan(s)
- Structural roof framing plan(s)
- Structural building/wall section(s)
- Structural details (exterior walls, interior walls, stairs, columns, headers, special structural conditions, etc.)
- Plumbing plans (plans, drain-waste-venting diagrams, fixture schedules, domestic H20 piping, etc.)
- Mechanical plans (plans, ducting sizing/locations supply & return, equipment sizing/locations, schedules etc.)
- Fire protection piping plans (plans, riser diagram, piping sizes/layouts hydraulic calcs, head information, etc.)
- Electrical plans (power supply & lighting layout plans, panel configurations, and equipment schedules)
- Fire alarm plans (plans showing alarm indicator devices, activation devices, controls, specifications, etc.)
- All Addenda’s, Change Orders, RFP’s, etc. for entire project (signed by MN licensed design professionals)

Other required/necessary submittals

- Roof and/or floor truss shop drawings and engineering (by manufacturer – signed by Minnesota engineer)
- Precast concrete planks, beams, columns, etc. shop drawings and engineering (by manufacturer – signed by Minnesota engineer)
- Soils investigation reports (Geotechnical reports signed by Minnesota engineer)
- Sample structural calculations for entire building (signed by Minnesota engineer)
- Special Inspections & Testing Agreement (completed and signed by required parties)
- Septic system design and soils investigation information (signed by Minnesota-licensed ISTS designer)
- Alternative methods and/or materials request with supporting documentation (signed by Minnesota architect)
- Energy Code Thermal Compliance Worksheet(s) (signed by Minnesota architect or Minnesota mechanical engineer)
- Energy Code Electrical (signed by Minnesota electrical engineer)
- Heat loss - furnace sizing computations (signed by Minnesota mechanical engineer) Commodity (storage) condition/classification reports, MSDS/hazardous materials reports, storage rack designs, bleacher/auditorium or assembly seating layout plans, special equipment testing/listing information, fire-resistive assembly testing information, furniture layout plans, etc.
- Permit Fee(s)

2020 MINNESOTA STATE BUILDING CODE USE AND APPLICATION

Classify the buildings' occupancies and special use conditions**

- Determine Use and Occupancy of Building Groups A - B - E - F - H - I - M - R - S - U (IBC Chapter 3)
- Minnesota Care Facilities (IBC 302.2)
- Special Uses (IBC Chapter 4)
- Identify specific Fire Code occupancy provisions (i.e., repair garages, hazardous occupancies, high piled storage/racking, temporary membrane structures, lumber yards, medical gas rooms, etc.) See the 2006 IFC

Verify applicants design intent **

- "Separated" or "Non-separated" uses? (IBC ,508.3, 508.4 Table 508.4)
- Incidental Uses (IBC 509 & Table 509)
- Special "use" conditions/operations within the building (IBC Chapter 4 & the IFC)
- Identify the type of construction **
- Type of construction: I-A, I-B, II-A, II-B, III-A, III-B, IV, VA and V-B (IBC Chapters 5 & 6)
- "Combustible" vs. "Non-combustible" and "Fire-resistance-rated" construction types (IBC 703)
- Combustible construction allowed in "non-combustible" buildings? Yes! (IBC 603.1 - 22 separate/specific locations)

Review construction plans and details to identify the materials used at exterior walls, roof/ceilings, floor/ceilings, interior walls, the structural frame, and other bearing conditions. Confirm occupancies within the building and apply the provisions of IBC Tables 503, 601 and 602. Review the number of stories and

building height. Each has a contributing factor to the building. A building should be classified into the most appropriate yet least restrictive type of construction it fits into. However, if the designer has identified something more restrictive, there is usually a reason. Verify these conditions with the designer. (IBC 503, 508, 601, 602, 603, 703 & 704)

Check location on property **

- Setback to property lines or public way(s) for frontage increases (IBC 506.3)
- Other buildings on same property (IBC 503.1.2, 508 & 705)
- Check "frontage increase" computation against survey information (IBC 506.3 & 507)
- Check exterior wall ratings/allowable opening areas (IBC Table 602, 705.2 & Table 705.8)
- Check access to building for frontage increase [minimum width of 20-feet to be "open"] (IBC 506.3)

Verify number of stories and building height **

- Actual vs. allowable (IBC 502.14, 507 & 508)
- Basement level/Sub-levels (IBC 504, 503.1.1, 506.1.3 & 508)
- First floor (IBC 202, 507 & 508)
- Number of stories (IBC 503, 504, 507, 508 & 1509)
- Mezzanines (IBC 505)
- Building height (IBC 503, 504, 507, 508 & 1509)
- Special rooftop structure heights/penthouses (IBC 504.3 &1509)

Identify number of buildings in question **

- Each bldg. check for height and area based on constraints (IBC 503.1, 504, 506, 507, 508 and 705)
- Firewalls/party walls - each bldg. complies for area & height (IBC 503.1, 504, 506, 507, 508 and 705)
- Each building has access to a public way (IBC506.3)
- Potential hazards due to proximity of buildings to property lines or other buildings (IBC Table 602, 705.2)
- Protection of openings and limiting factors for overhangs or projections (Table 705.8)
- Other building setbacks (local ordinances, MN DNR, MPCA, Fire Code, Pipeline Safety, Well/Septic, etc.)

Check allowable area computations **

- Mixed occupancy or single occupancy - separated use vs. non-separated use (508 Table 508.4)
- Yard increases [Perimeter method increase – max. increase 75%] (IBC 506.2 & 507)
- Fully sprinkled [What type of sprinkler system? - NFPA 13 or 13R?]
- Sprinkler allowable increases (IBC 506)
- Sprinkler allowable building height (IBC 504.2 for story and height increases)
- First floor size determination vs. additional floor plate sizes for total area.
- Mixed occupancy - multi-story computations (IBC506.2.2 and 506.2.4)
- Penthouse sizes & heights (IBC 1510.2)
- Special design features (IBC 510 sections)
- Check building height in stories and feet from finished grade plane [Increase allowed? Limitations?]

Determine occupant loads**

- Compute the design occupant load within building [gross and net areas] (IBC 1004)
- Actual number of occupants (IBC1004.1.1)
- Computed occupant loads per (IBC Table 1004.2)
- Increased/Modified occupant load (IBC 1004.4.5.1)

** Note: IBC Chapter 4 and the *International Fire Code* should be referenced for other special provisions and requirements for each building. Provisions of Chapter 4 and the *International Fire Code* may contain specific conditions that additionally regulate a buildings' height and number of stories, the allowable area, setbacks from other buildings and property lines, fire sprinkler or alarm requirements, exterior wall ratings, additional exiting, the type of construction, roof venting or explosion control, control areas, fire department access, etc.

Refer to IBC Chapter 4 and the *International Fire Code* as required for each building condition.

Detailed plan review requirements

- Review building design and plans for required licensed design provisions of MN Rule 1800 & 1805
- Review building for conformity with its occupancy group requirements (IBC Chapter 3 and 4)
- Review special use conditions within building (IBC Chapter 4 & IFC)
- Review building for conformity with the type of construction requirements (IBC Chapter 6)
- Review building for conformity with exiting requirements (IBC Chapter 10 & IFC)
- Review building for conformity with the special construction conditions of Chapters 8 and 9 and 14 through 35.
- Review the building for conformity with structural engineering requirements of Chapter 16, 17 and 18
- Review mechanical, plumbing, electrical, fire protection, energy, and other life-safety issues of the building code (IBC Chapters 9, 12, 24, 27 & 33)
- Review required shop drawings and deferred submittals for compliance with applicable code sections
- Review the building for other miscellaneous building and zoning code regulations (local & state codes and the Fire Code)
- Review specification manual(s) for procedural conditions, material specifications, reference standards, installation methods, etc.
- Review plan addenda's, change orders, RFP's, etc., for necessary code compliance. Insert into plan set if feasible.
- Review all construction documents for technical errors and notify applicant as necessary. These may not necessarily be code violations.
- Coordinate other agency reviews/authorizations for final permitting
- Plan Review Tools – Tables – Guides – Gimmicks:

Handouts, highlighters, calculators, red-pens, computer programs, scales, tables, reference documents, checklists, tabs, and other miscellaneous items can all be used to complete the plan review process. Every plan review process is unique. Each plans examiner works through a review using their own format. As long as that format is consistent, uniform, legible, accurate and well documented, it can be applied. Some examples of plan review reference tables and other miscellaneous handouts have been included herein.

Use any and all tools that make your job easier as long as they are accurate and provide you with consistent answers.

Table of code record information examples

Addition to an Existing Building	(___) Y/N ?
Addition and Exist. Remodel	(___) Y/N ?
New Building Only	(___) Y/N ?
Existing Building Remodel Only	(___) Y/N ?
Yard Setbacks (N_____Ft.) (S_Ft.)	(N.__Ft.) (S.__Ft.) (E.__Ft.) (W.__Ft)._
Actual Building Area – Per Floor	(____Sq. Ft.) ?
Percentage of Frontage Increase Allowed	(____%) ?
Building Occupancies	(_____)
Separated or Non-separated Design	(___) Y/N ?
Number of Stories	(___) ?
Building Height	(___) Feet
Proposed Special Uses	(_____)
Proposed Type of Construction	(_____)
Mixed Construction Types	(___) Y/N ?
Fire Wall(s) Used	(___) Y/N ?
Sprinkler Per NFPA (___)	(___) Y/N ?
Fully or Partially Sprinklered	(___) Y/N ?
Sprinkler Substitution Used	(___) Y/N ?
Sprinkler Height Increase Used	(___) Y/N ?
Standpipes Required	(___) Y/N ?
High Rack Storage Proposed	(___) Y/N ?
Hazardous Materials Used/Stored	(___) Y/N ?
Review Date:	(_____)
Project Location:	(_____)
Construction Value:	($_____)
Construction Documents Dated:	(_____)
Plan Set Number:	(_____)
Specification Manuals	(___) Y/N ?
Addendum/RFP Numbers(s):	(_____)

Project description

(Plans examiner to provide written/detailed project description for record purposes.)

Area modifications

506.1 General:

The building size and areas limited by Tables in sections 503 through 506, shall be permitted to be increased based on frontage (If) and automatic sprinkler system protection (Is) in accordance with the following:

- Equation 5-1, Allowable Area, Single Story
- Equation 5-2, Allowable Area, Multi-story
- Equation 5-3, Allowable Area, Mixed-Occupancy, Multi-story

- Equation 5-4, Frontage Increase, Weighted Average
- Equation 5-5, Frontage Increase

Tables 504.3, 504.4, 506.2 Automatic Sprinkler System Increase:

For buildings equipped with approved NFPA 13 fire sprinkler systems in accordance with 903.3.1.1, base tabular building size is increased as provided in tables 504.3, 504.4 and 506.2.

The 2020 MSBC (2018 IBC) has made rather radical departures from previous editions of the code in how it references building size. Although the square footage, height, and number of stories numbers are the same, the 2020 has now created three separate tables to address Allowable Building Height in Feet (Table 504.3), Allowable Stories Above Grade (Table 504.4) and Allowable Area (Table 506.2).

As in previous editions of the code, all of the size limitations are based on occupancy classification, construction type, level of sprinkler protection, and amount of open space (frontage) around the building. The equation $A_a = \{A_t + [A_t \times I_f] + [A_t \times I_s]\}$ remains the formula for determining increases to base tabular values for all of the categories with:

- A_a = Allowable area per story (square feet).
- A_t = Base tabular area depicted as NS in the tables.
- I_f = Area increase factor due to frontage as calculated in accordance with Section 506.3.
- I_s = Area increase factor due to sprinkler protection as provided in tables 504.3, 504.4 and 506.2

These new tables now provide the total sprinkler increase numbers eliminating the necessity of the plan reviewer to do the increase math.

Just as with Table 503 in previous code editions, all occupancy classifications are represented in the tables. Each of the tables now graphically depict all of the scenarios related to sprinkler increase with $[A_t \times I_s]$ already calculated. Because frontage increase varies according to each individual building, and where that building sits relative to other buildings or lot lines, frontage must still be calculated individually.

The tables are read by first determining the occupancy classification which, just as in previous editions of the code, is the first column. The second column identifies the level of sprinkler protection with the alpha numeric references for footnotes at the end of the table. The footnotes list NS (non-sprinkled), which is the base tabular allowable area, S1 (tabular + {tabular x 3} [300%]) for sprinkled one story above grade plane, and SM (tabular + {tabular x 2} [200%]) for sprinkled buildings two or more stories above grade plane. After determining which category the building in question fits (NS, S1, or SM) follow the line to the right, find the column for construction type and the number listed at the convergence of these two coordinates is the maximum allowable size for the occupancy, construction type, and level of sprinkler protection.

Residential occupancies (Group R) also include values for NFPA 13R and NFPA 13D sprinkler systems, neither of which qualifies for sprinkler increase. The tables reference these systems for the purpose of alleviating any question as to whether these systems may qualify for increase.

The area limitation in Table 503 is permitted to be increased by an additional 200 percent (Is =

for buildings with more than one story above grade plane and an additional 300 percent (Is =

for buildings with no more than one story above grade plane. These increases are permitted in addition to the height and story increases in accordance with Section 504.2.

Area Determination:

The maximum area of a building with more than one story above grade plane shall be determined by multiplying the allowable area of the first story (Aa), as determined in Section 506.1, by the number of stories above grade as listed below:

- For buildings with two stories above grade plane, multiply by 2;
- For buildings with three or more stories above grade plane, multiply by 3; and
- No story shall exceed the allowable area per story (Aa), as determined in Section 506.1, for the occupancies on the story.

Mixed Occupancies:

In buildings with mixed occupancies, the allowable area per story (*Aa)* shall be based on the most restrictive for each occupancy when the mixed occupancies are treated according to Section 508.3.2. When the occupancies are treated according to Section 508.3.3 as separate occupancies, the maximum total building area shall be the sum of the ratios for each such area on all floors as calculated according to Section 508.3.3.2 shall not exceed 2 for two story buildings and 3 for buildings 3 stories or higher.

Total Frontage Increase Allowed:

If= [F/P – 0.25] x W/30 = Percentage of Frontage Increase Allowed
P = Perimeter of entire building = ( )
F = Perimeter of building having over 20 ft. open yards = ( )
W = Minimum width of public way or open space = ( )
If = Allowable area increase due to frontage per MSBC 506.3 = ( )

"**Per Floor" (Multi-Story) Allowable Area Totals:**

( ) Occupancy - Type ( ) Construction:
Total Allowable "Per Floor" Building Area ( ) Square Feet Maximum.

Basic Allowable	Open Yards (%)	Sprinkled Throughout (x 2*)
( ) Sq. Ft.	( ) Sq. Ft.	( ) Sq. Ft.

** ( ) Occupancy Per Floor Building Actual Area = ( ) < ( ) = Complies for total "Per Floor" allowable building area per IBC 506.1.

* The x 2 would be x 3 in a single-story building.

"Total" Allowable Building Area:

( ) Occupancy – Type ( ) Construction:
"Total" Allowable Building Area For Multi-Story – ( ) Square Feet Maximum.

Basic Allowable	Open Yards (%)	Sprinkled Throughout (x - 2)	Floor Plate (x2 or3)
( ) Sq. Ft.	( ) Sq. Ft.	( ) Sq. Ft.	( ) Sq. Ft.

** ( ) Occupancy Total Building Actual Area = ( ) < ( ) = Complies for "Total" building area Per IBC503.3.

PLAN REVIEW ITEMS FOR CODE CONSIDERATION

Site plan, survey, civil utility and/or grading plans

- Signed Certificate of Survey - licensed land surveyor
- Detailed site plan indicating all buildings and structures on the site (existing, proposed, and demo work)
- Property address and full legal description
- Lot dimensions, all property lines, utility easements, utilities, streets, lakes/ponds & OHW, etc.
- Scaled, north arrow, lot corner, street/curb, and other spot elevations
- Proposed building/structure footprint and building/structure dimensions
- Proposed structure lowest floor and first floor (proposed)elevations
- Other structure benchmark/elevations and off-set hubs
- Locations of wells, septic systems, driveways, retaining walls, parking lots, signs, sidewalks, etc.
- Special conditions - natural & man made (swales, NERP ponds, etc.)
- Setback dimensions to all property lines and other buildings/structures on the same site
- Setback dimensions to septic systems, wells, lakes/ponds, OHW, etc.
- Grade contours/elevations and special drainage conditions
- Erosion control methods/details/procedures
- Utilities (domestic water/fire water lines, gas, electric, sanitary, storm sewer, storm swales/ponds, utility easements, etc.) and related details
- Site construction details (signs, curbs and curb cuts, drive entrances, erosion control, temporary drive accesses, etc.)
- Landscaping and tree planting plans
- Tree preservation plans
- Handicap parking, designated accessible routes on site, slopes, etc.
- Exterior trails, landings, sidewalks, and related details
- Fire hydrants, fire access roads, fire signage, etc.
- Exterior site lighting
- Proposed or future site conditions and/or buildings or structures shown
- Other local developmental standards

Building exterior elevations

- Establish finished grade plane and average finish grade plane
- Determine the number of stories (see definition of first story)
- Determine building height and height of special conditions (steeples, penthouses, antenna’s, etc.)
- Finished grade elevation and separations at building and “slope away/drainage” conditions
- Exterior retaining wall conditions/locations/guards, etc.
- Exterior exit courts/discharge/public way access
- Roof slopes, roof drainage conditions, roofing materials and roof venting
- Building projections and cantilevers - structural and non-structural
- Problem roof drainage (over walks/drives, etc.)
- Building siding/finish and fascia/soffit materials and installation conditions
- Weather exposed lumber
- Exterior stairs or ramps – guardrails, slopes, handrails, rise/run, width, accessibility, drainage, etc.
- Flashings and sealing at exterior wall openings
- Exterior window/door/mechanical opening locations (type, size, rating, distance to other openings, etc.)

- Mechanical and/or plumbing vent sizes and locations (adjacent to other building openings)
- Decks and porches (materials, existing, structural, life-safety, etc.)
- Skylights (quantity, size, materials, flashing, etc.)
- Veneer (structural support, fastening, weather barriers, flashing, weeps, height, etc.)
- Building signage/address

Building foundation plans

- Verify special loading conditions/bearing points (continuous transfer of loads)
- Footing/foundation design/materials (engineered, conventional, empirical)
- Sizes of strip footings, column pad sizes, piers, wall thicknesses, bearing pockets/pads, special conditions, etc.
- Masonry block sizes - number of courses - fire ratings - grouting conditions
- Re-bar conditions, sizes, placement, lapping, tying, clearances, etc.
- Step footing locations/conditions
- Proper frost depth protection (minimum and per geotech recommendations)
- Special foundation systems per approved research reports
- Drainage and waterproofing systems - exterior/interior/under slab
- Soil condition designs (compatible with Geotech recommendations)
- Anchoring systems and foundation wall support - lateral blocking and anchor hold down angles
- Building dimensions
- Bearing wall stud sizes (steel, concrete, or wood)
- Wood - exposed or in contact with concrete or masonry
- Foundation insulation and interior moisture barrier installation
- Basement egress windows and window wells
- Smoke detector/alarm locations
- Post/beam sizes, spans and bearing conditions
- Joist/truss sizes, spans and bearing conditions
- Shop drawings for manufactured floor trusses or precast members
- Concealed space fire blocking/draft stopping
- Utilities locations, access, combustion air, floor drains
- Parking garage minimum headroom
- Habitable space sizes/heights and light and ventilation
- Exiting
- Crawl space - heat, ventilation, access, poly over ground, insulation
- Plastics and insulation smoke/flame ratings and thermal separations
- Room/space identification/uses
- Minimum floor slab thickness
- Basement size/use conditions for fire sprinkler requirements
- Mechanical-Electrical-Plumbing-Fire Protection equipment access and clearances
- Fire resistance ratings for walls/floors/structural members/occupancy separations, etc.

Building floor plans

- Occupancy separations (ratings, opening protectives and continuity)
- Special use conditions (IBC Chapter 4)
- Special use conditions/requirements from the State Fire Code

- Exterior wall ratings due to location on property (opening protection, projections, exterior finishes, opening % per wall area, etc.)
- Fire-resistive rated wall/floor/structure- locations/types/installation conditions/penetrations/listings
- Fire area designations/separations
- Fire wall construction and terminations
- Fire sprinklers (fully sprinkled/partially sprinkled and type of sprinkler system)
- Standpipe requirements – locations and types of standpipes
- Draft stopping/Fire blocking installations and/or trade-offs
- Occupant loads (exiting and plumbing fixtures)
- Habitable room dimensions, heights, light and ventilation
- Exterior wall openings for fire sprinkler requirements of 903 (sizes, spacing, locations, types, etc.)
- Number of stories (for occupancy and type of construction requirements)
- Space use designations identified
- Exiting (number of exits, common path travel, total travel, exit width, door swing, enclosed stairs, exit discharge conditions, signage, lighting, etc.)
- Incidental use separations
- Sleeping room emergency egress windows
- Exit system designs (exit access, width, travel distances, number of exits, stairs/handrails, aisles, corridors, assembly seating, exits, exit discharge, hardware, etc.)
- Fireplaces/hot tubs/saunas/elevators and other special equipment locations and installations
- Safety tempered glass (hazardous locations)
- Alarm systems (smoke/fire alarms, indicating devices, pull stations, main panel location, etc.)
- Minimum number of plumbing fixtures (access to, travel distances, availability, quantity, etc.)
- Accessible plumbing fixtures, restrooms and other systems and facilities within building
- Accessible routes, clearances, signage, equipment, controls, etc.
- Attic accesses/crawl space access
- Fire blocking & draft stopping (also see trade-offs)
- Special rated separations per chapter 4, section 508 or 1509
- Joist/truss/beam/header/girder - size, span, bearing conditions and fastening/anchoring details
- Bearing wall/non-bearing wall - stud size, bracing, continuity, etc.
- Shaft requirements (continuity, dampers, access, termination, etc.)
- Stair enclosures (ratings, continuity, exiting conditions, width, storage under, openings into or through, etc.)
- Energy code criteria - “R” value, wind wash, air seals, vapor barriers, insulation backing/support, etc.
- Guardrails/handrails - Stairs rise/run - Accessible stairs or not
- Area of refuge required per (IBC 1009.6)
- Exposed lumber or on masonry or concrete or within 8” of grade to be treated for decay resistive.
- Combustibles or fire-retardant-treated wood installation locations
- Special frame requirements (cantilevers, bridging, blocking, bearing, nailing, double joists, etc.)
- Decks and porches (type of construction, materials, special connections, framing, insulation, sprinklers, etc.)
- Special systems (glass block, interior masonry veneer, plastics, skylights, wall & ceiling coverings)
- Interior finishes per chapter 8
- Special atrium or mall conditions
- Mech. smoke control, post smoke exhaust, smoke curtains, heat vents, etc.

- Special structural designs
- Opening protectives (ratings, sizes, locations, closing devices, activation, testing/listing information, etc.)
- Door hardware/locking
- Pedestrian walkways, penthouses, control rooms, high rack storage, etc. (special conditions)

Mechanical – plumbing – electrical – reviews

- Utilities - small rooms, ventilation, access, energy compliance, etc.
- Kitchen equipment and installations (special requirements)
- Heat and ventilation - supply/return and exhaust
- Access to plumbing and heating utilities as required by the mechanical codes (not HC)
- Mechanical exhaust (restrooms, laundry rooms, hazardous materials, etc.)
- Hot and cold potable water supplies and installations
- Fixture clearances and locations per plumbing/mechanical/electrical codes
- Fireplaces/hot tubs/saunas/elevators and other special equipment installed per code/manufacturer
- Firefighting mechanical equipment access, clearances, installations, monitoring, etc.
- Testing and balancing, disinfecting, boiler start-ups, fuel burning (ORSAT), monometer, pressure testing, mechanical commissioning report, etc.
- Smoke control installations (special provisions, methods, testing, etc.)
- Elevators (shunt trips, emergency power, phase I signals, signs, draft curtains, lobbies, equipment room, etc.)
- Hazardous material venting, ductwork, exhaust terminations, dust sprinklers, etc.
- Smoke and Fire damper installation conditions, locations, listings, actuations, etc.
- Duct installations, sizing, materials, gauges, hangers, balancing, etc.
- Fueling burning equipment 18” above garage surfaces
- Piping insulation per mechanical and energy codes
- Plenum ceiling designs (non-combustibles, smoke/flame ratings, not in corridors, etc.)
- Special equipment installations per code and manufacturer installation instructions
- Tested/listed fuel burning equipment and electrical equipment
- Fuel piping installations (materials, testing, hangers, I.D. labeling, valves, regulators, etc.)

Building and wall sections and details

- Ceiling heights, IBC Sec. 1003.2
- Energy code compliance (R-values, vapor barriers, air barriers, wind wash, insulation supports, etc.)
- Wall structure components/materials
- Exterior wall finishes/treatments, IBC Sec. 1404, 1405, 1406 & 1407
- Interior wall and floor finishes, IBC Sec. Chapter 8
- Number of stories and basements /crawlspaces
- Structural framing conditions
- Stair construction (tread rise & run, width, landings, handrails, guards, headroom, etc.)
- Shafts, elevators and stair enclosures (continuity, construction, materials, fire-ratings, etc.)
- Roof construction and materials (slopes, venting, underlayment’s, materials, etc.)
- Fire classification IBC Sec. 1505
- Crawl space ventilation, insulation, thermal separations, etc. (IBC 1201, Chapter 26, and Energy Code)
- Connection details (trusses, beams, columns, walls, etc.)
- Types of Construction IBC Chapter 6

- Building Address IBC Sec. 502
- Dampproofing and Foundation designs/depths IBC Sec. 1805.2 and MSBC 1303.1600
- Exterior Walls – Materials, installation of wall coverings, and combustible materials on the exterior side of exterior walls. IBC Sec. 1403, 1404 & 1405
- Special conditions, connections, projections, bearing, materials, installations, etc.

Special submittal requirements

- UL or Gypsum Association (etc.) testing/listing information on specific assemblies or equipment such as rated membrane of through penetration firestop systems, rated wall, roof, floor-ceiling, or shaft wall assemblies, etc.
- Certified shop drawings for bleachers, assembly seating, roof or floor truss construction, precast structural members, prefabricated mezzanines, etc.
- Prefabricated building designs/details and label certifications
- Energy computations for verification of thermal performance of the building envelope
- Energy computations evidencing lighting energy consumption and maximum usage condition
- Special equipment installation instructions from the manufacturer (prefab fireplaces, HVAC equipment, etc.)
- Special/new technology or material information or specification on products not specifically tested/listed or nationally recognized
- Alternate method requests and supporting information
- Heat loss computations
- Special Inspections Agreements/Contracts
- Sample structural calculations

Final reports and reviews

- Final Fire Alarm System Report – Certification of Operation/Completion by Installer
- Final “Commercial Kitchen” Minnesota Health Department Approval (Including kitchen hoods)
- Final Fire Code Inspection Approval (State or local Fire marshal)
- Final Elevator/Escalator Approval (State Elevator Inspectors)
- Final Boiler Start-up Approval (State Boiler Inspectors)
- Final Mechanical Inspection Approval
- Final Electrical Inspection Approval
- Final MDH Plumbing Inspection Approval
- Fire Sprinkler System Approval (Building Inspector and/or Local or State Fire Marshal)
- Fire Pump Operation/Certification Report (By installer)
- Emergency Generator Operational/Certification Reports (By installer)
- On-site Utility Final Inspection Approvals (i.e., septic, sanitary sewer, domestic water, storm, etc.)
- HVAC/Fuel Burning Equipment Performance Test Report(s) (By installer)
- HVAC Ventilation Balancing Report (By installer or third-party testing company)
- Special Inspection Summary Report (By special inspection agencies involved or by engineer of record.

PLAN REVIEW CHECK LIST COMMERCIAL

The following is a partial summary of plan review for COMMERCIAL structures and should include, but not be limited to the following:

Zoning: (Complies)	**Yes**	**No**	**N/A**
Site Plan -Submitted			
Front Yard Set Back:			
Rear Set Back:			
Side Set Back			
Conditional Use Permit			
New Building Size			
Location of Additional Buildings			
Location of Well			
Location of Septic			
Shoreland Setback			
High-water Elevation			

Notes:_____

Construction Documents: (Complies)	**Yes**	**No**	**N/A**
Complete Submittals *MN Rules 1300.0130*			
Permit Application Complete *1300.0120*			
Construction Submittals Signed By			
Design Professional *1300.0130 subdivision 1*			
Special Inspection Agreement Submitted			
Geotech Report			
Energy Calculations			

Notes:_____

Code Overview (Complies)	**Yes**	**No**	**N/A**
Classification & Use			
Building Classification *302.1*			
Incidental Use *509 & Table 509*			
Mixed Occupancies *508.4.2*			
Non-Separated or Separated Use *508.3, 508.4*			
Occupancy Separations *Table 508.4*			

Notes:_____

Code Overview *(cont.)* **(Complies)**	**Yes**	**No**	**N/A**
Building Occupancy Classifications			
Assembly *303*			
Business *304*			
Educational *305*			
Factory *306*			
High Hazard *307*			
Institutional 308			
Mercantile *309*			
Residential *310*			
Storage *311*			
Utility and Miscellaneous *312*			

Notes:_____

General Building Requirements **(Complies)**	**Yes**	**No**	**N/A**
Scope *MN Rules 1300.0040*			
Definitions *202*			
Basements 2*02*			
Basic Allowable Height *Table*s *50*4.3 & 504.4 Basic Allowable Area *Table 506.2*			
Height Modifications *504*			
Multi Story Area Increase *506*			

Notes:_____

Types of Construction **(Complies)**	**Yes**	**No**	**N/A**
Minimum Requirements *602.1.1*			
Combustible Material in Types I and II Construction, Sec. 603			
Fire Resistance Rating Requirements for Exterior Walls Based On Fire Separation Distance *Table 60*2 *w/footnotes*			

Notes:_____

Fire Resistive Construction **(Complies)**	**Yes**	**No**	**N/A**
Fire Area Definition *202*			
Fire Separation Distance Definition 2*02*			
Exterior Walls *705*			
Projections *705.2*			

Notes:_____

Fire Resistive Construction (cont.) **(Complies)**	**Yes**	**No**	**N/A**
Fire Walls – Horizontal Projecting Elements, Sec. 706.5.2			
Fire Walls – Fire Resistance Rating, Sec. *706*.4			
Allowable Area of Openings, Sec. 706.8			
Exterior Walls 705.8, Table 705.8			
Allowable Area of Openings, Sec. 705.8			
Parapets, Sec. 705.11			
Opening Protection Doors, Shutters & Exterior Walls 716, Table 716.5			
Fire Walls 706 Definition, Sec. 202			
Fire Walls Fire-Resistance Rating, Table 706.4			
Horizontal Continuity, Sec. 706.5			
Vertical Continuity, Sec. 706.6			
Opening Through Fire Walls, Sec. 706.8			
Fire Barrier 707.1, Definition 202			
Fire Barrier Fire-Resistance Rating, Sec. 707.3			
Fire Barrier Continuity, Sec. 707.5			
Openings Through Fire Barrier, Sec. 707.6 and 716			
Fire Partitions General, Sec. 708.1			
Fire Partition Fire-Resistance Rating, Sec. 708.3			
Fire Partition Continuity, Sec. 708.4			
Horizontal Assemblies General, Sec. 711.1			
Horizontal Assemblies Fire-Resistance Rating Separating Fire Areas, Sec. 711.2.4.2			
Horizontal Assemblies Continuity, Sec. 711.2.2			
Penetrations – Definitions 202			
Penetrations, Sec. 714			
Opening Protective, Sec. 716			
Duct and Air Transfer Openings, General, Sec. 717.1			
Fire Dampers Fire Protection Rating, Table 717.3.2.1			
Fire Damper Actuation, Sec. 717.3.3.1			
Damper Rating, Sec. 717.3.2			
Smoke Damper Actuation, Sec. 716.3.3.2			
Damper Where Required, Sec. 717.5			
Fireblocking, Sec. 718.2			
Draftstopping in Floors, Sec. 718.3			
Draftstopping in Attics, Sec. 718.4			

Notes:_____

Fire Protection Systems (Complies)	**Yes**	**No**	**N/A**
Fire Area Definition, Sec. 202			
Automatic Sprinkler Systems, Where Required, Sec. 903.2			
Sprinkler Systems Required in Basements, Sec 903.2.11.1.3			
Additional Required Suppression Systems Table 903.2.11.6			
Sprinkler Exempt Locations, Sec. 903.1.1.1			
Fire Alarm and Detection System, Sec. 907			

Notes:_____

Means of Egress (Complies)	**Yes**	**No**	**N/A**
Occupant Load, Sec. 1004 and Table 1004.5			
Cumulative Occupant Load 1004.2			
Means of Egress Sizing, Sec. 1005, 1005.3.1 and 1005.3.2			
Ceiling Height, Sec. 1003.2			
Exit Signs, Where Required Sec. 1013.1			
Means of Egress Illumination 1008.1			
Illumination Emergency Power 1008.3			
Guards 1011.13			
Doors, Gates, and Turnstiles 1010			
Size of Doors 1010.1.1 & Door Swing 1010 1.2			
Landings at Doors 1008.1.6			
Locks and Latches 1010.1.9.4			
Stairways 1011			
Stairway Landings 1011.6			
Handrails 1011.11 and 1014			
Handrail Height 1014.2			
Handrail Continuity 1014.4			
Handrail Extensions 1014.6			
Exit Access, General 1016.1			
Number of Exits and Exit Access Doorways 1006 & 1007			
Separation of Exits or Doorways 1007.1.1			
Egress Through Intervening Rooms or Spaces 1016.2			
Exit Access Travel Distance 1017.1			
Corridor, Definition 202			
Corridor Construction 1020.1 and Table 1020.1			
Corridor Continuity 1020.6			
Minimum Corridor Width Table 1020.2			

Notes:_____

Exits (Complies)	Yes	No	N/A
Exits 1022			
Minimum Number of Exits 1006.2			
Buildings With One Exit Table 1006.2(1)			
Interior Exit Stairways and Ramps 1023			
Interior Exit Stairways Definition 202			
Exit Passageway Definition 202			
Exit Passageway 1024			
Horizontal Exit 1026			
Exit Discharge Definition 202			
Exit Discharge 1028			

Notes:_____

MUNICIPAL APPLICATION FOR STATE PLAN REVIEW (Building Officials Only)

There are 2 basic types of review the division will perform as a fee-for-service for code enforced jurisdictions

- One is an SBC (State Building Code) plan review. If an SBC review is requested, the division will perform a plan review using State Building Code chapters of Minnesota Rules including 1305, International Building Code; 1306, Special Fire Protection Systems; 1341, Accessibility Code; 1346, Mechanical Code and 1323 the State Commercial Energy Code.
- The other is an NFPA 13 fire sprinkler review. If this review is requested, the division will perform a plan review using NFPA 13 and/or other relevant referenced standards.

