

## SINGLE FAMILY DWELLING PERMIT REQUIREMENTS

The following information must be submitted to the Building Department before a building permit can be processed and approved.

1. **Building Permit Application Form.**
2. **Survey or Site Plan [two copies].**
3. **Building Plans [two sets].**
4. **Energy Code Compliance Forms.**
5. **Mechanical Code Compliance Forms**
6. **Septic System Permit**
7. **Erosion Control Plan**
8. **Miscellaneous as required.**

A more detailed description of items 1-6 is listed below.

1. **BUILDING PERMIT APPLICATION:** Complete and sign a Building Permit Application form. Forms are available at the Department of Building Safety.
2. **SURVEY OR 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 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 when deemed necessary by the department.
3. **BUILDING PLANS:**
  - **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 house, interior rooms and use of each room [bedroom, bathroom etc.], window and door locations [safety glazing if required], interior walls, header sizes, stairs and plumbing and mechanical equipment.
  - **Section Drawings** [side cutaway view] showing the details of the footing, foundation construction with a drainage system, parging and dampproofing or waterproofing and insulation, floor, wall and roof construction. Provide copies of the floor and roof truss specifications prepared and stamped by a MN licensed engineer [some cities may allow them to be provided later at the framing inspection].
  - Include plans for decks and garage if applicable.
4. **ENERGY CODE COMPLIANCE FORM:** Complete an Energy Code Compliance Form to verify compliance with the MN Energy Code, [both the building envelope and mechanical pressurization form are required].
5. **MECHANICAL CODE COMPLIANCE FORMS:** Provide calculations for combustion air, make-up air and ventilation air.

6. **SEPTIC SYSTEM PERMIT:** A Minnesota Pollution Control Agency Licensed Designer must provide a completed Septic Permit Application, soils report and site plan for the primary and alternate site. If there is an existing septic system that is proposed for the new dwelling a Certificate of Compliance completed by a Licensed Designer I or Licensed Inspector and a completed Pumping Certificate is required.
7. **EROSION CONTROL PLAN:** Complete the attached erosion control plan.
8. **Miscellaneous:**

**Fireplace:** Masonry fireplaces must be installed and inspected to code, prefabricated fireplaces installed per manufacturers installation instructions, provide installation instructions on-site for a rough-in and final inspection.

**General Zoning** requirements must be met, contact the Township Zoning Administrator for specific requirements, phone (763) 389-3487 or 1-800-851-3383. A Zoning permit application is required if a variance, conditional use permit or special evaluation is required. Building permits will not be issued until all zoning requirements are approved.

**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 work can begin.

**Electrical wiring** must be inspected and approved by an Electrical Inspector. To obtain a permit call Ron Edel at (507) 334 3748 between 7:00 am and 8:30 am, Monday through Friday.

## **GENERAL INFORMATION**

**A Certificate of Occupancy** is required before the house can be occupied. All the required inspections must be completed and approved including final approval from the Electrical Inspector.

### **Required Inspections:**

1. **Footings**, after the forms and re-enforcing are in place but prior to placement of concrete.
2. **Foundations**, block and wood foundations 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. Dampproofing and parging or waterproofing and a perimeter drainage system must be in place for inspection.
3. **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.
4. **Mechanical Rough-in**, when all ducting, furnace and mechanical equipment is installed (prior to covering)
5. **Gas Piping**, a 25# air test for twelve hours is required, all piping must be visible.

6. **Fireplaces, Masonry Chimneys and Woodstoves**, for pre-fabricated fireplaces call for inspection when framing is complete, masonry chimneys and fireplaces when setting the throat, woodstoves when set, provide the manufacturer's installation instructions on site.
7. **Framing**, when all the framing is complete and all plumbing, mechanical is installed.
8. **Energy**, when the insulation, vapor retarder and attic ventilation is complete before covering.
9. **Plumbing manometer test** of the waste and vent piping.
10. **Final** when the house is complete, final electrical inspection is completed and all other inspections have been approved.

## **FOR INSPECTIONS CALL 24 HOURS IN ADVANCE**

**Excavations**, prior to excavating call Gopher State One, 48 hours in advance at (651)-454-0002 or for Greater Minnesota 1-800-252-1166, to verify the location of underground utilities etc.

**Gas and Electric Utilities**, contact your local utility for specific requirements.

If you have any questions, please contact the Zoning Administrator, Monday through Friday, 8:00 am and 4:30 pm.

Jim Braun, Zoning Administrator  
Office of Planning & Zoning  
2428-115<sup>th</sup> Avenue  
Princeton, Minnesota 55371-6200

Metro: 763-389-3487  
Toll Free: 1-800-851-3383  
Cellular: 612-282-9496  
Fax: 763-389-9587

# BUILDING PERMIT APPLICATION

|          |
|----------|
| PERMIT # |
| TOWNSHIP |

**TOWNSHIP ZONING OFFICE**  
**2428-115<sup>TH</sup> AVENUE**  
**PRINCETON, MINNESOTA 55371**  
**OFFICE (763) 389 3487 1-800-851-3383**  
**FAX (763) 389-9587**

|        |
|--------|
| PIN #  |
| FIRE # |

| GENERAL INFORMATION TO BE COMPLETED BY APPLICANT   |     |       |                          |       |                       |                        |
|--|-----|-------|--------------------------|-------|-----------------------|------------------------|
| PROPERTY ADDRESS   |     |       |                          |       |                       |                        |
| LEGAL DESCRIPTION  |     |       |                          |       |                       |                        |
| SEC  | TWP | RANGE | LOT                      | BLOCK | SUBDIVISION OR QTRQTR | ACRES                  |
| NOTE: IF PROPERTY IS A METES AND BOUNDS DESCRIPTION ATTACH COPY OF EXACT LEGAL   |     |       |                          |       |                       |                        |
| PROPERTY OWNER NAME  |     |       | ADDRESS—CITY, STATE, ZIP |       |                       | (TEL. NO.)             |
|  |     |       |                          |       |                       | HM.                    |
| CONTRACTOR NAME  |     |       | ADDRESS                  |       | STATE LICENSE NO.     | (TEL. NO.)             |
| ARCHITECT/DESIGNER   |     |       | ADDRESS                  |       |                       | (TEL. NO.)             |
| TYPE OF WORK   |     |       |                          |       |                       |                        |
| <input type="checkbox"/> NEW <input type="checkbox"/> ADDITION <input type="checkbox"/> ALTERATION <input type="checkbox"/> REPAIR <input type="checkbox"/> MOVE <input type="checkbox"/> REMOVE       |     |       |                          |       |                       |                        |
| TYPE OF STRUCTURE  |     |       |                          |       |                       |                        |
| <input type="checkbox"/> SINGLE FAMILY <input type="checkbox"/> ACCESSORY <input type="checkbox"/> COMMERCIAL <input type="checkbox"/> OTHER   |     |       |                          |       |                       |                        |
| USE OF BUILDING  |     |       |                          |       |                       |                        |
| TYPE OF WORK   |     |       |                          |       |                       |                        |
| <input type="checkbox"/> WOOD FRAME <input type="checkbox"/> MASONRY <input type="checkbox"/> METAL <input type="checkbox"/> POLE TYPE <input type="checkbox"/> PRE FAB <input type="checkbox"/> OTHER |     |       |                          |       |                       |                        |
| TOTAL SQUARE FEET  |     |       | ESTIMATED VALUE OF WORK  |       |                       | TYPE OF HEATING SYSTEM |
|  |     |       | \$                       |       |                       |                        |

I HEREBY APPLY FOR A BUILDING PERMIT AND ACKNOWLEDGE THAT THE INFORMATION ABOVE IS COMPLETE AND ACCURATE; THAT THE WORK WILL BE IN CONFORMANCE WITH THE ORDINANCES AND CODES AND WITH THE MINNESOTA BUILDING CODES; THAT I UNDERSTAND THIS IS NOT A PERMIT BUT ONLY AN APPLICATION FOR A PERMIT AND WORK IS NOT TO START WITHOUT A PERMIT; THAT THE WORK WILL BE ACCORDANCE WITH THE APPROVED PLAN.

NAME OF APPLICANT \_\_\_\_\_ DATE \_\_\_\_\_

| OFFICE USE ONLY   |                 |           |           |            |           |
|---|-----------------|-----------|-----------|------------|-----------|
| ZONING ADMINISTRATOR  |                 |           |           |            | DATE      |
| <input type="checkbox"/> APPROVED <input type="checkbox"/> DENIED   |                 |           |           |            |           |
| SUBJECT TO EXISTING REGULATIONS AND THE FOLLOWING MINIMUM SETBACKS: |                 |           |           |            |           |
| ROAD ROW  | CENTERLINE ROAD | SIDE YARD | REAR YARD | LAKE/RIVER | BLUFFLINE |
| DISTRICT  | COMMENTS        |           |           |            |           |
|   |                 |           |           |            |           |
|   |                 |           |           |            |           |
|   |                 |           |           |            |           |
|   |                 |           |           |            |           |

|   |  |               |                       |  |  |
|---|--|---------------|-----------------------|--|--|
| BUILDING OFFICIAL   |  |               | BUILDING PERMIT ..... |  |  |
| <input type="checkbox"/> APPROVED <input type="checkbox"/> DENIED |  |               | \$                    |  |  |
| BUILDING OFFICIAL VALUATION                                       |  |               | PLAN REVIEW FEE ..... |  |  |
|   |  |               | \$                    |  |  |
| USE   |  | OCCUPANCY     | STATE SURCHARGE ..... |  |  |
|   |  |               | \$                    |  |  |
| TYPE OF CONST.  |  | TOTAL SQ. FT. | SEWER PERMIT .....    |  |  |
|   |  |               | \$                    |  |  |
| NO STORIES  | SPRINKLER REQUIRED                                       | OCC. LOAD     | PENALTY .....         |  |  |
|   | <input type="checkbox"/> YES <input type="checkbox"/> NO |               | \$                    |  |  |
| OTHER .....   |  |               | TOTAL .....           |  |  |
|   |  |               | \$                    |  |  |
| COMMENTS:   |  |               |                       |  |  |
|   |  |               |                       |  |  |
|   |  |               |                       |  |  |
|   |  |               |                       |  |  |
|   |  |               |                       |  |  |
|   |  |               |                       |  |  |

Permit Number: \_\_\_\_\_

Parcel Number: \_\_\_\_\_

## **Property Owner Waiver**

### **Minnesota State Contractor Licensing Requirements**

*The purpose of this form is to have property owners acknowledge their responsibilities to the Minnesota State Building Code, to 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, and Roofers, 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 License requirements because I am not in the business of building on speculation or for resale and this is the first residential structure that I have built or improved in the past 24 months.

I acknowledge that because I do not have a State License, I forfeit any mechanic's lien rights to which I may otherwise have been entitled under Minnesota State Statute 514.01.

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's 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 of 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, or to check on the licensing status of an individual contractor, call the Minnesota Department of Commerce, Enforcement Division at 651/296-2594, or toll-free at 1-800/657-3602.

# PLANNING & ZONING DEPARTMENT

Jim Braun, Zoning Administrator  
2428-115<sup>th</sup> Avenue  
Princeton, Minnesota 55371-6200

Metro (763) 389-3487  
Out State 1-800-851-3383  
Cellular (612) 282-9496  
Fax (763) 389-9587

*Identify all General Contractors and Sub-Contractors to be performing work on this project:*

|                           | <i>Name</i> | <i>Phone No:</i> | <i>License No:</i> |
|---------------------------|-------------|------------------|--------------------|
| A. Architect or Engineer: |             |                  |                    |
| B. General:               |             |                  |                    |
| C. Excavator:             |             |                  |                    |
| D. Masonry:               |             |                  |                    |
| E. Carpentry:             |             |                  |                    |
| F. Roofing:               |             |                  |                    |
| G. Insulation:            |             |                  |                    |
| H. Sheetrock:             |             |                  |                    |
| I. Plumbing:              |             |                  |                    |
| J. Heating:               |             |                  |                    |
| K. Septic:                |             |                  |                    |
| L. Well Driller:          |             |                  |                    |
| M. Electrical:            |             |                  |                    |

