



Inspector Association WINTER UPDATE 2016

ADMINISTRATIVE UPDATE UDC Program

Presenter: Scott Mau, Section Chief

Phone: 608-261-0342

Email: scott.mau@wisconsin.gov

WI BUILDING INSPECTOR ASSOCIATION

WINTER UPDATE - UDC

TODAYS AGENDA ROOM 1

7:45-8:45am DSPS Adm. Update -	Scott Mau
8:45-9:45am UDC Revisions -	Lenny Kanter
9:45-10:00am BREAK	
10:00-11:30am DCA 6 -	Jim Smith
11:30-12:30pm LUNCH	
12:30-1:30pm UDC Rev/Appx C -	Lenny Kanter
1:30-2:30pm UDC Revisions -	Jack Wotruba
2:30-2:45pm BREAK	
2:45-3:45pm Q&A, Res. L.L., E.C. -	Lenny Kanter

MISSION STATEMENT

The mission of the Department of Safety and Professional Services (DSPS) is to promote economic growth and stability while protecting the citizens of Wisconsin as designated by statute. DSPS and related professional boards protect the citizens of Wisconsin by ensuring the safe and competent practice of licensed professionals; performing inspections of commercial buildings, amusement rides, boilers, elevators, pressurized gas systems, and electrical systems; and performing plan reviews of commercial building, plumbing, fire suppression, elevators, boilers, and private onsite wastewater treatment systems.

ADMINISTRATIVE UPDATE

- DSPS Organization
- UDC Enforcement Contracts
- UDC Code Changes & Updates
- Web Site Applications

BUREAU RESPONSIBILITIES

- ◉ **Bureau of Technical Services -**
 - Plan & Product Review
 - Commercial Building, UDC, Plumbing, Pools, Fire Protection Technical Consultation
 - Includes Building, UDC, Plumbing, Pools, Fire Alarm & Fire Suppression - where a plan review is involved.
- ◉ **Bureau of Field Services -**
 - Field inspection, enforcement, audits, etc.
- ◉ **Administrative Services Section -**
 - Plan Entry & Scheduling.
 - Field Support & Complaint Processing.
- ◉ **Fire Prevention, Public Sector Safety and Mine Safety Section -**
 - Administer 2% Fire dues program including use of the National Fire Incident Reporting System and dues distribution to qualifying Fire Departments
 - Technical consultation with Fire Departments related to Fire Prevention and Inspection
 - Inspection of amusement rides, ski tows, and public sector employers
 - Mine safety training, consultation, and inspections

SAFETY & PROFESSIONAL SERVICES DEPARTMENT ORGANIZATION

Secretary:

Dave Ross

Deputy Secretary:

Eric Esser

Assistant Deputy Secretary:

Jeff Weigand

Division Administrator:

Kirsten Reader

DIVISION OF INDUSTRY SERVICES

2 Bureaus:

- ⦿ **Technical Services**, Amy Millard,
Bureau Director
- ⦿ **Field Services**, Vacant,
Bureau Director