The division can also provide plan review of other systems. Contact the Plan Review Unit supervisor for more information.

Electronic plans and application are preferred

View online building plan review and permit instructions.

When applying for plan review online, plans must be submitted electronically through ePlans. Apply for building plan review here.

Paper plans will not be accepted with an online plan review application. Download paper applications for plan review here.

Questions

- Frequently Asked Questions on Building Plan Review
- Other Plan Review Resources

By completing and signing the Municipal Application for State Plan Review (building officials only), the applicant and the Division agree to the following:

1. The applicant will provide a complete set of applicable contract documents for review. This may include plans, specifications, sample structural calculations; hydraulic calculations, soil report; exterior envelope energy code calculations; all associated addenda's; plan review fee calculated in accordance with the Division's fee schedule.
2. The application materials will be reviewed and evaluated by the division in accordance with the current Minnesota State Building Code as referred to above in either the SBC or NFPA 13 review.
3. A plan review report will be prepared by the division and submitted to the building official identifying whether the materials appear to comply with the applicable provisions of the Code or if revisions to the contract documents are required. Deficiencies will be listed in the report and explained with reference to the applicable code sections.
4. Any proposed "alternate materials or methods" or "modifications" submitted with the contract documents will be evaluated and commented on in the plan review report. However, final approval rests with the building official.
5. The report will be mailed and e-mailed to the building official.
6. The division's plan review service is considered complete with the issuance of the plan review report. It is the building official's responsibility to perform any follow-up review of revised contract documents to determine final compliance with the State Building Code and ultimate issuance of the building permit. The division will, however, consult with the building official on any issues pertaining to the division's plan review or any follow-up responses submitted by the designer.
7. Although the division strives to complete plan reviews in as timely a manner as possible, the division makes no claim as to how long the process will take to complete on any given project. The division will provide as accurate an estimate as possible to the building official before and during the process.
8. The Division's fee for plan review is 65% of the building permit fee calculated in accordance with the fee schedule contained in Minnesota Statutes 326B.153.
9. Other Conditions may apply to unique projects.

Building plan review interpretations, policies and opinions

- Plan review policies (background, purpose, applicability, format and use)
- PR-01: Smoke Resistant Construction
- PR-02: Downgrading Existing Buildings
- PR-03: Group I-3 Corridor Ratings
- PR-04: Fire Walls
- PR-05: Group I-3 Cell Ventilation
- PR-06: Fire Wall Opening Protectives
- PR-07: Separate Facilities
- PF-08: Setting Four - Special Education Facilities
- Policy for plan review of similar building plans for state-owned buildings
- Building code unit philosophy regarding substituting sprinklers for passive fire protection

MUNICIPAL DELEGATION AGREEMENTS FOR PUBLIC BUILDINGS AND STATE LICENSED FACILITIES

What is a municipal delegation agreement? A municipal delegation agreement is a written agreement or transfer of responsibility between the Minnesota Department of Labor and Industry (DLI) and a municipality that has adopted the Minnesota State Building Code (MSBC). It identifies who is authorized to administer all or portions of the MSBC on these state building projects.

What are public buildings and state-licensed facilities? Or sometimes referred to as *state projects*.

326B.103 DEFINITIONS.

- Subdivision 13. State licensed facility. "State licensed facility" means a building and its grounds that are licensed by the state as a hospital, nursing home, supervised living facility, free-standing outpatient surgical center, correctional facility, boarding care home, or residential hospice.
- Subdivision 11. Public building. "Public building" means a building and its grounds the cost of which is paid for by the state or a state agency regardless of its cost, and a building project for a school district or charter school the cost of which is $100,000 or more.

View examples of public buildings and state-licensed facilities here.

What types of delegation agreements can a municipality request?

- There are three kinds of delegation agreements a municipality can request:
    - Reserved project inspections
    - All state project inspections
    - Both plan review and inspections

How can my municipality obtain a delegation agreement for public buildings and state-licensed facilities?

- The municipality must have adopted the state building code.
- The municipality must have a certified building official or certified limited building official that is designated and on file with DLI.
- The building official cannot be under an active enforcement investigation by DLI.
- Each individual person in a municipality that provides any type of code administration for state projects must be reviewed for approved through a municipal delegation agreement application. There are three types of applications:
    - Municipal Delegation Agreement Application for Reserved Projects
    - Municipal Delegation Agreement Application for Inspections Only
    - Municipal Delegation Agreement Application for Both Plan Review and Inspections

Applications for an inspections only delegation or a plan review and inspections delegation must satisfy the requirements of A, B and C below:

(The following requirements do not need to be satisfied for a reserved project delegation agreement.)

A. Minimum five years of experience in performing inspections or plan review and inspections to assure compliance with the Minnesota State Building Code on schools, hospitals, nursing homes, colleges,

dormitories, correctional facilities or other buildings having elements in at least five of the following component categories:

1) **Structural:** cast-in-place reinforced concrete [composite] floors, walls and structural members, structural masonry, structural steel and connections, precast concrete, pilings (all with evidence of completed Special Inspection)
2) **Fire-resistance:** walls, floors, structural members, penetrations, spray-applied fire- proofing, shafts, smoke barriers, smoke compartments, smoke, and fire dampers
3) **Egress:** exit enclosures, horizontal exits, elevator lobbies, exit passageways, areas of refuge, alternate locking devices
4) **Mechanical:** type 1 hoods, hazardous-exhaust systems, process piping, ventilation systems with make-up-air
5) **Fire protection:** alarm systems, alternate fire-protection-system designs, smoke control systems
6) **Miscellaneous:** hazardous materials storage or control rooms, atriums, auditoriums, stages, grandstand-type bleacher seating structures, pedestrian walkways, emergency power systems

Relevant certifications or training courses may substitute for a maximum of one year of experience. Relevant certifications or training courses must have been completed within the past five years.

B. Performed inspection or plan review and inspection for at least five complex buildings in the past five years that meet the criteria in "A."

C. Minimum five years of experience in performing inspections or plan review and inspections of fire protection system installations to determine compliance with the Minnesota State Building Code, Minnesota State Fire Code, and National Fire Protection Association (NFPA) standards.

What can I expect after I apply?

- A staff member from CCLD will review the application and resume(s).
- If the application and resume(s) qualify the municipality for a delegation agreement, a CCLD staff member will contact the applicant to confirm the application and resume(s) qualifying and to review the delegation agreement.
- If the application and resume(s) do not appear to qualify the municipality for a delegation agreement, a CCLD staff member will send a letter to the municipality detailing the reasons why the delegation cannot be granted and the process for reconsideration.

How long will the process take?

- The initial review of the application and resume(s) should take about one week.
- Obtaining all the municipal and state signatures required to complete the delegation agreement and to return a copy of the agreement to the municipality should take about two weeks.

What if I disagree with the determination?

- The municipality must be provided an opportunity to correct any deficiencies listed by DLI and request reconsideration in writing. See statute (PDF).
- The commissioner must then issue a final determination.
- If DLI denies issuance of a delegation agreement based upon the request for reconsideration, a CCLD staff member will send a letter to the municipality detailing the reasons why the delegation agreement was not granted and the process for appealing the final determination.

CODE FACT SHEETS, REPORTS, PUBLICATIONS

Resources, fact sheets and publications for homeowners and those in the construction industry

Forms

- Licensing forms

Newsletter

- CCLD Review newsletter

Code fact sheets

- Accessibility Code Enforcement Fact Sheet
- Automatic Sprinkler Systems in Residential Occupancies requirements: Quick Reference Guide
- Backflow Devices Fact Sheet
- Bleacher Safety Fact Sheet
- Fire-Resistant-Treated Wood Fact Sheet
- Frost Protected Foundations for Northern Minnesota
- Places of Public Accommodation Fact Sheet
- Radon Control Systems Fact Sheet
- Re-siding and the 2020 Minnesota Residential Code
- Residential Deck Requirements
- Residential/Townhouse Fire Sprinklers - Areas to be protected
- Residential Fire Sprinkler Installations Information Sheet - State Fire Marshal
- Small Arms Ammunition Sales and Storage
- Solar Photovoltaic Systems and the 2020 Minnesota Residential Code Fact Sheet
- Solar Photovoltaic Systems and the State Building Code Fact Sheet
- Tiny Houses Code Fact Sheet
- Townhouse/Two-Family Dwelling Fact Sheet
- Window Fall Prevention Fact Sheet
- Assisted Living Occupancy Classifications – https://www.dli.mn.gov/sites/default/files/pdf/fs-assisted-living-occupancy-classifications.pdf
- Assisted Living Group R-3 Dwelling Unit Compliance - https://www.dli.mn.gov/sites/default/files/pdf/fs-assisted-living-dwelling-unit.pdf

Homeowner code fact sheets

- Planning the Construction of a Garage
- Planning the Construction of a Porch
- Guidelines for Asphalt Shingle Re-roofing

- Contractor Recovery Fund

Reports

- Construction Codes and Licensing Division Report
- Contractor Recovery Fund Annual Report

Pressure Treated Wood Products - Web Links

- International Code Council Evaluation Service www.icc-es.org
- American Forest & Paper Association www.afandpa.org
- American Wood Preservers Association (AWPA) www.awpa.com
- American Wood Council www.awc.org
- Chemical Specialties, Inc (developer of ACQ wood preservative) www.treatedwood.com
- Canadian Institute of Treated Wood
- Wolmanized Wood Lumber www.wolmanizedwood.com
- Western Wood Preservers Institute www.wwpinstitute.org
- Osmose (wood preservatives) www.osmose.com
- United States Environmental Protection Agency (EPA) https://www.epa.gov/
- Southern Pine Council (Wood Foundations) https://www.southernpine.com/
- United States Consumer Product Safety Commission http://www.cpsc.gov/
- American Wood Preservers Institute www.preservedwood.com
- USP Structural Connectors
- Permanent Wood Foundations
- Simpson Strong Tie www.strongtie.com Select proper hardware when building with treated lumber

CHAPTER 6 - MINNESOTA STATE BUILDING CODE FIELD INSPECTIONS

INSPECTION RESPONSIBILITIES

Minnesota Rules Chapter 1300.0210 Subpart 1. General
Construction or work for which a permit is required will be subject to inspections by the building official and the construction or work shall remain accessible and exposed for inspection purposes until approved. Approval as a result of an inspection is not approval of a violation of the code or of other ordinances of the jurisdiction. Inspections presuming to give authority to violate or cancel the provisions of the code or of other ordinances of the jurisdiction are not valid. It shall be the duty of the permit applicant to cause the work to remain accessible and exposed for inspection purposes. Neither the building official nor the jurisdiction is liable for expense entailed in the removal or replacement of any material required to allow inspection.

Minnesota Rules Chapter 1300.0210 Subpart 2. Preliminary inspection
Before issuing a permit, the building official may examine, or cause to be examined, buildings, structures, and sites for which an application has been filed.

Minnesota Rules Chapter 1300.0210 Subpart. 3. Inspection record card
The building official shall identify which inspections are required for the work requiring a permit. Work requiring a permit shall not be commenced until the permit holder or an agent of the permit holder has posted or otherwise made available an inspection record card that allows the building official to conveniently make all required entries regarding inspection of the work. This card shall be maintained and made available by the permit holder until final approval has been granted by the building official.

Minnesota Rules Chapter 1300.0210 Subpart 4. Inspection requests
The building official shall provide the applicant with policies, procedures, and a timeline for requesting inspections. The person doing the work authorized by a permit shall notify the building official that the work is ready for inspection. The person requesting an inspection required by the code shall provide access to and means for inspection of the work.

Minnesota Rules Chapter 1300.0210 Subpart 5. Approval required
Work shall not be done beyond the point indicated in each successive inspection without first obtaining the approval of the building official. The building official, upon notification, shall make the requested inspections and shall either indicate the portion of the construction that is satisfactory as completed or notify the permit holder or an agent of the permit holder of any failures to comply with the code. Any portion that does not comply shall be corrected and the portion shall not be covered or concealed until authorized by the building official.

Minnesota Rules Chapter 1300.0210 Subpart 6. Required inspections
The building official, upon notification, shall make the inspections in this part. In addition to the inspections identified in this subpart, see applicable rule chapters in part 1300.0050 for specific inspection and testing requirements.

A. Footing inspections shall be made after excavations for footings are complete and any required reinforcing steel is in place. Materials for the foundation shall be on the job, except that concrete need not be on the job if the concrete is ready mixed according to approved nationally recognized standards.
B. Foundations:
    1) Foundation inspections for poured walls shall be made after all forms are in place with any required reinforcing steel and bracing in place, and prior to pouring concrete.
    2) All foundation walls shall be inspected prior to backfill for specific code requirements.
    3) The foundation inspection shall include excavations for thickened slabs intended for the support of bearing walls, partitions, structural supports, or equipment.
C. Concrete slab and under-floor inspections shall be made after in-slab or under-floor reinforcing steel and building service equipment, conduit, piping accessories, and other ancillary equipment items are in place, but before any concrete is placed or floor sheathing installed, including the subfloor.
D. Rough-in inspections of plumbing, mechanical, gas, sprinklers, alarms, and electrical systems shall be made before covering or concealment, before fixtures or appliances are set or installed, and before framing inspection.
E. Inspection of framing and masonry construction shall be made after the roof, masonry, framing, firestopping, draft stopping, and bracing are in place and after the plumbing, mechanical, and electrical rough inspections are approved.
F. Energy efficiency inspections shall be made to determine compliance with Minnesota Energy Code requirements.
G. Lath and gypsum board inspections shall be made after lathing and gypsum board, interior and exterior, are in place, but before any plastering is applied or before gypsum board joints and fasteners are taped and finished.
    1) **Exception:** Gypsum board that is not part of a fire-resistive assembly or a shear assembly.
H. Protection of joints and penetrations in fire-resistance-rated or smoke-resistance-rated assemblies shall not be concealed from view until inspected and approved.
I. Installation of manufactured homes (mobile homes) shall be made after the installation of the support systems and all utility service connections are in place, but before any covering material or skirting is in place. Evaluation of an approved anchoring system is part of the installation inspection.
J. Fireplaces must be inspected for compliance with applicable requirements of the code and the manufacturer's installation instructions.
K. A final inspection shall be made for all work for which a permit is issued.
L. Special inspections shall be as required by the code.
M. In addition to the inspections in items A to K, the building official is authorized to make or require other inspections of any construction work to ascertain compliance with the code and other laws that are enforced by the Department of Building Safety.

Minnesota Rules Chapter 1300.0210 Subpart 7. Inspection agencies

The building official is authorized to accept inspection reports by approved agencies.

OTHER REQUIRED INSPECTIONS

Elevator and Related Devices Inspection and Testing: (1307.0035). No person, firm, or corporation may put into service any installation covered by Parts 1307.0010 to 1307.0100 whether the installation is newly installed, relocated, or altered materially, without the installation being inspected and approved by the authority having jurisdiction. Where applicable, the elevator must be inspected by a state elevator inspector before putting the elevator into use.

Prefabricated Buildings On-site Inspection: (1360.1000). Local code enforcement agencies are required to inspect the installation of prefabricated buildings and are responsible for determining that each installation is completed in accordance with its certification.

Industrialized/Modular Buildings or Building Components Installation Inspections (1361.0500). Industrialized/modular buildings and building components must be installed in compliance with the Minnesota State Building Code, which incorporates by reference the Model Rules and Regulations for Industrialized/Modular Buildings.

Model Rules and Regulations for Industrialized/Modular Buildings, Uniform Administrative Procedures, Part IV: (Administration Sec. 6, Local Enforcement Agency Procedures, and Inspections):

A. Local enforcement agencies shall inspect work performed on-site, including foundations and the structural, mechanical, plumbing, and electrical connections, for compliance with the Uniform Administrative Procedures.
B. Local enforcement agencies shall inspect all industrialized/modular buildings or building components upon, or promptly after, installation at the building site to determine whether all site built work is in accordance with the permit application, the installation instructions, and the conditions listed on the manufacturer's data plate. This may include tests for tightness of plumbing connections done on-site and for malfunctions in the electrical systems, and visual inspection for obvious nonconformity with the approved plans or the code.
    1) Destructive disassembly of certified industrialized/modular buildings and building components shall not be performed in order to conduct such tests or inspections, nor shall there be imposed standards or test criteria different from those adopted by the participating State having jurisdiction.
    2) Non-destructive disassembly may be performed only to the extent of opening access panels and cover plates.
    3) Systems testing during manufacture shall not be subject to retesting at the building site.

Optional Other Inspections: Inspections that may be required by the building official.

CORRECTIVE ACTIONS

There are several ways to achieve corrective action on a jobsite. Methods can include verbal notification, notification in written format, notification via computer, e-mail messages or notification by phone. Methods outlined are not necessarily the only way to gain compliance on a job site but are tools that one should consider when trying to resolve required corrective jobsite actions.

Written correction orders

As referenced, these types of correction orders are always provided in written format. Duplicates or carbon copies of written correction orders should always be considered. Consider the following when writing a correction order:

- Clearly itemize all violations and specify exact code section(s).
- Contact the contractor or owner immediately. Explain your orders completely.
- Provide a specific timeline/deadline for corrective action. Follow up on orders and timeline promptly (in writing). Copy all orders for department records and site records.
- Issue “stop work” orders only when necessary or as a last resort.

Stop work orders

Minnesota Rules Chapter 1300.0170 Stop work orders

A stop work order must always be in written format. Duplicates should be considered for proper record purposes. Understand that legal action may be pursued as a result of this action. In addition, the code official is almost always affected by the “trickle-down effect” of local politics once a stop work order is issued. Consider the following when writing a stop work order:

- Should only be used as a last resort – for most severe action after documented verbal and/or written warnings if - or when - possible.
- Bear legal action (and political effects) in mind when writing corrections. Contact the contractor or owner immediately if/when issued.
- Post in a conspicuous location (main site entrance or building entry). Clearly itemize all violations point-by-point.
- Specify exact code section(s).
- Explain your orders clearly and completely. Offer alternatives if appropriate.
- Provide a specific timeline/deadline for required corrective action. Follow up on orders and timeline promptly (in writing also).
- Copy all stop work orders for department and site records.
- When called to verify corrective action/resolution, document inspection thoroughly for file. Try and be flexible in working towards a quick resolution. Make yourself available.

Regardless of the type of inspection format or notice that is used, be aware of the cause-and-effect factor of each option. In that respect, differing degrees of corrective order(s) will result in different responses by the violator. To that end, the primary purpose of each is to get the violator back into compliance with the code.

SAMPLE STOPWORK ORDER

STOPWORK ORDER

The following work **HAS NOT BEEN APPROVED AT**

Address:_____

_____

Date:_____

Reasons:_____

_____

_____

_____

_____

This tag is a legal notice to stop all work until all proper corrections have been made.

Inspector:_____ **Date:**_____

Call Municipal Building Department at _____
Between the hours of 7:30 AM – 4:00 PM

DO NOT REMOVE THIS TAG

SAMPLE DAILY INSPECTION SCHEDULE

Daily Inspection Schedule

TIME	ADDRESS	PERMIT NO.	TYPE OF INSPECTION	OWNER OR CONTRACTOR	COMMENTS
7:30 AM					
8:00 AM					
8:30 AM					
9:00 AM					
9:30 AM					
10:00 AM					
10:30 AM					
11:00 AM					
11:30 AM					
1:00 PM					
1:30 PM					
2:00 PM					
2:30 PM					
3:00 PM					
3:30 PM					

SPEICAL NOTATIONS OR FOLLOW-UP REQUIRED FOR INSPECTION(S):

SAMPLE INSPECTION REPORT

(Municipal Logo)_____					
INSPECTION REPORT					
PIN #:				**Date**	**Time**
Phone :			**Scheduled**		
Fax:			**Completed**		
ADDRESS:					
OWNER:					
CONTRACTOR:					
	SITE INSPECTION		FRAMING		PLUMBING FINAL
	FOOTING		ABV GRADE STRUCT MASON		MECHANICAL FINAL
	FOUNDATION		STRUCTURAL STEEL		FIREPLACE/CHIMNEY FINAL
	RADON MANAGEMENT		WINDOW/DOOR INSTALLATION		SPRINKLER SYSTEM FINAL
	CONCRETE SLAB		ENERGY EFFICIENCY		ALARM SYSTEM FINAL
	PLUMBING ROUGH-IN		LATH/GYPSUM		SIDING/ EIFS/ EXTERIOR FINISHES
	MECHANICAL ROUGH-IN		SPRINKLER SYSTEM ROUGH-IN		BUILDING FINAL
	ROOFING		SPRAY APPLIED FIRE PROOFING		RE-INSPECTION
	ELECTRICAL ROUGH-IN		JOINT/PENETRATION PROTECTION		COMPLAINT
	GAS PIPING		FIRE PLACE ROUGH-IN		
	GAS LINE PRESSURE		ALARM SYSTEM ROUGH-IN		
COMMENTS:					

		WORK SATISFACTORY; PROCEED		**PHOTO/ VIDEO TAKEN**
		CORRECT WORK AND PROCEED		
		CORRECT WORK, CALL FOR REINSPECTION BEFORE COVERIING		
		CORRECT – UNSAFE CONDITION – WITHIN _____ HOURS, AND CALL FOR REINSPECTION		
		STOP-WORK ORDER POSTED. CALL INSPECTOR		
		INSPECTION REQUIRED. CALL TO ARRANGE ACCESS TO WORK		
Call for the next inspection 24 hours in advance.				
BUILDING INSPECTOR:				**PHONE:**
OWNER/CONTRACTOR ON-SITE:				
NOTE: The jurisdiction may want this form on carbonless, duplicate paper to generate an office copy for the file and a field copy for the Contractor.				

SAMPLE INSPECTION RECORD Permit #_____

(Municipal Logo)

BUILDING PERMIT *and/or*

SITE INSPECTION RECORD

For all inspections call (XXX) XXX-XXXX 24 hours in advance.

Date Issued: _____ Permit: _____ Type: _____

Property Owner: _____Project Address: _____

General Contractor: _____ License #: _____

X in left column indicates which inspections are required.

X	INSPECTION	INSPECTOR	DATE	COMMENTS
	Footing			
Do not place any concrete until the footing inspection is signed off.				
	Foundation			
Do not backfill until foundation inspection is signed off				
	R-Plumb. (above grade)			
	R-Plumb. (below grade)			
	Rough Mechanical			
	Rough Electrical			
	Gas Piping Test			
	Fireplace Rough-In			
	Framing			
Do not insulate until the above inspections are signed off.				
	Energy/Insulation			
Do not sheetrock or cover until the insulation/energy inspection is signed off.				
	Lath			
Do not plaster until lath inspection is signed off (if applicable).				
	Final Plumbing			
	Final Mechanical			
	Sewer/Septic			
	Final			

A CERTIFICATE OF OCCUPANCY IS REQUIRED BEFORE BUILDING IS OCCUPIED

SAMPLE BUILDING DEPARTMENT CORRECTION ORDER

Municipality of _____

Building Department Correction Order

NAME: _____

ADDRESS: _____ CITY: _____ZIP: _____

PERMIT NUMBER: _____

Corrective action(s) required: _____

_____

_____

_____

_____

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_____

_____

_____

(List the statute, rule or section)

Date Issued: _____ Issued by: _____

If you have any questions or to schedule a re-inspection call XXX.XXX.XXXX, Monday through Friday, 8AM to 4:30 PM.

CERTIFICATE OF OCCUPANCY REQUIREMENTS

Minnesota Rules Chapter 1300.0220 Certificate of 0ccupancy.

No building or structure may be used or occupied, and no change in the existing occupancy classification of a building or structure is allowed until the building official has issued a certificate of occupancy.

Exception: A municipality has the option of requiring a certificate of occupancy for Group U occupancies; and used manufactured homes moved into or within a jurisdiction.

After the building official has inspected the building or structure and finds no violations of the provisions of the Minnesota Building Code or other laws that are enforced by the code enforcement agency, the building official will issue a certificate of occupancy that contains the following:

- The building permit number.
- The address of the building.
- The name and address of owner.
- A statement that the described portion of the building has been inspected for compliance with the requirements of the code for the occupancy and division of occupancy and the use for which the proposed occupancy is classified.
- The name of the building official.
- The edition of the code under which the permit was issued.
- The use and occupancy classification.
- The type of construction.
- If an automatic sprinkler system is provided.
- Any special stipulations and conditions of the building permit.

Temporary Certificate of Occupancy:

The building official is authorized to issue a temporary certificate of occupancy before the completion of the entire work covered by the permit, provided that the portion or portions are occupied safely. The building official must set a time period during which the temporary certificate of occupancy is valid. (*See the following sample)*

SAMPLE CERTIFICATE OF OCCUPANCY

Certificate of Occupancy

I, _____ acting on behalf of the of _____(City Name)_____in the capacity of _____(Title)_____hereby certify that the described premises and project have been inspected by myself and that the permit or use as authorized by the referenced permit has been completed in compliance with all applicable codes and ordinances and is not in variance with said application and supporting data as of the date of said inspection.

Permit # _____ Use/Occupancy Classification: _____ Type of Construction: _____

Description of Structure: _____ MN Building Code Edition: _____

PID # _____ Property Address: _____

Sprinkler System _____ Special stipulations or conditions: ___ None ___ See attached

Owner's Name: _____ Address of Owner/Agent:

_____

Signature: _____ Date: _____

TYPE OF CERTIFICATE

Temporary Certificate of Occupancy: ___ Yes ___ No, Number of items requiring completion _____

[See attached inspection record]. **Expiration Date: _____** A re-inspection must be scheduled; provide access for inspection(s). All items requiring completion need to be inspected and approved prior to the expiration date.

Final Approval: ___ Yes ___ No, Owner or Contractor's Signature: _____

CHAPTER 7 - MANUFACTURED HOMES

CHRONOLOGY OF THE MINNESOTA MANUFACTURED HOME CODE

July 2, 1972 – Law and rules in effect for the adoption of ANSI 501B 1972 Standard for mobile homes, including interim amendments requiring egress window or door in bedrooms. State seals required on all manufactured homes manufactured after July 1, 1972.

November 1972 – Reciprocity agreement to accept state of Indiana manufactured home seals.

Sept. 1, 1974 – Adoption of ANSI 501B 1974 and requirement for support and anchoring systems regulation and installer registration.

November 1974 – Reciprocity agreement to accept state of Wisconsin manufactured home seals.

Jan. 1, 1975 – Transfer of manufactured home manufacturer and dealer licensing to Department of Administration, Building Codes and Standards Division.

June 15, 1976 – State of Federal Manufactured Home Standards and Regulations. HUD Labels required on all new manufactured home nationwide.

June 1, 1977 – Rules amended to include support and anchoring systems and installer registration.

June 1, 1981 – State Building Code amended to require building official to inspect manufactured home installation.

Aug. 1, 1981 – Adoption of Federal Manufactured Home Construction and Safety Standards by state law including consumer complaint handling procedures.

August 1982 – Rules revised to include HUD regulations, consumer complaint handling, and the requirements for the installation of utility connections.

December 1982 – Rules adopted for licensing of manufactured home manufacturers and dealers.

March 1993 – Adoption of manufactured home installer license and bond requirements.

March 16, 1998 – Limited dealer license law for manufactured home park owners, passed, 327B.04 subd. 8.

April 1, 1998 – All manufactured home installers required to be licensed and bonded by the Minnesota Department of Commerce. No manufactured home installer license exemption can be issued after March 31, 1998.

April 10, 2000 – Laws modified for limited dealer license passed, 327B.04, subdivision 8.

June 26, 2000 – Chapter 1350 rules for limited dealer license and installation amended.

Feb. 8, 2008 – HUD Code of Federal Regulations (CFR) 3288, "Manufactured Home Dispute Resolution Program" became effective throughout the United States. Minnesota approved for enforcement and administration of the CFR 3288 program by HUD as of Feb. 6, 2008.

2007 and 2008 – Minnesota Statutes amended 327B.10 added to adopt rules for continued education programs for installers, 326B.885 language added for licensed installer renewal required every three years, and 326B.46 added to allow plumbing rules to permit licensed manufactured home installers to connect the plumbing to the manufactured home at the site of occupancy.

Jan. 1, 2009 – HUD Code of Federal Regulations (CFR) 3285, "Model Manufactured Home Installation Standards" and CFR 3286, "Model Manufactured Home Installation Program Rules and Regulations" became effective throughout the United States. Minnesota submitted for approval of qualifying state programs in accordance with CFR 3285 and CFR 3286 in October of 2008 (As of January of 2009 HUD approval pending for Minnesota).

Dec. 29, 2009 – Minnesota Chapter 1350 revisions became effective; were amended to include requirements for installation of new manufactured homes for compliance with minimum requirements of HUD CFR 3285: installation inspections for all new and used manufactured home installations; continued education requirements for licensed manufactured home installers; and dispute resolution in accordance with HUD CFR 3288. The requirements for used home sales were also changed—see MS 327.32. This change requires an agreement between the buy and seller defining who is responsible to correct non-compliances for the nine life health safety items listed in the statute.

Feb. 23, 2010 – Minnesota approved by HUD as having a fully acceptable state plan for installation of manufactured homes in accordance with HUD CFR3286.

July 21, 2011 – Changes to installation requirements for new and used manufactured homes in MS 327.32 and 327.33. Allows single and multi-section used manufactured homes to be installed as ground sets (this is in violation of manufacturer's DAPIA approved engineered installation instructions if frost depth footings are required by manufacturers and requires the seller/installer to provide the purchaser a "notice" of non-compliance with the manufacturer's installation requirements and the potential effects of installing the home on a support system with footings placed above the local frost line). Allows plan review and inspection of all new and used manufactured homes by Minnesota-certified building officials outside of the building official's designed jurisdiction. (New manufactured home installation inspection and approval by building officials without ICC certification is non-compliance of CFR 3286.)

PLAN REVIEW PROCESS FOR MANUFACTURED HOMES, PREFABRICATED BUILDINGS, AND INDUSTRIALIZED MODULAR BUILDINGS - (MANUFACTURED STRUCTURES)

Type of Structure			
CODE ACTIVITY	**Manufactured Homes MSBC Chapter 1350**	**Prefabricated Buildings MSBC Chapter 1360**	**Industrialized Modular Buildings MSBC Chapter 1361**
APPLICATION	"USE" Single Family Residence Only	"USE" Single Family Residence and/or Garage	"USE" All Occupancy Types
	Applicant must provide manufacturers plans, certifications along with the manufacturer's requirements for installation and site work for the building. This information is required prior to plan review and permit issuance. The seal numbers may or may not be available at the time of permit application but are required to be on the unit when the unit arrives at the job site.		
PERMIT FEE VALUATION	Based on the value of the work being done at the site.	Based on the value of the work being done at the site.	Based on the value of the work being done at the site.
PLAN REVIEW and INSPECTION STRUCTURAL	Pier pad sizing soil type concentrated loads anchoring or attachment of house to foundation.	Location of concentrated loads, bearing locations. Attachment of home to the foundation.	Location of concentrated loads, bearing locations. Attachment of the building to the foundation.
PLAN REVIEW MECHANCIAL	Location of crossover ducts or sleeves	Usually the mechanical system is done on site.	Will vary greatly. Homes will be similar to prefab, except two-story units. Commercial buildings will have the air handling system completed.
PLAN REVIEW PLUMBING	Diagram to bring DWV to a single drop. Gas line connection from meter to house inlet.	DWV is stubbed through the floor. Water supplies may or may not be installed other than the shower supply. No gas lines run.	Residential ranch style stubbed thru the floor. Two-story tied together at floors. Commercial units typically brought to one DWV drop as well as one water hook up. Gas lines run on site.
PLAN REVIEW ELECTRICAL	Disconnect location and house sub panel, size 100, 150, or 200 amps junction between units. Fixture installation.	Panel is usually designed to be located in basement. Circuit leads are brought to one location. Service and basement wiring is completed onsite.	Residential - panel is usually supplied for basement installation with home-runs to be wired into the service panel onsite. Commercial projects - the panel is installed in the building. Check if designated as a building service disconnect or subpanel.
PLAN REVIEW ENERGY	Inclusive of the label. If installed on a basement the Minnesota energy code applies to the basement only.	Complies with MN Energy Code MR 1322. Check sill area for insulation and sealing. Basement must comply with the MN Energy Code.	Complies with MN Residential or Commercial Energy Codes MR 1323.

Type of Structure			
CODE ACTIVITY	**Manufactured Homes MSBC Chapter 1350**	**Prefabricated Buildings MSBC Chapter 1360**	**Industrialized Modular Buildings MSBC Chapter 1361**
APPLICATION	**"USE" Single Family Residence Only**	**"USE" Single Family Residence and/or Garage**	**"USE" All Occupancy Types**
TESTS	The manufacturer requires the following tests: **Gas piping -** Without appliances 3 psi 10 minutes; With appliances 10-14 water column; With applied bubble solution **Drain Waste and Vent:** flood rim 15 minutes **Water supply:** 100 psi 15 minutes – (not to include the water heater) **Electrical:** Before service connect bonding of metal parts check for shorts after service connection polarity & ground fault (gfci)	Perform tests on-site as are required by the Minnesota Residential Code.	Perform tests on-site as are required by the Minnesota Building Code.

