

## **Building a One or Two-Family Home in Wisconsin**

- ☐ If applicable, you will need to obtain a **sanitary permit**, a **driveway permit**, and a **zoning permit** as required by your local municipality or county before a building permit can be issued; a copy of these permits will need to be submitted to the building inspector **prior** to a building permit being issued.
- ☐ Complete the latest version (R.6/10) of the **Wisconsin Uniform Building Permit Application** (attached) and return to the building inspector.
- ☐ Submit an **Erosion Control Plan** showing the locations of erosion control measures to be taken for sediment control, the location of the tracking pad for driveway access, and the locations of temporary soil storage piles. A copy of the Site Plan with the additional erosion control information may be used for the Erosion Control Plan.
- ☐ Submit your **Energy Calculations** to the building inspector; you may use the 2009 IECC to calculate this number. This software can be downloaded for free at [www.energycodes.gov](http://www.energycodes.gov). If you are uncertain how to obtain this calculation, please refer to your HVAC contractor.

### ☐ **Plan Submittal (Two Sets)**

At least **two** sets of plans for all one and two-family dwellings need to be submitted to the building inspector for examination and approval at the time the **Wisconsin Uniform Building Permit** application is submitted. The required building plans must be legible and drawn to scale or dimensioned and must include **ALL** of the following:

**Site Plan** must show all of the following:

- ☐ The location of the dwelling and other buildings, wells, surface waters and dispersal systems on the site with respect to property lines and surface waters adjacent to the site.
- ☐ The areas of land-disturbing construction activity and the location of all erosion and sediment control measures to be employed in order to comply with SPS 321.125.
- ☐ The pre-construction ground surface slope and direction of runoff flow within the proposed areas of land disturbance.

**Floor Plan** must be provided for each floor and must show all of the following:

- ☐ The size and location of all rooms, doors, windows, structural features, exit passageways and stairs.
- ☐ The use of each room.
- ☐ The location of plumbing fixtures, chimneys, heating and cooling appliances and a heating distribution layout.
- ☐ The location and construction details of the braced wall lines.

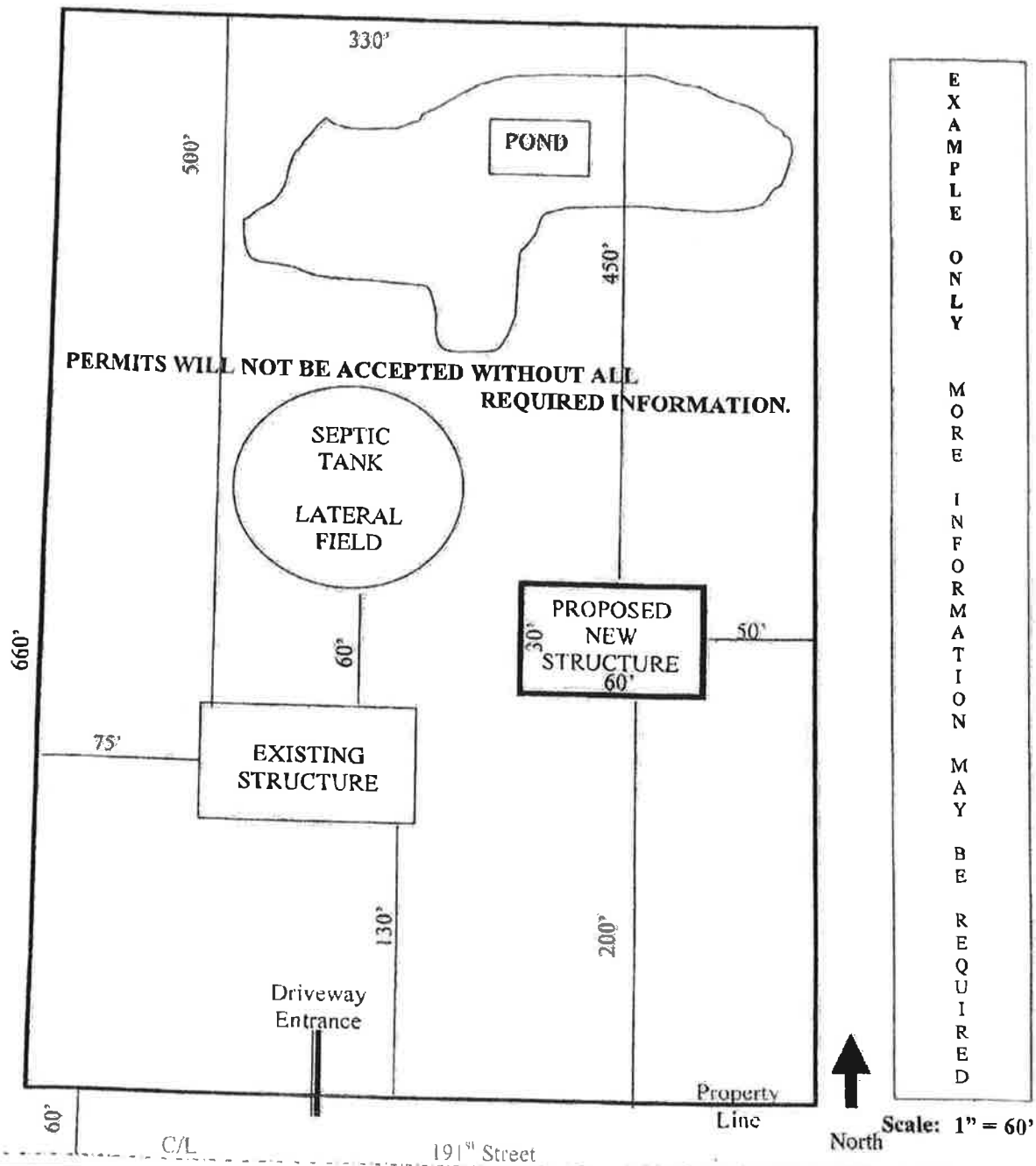
**Elevations** must show all of the following:

- ☐ The exterior appearance of the building, including the type of exterior materials.
- ☐ The location, size and configuration of doors, windows, roof, chimneys, exterior grade, footings and foundation walls.

**Storm Water Management Plan:**

- ☐ Must be prepared for a site where one acre or more of land will be disturbed.
- ☐ Must delineate and describe the post-construction storm water management practices to be employed to comply with SPS 321.126.

**All above Listed Materials MUST be Submitted PRIOR to the Issuance of a Building Permit**



### EXAMPLE SITE PLAN

NOTE ALL MEASUREMENTS IDENTIFIED ON THIS EXAMPLE SHOULD APPEAR ON THE SUBMITTED SITE PLAN. THE SUBMITTED SITE PLAN MUST BE DRAWN TO SCALE.

ALL MEASUREMENTS MUST BE TO SCALE

- Please indicate:
- The location of all existing and proposed buildings/structures. ☐
  - The distance from each structure to nearest property line. ☐
  - The distance from centerline of adjacent street to property lines. ☐
  - The scale used to draw the Site Plan. ☐

## WBA Regulatory Alert: New Wall bracing rules in effect April 1st



Posted: 27 Feb 2014 08:05 AM PST

WBA has been working with the Uniform Dwelling Code (UDC) Council and the Department of Safety and Professional Services (DSPS) over the last six months on an improved wall bracing code in Wisconsin. The new code preserves building safety and design flexibility, but it is easier to use and to understand for both builders and inspectors. It should also save money.

The DSPS is making a great deal of information on this matter available on their website. Click here: <http://165.189.64.111/Default.aspx?Page=4a17a637-d158-4c31-bcda-ae4be0744942> for a number of resources including the actual wall bracing rule language, a Wall Bracing Compliance Worksheet and a How To guide for the new provision.

In addition to these tools, WBA has been working with DSPS staff members to come up with answers to frequently asked questions (FAQ) on the wall bracing rule changes. We expect that FAQ to be available before the April 1, 2014 effective date. We will alert our members when it is available.

While the new code is easier and less expensive to comply with than the old rule, WBA recognizes that there will be questions from members now and after the April 1, 2014 effective date. Remember that you have free access to the WBA code hotline (1-888-947-2458). The hotline is ready and will be available for members that have questions on the wall bracing rule. WBA will continue to work with DSPS staff and the engineer that was hired to consult with us on the rule as well and will continue to provide you with the latest and most accurate information available.