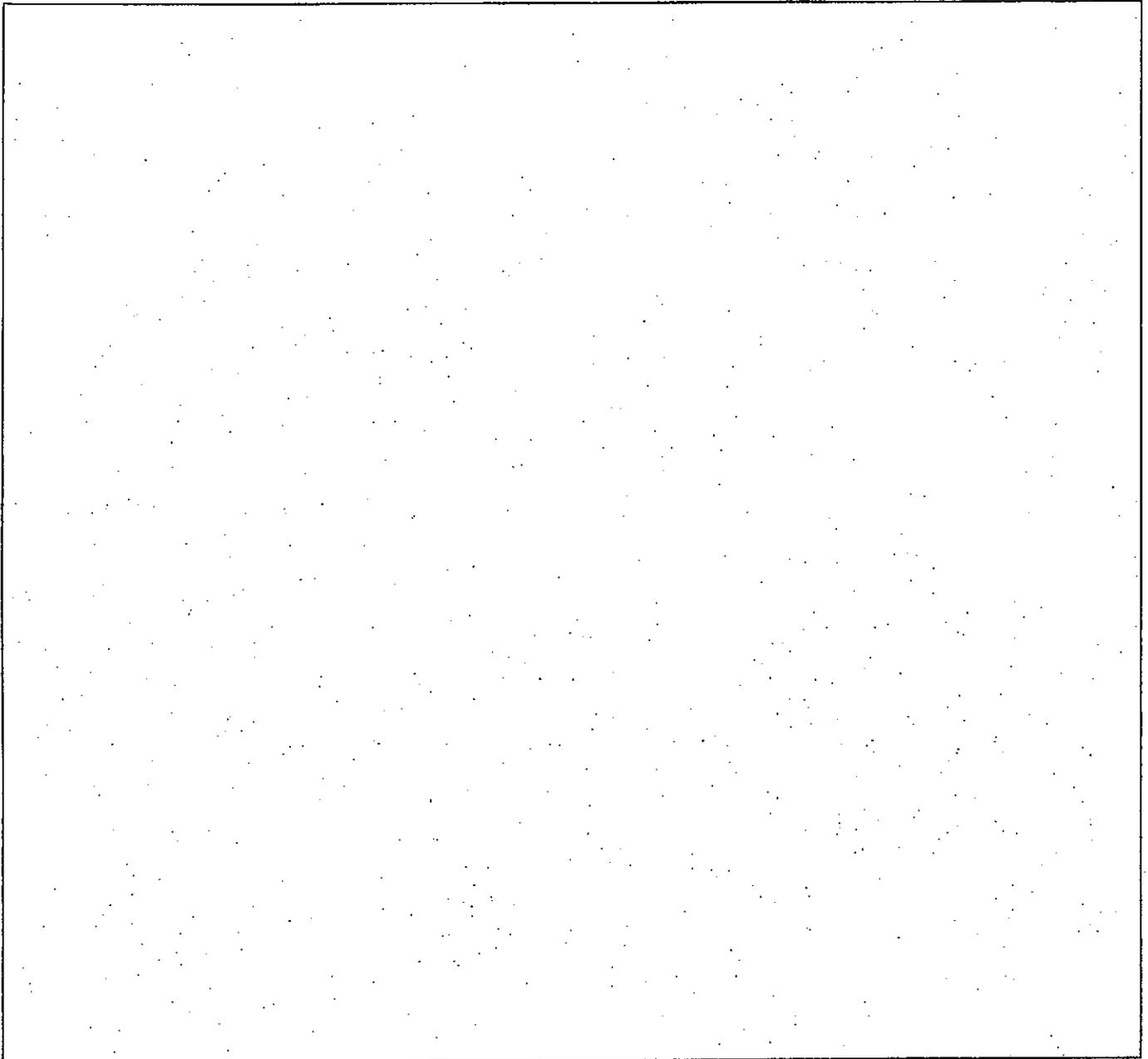
I, the undersigned, do hereby agree, in the case that a permit is granted, that all work shall be done and all materials that are used shall comply with the plans and specifications herewith submitted, and with all ordinances and building codes.

Signature of applicant: \_\_\_\_\_ Date: \_\_\_\_\_

## SITE PLAN

- Property Lines
- North Arrow

- Scale of Drawing: 1 square = \_\_\_\_  
\_\_\_\_\_ feet



**Required Information as per Section 505.16 of the Rice County Zoning Ordinance – Can be submitted on separate sheet**

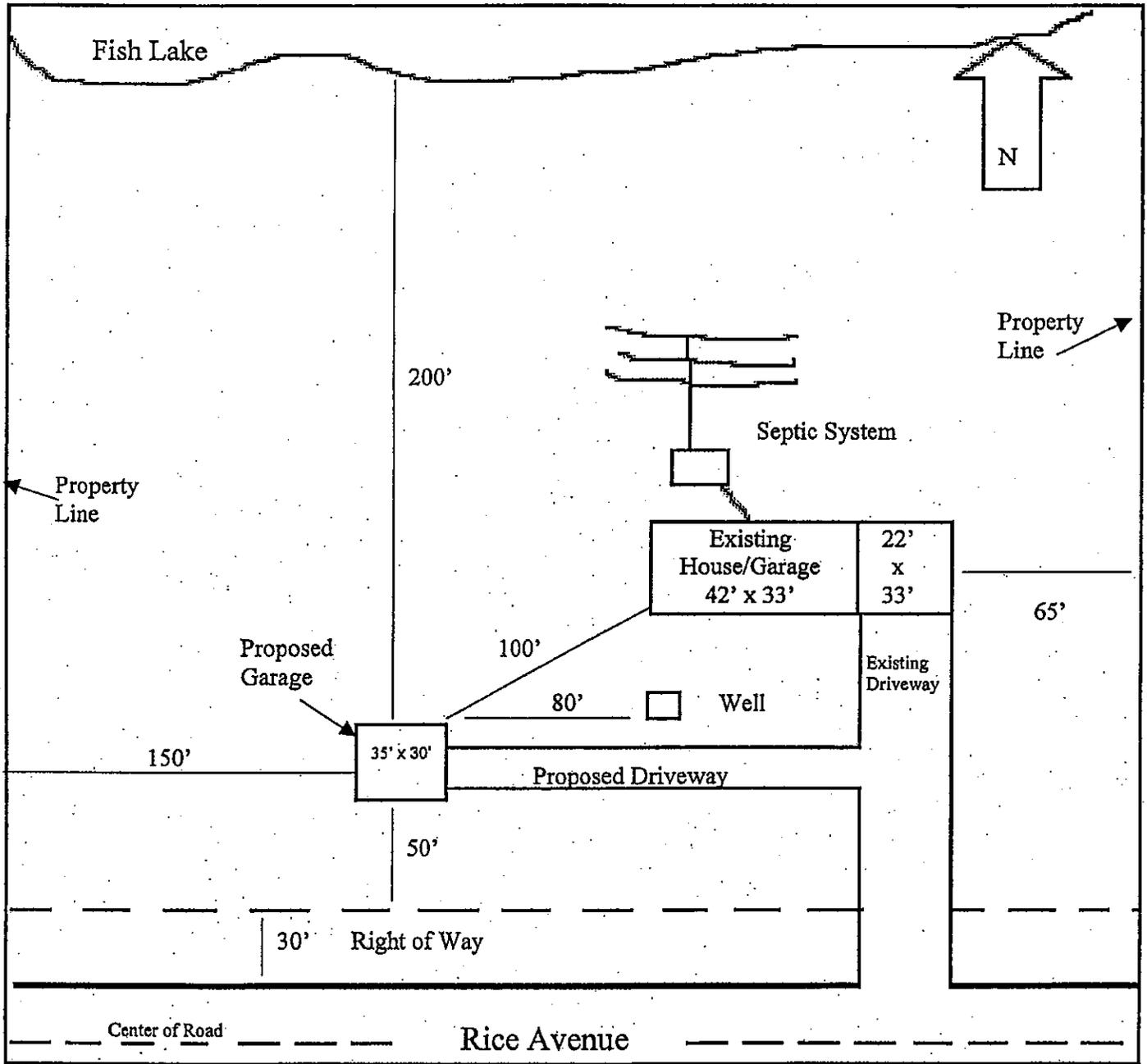
**Check box when complete:**

- Soils information
- Lakes, streams and wetlands
- Existing land uses onsite and neighboring properties
- Areas subject to flooding
- Existing and proposed structures, building footprints and setbacks
- Traffic generation
- Landscape plan including existing vegetation
- Roads labeled, access to lot/driveway
- Sewage treatment plans
- Storm water and Erosion Control plans
- Working and abandoned wells

# SAMPLE SITE PLAN

- Property Lines
- North Arrow

Scale of Drawing: 1 square = \_\_\_\_\_ feet



**Required Information as per Section 505.16 of the Rice County Zoning Ordinance – Can be submitted on separate sheet**

**Check box when complete:**

- |   |   |
|---|---|
| <input type="checkbox"/> Soils information  | <input type="checkbox"/> Landscape plan including existing vegetation |
| <input type="checkbox"/> Lakes, streams and wetlands  | <input type="checkbox"/> Roads labeled, access to lot/driveway        |
| <input type="checkbox"/> Existing land uses onsite and neighboring properties               | <input type="checkbox"/> Sewage treatment plans                       |
| <input type="checkbox"/> Areas subject to flooding  | <input type="checkbox"/> Storm water and Erosion Control plans        |
| <input type="checkbox"/> Existing and proposed structures, building footprints and setbacks | <input type="checkbox"/> Working and abandoned wells                  |
| <input type="checkbox"/> Traffic generation   |   |

**MINIMUM LOT AREA, WIDTH, AND SETBACKS  
FOR ZONING DISTRICTS IN BRIDGEWATER TOWNSHIP**

| Symbol | District          | Lot Area  | Lot Width | Front Yard  | Side Yard                                      | Rear Yard   | Structure Height  |
|--------|-------------------|---|-----------|---|--|---|---|
| A      | * Agricultural    | Residential - 35 acres per ¼ ¼<br>If second dwelling is permitted, minimum is 2.5 acres<br>Dwelling of record - 2 ½ acres<br>Other Uses - 2.5 acres | 250 feet  | State Highway - 150 feet to centerline or 100 feet from front property line<br>County or Township road - 133 feet to centerline or 100 feet from property line ** | 20 feet<br>For livestock buildings -- 100 feet | Principal structure - 70 feet<br>Accessory structure - 20 feet<br>Livestock buildings -- 100 feet | Maximum of 35 feet<br>Except for agricultural structures                      |
| UR     | Urban Reserve     | 35 acres<br>2.5 acres for existing dwelling units   | 250 feet  | Same as "A"   | Same as "A"                                    | Same as "A"   | Same as "A"   |
| RR     | Rural Residential | Existing lots of 20,000 square feet   | 100 feet  | Average of existing but no less than 35 feet  | 10 feet  | 25 feet   | Residences - 35 feet<br>Hangers -- 24 feet<br>Accessory structures -- 16 feet |

\* In the "A" District, a setback may be required, ranging from 500 to 1,000 feet, for any new house from an existing feedlot of ten animal units or more. Please contact the Bridgewater Township Zoning Office if you think any adjacent properties within ¼ mile of your proposed house site may have livestock, or buildings, which may have been used for livestock in the past.

\*\* The required setback shall be whichever distance is greater.

# IMPERVIOUS SURFACE CALCULATIONS

required for parcels located within shoreland overlay

## AREA OF PARCEL

|        |                          |   |                                       |
|--------|--------------------------|---|---------------------------------------|
| acres: | square feet<br>per acre: | = | Total are of parcel in<br>square feet |
|        | 43,560                   |   |                                       |

|    |  |
|----|--|
| OR | Total area of parcel in<br>square feet |
|    |  |

Impervious surface coverage of shoreland lots/parcels are limitd to 25%. Impermvios sufrage includes, but is not limited to decks, driveways (concrete, asphalt, or gravel), sidewalks (boardwalks, concrete, rock, landscapè block, etc.), plastic-lined landscaping and structures. Anything located upon, within or above the ground that would prohibit water from percolating into the soils below and create an increased rate of runoff than the natural landscaping.

## IMPERVIOUS SURFACE CALCULATIONS

| Residential structures   | length X<br>width | = | square foot of<br>structure |
|--------------------------|-------------------|---|-----------------------------|
| (example)                | (20x40)           |   | -800                        |
| dwelling                 |                   | = |                             |
| sidewalk                 |                   | = |                             |
| deck                     |                   | = |                             |
| driveway                 |                   | = |                             |
| patio                    |                   | = |                             |
| <b>Others; list:</b>     |                   | = |                             |
|                          |                   | = |                             |
|                          |                   | = |                             |
|                          |                   | = |                             |
| <b>TOTAL RESIDENTIAL</b> |                   |   |                             |

| Accessory Structures   | length X<br>width | = | square foot of<br>structure |
|------------------------|-------------------|---|-----------------------------|
| garage                 |                   | = |                             |
| shed                   |                   | = |                             |
|                        |                   | = |                             |
| <b>other; list?</b>    |                   | = |                             |
|                        |                   | = |                             |
|                        |                   | = |                             |
|                        |                   | = |                             |
|                        |                   | = |                             |
| <b>TOTAL ACCESSORY</b> |                   |   |                             |

| Other Items                         | length X<br>width | = | square foot of<br>structure |
|-------------------------------------|-------------------|---|-----------------------------|
| roadway (if not publicly dedicated) |                   | = |                             |
| landscaping with plastic barrier    |                   | = |                             |
|                                     |                   | = |                             |
| <b>Other; list:</b>                 |                   | = |                             |
|                                     |                   | = |                             |
|                                     |                   | = |                             |
| <b>TOTAL OTHER</b>                  |                   |   |                             |

Calculate:

|  |  |   |
|--|--|---|
| Total from "residential Structures"      |  | + |
| Total for "accessory Structures"         |  | + |
| Total from "Other Items"                 |  | + |
| <b>Total square foorage of coverage:</b> |  | = |
| (divide by total area of parcel, above)  |  | / |
|  |  | = |
| <b>Total Impervious Surface</b>          |  | % |

signature \_\_\_\_\_

date \_\_\_\_\_

permit number \_\_\_\_\_

# *Minnesota Energy Code*

Effective April 15, 2000 all new houses must comply with the new Minnesota Energy Code. Attached is a summary of the Energy Code requirements and the forms that must be completed and submitted with each application for a house building permit. The forms are generally completed by the general contractor and mechanical contractor.

The following exceptions apply:

**Manufactured [Mobile] Homes** are not required to complete the forms. If the manufactured home is installed on a full basement or crawl space that area must be insulated in compliance with the Energy Code. A detailed cross section of the foundation and rim joist is required.

**Pre-fabricated Homes** are required to comply with the mechanical ventilation/depressurization requirements of the energy code. The rim joist and foundation must be insulated and sealed in compliance with the energy code. Completed energy code forms for the mechanical system and a detailed cross-section of the foundation and rim joist insulation and sealing is required.

**Relocated Houses** are exempt from the energy code requirements except for the foundation. A detailed cross section drawing is required showing the foundation design, insulation and sealing.

If you have questions about completing the forms you may call the Minnesota Energy Department toll free at 1-800-657-3710 or 651-296-5175.

If you have questions about **Manufactured Homes, Pre-fabricated Homes or Relocated Houses** call a Rice County Building Inspector at 507-332-6113.