MANUFACTURED HOME REQUIREMENTS

Minnesota Statutes 326B.133: The Building official shall be responsible for all aspects of code administration for which they are certified, including the issuance of all building permits and the inspection of all manufactured home installations.

A permit is required for:

- Installation of new and used homes;
- Remodeling of homes involving the installation or replacement of windows, interior walls, roofing, siding, etc.;
- Alterations of homes (see 1350.3800);
- Additions to the home of porches, decks, garages, etc.; and
- Installation of furnaces and water heaters.

The required inspections for the installation of a new manufactured home would include the footings, anchoring and support system, gas piping test and final.

The required inspections for a manufactured home that is installed on a partial or full basement would be footings, foundation, anchoring, any new plumbing rough-in and manometer, mechanical, energy, electrical and related inspections.

For specific requirements for manufactured homes see Minnesota Rule 1350, Prefabricated Buildings, Minnesota Rule 1360, Industrialized/Modular Buildings Minnesota Rule 1361, and Minnesota Rule 1370 for Storm Shelters (Manufactured Home Parks).

For approved anchoring systems contact the Department of Labor and Industry, manufactured structures unit directly at 651-284-5092

SAMPLE MANUFACTURED HOME INFORMATIONAL FORM

MANUFACTURED HOME INFORMATIONAL FORM

DATE RECEIVED:	PLAN REVIEWED BY:	PERMIT #:

PROJECT ADDRESS:	OR PID#

INSTALLER:	PHONE #

COMMENTS:

INSTALLATION:

SEALS/CERTIFICATES #	ANCHORING #	(Anchoring may be required by municipal ordinance park rule for pre-code and state code homes. Anchoring is required for HUD code homes.)
INSTRUCTIONS USED: ☐ MANUFACTURERS ☐ STATE CHAPTER 1350		(Homes constructed after June 14, 1976, requires manufacturer's instructions to be used).
FOUNDATION TO STATE BUILDING CODE		(May be required by manufacturer's instructions in a park set or by code adopting or zoning ordinance in a private property set.)

FOUNDATION TYPE:

☐ Piers below frost depth ☐ Full depth basement (treated wood or concrete block or poured concrete or other) _____
☐ Crawlspace ☐ Engineered slab on grade (signed approval by DAPIA or Minnesota engineer) _____

SUPPORT FOOTINGS:		SOIL CONDITIONS:	PIER MATERIAL:
Type	Size	PSF	

PIER SPACING: (Calculations should be submitted for review prior to inspection.)		SHIMS:	
FEET	INCHES ON CENTER	MATERIALS	SIZE (Minimum 4'X6" Hardwood)

GENERAL ITEMS:

SKIRTING MATERIAL USED (Resistant to decay)	ACCESS TO CRAWL SPACE AREA (18"X24" Minimum)	GROUND COVER CRAWLSPACE AREA
VENTING FOR SKIRTED OR CRAWLSPACE AREA" sq. ft. of vents		(Manufacturer's instructions or other: usually 1 sq. ft./150 sq. ft of floor area)

☐ YES ☐ NO - Clothes dryer vented to outside crawlspace or skirted area:
Materials Used: _____
☐ YES ☐ NO - Fresh air intakes to outside crawlspace or skirted area (if required for fireplace or furnace or water heater)
☐ YES ☐ NO - Cross-over heat ducts of multi-section homes installed to manufacturers requirements.

ANCHORING EQUIPEMENT: (If applicable)

☐ YES ☐ NO - Anchors Used (manufacturers model numbers):
_____
☐ YES ☐ NO - Soil test probe torque value _____ inch pounds
☐ YES ☐ NO - Connection and mating of multiple sections: (manufacturers installation instructions)

UTILTIES AND TESTING: (Water)

☐ YES ☐ NO - Correct materials and fittings used:
Comments: _____
☐ YES ☐ NO - Water line protected from freezing:
☐ YES ☐ NO - Correct Support & Spacing: _____

WATER HEATER:

Pressure test (maximum 80 lbs.):
_____
☐ GAS ☐ ELECTRIC:
Installed by: _____

DRAIN/WASTE LINES:

☐ YES ☐ NO – Correct materials and fitting used:

Comments: _____

(If manufacturer ships materials loos to complete on-site, material list and DAPIA approved design drawings must be with the home)

☐ YES ☐ NO – Main sewer connection gasketed: Slope to drain: _____ per foot support _____ spacing _____ O.C.

Pressure test or flood level test:	Date:	Installer name: (plumbing contractor or other)

GAS SERVICE

☐ YES ☐ NO – Correct materials and fittings used:

Comments: _____

Pressure test (6 to 8 oz. 1350.3400)	Date:	Installer name:

Correct Connection Between Halves: (HUD Code)

☐ YES ☐ NO - 3280.705)**:**

Support Spacing and Type: _____

☐ YES ☐ NO - Service to home correct materials and installation: (for manufactured home parks reference UMC Appendix B, Section 221)

Gas line shutoffs: ☐ Furnace ☐ Range ☐ Clothes Dryer ☐ Water Heater ☐ Fireplace

ELECTRICAL

Installer's Name	License Number

Service to Home: 50 amp _____ 100 amp _____ 200 amp _____ Other _____

(Note: In a manufactured home park the service must match the design rating of the home and all wiring must be completed by a licensed Minnesota electrical contractor.)

☐ YES ☐ NO – Heat tape receptacle under home: (HUD 3280.603, must be within 2 feet of main water entry, requires a weather prove cover, shall not be on a GFCI circuit.)

MISCELLANEOUS

Egress window (each bedroom): ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

☐ YES ☐ NO - Smoke detectors: Location Comply: Type: ☐ Electric ☐ Battery ☐ Combination

(HUD code 6/14/76 and newer requires electric; State code 7/1/72 to 6/14/76 allowed battery-operated smoke detectors)

☐ YES ☐ NO – Working at time of inspection, Date: _____

☐ YES ☐ NO – Fireplace or wood-burning stove: Make and Model Chimney/ flue (materials and type) _____

☐ YES ☐ NO – Approved for Use:

☐ YES ☐ NO – Fresh air intake correctly installed

_____

Furnace: ☐ Original ☐ Replacement Type: ☐ Gas ☐ Electric ☐ Fuel Oil ☐ Other

☐ YES ☐ NO – Entry stairs front and rear of home to code: (check stair rise and run, landing size, and handrail or guardrail)

INSPECTIONS:

1. Inspector: _____ Date: _____

2. Inspector: _____ Date: _____

3. Inspector: _____ Date: _____

Comments: _____

_____

SAMPLE MANUFACTURED (MOBILE) HOME PERMIT/APPLICATION

MANUFACTURED (MOBILE) HOME PERMIT/APPLICATION

DATE RECEIVED: (Office Use Only):	PLAN REVIEWED BY: (Office Use Only):	PERMIT #:(Office Use Only):

PROJECT ADDRESS:	OR PID#
PROPERTY OWNER	PHONE #

OWNER ADDRESS	CITY	STATE	ZIP CODE

INSTALLER NAME		LICENSE #	PHONE #
GAS PIPING TEST CONTRACTOR	PHONE #	PARK NAME (if applicable)	Lot #
BRAND NAME	MODEL NAME	SERIAL NUMBER	DATE OF MANUFACTURER

CONSTRUCTION LABEL NUMBER	DESIGN ROOF LOAD	IS THIS HOME AN "ALTERNATE CONSTRUCTION" DESIGN: ☐ YES Contact the Bo for additional submittal information if yes. ☐ NO	HEATING/COOLING ZONE

DEALERS NAME			PHONE #
DEALERS ADDRESS	CITY	STATE	ZIP CODE

TYPE OF FOOTINGS & FOUNDATION	OF HOME	LOT SIZE	ESTIMATED VALUE OF HIOME	VALUE OF SITE WORK

This permit becomes null and void if work or construction authorized is not commenced within 180 days, or if construction or work is suspended or abandoned for a period of 180 days at any time after work has commenced. I hereby certify that I have read and examined this application and know the same to be true and correct. All provisions of laws and ordinances governing this type of work will be complied with whether specified herein or not. The granting of a permit does not presume to give authority to violate or cancel the provisions of any other state or local law regulating construction or the performance of construction.

NAME (please print)	SIGNATURE		
ADDRESS	CITY	STATE	ZIP CODE

CITY USE ONLY

PLANNING:

ZONING DISTRICT	MINIMUM SETBACKS REQUIRED: FRONT _____ SIDE _____ REAR _____ ROAD RIGHT OF WAY _____ OTHER: _____
REVIEWED BY	DATE
SUBJECT TO THE FOLLOWING CONDITIONS:	

BUILDING:

REVIEWED BY	DATE
SUBJECT TO THE FOLLOWING CONDITINOS:	

FEES:

BUILDING PERMIT	PLAN REVIEW	STATE SURCHARGE
PLUMBING PERMIT	PLAN REVIEW	STATE SURCHARGE
MECHANICAL PERMIT	PLAN REVIEW	STATE SURCHARGE
OTHER	**TOTAL DUE:**	

DATE ISSUED:	ISSUED BY:	RECEIPT #

SAMPLE MANUFACTURED (MOBILE) HOME PERMIT REQUIRMENT

Sample

MANUFACTURED (MOBILE) HOME PERMIT REQUIREMENTS

The following information must be submitted to the Building Department before a building permit can be processed and approved. A more detailed description of items 1-5 is listed below.

1. Manufactured Home Permit

2. Site Plan or Survey (two copies)

3. Plans/Installation Instructions (two copies)

4. Contractor(s) License Number

5. Gas Piping Air Test

*** Miscellaneous as required**

After a preliminary review, additional information may be required. Allow XX working days for processing.

1. **Permit application:** Complete a building permit application form.
2. **Site plan or survey:** Provide an updated plan of the property showing the direction north, all property lines, road right of ways, easements, existing buildings [with dimensions] and project address or PIN number. Diagram the proposed building location, dimensions and proposed setbacks from property lines, existing buildings, and all topographical features. A registered survey may be required if deemed necessary by the department.
3. **Plans/installation instructions (two copies):**
   A. **Floor plans** of the home showing the length and width of the home, room layout and use of rooms [bedroom, bathroom etc.]. If a basement is being installed include floor plans of the basement.
   B. **Installation instructions** showing the anchoring and support system designed by the manufacturer. If the manufacturer's instructions are not available, the home must be anchored and supported per section 1350 of the MN State Building Code.
   C. **A cross section** of the footings and foundation is required if a basement or frost footing foundation is being installed. Provide the manufacturers design for the foundation including footing size, foundation type, anchoring system, center bearing wall design, damp proofing/waterproofing, and foundation insulation.
4. **The installer's license number and the general contractor's** license number must be provided on the permit application.
5. **Gas piping air test:** Provide the name and phone number of the contractor performing the air test on the gas piping inside the home. All piping must be of approved material; from the meter to the main connection at 25psig for 30 minutes, can be reduced to 10 minutes with prior approval. Inside the home with an air test of ten to 14 inches water column for ten minutes and soap tested. Support the gas piping in accordance with the 2015 Minnesota Fuel Gas Code (MNFGC) Section 415 using approved connectors. The tests must be witnessed by an inspector before the home can be occupied. Refer to the

manufacturer's installation instructions for additional requirements.

*** Miscellaneous: alternate construction:** If your manufactured home was designed and built under an alternative construction technique, additional information will be required.

A. **Zoning:** A zoning permit application is required if a variance, conditional use permit or special evaluation is required. Zoning approval is required for all building permits
B. **Electrical:** Electrical permits are issued by the state electrical inspector. For permit and inspection requirements call xxx-xxx-xxxx, 7 to 8:30 a.m., Monday through Friday.
C. **Permit fees**: Building and zoning fees will be determined after the application and required plans have been approved. Fees must be paid in full before a permit can be issued or work can begin.

General Information

****Required Inspections:**

1. Footing inspection [if concrete is being placed].
2. Setup inspection of anchoring and support system.
3. Gas piping air test.
4. Plumbing manometer or flood level of the water closet.
5. Final [before occupied], when all inspections are complete and code complying landings and stairs are in place.
6. If a basement is being installed the foundation must be inspected prior to backfill.

For all inspections call xxx-xxx-xxxx 24 hours in advance.

Certificate of occupancy: Before the home can be occupied a Certificate of Occupancy may be required by the municipality. All work must be completed, and the required inspections approved, before the home can be occupied.

Licensed installers: All homes are required to be installed by a licensed installer or the owner/occupant. Installers must attach a support and anchoring seal to the home. Because of frost conditions, homes installed after Nov. 15 require a temporary installation seal before occupancy. The installer/owner must provide a copy of the temporary installation seal before occupancy and contact the building department when the final seal is installed.

Construction seals: Include on the application form the Minnesota State Construction Seal or the HUD Serial Number, manufacturer and year built.

Water piping: All water piping must be of approved material and fittings. Piping under the home must be insulated, heat tape installed and supported.

Gas water heaters/furnaces: Gas water heaters and furnaces must be listed specifically for manufactured homes and be installed to the manufacturer's specifications and the State Building Code. All gas water heaters and furnaces require outside combustion air and proper venting.

Fireplaces: Fireplaces must be listed for manufactured homes and installed per manufacturer's instructions and the State Building Code.

Gas and electric utilities: Contact your local supplier for specific requirements.

Electrical wiring: Wiring must be inspected and approved by a state electrical inspector. To request an inspection or to answer electrical questions call xxx-xxx-xxxx between 7 and 8:30 a.m., Monday through Friday.

Excavations: Before excavating contact Gopher State One Call 48 hours in advance at 651-454-0002 or for greater Minnesota 1-800-252-1166 to verify the location of underground utilities, etc.

If you have any questions, please contact the Building Department Monday through Friday, 8 a.m. to 4:30 p.m. at:

Name
Address
City, State, Zip
Phone

Egress windows for manufactured homes

1. ANSI A119. STANDARDS: Clear opening of not less than 22 inches in least dimensions and 5 square feet in area with bottom of the opening not more than 4 feet above the floor. (ANSI A119.1 effective July 1, 1972 thru June 14, 1976.)
2. HUD CFR 3280.106**:** Clear opening of not less than 20 inches width and 24 inches height in least dimensions and 5 square feet in area with bottom of the opening not more than 36 inches above the floor. Locks, latches, operating handles, tables, and other devices, which need to be operated in order to permit existing, shall not be located in excess of 54 inches from the finished floor. (HUD Standards effective July 15, 1976 to present.)
3. 2020 Minnesota Residential Building Code Section 310 Emergency Escape and Rescue Openings

Options No. 2 and No. 3 may be acceptable for municipalities that adopt ordinances for "Pre-Code Manufactured Homes" (Homes built prior to July 1, 1972).

Note: Manufactured homes built from July 1, 1972, thru June 14, 1976, must have egress windows in compliance with ANSI A119.1 or HUD windows in compliance with HUD CFR 3280.106 in every bedroom. All basements when installed under manufactured homes must meet the egress requirements of the Minnesota State Building Code, 2000 IRC Section 310.

Correct appliance installations for manufactured homes

Gas water heaters and furnaces must be listed for manufactured home use, Code of Federal Regulations, title 24, section 3280.709 (a) and (d)(1) and (2), and installed correctly, in accordance with their listing or standards.

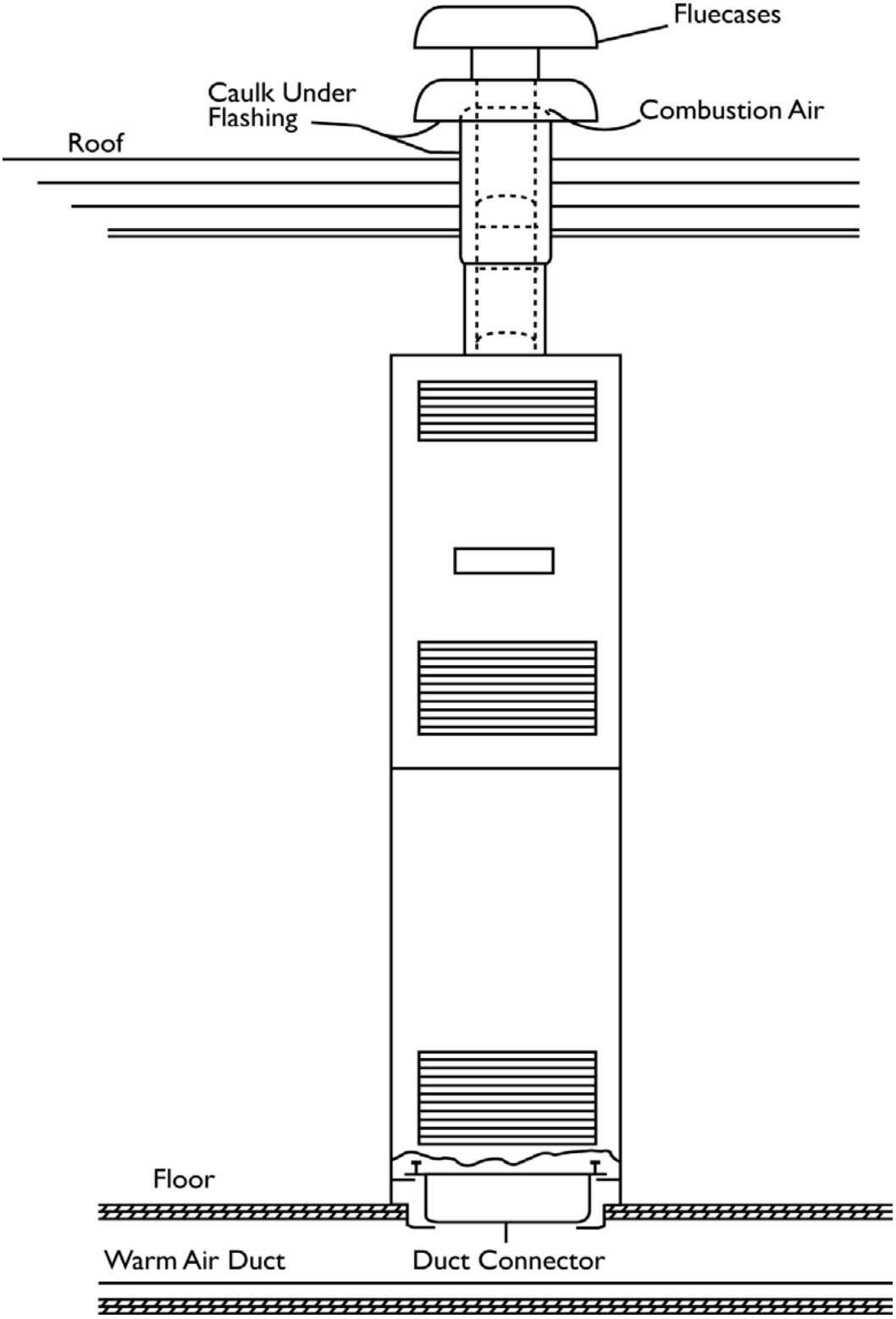
- Clearance requirements in the manufacture installation instructions for a replacement appliance or a retrofit appliance must be adhered to when installed into an existing manufactured home.

HUD CFR 3280.709 standards recognize two methods in which compliance may be achieved for the required "Complete separation of the combustion systems from the interior atmosphere of the manufactured home."

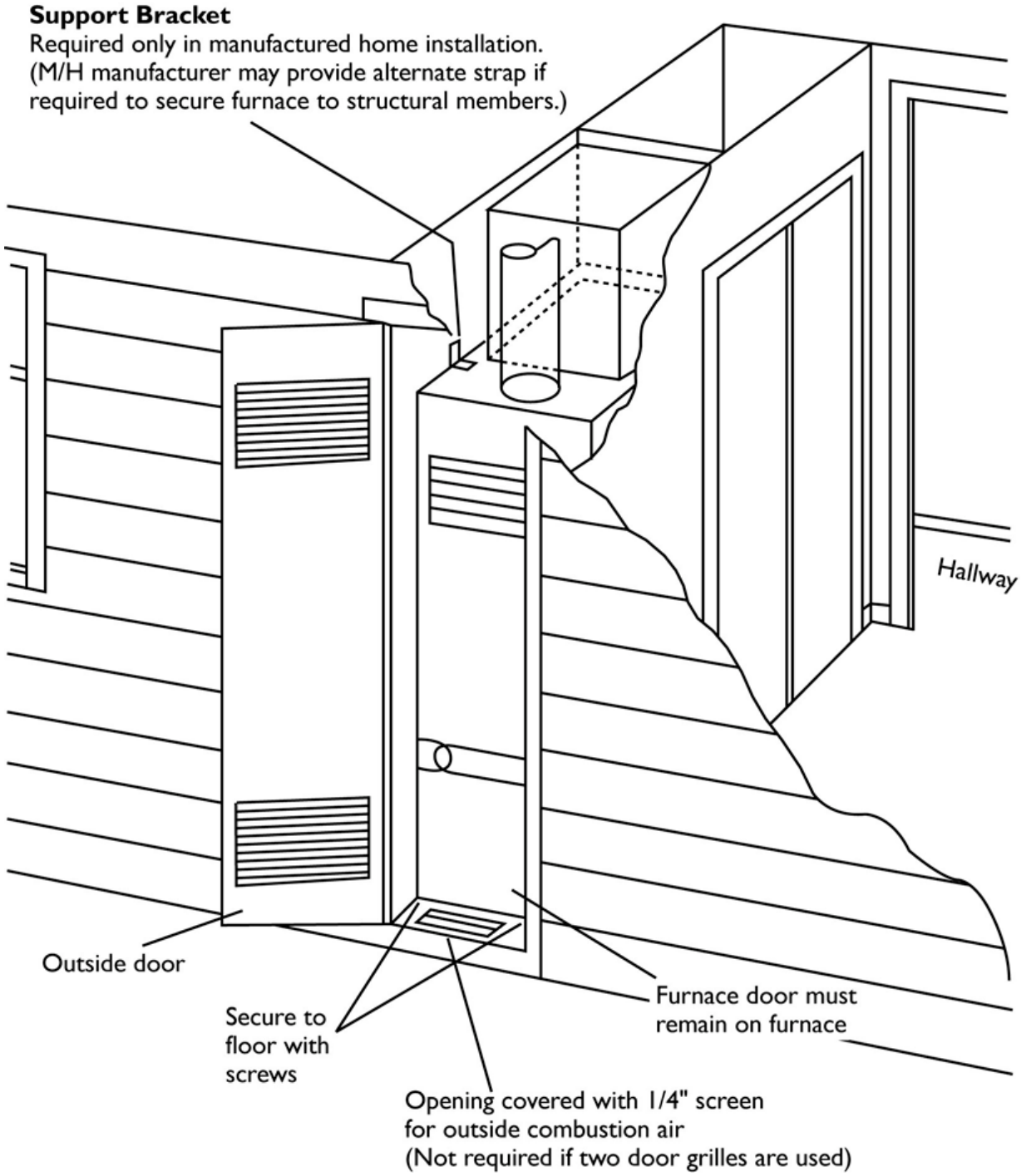
- Method one is the installation of direct vent system (sealed combustion system).
- Method two is the installation of appliances within enclosures so as to separate the appliance combustion system and venting system from the interior atmosphere of the manufactured home.
    - Method two shall not have any door, removable access panel, or other opening into the enclosure housing the furnace or water heater from inside of the manufactured home. Any opening for ducts, piping, wiring, etc. must be sealed.

It is a violation of state law to alter and/or sell or lease or offer to sell or lease any manufactured home built after July 1, 1972, that does not comply with the manufactured home building code (Minnesota Statutes 327.31 through 327.35). In the future, all personnel involved in replacing water heaters and furnaces or selling manufactured homes in Minnesota should not only note that the appliance is listed for use in a manufactured home, but also that the installation conforms to the appliance manufacturer's installation instructions.

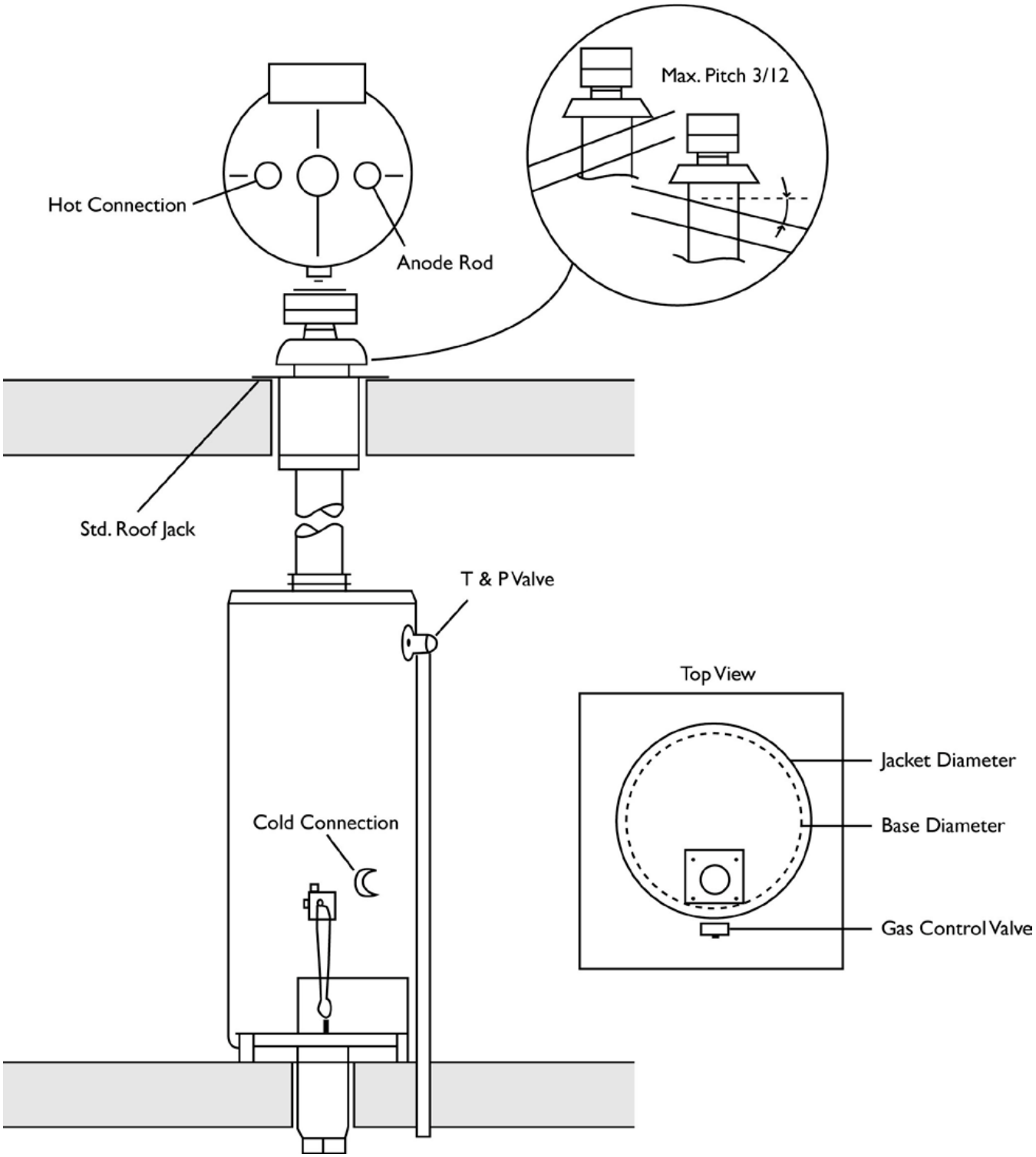
METHOD ONE
Direct Vent



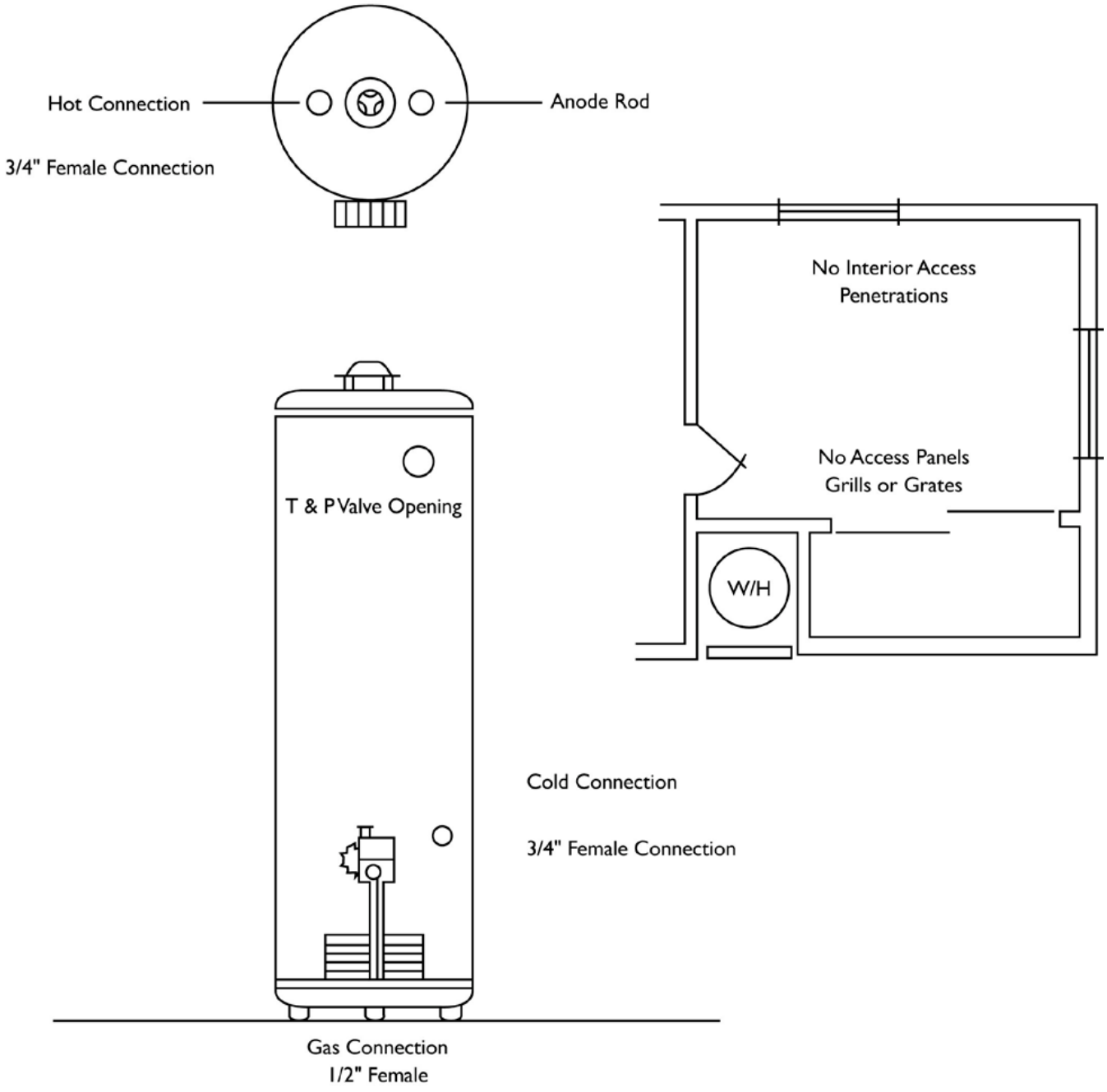
METHOD TWO
Separate Enclosure
Typical Closet Installation



METHOD ONE
Direct Vent Water Heater



METHOD TWO
Separate Enclosure



INSPECTION CHECK LIST FOR MANUFACTURED HOME INSTALLATION

Following is a list of common manufactured home code non-compliant items found in used or altered manufactured homes. Other non-compliant issues may be present that are not on this list. The items listed usually happen after the home was labeled/certified and left the manufacturer's production facility.

This form must be completed by a certified building inspector or a licensed manufactured home dealer in the Minnesota. Dates should be entered in areas of compliance, correction required, correction completed for each item. This form is required to completed and submitted with application for a manufactured replacement construction label in Minnesota.

Code item

1. Exterior receptacles require weatherproof protector covers; this includes heat tape receptacles mounted under the home. CFR 3280.808 (a) and NEC 406.9.

   Complies _____ Correction Required _____ Correction Completed _____

2. NM-cable type wiring that is added under or on the exterior of the home shall be protected by rigid metal conduit and the conductors shall be suitable for wet locations. CFR 3280.808 (k) and NEC 550.15 (H).
   Complies _____ Correction Required _____ Correction Completed _____

3. Electrical boxes, fittings, and cables shall be securely fastened in place and supported by a structural member or a substantial brace. Common examples are duplex receptacle boxes, electric range and clothes dryer receptacles that have been added and not secured to anything. CFR 3280.808 (n) and NEC 550.15 (I).
   Complies _____ Correction Required _____ Correction Completed _____

4. NM-type cable located within 15-inches or less above the floor or in areas where storage is used shall be protected from physical damage. Common examples are wiring added for range or clothes dryer, and NM-type cable run in closets or cabinet storage areas. CFR 3280.808 (c) and NEC 550.15(B).

   Complies _____ Correction Required _____ Correction Completed _____

5. Electric ranges and clothes dryers shall have 4 conductor cord and 4 wire grounding type plugs. CFR 3280.809 (b) (2) and NEC 250.140.

   Complies _____ Correction Required _____ Correction Completed _____

6. Solid fuel-burning fireplaces or stoves shall be listed for use in manufactured homes and installed in accordance with the listing or standards (i.e. chimney, doors, hearth, combustion air intake, etc.). CFR 3280.707 and CFR 3280.709 (g).