Wisconsin Chapter

March 2014

# ELECTRICAL LICENSING GUIDE

## Wisconsin's New Law

*Many of the recent changes to Wisconsin's electrical licensing law were established by legislation passed in March of 2008. In addition to requiring statewide licensing, this legislation provided for a 5-year delayed effective date (April 1, 2013) to give people time to get the credentials required by the 2008 law.*

### The Important Facts You Need to Know

#### How ABC Can Help You

##### ABC of Wisconsin Electrical Exam Preparation Training –

Starting April 2, 2014. This is a review course to prepare for the Wisconsin Journeyman and Masters electrical exams. See [www.abcwit.org](http://www.abcwit.org) for more information.

- **Effective April 1, 2014** - Everyone (with certain exceptions) working as an electrician or in business as an electrical contractor will need to be licensed or registered with the Wisconsin Department of Safety and Professional Services (DPS).
- **Electricians** - If you have a current DPS electrical credential (i.e. Master license, Journeyman license, Apprentice or Beginning Electrician registration) you will be in compliance with the new law.
- **Apprentices** - If you are an active apprentice in a registered apprenticeship program, and have a current DPS electrical credential (i.e. Apprentice or Beginning Electrician registration), you will be in compliance with the new law.
- **Electrical Contractor** - If you have a current Electrical Contractor license and you are or employ a Master Electrician, you will be in compliance with the new law. If you are not a Master Electrician or do not employ a Master electrician, you will need to meet this requirement in order to be an Electrical Contractor.
- **No DPS Credential** – If you do not have a current DPS credential, you will need to either obtain a Master Electrician license, Journeyman license, or register as a Beginning Electrician. Beginning Electricians will be “converted” to Registered Electricians in the future.
- **Exemptions** - Many types of “electrical work” are exempt from the licensing requirement.
- **Grandfathering** - There is a very limited grandfathering clause affecting only individuals born before January 1, 1956.
- **Further Details** - Many “details” not addressed in the law will be established by Administrative Rules. The Administrative Rules have not yet been approved.



# ELECTRICAL LICENSING GUIDE

## Wisconsin Chapter

## Wisconsin's New Law

### Legislative Changes Began in 2008

Many of the recent changes to Wisconsin's electrical licensing law were established by legislation passed in March of 2008. In addition to requiring statewide licensing, this legislation provided for a 5-year delayed effective date (April 1, 2013) to give people time to get the credentials required by the 2008 law.

As the effective date approached, some of those regulated by the new law raised concerns and in March of 2013 the legislature pushed back the effective date of the legislation another year (April 1, 2014) in order to consider changes. In February of 2014 the legislature passed new legislation making several changes to the 2008 law but keeping the effective date of April 1, 2014.

Now, under provisions that will become law on April 1, 2014, no person may work as an electrician, and no person may engage in business as an electrical contractor, unless that person is licensed by, or registered with, the Department of Safety and Professional Services.

### Credentialing Requirements Effective April 1, 2014

<b>Electrical Contractor</b>	<ul style="list-style-type: none"><li>✓ No person may engage in the business of installing, repairing, or maintaining electrical wiring unless the person is licensed as an electrical contractor by the department of safety and professional services.</li><li>✓ No person who is not a master electrician may install, repair, or, maintain electrical wiring unless a master electrician is at all times responsible for the persons work.</li></ul>
<b>Master Electricians</b>	<p><b>At least one of the following:</b></p> <ul style="list-style-type: none"><li>✓ A bachelor's degree or master's degree in electrical engineering, followed by passage of an examination.</li><li>✓ 12 months of experience as a journeyman electrician, followed by passage of an examination.</li><li>✓ 60 months, with at least 10,000 hours experience, followed by passage of an examination.</li></ul>
<b>Journeyman Electricians</b>	<p><b>At least one of the following:</b></p> <ul style="list-style-type: none"><li>✓ Completion of a construction electrician apprenticeship program lasting at least 3 years<sup>ii</sup> and that is approved by the U.S. department of labor or the department of workforce development, followed by passage of an examination.</li><li>✓ 48 months, with at least 8,000 hours experience, followed by passage of an examination (completion of a 2-year approved program shall be equivalent to 12 months and 2,000 hours of experience).</li></ul>
<b>Apprentice Electricians</b>	<ul style="list-style-type: none"><li>✓ The department of safety and professional services must promulgate rules for the registration of electrical apprentices.</li></ul>
<b>Registered Electricians</b> (formerly Beginning Electricians)	<ul style="list-style-type: none"><li>✓ The department of safety and professional services must promulgate rules that establish procedures for the enrollment of registered electricians.</li><li>✓ Registered electricians must be supervised by licensed journeyman or master electricians.</li><li>✓ The department must promulgate rules to differentiate the scope of installation, repair, or maintenance of electrical wiring that may be performed by registered electricians.</li></ul>
<b>Grandfathering</b>	<ul style="list-style-type: none"><li>✓ Persons born on or before January 1, 1956 and who have at least 15 years of experience in installing, repairing, or maintaining electrical wiring will be regulated under separate rules to be developed.</li><li>✓ It is generally presumed that these individual will not be required to pass an examination and may be limited by other restriction.</li></ul>



# ELECTRICAL LICENSING GUIDE

## Wisconsin Chapter

## Wisconsin's New Law

### Exemptions to Wisconsin's Electrical Licensing Law

1. A residential property owner who installs, repairs, or maintains electrical wiring on premises that the property owner owns and occupies as a residence, unless a license or registration issued by the department is required by local ordinance.
2. A person engaged in maintaining or repairing electrical wiring within an existing facility or on premises owned or leased by the person or by an entity for which the person is an agent or employee.
3. A person engaged in installing, repairing, or maintaining electrical wiring, apparatus, or equipment for elevators and escalators.
4. A person engaged in installing, repairing, or maintaining equipment or systems that operate at 100 volts or less.
5. A person engaged in installing, repairing, or maintaining an electronic system designed to monitor a premise for the presence of an emergency, to issue an alarm for an emergency, or to detect and summon aid for an emergency.
6. A person engaged in installing, repairing, or maintaining electrical wiring of facilities that support telecommunication services that is provided by a telecommunications provider.
7. A person engaged in installing, repairing, or maintaining manufactured equipment or utilization equipment, including ballasts, electric signs and luminaries or any other manufactured system that is designed to provide a function that is not primarily electrical in nature if the installation, repair, or maintenance does not involve the modification or installation of branch circuit conductors that are external to the manufactured or utilization equipment or other manufactured system.
8. A person engaged in installing electrical wiring for components of a manufactured home or a manufactured building, while the manufactured home or the manufactured building is at or in the facility at which it is being manufactured.
9. A person employed by an electricity provider, or a subcontractor of an electricity provider, who installs, repairs, or maintains electrical wiring for equipment that is installed in the normal course of providing utility services by the electricity provider.
10. A person engaged in installing, repairing, or maintaining electrical wiring that provides lighting or signals for public thoroughfares and for public airports.
11. A person engaged in installing, repairing, or maintaining electric lines on the utility side of substations and other distribution facilities owned or operated by customers or members of electricity providers.
12. A person employed by an electricity provider, or a subcontractor of an electricity provider, who installs, repairs, or maintains primary voltage electric facilities that are owned by the electricity provider's customers or members and that operate at greater than 600 volts.
13. A person employed by an electricity provider, or a subcontractor of an electricity provider, who restores service during an emergency.
14. A person who installs a replacement for an existing switch or outlet, if the replacement switch or outlet has a rating of not more than 20 amperes.
15. A person engaged in installing electrical wiring within an existing industrial facility or existing manufacturing facility owned or leased by the person or by an entity for which the person is an agent or employee.
16. A person who installs electrical wiring without receiving payment in a new one or two family dwelling that is being constructed by a qualified nonprofit corporation.

### Municipal Authority

Municipal licenses and registrations issued to electricians, electrical contractors, and electrical inspectors are no longer valid (or required) as of March 31, 2014. Municipalities may no longer impose any registration, licensing, or certification requirements on electrical contractors, electricians, or electrical inspectors. And no person may work as an electrician, and no person may engage in business as an electrical contractor, unless that person is licensed by, or registered with, the Department of Safety and Professional Services.