Job Site Address: \_\_\_\_\_

Questions? Call  
 1-800-657-3710 or  
 651-296-5175

# "CATEGORY 1" ALTERNATE FOR ONE & TWO FAMILY DWELLINGS

**INSTRUCTIONS:** This alternative may be used for one- and two-family dwellings built to meet the Category 1 requirements of Minnesota Rules, Chapter 7670. Complete Parts A, B, and C. Clearly mark plans with: insulation R-values; window and skylight U values; size and type of equipment; equipment controls; and location of vapor retarder and windwash barriers. More detailed information can be found in the *Minnesota Energy Code* summary sheets available from the Minnesota Department of Commerce.

## Part A. BUILDING ENVELOPE

- Check proposed envelope joint sealing option →  Prescriptive (caulking, gaskets, etc.)  Performance (test per 7670.0470 subp. 7.C.)
- Check thermal energy calculation option used →  "Cookbook" (complete worksheet below)  MnCheck method (attach report)
- Performance (attach U-value calculations)  Systems Analysis method (attach analysis)

### "Cookbook" Worksheet

**INSTRUCTIONS**

- Step 1. Check item(s) that design meets on *Minimum Requirements* list to the right. Must meet all items to use "Cookbook" option.
- Step 2. Indicate proposed wall type on table below.
- Step 3. Indicate Window U-value and source.
- Step 4. Verify total window (including area of all foundation windows) and door area is equal or less than allowable percentage.

| MINIMUM REQUIREMENTS<br>(for "Cookbook" option only) |  |
|--|--|
| <input type="checkbox"/>                             | Ceiling Insulation: Minimum R-38 with 7/8" energy heel; or Minimum R-44 with low truss heel; or Minimum R-38 with R-5 sheathing when no attic. |
| <input type="checkbox"/>                             | Entry Doors: Max. U-value of 0.30 or 1/2" solid wood with storm  |
| <input type="checkbox"/>                             | Rim Joist Insulation: Minimum R-19   |
| <input type="checkbox"/>                             | Floors over unconditioned spaces: Minimum R-24   |
| <input type="checkbox"/>                             | Foundation Insulation: Minimum R-10  |
| <input type="checkbox"/>                             | Foundation windows: 1/2" insulated glass, wood or vinyl frame.   |

**TABLE FOR DETERMINING MAXIMUM WINDOW AND DOOR AREA**

| Maximum Allowable Total Window and Door Area as a Percentage of Exposed Wall → | 12%  | 14%  | 16%  | 18%  | 20%  | 22%  | 24%  | 26%  | 28%  |
|--|--|------|------|------|------|------|------|------|------|
| <b>Wall Type (Standard Framing):</b>   | <b>Maximum Average Window U-value (except foundation windows):</b> |      |      |      |      |      |      |      |      |
| <input type="checkbox"/> 2x4, R-13 insulation, R-7 sheathing                   | 0.55   | 0.47 | 0.41 | 0.36 | 0.33 | 0.30 | 0.27 | 0.25 | 0.23 |
| <input type="checkbox"/> 2x4, R-15 insulation, R-5 sheathing                   | 0.52   | 0.45 | 0.39 | 0.35 | 0.31 | 0.28 | 0.26 | 0.24 | 0.22 |
| <input type="checkbox"/> 2x6, R-19 insulation, < R-5 sheathing                 | 0.48   | 0.41 | 0.36 | 0.32 | 0.29 | 0.26 | 0.24 | 0.22 | 0.21 |
| <input type="checkbox"/> 2x6, R-19 insulation, R-5 sheathing                   | 0.56   | 0.48 | 0.42 | 0.37 | 0.34 | 0.31 | 0.28 | 0.26 | 0.24 |
| <input type="checkbox"/> 2x6, R-21 insulation, < R-5 sheathing                 | 0.51   | 0.43 | 0.38 | 0.34 | 0.30 | 0.28 | 0.25 | 0.23 | 0.22 |
| <input type="checkbox"/> 2x6, R-21 insulation, R-5 sheathing                   | 0.58   | 0.50 | 0.44 | 0.39 | 0.35 | 0.32 | 0.29 | 0.27 | 0.25 |
| <b>Wall Type (Advanced Framing):</b>   | <b>Maximum Average Window U-value (except foundation windows):</b> |      |      |      |      |      |      |      |      |
| <input type="checkbox"/> 2x6, R-19 insulation, < R-5 sheathing                 | 0.52   | 0.45 | 0.39 | 0.35 | 0.31 | 0.28 | 0.26 | 0.24 | 0.22 |
| <input type="checkbox"/> 2x6, R-19 insulation, R-5 sheathing                   | 0.58   | 0.50 | 0.44 | 0.39 | 0.35 | 0.32 | 0.29 | 0.27 | 0.25 |
| <input type="checkbox"/> 2x6, R-21 insulation, < R-5 sheathing                 | 0.55   | 0.47 | 0.41 | 0.36 | 0.33 | 0.30 | 0.27 | 0.25 | 0.23 |
| <input type="checkbox"/> 2x6, R-21 insulation, R-5 sheathing                   | 0.60   | 0.52 | 0.46 | 0.41 | 0.36 | 0.33 | 0.30 | 0.28 | 0.26 |

Window U-value: \_\_\_\_\_

Source:  NFRC  ASHRAE 1993 Handbook

$$100 \times \frac{\text{window \& door area}}{\text{gross exposed wall area}} = \frac{\text{DESIGN}}{\text{ALLOWABLE (from table above)}} \% < \frac{\text{DESIGN}}{\text{ALLOWABLE (from table above)}} \%$$

## MINNESOTA ENERGY CODE — WHICH RULES MAY I USE ?

| TYPE OF RESIDENTIAL BUILDING  | APPLICABLE RULES   |
|---|--|
| Detached R-3 occupancy 1- and 2-family dwellings<br>Examples: single family, twin homes, duplexes | Chapter 7672; or<br>Chapter 7670 "Category 1" with statutory depressurization and ventilation requirements |
| Attached R-3 occupancy dwellings<br>Examples: triplex townhouses and row houses                   | Chapter 7674; or<br>Chapter 7670 with either "Category 1" or "Category 2" provisions                       |
| R-1 occupancy buildings of 3 stories or less<br>Examples: condominiums or apartments              | Chapter 7674; or<br>Chapter 7670 with either "Category 1" or "Category 2" provisions                       |
| R-1 occupancy buildings over 3 stories high<br>Examples: high rise condos or apartments           | Chapter 7676   |

# Part II. DEPRESSURIZATION PROTECTION

Check option used:  Aggregate (complete aggregate worksheet on next page)  Prescriptive (complete worksheet below)  
 Performance (submit test report prior to final inspection)  No fuel burning equipment

## PRESCRIPTIVE PATH WORKSHEET

### INSTRUCTIONS

- Step 1. Complete the *Combustion Equipment Schedule* on the right.
- Step 2. Choose a *Make-up Air Path* with a Y (Yes) for all selected equipment.
- Step 3. Complete the table below for the *Make-up Air Path* chosen, indicating flows in cfm for exhaust and make-up air methods proposed. Only the capacity of largest exhaust appliance in each category need be considered.
- Step 4. Fill out the *Passive Make-up Air Opening Schedule* on the next page.

| COMBUSTION EQUIPMENT SCHEDULE<br>(check all types proposed) |   | Permitted Equipment |        |        |        |
|---|---|---------------------|--------|--------|--------|
|   |   | Path 0              | Path 1 | Path 2 | Path 3 |
| Space heating   | <input checked="" type="checkbox"/> Sealed combustion | Y                   | Y      | Y      | Y      |
|   | <input type="checkbox"/> Direct or power vented       | N                   | Y      | Y      | Y      |
|   | <input type="checkbox"/> Atmospherically vented       | N                   | N      | Y*     | Y      |
| Water heating   | <input checked="" type="checkbox"/> Sealed combustion | Y                   | Y      | Y      | Y      |
|   | <input type="checkbox"/> Direct or power vented       | N                   | Y      | Y      | Y      |
|   | <input type="checkbox"/> Atmospherically vented       | N                   | N      | N      | Y      |
| Hearth - gas  | <input checked="" type="checkbox"/> Sealed combustion | Y                   | Y      | Y      | Y      |
|   | <input type="checkbox"/> Direct or power vented       | N                   | Y      | Y      | Y      |
|   | <input type="checkbox"/> Atmospherically vented       | N                   | N      | Y*     | N      |
| Hearth - solid fuel   | <input type="checkbox"/> Closed controlled            | N                   | Y      | Y*     | N      |
|   | <input type="checkbox"/> Decorative                   | N                   | N      | Y*     | N      |

\* Only one atmospherically vented appliance may be installed in Prescriptive Path 2.

| <input checked="" type="checkbox"/> Path 0 - Prescriptive Make-up Air Method   |   | Exhaust           | Passive Infiltration | Passive Opening | Powered Make-up |
|--|---|-------------------|----------------------|-----------------|-----------------|
| Clothes dryer  | Passive infiltration for up to 175 cfm<br>Passive openings for cfm's over 175   |                   |                      |                 |                 |
| Kitchen exhaust  | Passive infiltration for up to 250 cfm<br>Passive openings for cfm's over 250<br>Powered to match flow for cfm's over 500 | Sealed combustion | heaters              | not readily     | available       |
| Other exhaust †  | Passive openings for up to 140 cfm<br>Powered to match flow for cfm's over 140  |                   | N/A                  |                 |                 |
| † Need not include central vacuum exhaust in Path 0. TOTALS:   |   |                   |                      |                 |                 |
| <input type="checkbox"/> Path 1 - Prescriptive Make-up Air Method  |   | Exhaust           | Passive Infiltration | Passive Opening | Powered Make-up |
| Clothes dryer †  | Passive infiltration for up to 175 cfm<br>Passive openings for cfm's over 175   |                   |                      |                 |                 |
| Kitchen exhaust  | Passive openings for up to 250 cfm<br>Powered to match flow for cfm's over 250  |                   | N/A                  |                 |                 |
| Other exhaust †  | Passive openings for up to 140 cfm<br>Powered to match flow for cfm's over 140  |                   | N/A                  |                 |                 |
| TOTALS:  |   |                   |                      |                 |                 |
| If closed controlled combustion solid-fuel burning appliance is installed in Path 1, then the clothes dryer and any central vacuum that exhausts to outside must be provided with make-up air by passive opening to match flow. Otherwise need not include central vacuum. |   |                   |                      |                 |                 |
| <input type="checkbox"/> Path 2 - Prescriptive Make-up Air Method  |   | Exhaust           | Passive Infiltration | Passive Opening | Powered Make-up |
| Clothes dryer  | Passive openings for up to 175 cfm<br>Powered to match flow for cfm's over 175  |                   | N/A                  |                 |                 |
| Kitchen exhaust  | Powered to match flow   |                   | N/A                  | N/A             |                 |
| Other exhaust  | Powered to match flow   |                   | N/A                  | N/A             |                 |
| TOTALS:  |   |                   | N/A                  |                 |                 |
| <input type="checkbox"/> Path 3 - Prescriptive Make-up Air Method  |   | Exhaust           | Passive Infiltration | Passive Opening | Powered Make-up |
| Clothes dryer  | Powered to match flow   |                   | N/A                  | N/A             |                 |
| Kitchen exhaust  | Powered to match flow   |                   | N/A                  | N/A             |                 |
| Other exhaust  | Powered to match flow   |                   | N/A                  | N/A             |                 |
| 4/15/2000<br>TOTALS  |   |                   |                      | N/A             |                 |

# Questions? Call 1-800-657-3710

Job Site Address: \_\_\_\_\_

## ENERGY CODE WORKSHEET FOR ONE & TWO FAMILY DWELLINGS

**INSTRUCTIONS:** Complete Parts I, II and III. Clearly mark plans with: insulation R-values; window and skylight U-values; size and type of equipment; equipment controls; and location of interior air barrier, vapor retarder and windwash barriers. More detailed information can be found in the *Minnesota Energy Code Summary Sheets* available from Minn. Dept. of Public Service. 1-800-657-3710

### Part I. BUILDING ENVELOPE

Check option used:  "Cookbook" Method (complete worksheet below)  MnCheck method (attach report)  
 Building Component method (attach calculations)  Systems Analysis method (attach analysis)

### "Cookbook" Worksheet

#### INSTRUCTIONS

- Step 1. Check item(s) that design meets on *Minimum Requirements* list to the right. Must meet all items to use Cookbook option.
- Step 2. Indicate proposed wall type on table below.
- Step 3. Indicate Window U-value and source.
- Step 4. Verify total window (including area of all foundation windows) & door area is equal or less than allowable percentage

| MINIMUM REQUIREMENTS<br>(for "Cookbook" Option) |  |
|---|--|
| <input type="checkbox"/>                        | Heating system efficiency: Minimum 90% AFUE  |
| <input type="checkbox"/>                        | Entry Doors: 1 1/4" solid wood or maximum U-value of 0.40  |
| <input type="checkbox"/>                        | Skylights: Include with r windows  |
| <input type="checkbox"/>                        | Ceiling Insulation: Minimum R-38   |
| <input type="checkbox"/>                        | Rim Joist Insulation: Minimum R-10   |
| <input type="checkbox"/>                        | Floors over unconditioned spaces: Minimum R-30   |
| <input type="checkbox"/>                        | Foundation windows: 1/2" insulated glass in wood or vinyl frame or maximum U-value of 0.51, maximum size 5.6 square foot |