   Complies _____ Correction Required _____ Correction Completed _____

7. Replacement gas water heaters or furnaces must be listed for use in manufactured homes. If listed for use, verify compliance for separation of combustion system from the interior atmosphere of the home. (This includes the vents, roof jacks, and chimneys) and installed according to the listings. CFR 3280.707 (a), CFR 3280.709 (a & d), and CFR 3280.710 (a).

   Complies _____ Correction Required _____ Correction Completed _____

8. Clothes dryer ducts shall not terminate beneath the manufactured home and shall be constructed of metal and shall not be connected with screws or other fasteners which extend into the interior of the duct. CFR 3280.708 (a)(3 & 4) and IMC 504.6.

   Complies _____ Correction Required _____ Correction Completed _____

9. Gas appliances (i.e. range, furnace, clothes dryer, water heater, etc.) are required to have shutoff valves upstream of the union or connector. Shutoff within 6’ of any cooking appliance and within 3’ of any other appliance. CFR 3280.705 (k) (3).

   Complies _____ Correction Required _____ Correction Completed _____

10. Plastic pipe materials and fittings used for drain lines must be of approved materials and correctly installed. Commonly found code non-compliant item is ABS drain materials/fittings glued together with PVC drain material/fittings. CFR 3280.610 (b).

    Complies _____ Correction Required _____ Correction Completed _____

11. Exterior hose bibs (water faucets) must be installed with a backflow prevention device (vacuum breaker). The installation of potable water supply piping or fixture or appliance connections shall be made in a manner to preclude the possibility of backflow. CFR 3280.609 (b) (2 & 7).

    Complies _____ Correction Required _____ Correction Completed _____

12. Water heaters must have a pressure-temperature relief valve which will activate at 150 psi and at or below a water temperature of 210 degrees F. There must also be a full-size drain line with a cross section area equal to that of the relief valve, extended to discharge beneath the manufactured home. CFR 3280.609 (c) (ii & iii). Homes manufactured after May 31, 2006, are required to have a drip pan under the water heater (CFR 3280.709 (h)) and the line may empty into the pan on those homes.

Complies _____ Correction Required _____ Correction Completed _____

13. Fire blocking (fire stop collars) must be installed around all openings for pipes, vents, flue stacks, and other penetrations in walls, floors, and ceilings of furnace and water heater spaces. CFR 3280.206 (c). Common areas found that are non-compliant are flue locations at the ceiling line.

    Complies _____ Correction Required _____ Correction Completed _____

14. Cooking appliances shall be ventilated by a metal duct not less than 12.5 square inches in area located above the appliance and terminating outside of the home, or by listed mechanical ventilating equipment installed in accordance with the listing installed not more than 10' horizontal distance from the appliance. CFR 3280.710 (e) and NFPA 501B section 6.4.5.

    Complies _____ Correction Required _____ Correction Completed _____

15. Vertical clearance of 24" to the bottom of combustible cabinets must be maintained above the cooking top. CFR 3280.204(e).

    Complies _____ Correction Required _____ Correction Completed _____

16. Smoke alarms must be installed in manufactured homes. Homes manufactured after July 31, 2002, must have hard wired alarms in each sleeping room and in an area to protect the living area and kitchen space. CFR 3280.209(b). Homes manufactured from June 14, 1976 to July 31, 2002, must have hard wired alarms located between the bedroom areas and living areas of the home, or equipped with a 10-year battery. CFR 3280.209(b). If homes have bedrooms at each end of the home three alarms minimum are required.
    Homes manufactured from July 1, 1972 to June 14, 1976, must have either hard wired or battery-operated alarms located between the bedroom areas and living areas of the home. NFPA 501B, sections 9.1 & 9.2. If homes have bedrooms at each end of the home three alarms minimum are required.

    Complies _____ Correction Required _____ Correction Completed _____

17. Carbon Monoxide alarms are required in each home containing fuel-burning appliances 3280.211(b). Alarms must be installed outside of every separate sleeping area in the immediate vicinity of the bedrooms. Every carbon monoxide alarm must obtain power from the electrical system of the home and have a battery as a secondary power source.

    Complies _____ Correction Required _____ Correction Completed _____

18. Floors are required to support 40# per square foot live load and a 200# concentrated load on a 1' diameter disk where deflection is not to exceed 1/8". CFR 3280.305 (g). Common examples of not code compliant locations are in bathroom, laundry areas, water heater rooms, and by front or rear entry doors where floor decking is been exposed to water and softened the decking.

    Complies _____ Correction Required _____ Correction Completed _____

19. Floor decking in kitchens, bathrooms, laundry areas, water heater compartments is required to be protected from moisture. CFR 3280.305 (g) (2) allows for protection by sealing with an approved sealer or an overlay of nonabsorbent material and all penetrations are to be protected with a sealant.

    Complies _____ Correction Required _____ Correction Completed _____

20. Homes manufactured after November 30, 2005 (see data plate-date of manufacture) are required to have corrosion-resistant water drip collection and drain pan installed under each water heater CFR 3280.709 (h).

    Complies _____ Correction Required _____ Correction Completed _____

21. Bottom board materials (belly board) must be sealed to resist the entrance of rodents around pipes, ducts, repairs, etc. CFR 3280.307 (d) and 3280.705 (a).

    Complies _____ Correction Required _____ Correction Completed _____

22. Exterior coverings and exterior doors/windows shall prevent allowing the elements (rain, snow, etc.) from exposed interior materials. CFR 3280.307 (a & b). This would include joints between dissimilar materials.

    Complies _____ Correction Required _____ Correction Completed _____

23. Rooms in homes are required to have windows for minimum natural light and ventilation.
    Each habitable room shall have 8% light and 4% ventilation on HUD label units built after June 14, 1976. CFR 3280.103.

    Complies _____ Correction Required _____ Correction Completed _____

    - Each habitable room shall have 10% light and 5% ventilation on State labeled units built from July 1, 1972, through June 14, 1976. NFPA 501B section 8.1

    Complies _____ Correction Required _____ Correction Completed _____

    - Kitchen and bathrooms may be provided with artificial light and mechanical ventilation. NFPA 501B section 8.1 and CFR 3280.103.

Complies _____ Correction Required _____ Correction Completed _____

- Each bathroom must have ventilation by either mechanical method 1 air change every 12 minutes or by means of 1.5 square foot of open able window in State labeled homes (7/1/72 – 6/14/76) and HUD labeled homes (6/15/76 – 10/25/93). NFPA 501B section 8.1.2 and CFR 3280.103

Complies _____ Correction Required _____ Correction Completed _____

- Each bathroom must have a mechanical ventilation system capable of exhausting 50 cfm to the outside of the home on HUD labeled units (1026/93 – current date of manufacture). CFR 3280.103 (c) (3).

Complies _____ Correction Required _____ Correction Completed _____

24. Homes must have one egress window in each bedroom.
State labeled homes 7/1/1972 through 6/14/1976, clear opening of 22 inches in width and height and 5 square foot in area. Sill height not more than 48' above the floor. NFPA 501B section 8.3.1 (c).

Complies _____ Correction Required _____ Correction Completed _____

- HUD labeled homes 6/14/1976 to the current date of manufacture, net clear opening of 20" wide and 24" high, 5 square foot in area, with sill height of window opening no more than 36" above the floor, and tabs or other operational devices shall not be located more than 54" above the finished floor. CFR 3280.106

Complies _____ Correction Required _____ Correction Completed _____

- HUD labeled homes located in Minnesota shall be equipped with storm windows or insulated glass. CFR 3280.506 (c).

- Complies _____ Correction Required _____ Correction Completed _____

25. Manufactured homes shall have 2 exit doors located remote from each other. NFPA 501B section 8.3.1 (a) and CFR 3280.105 (a). Manufactured homes exterior exit doors must be at least 12' from each other in single section homes and must be at least 20' from each other in multi-section homes. CFR 3280.105 (a) (2).

Complies _____ Correction Required _____ Correction Completed _____

26. In HUD label homes (6/15/76 to present date of manufacture) an exit door shall not be more than 35' from each bedroom doorway. CFR 3280.105 (a) (2) (IV).

    Complies _____ Correction Required _____ Correction Completed _____

27. Glazing in all entrance doors, sliding glass doors, unbacked mirrored wardrobe doors, shower, and bathtub enclosures to a height of 6' above the floor, and sidelights within 12" of either side of an entrance door must be safety glazing materials which comply with ANSI Z97.1-1984.

    Complies _____ Correction Required _____ Correction Completed _____

28. Gas line piping shall not be used for electrical ground. CFR 3280.705 (l) (5).

    Complies _____ Correction Required _____ Correction Completed _____

29. Electrical distribution panel boards shall not be located in Bathrooms. There shall be 6" of clearance from easily ignitable materials maintained in front of the panel board. There shall be a clear working space of 30" wide and 30" in front of the panel board. CFR 3280.804 (f).

    Complies _____ Correction Required _____ Correction Completed _____

30. Manufactured homes built and labeled under the State program (7/1/1972 through 6/14/1976) must have a State issued construction label on the exterior of the home. MSBC 1350.0400 subpart 1.

    Complies _____ Correction Required _____ Correction Completed _____

31. Manufactured homes built and labeled in accordance with the HUD program June 15, 1976 and to present date of manufacture must have a construction label on each exterior section of the home. CFR 3280.11. Each manufactured home with HUD certification labels must have a data plate permanently located in the home. CFR 3280.5. The data plate must contain the manufacturer's name and production address, date of manufacture of the home, roof design load, wind design load, heating design, and list all major factory installed appliances.

    Complies _____ Correction Required _____ Correction Completed _____

32. Manufactured homes with proposed alterations or additions added on must have plans/specifications approved by LAHJ or CCLD with all permits and inspections required. MSBC 1350.3800. If the home is a new manufactured home covered under warranty (MS 327B.02 and 327B.03) written permission from the manufacture for the alteration or addition must also be obtained.

    Complies _____ Correction Required _____ Correction Completed _____

I have inspected the above items to verify compliance of the items to the manufactured home construction codes that the home was required to be constructed to.

_____ _____

Signature of Certified Building Official/Inspector Date OR

_____ _____

Signature of Licensed Manufactured Dealer Date

CHAPTER 8 - MECHANICAL AND FUEL GAS INFORMATION

This chapter is not intended to all cover code issues relating to the 2020 Minnesota Mechanical and Fuel Gas Code. The information in this chapter references requirements to plan review, inspections and general code information that should be followed up with Minnesota State Building Code research within documents that pertain to the subject matter specific to the project.

The 2020 Minnesota Mechanical and Fuel Gas Code is located in Minnesota Rules Chapter 1346. This rule chapter adopts by reference chapters 2 through 15 of the 2018 International Mechanical Code (including Minnesota amendments), Chapters 2 through 8 of the 2018 International Fuel Gas Code (including Minnesota amendments), chapters 1 through 9 of the ANSI/ASHRAE Standard 154-2016 Ventilation for Commercial Cooking Operations, ANSI/ASHRAE 62.2-2016, and Ventilation and Acceptable Indoor Air Quality in Residential Buildings.

MECHANICAL SUBMITTAL DOCUMENTS AND MECHANCIAL PLAN REVIEW INFORMATION

Minnesota Rules Chapter 1300.120 subpart 1 defines work that requires a permit and subpart 4 defines work exempt from a permit. See Submittal Documents for Mechanical and Plumbing Work within Chapter 4 of this Code Administration Manual.

Definitions

The following are definitions related to mechanical appliances typically seen in a residential application that will require combustion air from the exterior of the building.

Atmospherically vented gas or oil appliance. An appliance, also known as natural draft, that utilizes a venting system designed to remove flue or vent gases under non-positive static vent pressure entirely by natural draft.

Combustion air. Air necessary for complete *combustion* of a fuel, including *theoretical air* and excess air.

Closed combustion solid fuel burning appliance. A heat producing *appliance* that employs a *combustion* chamber having no openings other than the flue collar, fuel charging door, and adjustable openings provided to control the amount of *combustion air* that enters the *combustion* chamber and includes doors with gaskets or flanges that permit tight closure and glass or ceramic panels which must be tightly sealed or gasketed at their frames.

Decorative solid-fuel-burning appliance. A natural draft *appliance*, usually a fireplace, intended primarily for viewing of the fire and which may or may not incorporate doors that substantially close off the firebox opening when the *appliance* is in operation.

Direct-vent appliances. Appliances that are constructed and installed so that all air for *combustion* is derived from the outdoor atmosphere and all flue gases are discharged to the outdoor atmosphere.

Fan-assisted appliance. An appliance equipped with an integral mechanical means to either draw or force products of combustion through the combustion chamber or heat exchanger.

Powered make up air. Air which must be brought in from the outdoors by means of a fan to replenish the air expelled by a mechanical exhausting device.

Power vent appliance. An appliance with a venting system which uses a fan or other mechanical means to cause the removal of flue or vent gases under positive static pressure.

Solid Fuel Appliance. A natural draft *appliance* that is either a closed *combustion* solid-fuel-burning *appliance* or a decorative solid-fuel-burning *appliance*.

Combustion air for residential construction

Solid fuel and oil appliances references are found in Chapter 7 of the 2020 Minnesota Mechanical Code. Gas Burning Appliance references can be found in Chapter 3 Section 304 of the 2020 Minnesota Fuel Gas Code

304.1 General. Air for combustion, ventilation, and dilution of flue gases for appliances installed in buildings shall be provided by application of one of the methods prescribed in Sections 304.5 to 304.9.

Combustion air requirements for Residential Dwellings shall be calculated by using Worksheet E-1. Note: See Worksheet E-1 "Residential Combustion Air Calculation Method" and Table E-1 "Residential Combustion Air Required Volume" in this Code Administration Manual or as adopted in Minnesota Rules Chapters 1346.6012 IFGC APPENDIX E, WORKSHEET E-1 and 1346.6014 IFGC APPENDIX E, TABLE E-1.

Exceptions

Type 1 clothes dryers that are provided with make-up air in accordance with the appliance manufacturer's instructions.

Combustion air for power burner appliances equipped with a draft control device and having an input above 400,000 Btu/hr. Combustion air shall be provided from a single opening from the outdoors. In lieu of this requirement, combustion air requirements specified by the manufacturer for a specific power burner appliance may be approved by the building official.

Combustion air for power burner appliances not equipped with a draft control device and having an input above 400,000 Btu/hr. shall have a net free area of 0.1 square inches per1,000 Btu/hr. Combustion air shall be provided from a single opening from the outdoors. In lieu of this requirement, combustion air requirements specified by the manufacturer for a specific power burner appliance may be approved by the building official.

Combustion air for equipped with a draft control device and having an input above 400,000 Btu/Hr

shall have a net free area of 0.2 square inches per 1,000 Btu/hr. Combustion air shall be provided from a single opening from the outdoors, terminating within 12 inches of the bottom of the enclosure. In lieu of this requirement, combustion air requirements specified by the manufacturer for a specific power burner appliance may be approved by the building official. Category I, II, and IV gas-fired appliances shall be determined using Table 304.1

TABLE 304.1 COMBUSTION AIR REQUIREMENTS FOR GAS-FIRED APPLIANCES WHEN THE COMBINED INPUT IS UP TO AND INCLUDING 400,000 Btu/hr		
TOTAL INPUT OF APPLIANCES1, THOUSANDS OF Btu/hr (kW)	**REQUIRED FREE AREA OF AIR-SUPPLY OPENING OR DUCT, SQUARE INCHES sq (mm)**	**ACCEPTABLE APPROXIMATE ROUND DUCT EQUIVALENT DIAMETER2, INCHES (mm)**
25 (8)	7 (4,500)	3 (75)
50 (15)	7 (4,500)	3 (75)
75 (23)	11 (7,000)	4 (100)
100 (30)	14 (9,000)	4 (100)
125 (37)	18 (12,000)	5 (125)
150 (45)	22 (14,000)	5 (125)
175 (53)	25 (16,000)	6 (150)
200 (60)	29 (19,000)	6 (150)
225 (68)	32 (21,000)	6 (150)
250 (75)	36 (23,000)	7 (175)
275 (83)	40 (26,000)	7 (175)
300 (90)	43 (28,000)	7 (175)
325 (98)	47 (30,000)	8 (200)
350 (105)	50 (32,000)	8 (200)
375 (113)	54 (35,000)	8 (200)
400 (120)	58 (37,000)	9 (225)

501.4.2.5 Separate makeup air and combustion air openings.

When both makeup air and combustion air openings are required, they shall be provided through separate openings to the outdoors, subject to IFGC Section 304, to determine requirements for air for combustion and ventilation.

Exception: Combination makeup air and combustion air systems may be approved by the building official where they are reasonably equivalent in terms of health, safety, and durability.

Mechanical Ventilation

The following are requirements related to ventilation found within residential and commercial applications from Chapter 4 of the 2020 Minnesota Mechanical Code.

- Section 401: General Requirements for Mechanical Exhaust and Natural Ventilation
- Section 402: Natural Ventilation Requirements
- Section 403: Mechanical Ventilation Requirements

Make-up air

The following are requirements related to make up air found within residential and commercial applications within Chapter 5 of the Minnesota Mechanical Code.

- Section 501.1: General requirements for exhaust systems serving clothes dryers and cooking appliances; hazardous exhaust systems; dust, stock and refuse conveyor systems; sub-slab soil exhaust systems; smoke control systems; energy recovery ventilation systems and other systems.
- Section 501.2: Type I exhaust systems shall be independent of all other exhaust systems and Type II exhaust systems shall be independent of all other exhaust systems.
- Section 501.3: Exhaust discharge removed by a mechanical exhaust system shall be discharged to outdoors not less than specified distances per section 501.3.1.
  - Exception: Commercial cooking recirculation systems.
- Section 501.4: Mechanical exhaust systems shall be sized and operated to remove the quantity of air required in this chapter.
  - Table 501.4.1: Procedure to determine makeup air quantity for exhaust appliances in dwellings.
  - Section 501.4.2 and Table 501.4.2 Makeup air supply methods and opening sizing for dwellings
  - Table 501.4.3(1) & (2) & (3) Procedure to determine air quantity for exhaust appliances in existing dwellings.

MAKEUP AIR EXAMPLE USING TABLES 501.4 AND 501.4.2 IN CHAPTER 5 OF THE 2020 MINNESOTA MECHANICAL CODE

Example 1 – The makeup air quantities for **new** residential homes are calculated by using table 501.4.1 from Chapter 5 of the Minnesota Mechanical Code. The underlined sample information was added to the table below to calculate makeup air requirements for different types of water heater and furnace appliance combinations based on the following new residential home example information:

- *A new residential home 3000 square feet (sf) area including basement that contains the following:*
- *(3) bedrooms*
- *160 CFM kitchen exhaust*
- *60 CFM bathroom Exhaust*
- *60 CFM heat recovery ventilator (HRV) air exchanger*

TABLE 501.4.1 PROCEDURE TO DETERMINE MAKEUP AIR QUANTITY FOR EXHAUST APPLIANCES IN DWELLINGS				
	ONE OR MULTIPLE POWER VENT OR DIRECT VENT APPLIANCES OR NO COMBUSTION APPLIANCES[a]	ONE OR MULTIPLE FAN-ASSISTED APPLIANCES AND POWER VENT OR DIRECT VENT APPLIANCES[b]	ONE ATMOSPHERICALLY VENTED GAS OR OIL APPLIANCE OR ONE SOLID FUEL APPLIANCE[c]	MULTIPLE APPLIANCES THAT ARE ATMOSPHERICALLY VENTED GAS OR OIL APPLIANCES OR SOLID FUEL APPLIANCES[d]
1. Use the Appropriate Column to Estimate House Infiltration.				
a) pressure factor (cfm/sf)	**0.15**	**0.09**	**0.6**	**0.03**
b) conditioned floor area (sf) (including unfinished basements)	*3000 sf*	*3000 sf*	*3000 sf*	*3000 sf*
Estimated House Infiltration(cfm): [1a × 1b]	450	270	180	90
2. Exhaust Capacity				
a) clothes dryer	*135*	*135*	*135*	*135*
b) 80% of the largest exhaust rating (cfm):	*128*	*128*	*128*	*128*
(not applicable if recirculating system or if powered makeup air is electrically interlocked and matched to exhaust)				
c) 80% of the next largest exhaust rating (cfm):	Not Applicable	*48*	*48*	*48*
(not applicable if recirculating system or if powered makeup air is electrically interlocked and matched to exhaust)				
Total Exhaust Capacity (cfm): [2a + 2b + 2c]	*263*	*311*	*311*	*311*
3. Make up Air Requirement				
a) Total Exhaust Capacity (from above)	*263*	*311*	*311*	*311*
b) Estimated House Infiltration (from above)	*450*	*270*	*180*	*90*
Makeup Air Quantity (cfm): [3a-3b]	*0*	*41*	*131*	*221*
4. For Makeup Air Opening Sizing, refer to Table 501.4.2 (if value is negative, no make-up air is needed) Air Opening Sizes for makeup air totals above: *4" = 41cfm, 7" = 131 cfm and 11" + 42 cfm for 221 cfm*				

a. Use this column if there are other than fan-assisted, atmospherically vented gas or oil appliances or if there are no combustion appliances.

b. Use this column if there is one fan-assisted appliance per venting system. Other than atmospherically vented appliances may also be included.

c. Use this column if there is one atmospherically vented (other than fan-assisted) gas or oil appliance per venting system or one solid fuel appliance.

d. Use this column if there are multiple atmospherically vented gas or oil appliances using a common vent or if there are atmospherically vented gas or oil appliances and solid fuel appliances.

Passive and powered makeup air openings shall be sized and provided according to Table 501.4.2.

TABLE 501.4.2
MAKEUP AIR OPENING SIZING TABLE FOR NEW AND EXISTING DWELLINGS

	ONE OR MULTIPLE POWER VENT OR DIRECT VENT APPLIANCES OR NO COMBUSTION APPLIANCES[a]	ONE OR MULTIPLE FAN-ASSISTED APPLIANCES AND POWER VENT OR DIRECT VENT APPLIANCES[b]	ONE ATMOSPHERICALLY VENTED GAS OR OIL APPLIANCE OR ONE SOLID FUEL APPLIANCE[c]	MULTIPLE APPLIANCES THAT ARE ATMOSPHERICALLY VENTED GAS OR OIL APPLIANCES OR SOLID FUEL APPLIANCES[d]	PASSIVE MAKEUP AIR OPENING DUCT DIAMETER[e, f, g]
Type of opening or system	(cfm)	(cfm)	(cfm)	(cfm)	(inches)
Passive Opening	1-36	1-22	1-15	1-9	3
Passive Opening	37-66	23-41	16-28	10-17	4
Passive Opening	67-109	42-66	29-46	18-28	5
Passive Opening	110-163	67-100	47-69	29-42	6
Passive Opening	164-232	101-143	70-99	43-61	7
Passive Opening	233-317	144-195	100-135	62-83	8
Passive Opening with Motorized Damper	318-419	196-258	136-179	84-110	9
Passive Opening with Motorized Damper	420-539	259-332	180-230	111-142	10
Passive Opening with Motorized Damper	540-679	333-419	231-290	143-179	11
Powered Makeup Air[h]	>679	>419	>290	>179	Not Applicable

a. Use this column if there are other than fan-assisted or atmospherically vented gas or oil appliances or if there are no combustion appliances.
b. Use this column if there is one fan-assisted appliance per venting system. Other than atmospherically vented appliances may also be included.
c. Use this column if there is one atmospherically vented (other than fan-assisted) gas or oil appliance per venting system or one solid fuel appliance.
d. Use this column if there are multiple atmospherically vented gas or oil appliances using a common vent or if there are atmospherically vented gas or oil appliances and solid fuel appliance(s).
e. An equivalent length of 100 feet of round smooth metal duct is assumed. Subtract 40 feet for the exterior hood and ten feet for each 90-degree elbow to determine the remaining length of straight duct allowable.
f. If flexible duct is used, increase the duct diameter by one inch. Flexible duct shall be stretched with minimal sags.
g. Barometric dampers are prohibited in passive makeup air openings when any atmospherically vented appliance is installed.
h. Powered makeup air shall be electrically interlocked with the largest exhaust system.

DUCT CONSTRUCTION AND INSTALLATION

Duct systems are represented in Chapter 6 of the 2020 Minnesota Mechanical Code unless otherwise noted.

- 601.1 Scope – Duct systems shall conform to the provisions of this chapter except as otherwise specified in Chapters 5 and 7.
  - Exception: Ducts discharging combustible materials into any combustion chamber shall conform to the requirements of NFPA 82.
- 601.2 Air movement in egress elements - Requirements and exceptions are described in this section.
- 601.2.1 Corridor ceiling – Conditions to a allowing floor or roof structure above as a return air plenum.
- 601.4 Contamination prevention - Ducts or plenum through penetration prohibitions and exceptions.
- 602.2.1 Materials within plenums – Requirements and exceptions are described in this section.
- 602.2.1.6 Foam plastic in plenums as interior finish or interior trim with three exceptions.
- 602.2.1.9 Piping in plenums carrying flammable liquids have connections made by welding of brazing.
- 603.4 Metallic ducts shall be constructed as specified in the SMACNA HVAC Duct Construction Standards – Metal and Flexible.
  - Exception: Ducts installed within single family dwelling units shall have a minimum thickness as specified in Table 603.4

TABLE 603.4 DUCT CONSTRUCTION MINIMUM SHEET METAL THICKNESS FOR SINGLE DWELLING UNITS[a]

ROUND DUCT DIAMETER (inches)	STATIC PRESSURE			
	$^1/_2$-inch water gauge		1-inch water gauge	
	Thickness (inches)		Thickness (inches)	
	Galvanized	Aluminum	Galvanized	Aluminum
< 12	0.013	0.018	0.013	0.018
12 to 14	0.013	0.018	0.016	0.023
15 to 17	0.016	0.023	0.019	0.027
18	0.016	0.023	0.024	0.034
19 to 20	0.019	0.027	0.024	0.034
RECTANGULAR DUCT DIMENSION (inches)	STATIC PRESSURE			
	$^1/_2$-inch water gauge		1-inch water gauge	
	Thickness (inches)		Thickness (inches)	
	Galvanized	Aluminum	Galvanized	Aluminum
≤ 8	0.013	0.018	0.013	0.018
9 to10	0.013	0.018	0.016	0.023
11 to 12	0.016	0.023	0.019	0.027

13 to 16	0.019	0.027	0.019	0.027
17 to 18	0.019	0.027	0.024	0.034
19 to 20	0.024	0.034	0.024	0.034

For SI: 1 inch = 25.4 mm, 1-inch water gauge = 249 Pa.

a. Ductwork that exceeds 20 inches by dimension or exceeds a pressure of 1-inch water gauge shall be constructed in accordance with SMACNA *HVAC Duct Construction Standards—Metal and Flexible*.

- 603.4.1 Minimum fasteners – Round metallic ducts require at least three sheet metal screws or rivets.
- 603.5 nonmetallic ducts – Duct material requirements for various materials and material requirements.
- 603.8 Underground ducts - Underground duct work shall comply with this section.
  - 603.8.1 Slope
  - 603.8.2 Sealing
  - 603.8.3 Plastic ducts and fittings
  - 603.8.4 Drainage and insulation

Duct insulation

The sections represented for duct insulation are provided in the 2015 Minnesota Residential Energy Code. Ducts and air handlers shall be in accordance with Sections R403.2.1 through R403.2.3 of the Minnesota Residential Energy Code. R403.2.1 Insulation (prescriptive).

TABLE R403.2.1 MINIMUM REQUIRED DUCT AND PLENUM INSULATION FOR DWELLING UNITS

DUCT TYPE/LOCATION	REQUIREMENTS
Exterior of building	R-8, V and W
Attics, garages, and ventilated crawl spaces	R-8 and V
Outdoor air intakes within conditioned spaces	R3.3 and V
Exhaust ducts within conditioned spaces	R3.3 and V
Within concrete slab or within ground	R3-5 and V
Within conditioned spaces and in basements with insulated walls	None Required

For the purposes of Table R403.2.1, the following applies:

- Insulation is only required in the conditioned space for a distance of 3 feet (914 mm) from the exterior or unconditioned space.
- V means the vapor retarder in accordance with IMC Section 604.11. When a vapor retarder is required, duct insulation required by this section shall be installed without respect to other building envelope insulation.
- W means an approved weatherproof barrier.

Duct sealing

R403.2.2 Duct Sealing (Mandatory)

Ducts, air handlers, and filter boxes shall be sealed. Joints and seams shall comply with either the *Minnesota Mechanical Code* or *Minnesota Residential Code*, as applicable.

- Exceptions:
  - Air-impermeable spray foam products shall be permitted to be applied without additional joint seals.
  - Where a duct connection is made that is partially inaccessible, three screws or rivets shall be equally spaced on the exposed portion of the joint to prevent a hinge effect.
  - Continuously welded and locking-type longitudinal joints and seams in ducts operating at static pressures less than 2 inches of water column (500 Pa) pressure classification shall not require additional closure systems.
- Duct tightness shall be verified by either of the following:
  - Postconstruction test: Total leakage shall be less than or equal to 4 cfm (113.3 L/min) per 100 square feet (9.29 m^2) of conditioned floor area when tested at a pressure differential of 0.1 inches w.c. (25 Pa) across the entire system, including the manufacturer's air handler enclosure. All register boots shall be taped or otherwise sealed during the test.
  - Rough-in test: Total leakage shall be less than or equal to 4 cfm (113.3 L/min) per 100 square feet (9.29 m^2) of conditioned floor area when tested at a pressure differential of 0.1 inches w.c. (25 Pa) across the system, including the manufacturer's air handler enclosure. All registers shall be taped or otherwise sealed during the test. If the air handler is not installed at the time of the test, total leakage shall be less than or equal to 3 cfm (85 L/min) per 100 square feet (9.29 m^2) of conditioned floor area.
  - Exception: The total leakage test is not required for ducts and air handlers located entirely within the building thermal envelope.
- R403.2.2.1 Sealed air handler.
- R403.2.3 Building framing cavities shall not be used as ducts or plenums.
- 918.5 of the 2020 Mechanical Code Outdoor and return air openings.
  - Outdoor intake openings shall be located in accordance with Section 401.4. Return air openings shall be located in accordance with Section 601.5.

CHIMNEYS AND VENTS

Venting for all fuel burning appliances other than gas-fired, use Chapter 8 of the 2020 Minnesota Mechanical Code.

- Section 801.1 Scope - This chapter shall govern the installation, maintenance, repair and approval of factory-built chimneys, chimney liners, vents, and connectors. This chapter shall also govern the utilization of masonry chimneys. Gas-fired appliances shall be vented in accordance with the International Fuel Gas Code.

- Section 801.2.1 Oil-fired appliances - Oil-fired appliances shall be vented in accordance with this code and NFPA 31.
- IMC Section 801.3 Masonry chimneys - Masonry chimneys shall be constructed in accordance with the International Building Code.
- Note: For chimneys within residential, see residential code.

Vents

- IMC Section 802.1 General - All vent systems shall be listed and labeled. Type L vents and pellet vents shall be tested in accordance with UL 641.
- IMC 802.3 Installation - Vent systems shall be sized, installed, and terminated in accordance with the vent and appliance manufacturer's installation instructions.
- 802.4 Vent termination cap required - Type L vents shall terminate with a listed and labeled cap in accordance with the vent manufacturer's instructions.
- IMC 802.5 Type L vent termination - Type L vents shall terminate not less than 2 feet above the highest point of the roof penetration and not less than 2 feet higher than any portion of a building within 10 feet.

Venting for all gas-fired appliances, use Chapter 5 of the 2020 Minnesota Fuel Gas Code.

- Section 501.1 Scope. This chapter shall govern the installation, maintenance, repair and approval of factory-built chimneys, chimney liners, vents and connectors and the utilization of masonry chimneys serving gas-fired appliances. The requirements for the installation, maintenance, repair and approval of factory-built chimneys, chimney liners, vents and connectors serving appliances burning fuels other than fuel gas shall be regulated by the *International Mechanical Code*. The construction, repair, maintenance, and approval of masonry chimneys shall be regulated by the Minnesota *Building Code*.
- Section 501.7 Connection to fireplace.
  Connection of any *appliance* to chimney flues serving *fireplaces* is prohibited. Refer to Section 602 for decorative appliances for installation in fireplaces and Section 603 for log lighters.
- Section 501.12 Residential and low-heat appliances flue lining systems.
  An approved metallic liner shall be installed in masonry chimneys used to vent gas appliances. The liner shall comply with one of the following:
  - Aluminum (1100 or 3003 alloy or equivalent) not less than 0.032 inches thick to 8 inches in diameter.
  - Stainless steel (304 or 430 alloy or equivalent) not less than 26 gauge and 8 inches in diameter or not less than 24 gauge and larger than 8 inches diameter.
  - Listed vent system.
- Exception: Metallic liners are not required when each appliance connected into the masonry chimney has a minimum input rating greater than 400,000 Btu/hr.

- Section 501.8 Appliances not required to be vented.
  The following *appliances* shall not be required to be vented.
  - Ranges.
  - Built-in domestic cooking units *listed* and marked for optional venting.
  - Hot plates and laundry stoves.
  - Type 1 clothes dryers (Type 1 clothes dryers shall be exhausted in accordance with the requirements of Sections 613 and 614).
  - A single booster-type automatic instantaneous water heater, where designed and used solely for the sanitizing rinse requirements of a dishwashing machine, provided that the heater is installed in a commercial kitchen having a mechanical exhaust system. Where installed in this manner, the draft hood, if required, shall be in place and unaltered and the draft hood outlet shall be not less than 36 inches (914 mm) vertically and 6 inches (152 mm) horizontally from any surface other than the heater.
  - Refrigerators.
  - Counter *appliances.*
  - Direct-fired *make-up air* heaters.
  - Specialized *equipment* of limited input such as laboratory burners and gas lights.