### Reciprocity

Many of the most recent changes were intended to facilitate reciprocal agreements with neighboring states. The 2014 legislation allows the department to enter into reciprocal agreements with other states provided the credentials are comparable, the individual submits an application, and pays the fee. It is presumed the department will begin to negotiate such agreements.



Wisconsin Chapter

March 2014

# ELECTRICAL LICENSING GUIDE

## Wisconsin's New Law

### Topics to be Further Defined in Administrative Rules

<b>Inspections</b>	<ul style="list-style-type: none"><li>✓ Current law requires the department to establish rules for the inspection of electrical wiring.</li><li>✓ This legislation prohibits the department from requiring inspection of electrical wiring in an existing industrial facility unless the project required plan review.</li><li>✓ Under the bill, all inspections shall be performed by inspectors certified by the department.</li><li>✓ Promulgate rules that establish criteria for the certification of electrical inspectors.</li></ul>
<b>Registered electricians and electrical apprentices</b>	<ul style="list-style-type: none"><li>✓ Promulgate rules that establish criteria for the enrollment of registered electrician and the registration of electrical apprentices.</li><li>✓ Promulgate rules that establish requirements for the supervision of registered electricians.</li></ul>
<b>Registration and licensing procedure</b>	<ul style="list-style-type: none"><li>✓ Promulgate rules that establish the procedures for the licensing of journeyman electricians and master electricians.</li></ul>
<b>Suspension or revocation</b>	<ul style="list-style-type: none"><li>✓ Establish criteria and a process for the suspension and revocation of registrations and licenses.</li></ul>
<b>Types of electricians</b>	<ul style="list-style-type: none"><li>✓ The department may promulgate rules that recognize and regulate different types and subtypes of electricians.</li></ul>
<b>Scope of work</b>	<ul style="list-style-type: none"><li>✓ Promulgate rules to differentiate the scope of installation, repair, or maintenance that may be performed by electrical contractors, registered electricians, journeyman electricians, master electricians, and any additional type of electrician created in rules.</li></ul>
<b>Continuing Education</b>	<ul style="list-style-type: none"><li>✓ Continuing Education requirements for all types of electricians will be defined in Administrative Rule.</li></ul>

### Additional Resources

- For Master or Journeyman electrician exam locations check the Department of Safety and Professional Services website ([www.dsps.wi.gov](http://www.dsps.wi.gov)).
- If you are unable to schedule an exam before April 1, 2014, register as a "Beginning Electrician" on the DSPS website ([www.dsps.wi.gov](http://www.dsps.wi.gov)).
- ABC of Wisconsin has Electrical Exam Preparation training (Master and Journeyman) scheduled starting on April 2nd and concluding on May 21st. Visit [www.abcwi.org](http://www.abcwi.org) and click on the "events" tab for more details. For more information contact Elizabeth Roddy at 608-244-6050 or [eroddy@abcwi.org](mailto:eroddy@abcwi.org).
- For questions about this document contact: John Mielke at 608-244-5883 or [jmielke@abcwi.org](mailto:jmielke@abcwi.org).

*This guide is intended to be a summary of the major provisions of Wisconsin's electrical licensing laws. For actual language<sup>iii</sup> refer to Wisconsin State Statute Ch. 101 and Wisconsin Administrative Rule SPS 305.40.*

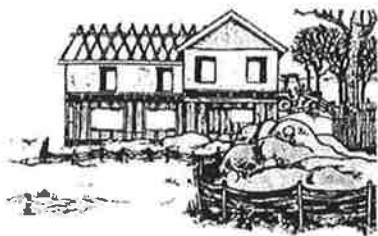
<sup>iii</sup> See "Exemptions to Wisconsin's Electrical Licensing Laws"

The actual length of approved apprenticeship programs is determined by either the Wisconsin Bureau of Apprenticeship Standard or the U.S. Department of Labor. Websites and printed material may not yet be updated to reflect changes in law and Administrative Rule resulting in confusing or seemingly contradictory information.

**Associated Builders and Contractors of Wisconsin, Inc.**

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# 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.

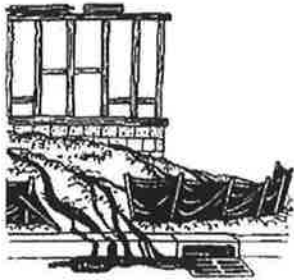
If you need help developing an erosion control plan or training your staff, contact your local building inspection, zoning or erosion control office.

## 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 1000 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 1/4" 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,



# Standard Erosion Control Plan

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

According to SPS 320 & 321 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 \_\_\_\_\_