TABLE I. FOR DETERMINING MAXIMUM WINDOW AND DOOR AREA

| Maximum Allowable Total Window and Door Area as a Percentage of Exposed Wall   | 10%  | 12%  | 14%  | 16%  | 18%  | 20%  | 22%  | 24%  | 26%  | 28%  |
|--|------|------|------|------|------|------|------|------|------|------|
| Wall Type (R-5 up to R-10 Foundation Insul): Maximum Average Window U-value (except foundation windows $\leq$ 5.6 sq. ft.) |      |      |      |      |      |      |      |      |      |      |
| <input type="checkbox"/> 2x4, R-13 insulation, < R-5 sheathing   | 0.37 | 0.36 | 0.30 | 0.26 | 0.23 | 0.20 | 0.18 | 0.16 | 0.15 | 0.14 |
| <input type="checkbox"/> 2x4, R-13 insulation, $\square$ R-5 sheathing   | 0.37 | 0.37 | 0.37 | 0.37 | 0.35 | 0.31 | 0.28 | 0.25 | 0.23 | 0.22 |
| <input type="checkbox"/> 2x4, R-13 insulation, $\square$ R-7 sheathing   | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.34 | 0.31 | 0.28 | 0.26 | 0.24 |
| <input type="checkbox"/> 2x6, R-19 insulation, < R-5 sheathing   | 0.37 | 0.37 | 0.37 | 0.37 | 0.34 | 0.31 | 0.28 | 0.25 | 0.23 | 0.21 |
| <input type="checkbox"/> 2x6, R-19 insulation, $\square$ R-5 sheathing   | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.33 | 0.30 | 0.28 | 0.26 |
| <input type="checkbox"/> 2x6, R-21 insulation, < R-5 sheathing   | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.33 | 0.30 | 0.27 | 0.25 | 0.23 |
| <input type="checkbox"/> 2x6, R-21 insulation, $\square$ R-5 sheathing   | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.35 | 0.31 | 0.29 | 0.27 |
| Wall Type (with R-10 Foundation Insulation): Maximum Average Window U-value (except foundation windows $\leq$ 5.6 sq. ft.) |      |      |      |      |      |      |      |      |      |      |
| <input type="checkbox"/> 2x4, R-13 insulation, < R-5 sheathing   | 0.37 | 0.37 | 0.33 | 0.28 | 0.25 | 0.22 | 0.20 | 0.18 | 0.17 | 0.15 |
| <input type="checkbox"/> 2x4, R-13 insulation, $\square$ R-5 sheathing   | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.33 | 0.30 | 0.27 | 0.25 | 0.23 |
| <input type="checkbox"/> 2x4, R-13 insulation, $\square$ R-7 sheathing   | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.36 | 0.33 | 0.30 | 0.27 | 0.25 |
| <input type="checkbox"/> 2x6, R-19 insulation, < R-5 sheathing   | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.32 | 0.29 | 0.27 | 0.24 | 0.23 |
| <input type="checkbox"/> 2x6, R-19 insulation, $\square$ R-5 sheathing   | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.35 | 0.32 | 0.29 | 0.27 |
| <input type="checkbox"/> 2x6, R-21 insulation, < R-5 sheathing   | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.35 | 0.31 | 0.29 | 0.26 | 0.24 |
| <input type="checkbox"/> 2x6, R-21 insulation, $\square$ R-5 sheathing   | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.36 | 0.33 | 0.30 | 0.28 |
| Wall Type (with R-19 Foundation Insulation): Maximum Average Window U-value (except foundation windows $\leq$ 5.6 sq. ft.) |      |      |      |      |      |      |      |      |      |      |
| <input type="checkbox"/> 2x4, R-13 insulation, < R-5 sheathing   | 0.37 | 0.37 | 0.34 | 0.29 | 0.26 | 0.23 | 0.21 | 0.19 | 0.17 | 0.16 |
| <input type="checkbox"/> 2x4, R-13 insulation, $\square$ R-5 sheathing   | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.34 | 0.31 | 0.28 | 0.26 | 0.24 |
| <input type="checkbox"/> 2x4, R-13 insulation, $\square$ R-7 sheathing   | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.34 | 0.31 | 0.28 | 0.24 |
| <input type="checkbox"/> 2x6, R-19 insulation, < R-5 sheathing   | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.34 | 0.30 | 0.28 | 0.25 | 0.23 |
| <input type="checkbox"/> 2x6, R-19 insulation, $\square$ R-5 sheathing   | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.36 | 0.33 | 0.30 | 0.28 |
| <input type="checkbox"/> 2x6, R-21 insulation, < R-5 sheathing   | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.36 | 0.32 | 0.29 | 0.27 | 0.25 |
| <input type="checkbox"/> 2x6, R-21 insulation, $\square$ R-5 sheathing   | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.37 | 0.34 | 0.31 | 0.29 |

Window U-value:  Source:  NFRC  Code Default Table (see Part 7670.0700)

100 x    =  %  $\leq$   %

4-15-2000 window & door area gross exposed wall area DESIGN ALLOWABLE (from table above)

Part II Cont.

Job Site Address:

**PASSIVE MAKE-UP AIR OPENING SCHEDULE**

| TABLE FOR SIZING PASSIVE MAKE-UP AIR OPENINGS |  | Diameter | Path 0  | Path 1  | Path 2  |
|---|--|----------|---------|---------|---------|
| Notes:  | a) This table assumes 20 feet of smooth unobstructed round duct with three 90° elbows and a screened hood.<br>b) Equivalent designs calculated using pressures of 50 Pascals for Path 0, 25 Pascals for Path 1, and 5 Pascals for Path 2 may be used.<br>c) If a make-up air opening is used with no duct or elbows, the diameter can be decreased by 1 inch.<br>d) If flex duct is used, increase diameter by 1 inch. | 3 inches | 50 cfm  | 35 cfm  | 15 cfm  |
|   |  | 4 inches | 90 cfm  | 60 cfm  | 30 cfm  |
|   |  | 5 inches | 140 cfm | 100 cfm | 45 cfm  |
|   |  | 6 inches | 200 cfm | 140 cfm | 65 cfm  |
|   |  | 7 inches | 270 cfm | 190 cfm | 85 cfm  |
|   |  | 8 inches | 350 cfm | 250 cfm | 110 cfm |
|   |  | 9 inches | 450 cfm | 320 cfm | 140 cfm |
| 10 inches                                     | 570 cfm  | 400 cfm  | 180 cfm |         |         |

| Make-up Air Application/Location | CFM | Opening size | Duct Type                       |                               |                                       |
|----------------------------------|-----|--------------|---------------------------------|-------------------------------|---------------------------------------|
|                                  |     |              | <input type="checkbox"/> Smooth | <input type="checkbox"/> Flex | <input type="checkbox"/> Opening only |
|                                  |     |              | <input type="checkbox"/> Smooth | <input type="checkbox"/> Flex | <input type="checkbox"/> Opening only |
|                                  |     |              | <input type="checkbox"/> Smooth | <input type="checkbox"/> Flex | <input type="checkbox"/> Opening only |
|                                  |     |              | <input type="checkbox"/> Smooth | <input type="checkbox"/> Flex | <input type="checkbox"/> Opening only |

**AGGREGATE MAKE-UP AIR WORKSHEET**

INSTRUCTIONS

- Step 1. Complete *Exhaust Schedule* on the right indicating cfm of largest device in each category.
- Step 2. Complete the *Combustion Equipment Schedule* on preceding page.
- Step 3. Choose a path with a Y (Yes) for all selected equipment.
- Step 4. Complete *Aggregate Make-up Air* table below for chosen path. Using the total cfm from the *Exhaust Schedule*, indicate flow in cfm for proposed method(s) of providing make-up air.
- Step 5. Fill out the *Passive Make-up Air Opening Schedule* above.

| EXHAUST SCHEDULE |     |
|------------------|-----|
| DEVICE           | CFM |
| Clothes dryer    |     |
| Kitchen exhaust  |     |
| Other exhaust    |     |
| <b>TOTAL</b>     |     |

|  |                      |                  |                 |
|--|----------------------|------------------|-----------------|
| <input checked="" type="checkbox"/> <b>Path 0 – Aggregate Make-up Air Method</b>   | Passive Infiltration | Passive Opening  | Powered Make-up |
| Passive infiltration for up to 425 cfm<br>Passive openings for cfm's over 425<br>Powered to match flow for cfm's over 985  |                      |                  |                 |
| <input type="checkbox"/> <b>Path 1 – Aggregate Make-up Air Method</b>  | Passive Infiltration | Passive Opening* | Powered Make-up |
| Passive infiltration up to 175 cfm*<br>Passive openings for cfm's over 175<br>Powered to match flow for cfm's over 565   |                      |                  |                 |
| * If a closed controlled solid-fuel burning appliance is installed in Path 1, then a passive opening must be installed to provide make-up air for the clothes dryer and for any central vacuum that exhausts to the outside. |                      |                  |                 |
| <input type="checkbox"/> <b>Path 2 – Aggregate Make-up Air Method</b>  | Passive Infiltration | Passive Opening  | Powered Make-up |
| Passive openings for up to 175 cfm*<br>Powered to match flow for cfm's over 175  | N/A                  |                  |                 |
| <input type="checkbox"/> <b>Path 3 – Aggregate Make-up Air Method</b>  | Passive Infiltration | Passive Opening  | Powered Make-up |
| Powered to match flow  | N/A                  | N/A              |                 |

**NOTE:** As an alternative to ventilation requirements of the State Building Code, bathrooms may be ventilated with a system designed to operate at a continuous rate of 20 CFM and kitchens may be ventilated with a system designed to operate at a continuous rate of 25 CFM.

**Questions? Call 1-800-657-3710**

# Part IIIa. VENTILATION

Job Site Address: \_\_\_\_\_

## INSTRUCTIONS

- Step 1. Complete the *Ventilation Quantity* worksheet below.
- Step 2. Check the Make-up Air Path (from Part II) on the *Ventilation Methods* table below.
- Step 3. Choose permitted method(s) for People and Supplemental Ventilation from the *Ventilation Methods* table.
- Step 4. Complete the *Ventilation Fan Schedule*.

| VENTILATION QUANTITY                               |                                       |                   |                    |           |
|--|---------------------------------------|-------------------|--------------------|-----------|
| TOTAL VENTILATION:                                 | 0.05 cfm / sq. ft.                    | [ ]               | sq. ft.            | [ ] cfm   |
| conditioned floor area normally including basement |                                       |                   |                    |           |
| PEOPLE VENTILATION:                                | ( [ ] x 15 cfm / bedroom ) + 15 cfm = | [ ]               |                    | [ ] cfm   |
|  |                                       | # of bedrooms     |                    |           |
| SUPPLEMENTAL VENTILATION:                          | [ ] cfm                               | -                 | [ ] cfm            | = [ ] cfm |
|  |                                       | total ventilation | people ventilation |           |

| VENTILATION METHODS  |                          |                           |               |
|--|--------------------------|---------------------------|---------------|
| MAKE-UP AIR PATH (from Part II)  | PEOPLE                   | SUPPLEMENTAL              | CO-ALARM      |
| <input type="checkbox"/> Prescriptive (or Aggregate) Path 0              | Balanced or Exhaust only | Balanced or Exhaust only  | Not required  |
| <input type="checkbox"/> Prescriptive (or Aggregate) Path 1              | Balanced or Exhaust only | Balanced or Exhaust only* | Not required† |
| <input type="checkbox"/> Prescriptive (or Aggregate) Path 2              | Balanced                 | Balanced or Exhaust only* | Required      |
| <input type="checkbox"/> Prescriptive (or Aggregate) Path 3              | Balanced                 | Balanced                  | Required      |
| <input type="checkbox"/> Performance Path (See part 7872.1000 subpart 7) | Performance              | Performance               | Required      |

\* Passive infiltration shall not be used to provide make-up air for exhaust only supplemental ventilation in excess of 0.05 cfm / s.f.  
 † A carbon monoxide alarm must be installed if a controlled combustion solid-fuel burning appliance is installed in Path 1.

| VENTILATION FAN SCHEDULE    |                                       |                                       |                                       |                                       |        |
|-----------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|--------|
| Fan description or location |                                       |                                       |                                       |                                       | TOTALS |
| Fan Purpose                 | <input type="checkbox"/> People       | <input type="checkbox"/> People       | <input type="checkbox"/> People       | <input type="checkbox"/> People       | cfm    |
|                             | <input type="checkbox"/> Supplemental | <input type="checkbox"/> Supplemental | <input type="checkbox"/> Supplemental | <input type="checkbox"/> Supplemental | cfm    |
| VENTILATION AS DESIGNED     | Intake                                | cfm                                   | Exhaust                               | cfm                                   | cfm    |
|                             |                                       | cfm                                   |                                       | cfm                                   | cfm    |

**Statement of Compliance:** The proposed building design represented in these documents is consistent with the building plans, specifications, and other calculations submitted with the permit application. The proposed building has been designed to meet the requirements of the Minnesota Energy Code.

Applicant (print name) \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_ Telephone number \_\_\_\_\_  
 4-15-2000

# Part IIIb. VENTILATION

(Submit Part IIIb upon completion of system verification)

Job Site Address: \_\_\_\_\_ Permit Number \_\_\_\_\_

| Fan description or location |         |     |          |     | TOTALS |
|-----------------------------|---------|-----|----------|-----|--------|
| MEASURED PERFORMANCE        | Intake* | cfm | Exhaust* | cfm | cfm    |
|                             |         | cfm |          | cfm | cfm    |

\*Measurement required for ventilation system intakes and exhausts from the building with design air flow of 30 cfm and greater.

**Compliance Statement:** Installed ventilation system is in compliance with MN Energy Code and is sized to provide the design air flow.