  Automatically operated *equipment* vented with a hood or exhaust system shall comply with Section 503.3.4. Where the *appliances* and *equipment* listed in Items 5 to 9 are installed so that the aggregate input rating exceeds 20 Btu/hr per cubic foot (207 watts per m3) of volume of the room or space in which such *appliances* and *equipment* are installed, one or more shall be provided with venting systems or other *approved* means for conveying the vent gases to the outdoor atmosphere so that the aggregate input rating of the remaining unvented *appliances* and *equipment* does not exceed the 20 Btu/hr per cubic foot (207 watts per m3) figure. Where the room or space in which the *equipment* or *appliance* is installed is directly connected to another room or space by a doorway, archway, or other opening of comparable size that cannot be closed, the volume of such adjacent room or space shall be permitted to be included in the calculations.

- Section 502.1 General.
  All vents, except as provided in Section 503.7, shall be *listed* and *labeled*. Type B and BW vents shall be tested in accordance with UL 441. Type L vents shall be tested in accordance with UL 641. Vents for Category II and III appliances shall be tested in accordance with UL 1738. Plastic vents for Category IV appliances shall not be required to be *listed* and *labeled* where such vents are as specified by the *appliance* manufacturer and are installed in accordance with the *appliance* manufacturer's installation instructions.
- Section 502.2 Connectors required.
  Connectors shall be used to connect appliances to the vertical chimney or vent, except where the chimney or vent is attached directly to the *appliance*. Vent connector size, material, construction, and installation shall be in accordance with Section 503.
- Section 502.3 Vent application.
  The application of vents shall be in accordance with Table 503.4.
- Section 503.4 Type of venting system to be used.

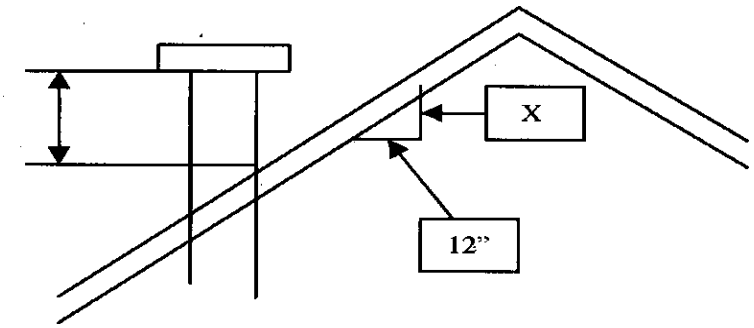
The type of venting system to be used shall be in accordance with Table 503.4

TABLE 503.4 TYPE OF VENTING SYSTEM TO BE USED	
APPLIANCES	**TYPE OF VENTING SYSTEM**
Listed Category I appliances Listed appliances equipped with draft hood Appliances listed for use with Type B gas vent	Type B gas vent (Section 503.6) Chimney (Section 503.5) Single-wall metal pipe (Section 503.7) Listed chimney lining system for gas venting (Section 503.5.3) Special gas vent listed for these appliances (Section 503.4.2)
Listed vented wall furnaces	Type B-W gas vent (Sections 503.6, 608)
Category II, Category III, and Category IV appliances	As specified or furnished by manufacturers of listed appliances (Sections 503.4.1, 503.4.2)
Incinerators	In accordance with NFPA 82
Appliances that can be converted for use with solid fuel	Chimney (Section 503.5)
Unlisted combination gas and oil-burning appliances	Chimney (Section 503.5)
Listed combination gas and oil-burning appliances	Type L vent (Section 503.6) or chimney (Section 503.5)
Combination gas and solid fuel-burning appliances	Chimney (Section 503.5)
Appliances listed for use with chimneys only	Chimney (Section 503.5)
Unlisted appliances	Chimney (Section 503.5)
Decorative appliances in vented fireplaces	Chimney
Gas-fired toilets	Single-wall metal pipe (Section 626)
Direct-vent appliances	See Section 503.2.3
Appliances with integral vent	See Section 503.2.4

- Section 502.4 Insulation shield - Where vents pass through insulated assemblies, an insulation shield constructed of steel having a minimum thickness of 0.0187 inch (0.4712 mm) (No. 26 gage) shall be installed to provide *clearance* between the vent and the insulation material. The *clearance* shall not be less than the *clearance* to combustibles specified by the vent manufacturer's installation instructions. Where vents pass through attic space, the shield shall terminate not less than 2 inches (51 mm) above the insulation materials and shall be secured in place to prevent displacement. Insulation shields provided as part of a *listed* vent system shall be installed in accordance with the manufacturer's installation instructions.
- Section 502.5 Installation - Vent systems shall be sized, installed, and terminated in accordance with the vent and appliance manufacturer's installation instructions and Section 503.
- Section 503.5.4 Chimney termination - Chimneys for residential-type or low-heat appliances shall extend at least 3 feet (914 mm) above the highest point where they pass through a roof of a building and at least 2 feet (610 mm) higher than any portion of a building within a horizontal distance of 10 feet (3048 mm).

Chimneys for medium-heat appliances shall extend at least 10 feet (3048 mm) higher than any portion of any building within 25 feet (7620 mm). Chimneys shall extend at least 5 feet (1524 mm) above the highest connected *appliance* draft hood outlet or flue collar. Decorative shrouds shall not be installed at the termination of factory-built chimneys except where such shrouds are *listed* and *labeled* for use with the specific factory-built chimney system and are installed in accordance with the manufacturer's installation instructions.

- Section 1346.503.5.5 Size of chimneys. The effective area of a chimney venting system serving *listed appliances* with draft hoods, Category I *appliances*, and other *appliances listed* for use with Type B vents shall be in accordance with IFGC Section 504 or other *approved* engineering methods.
- Exceptions:
    - As an alternate method of sizing an individual chimney venting system for a single *appliance* with a draft hood, the effective areas of the vent connector and chimney flue shall be not less than the area of the *appliance* flue collar or draft hood outlet, nor greater than four times the draft hood outlet area.
    - As an alternate method for sizing a chimney venting system connected to two *appliances* with draft hoods, the effective area of the chimney flue shall be not less than the area of the larger draft hood outlet plus 50 percent of the area of the smaller draft hood outlet, nor greater than four times the smallest draft hood outlet area. Where an incinerator is vented by a chimney serving other gas utilization *appliance*, the gas input to the incinerator shall not be included in calculating chimney size, provided the chimney flue diameter is not less than 1 inch (25.4 mm) larger in equivalent diameter than the diameter of the incinerator flue outlet.
- Section 503.5.6 Inspection of chimneys.
  Before replacing an existing *appliance* or connecting a vent connector to a chimney, the chimney passageway shall be examined to ascertain that it is clear and free of obstructions, and it shall be cleaned if previously used for venting solid or liquid fuel-burning *appliances* or fireplaces.
- Exception: Existing chimneys shall be lined in accordance with amended IFGC Section 501.12 unless otherwise *approved* by the building official.
- Section 503.6.5 Gas vent terminations
  A gas vent shall terminate in accordance with one of the following:
    - Gas vents that are 12 inches (305 mm) or less in size and located not less than 8 feet (2438 mm) from a vertical wall or similar obstruction shall terminate above the roof in accordance with Figure 503.6.5.
    - Gas vents that are over 12 inches (305 mm) in size or are located less than 8 feet (2438 mm) from a vertical wall or similar obstruction shall terminate not less than 2 feet (610 mm) above the highest point where they pass through the roof and not less than 2 feet (610 mm) above any portion of a building within 10 feet (3048 mm) horizontally.
- As provided for industrial appliances in Section 503.2.2.
- As provided for direct-vent systems in Section 503.2.3.
- As provided for appliances with integral vents in Section 503.2.4.
- As provided for mechanical draft systems in Section 503.3.3.
- As provided for ventilating hoods and exhaust systems in Section 503.3.4.



Roof Pitch	Minimum Height in Feet
Flat to 6/12	1.0
6/12 to 7/12	1.25
7/12 to 8/12	1.5
8/12 to 9/12	2.0
9/12 to 10/12	2.5
10/12 to 11/12	3.25
11/12 to 12/12	4.0

- Section 503.6.10 Size of gas vents.
  Venting systems shall be sized and constructed in accordance with Section 504 or other *approved* engineering methods and the gas vent and *appliance* manufacturer's installation instructions.
- Section 1346.503.6.10.1 Category I appliances.
  The sizing of natural draft venting systems serving one or more listed *appliances* equipped with a draft hood or appliances *listed* for use with Type B gas vent, installed in a single story of a building, shall be in accordance with one of the following methods:
  - The provisions of Section 504.
  - For sizing an individual gas vent for a single draft-hood-equipped *appliance*, the effective area of the vent connector and the gas vent shall be not less than the area of the *appliance* draft hood outlet, nor greater than four times the draft hood outlet area.
  - For sizing a gas vent connected to two *appliances* with draft hoods, the effective area of the vent shall be not less than the area of the larger draft hood outlet plus 50 percent of the area of the smaller draft hood outlet, nor greater than four times the smaller draft hood outlet area.
  - *Approved* engineering practices.
- Section 503.7.6 Installation.
  Single-wall metal pipe shall not originate in any unoccupied attic or concealed space and shall not pass through any attic, inside wall, concealed space, or floor. The installation of a single-wall metal pipe through an exterior combustible wall shall comply with Section 503.7.7.
- Section 1346.503.7.9 Size of single-wall metal pipe.
  A venting system constructed of single-wall metal pipe shall be sized in accordance with one of the following methods and the *appliance* manufacturer's instructions:
  - For a draft hood-equipped *appliance*, in accordance with IFGC Section 504.
  - For a venting system for a single *appliance* with a draft hood, the areas of the connector and the pipe each shall be not less than the area of the *appliance* flue collar or draft hood outlet, whichever is smaller. The vent area shall not be greater than four times the draft hood outlet area.

- Other *approved* engineering methods.

- Section 503.8 Venting system termination location.
  The location of venting system terminations shall comply with the following (see Appendix C):
  - A mechanical draft venting system shall terminate at least 3 feet (914 mm) above any forced-air inlet located within 10 feet (3048 mm).
    a) Exceptions:
       i. This provision shall not apply to the *combustion air* intake of a direct-vent *appliance*.
       ii. This provision shall not apply to the separation of the integral outdoor air inlet and flue gas discharge of *listed* outdoor appliances.
  - A mechanical draft venting system, excluding *direct-vent appliances*, shall terminate at least 4 feet (1219 mm) below, 4 feet (1219 mm) horizontally from, or 1 foot (305 mm) above any door, operable window, or gravity air inlet into any building. The bottom of the vent terminal shall be located at least 12 inches (305 mm) above finished ground level.
  - Through-the-wall vents for Category II and IV appliances and non-categorized condensing appliances shall not terminate over public walkways or over an area where condensate or vapor could create a nuisance or hazard or could be detrimental to the operation of regulators, relief valves or other *equipment*. Where local experience indicates that condensate is a problem with Category I and III appliances, this provision shall also apply. Drains for condensate shall be installed in accordance with the appliance and vent manufacturers' instructions.
  - Vent systems for category IV appliances that terminate through and outside wall of a building and discharge flue gasses perpendicular to the adjacent wall shall be located not less than 10 feet (3048mm) horizontally from an operable opening in an adjacent building. This requirement shall not apply to vent terminals that are 2 feet (607mm) or more above or 25 feet (7620 mm) or more below operable openings.
- Section 503.10.5 Clearance.
  Minimum clearances from vent connectors to *combustible material* shall be in accordance with Table 503.10.5.
  - Exception: The *clearance* between a vent connector and *combustible material* shall be permitted to be reduced where the *combustible material* is protected as specified for vent connectors in Table 308.2.
- TABLE 503.10.5a CLEARANCES FOR CONNECTORS
  - These clearances shall apply unless the manufacturer's installation instructions for a listed appliance or connector specify different clearances, in which case the listed clearances shall apply.
- Section 503.10.8 Length of vent connector.
  The maximum horizontal length of a single-wall connector shall be 75 percent of the height of the chimney or vent except for engineered systems. The maximum horizontal length of a Type B double-wall connector shall be 100 percent of the height of the chimney or vent except for engineered systems.

GAS PIPING INSTALLATIONS

Chapter 4 of the 2020 Minnesota Fuel Gas Code

This chapter shall govern the design, installation, modification, and maintenance of *piping* systems. The applicability of this code to *piping* systems extends from the *point of delivery* to the connections with the *appliance*s and includes the design, materials, components, fabrication, assembly, installation, testing, inspection, operation, and maintenance of such *piping* systems.

Chapter 13 of the Minnesota Mechanical Code

This chapter shall govern the design, installation, construction and repair of fuel-oil storage and piping systems. The storage of fuel oil and flammable and combustible liquids shall be in accordance with Chapters 6 and 57 of the *International Fire Code*.

Example of Calculating Gas Capacity in Cubic Feet Per Hour:
GAS Pressure: Less than 2 PSI
Equipment Load: 150,000 BTU/HR
Developed Length: 30 feet
Note: Read footnotes.
Pressure and lengths are highlighted in yellow, pipe size for installation highlighted in blue.

TABLE 402.4(9) SEMIRIGID COPPER TUBING

Gas	Natural
Inlet Pressure	Less than 2 psi
Pressure Drop	0.5 in. w.c.
Specific Gravity	0.60

TUBE SIZE (inch)										
Nominal	K & L	1/4	3/8	1/2	5/8	3/4	1	1 1/4	1 1/2	2
	ACR	3/8	1/2	5/8	3/4	7/8	1 1/8	1 3/8	—	—
Outside		0.375	0.500	0.625	0.750	0.875	1.125	1.375	1.625	2.125
Inside		0.305	0.402	0.527	0.652	0.745	0.995	1.245	1.481	1.959
Length (ft)		Capacity in Cubic Feet of Gas Per Hour								
10		27	55	111	195	276	590	1,060	1,680	3,490
20		18	38	77	134	190	406	730	1,150	2,400
30		15	30	61	107	152	326	586	925	1,930
40		13	26	53	92	131	279	502	791	1,650
50		11	23	47	82	116	247	445	701	1,460
60		10	21	42	74	105	224	403	635	1,320
70		NA	19	39	68	96	206	371	585	1,220
80		NA	18	36	63	90	192	345	544	1,130

90	NA	17	34	59	84	180	324	510	1,060
100	NA	16	32	56	79	170	306	482	1,000
125	NA	14	28	50	70	151	271	427	890
150	NA	13	26	45	64	136	245	387	806
175	NA	12	24	41	59	125	226	356	742
200	NA	11	22	39	55	117	210	331	690
250	NA	NA	20	34	48	103	186	294	612
300	NA	NA	18	31	44	94	169	266	554
350	NA	NA	16	28	40	86	155	245	510
400	NA	NA	15	26	38	80	144	228	474
450	NA	NA	14	25	35	75	135	214	445
500	NA	NA	13	23	33	71	128	202	420
550	NA	NA	13	22	32	68	122	192	399
600	NA	NA	12	21	30	64	116	183	381
650	NA	NA	12	20	29	62	111	175	365
700	NA	NA	11	20	28	59	107	168	350
750	NA	NA	11	19	27	57	103	162	338
800	NA	NA	10	18	26	55	99	156	326
850	NA	NA	10	18	25	53	96	151	315
900	NA	NA	NA	17	24	52	93	147	306
950	NA	NA	NA	17	24	50	90	143	297
1,000	NA	NA	NA	16	23	49	88	139	289
1,100	NA	NA	NA	15	22	46	84	132	274
1,200	NA	NA	NA	15	21	44	80	126	262
1,300	NA	NA	NA	14	20	42	76	120	251
1,400	NA	NA	NA	13	19	41	73	116	241
1,500	NA	NA	NA	13	18	39	71	111	232
1,600	NA	NA	NA	13	18	38	68	108	224
1,700	NA	NA	NA	12	17	37	66	104	217
1,800	NA	NA	NA	12	17	36	64	101	210
1,900	NA	NA	NA	11	16	35	62	98	204
2,000	NA	NA	NA	11	16	34	60	95	199

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square inch = 6.895 kPa, 1-inch water column = 0.2488 kPa, 1 British thermal unit per hour = 0.2931 W, 1 cubic foot per hour = 0.0283 m3/h, 1 degree = 0.01745 rad.

- Notes:
  - Table capacities are based on Type K copper tubing inside diameter (shown), which has the smallest inside diameter of the copper tubing products.
  - NA means a flow of less than 10 cubic feet of gas per hour.
  - All table entries have been rounded to three significant digits.
- Section 1346.403.8 Protective coating.
  Where in contact with material or passing through concrete or other abrasive material or atmosphere exerting a corrosive action, metallic *piping* and fittings coated with a corrosion- resistant material, sleeve, or casing shall be used. Steel pipe exposed in exterior locations shall be galvanized or coated with *approved* corrosion-resistant material. External or internal coatings or linings used on *piping* or components shall not be considered as adding strength.
- Section 403.10 Metallic piping joints and fittings.
  The type of *piping* joint used shall be suitable for the pressure-temperature conditions and shall be selected giving consideration to joint tightness and mechanical strength under the service conditions. The joint shall be able to sustain the maximum end force caused by the internal pressure and any additional forces caused by temperature expansion or contraction, vibration, fatigue or the weight of the pipe and its contents.
- Section 1346.403.10.1 Pipe joints.
  Pipe joints shall be threaded, flanged, brazed, welded, or made with press connect fittings complying with ANSI LC 4. Where nonferrous pipe is brazed, the brazing materials shall have a melting point in excess of l,000°F (538°C). Brazing alloys shall not contain more than 0.05 percent phosphorus.
- Section 1346.403.10.2 Copper Tubing joints.
  Copper tubing joints shall be assembled with *approved* gas tubing fittings, shall be or brazed with a material having a melting point in excess of l,000°F (538°C), or assembled with press connect fittings complying with ANSI LC 4, *Press-Connect Copper and Copper Alloy, Fittings for Use in Fuel Gas Distribution Systems*. Brazing alloys shall not contain more than 0.05 percent phosphorus.
- Section 403.10.5 Metallic fittings.
  Metallic fittings shall comply with the following:
  - Threaded fittings in sizes larger than 4 inches (102 mm) shall not be used except where *approved*.
  - Fittings used with steel, stainless steel or wrought-iron pipe shall be steel, stainless steel, copper alloy, malleable iron or cast iron.
  - Fittings used with copper or copper alloy brass pipe shall be copper or copper alloy.
  - Fittings used with aluminum alloy pipe shall be of aluminum alloy.
  - Cast-iron fittings
  - Aluminum alloy fittings. Threads shall not form the joint seal.
  - Zinc-aluminum alloy fittings. Fittings shall not be used in systems containing flammable gas-air mixtures.
  - Special Fittings. Fittings such as Couplings, proprietary-type joints, saddle tees, gland-type compression fittings and flared, flareless and compression type tubing fittings shall be used: used within the fitting manufacturer's pressure-temperature recommendations; used within the service conditions anticipated with respect to vibration, fatigue, thermal expansion, and contraction; and shall be approved.

CHAPTER 9 - PLUMBING INFORMATION

This chapter is not intended to cover all code issues relating to the 2020 Minnesota Plumbing Code. The information in this chapter references requirements to plan review, inspections and general code information that should be followed up with Minnesota State Building Code research within documents that pertain to the subject matter specific to the project.

The 2020 Minnesota Plumbing Code located in Minnesota Rules 4714 has adopted by reference chapters 2 to 11, 14 and 17 of the 2018 Uniform Plumbing Code (UPC) and UPC Appendices A, B, and I, including Minnesota Amendments. Section 4714.0203 through 4714.0225 has modified the definitions of terms from UPC section 203.0 that start with the letter A through terms that start with the letter W.

PLUMBING PRINCIPLES

Section 4714.0100 basic plumbing principles

The plumbing system is really made up of two systems: the supply system that brings in fresh water, and the drain-waste-vent system that takes out used water and sewage. This section includes plumbing principles including minimum number of fixtures, proper protection, venting, materials, sizing, installation, cleanouts, and tests. If water closets or other plumbing fixtures are installed in a building where there is no public sewer available as determined by the Authority Having Jurisdiction, sewage shall be suitably treated before discharged into surface or subsurface water as approved by the Pollution Control Agency administration rules.

Section 4714.0101, subpart 1 conformance with code

Scope - As provided in Minnesota Statutes, sections 326B.43 and 326B.52, this code applies to all new plumbing installations performed anywhere in the state, including additions, extensions, alterations, and replacements. In existing buildings and premises in which plumbing systems, drainage systems, or other work regulated by this code are to be added, altered, renovated, or replaced, the new materials and work shall meet the provisions of this code. The Authority Having Jurisdiction may grant deviations when provision compliance results in exceptional or undue hardship. The deviation may only be granted when not endangering the health and safety of the occupants and the public.

Reference Minnesota Plumbing Code Frequently Asked Questions on drainage systems, fixtures, floor drains, materials and support, water conditioning and venting.

Building plumbing system drain connection to sewer drainage piping

- Plumbing system is defined in Section 4714.0218
- The building plumbing system drain ends at a point 2 feet outside the building. The building sewer is the pipe that connects to the end of the building plumbing system drain and transports the waste away from the structure to an approved point of disposal.

- The plumbing code regulations stop where the building sewer ends. The plumbing code ends at the point that occurs first:
  - Property line
  - Start of public pipe ownership (such as a collection system)
  - Septic tank, holding tank, or point of treatment or disposal
- The following criteria needs to be addressed when inspecting the building sewer.
  - Installation:
    a) MN Rule 4714.0701.1 Drainage Piping. Materials for drainage piping shall be in accordance with one of the referenced standards in Table 701.1 except that; ABS and PVC DWV piping installations shall be installed in accordance with applicable standards referenced in Table 1401.1
    b) MN Rule 4714.0713 Sewer Required. A building in which plumbing fixtures are installed and premises having drainage piping thereon shall have a connection to a public or private sewer, except as provided in sections 713.2 and 713.4 and Minnesota Rules, part 4714.0101, subpart 6.
    c) When inspecting the installation of the sanitary sewer make sure that it is properly separated from the building water service per amended MN Rules 4714.0721 Minimum Horizontal Distance Required from Building Sewer.
    d) Note: Remember that no building sewer can be located in a lot other than the lot that is the site of the building or structure.

Testing 4714.0712 - Verify testing of the system by witnessing the air or hydraulic test.

- 4714.0712.1 Media. The piping of the plumbing, drainage, and venting systems shall be tested with water or air. The Authority Having Jurisdiction shall be permitted to require the necessary points of access to ascertain whether the pressure has reached all parts of the system.
- 4714. 0723 BUILDING SEWER TEST. General. Building sewers shall be tested by plugging the end of the building sewer at its points of connection with the public sewer or private sewage disposal system and completely filling the building sewer with water from the lowest to the highest point there-of, or by approved equivalent low-pressure air test.
- 4714.0712.3 Air Test. The air test shall be made by attaching an air compressor testing apparatus to a suitable opening and, after closing all other inlets and outlets to the system, forcing air into the system until there is a uniform gauge pressure of 5 pound-force per square inch or sufficient to balance a column of mercury 10 inches in height. The pressure shall be held without introduction of additional air for a period of not less than 15 minutes.
- 4714.0712.5 Finished Plumbing. After the plumbing fixtures have been set and their traps filled with water, their connections shall be tested and proven gastight and watertight by plugging the stack openings on the roof and the building drain where it leaves the building, and air introduced into the system equal to the pressure of a 1-inch water column. Such pressure shall remain constant for 15 minutes or the duration of the inspection without the introduction of additional air.

Cleanouts

- 4714.707.4 Location. Each horizontal drainage pipe shall be provided with a cleanout at its upper terminal and each run of piping that is more than 100 feet (30,480 mm) in total developed length shall be provided with a cleanout for each 100 feet (30,480 mm), or fraction thereof, in length of such piping. An additional cleanout shall be provided in a drainage line for each aggregate horizontal change in direction exceeding 135 degrees (2.36 rad). A cleanout shall be installed above the fixture connection fitting serving each urinal, regardless of the location of the urinal in the building.

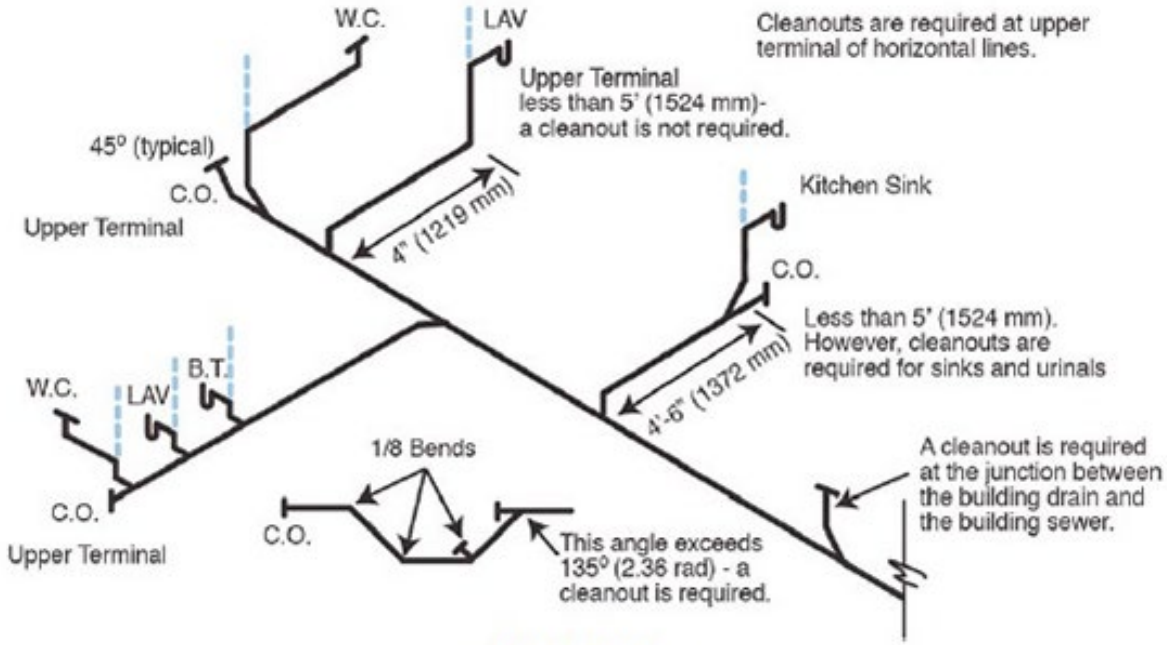


FIGURE 707.4
CLEANOUT REQUIREMENTS

- 4714.719.4 Cleaning. Each cleanout shall be installed so that it opens to allow cleaning in the directions of flow of the soil or waste or at right angles thereto and, except in the case of wye branch and end-of-line cleanouts, shall be installed vertically above the flow line of pipe.

Sewer installation inspection suggestions

- The building sewer shall be sized in accordance with amended Table MN 4714.0717.
  - Note: You will also have to know the fixtures and loading within the building to verify the size of the building sewer. If there are more than 3 water closets, the building sewer will always be a minimum of 4 inch.
- Verify that the sanitary sewer is on the same property as the building or meets other requirements of 4714.0713
- Verify the material meets the requirements of 4714.0701
- Verify the building sewer meets the requirements for slope and size of piping for drainage fixtures
- Verify the horizontal separation between the sanitary sewer and the water service.
- Verify testing of the system by witnessing the air or hydraulic test.
- Verify cleanouts every 100 feet or change in direction of 135 degrees.

SINGLE-FAMILY PLUMBING SYSTEMS

When reviewing a single-family house plan, there typically will not be a drawing of the plumbing system to review. The reason for this is the plumbing systems are usually a design build system (design build system – designed and fabricated on location to meet the code; this is to include the sanitary and potable water system). Due to this, you are not seeing the design until the contractor is calling for inspections of the plumbing system. It is important to be familiar with the 2020 Minnesota Residential Code terminology and definitions in 1309.0202 and to understand the home's layout before completing the plumbing inspections.

Single-family plumbing system inspections

- The building plumbing drainage system includes the building drain, horizontal branches, and venting.
- Verify the drainage fixture unit values (DFU) by referencing Table 702.1. Click to see the complete Table 702.1 in Minnesota Rules 4714.0702.
  - Verify the fixture counts and generalize the total to confirm building drain is adequately sized.
  - If there are more than three water closets, a minimum of a 4-inch building drain to the branch starting from the first of the three water closets. After that the sizing could reduce to 3 inches for the water closets and 2 inches for the rest of the building drain system.
  - The following table is a selection fixture and not the full list of fixtures in Table 702.1 on the next page.
  - When reviewing the plan for inspections, document all drainage fixture unit values (DFUV) from table 702.1 for private use.

DRAINAGE FIXTURE UNIT VALUES (DFU)	TABLE 702.1	
PLUMBING APPLIANCES, APPURTENANCES, OR FIXTURES	MINIMUM SIZE TRAP AND TRAP ARM (inches)	RESIDENTIAL PRIVATE DFU
Bathtub or Combination Bath/Shower	1-1/2	2
Clothes Washer, domestic, standpipe	2	3
Dishwasher, domestic, with independent drain	1-1/2	2
Floor drain, non-emergency	2	2
Shower, single-head trap	2	2
Shower, each additional head	2	1
Lavatory, single	1-1/4	1
Lavatory, set of two or three on single-trap	1-1/2	2
Bar Sink	1-1/2	1
Kitchen Sink, with or without food grinder, dishwasher, or both	1-1/2	2
Laundry Tub, with or without discharge from clothes washer	1-1/2	2
Water Closet	3	3

Verify maximum unit loading and maximum length of drainage and vent piping by referencing table703.2

Drain Waste & Vent
Table 703.2 Maximum DFU and length

TABLE 703.2: MAXIMUM DFU AND MAXIMUM LENGTH OF DRAINAGE AND VENT PIPING

SIZE OF PIPE (inches)	1-1/4	1-1/2	2	2-1/2	3	4
Drainage Piping[1]						
Maximum DFU on Vertical	1	2[2]	16[3]	32[3]	48[4]	256
Maximum DFU on Horizontal	1	1	8[3]	14[3]	35[4]	216[5]
Maximum Length Vertical (feet)	45	65	85	148	212	300
Maximum Length Horizontal (unlimited)						
Vent Piping						
Maximum DFU either Horizontal or Vertical	1	8[3]	24	48	84	256
Maximum Length (feet)	45(15)	60(20)	120(40)	180(60)	212(70)	300(100)

For SI units: 1 inch = 25 mm, 1 foot = 304.8 mm

Notes:

1. Excluding trap arm.
2. Except sinks, urinals, and dishwashers – exceeding 1 fixture unit.
3. Except six-unit traps or water closets.
4. Only four water closets or six-unit traps allowed on a vertical pipe or stack; and not to exceed three water closets or six-unit traps on a horizontal branch or drain.
5. Based on ¼ inch per foot (20.8 mm/m) slope. For ⅛ of an inch per foot (10.4 mm/m) slope, multiply horizontal fixture units by a factor of 0.8.

Drainage pipe size and length

- Use table 703.2 of the 2020 Minnesota Plumbing Code to determine maximum lengths of the drainage and vent piping.
- Different types of wet venting see Minnesota Plumbing Code sections:
    - 4714.908.1 for wet venting
    - 4714.908.2 for horizontal wet venting
    - Note: you cannot combine both applications into one-bathroom group
- To size the DFUV for the house and determine the right size for the drainage and vent system MN Rule 4714.702.1

EXAMPLE SIZING A PLUMBING SYSTEM FOR A SINGLE-FAMILY HOME

Type of Fixture	Number of Fixtures	Minimum size trap and trap arm size (inches)	Private use (DFUV) single family home	Total DFUV- # of fixtures X DFUV = Total
Water Closet 1.6 GPF	4	3	3	12
Shower	3	2	2	6
Lavatory	5	1 ¼	1	5
Floor Drain	1	2	2	2
Laundry tub main floor	1	2 (See footnote 2 in Table 703.2)	2	2
Clothes washer, Domestic standpipe	1	2 (See footnote 5 in Table 703.2)	3	3
Kitchen, domestic[1]	1	2 (See footnote 2 in Table 703.2)	2	2
			Total DFUV[2]	**32**

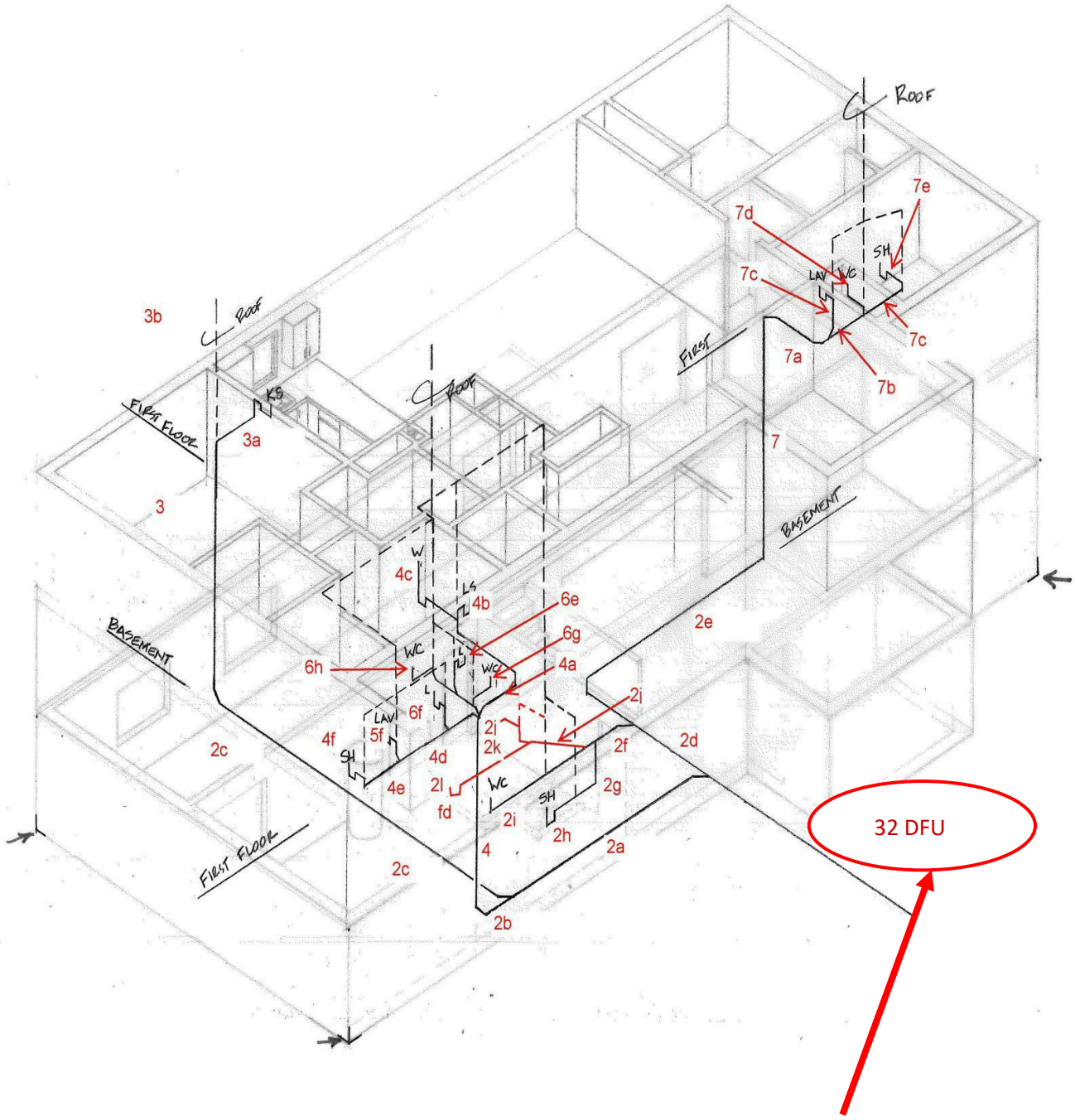
Notes:

[1] Footnote specifies the vertical drain cannot be less than two inches

[2] The building drain, horizontal branch and fixture drains will be sized from the DFUV of each fixture and total DFUV of 32

- When sizing the sanitary plumbing system inside the building, start at the connection between the building drain and sanitary sewer.