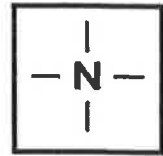
BUILDER \_\_\_\_\_ OWNER \_\_\_\_\_

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





### SITE DIAGRAM

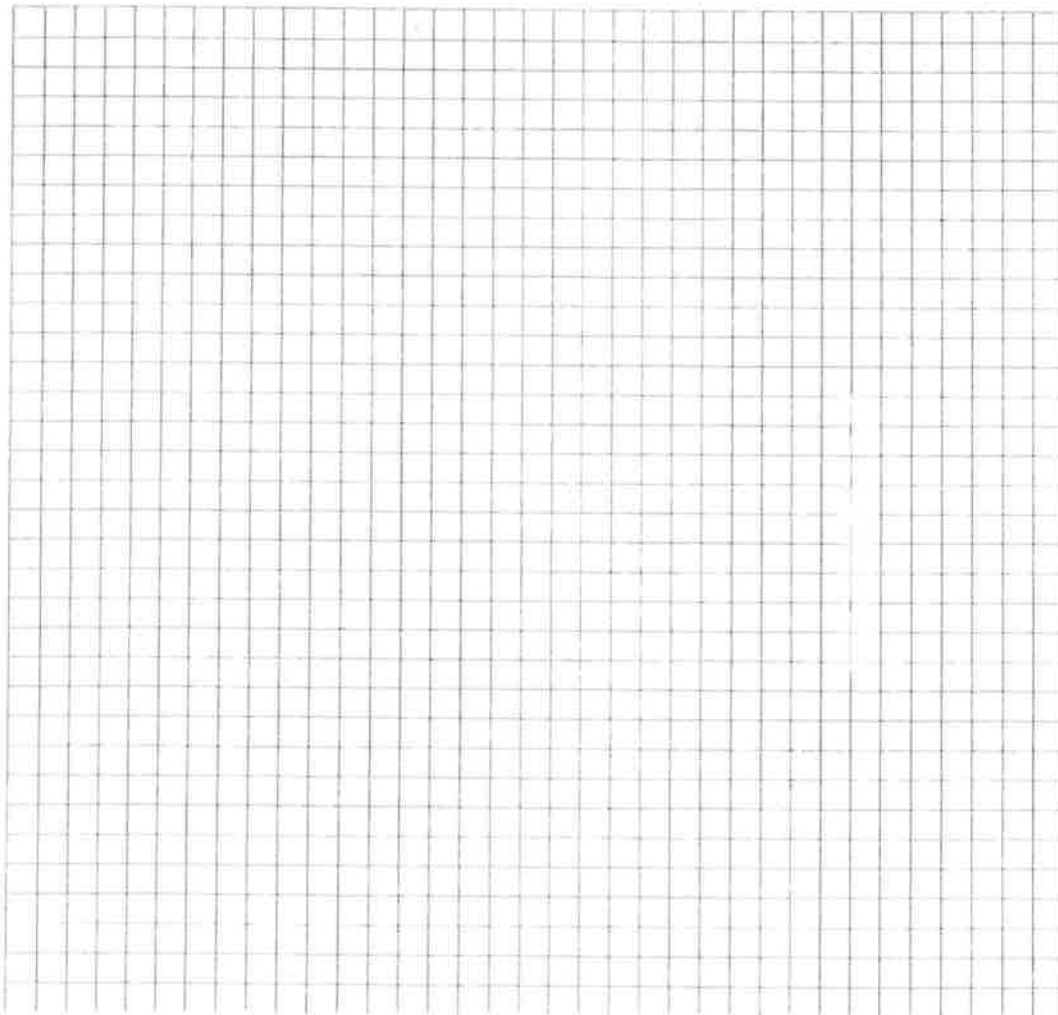
Scale: 1 inch = \_\_\_\_ feet

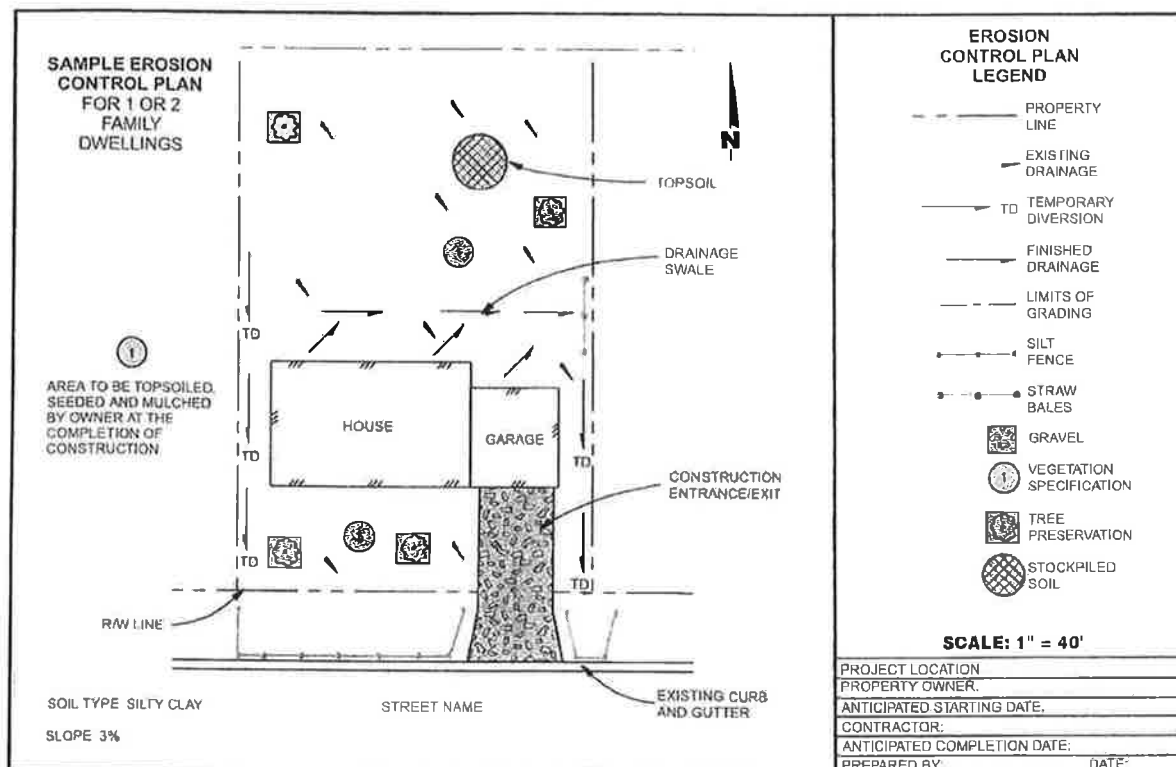
Please indicate north  
by completing the arrow.



### 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





### 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.

# 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.

**TABLE 322.31-1  
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT<sup>a</sup>**

Zone	Fenestration U-Factor	Skylight U-Factor	Ceiling R-Value	Wood Frame Wall R-Value	Mass Wall R-Value	Floor R-Value	Basement or Crawl Space Wall R-Value <sup>b</sup>	Heated Slab R-Value <sup>c</sup>	Unheated Slab R-Value <sup>d</sup>
1	0.35	0.60	49 <sup>e</sup>	19 <sup>f</sup> or 13+5 <sup>g</sup>	15	30 <sup>h</sup>	10/13	10/15	10
2	0.35	0.60	49 <sup>e</sup>	21 <sup>f</sup>	19	30 <sup>h</sup>	10/13	10/15	10

<sup>a</sup> R-values are minimums. U-factors are maximums.

<sup>b</sup> The first R-value applies to continuous insulation. The second R-value applies to framing cavity insulation. Either insulation meets the requirement.

<sup>c</sup> The first R-value applies under the entire slab, regardless of depth below grade. The second R-value applies to the slab edge where the bottom of the slab is less than 12 inches below adjacent grade. Slab edge insulation shall extend downward from the top of the slab for a minimum of 48 inches or downward to at least the bottom of the slab and then horizontally to the interior or exterior for a minimum total distance of 48 inches. Also, see s. SPS 321.16 for protection against frost for slabs with supports less than 4 feet below grade.

<sup>d</sup> The R-value applies to any slab, the bottom of which is less than 12 inches below adjacent grade. Also, see s. SPS 321.16 for protection against frost for slabs with supports less than 4 feet below grade.

<sup>e</sup> See s. SPS 322.32 (1) for application and permitted reduced R-value.

<sup>f</sup> R-19 and R-21 may be compressed into a 2X6 cavity.

<sup>g</sup> "13+5" means R-13 cavity insulation plus R-5 insulated sheathing. If structural sheathing covers 25% or less of the exterior, insulating sheathing is not required where structural sheathing is used. If structural sheathing covers more than 25% of the exterior, structural sheathing shall be covered with insulated sheathing of at least R-2.

<sup>h</sup> Or insulation sufficient to fill the framing cavity with a minimum of R-19.

**TABLE 322.31-2  
EQUIVALENT U-FACTORS**

Zone	Fenestration U-Factor	Skylight U-Factor	Ceiling U-Factor	Wood Frame Wall U-Factor	Mass Wall U-Factor	Floor U-Factor	Basement Wall U-Factor	Crawl Space U-Factor
1	0.35	0.60	0.026	0.060	0.060	0.033	0.065	0.065
2	0.35	0.60	0.026	0.057	0.057	0.033	0.065	0.065

**TABLE 322.31-3  
WARM AIR FURNACES AND BOILERS, MINIMUM EFFICIENCY REQUIREMENTS**

Equipment Type	Minimum Efficiency	Test Procedure
Natural gas and propane furnace	90% AFUE	DOE 10 CFR Part 430 or ANSI Z21.47
Natural gas and propane hot water boilers	90% AFUE	DOE 10 CFR Part 430
Oil-fired furnaces	83% AFUE	DOE 10 CFR Part 430 or UL 727
Oil-fired hot water boilers	84% AFUE	DOE 10 CFR Part 430

WALL BRACING

RULE TEXT

## TEXT OF RULE

SECTION 1. SPS 320.09 (5) (b) 2. d. is amended to read:

**SPS 320.09 (5) (b) 2. d.** The location and construction details of ~~the braced wall lines~~ wall bracing on each building side and floor level.

SECTION 2. SPS 321.02 (1) (c) is amended to read:










**SPS 321.02 (1) (c) Wind loads.** Dwellings shall be designed and constructed to withstand either a horizontal and uplift pressure of 20 pounds per square foot acting over the surface area or the wind loads determined in accordance with ASCE 7-05, Minimum Design Loads for Buildings and Other Structures.

SECTION 3. SPS 321.02 (1) (c) (Note) is created to read:

**SPS 321.02 (1) (c) Note:** ASCE 7-05 allows for substantial reduction from 20 psf as applied to the surface area.

SECTION 4. SPS Table 321.25-A is amended to read:

**Table 321.25-A**  
**SIZE, HEIGHT AND SPACING OF WOOD STUDS<sup>a,c</sup>**  
(Partial Table)

Nominal Stud Size (inches)	Maximum Laterally Unsupported Stud Height <sup>a</sup> (feet)	Bearing and Exterior Nonbearing Walls				Interior Nonbearing Walls	
		Maximum Spacing When Supporting Roof and Ceiling Only (inches)	Maximum Spacing When Supporting One Floor, Roof and Ceiling (inches)	Maximum Spacing When Supporting Two Floors, Roof and Ceiling (inches)	Maximum Spacing When Supporting One Floor Only (inches)	Maximum Laterally Unsupported Stud Height <sup>a</sup> (feet)	Maximum Spacing (inches)
		  	 				
2x6	10 <sup>d</sup>	24	24	16	24	20	24

<sup>c</sup>All spacing dimensions are to the center of the studs.