Applicant (print name) \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_ Telephone number \_\_\_\_\_

**Questions? Call 1-800-657-3710**

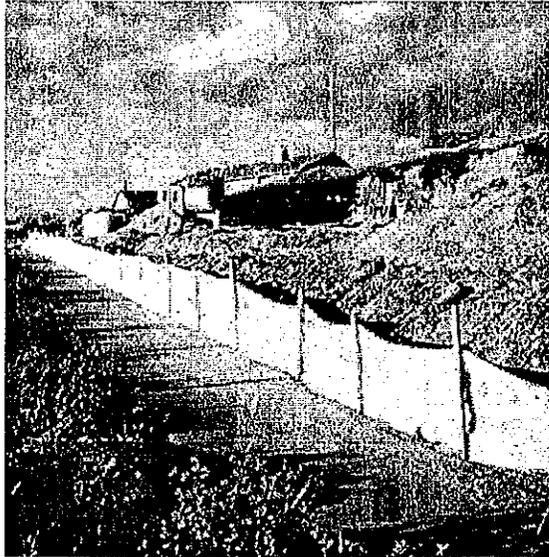
## Driveway and Road Access and Standards

- A. **Permit required.** A permit shall be required for all new driveways or changes in driveway use.
- B. **Approval of location.** The location of direct access for a driveway to any County road shall be approved by the Rice County Engineer and Planning Director prior to any development of the property in question, and shall conform to the following:
1. Access to township roads shall be regulated by Township Boards.
  2. Primary access shall be to the road of lesser classification.
  3. Access points shall be kept to a minimum and shared when possible.
  4. Closure of field accesses and existing driveways may be required with a change to a more intensive use of the property.
- C. **Appeal procedure.** The decision of the Rice County Highway Engineer and Planning Director shall be final subject to appeal to the Board of Adjustment.
- D. **Access to state highways.** No new driveway shall have direct access to any state highway without the prior approval of the State of Minnesota Highway Engineer of the district where the highway is located.
- E. **Appeal procedure for state highway access.** The decision of the district engineer may be appealed to Commissioner of the Minnesota Department of Transportation.
- F. **Residential driveway standards.** All dwellings, in any zoning district, shall provide an access driveway with an all-weather driving surface, constructed as follows.
1. **Less than two hundred feet.** All access driveways that are less than two hundred (200) feet long shall be constructed to provide the following:
    - a. An unobstructed driving surface at least twelve (12) feet wide; and
    - b. A driving surface of Class 1 material, or approved aggregate substitute, that is at least three (3) to four (4) inches thick.
  2. **Two hundred feet or more.** All access driveways that are two hundred (200) feet long or longer shall be constructed to provide the following:
    - a. An unobstructed driving surface at least twelve (12) feet wide;
    - b. A driving surface of Class 1 material, or approved aggregate substitute, that is at least three (3) to four (4) inches thick;
    - c. An unobstructed minimum forty-five (45) foot turning radius at the end of the driveway near the dwelling, or a turnaround that can accommodate a vehicle with a forty-five (45) foot turning radius, said radius to be constructed with the same driving surface as provided at (2) above.
  3. The access driveway shall be improved to the established standard to insure access for emergency vehicles and shall otherwise be continuously maintained. The driveway shall be constructed prior to the issuance of an occupancy permit.
- G. **Nonresidential driveways and frontage roads.** Driveways serving nonresidential properties shall be constructed in compliance with the Access Guidelines in the Rice County Transportation Plan and the following.
1. Development of a frontage road may be required by the Board of Commissioners to provide access to commercial or industrial properties. The frontage road shall be designed and constructed to accommodate future development along the roadway.
- H. **Driveway separation distances.** Separation distances between driveways shall be consistent with the Access Guidelines adopted by Rice County. Driveway accesses shall be combined or shared wherever feasible in order to reduce the number of accesses to State, County or Township roads. No more than three (3) accesses shall be permitted from any residential plat. Additional accesses will require the creation of an internal access street meeting County and Township requirements.
- I. **New roads.** New roads serving residential plats or other development sites shall only be created under the following conditions:
1. Any new road shall be constructed to County standards at the sole cost of the subdivider.
  2. Access points for new roads shall meet the Access Guidelines adopted by Rice County.
  3. New roads shall require the approval of the County Board and the affected Township.



# Erosion Control for Home Builders

**By controlling erosion, home builders help keep our lakes and streams clean.**



**E**roding construction sites are a leading cause of water quality problems in Wisconsin. For every acre under construction, about a dump truck and a half of soil washes into a nearby lake or stream unless the builder uses erosion controls. Problems caused by this sediment include:

#### **Taxes**

Cleaning up sediment in streets, sewers and ditches adds extra costs to local government budgets.

#### **Lower property values**

Neighboring property values are damaged when a lake or stream fills with sediment. Shallow areas encourage weed growth and create boating hazards.

#### **Poor fishing**

Muddy water drives away fish like northern pike that rely on sight to feed. As it settles, sediment smothers gravel beds where fish like smallmouth bass find food and lay their eggs. Soil particles in suspension can act like a sand blaster during a storm and damage fish gills.

#### **Nuisance growth of weeds and algae**

Sediment carries fertilizers that fuel algae and weed growth.

#### **Dredging**

The expense of dredging sediment from lakes, harbors and navigation channels is paid for by taxpayers.

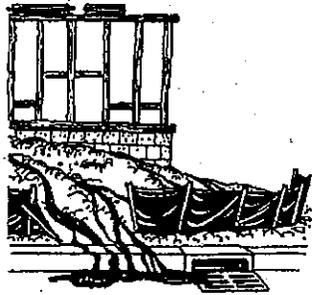
This fact sheet includes the diagrams and step-by-step instructions needed by builders on most home sites. Additional controls may be needed for sites that have steep slopes, are adjacent to lakes and streams, receive a lot of runoff from adjacent land, or are larger than an acre.

If you need help developing an erosion control plan or training your staff, contact your local building inspection, zoning or erosion control office.

## ***Controlling Erosion is Easy***

Erosion control is important even for home sites of an acre or less. The materials needed are easy to find and relatively inexpensive – straw bales or silt fence, stakes, gravel, plastic tubes, and grass seed. Putting these materials to use is a straightforward process. Only a few controls are needed on most sites:

- Preserving existing trees and grass where possible to prevent erosion;
- Revegetating the site as soon as possible;
- Silt fence or straw bales to trap sediment on the downslope sides of the lot;
- Placing soil piles away from any roads or waterways;
- Diversions on upslope side and around stockpiles;
- Stone/rock access drive used by all vehicles to limit tracking of mud onto streets;
- Cleanup of sediment carried off-site by vehicles or storms; and
- Downspout extenders to prevent erosion from roof runoff.



**A poorly installed silt fence will not prevent soil erosion. Fabric must be buried in a trench and sections must overlap (see diagram on back of this fact sheet).**

**WARNING! Extra measures may be needed if your site:**

- is within 300 feet of a stream or wetland;
- is within 1,000 feet of a lake;
- is steep (slopes of 12% or more);
- receives runoff from 10,000 sq. ft. or more of adjacent land;
- has more than an acre of disturbed ground.

For information on appropriate measures for these sites, contact your local building inspection, zoning or erosion control office.

### *Straw Bale or Silt Fence*

- Install within 24 hours of land disturbance.
- Install on downslope sides of site parallel to contour of the land.
- Extended ends upslope enough to allow water to pond behind fence.
- Bury eight inches of fabric in trench (see back page).
- Stake (two stakes per bale).
- Leave no gaps. Stuff straw between bales, overlap sections of silt fence, or twist ends of silt fence together.
- Inspect and repair once a week and after every ½-inch rain. Remove sediment if deposits reach half the fence height. Replace bales after three months.
- Maintain until a lawn is established.

### *Soil Piles*

- Cover with plastic and locate away from any downslope street, driveway, stream, lake, wetland, ditch or drainageway.
- Temporary seed such as annual rye or winter wheat is recommended for topsoil piles.

### *Access Drive*

- Install an access drive using two-to-three-inch aggregate prior to placing the first floor decking on foundation.
- Lay stone six inches deep and at least seven feet wide from the foundation to the street (or 50 feet if less).
- Use to prevent tracking mud onto the road by all vehicles.
- Maintain throughout construction.
- In clay soils, use of geotextile under the stone is recommended.

### *Sediment Cleanup*

- By the end of each work day, sweep or scrape up soil tracked onto the road.
- By the end of the next work day after a storm, clean up soil washed off-site.

### *Sewer Inlet Protection*

- Protect on-site storm sewer inlets with straw bales, silt fences or equivalent measures.
- Inspect, repair and remove sediment deposits after every storm.

### *Downspout Extenders*

- Not required, but highly recommended.
- Install as soon as gutters and downspouts are completed to prevent erosion from roof runoff.
- Use plastic drainage pipe to route water to a grassed or paved area. Once a lawn is established, direct runoff to the lawn or other pervious areas.
- Maintain until a lawn is established.

### *Preserving Existing Vegetation*

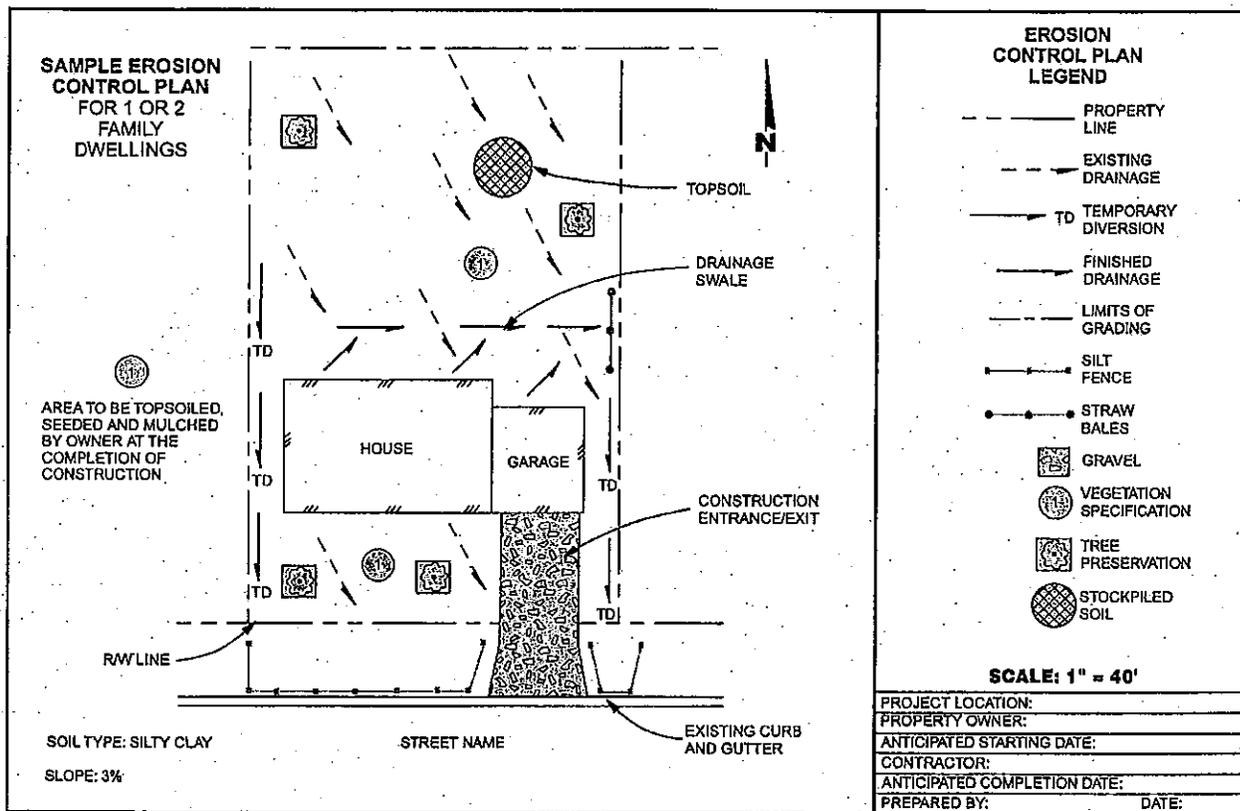
- Wherever possible, preserve existing trees, shrubs, and other vegetation.
- To prevent root damage, do not grade, place soil piles, or park vehicles near trees marked for preservation.
- Place plastic mesh or snow fence barriers around trees to protect the root area below their branches.

### *Revegetation*

- Seed, sod or mulch bare soil as soon as possible. Vegetation is the most effective way to control erosion.

### *Seeding and Mulching*

- Spread four to six inches of topsoil.
- Fertilize and lime if needed according to soil test (or apply 10 lb./1000 sq. ft. of 10-10-10 fertilizer).
- Seed with an appropriate mix for the site (see table).
- Rake lightly to cover seed with ¼" of soil. Roll lightly.
- Mulch with straw (70-90 lb. or one bale per 1000 sq. ft.).
- Anchor mulch by punching into the soil, watering, or by using netting or other measures on steep slopes.
- Water gently every day or two to keep soil moist. Less watering is needed once grass is two inches tall.



### Sodding

- Spread four to six inches of topsoil.
- Fertilize and lime if needed according to soil test (or apply 10 lb./1000 sq. ft. of 10-10-10 fertilizer).
- Lightly water the soil.
- Lay sod. Tamp or roll lightly.
- On slopes, lay sod starting at the bottom and work toward the top. Laying in a brickwork pattern. Peg each piece down in several places.
- Initial watering should wet soil six inches deep (or until water stands one inch deep in a straight-sided container). Then water lightly every day or two to keep soil moist but not saturated for two weeks.
- Generally, the best times to sod and seed are early fall (Aug. 15-Sept. 15) or spring (May). If construction is completed after September 15, final seeding should be delayed. Sod may be laid until November 1, Temporary seed (such as rye or winter wheat) may be planted until October 15.

Mulch or matting may be applied after October 15, if weather permits. Straw bale or silt fences must be maintained until final seeding or sodding is completed in spring (by June 1).