Isometric diagram of a residential home using a number/letter labeling to identify locations of fixtures and building drain piping.



Sizing the building drain for a single-family home						
Identity: Building drain	**Fixtures**	**Drainage fixture units from table 4714.702.1**	**Total**	**Drainage fixture units discharging into the building drain per identity**	**Size of building drain based on ¼ inch per foot slope table 703.2 (See footnote 5 in Table 703.2)**	**Maximum length of drainage piping and fixture loading Table 703.2**
2a Receiving discharge from 2b and 2c	2 – wc 1 – sh 3 – lav 1 – lt 1 – w 1 - ks	3 2 1 2 3 2	6 2 3 2 3 2 18	18	3 inches	Vertical 212 ft. Horiz. unlimited Maximum fixture loading 3 inches is 35 dfu's (Refer to Table 313.1 for plastic pipe expansion)
2b receiving discharge from stack #4	1 - wc 2 – sh 2 – lav 1- lt 1- w	3 2 1 2 3	6 2 3 2 3	16	3 inches	Horizontal unlimited Need cleanout at the base stack
2c receiving discharge from stack #3	1 – ks	2	2	2	2 inches	Horizontal unlimited need cleanout at the base of stack
2d receiving discharge from basement bathroom and stack #7	2- sh 2- lav 2 – wc 2- fd	2 1 3 2 private use	4 2 6 2	14	3 inches	Horizonal unlimited
2e receiving discharge from stack #7	1 – wc 1 – sh 1 – lav	3 2 1	3 2 1	6	3 inches	Horizontal unlimited Max dfu 35

Sizing the building stacks for a single-family home						
Identity: Building Drain	**Fixtures**	**Drainage fixture units from Table 4714.702.1**	**Total**	**Drainage fixture units discharging into the building stacks**	**Size of stack #3 (Footnote #2 from Table 4714.702.1 - 2" minimum drain)**	**Maximum length of drainage piping Table 703.2**
Discharge from horizontal drain 3a ks into stack #3	1 -ks	2	2	2	2 inches	Vertical 85 ft Note: make sure to watch for total fixture loading
Discharge from horizontal drains 4a through 6h into stack #4	1 – sh 3 – lav 2 – wc 1- lt 1 - w	2 1 3 2 3	2 3 6 2 3	16	3 inches	Vertical 32 ft Note: consider total fixture loading to horizontal drain
Drains 7a through 7e into stack #7	1 – lav 1 – sh 1 – wc	1 1 1	1 2 3	6	3 inches	Same as above

Sizing horizontal branches (drainage piping) below ground for basement bathroom and floor drain						
Identify: Horizontal branches (drainage piping)	**Fixtures**	**Drainage fixture units from table 4714.702.1**	**Total**	**Drainage fixture unit discharging into horizontal branches**	**Size of horizontal branch 2f (Footnote #2 from Table 702.1 - 2" minimum drain)**	**Maximum length of drainage piping and fixture loading Table 703.2**
Discharge of horizontal branches from 2g through 2i in to 2f	1 – wc 1 – sh 1 –lav 1 - fd	3 2 1 2	3 2 1 2	8	3 inches	Horizontal 212 ft Max. fixture loading 35 dfu
Drainage piping for shower 2g and 2h	1 – sh	2	2	2	2 inches Note: trap arm and trap table	Horizontal 8 dfu Table 703.2 Foot note #3 (no water closets)
Drainage piping for water closet 2i	1 – wc	3	3	3	3 inches	Table 703.2 Footnote #3 (no water closets)
Drainage piping for lavatory and shower 2j	1 – lav 1 – sh	1 2	1 2	3	2 inches	Horizontal 8 dfu, Table 703.2 Foot note #3 (no water closets)
Piping and trap arm for floor drain 2k and 2l	1 – fd	2	2	2	2 inches	Horizontal 8 dfu
Piping and trap arm for lav drain 2l	1 – lav	1	1	1	1 ¼ inches	Vertical 1 ¼ Horizontal 1 ¼ inches

Sizing horizontal branches (drainage piping) above ground						
Identity: Horizontal branches (drainage piping)	**Fixtures**	**Drainage fixture units from table 4714.702.1**	**Total**	**Drainage fixture units discharging into the building drain per identity**	**Size of horizontal branch drain (Footnote #2 from Table 4714.702.1 - 2" minimum drain)**	**Maximum length of drainage piping and fixture loading Table 703.2**
Discharge from 4b and 4c into 4a	1 – lt 1 – sh	2 2	2 2	4	2 inches Note: The length of trap arms must not exceed the limits of Table 1002.2.	Horizontal 8 dfu, remember the wet venting that is occurring Section 4714.908
Discharge of lav trap arm 4b into vertical of 4a	1 – lt	2	2	2	1 ½ inches Note: The length of trap arms must not exceed the limits of Table 1002.2.	Note: the vertical due to wet venting will be 2 ½ inches for wet venting Section 4714.908
Discharge of lav trap arm 4c	1 – w	3	3	3	2 inches	Note: The length of trap arms must not exceed the limits of Table 1002.2.
Discharge of 6g wc, 6e lav and 6h	2 – wc 1 – wc	3 1	6 1	8	3 inches	Note: The length of trap arms must not

into horizontal drain						exceed the limits of Table 1002.2.
Discharge from 4f sh, 5f lav and 6 lav into horizontal drain 4d	1 – sh 2 – lav	2 1	22	4	2 inches	Horizontal 8 dfu, No water closets permitted
Discharge from 4f sh into 4e	1 – sh	2	2	2	2 inches	Horizontal 8 dfu No water closets permitted
Trap arm 4f sh	1 – sh	2	2	2	2 inches - distance limits in Table 1002.2	N/A
Trap arm 5f lav	1 – lav	1	1	1	1 ¼ inches – distance limits in Table 1002.2	N/A
Trap arm 3a Ks	1 – ksf	2	2	2	1 ½ inches	N/A
Discharge from 7c lav, 7d wc and 7e into 7a horizontal branch	1 – lav 1 – wc 1 – sh	1 3 2	1 3 2	6	3 inches	N/A
Discharge into 7b for 7d lav and 7e wc	1 – lav 1 – wc	1 4	1 4	5	3 inches	N/A
Discharge from 7e into 7c	1 – sh	2	2	2	2 inches	N/A

This completes the sanitary (drainage piping sizing for the single-family home.)

Vent pipe size and Length

To size venting, reference maximum unit loading and maximum length of drainage and vent piping. In section 4714.904.1, the size of vent piping shall be determined from its length and total number of fixture units connected thereto, in accordance with Table 703.2. The drainage piping of each building and each connection to a public sewer or a private sewage disposal system shall be vented by means of one or more vent pipes, the aggregate cross-sectional area of which shall be not less than that of the largest required building sewer, as determined from Table 703.2. MN rule 4714.906.7 Frost or snow closure, vent terminals shall not be less than 2 inches in diameter and shall not be smaller than the required vent pipe. Any change in diameter shall be made inside the building not less than 12 inches below the roof in an insulation space and terminate not less than 12 inches above the roof.

This will complete the sanitary drain, waste, and vent for single family home

WATER DISTRIBUTION

Review the water service and distribution system to confirm the minimum volume of water is supplied to each fixture. Table 610.3 in MN Rule 4714.0610 is used to size the water service and distribution system. The following considerations must be known to check size water distribution piping:

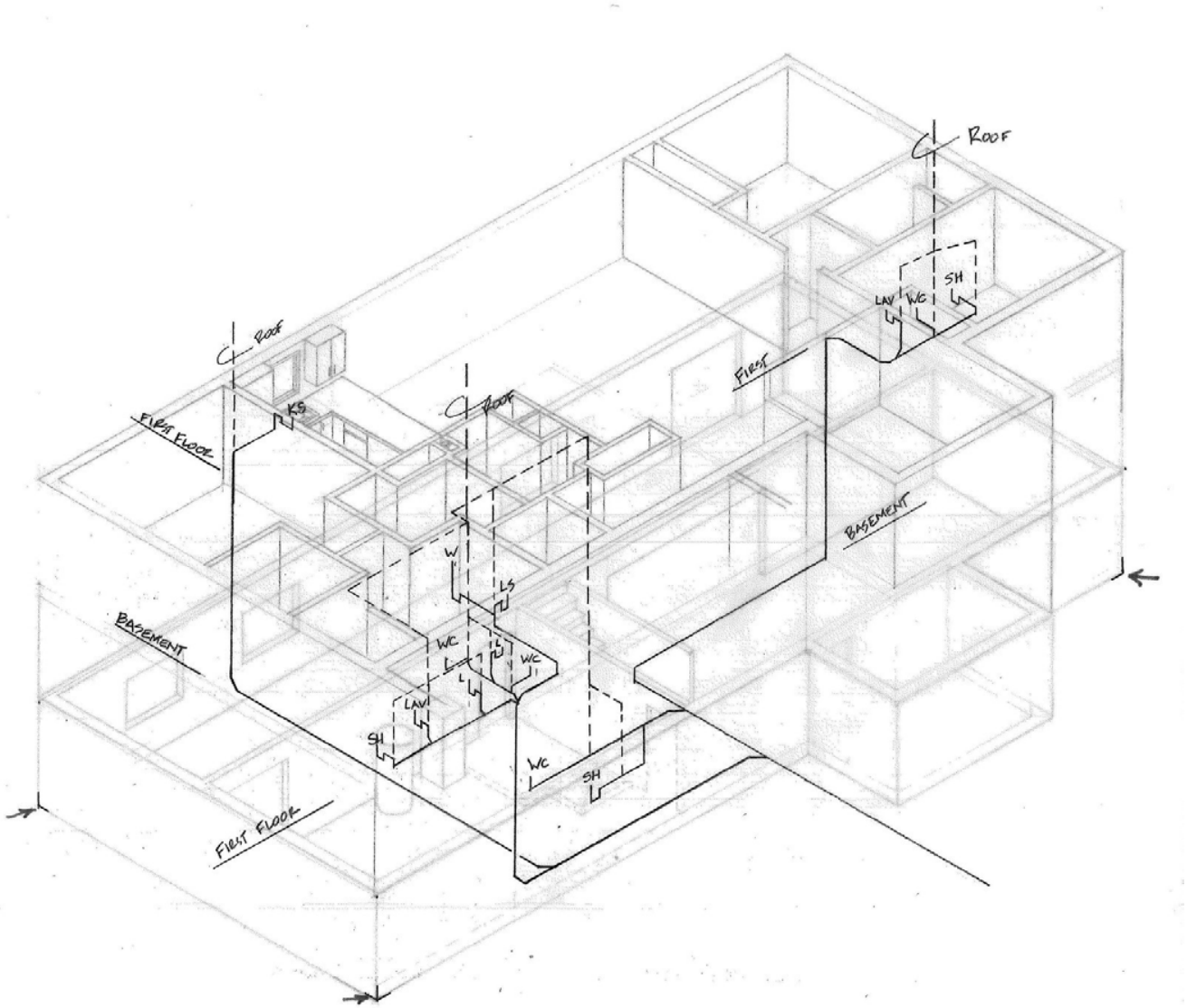
- Total number of appliances, appurtenances, or fixtures
- Total pressure losses through appliances
  - Water filter
  - Water softener
  - Type of water heater
  - Backflow prevention device
  - Other appliances that create pressure losses
- Total pressure at main or meter
- The difference in elevation is from source of known pressure to the highest fixture
  - The pressure drop can be calculated by multiplying difference in elevation by .433 psi.
  - The known source of pressure will either be at the street main or the water meter inside the building
  - The difference in elevation can be calculated by scaling the plan or reading the elevations that are given on the plan
- The minimum pressure required for every fixture in a water distribution system is 15psi residual pressure per section 4714.608.
  - The 15psi residual pressure is calculated after allowing for friction and other pressure losses.
  - Where specific fixtures or fitting require pressure exceeding 15psi, that minimum pressure shall be provided for the water distribution system.

EXAMPLE SIZING A PLUMBING SYSTEM FOR A SINGLE-FAMILY HOME

This example will assume the water service is 8 feet below grade and the highest shower head to be 7 feet above the finished floor. The house elevations below are based on the isometric drawing on the following page:

- 8 feet from water main to basement slab
- 9.5 feet to first floor
- 7 feet to shower head
- Total difference in elevation 24.5 feet
- Pressure loss due to difference in elevation - 24.5 feet x .433 psi = 10.6 psig
- The assumed pressure at the main is 70 psig.
- The total developed length to the furthest fixture is the shower in the master bath. The developed length used for this application is 113 feet from the main to the highest fixture (master bath shower).

Add the water supply fixture units (WSFU) together in the example below by using Table 610.3 in MN Rule 4714.0610 for combined cold and hot water demand for each listed fixture. Footnotes must be considered whenever noted.



The following fixture types and their water supply fixture units are based on table 610.3 in MN Rule 4714.0610.

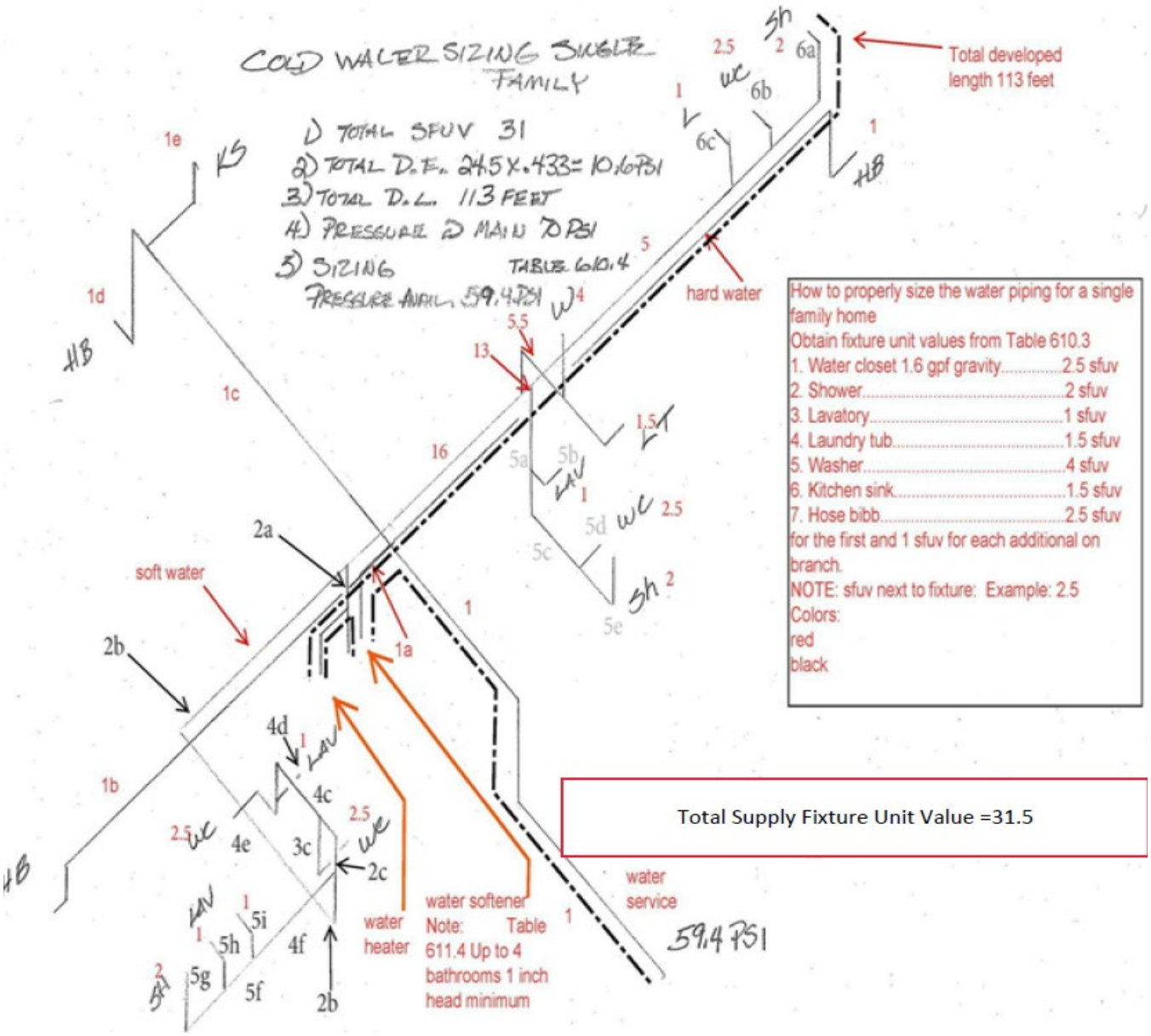
Type of fixture	Number of fixtures	Supply fixture unit values: Private use	Total supply fixture unit values: Private	Minimum fixture branch pipe size (inches)
Water closet, 1.6 GPF gravity tank	4	2.5	10	½
Shower	3	2	6	½
Lavatory	4	1	4	½
Laundry tub	1	1.5	1.5	½
Washer	1	4	4	½
Kitchen sink	1	1.5	1.5	½
Outside hose bibs	3	2.5 for first bib and 1 each additional[8]	2.5 + 2 = 4.5	½
		Total WSFU:	**31.5**	

- Footnote #8 reduces the fixture unit loading for additional hose bibs down to 1 unit per fixture after the first hose bib. The fixture branch piping to each hose bib shall be sized based on 2.5 fixture units.

Water service and water distribution sizing criteria for this example	
Total water supply fixture load on house	31.5
Total difference in elevation	24.5 ft x .433 psig = 10.6 psig
Total developed length	113 feet
Total pressure at the main	70 psig – 10.6 psig (elevation difference) = **59.4 psig**

Sizing the water service piping and distribution system for cold water service

Sizing the distribution system includes the water service (building service), water meter size, main building supply piping and building branch piping.



The meter and street service size to be ¾ inch based on the example of 113 feet total pipe length, 31.5 total load of water supply fixture units and 59.4 psig at the water main.

4714.0610 TABLE 610.4

FIXTURE UNIT TABLE FOR DETERMINING WATER PIPE AND METER SIZES

METER AND STREET SERVICE (inches)	BUILDING SUPPLY AND BRANCHES (inches)	MAXIMUM ALLOWABLE LENGTH (feet)														
		40	60	80	100	150	200	250	300	400	500	600	700	800	900	1000
PRESSURE RANGE — 30 to 45 psi[1]																
3/4	1/2[2]	6	5	4	3	2	1	1	1	0	0	0	0	0	0	0
3/4	3/4	16	16	14	12	9	6	5	5	4	4	3	2	2	2	1
3/4	1	29	25	23	21	17	15	13	12	10	8	6	6	6	6	6
1	1	36	31	27	25	20	17	15	13	12	10	8	6	6	6	6
3/4	1 1/4	36	33	31	28	24	23	21	19	17	16	13	12	12	11	11
1	1 1/4	54	47	42	38	32	28	25	23	19	17	14	12	12	11	11
1 1/2	1 1/4	78	68	57	48	38	32	28	25	21	18	15	12	12	11	11
1	1 1/2	85	84	79	65	56	48	43	38	32	28	26	22	21	20	20
1 1/2	1 1/2	150	124	105	91	70	57	49	45	36	31	26	23	21	20	20
2	1 1/2	151	129	129	110	80	64	53	46	38	32	27	23	21	20	20
1	2	85	85	85	85	85	85	82	80	66	61	57	52	49	46	43
1 1/2	2	220	205	190	176	155	138	127	120	104	85	70	61	57	54	51
2	2	370	327	292	265	217	185	164	147	124	96	70	61	57	54	51
2	2 1/2	445	418	390	370	330	300	280	265	240	220	198	175	158	143	133
PRESSURE RANGE — 46 to 60 psi[1]																
3/4	1/2[2]	7	7	6	5	4	3	2	2	1	1	1	0	0	0	0
3/4	3/4	20	20	19	17	14	11	9	8	6	5	4	4	3	3	3
3/4	1	39	39	36	33	28	23	21	19	17	14	12	10	9	8	8
1	1	39	39	39	36	30	25	23	20	18	15	12	10	9	8	8
3/4	1 1/4	39	39	39	39	39	39	34	32	27	25	22	19	19	17	16
1	1 1/4	78	78	76	67	52	44	39	36	30	27	24	20	19	17	16
1 1/2	1 1/4	78	78	78	78	66	52	44	39	33	29	24	20	19	17	16
1	1 1/2	85	85	85	85	85	85	80	67	55	49	41	37	34	32	30
1 1/2	1 1/2	151	151	151	151	128	105	90	78	62	52	42	38	35	32	30
2	1 1/2	151	151	151	151	150	117	98	84	67	55	42	38	35	32	30
1	2	85	85	85	85	85	85	85	85	85	85	85	85	85	83	80
1 1/2	2	370	370	340	318	272	240	220	198	170	150	135	123	110	102	94
2	2	370	370	370	370	368	318	280	250	205	165	142	123	110	102	94
2	2 1/2	654	640	610	580	535	500	470	440	400	365	335	315	285	267	250

For SI units: 1 inch = 25 mm, 1 foot = 304.8 mm, 1 pound-force per square inch = 6.8947 kPa

[1] Available static pressure after head loss.

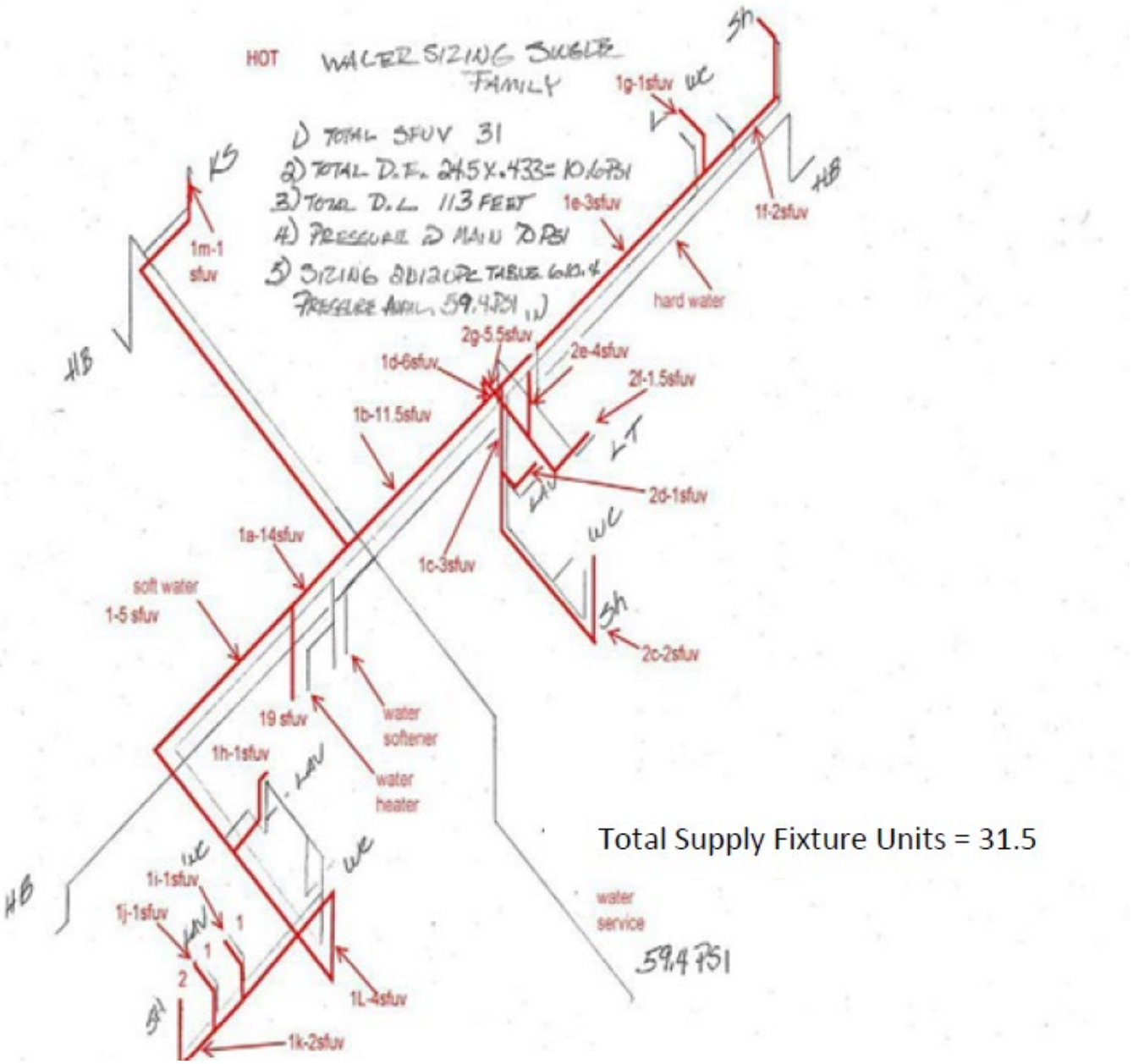
[2] Building supply, not less than 3/4 of an inch (20 mm) nominal size.

SIZING BUILDING SUPPLY AND BRANCHES

BUILDING SUPPLY (B.S.) OR BRANCH NUMBER (B.N.)	TOTAL SFUV	SIZE OF PIPING	OTHER REQUIREMENTS
B.S. – 1	31.5 SFUV	1 ¼ INCHES	1346.1417 section 609.11 water mete inches above the floor 606.2 Fullway valve before and on the discharge side of the meter?
B.S. – 1a	29 SFUV Note: footnote 8 subtract 3.5 sfuv for hose bibbs	1 INCH	Table 610.3 footnote #8 reduction For sfuv loading of multiple hose bibbs
Water softener	29 sfuv	1 inch inlet 1 inch outlet	Table 611.4 sizing of residential water Softeners Note: footnotes 1 through 4
Water heater	19 sfuv	1 inch inlet 1 inch outlet	606.5 control valve on the inlet Of water heater 608.3 expansion tank requires T/P valve and drain
B.S. – 2b	10 sfuv	¾ inch	Table 313.3 hangers and supports MN 4715. 1430 Horizontal: every 6 feet Vertical: each story
B.N. – 2c	5.5 sfuv	¾ inch	609.10 water hammer arrestor Where quick acting valves are used
B.N. – 3c	2.5 sfuv	½ inch	605.5 control valve required does Not have to be fullway table 603.3.1 minimum air gaps Read the footnotes
B.N. – 4c	3.5 sfuv	½ inch	
B.N. – 4d	1 sfuv	½ inch	605.5 shut off valve
B.N. – 4e	2.5 sfuv	½ inch	605.5 shut off valve 401.1 Quality of fixtures chapter 14 referenced standards Approval of fixtures
B.N. – 1b	2.5 sfuv	½ inch	605.5 shut off valve 603.3.3 hose connection backflow table 603.2 backflow prevention Read footnotes
B.N. – 1c - hard water	2.5 sfuv	½ inch	Supplies kitchen sink and hose bibb May recommend insulation due to Hose bibb
B.N. – 1d	1 sfuv - MN table 610.3 footnote #8	½ inch	May want to inslulate
B.N. – 1e	1.5 sfuv	½ inch	605.5 shut off valve 603.3.3 hose connection backflow table 603.2 backflow prevention Read footnotes
B.N. – 1 hose bibb by Master bath	1 sfuv MN table 610.3 footnote #	½ inch	May want to insulate 605.5 shut off valve
B.S. – 7	16 sfuv	1 inch	Design not to exceed 10 feet per Second creates oxygen in lines Creating turbulence (failure of piping)
B.S. – 7a	13 sfuv	¾ inch	Table 313.3 hangers and supports MN 4715. 1430 Horizontal: every 6 feet 1 ¼ or less Vertical: each story
B.N. – 7b	5 sfuv	¾ inch	Table 313.3 hangers and supports MN 4715. 1430 Horizontal: every 6 feet Vertical: each story
B.N.- 5a	5.5 sfuv	¾ inch	312.9 steel nail plates 18 gauge when piping closer than 1"

B.N. 5b	1 sfuv	½ inch	605.5 shut off valve 603.3.3 hose connection backflow table 603.2 backflow prevention Read footnotes
B.N. 5c	4.5 sfuv	¾ inch	609.10 water hammer arrestor Where quick acting valves are used
B.N. 5d	2.5 sfuv	½ inch	605.5 shut off valve
B.N. 5e	2 sfuv	½ inch	408.3 control valves Pressure balance type Or combination pressure balance / Thermostatic mixing valve ASSE 1016 or ASME A112.18.1 408.7.1 tests for shower receptor Fill base with water to threshold 408.6 shower compartments Minimum 30 circle
B.N. 5f	5.5 sfuv	¾ inch	609.10 water hammer arrestor Where quick acting valves are used
B.N. 5g	4 sfuv	½ inch	605.5 shut off valve
B.N. 5h	1.5 sfuv	½ inch	605.5 shut off valve 603.3.3 hose connection backflow table 603.2 backflow prevention Read footnotes
B.N. 7c	4.5 sfuv	¾ inch	Table 313.3 hangers and supports MN 4715. 1430 Horizontal: every 6 feet 1 ¼ or less Vertical: each story
B.N. 6a	2 sfuv	½ inch	ASSE 1016 or ASME A112.18.1 UPC 408.7.1 tests for shower receptor Fill base with water to threshold 408.6 shower compartments Minimum 30 circle
B.N. 6b	2.5 sfuv	½ inch	605.5 shut off valve
B.N. 6c	1 sfuv	½ inch	605.5 shut off valve

The hot water distribution system will utilize Minnesota Rule Chapter 4714.0610 and based on the cold water sizing information, the water heater will have a 19 supply fixture unit value to calculate supply piping.