<sup>d</sup>Unless supported by structural analysis, use of stud heights that range from over 10 feet to 12 feet is limited to where all of the following conditions are met: snow loads do not exceed 25 psf; tributary dimensions for floors and roofs do not exceed 6 feet; spans for floors and roofs do not exceed 12 feet; eave projections do not exceed 2 feet; the bending modulus of elasticity is at least 1,600,000 lb<sub>f</sub> per square inch; the allowable fiber stress in bending for the wood is not less than 1310 psi as determined by multiplying the AF&PA NDS tabular base design value by the repetitive use factor, and by the size factor for all species except southern pine; utility, standard, stud, and No. 3 grade lumber of any species is not used; and the allowable deflection does not exceed whichever of the following are applicable:

Interior walls and partitions – span height/180.

Exterior walls with plaster or stucco finish – span height/360.

Exterior walls with other brittle finishes – span height/240.

Exterior walls with flexible finishes – span height/120.

Exterior walls with interior gypsum wallboard finish – span height/180.

Any manufacturer-specified limits for any included windows or doors.

SECTION 5. SPS 321.25 (7) (d) and (8) (a) (Note) are amended to read:

**SPS 321.25 (7) (d)** Cripple walls with a stud height of 14 inches or greater shall be braced in accordance with sub. (8) ~~or (9)~~.

**(8) (a) Note:** Acceptable engineering wall bracing practices include any of the following:

1. The provisions under s. section R602.10 or R602.12 of the International Residential Code (IRC) – 2009 2012.
2. Design in accordance with the engineering basis of the 2012 IRC bracing provisions, such as described in Crandell, J. and Martin, Z., “The Story Behind the 2009 IRC Wall Bracing Provisions (Part 2: New Wind Bracing Requirements),” *Wood Design Focus*, Forest Products Society, Peachtree Corners, GA, Spring 2009.
3. Installation instructions from the manufacturer of the bracing product that are compliant with section SPS 321.02.

SECTION 6. SPS 321.25 (8) (b) and (c), Tables 321.25–G to 321.25–J, and Figures 321.25–A to 321.25–C are repealed and recreated to read:

**SPS 321.25 (8) (b) *Bracing materials and methods.*** Wall bracing shall consist of the materials and methods listed in Table 321.25–G or approved alternatives capable of providing the required wind load resistance as determined in accordance with s. SPS 321.02 (1) (c).



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Table 321.25-G  
BRACING METHODS<sup>a, f</sup>

Material	Minimum Brace Material Thickness or Size	Maximum Nominal Wall Height <sup>b</sup>	Minimum Braced Wall Panel Width or Brace Angle	Connection Criteria	
				Minimum Fasteners	Maximum Spacing
Intermittent Bracing Methods					
LIB <sup>c</sup> Let-in bracing	1x4 wood brace (or approved metal brace installed per manufacturer instructions)	10'	45° angle and maximum 16" o.c. stud spacing <sup>b</sup>	2-8d common nails or 3-8d box nails (2 3/8" long x 0.113" diameter)	Per stud and top and bottom plates <sup>c</sup>
DWB Diagonal wood boards	¾" (1" nominal) for maximum 24" o.c. stud spacing	10'	48"	2-8d box nails (2 3/8" long x 0.113" diameter) or 2 - 1 3/4" long 16-gage staples	Per stud and top and bottom plates <sup>c</sup>
WSP Wood structural panel	3/8" for maximum 16" o.c. stud spacing; 7/16" for maximum 24" o.c. stud spacing	10'	48"	6d common nail or 8d box nail (2 3/8" long x 0.113" diameter); or 7/16"- or 1/2"-crown 16-gage staples, 1 1/4" long	6" edges, 12" field (nails) 3" edges, 6" field (staples)
SFB Structural fiberboard sheathing	½" for maximum 16" o.c. stud spacing	10'	48"	1 1/2" long x 0.120" diameter galvanized roofing nails or 1"-crown 16-gage staples, 1 1/4" long	3" edges, 6" field
GB Gypsum board (installed on both sides of wall)	½" for maximum 24" o.c. stud spacing	10'	96"	5d cooler nails, or #6 screws	7" edges, 7" field (including top and bottom plates)
Continuous Sheathed Bracing Methods					
CS-WSP <sup>d</sup> Continuous sheathed WSP	3/8" for maximum 16" o.c. stud spacing; 7/16" for maximum 24" o.c. stud spacing	12'	Refer to Table 321.25-H	Same as WSP	Same as WSP
CS-SFB <sup>d</sup> Continuous sheathed SFB	½" for maximum 16" o.c. stud spacing			Same as SFB	Same as SFB
Narrow Panel Bracing					
PF Portal frame	7/16"	12'	Refer to Figure 321.25-A	Refer to Figure 321.25-A	Refer to Figure 321.25-A

<sup>a</sup>The interior side of all exterior walls shall be sheathed with minimum 1/2-inch gypsum wallboard unless otherwise permitted to be excluded by this subsection. All edges of panel-type wall bracing, except horizontal joints in GB bracing, shall be attached to framing or blocking.

<sup>b</sup>The actual measured wall height shall include stud height and thickness of top and bottom plates. The actual wall height shall be permitted to exceed the listed nominal values by not more than 4 1/2 inches. Tabulated bracing amounts in s. SPS 321.25 (8) (c) are based on a 10-foot nominal wall height for all bracing methods and shall be permitted to be adjusted to other nominal wall heights not exceeding 12 feet in accordance with footnotes to Table 321.25-I or Table 321.25-J.

<sup>c</sup>LIB is not permitted for walls supporting a roof and two floors. Two LIB braces installed at a 60° angle from horizontal shall be permitted to be substituted for each 45° angle LIB brace.

<sup>d</sup>Bracing with CS-WSP and CS-SFB shall have sheathing installed on all sheathable surfaces above, below, and between wall openings.

<sup>e</sup>Shall be attached to the top and bottom plates and any intermediate studs, in one continuous length.

<sup>f</sup>Each braced panel may contain no more than one hole, having a maximum dimension of no more than ten percent of the least dimension of the panel, and confined to the middle three-fourths of the panel.

**Table 321.25–H<sup>a, b</sup>**

**MINIMUM WIDTHS OF CS-WSP AND CS-SFB BRACED WALL PANELS**

Maximum Opening Height Adjacent to Braced Wall Panel	Minimum Width of Full-Height Braced Wall Panel (inches)			
	8' Tall Wall	9' Tall Wall	10' Tall Wall	12' Tall Wall
5'– 4"	24	27	30	36
6'– 8"	32	30	30	36
8'	48	41	38	36
9'	-	54	46	41
10'	-	-	60	48
12'	-	-	-	72

<sup>a</sup>Sheathing shall extend from the top of the top plate to the bottom of the bottom plate and may be multiple sheets. All joints shall be blocked.

<sup>b</sup>Interpolation is permitted.

**FRONT ELEVATION**

EXTENT OF HEADER WITH DOUBLE PORTAL FRAMES (TWO PORTAL FRAME PANELS)

EXTENT OF HEADER WITH SINGLE PORTAL FRAME PANEL

2" - 18" FINISHED WIDTH OF OPENING FOR SINGLE OR DOUBLE PORTAL

4" MAX PONY WALL HEIGHT

12" MAX TOTAL WALL HEIGHT

10" MAX PANEL HEIGHT

MIN. 3" X 11-1/4" NET HEADER  
STEEL HEADER PROHIBITED

FASTEN SHEATHING TO HEADER WITH 8D COMMON OR GALVANIZED BOX NAILS IN 3" GRID PATTERN AS SHOWN

HEADER TO JACK-STUD STRAP ON BOTH SIDES OF OPENING OPPOSITE SIDE OF SHEATHING; STRAP CAPACITY SHALL EQUAL 1,000 LBS. OR 4,000 LBS. WHEN PONY WALL IS PRESENT

MIN. DOUBLE STUD FRAMING COVERED WITH MIN. 7/16" THICK WOOD STRUCTURAL PANEL SHEATHING WITH 8D COMMON OR GALVANIZED BOX NAILS AT 3" O.C. IN ALL FRAMING (STUDS, BLOCKING, AND SILLS) TYP.