DIVISION OF INDUSTRY SERVICES

Technical Services

KIRSTEN READER
DIVISION
ADMINISTRATOR
(UNCLASSIFIED)
90-00 024781

JAN LIN
EXECUTIVE STAFF
ASSISTANT
81-04 303296

AMY MILLARD
BUREAU DIRECTOR
BUREAU OF
TECHNICAL SERVICES
81-01 000532

VACANT
EXECUTIVE STAFF
ASSISTANT
81-04
(Lochner) 322072

STEVEN DOBRATZ
CHIEF, INTEGRATED
SERVICES SECTION
G Bay 81-02 002573

TOM BRAUN
CHIEF, INTEGRATED
SERVICES SECTION
81-02 310051

SCOTT MAU
CHIEF, INTEGRATED
SERVICES SECTION
81-02 304025

JASON HANSEN
ENG CONSLT-BLDG
SYSTEMS-SEN
14-13
G Bay 305231

MARK PIQUETTE
ENG CONSLT-BLDG
SYSTEMS-SEN
14-13
Waukesha 031154

DAVE WALLACE
ENG CONSLT-BLDG
SYSTEMS-ADV
14-13
322081

SHUNAI ZHU
ENG CONSLT-BLDG
SYSTEMS-ADV
14-13
310055

TOM WESTLUND
ENG CONSLT-BLDG
SYSTEMS-SEN
14-13
Hayward 301708

JOHN PEARSE
ENG CONSLT-BLDG
SYSTEMS-ADV
14-13
Holmen 327888

MOKTAR TAAMALLAH
ENG CONSLT-BLDG
SYSTEMS-ADV
14-13
009023

LAURENCE WIEST
ENG CONSLT-BLDG
SYSTEMS-SEN
14-13 (Pelot)
G Bay 309345

RANDALL DAHMEN
ENG CONSLT- HVAC -
ADV
14-13
322073

VACANT
ENG CONSLT-BLDG
SYSTEMS-ADV
14-13 (Erlor)
012218

VACANT
ENG CONSLT-BLDG
SYSTEMS-SEN
14-13 (Holmes)
032639

JOSEPH MONFRE
ENG CONSLT- HVAC-
SEN
14-13
026942

JACK MILLER
ENG CONSLT-BLDG
SYSTEMS-ADV
14-13
Holmen 310239

DAVID LINTZ
ENG CONSLT-BLDG
SYSTEMS-SEN
14-13 (Zhu)
G Bay 310049

ROBERT FRANKE
PLUMBING PLAN
REVIEWER
06-63
Waukesha 031002

DONALD HOUGH
PLUMBING
CONSULTANT
06-63
Hayward 000327

MICHAEL DUBOIS
PLUMBING PLAN
REVIEWER
06-63
G Bay 017610

PHILLIP MNUK
PLUMBING PLAN
REVIEWER
06-63
Waukesha 018249