HOT WATER SIZING FOR BUILDING SUPPLY AND BRANCHES

BUILDING SUPPLY (B.S.) OR BRANCH NUMBER (B.N.)	TOTAL SFUV	SIZE OF PIPING	OTHER REQUIREMENTS
Water heater discharge	19 sfuv	1 inch	MN 1322 residential code R403.4.2 Hot water piping insulation required
B.N. 1	5 sfuv	¾ inch	Table 313.3 hangers and supports MN 4715.1430 Horizontal: ever 6 feet 1 ¼ or less Vertical: every story
B.N. 1L	4 sfuv		MN Rule 4714.0610 Table 610.3 Footnote # 3 sizing reduction to 75% for fixtures having both h and c
B.N. 1i	1 sfuv	½ inch	605.5 shut off valve
B.N. 1j	1 sfuv	½ inch	605.5 shut off valve
B.N. 1k	2sfuv	½ inch	408.3 control valves Pressure balance type Or combination pressure balance / Thermostatic mixing valve ASSE 1016 or ASME A112.18.1
			ASME A112.18.1 408.7.1 tests for shower receptor Fill base with water to threshold 408.6 shower compartments Minimum 30 circle
B.N. 1m	1.5 sfuv	½ inch	605.5 shut off valve
B.S. 1b	11.5 sfuv	¾ inch	Table 313.3 hangers and supports MN 4715.1430 Horizontal: ever 6 feet 1 ¼ or less Vertical: every story
B.S. 1d	6 sfuv	¾ inch	MN 1322 residential code R403.4.2 Hot water piping insulation required
B.N. 1c	3 sfuv	½ inch	312.9 steel nail plates 18 gauge when piping closer than 1"
B.N. 2c	2 sfuv	½ inch	408.3 control valves Pressure balance type Or combination pressure balance / Thermostatic mixing valve ASSE 1016 or ASME A112.18.
B.N. 2d	1 sfuv	½ inch	605.5 shut off valve
B.N. 2e	4 sfuv	½ inch	609.10 water hammer arrestor Where quick acting valves are used
B.N. 2f	1.5 sfuv	½ inch	605.5 shut off valve 603.3.3 hose connection backflow table 603.2 backflow prevention Read footnotes
B.N. 2g	5.5 sfuv	¾ inch	312.9 steel nail plates 18 gauge when piping closer than 1"
B.N. 1e	3 sfuv	½ inch	312.9 steel nail plates 18 gauge when piping closer than 1" Table 313.3 hangers and supports MN 4715.1430 Horizontal: ever 6 feet 1 ¼ or less Vertical: every story
B.N. 1f	2 sfuv	½ inch	408.3 control valves Pressure balance type Or combination pressure balance / Thermostatic mixing valve ASSE 1016 or ASME A112.18.
B.N. 1g	1	½ inch	605.5 shut off valve

HOT WATER SIZING FOR BUILDING SUPPLY AND BRANCHES

BUILDING SUPPLY (B.S.) OR BRANCH NUMBER (B.N.)	TOTAL SFUV	SIZE OF PIPING	OTHER REQUIREMENTS
Water heater discharge	19 sfuv	1 inch	MN 1322 residential code R403.4.2 Hot water piping insulation required
B.N. 1	5 sfuv	¾ inch	Table 313.3 hangers and supports MN 4715.1430 Horizontal: ever 6 feet 1 ¼ or less Vertical: every story
B.N. 1L	4 sfuv		MN Rule 4714.0610 Table 610.3 Footnote # 3 sizing reduction to 75% for fixtures having both h and c
B.N. 1i	1 sfuv	½ inch	605.5 shut off valve
B.N. 1j	1 sfuv	½ inch	605.5 shut off valve
B.N. 1k	2sfuv	½ inch	408.3 control valves Pressure balance type Or combination pressure balance / Thermostatic mixing valve ASSE 1016 or ASME A112.18.1
			ASME A112.18.1 408.7.1 tests for shower receptor Fill base with water to threshold 408.6 shower compartments Minimum 30 circle
B.N. 1m	1.5 sfuv	½ inch	605.5 shut off valve
B.S. 1b	11.5 sfuv	¾ inch	Table 313.3 hangers and supports MN 4715.1430 Horizontal: ever 6 feet 1 ¼ or less Vertical: every story
B.S. 1d	6 sfuv	¾ inch	MN 1322 residential code R403.4.2 Hot water piping insulation required
B.N. 1c	3 sfuv	½ inch	312.9 steel nail plates 18 gauge when piping closer than 1"
B.N. 2c	2 sfuv	½ inch	408.3 control valves Pressure balance type Or combination pressure balance / Thermostatic mixing valve ASSE 1016 or ASME A112.18.
B.N. 2d	1 sfuv	½ inch	605.5 shut off valve
B.N. 2e	4 sfuv	½ inch	609.10 water hammer arrestor Where quick acting valves are used
B.N. 2f	1.5 sfuv	½ inch	605.5 shut off valve 603.3.3 hose connection backflow table 603.2 backflow prevention Read footnotes
B.N. 2g	5.5 sfuv	¾ inch	312.9 steel nail plates 18 gauge when piping closer than 1"
B.N. 1e	3 sfuv	½ inch	312.9 steel nail plates 18 gauge when piping closer than 1" Table 313.3 hangers and supports MN 4715.1430 Horizontal: ever 6 feet 1 ¼ or less Vertical: every story
B.N. 1f	2 sfuv	½ inch	408.3 control valves Pressure balance type Or combination pressure balance / Thermostatic mixing valve ASSE 1016 or ASME A112.18.
B.N. 1g	1	½ inch	605.5 shut off valve

CHAPTER 10 – MISCELLANEOUS

RETENTION SCHEDULE

All local jurisdictions must adopt a general records retention schedule for permits, building inspections and certificate of occupancy to retain and dispose records as indicated on the schedule. See Minnesota Historical Society general records retention schedules online for cities and townships with building, plumbing, mechanical and electrical record retention requirements. The following is the retention schedule example for building records for Minnesota cities:

GENERAL RECORDS RETENTION SCHEDULE FOR MINNESOTA CITIES

SECTION	CODE	TITLE & DESCRIPTION	RETENTION PERIOD	CLASSIFICATION	STATUTE
BUILDING INSPECTIONS	BUI 00100	BUILDING INSPECTION RECORDS - NOT FINAL Includes grading, demolition.	1	Public	
BUILDING INSPECTIONS	BUI 00150	BUILDING INSPECTION RECORDS - FINAL	Life of property	Public	
BUILDING INSPECTIONS	BUI 00200	BUILDING PLANS - COMMERCIAL, INDUSTRIAL Includes architectural, design specifications, structural & utility plans.	15, or until superseded with complete set.	Public/Private/Non-Public	MS 13.37, Subd. 1b, MS 541.051
BUILDING INSPECTIONS	BUI 00300	BUILDING PLANS: RESIDENTIAL Includes architectural, design specifications, structural & utility plans.	1 after completion of project.	Public/Private/Non-Public	MS 13.37, Subd. 1b
BUILDING INSPECTIONS	BUI 00400	CERTIFICATE OF OCCUPANCY	Permanent	Public	
BUILDING INSPECTIONS	BUI 00410	CERTIFICATE OF SURVEY Survey of property.	Permanent	Public	
BUILDING INSPECTIONS	BUI 00500	CODE COMPLIANCE INSPECTION Point of conveyance.	Until new ownership	Public	
BUILDING INSPECTIONS	BUI 00600	ELECTRICAL INSPECTION RECORD	Permanent	Public	
BUILDING INSPECTIONS	BUI 00700	FIRE INSPECTION RECORD - ANNUAL Multiple dwelling/commercial.	5 (Per MN State Fire Code 104.6)	Public	
BUILDING INSPECTIONS	BUI 00800	HEATING / VENTILATION INSPECTION RECORD Includes heating, a/c, ventilating, fireplace.	Permanent	Public	
BUILDING INSPECTIONS	BUI 00900	HOUSING INSPECTION RECORD Change of ownership, point of sale.	6	Public	
	BUILDING				

Sample

SINGLE FAMILY DWELLING PERMIT REQUIREMENTS

The following information must be submitted to the Building Department before a building permit can be processed and approved. A more detailed description of items 1 – 5 is listed below.

1. Building Permit Application Form

2. Survey or Site Plan (two copies)

3. Building Plans (two sets)

4. General Information

5. Required Inspections

After a preliminary review additional information may be required. Allow_____working days for processing.

This handout is provided as guidelines and is not intended to be considered a complete set of requirements.

Building Permit Application

- Complete and sign a Building Permit Application Form. Forms are available at the Department of Building Safety.

Survey for Site Plan

- Provide a site plan of the property showing all property lines, road right of ways, easements, existing buildings [with dimensions] and project address or parcel identification number. Diagram the proposed building location, dimensions and proposed setbacks from property lines, existing buildings and all topographical features, elevations, and drainage. A registered certificate of survey may be required when deemed necessary by the department.

Building Plans

- Elevation drawings [exterior views], of front, rear, and sides of the finished building. [Some sheathing materials may require a braced wall layout plan(s) and narrow garage wall design.]
- Floor plans of the basement and each floor showing the dimensions of the house, interior rooms, and use of each room [bedroom, bathroom etc.], window and door locations [safety glazing if required], interior walls, beam and header sizes, stairs, plumbing and mechanical equipment and locations of smoke and carbon monoxide alarms,
- Section drawings [side cutaway view] showing the details of the footing, foundation construction with a drainage and radon control system radon system, waterproofing or damp proofing and insulation, floor, wall, and roof construction including all thermal envelope insulation values (See the following Energy Code compliance requirements). Provide copies of the floor and roof truss specifications prepared and stamped by a Minnesota-licensed engineer [some cities may allow or require them to be provided later at the framing inspection]. [An engineered foundation wall design may be required.]

- Include plans for decks and detached garages if applicable.
- Energy Code Compliance Form: Complete an Energy Code Compliance Certificate Form to verify compliance with the 2020 Minnesota Residential Energy Code. Provide an Energy Code design criteria, noted on plan, verifying that the building envelope meets the provisions of Table R402.1.1. Exceptions to the table would include one of the following calculations that must be submitted for approval:
  - R-value computation method per Table R402.1.1.
  - Total UA alternative per Table R402.1.3.
  - Engineered systems alternative per R405.
- Mechanical Code Compliance Forms:
  Provide a copy of calculated heat loss/gain and calculated cooling load verifying HVAC equipment sizing is in compliance with the Minnesota Energy Code (ACCA Manual J 8th Edition) or equivalent, approved by building official.
  [Ductwork sizing is also critical and to be completed by calculating square footage of home and each room, cubic feet per minute calculations (unit size and air flow velocity) and the ductwork friction loss and static pressure of your HVAC system.]
  Provide a copy of IFGC Appendix E, Worksheet E-1 calculating combustion air size, and a copy of IMC Table 501.4.1 calculating makeup air quantity.
  Provide a copy of ventilation calculations including ventilation rate, conditioned square footage space and number of bedrooms verifying compliance with the 2015 Minnesota Energy Code R403.5.
- Provide calculations for combustion air, make-up air and ventilation air.

General Information

- General zoning requirements must be met and reviewed for approval. Contact a municipal planner for specific requirements, phone: xxx-xxx-xxxx. A zoning permit application is required if a variance, conditional use permit or special evaluation is required for the project. Building permits will not be issued until all zoning requirements are reviewed and approved.
- Permit fees will be determined (before) (after) the application and plans have been reviewed. Fees must be paid in full before a permit can be issued or work can begin.
- Electrical wiring must be inspected and approved by an electrical inspector. Electrical permits may be issued locally or by the Minnesota Department of Labor and Industry. Call your local municipality/jurisdiction to verify where to apply for an electrical permit before work begins. To obtain a permit call xxx-xxx-xxxx. Check the Electrical Inspector Directory or your local municipality/jurisdiction for contact information to request an inspection or to answer electrical questions. call: Name at xxx- xxx-xxxx, between 7 and 8:30 a.m., Monday through Friday.
- Smoke alarms shall be located in each sleeping room, outside of each separate sleeping area in the immediate vicinity of the bedrooms and shall be interconnected in such a manner that the activation of one alarm will activate all of the alarms. Smoke alarms shall also be hardwired and have battery backup. Smoke alarms in existing areas may be solely battery operated when the alterations or repairs do not result in the removal of interior wall or ceiling finishes exposing the structure unless there is a crawl space or basement available which could provide access for hardwiring and interconnection without removal of interior finishes. (Section R314.2 of the 2020 Minnesota Residential Code)

- Carbon monoxide (CO) alarms shall be located within 10 feet outside of each sleeping room in existing dwellings that have an attached garage or fuel-fired appliances. Carbon monoxide alarms shall be listed as complying with UL 2034. (Section R315 of the 2020 Minnesota Residential Code)
- Fireplace: Masonry fireplaces must be installed and inspected to code, prefabricated fireplaces installed per the manufacture's installation instructions, provide installation instructions on-site for a rough-in and final inspection.
- Excavations: Prior to excavating call Gopher State One, 48 hours in advance at 651-454-0002 or for greater Minnesota 1-800-252-1166, or 811 to verify the location of underground utilities etc.
- Gas and electric utilities: Contact your local utility for specific requirements.

Required Inspections

- Footings [before concrete is placed]: After forms and re-enforcing are in place but prior to placement of concrete.
- Foundations: Block and wood foundations are inspected prior to backfill. Cast in place concrete; after the forms and re-enforcing are in place prior to placement of concrete then again prior to backfill. Damp proofing and waterproofing and a perimeter drainage system must be in place for inspection.
- Plumbing rough-in: After all water piping and waste and vent piping is installed, a 5# air test for 15 minutes is required on the waste and vent piping.
- Mechanical rough-in: When all ducting, furnace and mechanical equipment is installed [prior to covering].
- Gas piping: A 25# air test shall be 1/2 hour. When testing a system in a single-family dwelling the test is permitted to be reduced to 10 minutes with prior approval from the building official. All piping must be visible.
- Fireplaces, masonry chimneys and woodstoves: For prefabricated fireplaces call for inspection when framing is complete; masonry chimneys and fireplaces when setting the throat; woodstoves when set. Provide the manufacturers installation instructions on site.
- Framing: When all the framing is complete and all plumbing, mechanical and electrical is installed. A smoke and carbon monoxide alarm placement inspection is completed during the framing inspection.
- Energy: When the insulation, vapor retarder and attic ventilation is complete before covering.
- Plumbing manometer: A test of the waste and vent piping when the house is complete.
- Final inspection: When all exterior and interior finish work is complete; all rough-in inspections are approved and mechanical, plumbing, and electrical final inspections are approved. The final inspection will include the testing of smoke and carbon monoxide alarms.
- Certificate of occupancy: All the required inspections must be completed and approved, including final approval from the state/local electrical inspector before the new residential dwelling can be used or occupied.
- To schedule an inspection call___hours in advance at xxx-xxx-xxxx, 8 a.m. to 4:30 p.m., Monday through Friday.

If you have any questions, please contact the Building Department, Monday through Friday, 8 a.m. to 4:30 p.m. at **xxx-xxx-xxxx**, or write to: **Address, City, State, Zip Code and Phone Number**

Sample

BUILDING PERMIT REQUIREMENTS FOR RESIDENTIAL ADDITIONS AND PORCHES

The following information must be submitted to the Building Department before a building permit can be processed and approved. A more detailed description of items 1 – 5 is listed below.

1. Building Permit Application Form

2. Survey or Site Plan (two copies)

3. Building Plans (two sets)

4. General Information

5. Required Inspections

After a preliminary review additional information may be required. Allow_____working days for processing.

This handout is provided as guidelines and is not intended to be considered a complete set of requirements.

Building Permit Application

- Complete and sign a Building Permit Application form. Forms are available at the Department of Building Safety.

Survey or Site Plan

- Provide an updated plan of the property showing all property lines, road right of ways, easements, existing buildings [with dimensions] and project address or identification number. Diagram the proposed addition location, dimensions and proposed setbacks from property lines, existing buildings, and all topographical features. A registered survey may be required.

Building Plans

- Elevation drawings [exterior views] of front, rear, and sides of finished addition. Indicate the height from finished grade to the top of the sidewalls and peak.
- Section drawing [side cutaway view] showing the details of the footings, foundation construction, floor, wall, and roof construction including all thermal envelope insulation values. Provide copies of the floor and roof truss specifications prepared and stamped by a Minnesota-licensed engineer [some cities may allow or require them to be provided later at the framing inspection]. [An engineered foundation wall design may be required.]
- Floor flans of the basement and each floor showing the length and width of the addition, room dimensions and use [bedroom, bathroom etc.], finished and unfinished areas, window and door locations, beams and header sizes, interior walls, stairs, and plumbing/heating fixtures.

General Information

- Zoning: A zoning permit application is required if a variance, conditional use permit or special evaluation is required for the project. Building permits will not be issued until all zoning requirements are reviewed and approved.
- Permit fees will be determined (before) (after) the application and plans have been reviewed. Fees must be paid in full before a permit can be issued or work can begin.
- Gas and electric utilities: Contact your local supplier for specific requirements.
- Electrical: Electrical wiring must be inspected and approved by an electrical inspector. Electrical permits may be issued locally or by the Minnesota Department of Labor and Industry. Call your local municipality/jurisdiction to verify where to apply for an electrical permit before work begins. To obtain a permit call xxx-xxx-xxxx. Check the Electrical Inspector Directory or your local municipality/jurisdiction for contact information to request an inspection or to answer electrical questions.
- Fireplace: Masonry fireplaces must be installed and inspected to code, prefabricated fireplaces installed per the manufacturer's installation instructions Provide installation instructions on-site for a rough-in and final inspection.
- Excavations: Before excavating call Gopher State One 48 hours in advance at 1-800-252-1166 or 651-454-0002 or 811 to verify the location of underground utilities, etc.…

Required Inspections

- Footings [before concrete is placed]: After forms and re-enforcing are in place but prior to placement of concrete.
- Foundations: Block and wood foundations are inspected prior to backfill. Cast-in-place concrete are inspected after the forms and re-enforcing are in place prior to placement of concrete then again prior to backfill. Damp proofing and waterproofing and a perimeter drainage system must be in place for inspection.
- Plumbing rough-in: After all water piping and waste and vent piping is installed, a 5# air test for 15 minutes is required on the waste and vent piping.
- Mechanical rough-in: When all ducting and mechanical equipment is installed [prior to covering].
- Gas piping: A 25# air test shall be 1/2 hour. When testing a system in a single-family dwelling the test is permitted to be reduced to 10 minutes with prior approval from the building official. All piping must be visible.
- Fireplaces, masonry chimneys and woodstoves: For prefabricated fireplaces call for inspection when framing is complete; masonry chimneys and fireplaces when setting the throat; woodstoves when set. Provide the manufacturers installation instructions on site.
- Framing: When all the framing is complete and all plumbing, mechanical and electrical is installed. Placement of existing smoke and carbon monoxide alarms is reviewed during the framing inspection.
- Energy: When the insulation, vapor retarder and attic ventilation is complete before covering.
- Plumbing manometer: A test of the waste and vent piping when the house is complete.
- Final inspection: When all exterior and interior finish work is complete; all rough-in inspections are approved and mechanical and plumbing final inspections are approved, including final approval from the

state/local electrical inspector. The final inspection will include the testing of smoke and carbon monoxide alarms throughout the existing dwelling.

- To schedule an inspection call _ hours in advance at xxx-xxx-xxxx, 8 a.m. to 4:30 p.m., Monday through Friday.
- If you have any questions, please contact the Building Department, Monday through Friday, 8 a.m. to 4:30 p.m. at: **xxx-xxx-xxxx. City, Name, Address, City, State, Zip and Phone Number**

Sample

DECK PERMIT REQUIREMENTS

The following information must be submitted to the Building Department before a building permit can be processed and approved. A more detailed description of items 1 – 5 is listed below.

1. Building Permit Application Form

2. Survey or Site Plan (two copies)

3. Building Plans (two sets)

4. General Information

5. Required Inspections

After a preliminary review additional information may be required. Allow_____working days for processing.

This handout is provided as guidelines and is not intended to be considered a complete set of requirements.

Building Permit Application

- Complete a building permit application form. Forms are available at the Building Department.

Survey or Site Plan

- Provide an updated plan of the property showing all property lines, existing buildings [with dimensions] and project address or identification number. Diagram the proposed deck building location, dimensions and proposed setbacks from property lines, existing buildings, and all topographical features. A registered survey may be required.

Building Plans

- Section drawing [side, cutaway drawing] showing the footing width and thickness, post size, joist size, beam size, decking, height above grade, guard, cantilevers [overhang], anchoring, flashing, connectors, lateral load connections and hanger types, include grade and species of lumber. All deck and flashing materials and application of those materials are to be noted on this drawing.
- Floor plans of the deck showing the length and width of the deck, beam location, post spacing, joist spacing and stair location. See the material description below: and type of lumber [pressure treated, redwood, cedar etc.]

General Information

- Zoning: A zoning permit application is required if a variance, conditional use permit or special evaluation is required for the project. Building permits will not be issued until all zoning requirements are reviewed and approved.
- Permit fees will be determined (before) / (after) the application and plans have been reviewed. Fees must be paid in full before a permit can be issued or work can begin.

- Excavations: Before digging footings call Gopher State One 48 hours in advance at 1-800-252-1166 or 651-454-0002 or 811 to verify the location of underground utilities.
- Footings: Footings must be a minimum ____below final grade. The base of the footing must be wide enough to transfer the weight of the deck to the soil, determine minimum base of footing. Posts must be pressure treated, redwood, cedar, concrete, or other approved material.
- Framing and connections: The joists and beams must be sized to support a 40# per sq. ft. live load. Framing support must also include vertical and lateral load support connections and restraints by using approved bearing practices, fasters, and connectors. Connection details for exterior decks are found in Section R507 of the 2020 Minnesota Residential Code. Connection details include deck post to deck footing, deck beam to supports, deck ledger connection to exterior wall band joists, deck joist bearing and decking connections.
- Guard: Residential decks 30" or more above adjacent grade must be protected by a guard with a minimum height of 36". Open guardrails shall have intermediate rails or ornamental pattern such that a 4" (four inch) sphere cannot pass through.
- Stairs/Residential: The minimum width of a stairway is 36" inches in width. The maximum rise on stairs is 7 3/4". The minimum run of the treads is 10". A handrail is required on all stairs with four or more risers. Open risers are permitted, provided that the opening between treads does not permit the passage of a 4-inch-diameter sphere.
- Handrails: A handrail is required on one side of a stairs with four or more risers. The handrail must be 34" to 38" high, be continuous and uninterrupted the full length of the stairs. All required handrails shall be one of the following types.
    - (TYPE 1) handrail with a circular cross section shall have an outside diameter not be less than 1 1/4 inches or more than 2 inches. If the handrail is not circular it shall have a perimeter dimension of at least 4 inches and not greater than 6 ¼ inches with a maximum cross-sectional dimension of 2 ¼ inches.
    - *(TYPE 2)* Handrails with a perimeter of greater than 6 ¼ inches shall provide a graspable finger recess area on both sides of the profiles. The finger recess shall begin within a distance of ¾ inch measured vertically from the tallest portion of the profile and the achieved depth of at least 5/16 inch within 7/8 inch below the widest portion of the profile. This required depth shall continue for at least 3/8 to a level that is not less than 1 ¾ inches below the tallest portion of the profile. The maximum width of the handrail above the recess shall be 1 ¼ to a maximum of 2 ¾ inches. Edges shall have a maximum radius of 0.01inch.
- Flashing and decking materials: Flashing and decking material types and location must be identified on construction plans when submitted for plan review approval. Installation of flashing and deck materials must follow manufacturer installation instructions and installation will be approved during inspection. Materials used for the construction of decks shall comply with section R507.2 of the 2020 Residential Code. Preservative-treated wood products in contact with the ground shall be labeled for such usage. Cuts, notches and drilled holes of preservative treated wood members shall be treated in accordance with section R317.1.1
- Special design note: Future porch, addition or hot tubs located on deck must have the increased material or accessory loads calculated into the design of footings, beams, and joists.

Required Inspections

- Footing inspection: Depth and size of footing holes to be approved before concrete is placed
- Framing/Final inspection: When all framing, stairs, hand, and guard rails are completed, both rough-in inspection and final inspection are completed at the same time. The inspector may require access to home's interior if lateral load connection devices used are connected to the interior house floor framing.
- To schedule an inspection call_____ hours in advance at xxx-xxx-xxxx, 8 a.m. to 4:30 p.m., Monday through Friday.

If you have any questions, please contact the Building Department, Monday through Friday, 8 a.m. to 4:30 p.m. at xxx-xxx-xxxx, or write to: Address, City, State, Zip Code and Phone Number

Sample

BASEMENT OR INTERIOR REMODELING PERMIT REQUIREMENTS

The following information must be submitted to the Building Department before a building permit can be processed and approved. A more detailed description of items 1 – 4 is listed below.

1. Building Permit Application Form

2. Building Plans (two copies)

3. General Information

4. Required Inspections

After a preliminary review additional information may be required. Allow_____working days for processing.

This handout is provided as guidelines and is not intended to be considered a complete set of requirements.

Permit Application

- Complete and sign a Building Permit Application Form. Application forms are available at the Building Department.

Building Plans

- Floor plan showing length and width of each floor and room dimensions, finished and unfinished areas, interior walls, beams, existing walls. Walls being removed, plumbing and mechanical fixtures and indicate on the floor plan how each area will be used, [bedroom, recreation room etc.]. Also size and location of egress windows, location of smoke and carbon monoxide alarms, ceiling height from finished floor, beams/ductwork, and headroom height at stairs.
- Foundation insulation, scope of proposed insulation method to be detailed on plan: Prescriptive insulation assemblies are provided in the 2020 Minnesota Energy Code Sections R402.1.1.3 Exterior Non-draining Foundation Insulation, R402.1.1.4 Interior Foundation Requirements, R402.1.1.5 Rigid Interior Insulation, R402.1.1.6 Spray-applied Interior Foam Insulation, and R402.1.1.7 Fiberglass batt Interior Foundation Insulation.
- Description of use: Provide a detailed written description of the work being done.

General Information

- Pressure treated wood sill plates must be used when in contact with concrete or masonry. IRC R317
- Minimum ceiling height is 6’-4” for alterations to existing basements (including beams, girders, ducts, or other obstructions) with habitable rooms, hallways, corridors, bathrooms, toilet rooms and laundry rooms. Section R305.2.1
- Minimum headroom height is 6’4” for alterations to existing stairs serving basements. R305.2.2
- Egress window shall be provided in each sleeping room that complies with the following:
    - A minimum net clear opening area of 5.7 square feet; minimum net clear opening height dimension of 24” and minimum net clear opening width dimension of 20”

    - A finished sill height of no more than 44” inches (See Emergency Escape Window Openings)
- If a building is protected with an automatic sprinkler system installed in accordance with IRC Section R2904 or NFPA 13D, then no emergency escape and rescue opening is required.
- See Emergency Escape Window Openings for more details
- Smoke alarms shall be located in each sleeping room, outside of each separate sleeping area in the immediate vicinity of the bedrooms and shall be interconnected in such a manner that the activation of one alarm will activate all of the alarms. Smoke alarms shall also be hardwired and have battery backup. Smoke alarms in existing areas may be solely battery operated when the alterations or repairs do not result in the removal of interior wall or ceiling finishes exposing the structure unless there is a crawl space or basement available which could provide access for hardwiring and interconnection without removal of interior finishes. Section R314.2 of the 2020 Minnesota Residential Building Code.
- Carbon monoxide alarms shall be located within 10 feet outside of each sleeping room in existing dwellings that have an attached garage or fuel-fired appliances. Carbon monoxide alarms shall be listed as complying with UL 2034 Section R315 of the 2020 Minnesota Residential Building Code (2020 MRBC).
- Enclosed accessible space under stairs shall have walls, under stair surface and any soffits protected on the enclosed side with minimum ½” gypsum board. Section R302.7 of the 2020 MRBC.
- Bathrooms
    - Each water closet shall be located in the center of a clear space not less than 30” in width and have a clear space in front of the water closet of not less than 24”.
    - Similar materials must be attached to each other, i.e., PVC must not be glued to ABS waste and vent.
    - An approved anti-scald (thermostatic or pressure-balancing type) faucet must be installed in new shower or shower/bath.
    - All clean-outs must be accessible.
    - Each bathroom shall be provided with a window opening or powered exhaust fan venting to the outside. Last 3’ of exhaust duct at discharge must be insulated (minimum R-3).
- Mechanical
    - Furnace shall have an unobstructed working space of not less than 30” in front and shall be provided with outside combustion air.
    - Furnace may not be accessed through or located in a bedroom or bathroom.
    - Compression fittings are not approved in gas piping applications.
    - No concealed flared or union gas fittings are allowed.
    - In warm air heating systems, an equal amount of air supply and return air shall be attained.
    - Proper clearance from furnace flue shall be maintained – a 1” clearance for a double wall type ‘B’ vent and a 6” clearance for single wall flue pipe.

Required Inspections

- Rough-in framing, mechanical, plumbing 5# air test, gas piping air test, and electrical rough-in inspected prior to installation of insulation and gypsum board. A smoke and carbon monoxide alarm placement inspection is also completed during the framing inspection.
- Insulation methods of interior insulated foundation system may require an inspection before framing.

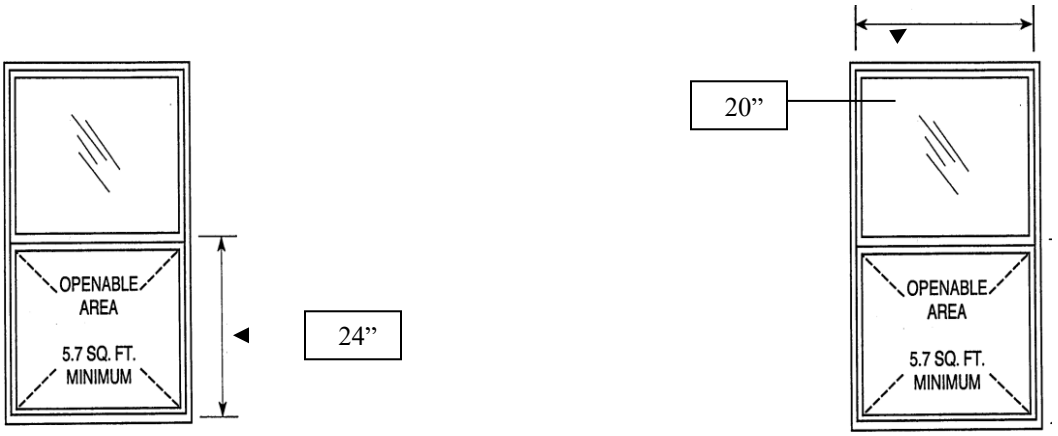
- Final inspections after all work is finished. Trade finals scheduled first, then electrical and building final inspection. The final inspection will include the testing of smoke and carbon monoxide alarms as well as existing areas of the dwelling.
- Electrical: Electrical wiring must be inspected and approved by an electrical inspector. Electrical permits may be issued locally or by the Minnesota Department of Labor and Industry. Call your local municipality/jurisdiction to verify where to apply for an electrical permit before work begins. To obtain a permit call xxx-xxx-xxxx. Check the Electrical Inspector Directory or your local municipality/jurisdiction for contact information to request an inspection or to answer electrical questions.
- For all inspections call **xxx-xxx-xxxx**, 24 hours in advance.

If you have any questions, please contact the Building Department, Monday through Friday, 8 a.m. to 4:30 p.m. at: **City Name Address, City, State, Zip and Phone Number**

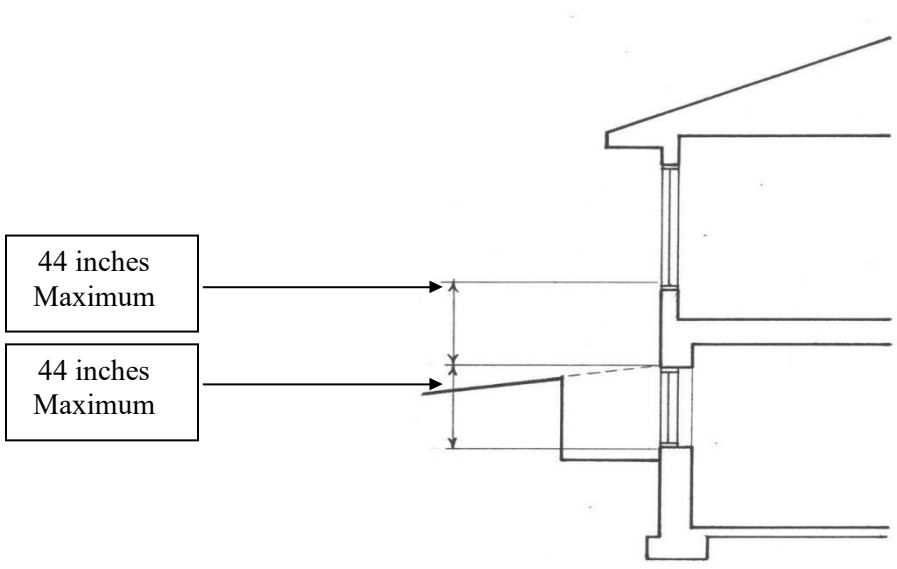
EMERGENCY ESCAPE WINDOW OPENINGS

All emergency escape and rescue openings shall have a:

- minimum net clear opening of 5.7 square feet.
- minimum net clear opening height shall be 24 inches.
- minimum net clear opening width shall be 20 inches.

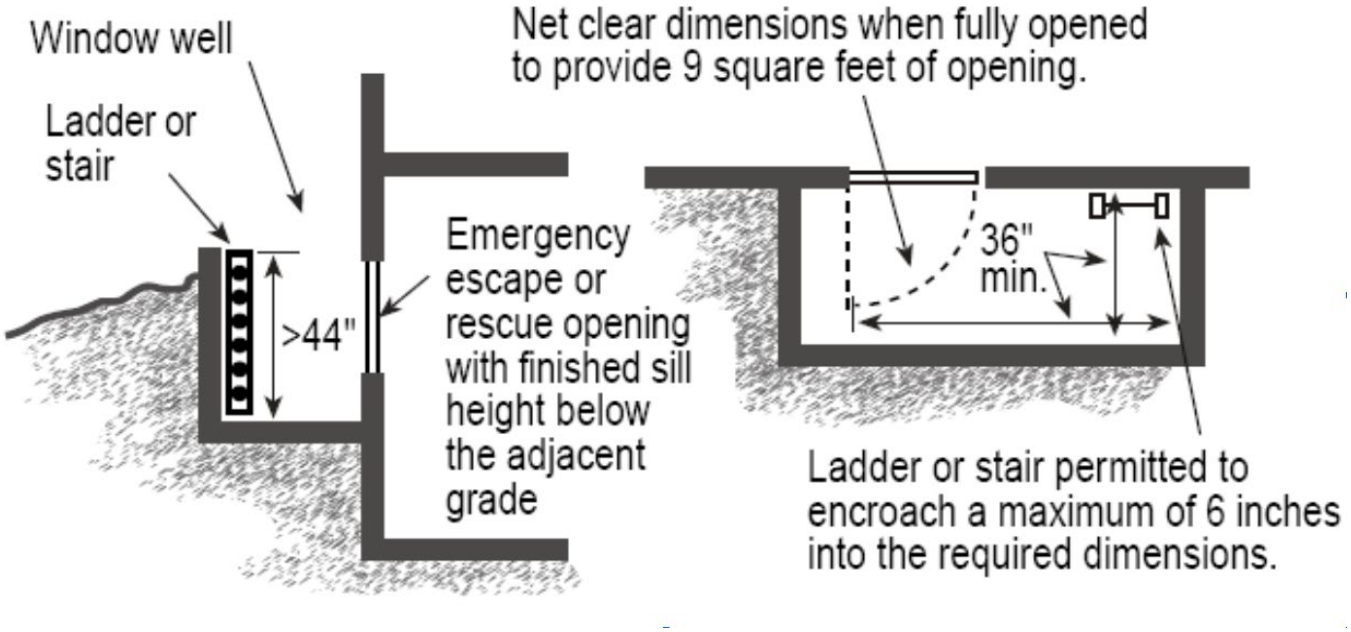


Exception: **Grade floor openings** shall have a minimum net clear opening of 5 square feet. Grade floor opening is a window or other opening located such that the sill height of the opening is not more than 44 inches (1118 mm) above or below the finished ground level adjacent to the opening.