**MINIMUM PANEL LENGTH**

WALL HEIGHT, ft.	8	9	10	11	12
PANEL LENGTH, in.	16	18	20	22	24

MIN. (2) 1/2" DIAM. ANCHOR BOLTS INSTALLED PER S. SPS 321.18 (1) (c), WITH 2" x 2" x 3/16" PLATE WASHER

**OVER CONCRETE OR MASONRY BLOCK FOUNDATION**

WOOD STRUCTURAL PANEL SHEATHING TO TOP OF BAND OR RIM JOIST

NAIL SOLE PLATE TO JOIST PER TABLE IN APPENDIX

**OVER RAISED WOOD FLOOR - FRAMING ANCHOR OPTION**

WOOD STRUCTURAL PANEL SHEATHING CONTINUOUS OVER BAND OR RIM JOIST

NAIL SOLE PLATE TO JOIST PER TABLE IN APPENDIX

**OVER RAISED WOOD FLOOR - OVERLAP OPTION**

MIN. OVERLAP 9-1/4"

**SECTION**

TENSION STRAP (ON OPPOSITE SIDE OF SHEATHING)

WSP OR CS-WSP BRACE PANEL

IF NEEDED PANEL SPLICE EDGES SHALL OCCUR AND BE ATTACHED TO COMMON BLOCKING WITHIN 24" OF WALL MID-HEIGHT. ONE ROW OF 3" O.C. NAILING IS REQUIRED IN EACH PANEL EDGE.

**TYPICAL PORTAL FRAME CONSTRUCTION**

COMMON STUD AND ONE OR MORE SHOULDER STUDS PER S. SPS 321.25 (3) (b)

ANCHOR BOLTS PER SPS s. 321.18 (1) (c)

(2) FRAMING ANCHORS APPLIED ACROSS SHEATHING JOINT WITH A CAPACITY OF 870 LBS IN THE HORIZONTAL AND VERTICAL DIRECTIONS

WOOD STRUCTURAL PANEL SHEATHING OVER APPROVED BAND OR RIM JOIST

ATTACH SHEATHING TO BAND OR RIM JOIST WITH 8D COMMON NAILS AT 3" O.C. TOP AND BOTTOM

WOOD STRUCTURAL PANEL SHEATHING OVER APPROVED BAND OR RIM JOIST

FASTEN TOP PLATE TO HEADER WITH TWO ROWS OF 18D SINKER NAILS AT 3" O.C. TYP.

MIN. 7/16" WOOD STRUCTURAL PANEL SHEATHING

MIN. 2X4 STUDS WITH PONY WALL HEIGHT UP TO 2'; MIN. 2X6 STUDS WITH PONY WALL HEIGHT GREATER THAN 2'.

NAIL SOLE PLATE TO JOIST PER TABLE IN APPENDIX

APPROVED BAND OR RIM JOIST

NAIL SOLE PLATE TO JOIST PER TABLE IN APPENDIX

APPROVED BAND OR RIM JOIST

**Note:** As shown in the above cross-section, ½-inch gypsum wallboard is not required on the interior side of the wall.

1. For the purpose of determining bracing amounts, the outermost extents of the building plan at each floor level shall be circumscribed with a rectangle to define the overall length of each building side as shown in Figure 321.25-B.

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3. Where used, the number of intermittent brace panels applied to walls parallel to each rectangle side shall comply with Table 321.25-I.

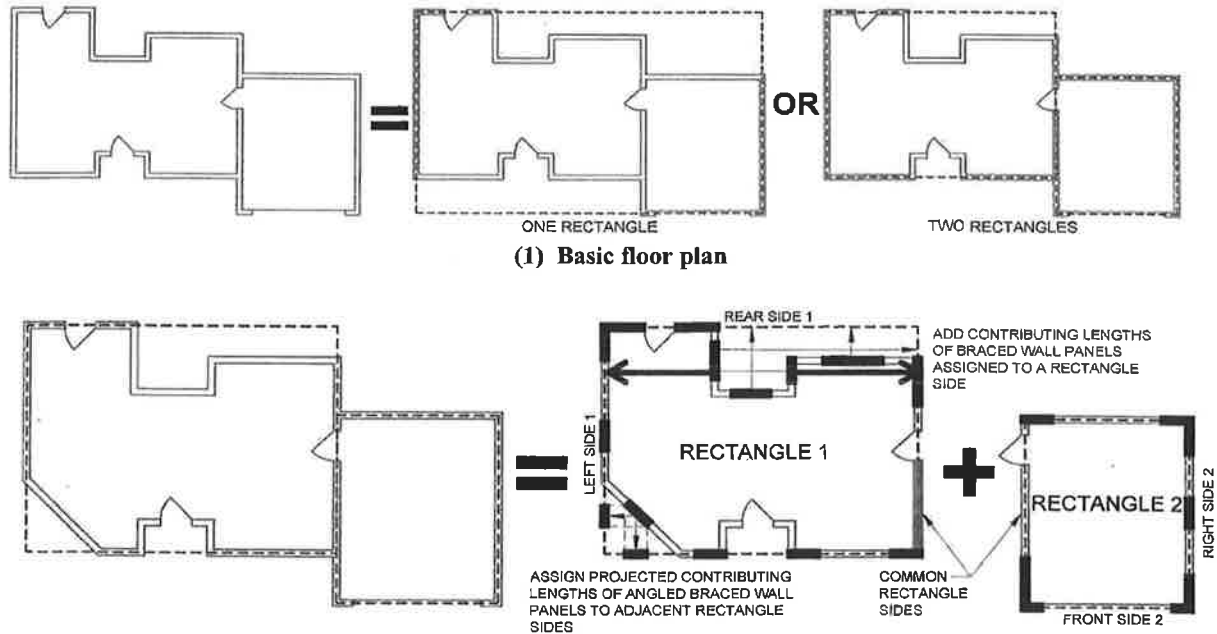
4. Where used, the total length of continuous sheathed brace panels applied to walls parallel to each building side shall comply with Table 321.25-J.

5. The location of brace panels applied to walls parallel to each building side shall comply with Figure 321.25-C.

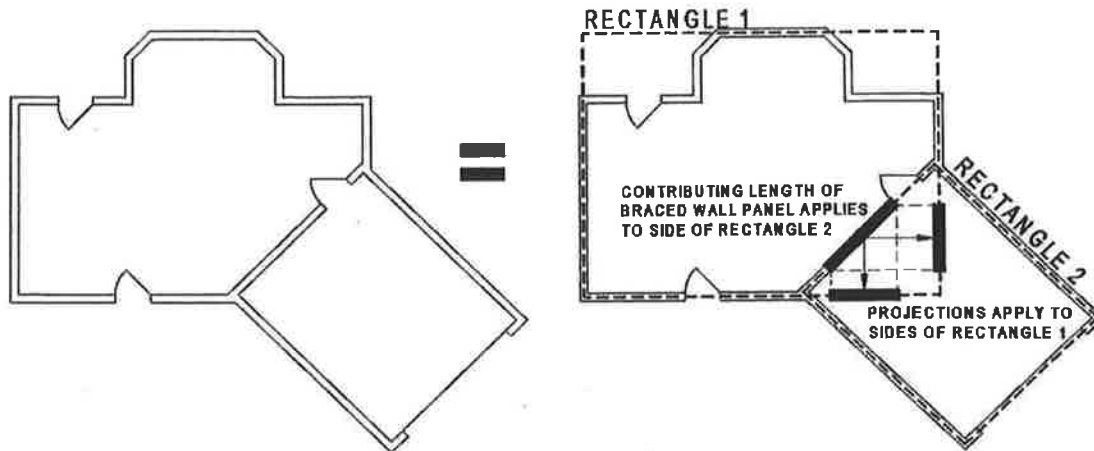
6. Balloon-frame walls may be no longer than 21 feet and shall have a maximum height of two floors unless constructed in accordance with an approved design. Wall framing shall be continuous from the lowest floor to the wall top plate at the roof. All edges of sheathing shall be supported on and fastened to blocking or framing. Braced wall panels may not be required on the balloon-frame wall portion provided the bracing amount and brace spacing requirement are satisfied for the building side. Where brace panels are located on the balloon-frame wall portion, they shall have a height-to-width ratio of not more than 2.5:1.