### Concrete Wash Water

- Dispose of concrete wash water in an area of soil away from surface waters where soil can act as a filter or evaporate the water. Dispose of remaining cement. Be aware that this water can kill vegetation.

### De-Watering

- Dispose of de-watering water in a pervious area. Prevent the discharge of sediment from de-watering operations into storm sewers and surface waters.

### Material Storage

- Manage chemicals, materials and other compounds to avoid contamination of runoff.

### Typical Lawn Seed Mixtures

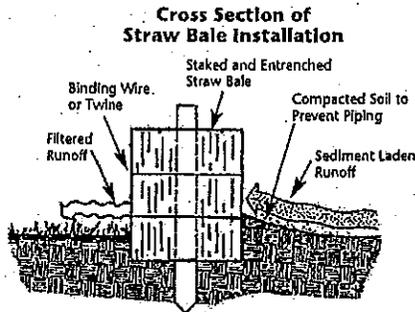
| Grass              | Percent by Weight |            |
|--------------------|-------------------|------------|
|                    | Sunny Site        | Shady Site |
| Kentucky bluegrass | 65%               | 15%        |
| Fine fescue        | 20%               | 70%        |
| Perennial ryegrass | 15%               | 15%        |

Seeding rate 3-4 4-5  
(lb./1000 sq. ft.)

Source: R.C. Newman, Lawn Establishment, UW-Extension, 1988.

## COMMONLY USED EROSION CONTROLS

### Straw Bale Fences



Source: Michigan Soil Erosion and Sedimentation Control Guidebook, 1975.

### How to Install a Straw Bale Fence



1. Excavate a 4" deep trench.



2. Place bales in trench with bindings around sides away from the ground. Leave no gaps between bales.



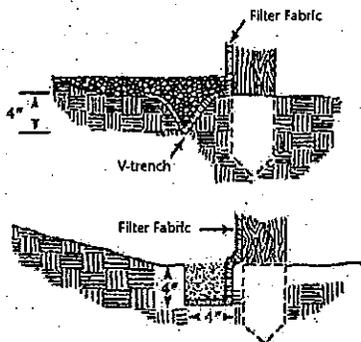
3. Anchor bales using two steel rebar or 2" x 2" wood stakes per bale. Drive stakes into the ground at least 8".



4. Backfill and compact the excavated soil.

### Silt Fences

#### Cross Sections of Trenches for Silt Fences

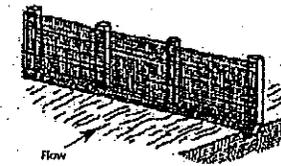


Source: North Carolina Erosion and Sediment Control Planning and Design Manual, 1988.

### How to Install a Silt Fence



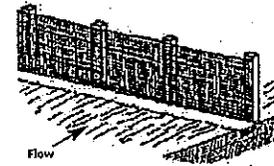
1. Excavate a 4" x 4" trench along the contour.



2. Stake the silt fence on downslope side of trench. Extended 8" of fabric into the trench.



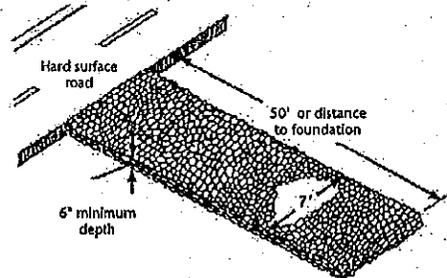
3. When joints are necessary, overlap ends for the distance between two stakes.



4. Backfill and compact the excavated soil.

### Access Drive

### How to Install an Access Drive



1. Install as soon as possible after start of grading.
2. Use two-to-three-inch aggregate stone.
3. Drive must be at least seven feet wide and 50 feet long or the distance to the foundation, whichever is less.
4. Replace as needed to maintain six-inch depth.



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GWQ001 Erosion Control for Home Builders

DNR WT-457-96

R-1-00-10M-25-S

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A publication of the University of Wisconsin-Extension in cooperation with the Wisconsin Department of Natural Resources.

Author: Carolyn Johnson, UW-Extension.

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Extension



# Standard Erosion Control Plan

## for 1- & 2-Family Dwelling Construction Sites

According to Chapters Comm 20 & 21 of the Wisconsin Uniform Dwelling Code, soil erosion control information needs to be included on the plot plan which is submitted and approved prior to the issuance of building permits for 1- & 2-family dwelling units in those jurisdictions where the soil erosion control provisions of the Uniform Dwelling Code are enforced. This Standard Erosion Control Plan is provided to assist in meeting this requirement.

### Instructions:

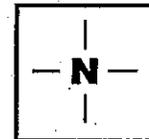
1. Complete this plan by filling in requested information, completing the site diagram and marking appropriate boxes on the inside of this form.
2. In completing the site diagram, give consideration to potential erosion that may occur before, during, and after grading. Water runoff patterns can change significantly as a site is reshaped.
3. Submit this plan at the time of building permit application.

PROJECT LOCATION \_\_\_\_\_

BUILDER \_\_\_\_\_ OWNER \_\_\_\_\_

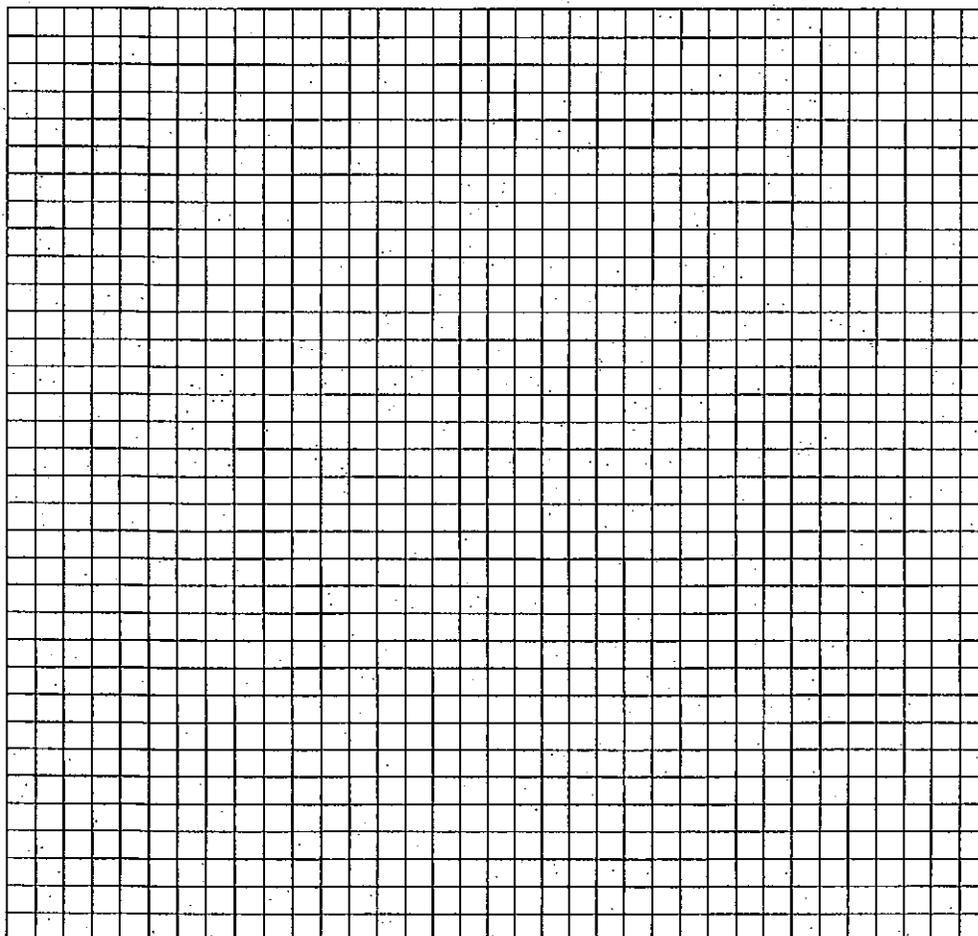
WORKSHEET COMPLETED BY \_\_\_\_\_ DATE \_\_\_\_\_

Please indicate north by completing the arrow.



### SITE DIAGRAM

Scale: 1 Inch = \_\_\_\_\_ feet



### EROSION CONTROL PLAN LEGEND

- PROPERTY LINE
- > EXISTING DRAINAGE
- > TD TEMPORARY DIVERSION
- > FINISHED DRAINAGE
- LIMITS OF GRADING
- SILT FENCE
- STRAW BALES
- GRAVEL
- VEGETATION SPECIFICATION
- TREE PRESERVATION
- STOCKPILED SOIL

COMPLETED

NOT APPLICABLE

# EROSION CONTROL PLAN CHECKLIST

Check (✓) appropriate boxes below, and complete the site diagram with necessary information.

## Site Characteristics

North arrow, scale, and site boundary. Indicate and name adjacent streets or roadways.

Location of existing drainageways, streams, rivers, lakes, wetlands or wells.

Location of storm sewer inlets.

Location of existing and proposed buildings and paved areas.

The disturbed area on the lot.

Approximate gradient and direction of slopes before grading operations.

Approximate gradient and direction of slopes after grading operations.

Overland runoff (sheet flow) coming onto the site from adjacent areas.

## Erosion Control Practices

Location of temporary soil storage piles.

Note: Soil storage piles should be placed behind a sediment fence, a 10 foot wide vegetative strip, or should be covered with a tarp or more than 25 feet from any downslope road or drainageway.

Location of access drive(s).

Note: Access drive should have 2 to 3 inch aggregate stone laid at least 7 feet wide and 6 inches thick. Drives should extend from the roadway 50 feet or to the house foundation (whichever is less).

Location of sediment controls (filter fabric fence, straw bale fence or 10-foot-wide vegetative strip) that will prevent eroded soil from leaving the site.

Location of sediment barriers around on-site storm sewer inlets.

Location of diversions.

Note: Although not specifically required by code, it is recommended that concentrated flow (drainageways) be diverted (re-directed) around disturbed areas. Overland runoff (sheet flow) from adjacent areas greater than 10,000 sq. ft. should also be diverted around disturbed areas.

Location of practices that will be applied to control erosion on steep slopes (greater than 12% grade).

Note: Such practices include maintaining existing vegetation, placement of additional sediment fences, diversions, and re-vegetation by sodding or seeding with use of erosion control mats.

Location of practices that will control erosion on areas of concentrated runoff flow.

Note: Unstabilized drainageways, ditches, diversions, and inlets should be protected from erosion through use of such practices as in-channel fabric or straw bale barriers, erosion control mats, staked sod, and rock rip-rap. When used, a given in-channel barrier should not receive drainage from more than two acres of unpaved area, or one acre of paved area. In-channel practices should not be installed in perennial streams (streams with year round flow).

Location of other planned practices not already noted.

COMPLETED

NOT APPLICABLE

Indicate management strategy by checking (✓) the appropriate box.

### Management Strategies

Temporary stabilization of disturbed areas.

Note: It is recommended that disturbed areas and soil piles left inactive for extended periods of time be stabilized by seeding (between April 1 and September 15), or by other cover, such as tarping or mulching.

Permanent stabilization of site by re-vegetation or other means as soon as possible (lawn establishment).

- Indicate re-vegetation method:  Seed  Sod  Other \_\_\_\_\_
- Expected date of permanent re-vegetation: \_\_\_\_\_
- Re-vegetation responsibility of:  Builder  Owner/Buyer
- Is temporary seeding or mulching planned if site is not seeded by Sept. 15 or sodded by Nov. 15?  Yes  No

Use of downspout and/or sump pump outlet extensions.

Note: It is recommended that flow from downspouts and sump pump outlets be routed through plastic drainage pipe to stable areas such as established sod or pavement.

Trapping sediment during de-watering operations.

Note: Sediment-laden discharge water from pumping operations should be ponded behind a sediment barrier until most of the sediment settles out.

Proper disposal of building material waste so that pollutants and debris are not carried off-site by wind or water.

Maintenance of erosion control practices.

- Sediment will be removed from behind sediment fences and barriers before it reaches a depth that is equal to half the height of the barrier.
- Breaks and gaps in sediment fences and barriers will be repaired immediately. Decomposing straw bales will be replaced (typical bale life is three months).
- All sediment that moves off-site due to construction activity will be cleaned up before the end of the same workday.
- All sediment that moves off-site due to storm events will be cleaned up before the end of the next workday.
- Access drives will be maintained throughout construction.
- All installed erosion control practices will be maintained until the disturbed areas they protect are stabilized.

# EROSION CONTROL REGULATIONS

Erosion control and stormwater regulations can be complex. Local, state and, in some cases, federal regulations may apply. Before construction make sure you have the appropriate permits.

## LOCAL ORDINANCES

Check with your county, city, village, or town for any local erosion control ordinances including shoreland zoning requirements. Except for new 1- & 2-family dwellings, local ordinances may be more strict than state regulations. They may also require erosion control on construction projects not affected by state or federal regulations.

## UNIFORM DWELLING CODE (DEPT. OF COMMERCE)

### CONTROLS REQUIRED

- Silt fences, straw bales, or other approved perimeter measures along downslope sides and side slopes.
- Access drive.
- Straw bales, filter fabric fences or other barriers to protect on-site sewer inlets.
- Additional controls if needed for steep slopes or other special conditions.

### FOR MORE INFORMATION, CONTACT:

- Local building inspector
- Department of Commerce, Safety and Buildings Division, P.O. Box 7970, Madison, Wis. 53707-7970, (608) 267-5113.

## STORMWATER PERMIT (DEPT. OF NATURAL RESOURCES)

### CONTROLS REQUIRED

- Erosion control measures specified in the *Wisconsin Construction Site Best Management Practice Handbook*.
- Measures to control storm water after construction.