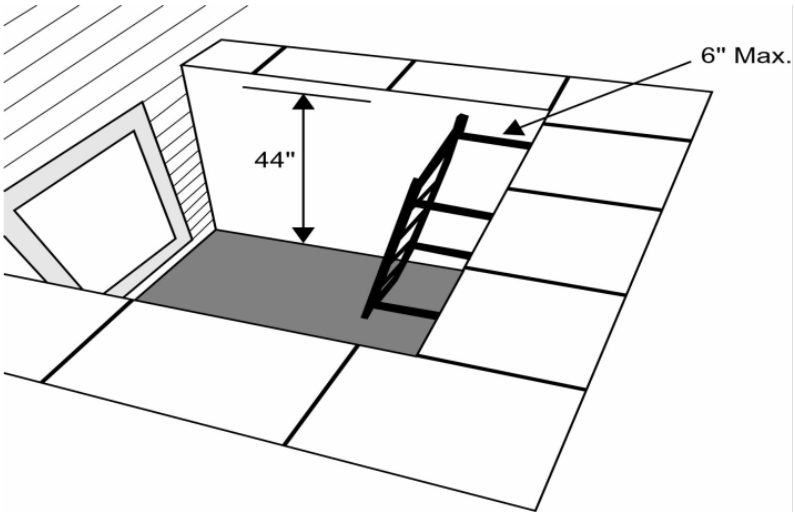


EMERGENCY ESCAPE AND RESCUE WINDOW WELLS

Window wells required for emergency escape and rescue shall have horizontal dimensions that allow the door or window of the emergency escape and rescue opening to be fully opened. The horizontal dimensions of the window well shall provide a minimum net clear area of 9 square feet with a minimum horizontal projection and width of 36 inches.



Window wells with a vertical depth greater than 44 inches shall be equipped with a permanently affixed ladder or steps usable with the window in the fully open position. The ladder or stairs shall be permitted to encroach a maximum of 6 inches.



Sample

ACCESSORY BUILDINGS AND GARAGE REQUIREMENTS

The following information must be submitted to the Building Department before a building permit can be processed and approved. A more detailed description of items 1 – 5 is listed below.

1. Building Permit Application Form

2. Survey or Site Plan (two copies)

3. Building Plans (two sets)

4. General Information

5. Required Inspections

After a preliminary review additional information may be required. Allow_____working days for processing.

This handout is provided as guidelines and is not intended to be considered a complete set of requirements.

Building Permit Application

- Complete a building permit application form. Forms are available at the Department of Building Safety. Building permits are required for proposed accessory structures exceeding 200 ft^2 floor area.

Survey or Site Plan

- Provide an updated plan of the property showing all property lines, road right of ways, easements, existing buildings [with dimensions] and project address or parcel identification number. Diagram the proposed building location, dimensions, and proposed setbacks from property lines. A registered certificate of survey may be required when deemed necessary.

Building Plans

- Elevation drawings [exterior views] of front, rear, sides of finished building. Indicate the finish materials of walls and roof, height from finished grade to the top of the sidewalls and peak.
- Section drawing [side, cutaway drawing] showing the details of the size and depth of footings, foundation/floor design, beam sizes and wall and roof construction.
- Floor plans of the garage floor showing the length and width of the garage, interior walls, plumbing and heating equipment, use of garage [car storage etc.], all window/door sizes and locations and header sizes, and size, spacing and direction of roof framing.

General Information

- Zoning: A zoning application may be required if a variance, conditional use permit or special evaluation is required. If the garage is for a use other than accessory storage to a dwelling contact the building official for additional requirements.

- Permit fees: Building and zoning fees will be determined before/after the application and required plans have been approved. Fees must be paid in full before a permit can be issued or work can begin.
- Footings: Detached garages may be placed on an approved floating slab.
- Firewall separation required: Garages attached to dwellings require a fire separation on the garage side of the common wall. The separation is required from the floor to the roof sheathing and common soffits. The separation material is typically one layer of ½" gypsum board [or equivalent]. If the firewall separation wall terminates at the ceiling, the ceiling shall have gypsum board installed and the walls supporting the ceiling shall have gypsum board applied. The doors or openings in the wall must be 1 3/8" solid wood or have a 20-minute fire label.
- Electrical wiring must be inspected and approved by an electrical inspector. Electrical permits may be issued locally or by the Minnesota Department of Labor and Industry. Call your local municipality/jurisdiction to verify where to apply for an electrical permit before work begins. To obtain a permit call xxx-xxx-xxxx. Check the Electrical Inspector Directory or your local municipality/jurisdiction for contact information to request an inspection or to answer.
- Excavations: Before excavating call Gopher State One 48 hours in advance at 651-454-0002, greater Minnesota call 1-800-252-1166, to verify the location of underground utilities, etc.

Required Inspections Miscellaneous

- Footing inspection [before concrete is poured]
- Framing
- Electrical wiring rough-in and final
- Final
- Additional inspections may be required if plumbing or mechanical systems are installed.
- For all inspections call xxx-xxx-xxxx ____ hours in advance.

If you have any questions, please contact the Building Department, Monday through Friday, 8 a.m. to 4:30 p.m. at: City Name Address, City, State, Zip and Phone Number

Sample

POLE BUILDING REQUIREMENTS

The following information must be submitted to the Building Department before a building permit can be processed and approved. A more detailed description of items 1 – 5 is listed below.

1. Building Permit Application Form

2. Survey or Site Plan (two copies)

3. Building Plans (two copies)

4. General Information

5. Required Inspections

After a preliminary review additional information may be required. Allow_____working days for processing.

This handout is provided as guidelines and is not intended to be considered a complete set of requirements.

Permit Application

- Complete and sign a building permit application. Forms are available at the building department.

Survey or Site Plan

- Provide an updated plan of the property showing the direction north, all property lines, road right of ways, easements, existing buildings [with dimensions], and proposed building location, dimensions, and proposed setbacks.

Building Plans

- Pole and post frame buildings do not meet the prescriptive requirements of the Minnesota Building Code, therefore these types of structures shall be designed to meet performance-based design requirements. The code official may approve performance-based designs if the code official finds that the proposed design is satisfactory and complies with the intent of the code, and that the material, method, or work offered is, for the purpose intended, at least the equivalent of that prescribed in the code in quality, strength, effectiveness, fire resistance, durability, and safety. The code official may require the owner or agent to provide a performance-based design, prepared by, and bear the stamp of, a Minnesota-licensed design professional competent in the area of work (MN Statute 1300.0110 Subdivision 14) when work does not follow an approved performance-based method.
- Section drawing [side, cutaway drawing] showing the footing width, thickness, and depth below grade, anti-wind lift for the pole, pole dimensions, wall construction, wind bracing, roof framing, purlin and girt spacing and grade of lumber, truss bracing and connection, roof covering material, energy efficiency design if provided, slab information if provided and interior finish.
- Floor plan showing length/width of building, post spacing, window/door locations, and header sizes. Include on the floor plan a written description of the use of all areas of the building.

- Elevation drawings of front, rear, and sides of finished building. Include sidewall height and height to peak from grade.
- Roof truss specifications: Provide two copies of the manufacturer's roof truss design [signed by a licensed engineer] showing the truss span, spacing, design snow load, dead loads, required bracing and spacing and grade of lumber for roof purlins. Check with the local building official before ordering trusses to determine the required snow load for the proposed use of the building.

General Information

- Typically pole buildings are permitted for residential accessory buildings. If the pole building is for a business, commercial, agricultural, or mixed use, contact the building department for additional requirements. If the buildings use changes in the future, the building official and the planning department must approve the use. Additionally, it must comply with all applicable ordinances and building codes.
- MN statutes 326b.103 defines an agricultural building as a structure on agricultural land; designed, constructed, and used to house farm implements, livestock, or agricultural products; and used by the owner, lessee, and sub-lessee of the building and members of their immediate families, their employees, and person engaged in the pickup or delivery of agricultural products. The Minnesota State Building Code does not apply to agricultural buildings except with respect to state inspections required or rulemaking authorized by Minnesota Statutes, sections *103F.141*, 326B.36, and *326B.121*, subdivision 1, paragraph (c), clause (2).

Required Inspections

- Footings [before concrete is placed]
- Framing inspection.
- Final inspection
- Additional inspections as needed.
- For all inspections call xxx-xxx-xxxx ____hours in advance.
- Electrical: Electrical wiring must be inspected and approved by an electrical inspector. Electrical permits may be issued locally or by the Minnesota Department of Labor and Industry. Call your local municipality/jurisdiction to verify where to apply for an electrical permit before work begins. To obtain a permit call xxx-xxx-xxxx. Check the Electrical Inspector Directory or your local municipality/jurisdiction for contact information to request an inspection or to answer questions.
- Excavations: Before excavating, call Gopher State One at 1-800-252-1166 or 651-454-0002 to verify the location of underground utilities, etc...

If you have any questions, please contact the Building Department, Monday through Friday, 8 a.m. to 4:30 p.m. at xxx-xxx-xxxx or write to City Name Address, City, State, Zip and Phone Number

Sample

BUSINESS/COMMERCIAL/INDUSTRIAL BUILDING REQUIREMENTS

The following information must be submitted to the Building Department before a building permit can be processed and approved. A more detailed description of items 1 – 5 is listed below.

1. Building Permit Application Form

2. Survey or Site Plan (two copies)

3. Building Plans (two sets)

4. General Information

5. Required Inspections

After a preliminary review additional information may be required. Allow_____working days for processing.

This handout is provided as guidelines and is not intended to be considered a complete set of requirements.

Building Permit Application

- Complete and sign a building permit application form. Forms are available at the department of building safety.

Survey or Site Plan

- Provide an accurate, detailed site plan of the property showing all property lines, road rights of ways, easements, existing buildings [include dimensions] and the address of the property **or** identification number. Diagram the proposed building location, dimensions and proposed setbacks from property lines, existing buildings, and all topographical features. A registered certificate of survey may be required.

Building Plans

- Some business/commercial/industrial use structures may be required by the building official and/or state statute to be prepared by and signed by a Minnesota-licensed architect, structural engineer, and mechanical engineer. Contact the building official to determine if your building requires these design professionals.
- A Code Analysis or Code Summary is a separate graphic and written record of the significant code compliance features of a project prepared by the licensed design professional. It is intended to provide a succinct summary description of major code required life-safety components.
- Elevation drawings [exterior views], of front, rear, and sides of the finished building.
- Floor plans of the basement and each floor showing the dimensions of the building, interior rooms and use of each room, window and door locations, interior walls, header sizes, stairs and plumbing and mechanical equipment.

- Section drawings [side cutaway view] showing the details of the footing, foundation construction with damp proofing and insulation, floor, wall, and roof construction.
- Plumbing plans must be submitted to and approved by the Minnesota Department of Labor and Industry, Plumbing Division. Provide the Minnesota Department of Health's letter of approval and two sets of plumbing plans to the city.
- Mechanical plans, specifications, and energy code calculations.

General Information

- Pre-construction meeting: A meeting with the city staff should be scheduled to determine if the proposed use is permitted by the zoning, building and municipal ordinances.
- Special inspections: IBC Chapter 17 requires the owner, architect, or engineer of record to indicate what special inspections are required [if any] and who will be performing the special inspections, subject to the approval of the building official.
- General zoning: Check with the jurisdiction to determine if a variance, conditional use permit or special evaluation is required.
- Permit fees will be determined after the application and plans have been reviewed. Fees must be paid in full before a permit can be issued or construction can begin.
- Excavations: Prior to excavating call Gopher State One, 48 hours in advance at 651-454-0002 or 1-800-252-1166 to verify the location of underground utilities etc.
- Gas and electric utilities: Contact your local utility for specific requirements.

Required Inspections

- Footings, after forms are in place but prior to placement of concrete, gravel, or sand.
- Foundations, prior to backfilling and as deemed necessary by the building official and design professionals.
- Plumbing 5# air test of all waste and vent piping prior to covering, contact the Minnesota Department of Labor and Industry Plumbing Division and then the local building official with inspection requests.
- Fireplaces and masonry chimneys rough-In; for prefabricated when framing is complete; for masonry fireplaces when the throat is set; masonry chimneys when starting.
- Mechanical rough-in when complete, prior to covering.
- Gas piping must hold 25# of air for 1/2 hour, all piping and fittings must be exposed for inspection.
- Framing/structural when all the framing is complete. Structural masonry, concrete, etc.
- Insulation when the insulation, vapor barrier, fire stopping, and draft stopping is in place.
- Plumbing manometer test of all the waste and vent piping after all fixtures are set, contact the Minnesota Department of Health for inspection requests, then the local building official.
- Special inspections of soils, concrete, welding, bolting, fire resistive construction and similar components. The building official, architect and engineer of record shall indicate what special inspections are required. An inspector approved by the building official must perform the special inspections and file copies of all reports with the building official.

- Depending on the project inspection of exterior and interior wall finish, fire suppression systems, alarms, elevators, fires topping etc.
- Final when the structure is complete, and the required inspections have been approved.
- A certificate of occupancy is required before the structure can be occupied. All the required building inspections must be completed and approved, the septic system installed and inspected, and final approval received from the state electrical inspector.
- Electrical wiring must be inspected and approved by an electrical inspector. Electrical permits may be issued locally or by the Minnesota Department of Labor and Industry. Call your local municipality/jurisdiction to verify where to apply for an electrical permit before work begins. To obtain a permit call xxx-xxx-xxxx. Check the Electrical Inspector Directory or your local municipality/jurisdiction for contact information to request an inspection or to answer For all inspections call xxx-xxx-xxxx ____ hours in advance.

If you have any questions, please contact the Building Department, Monday through Friday, 8 a.m. to 4:30 p.m. at: City Name Address, City, State, Zip and Phone Number

The following is a portion of the statutes that regulate excavations in Minnesota. Municipalities should contact Gopher State One Call to obtain copies of the display and informational handouts that are required to be displayed. Metro area call: 651-454-0002, greater Minnesota: 1-800-252-1166 or 811 or visit www.gopherstateonecall.org

MINNESOTA STATUTE 216D.02 NOTICE TO EXCAVATOR OR OPERATOR

Subdivision 1. Display and distribution

- Local governmental units that issue permits for an activity involving excavation must continuously display an excavator's and operator's notice at the location where permits are applied for and obtained. An excavator and operator's notice and a copy of sections 216D.03 to 216D.07 must be furnished to each person obtaining a permit for excavation.

Subdivision 2. Form

- The notification center shall prescribe an excavator and operator's notice. The notice must inform excavators and operators of their obligations to comply with sections 216D.03 to 216D.07. The center shall furnish to local governmental units:
  - a copy of the notice and sections 216D.03 to 216D.07 in a form suitable for photocopying;
  - a copy of the display and distribution requirements under subdivision 1; and
  - the telephone number and mailing address of the notification center.
- History: *1987 c 353 s 8*

ELEVATOR INSTALLATIONS AND ALTERATIONS

Minnesota Administrative Rules Chapter 1307 governs the design, installation, alteration, repair, removal, operation, and maintenance of various types of elevators and conveying equipment. The Minnesota Elevator Code adopts standard codes for equipment used as, but not limited to passenger elevators, freight elevators and escalators.

A person, firm, or corporation that seeks to install, alter or remove an elevator shall first obtain a permit from the Minnesota Department of Labor and Industry Elevator Inspection Department, or with a municipality that is authorized by law to issue a permit, before beginning installation, alteration or removal.

An application for a permit must be submitted to the authorized municipality. Plans and specifications describing the permitted work must be submitted with the application for a permit. A permit will be issued to the applicant when the plans and specifications have been approved and the appropriate permit fees have been paid. A permit issued by the department is valid for work commenced within 12 months of application and completed within two years of application. Where no work is commenced within 12 months of application, an applicant may cancel the permit and request a refund of inspection fees. An elevator permit becomes invalid if the work has not started within 180 days after issuance or if the work is suspended or abandoned for more than 180 days after the work has commenced.

Create an account and pay fees

Visit the new online system for plan reviews and permits and select "Register as a New User" to create an account. You'll receive a verification email to complete the validation process. If you don't receive the email within 15 minutes, check your spam/junk folder. The verification link is valid until midnight the day of registration. If you do not validate your account by midnight, you will need to re-register your email address. View step-by-step instructions.

- An elevator that passes department inspection will be issued an operating permit by the department. Renewal of the operating permit is required on an annual basis except in private residential applications.
- Vertical Reciprocating Conveyors are a classification of freight lifts, or material lifts, governed by the ASME B20.1 Safety Standard, used for moving materials only from one level to another. They are subject to filing and inspection fees for new and altered installations but are exempt from routine inspection by an elevator inspector.

CHAPTER 11 - LICENSING AND ENFORCEMENT

Residential contractor licensing is administered through the Licensing and Certification unit, a part of the Construction Codes and Licensing Division (CCLD). This chapter will provide links to licensing laws and to CCLD website links on licensing regulation and enforcement for residential building contractors, remodelers and roofers.

MINNESOTA LAWS THAT GOVERN RESIDENTIAL BUILDING CONTRACTORS

Licensing requirements: Minnesota Statute § 326B.802 -.89
Enforcement: Minnesota Statue §§ 326B.082 and 326B.89
Statutory warranty: Minnesota Statue § 327A
Contractor registration: Minnesota Statue § 326B.701
Worker classification: Minnesota Statue § 181.723
Prohibition against rebating insurance deductibles: Minn. Stat. § 325E.66

Who needs a license? A building contractor, remodeler, or roofer that contracts directly with a homeowner of residential real estate to provide building construction or improvement services in more than one skill area.

- A residential remodeler can only perform work on existing structures. A residential building contractor can perform work on both new and existing structures. A residential roofer can perform work only on roof coverings, roof sheathing, roof weatherproofing and insulation, and repair of roof systems, but not construction of new roof systems.

CONSTRUCTION CONTRACTOR REGISTRATION

Subcontractors who do not contract with the homeowner and provide only one special skill must register through the Contractor Registration Program. Individuals who provide residential or commercial building construction or improvement services are required to register if they do not hold a contractor's license.

If contractors are performing any construction work for which a license, certification or separate registration is required under Minnesota Statutes 326B, they must apply for the applicable license instead of submitting a construction contractor registration.

Who does not need a contractor license?

Subcontractors who do not contract with the homeowner, yet they must register with DLI through the Contractor Registration Program;
Commercial contractors, though they must register with DLI through the Employees of a licensed contractor;
Contractors who work on residential buildings with more than four units;

Material suppliers who do not install or attach the items they sell;

Owners doing work on their own property (unless they are building or improving properties they own for purposes of resale or speculation);

Architects or engineers doing work within the scope of their practice;

Residential building contractors whose gross annual receipts from their residential activities are less than $15,000 and have a Certificate of Exemption. Gross annual receipts are the total amount derived from residential contracting or remodeling activities, regardless of where the activities are performed, and must not be reduced by cost of goods sold, expenses, losses, or any other amount.

What is a special skill area?

A contractor who provides services in more than one special skill area must be licensed. Specialty contractors who provide only one special skill are not required to have a state license (except residential roofers).

NOTE: Specialty contractors are NOT required to obtain a certificate of exemption from DLI. Only those grossing less than $15,000 a year are required to have a certificate of exemption.

See list of Special Skill areas listed in eight categories found in Minnesota Statutes 326B.802 DEFINITIONS, Subdivision 15. **Special skill.**

"Specialty contractor" means a person in the business of contracting or offering to contract to build or improve residential real estate by providing only one special skill as defined in this section.

HOMEOWNERS PULLING THEIR OWN PERMITS

By law, municipalities are required to check a contractor's license status before issuing any building permit, but homeowners are able to pull building permits for work on their own homes. However, homeowners must be licensed as a residential building contractor or remodeler if they are building or improving for purposes of speculation and are doing at least some of the work themselves. By law, a homeowner is presumed to be building or improving for speculation if they build or improve more than one residential property in any 24-month period and do at least some of the work themselves.

Homeowners may directly apply for and be issued a building permit to have licensed or unlicensed workers provide contract services for convenience or to reduce project costs. It is recommended that the municipality have the homeowner sign a waiver form (example on next page) on which the homeowner attests to the fact that they aware Minnesota has a residential building contractor license requirement, that they are doing the work themselves, that they are not improving the home for purposes of speculation, that they understand that they will be personally responsible for code compliance, and that they understand the consequences of hiring an unlicensed contractor.

Use of this form is not required by law but can be helpful in the event the homeowner has hired an unlicensed contractor, runs into problems, and seeks assistance from the municipality and/or DLI. If you use this form, you may make changes to it to suit your needs since it is not mandated by law. Be sure it is maintained with the permit records for the property.

Property Owner Waiver

Permit Number -

Minnesota State Contractor Licensing Requirements

The purpose of this form is to have property owners acknowledge their responsibilities with respect to the Minnesota State Building Code, state licensing requirements, municipal zoning ordinances, and to other applicable rules and regulations when they are acting as general contractor in building projects.

I understand that the State of Minnesota requires that all residential building contractors, remodelers, roofers, and owners improving residential real estate for purposes of speculation obtain a state license unless they qualify for a specific exemption from the licensing requirements. By signing this waiver, I attest to the fact that I am building or improving my property by myself. I claim to be exempt from the state licensing requirements because I am not in the business of building or improving homes for speculation, and this is the first residential structure that I have built or improved in the past 24 months.

I acknowledge that I may be hiring independent contractors to perform certain aspects of the construction or improvement of this property. Some of these contractors may be required to be licensed by the State of Minnesota. I understand that unlicensed residential contracting, remodeling, and/or roofing activity is a misdemeanor under Minnesota State Statute 326.92, subdivision 1, and that I forfeit my rights to reimbursement from the Contractor Recovery Fund in the event that any contractors that I hire are unlicensed.

I also acknowledge that as the contractor on this project, I am solely and personally responsible for any violations of the State Building Code and/ or jurisdictional ordinance in connection with the work performed on this property.

_____
Signature or Property Owner

_____

_____
Project Address

_____
Date

Please return this signed waiver with the Building Permit Application

To determine whether a particular contractor is required to be licensed check on the licensing status of an individual contractor or call the Minnesota Department of Labor and Industry, Licensing Division at 651-284-5069, or toll-free at 1-800342-5354.

MINNESOTA PLUMBING LICENSING BASICS WEBSITE INFORMATION

Plumbing license basics on the Department of Labor and Industry website

Who can perform plumbing work in Minnesota and perform work without a license?

- How do I become a registered unlicensed plumber in Minnesota?
- To renew your registration as an unlicensed plumber

How do I become licensed journeyworker plumber in Minnesota?

Journey worker plumber license

- Credit for work experience
- The exam
- License renewal

Master plumber license

- Work experience
- The exam
- License renewal

Plumbing Contractor Licensing Basics on the Department of Labor and Industry website

Businesses and individuals that contract to work on "plumbing systems" in Minnesota

- "Plumbing systems"
- Restricted plumbing contractors permitted based on community population
- Employees who perform plumbing work licensing
- General contractors and construction management firms that contract with licensed subcontractors to perform plumbing work are not required to hold their own plumbing contractor license

Identify a "responsible license individual" (RLI) for a company's license

- provide proof of a public liability insurance policy
- provide a $25,000 surety bond
- Complete application form and pay fees

What are my responsibilities as a RLI plumbing contractor?

- Ensure that all employees who perform plumbing work are always actively licensed or registered
- Ensure that unlicensed employees are always supervised
- Submit plumbing plans for review by DLI or applicable municipality prior to beginning work on all commercial projects
- Obtain all required permits for plumbing work performed by company employees
- Call for all required inspections, but only when work is ready to be inspected
- Maintain accurate records of the work experience of all unlicensed employees
- Notify DLI in writing of the loss of your RLI within 15 days
- Make sure your company's license number appears on all company vehicles
- Ensure your contractor license is renewed in a timely manner

What is "direct supervision" per Minnesota Statute 326B.42, subdivision 2?

WATER CONDITIONING LICENSE BASICS WEBSITE INFORMATION

Water conditioning license basics on the Department of Labor and Industry website

- What is water conditioning work?
- Who can perform water conditioning work in Minnesota?
- Who can perform water conditioning work without a license?
  - Registering as an unlicensed water conditioner
  - Registration renewal as an unlicensed water conditioner
- How to obtain a water conditioning journey worker exam and license
  - Credit for work experience
  - The exam
  - License renewal

How to obtain a water conditioning master exam and license

- Water conditioning work experience
- The exam
- License renewal

MECHANICAL CONTRACTOR BOND REQUIREMENTS INFORMATION

While there is no state license requirement for mechanical contractors, they are required to file a $25,000 mechanical contractor bond with DLI in order to contract to perform gas, heating, ventilation, cooling, air conditioning, fuel burning or refrigeration work in Minnesota.

Mechanical contractor bond requirements on the Department of Labor and Industry website

- Forms for Individuals performing mechanical work
- List of code books used for mechanical work

ELECTRICAL LICENSING BASICS ~~WEBSITE INFORMATION~~

Electrical licensing basics on the Department of Labor and Industry website

Who can perform electrical work in Minnesota?

- When you are a licensed electrical contractor, employee of a licensed electrical contractor or registered as an unlicensed electrician.
- A registered unlicensed electrician work is directly supervised at all times by a licensed journeyworker or master electrician.

- A licensed employee of one company cannot supervise the unlicensed employees of another company.
- A licensed electrician may not supervise more than two unlicensed individuals

Electrical work is defined as the installing, altering, repairing, planning, or laying out of electrical wiring, apparatus, or equipment for electrical light, heat, power, technology circuits or systems, or other purposes.

- How to register as an unlicensed electrician
  - Application
  - License renewal
- How to obtain a journeyworker electrician license
  - Credit for work experience
  - The exam
  - License renewal
- How to obtain a master electrician license
  - Credit for work experience
  - The exam
  - License renewal

ELECTRICAL CONTRACTOR LICENSING BASICS

Electrical contractor licensing basics on the Department of Labor and Industry website

Who can contract to electrical work in Minnesota?

General contractors and construction management firms that contract with licensed subcontractors to perform electrical work are not required to hold their own electrical contractor license.

How do I get an electrical contractor license?

- Identify a "responsible license individual" (RLI) for a company's license
- Your RLI must: Hold an active master electrician license, and
- Be an owner, officer, or member of the business applying for the license, or a W-2 employee
- Not act as the RLI for any other electrical contractor or employer
- Be responsible for all electrical work performed by the company's employees
- You must provide proof of a public liability insurance policy
- Policy must be written by a Minnesota insurance company

You must provide a $25,000 surety bond

What are my responsibilities as a licensed electrical contractor?

- Ensure that all employees who perform electrical work are always actively licensed or registered
- Ensure that unlicensed employees are always supervised
- Obtain all required permits for electrical work performed by company employees
- Call for all required inspections, but only when work is ready to be inspected
- Maintain accurate records of the work experience of all unlicensed employees
- Notify DLI in writing of the loss of your RLI within 15 days

- Make sure your company's license number appears on all company vehicles
- Ensure your contractor license is renewed in a timely manner

What is an "employee" per Minnesota Rule 3800.3500, subpart 3?

BUILDING CONTRACTOR COMPLAINT PROCESS

What authority does DLI have?

DLI has the authority to investigate complaints against contractors and take administrative enforcement action against contractors who are determined to have engaged in violations of the laws and rules over which DLI has authority. DLI does not have authority to make legally binding determinations on either party in cases of factual or contractual disputes, and cannot order contractors to make corrections, cancel contracts, or pay specific damages. These remedies are to be pursued through private, civil action (litigation, arbitration, mediation, etc.). Consumers who are successful in litigation against a licensed contractor may be eligible for compensation for their direct out-of-pocket losses through the Contractor Recovery Fund, which our department administers as the consumer protection component of its contractor licensing program.

DLI cannot take action against a contractor based on workmanship complaints unless the contractor refuses to correct a violation of the State Building Code that has been documented by a certified building official or other municipal code enforcement official.

Who can I contact with questions about a contractor, remodeler, or roofer?

To get information about the complaint filing process, check a contractor's enforcement record or ask general questions regarding the licensing and regulation of residential building contractors contact: Construction Codes and Licensing Division's Enforcement Services

Phone: 651-284-5069
E-mail: DLl.contractor@state.mn.us

Who can file a complaint?

Consumers
Building officials/inspectors
Licensees
Industry representatives
Attorneys
Law enforcement agencies
Any person who has a complaint against someone regulated by CCLD

DLI is authorized to take disciplinary action if the licensee, unlicensed contractor, or license applicant has:

filed an application for a license which is false or misleading.
engaged in fraudulent, deceptive, or dishonest practice.
is permanently or temporarily ordered by the courts from engaging in or continuing any part of the business.
failed to reasonably supervise employees, agents, subcontractors, or salespersons, or performed negligently or in breach of contract so as to cause injury or harm to the public.
failed to comply with any provision of the licensing law.
been shown to be incompetent, untrustworthy, or financially irresponsible.
been convicted of a violation of the State Building Code, or, if the work was performed in a non-code area, refused to correct a violation of the state building code as certified by a state-certified building official
misused or converted client funds or failed to use the proceeds of any payment for the payment of labor, skill, material, and machinery contributed to the construction or improvement.
forged lien waivers or has failed to furnish valid lien waivers to the person making payment.
engaged in conduct which was the basis for a recovery fund payment and the payment has not been reimbursed.
engaged in bad faith, unreasonable delays, or frivolous claims in defense of a civil lawsuit or arbitration.
has had a judgment entered against them for failure to make payments to employees, subcontractors, or material suppliers, and all appeals of the judgment have been exhausted or the period for appeal has expired.
if unlicensed, obtaining a building permit by the fraudulent use of a fictitious license number or the license number of another, or, if licensed, has knowingly allowed an unlicensed person to use the licensee's license number for the purpose of fraudulently obtaining a building permit.

What type of action can DLI take against a contractor?

Deny a license applicant
Issue Administrative Orders (to unlicensed contractors) requiring them to stop acting as a contractor until a license is obtained
Censure a licensee
Suspend a license
Revoke a license
Impose monetary penalties (up to $10,000 per violation).

What is DLI unable to do regarding contractor complaints?

Generally speaking, DLI cannot:

Order a contractor to perform corrective work.
Order a contractor to cancel a contract or pay damages.
Impose settlements of contractual disputes.

What happens once a complaint is filed?

Investigative file is opened and assigned to an investigator.
Complaint is logged into computer system and maintained indefinitely.
Investigator receives and reviews file.
If investigator determines that the complaint is outside DLI's authority, parties receive notification of this determination.
If the complaint is deemed to be within DLI's investigative authority, the contractor is sent a copy of complaint and must provide written response to investigator – usually within 15 days.
Response from licensee is reviewed and investigator determines if additional information is necessary. Response of licensee may be sent to complaining party for comment and review.
Investigator gathers available information from sources.
Once all available facts are gathered, investigator makes a determination if there is a violation of the law.
If insufficient evidence is available to prove a violation, the file is closed. The complaining party and licensee are notified in writing of the conclusion of the investigation.
If a violation of law has occurred, the investigator prepares an investigative memorandum detailing the investigation and recommends the appropriate administrative disciplinary action.
If action is taken, the investigator notifies the complaining party, in writing, of the action taken, once the action itself becomes a matter of public record (after all appeals have run or been exhausted).

What authority does DLI have to obtain information during an investigation?

DLI is authorized under Minn. Stat. §326B.082 to obtain information through several methods:

Conduct investigations within and outside of Minnesota.
Request written statements, sworn or unsworn.
Examine records: DLI has free access to records and files of licensed or unlicensed persons and entities.
Issue Orders to Appear requiring the subject of the investigation to appear in person at DLI offices.
Compel production of evidence by issuing subpoenas or requiring sworn statements.

How can a licensee resolve a disciplinary action sought by DLI?

If DLI seeks a disciplinary action, the licensee can:

A. Enter into a Consent Order: A written agreement voluntarily entered into by the licensee and the department, in which the licensee agrees to the terms of the action; or

B. Request a hearing: If DLI issues a Licensing Order or an Administrative Order, the subject of the order may request a hearing to contest DLI's action. If a hearing is requested, DLI's file is forwarded to the Attorney General's Office and a Notice of and Order for Prehearing conference is issued and a conference is scheduled. The purpose of the conference is to explore potential settlement of the case or if settlement is not possible, to schedule a hearing and determine how much time may be needed for the hearing.

At the hearing, DLI and the subject of the order present their case to an Administrative Law Judge (AU) at the Office of Administrative Hearings, an independent state agency located in St. Paul. DLI is represented by the Attorney General's Office and the subject of the order has the right to be represented by their own legal counsel.

After the hearing (usually within 30 days), the AU issues a written Findings of Fact, Conclusions of Law, and Recommendation indicating whether or not DLI met its burden of proof (a preponderance of the evidence). The subject and DLI are notified of the AU's Recommendation and are allowed 10 days to file exceptions with DLI's commissioner, who has the final decision-making authority. The commissioner then issues a final Findings of Fact, Conclusions of Law, and Order which will affirm, modify, or vacate the underlying Administrative or Licensing Order.

The subject of the order has the right to appeal the commissioner's decision to the Minnesota Court of Appeals.