7. For a gable end wall, if the brace-panel height does not exceed 12 feet at the highest portion and if the 12½-foot and 21-foot spacing requirements in Figure 321.25-C are met, the wall is adequately braced. Where a brace panel exceeds 12 feet in height, it shall have a height-to-width ratio of not more than 2.5:1, and comply with Figure 21.25-C.

**Figure 321.25-B**  
**DEFINING BUILDING SIDES AND LENGTHS WITH ONE OR MORE CIRCUMSCRIBED RECTANGLES<sup>a,b,c</sup>**



**(2) Angled-building-side plan<sup>d</sup>**



**(3) Angled floor plan<sup>e</sup>**

<sup>a</sup>Each floor plan level shall be circumscribed with one or more rectangles around the entire floor plan at the floor level under consideration as shown. When multiple rectangles are used, each side shall be braced as though it were a separate building and the bracing amount added together along the common wall where adjacent rectangles overlap or abut.

<sup>b</sup>Rectangles shall surround all enclosed plan offsets and projections. Chimneys, partial height projections, and open structures, such as carports and decks, shall be excluded from the rectangle.

<sup>c</sup>Each rectangle shall have a maximum rectangle length-to-width ratio of 3:1.

<sup>d</sup>Projected contributing lengths of angled braced wall panels shall be assigned to the closest rectangle sides, as shown for the angled corner in the angled-building-side-plan shown above.

<sup>e</sup>Braced wall panels located on a common wall where angled rectangles intersect, as shown in Figure 321.25-B(3), shall have their contributing length applied towards the required length of bracing for the parallel rectangle side and its projected contributing lengths towards the adjacent angled rectangle sides. Where the common side of rectangle 2 as shown in Figure 321.25-B(3) has no physical wall, the portion shall be designed in accordance with s. SPS 321.25 (8) (a).

**Table 321.25–I**  
**REQUIRED NUMBER OF INTERMITTENT BRACED WALL PANELS**  
**ON WALLS PARALLEL TO EACH RECTANGLE SIDE**  
**AT EACH FLOOR LEVEL<sup>a,b,c,d,e,f,h</sup>**

Wall Supporting:		Required Number of Brace Panels on a Building Side		
		Length of Perpendicular Side (feet) <sup>g</sup>		
		≤25	≤50	≤75
Roof and ceiling only		1 <sup>i</sup>	2	3
One floor, roof and ceiling		2	4	6
Two floors, roof and ceiling		3	6	9

<sup>i</sup>Interpolation is permitted. Extrapolation to buildings larger than addressed in this table is prohibited.

<sup>b</sup>This table applies to wind exposure category B. For wind exposure category C or D, multiply the number of braced wall panels required by 1.3 or 1.6, respectively.

Wind exposure category B is comprised of urban and suburban areas, wooded areas, or other terrain with numerous closely spaced obstructions having the size of single-family dwellings or larger. Exposure B shall be assumed unless the site meets the definition of another type exposure.

Wind exposure category C is comprised of flat, open country and grasslands with scattered obstructions, including surface undulations or other irregularities, having heights generally less than 30 feet extending more than 1,500 feet from the building site in any quadrant. This exposure also applies to any building located within Exposure B type terrain where the building is directly adjacent to open areas of Exposure C type terrain in any quadrant for a distance of more than 600 feet.

Wind exposure category D is comprised of flat, unobstructed areas exposed to wind flowing over open water for a distance of at least 1 mile. This exposure applies only to those buildings and other structures exposed to the wind coming from over the water. Exposure D extends inland from the shoreline a distance of 1,500 feet or 10 times the height of the building or structure, whichever is greater.

<sup>c</sup>Tabulated values are based on a nominal wall height of 10 feet. For nominal wall heights other than 10 feet and not more than 12 feet, multiply the required number of brace panels by the following factors: 0.9 for 8 feet, 0.95 for 9 feet, 1.15 for 11 feet, or 1.3 for 12 feet.

<sup>d</sup>Tabulated values are based on a roof with a top-of-wall-to-ridge height of 10 feet. For top-of-wall-to-ridge heights other than 10 feet, multiply the required number of brace panels by the following factors for each floor level support condition:

Roof only – 0.7 for 5 feet, 1.3 for 15 feet, or 1.6 for 20 feet

Roof + 1 Floor – 0.85 for 5 feet, 1.15 for 15 feet, or 1.3 for 20 feet

Roof + 2 Floors – 0.9 for 5 feet or 1.1 for 15 feet.

<sup>e</sup>Where minimum ½-inch gypsum wallboard is not included on the interior side of the wall, multiply the number of braced wall panels by 1.7 for LJB bracing or 1.4 for all other bracing methods, except this increase is not required for the portal frame method.










<sup>f</sup>Adjustments in footnotes b to e apply cumulatively. Fractions of panels shall be rounded to the nearest one-half braced wall panel.

<sup>g</sup>Perpendicular sides to the front and rear sides are the left and right sides. Perpendicular sides to the left and right sides are the front and rear sides. See Figure 321.25–B.

<sup>h</sup>The following braced wall panel conditions shall be permitted to be counted as one-half a braced wall panel toward meeting the required number of panels: (1) one 60 degree LJB; (2) one 48" GB or one 96" GB with gypsum wallboard on one side; (3) one 36" WSP or SFB braced wall panel for wall heights not more than 9 feet; (4) a 48" WSP or SFB braced wall panel where there is no more than one unblocked horizontal joint; or (5) one PF brace panel complying with Figure 321.25–A.

<sup>i</sup>This value of less than 2 serves only as the beginning value for calculation purposes. The resulting value shall be 2 or greater, to be consistent with subd. 2.

**Table 321.25-J**  
**REQUIRED LENGTH OF CONTINUOUS BRACING ON WALLS PARALLEL TO EACH**  
**RECTANGLE SIDE AT EACH FLOOR LEVEL<sup>a,b,c,d,e,g,h</sup>**

Top-of-Wall-to-Ridge Height (feet)	Wall Supporting:		Total Required Length (feet) of Full-Height Bracing on Any Side of Rectangle							
			Length of Perpendicular Side (feet) <sup>f</sup>							
			10	20	30	40	50	60	70	80
10	Roof and ceiling only		2.0 <sup>i</sup>	3.5 <sup>i</sup>	5.0	6.0	7.5	9.0	10.5	12.0
	One floor, roof and ceiling		3.5 <sup>i</sup>	6.5	9.0	12.0	14.5	17.0	19.8	22.6
	Two floors, roof and ceiling		5.0	9.5	13.5	17.5	21.5	25.5	29.2	33.4
15	Roof and ceiling only		2.6 <sup>i</sup>	4.6	6.5	7.8	9.8	11.7	13.7	15.7
	One floor, roof and ceiling		4.0	7.5	10.4	13.8	16.7	19.6	22.9	26.2
	Two floors, roof and ceiling		5.5	10.5	14.9	19.3	23.7	27.5	32.1	36.7
20	Roof and ceiling only		2.9 <sup>i</sup>	5.2	7.3	8.8	11.1	13.2	15.4	17.6
	One floor, roof and ceiling		4.5	8.5	11.8	15.6	18.9	22.1	25.8	29.5
	Two floors, roof and ceiling		6.2	11.9	16.8	21.8	27.3	31.1	36.3	41.5

<sup>a</sup>Interpolation is permitted. Extrapolation to buildings larger than addressed in this table is prohibited.

<sup>b</sup>This table applies to wind exposure category B. For wind exposure category C or D, multiply the required length of wall bracing by 1.3 or 1.6, respectively. Wind exposure categories are as defined in Table 321.25-I footnote b.

<sup>c</sup>Tabulated values are based on a nominal wall height of 10 feet. For nominal wall heights other than 10 feet, multiply the required length of bracing by the following factors: 0.90 for 8 feet, 0.95 for 9 feet, 1.05 for 11 feet, or 1.10 for 12 feet.

<sup>d</sup>Where minimum ½-inch gypsum wallboard interior finish is not provided, the required bracing amount for the affected rectangle side shall be multiplied by 1.4, except this increase is not required for the portal frame method.

<sup>e</sup>Adjustments in footnotes b to d apply cumulatively.