### FOR MORE INFORMATION, CONTACT

- Department of Natural Resources, Storm Water Permits, P.O. 7921, Madison, WI 53707-7921, (608) 267-7694.

For more assistance on plan preparation, refer to the Wisconsin Uniform Dwelling Code, the DNR *Wisconsin Construction Site Best Management Handbook*, and UW-Extension publication *Erosion Control for Home Builders*. The *Wisconsin Uniform Dwelling Code* and the *Wisconsin Construction Site Best Management Handbook* are available through the State of Wisconsin Document Sales, (608) 266-3358.

*Erosion Control for Home Builders* (GWQ001) can be ordered through Extension Publications, (608) 262-3346 or the Department of Commerce, (608) 267-4405. A PDF version of *Erosion Control for Home Builders* (GWQ001) and *Standard Erosion Control Plan* are also available at <http://clean-water.uwex.edu/pubs/sheets>

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**GWQ001A Standard Erosion Control Plan for 1 & 2 Family Dwelling Construction Sites**

**DNR WT-458-96**

**R-03-02-2M-10-S**

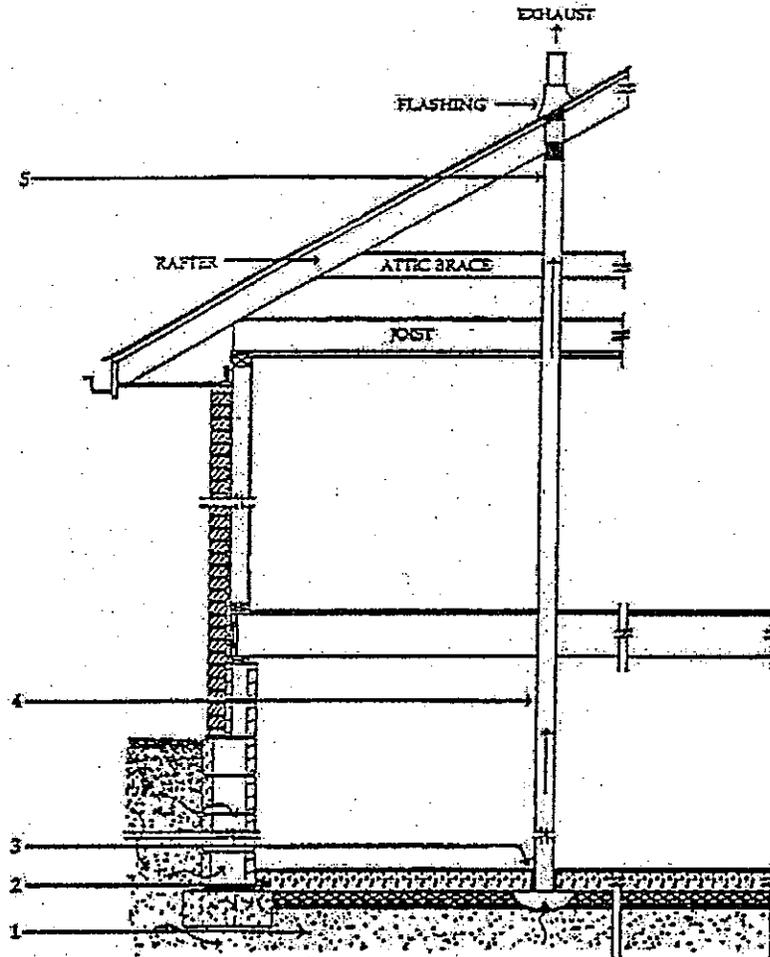
Editing and design by the Environmental Resources Center, University of Wisconsin-Extension.



Printed on  
recycled paper

# RADON-RESISTANT TECHNIQUES FOR NEW HOME CONSTRUCTION PASSIVE SYSTEM

The techniques described below have proven to be effective in reducing the entry of radon gas into a home and preparing the home for easy installation of an active radon control system. This approach utilizes barriers to radon entry and stack effect reduction techniques to reduce the rate of radon entry, plus the installation of a PVC pipe running from beneath the slab to the roof. The radon is drawn from beneath the slab into the stack and vented into the air above the roof where it dissipates. All new homes should be tested to ensure that the passive system has lowered the radon level below 4 pC/L. If the level is above 4 pC/L, the system can be modified by the addition of a fan and warning device (see other side).

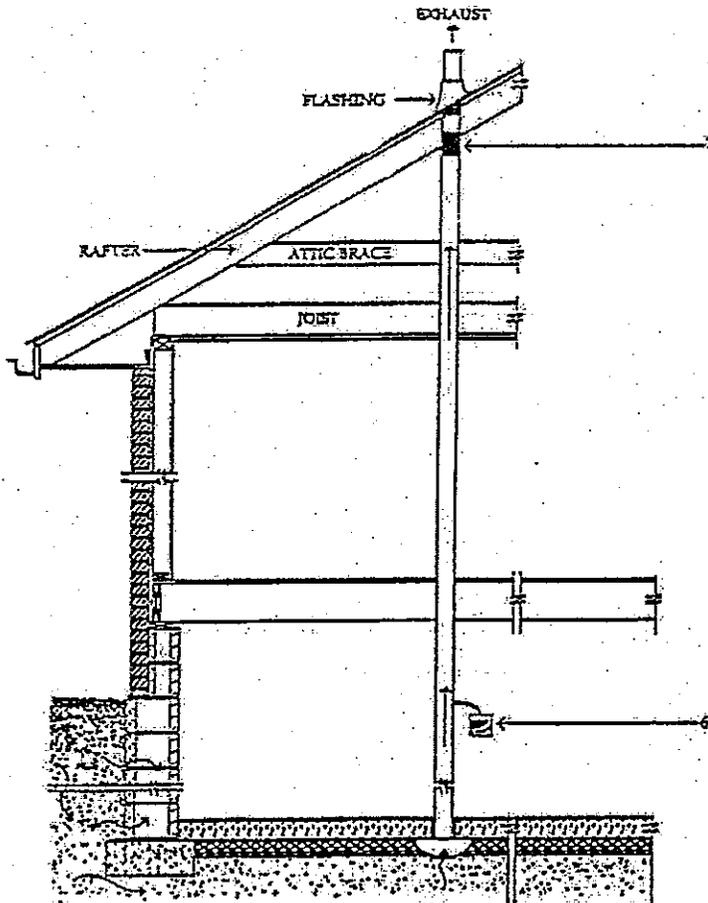


1. Layer of gas permeable material, such as clean gravel, 4" thick
2. Continuous layer of polyethylene sheeting under entire slab, overlapped at seams, to serve as a soil-gas-retarder.
3. Sealing and caulking of any openings through the slab and foundation walls, such as drains, sumps, utility penetrations, and floor-wall joints to retard soil-gas entry.
4. Installation of 3"-4" PVC pipe that extends from the gas permeable layer to the roof.
5. Roughed-in wiring for later installation of fan and system failure warning device, if radon test shows elevated levels.

# RADON-RESISTANT TECHNIQUES

## ACTIVE SYSTEM

Active systems can be installed at the time of construction of the home or a passive system can be upgraded to an active system if the home is found to have elevated levels of radon above 4 pCi/L. Active systems have proven effective in lowering radon in homes where elevated levels have been found. Active systems are simply passive systems with the addition of a fan to more actively draw radon from the soil into the stack where it dissipates into the atmosphere. It also includes a system-failure warning device. All homes should be tested for radon; if levels above 4 pCi/L are found, the passive system should be upgraded to an active system.



6. System-failure warning device.
7. Fan installed in stack.

Note: For more information on either active or passive systems, see ASTM Standard Guide 1465-92 (American Society of Testing and Materials), or call the Radon Division of the U.S. EPA (202-233-9338).

## WHAT IS RADON?

Radon is a naturally occurring gas produced by the breakdown of uranium in soil, rock, and water. Radon cannot be detected by sight, smell, or taste and is estimated to cause 7,000 to 30,000 deaths from lung cancer per year. It can become a health risk when trapped indoors where it can build to high levels. Radon can enter a home or building through dirt floors; hollow block walls; cracks in the foundation floor and walls; and openings around floor drains, pipes, and sump pumps.

Radon can enter and collect inside homes and other buildings that are not built with radon-resistant techniques. However, buildings constructed with radon-resistant techniques can ensure lower radon levels, energy-efficiency, and a safer home.

### RADON FACTS

- \* High levels of radon have been found in every State.
- \* 1 out of every 15 homes is estimated to have high radon levels.
- \* Levels can vary widely, even from home to home in the same neighborhood.
- \* Radon is the second leading cause of lung cancer.

## WHERE CAN I GET MORE INFORMATION?

\* For your free copy of EPA's Model Standards and Techniques for Control of Radon in New Residential Buildings, call 1-800-55RADON. Free architectural drawings of radon-resistant construction techniques are also available by calling 1-800-55RADON.

\* The American Society of Testing and Materials (ASTM) has a Standard Guide (E 1465-92) on radon-resistant construction. It contains construction techniques similar to those in the EPA Model Standards. Call 215-299-5585 for more information on obtaining this Standard Guide.

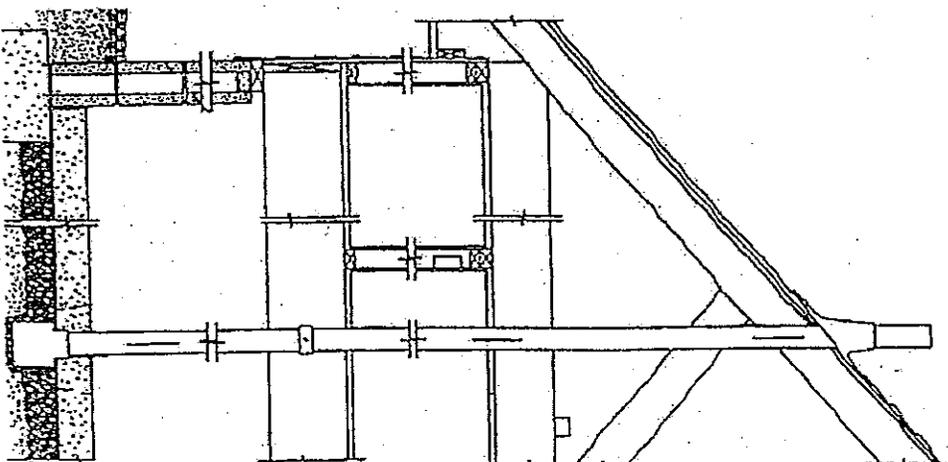
\* The National Association of Home Builders has information on radon-resistant techniques in their Energy and Home Environment Department (1-800-368-5242 ext.244).

\* EPA has developed a county-by-county Map of Radon Zones. While any home in any county may have high radon levels, about 1/3 of the counties have been identified as having the greatest risk. For a copy of this map, contact your State Radon Program Office.

\* States, counties, and cities have begun to incorporate radon-resistant techniques into their building codes. For more information, contact Jennifer L. Keller, U.S. EPA, at 202-233-9338.

## RADON-RESISTANT CONSTRUCTION

### IN NEW HOMES



Prevention

*It's a good idea!*

# WHY BUILD HOMES WITH RADON-RESISTANT TECHNIQUES?

## Makes Homes Safer from Radon!

These construction techniques help block radon from entering the home. The occupants will benefit from lower radon levels in their new home.

## Easy to Upgrade

If high radon levels are found, the techniques allow for easy and inexpensive installation of a fan for increased radon reduction in the home. Every new home should be tested for radon by the homeowner after occupancy.

## Cost-Effective for Home Buyers

It is more cost-effective to include radon-resistant techniques while building a home, rather than retrofitting an existing home.

### Materials and labor cost

|                               |                 |
|-------------------------------|-----------------|
| Radon-Resistant Techniques    | \$350 - \$500   |
| VS.                           |                 |
| Retrofitting an Existing Home | \$800 - \$2,500 |

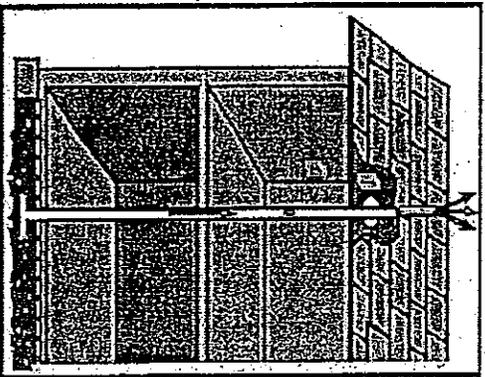
Some construction companies use this as a marketing advantage.

## Improves Energy-Efficiency

Radon-resistant construction techniques provide an average of \$65 per year in energy savings for the homeowner.

There are five major parts to passive radon-resistant construction techniques:

- 1) a layer of gas permeable material under the foundation (usually 4" of gravel);
- 2) plastic sheeting over that material;



- 3) sealing and caulking all openings in the concrete foundation floor;
- 4) installation of a gas-tight 3" or 4" vent pipe that runs from under the foundation through the house to the roof; and
- 5) a roughed-in electrical junction box for the future installation of a fan, if needed.

These features create a physical barrier to radon entry. The vent pipe redirects the flow of air under the foundation, preventing radon from seeping into the house.

# IS THERE A GUIDE FOR BUILDING WITH RADON-RESISTANT TECHNIQUES?

Model Standards and Techniques for Control of Radon in New Residential Buildings is available from your State Radon office or by calling 1-800-55RADON.

These Model Standards, developed by the U.S. Environmental Protection Agency and the building industry, detail how to install radon-resistant techniques during construction of homes.

The Model Standards are useful for builders, architects, prospective home buyers, realtors, building code officials, home inspectors, and others who have interest in new home construction.

The radon-resistant techniques use common building materials and methods. The techniques are passive and easy to install.

The Model Standards are supported by the National Association of Home Builders for areas of high radon potential.