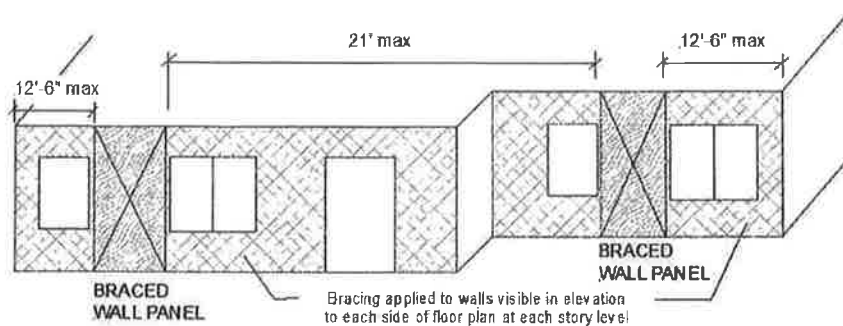
<sup>f</sup>Perpendicular sides to the front and rear sides are the left and right sides. Perpendicular sides to the left and right sides are the front and rear sides. See Figure 321.25-B.

<sup>g</sup>Continuous sheathing shall be applied to all surfaces of the wall, including areas between brace panels and above and below wall openings.

<sup>h</sup>When used on a wall line with continuous sheathing, each portal frame panel is counted for its actual length in contributing toward the length of continuous sheathing used on other portions of the same wall line, such as the building side at a given story level.

<sup>i</sup>Any value of less than 4.0 in this table serves only as the beginning value for calculation purposes. The resulting value shall be 4.0 or greater, to be consistent with Table 321.25-H and subd. 2.

**FIGURE 321.25-C  
LOCATION OF BRACED WALL PANELS ALONG A BUILDING SIDE<sup>a</sup>**



<sup>a</sup>A braced wall panel can be anything from one-half to one brace panel.

SECTION 7. SPS 321.25 (8) (d) to (f) are repealed.

SECTION 8. SPS 321.25 (8) (g) (title), (intro.), and 1. to 3. are renumbered SPS 321.25 (8) (d) (title), (intro.), and 1. to 3.

SECTION 9. SPS 321.25 (8) (g) 4. and (h) and (9), Tables 321.25-K and 321.25-L, and Figures 321.25-D to 321.25-K are repealed.

SECTION 10. SPS 320 to 325 Appendix, Minimum Fastener Schedule Table is amended to read:

**CHAPTERS SPS 320–325 Appendix  
MINIMUM FASTENER SCHEDULE TABLE  
(Partial Table)**

Other interior and exterior panel products and finishes installed per manufacturer requirements. For **engineered connectors**, use manufacturer's **specified** fasteners.

Description of Building Materials/Connection		Number and Type of Fastener <sup>1 2 3</sup>	
Wall Framing			
Sole plate to joist or blocking, face nail		2-16d at 16”o.c.	
Panel Sheathing			
Material	Fastener	Spacing of Fastener	
		Edges	Intermediate Supports
Wood panel siding to framing			
5/8” gypsum sheathing <sup>5</sup>	1 3/4” galvanized roofing nail; 8d common nail; staple galvanized 1 5/8” long; 1 5/8” screws, Type W or S	4 7”	8 7”



# **MINIMUM WIDTH OF BRACED WALL PANEL BETWEEN END OF WALL AND GARAGE DOOR**

(Assuming garage end wall is the end of a rectangle side)

<b>METHOD</b>	<b>WALL HEIGHT</b>				
	<b>8'</b>	<b>9'</b>	<b>10'</b>	<b>11'</b>	<b>12'</b>
<b>PORTAL FRAME<sup>1,2</sup></b>	16"	18"	20"	22"	24"
<b>CONTINUOUS<sup>3</sup> SHEATHING (HEIGHT OF DOOR OPENING)</b>					
6'8"	32"	30"	30"	33"	36"
8'	48"	41"	38"	37"	36"
9'		54"	46"	43.5"	41"
10'			60"	54"	48"
12'					72"
<b>INTERMITTENT<sup>3</sup></b>	36" <sup>4</sup>	36" <sup>4</sup>	48"	48"	48"

<sup>1</sup> If using Intermittent Sheathing on the remainder of the rectangle side, a Portal Frame panel counts as ½ panel toward the total number of panels needed.

<sup>2</sup> A full-height braced wall panel must go immediately on the other side of the garage door opening.

<sup>3</sup> As long as the first panel starts within 12.5' of the end, there is no minimum width.

<sup>4</sup> Counts as ½ panel toward the total number of panels needed.

## Wall Bracing Compliance Worksheet

Complete this worksheet or provide equivalent information on the plans submitted with the permit application.

Sketch and dimension the building plan and the wall bracing rectangle(s) per 321.25(8)(c)1. and Figure 321.25-B. Provide and label additional sketches if the **building plan/rectangles** change at different floor levels.

Indicate applicable Wall Bracing Method for each level (see Table 321.25-G), each labeled rectangle if more than one [see 321.25(8)(c)], and amount of bracing (# of braced panels or length of braced wall required) per the respective table (provide additional worksheets for additional rectangles as needed):

Rectangle: \_\_\_\_\_ Wall Ht. = \_\_\_\_\_ Eave to Ridge Ht. = \_\_\_\_\_ Max. Opening Ht. = \_\_\_\_\_ Wind Exp. = \_\_\_\_\_

Walls Supporting:	Intermittent method (LIB, DWB, WSP, SFB, GB, PCP) and # of panels per Table 321.25-I Min. panel width (Table 321.25-G) = _____	Continuous method (CS-WSP, CS-SFB) and total length required per Table 321.25-J Min. panel width (Table 321.25-H) = _____	PF Method (see Figure 321.25-A). Indicate number of PF panels 16-24" wide provided. Min. PF width (Fig. 321.25-A) = _____
	Long side      Short side	Long side      Short side	Long side      Short side
Roof and ceiling only			
One floor, roof and ceiling			
Two floors, roof and ceiling			

Rectangle: \_\_\_\_\_ Wall Ht. = \_\_\_\_\_ Eave to Ridge Ht. = \_\_\_\_\_ Max. Opening Ht. = \_\_\_\_\_ Wind Exp. = \_\_\_\_\_

Walls Supporting:	Intermittent method (LIB, DWB, WSP, SFB, GB, PCP) and # of panels per Table 321.25-I Min. panel width (Table 321.25-G) = _____	Continuous method (CS-WSP, CS-SFB) and total length required per Table 321.25-H Min. panel width (Table 321.25-H) = _____	PF Method (see Figure 321.25-A). Indicate number of PF panels 16-24" wide provided. Min. PF width (Fig. 321.25-A) = _____
	Long side      Short side	Long side      Short Side	Long side      Short side
Roof and ceiling only			
One floor, roof and ceiling			
Two floors, roof and ceiling			

**PF Method:** For Intermittent bracing, per Table 321.25-I footnote 'h', each PF panel (16-24" wide per Figure 321.25-A) counts as ½ of a braced wall panel when determining compliance with Table 321.25-I. For Continuously Sheathed bracing, the actual length of each PF panel (16-24" wide per Figure 321.25-A) in feet counts toward the required total length of bracing required. For intermittent or continuous methods, each PF panel meeting min. required width of Fig. 321.25-A counts as a braced wall panel when evaluating panel spacing per Fig. 321.25-C.

**Indicate the location and construction details of required braced wall panels determined above on each rectangle side as required by Figure 321.25-C on the floor plans submitted with the permit application.**

Please Call \_\_\_\_\_ for inspections:

24 Hours Notice is Appreciated

Wisconsin Administrative Code, SPS 320.10(2)(b)1: "The applicant or an authorized representative shall request inspections from the municipality ..."

Below are shown the required inspections you must call for:

## **NOTICE REQUIRED INSPECTIONS**

**SEWER  
EROSION CONTROL  
FOOTINGS  
(BEFORE POURING)  
FOUNDATION & DRAIN TILE  
(BEFORE POURING)  
UNDERFLOOR PLUMBING  
VAPOR RETARDER  
(Under Basement Floor)  
TEMPORARY ELECTRICAL SERVICE  
ROUGH CONSTRUCTION  
ROUGH PLUMBING  
ROUGH ELECTRIC  
ROUGH HEATING- A/C  
SERVICE- PERMANENT ELECTRICAL  
INSULATION  
FINAL INSPECTION  
(OCCUPANCY)**