The American Society for Testing and Materials (ASTM) published a Standard Guide for Radon Control Options for the Design and Construction of New Low-Rise Residential Buildings (E 1465-92). The techniques are similar to those found in the EPA Model Standards.



Northern States Power Company  
Gas Utility

2763 First Avenue NW  
Faribault, MN 55021-1910  
Telephone (507) 334-2929

## ATTENTION

ALL CONTRACTORS, PLUMBERS, ELECTRICIANS, AND  
HOMEOWNERS

PLEASE NOTE THE ILLUSTRATION OF MINIMUM CLEARANCES THAT ARE  
REQUIRED FOR PROPER INSTALLATION OF A NATURAL GAS METER. THESE  
REQUIREMENTS COME UNDER THE NATURAL GAS FUEL CODE.

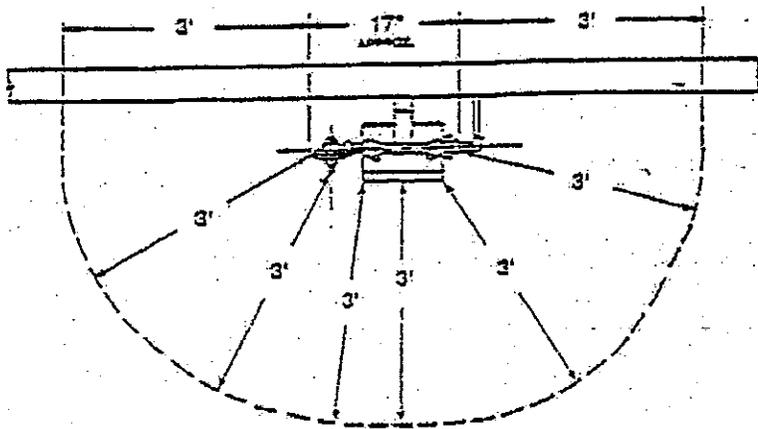
NSP WOULD LIKE TO SEE 3 FEET OF CLEARANCE FROM A GAS METER TO  
ANY OF THE FOLLOWING:

ELECTRIC METER SOCKET  
ELECTRIC DISCONNECT SWITCH  
ANY POSSIBLE SOURCE OF IGNITION  
AIR INTAKE VENTS  
AND AIR DISCHARGE VENTS.

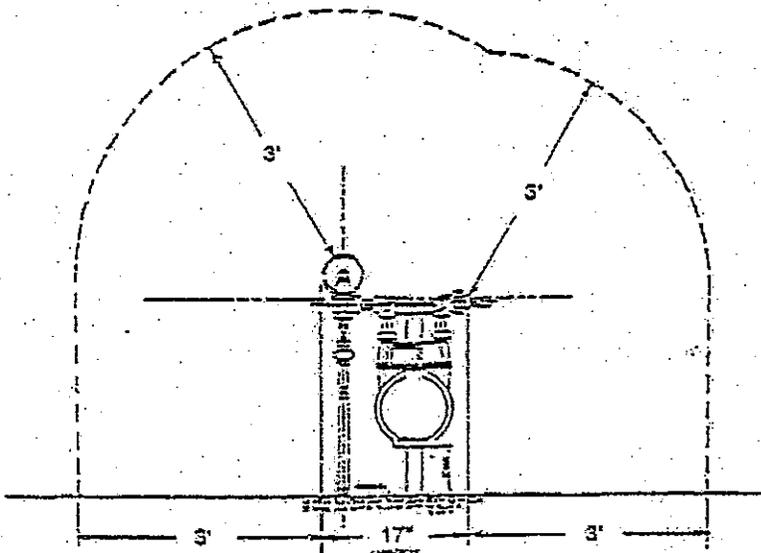
SEE BACKSIDE FOR MINIMUM CLEARANCE ILLUSTRATIONS.

IF YOU HAVE ANY QUESTIONS, PLEASE CALL NORTHERN STATES POWER AT  
334-2939.

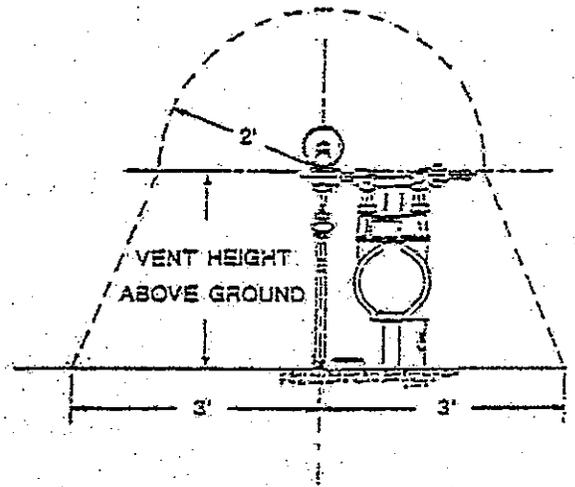
JEFF H. KNIPPEL  
Area Representative



PLAN VIEW



ELEVATION VIEW



CLEAR ZONE FOR SOURCES OF IGNITION

CLEAR ZONE FOR OPENINGS

(MEASUREMENTS TAKEN FROM REGULATOR, METER & METER BAR)

MINIMUM CLEARANCES  
OUTSIDE RESIDENTIAL  
GAS METER INSTALLATIONS

# SMOKE ALARMS

Guidelines for placement and use of smoke alarms.



## WHY ARE SMOKE ALARMS REQUIRED?

More fire deaths occur in residential buildings than in any other building type. More than half of all fire deaths that occur in residential buildings occur when the occupants are asleep and are unaware that a fire has occurred. Death usually results from asphyxiation long before the fire reaches the occupants.

Smoke alarms installed in a home give an early warning of smoke and fire thus giving the occupants the critical few moments needed to escape.

In order to address the tragic loss of life in residential buildings, the Minnesota State Building Code has requirements for the installation of smoke alarms in a home when new construction, remodeling or repair is undertaken.

## GENERAL REQUIREMENTS

In general, the code requires that smoke alarms be provided on each floor of a dwelling, in the corridor giving access to bedrooms and in bedrooms. Alarms in new construction must receive their power from the building wiring and have a battery backup in the event power is lost. (Reference International Residential Code R317.1.1)

An important feature of the requirement for alarms being connected into the building's electrical wiring is that there must be no disconnecting means other than the primary over current protection. This means alarms must be wired directly into the building's wiring system and that no switches, plugs or mechanical disconnects are permitted between the main fuse box and the alarm.

The code also requires that smoke alarms be located in each sleeping room and centrally located on the ceiling or wall of the corridor or area giving access to sleeping rooms. This will give the earliest warning to the sleeping occupants in sleeping rooms.

In buildings with basements, an alarm is also required in the basement.

All smoke alarms, regardless of the location in the dwelling, must be audible in the sleeping areas. In a large home this can be difficult to accomplish. For this reason, alarms must be wired together so if one detects a fire, they all sound the alarm.

## SPECIFIC CODE REQUIREMENTS

### General

Dwelling units, congregate residences and hotel or lodging guest rooms that are used for sleeping purposes must be provided with smoke alarms. Alarms must be installed in accordance with the approved manufacturer's instructions.

### POWER SOURCE

In new construction, the required smoke alarms shall receive their primary power from the building wiring when such wiring is served from a commercial source, and when primary power is interrupted, shall receive power from a battery. Wiring shall be permanent and without a disconnecting switch other than those required for overcurrent protection. Smoke alarms shall be permitted to be battery operated when installed in buildings without commercial power or in buildings that undergo alterations, repairs or additions regulated by Section R317.1.1.



## Building Codes and Standards Division

408 Metro Square Building  
121 East 7th Place  
St. Paul, MN 55101-2181  
651.296.4639  
TTY: 800.627.3529  
Fax: 651.297.1973

[www.buildingcodes.admin.state.mn.us](http://www.buildingcodes.admin.state.mn.us)

[www.mncodes.org](http://www.mncodes.org)

# ALARMS continued

## LOCATION WITHIN A DWELLING UNIT

### R317.1 Single- and multiple-station smoke alarms

Single- and multiple-station smoke alarms shall be installed in the following locations:

1. In each sleeping room.
2. Outside of each separate sleeping area in the immediate vicinity of the bedrooms.
3. On each additional story of the dwelling, including basements and cellars, but not including crawl spaces and uninhabitable attics. In dwellings or dwelling units with split levels and without an intervening door between the adjacent levels, a smoke alarm installed on the upper level shall suffice for the adjacent lower level provided that the lower level is less than one full story below the upper level.

When more than one smoke alarm is required to be installed within an individual dwelling unit the alarm devices shall be interconnected in such a manner that the actuation of one alarm will activate all of the alarms in the individual unit. The alarm shall be clearly audible in all bedrooms over background noise levels with all intervening doors closed.

All smoke alarms shall be listed and installed in accordance with the provisions of this code and the household fire warning equipment provisions of NFPA 72.

#### R317.1.1 Alterations, repairs or additions

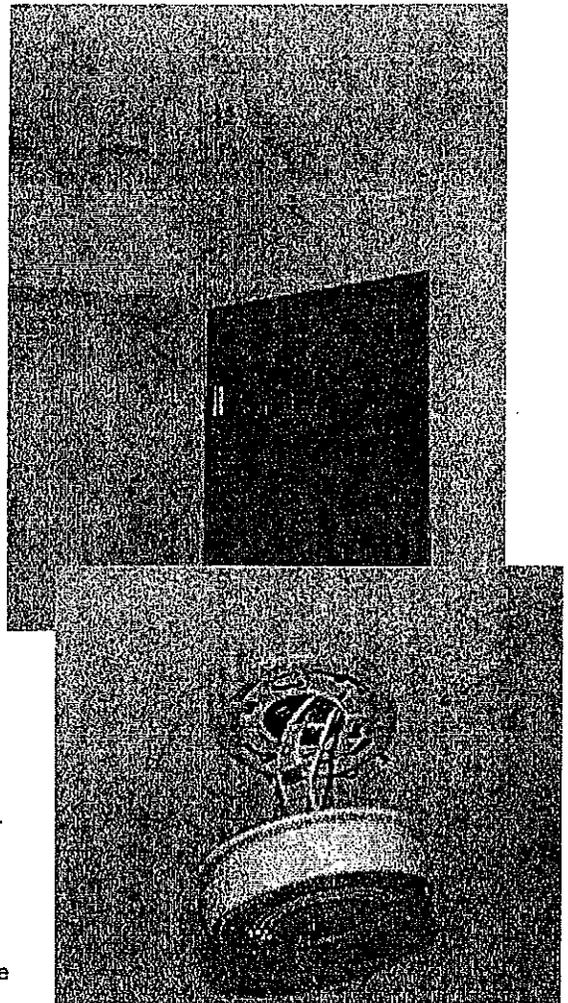
When interior alterations, repairs or additions requiring a permit occur, or when one or more sleeping rooms are added or created in existing dwellings, the individual dwelling unit shall be provided with smoke alarms located as required for new dwellings; the smoke alarms shall be interconnected and hardwired.

Exceptions:

1. Smoke alarms in existing areas shall not be required to be interconnected and hardwired where the alterations or repairs do not result in the removal of the 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 the removal of interior finishes.
2. Work on the exterior which does not require entry into the interior for inspection.

#### Follow the manufacturer's installation instructions.

Make sure everyone in the residence knows what the alarm sounds like and knows what to do in a case of a fire. A smoke detector is just one part of an emergency escape safety plan, especially if a fire occurs in the middle of the night and no lights are available to aid escape.



Call at least 2 full business days before you dig.  
1-651-454-0002 1-800-252-1156 [www.gopherstateonecall.org](http://www.gopherstateonecall.org)

Contact your local building code official regarding specific code and permit requirements in your municipality or if you have any questions regarding information presented in this brochure.



# Minnesota State Contractor License Law

**Notice to Homeowners:**  
**Be Sure Your Contractor is Licensed**



## **Know Your Rights**

The State of Minnesota recently adopted a statewide "Contractor and Remodeler License Law." This law is designed to protect the consumer by requiring that contractors be licensed with the State. Contractors must apply to the State, post a bond, and show proof of insurance and competency. The law gives homeowners reasonable assurance that they are dealing with a reputable, professional contractor, and a place they can call to get general contractor information.

## **Getting Information on a Contractor**

Contractors, with a few exceptions, who contract with a homeowner to perform home construction, remodeling, or repair, must be licensed with the Minnesota Department of Commerce. Homeowners can call the Commerce Department Licensing Division at 1-800-657-3602, 651-296-2488 or visit the web site @ [www.commerce.state.mn.us](http://www.commerce.state.mn.us) to obtain information on a specific contractor. Contractors must display their license number on their advertising and they must make it available to consumers. Building permits cannot be granted to contractors who are not properly licensed by the state.

## **Exceptions to Being Licensed**

State law exempts contractors who have gross annual receipts from the construction business of less than \$15,000.00. Also exempt are specialty contractors who perform only one specialty skill.

## **Homeowner Rights if a Contractor is Not Licensed**

If your contractor is required to be licensed by the State of Minnesota and you find that he/she is not, you may still have recourse under the law. Generally, the law provides that a contractor who is working in violation of the Minnesota State License Law has no lien rights and may not be able to enforce a contract signed with a homeowner. If you find yourself in this situation, you should consult with an attorney to get sound legal advice. You should never knowingly hire someone who is deliberately violating the State License Law.

## **Working on Your Own Home**

You can obtain permits to do work on your own home. The License Law was written to insure a reasonable degree of protection for you as the consumer of construction services, not to discourage homeowners from doing work on their own property. For your safety, building permits are required for most construction projects.

For more information on State Licensing, contact the  
Minnesota Department of Commerce at 800/657-3602 or 651/296-2594