TIM LAMB
PLUMBING PLAN
REVIEWER
06-63
031136

BRUCE MEINERS
PLUMBING
CONSULTANT
06-63
Holmen 301682

TOM DEVEREAUX
PLUMBING PLAN
REVIEWER
06-63
Hayward 317723

RYAN BOEBEL
PLUMBING
CONSULTANT
06-63
Fennimore 317728

GLEN JONES
PLUMBING PLAN
REVIEWER
06-63
305922

GLEN SCHLUETER
ENG CONSLT-PLUMBING
PROD REV-ADV
14-13
042286

MICHAEL LAMBERTY
PLUMBING PLAN
REVIEWER
06-63
022238

RICHARD ROCHELT
PLUMBING PLAN
REVIEWER
06-63
Holmen 009276

JOHN WOTRUBA
ENG CONSLT-UNIFORM
DWELLING-ADV
14-13
G Bay 016102

ROBERT KANTER
ENG CONSLT-UNIFORM
DWELLING-ADV
14-13
320109

VACANT
ENG CONSLT-UNIFORM
DWELLING-ADV
14-13 (Hubeler)
083448

ROBERT JESKE
ENG CONSLT-FIRE
SUPPR SYSTEMS-ADV
14-13
G Bay 325818

THOMAS FRECHETTE
ENG CONSLT-FIRE
SUPPR SYSTEMS-ADV
14-13
327889

DAVID GARCES
ENG CONSLT-FIRE
SUPPR SYSTEMS-ADV
14-13
Waukesha 023701

RICHARD ST LOUIS
ENG CONSLT-FIRE
SUPPR SYSTEMS-ADV
14-13
Waukesha 017456

ANTHONY TADYSK
ENG CONSLT-ELEC
SYSTEMS-ADV
14-13
Muskego 325295

VACANT
ENG CONSLT-ELEC
SYSTEMS-SEN
14-13
(Garvey) 310058

CRAIG MULDER
ENG CONSLT-ELEC
SYSTEMS ADV
14-13
Brandon 310056

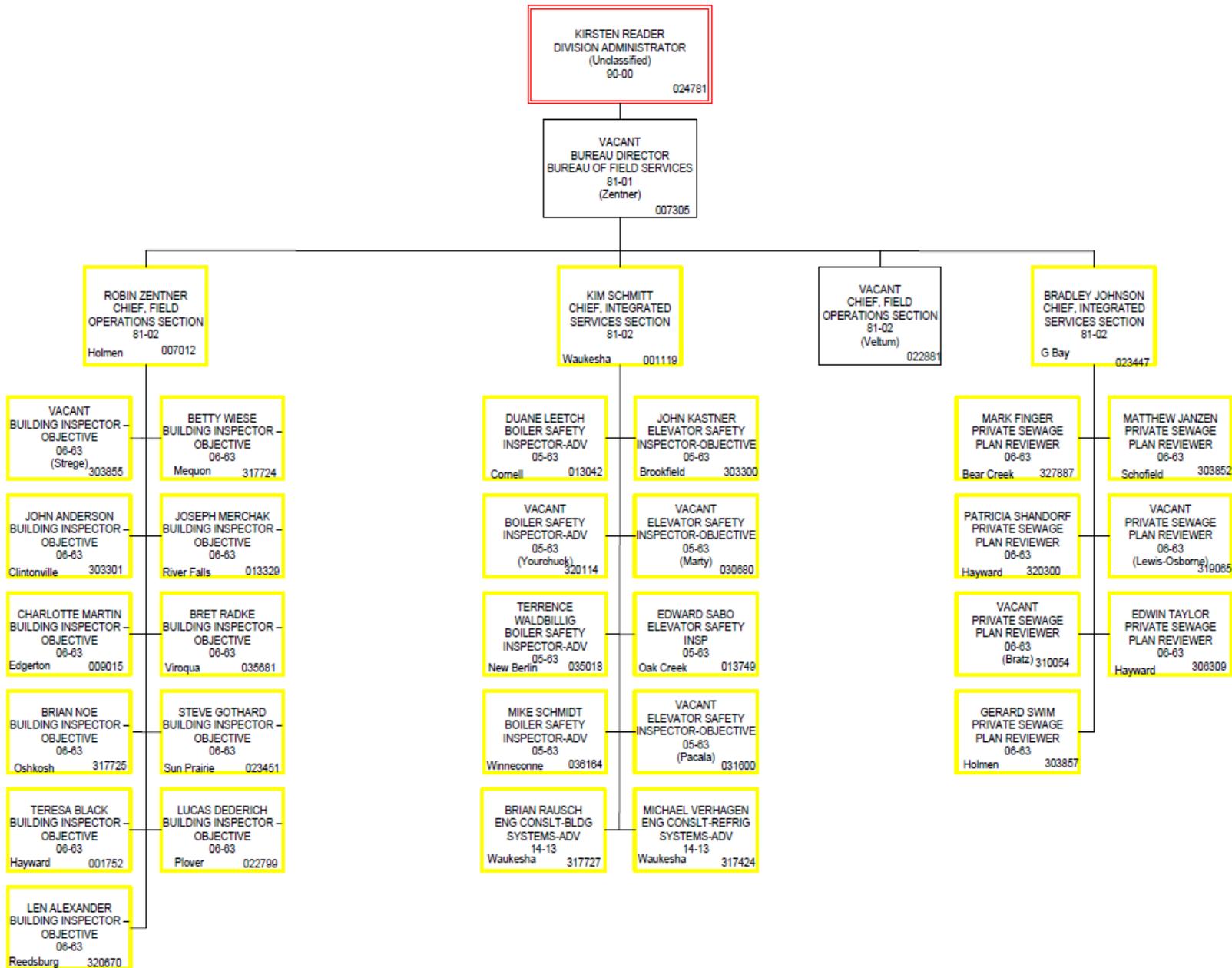
STEVEN RASMUSSEN
ENG CONSLT-ELEC
SYSTEMS-ADV
14-13
Schofield 010000

Positions = 104.64

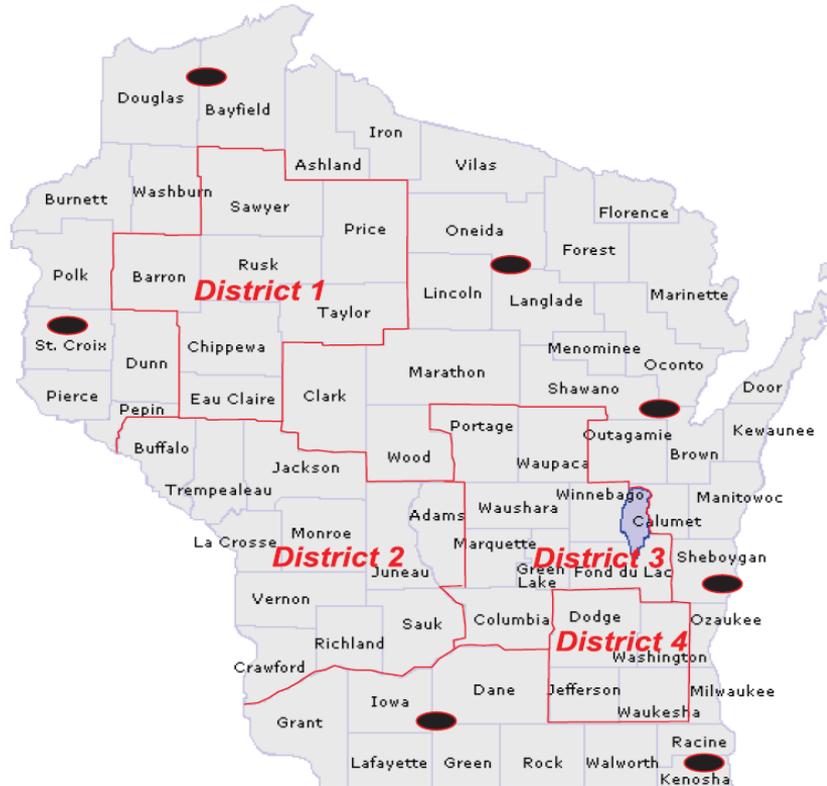
FIELD SERVICES BUREAU

- ◉ Robin Zentner, Section Chief over Commercial Building Inspectors
- ◉ Kim Schmitt, Section Chief over Boilers and Elevators
- ◉ Brad Johnson, Section Chief over POWTS

DIVISION OF INDUSTRY SERVICES – Field Services



BOILER & PRESSURE VESSEL DISTRICT MAP

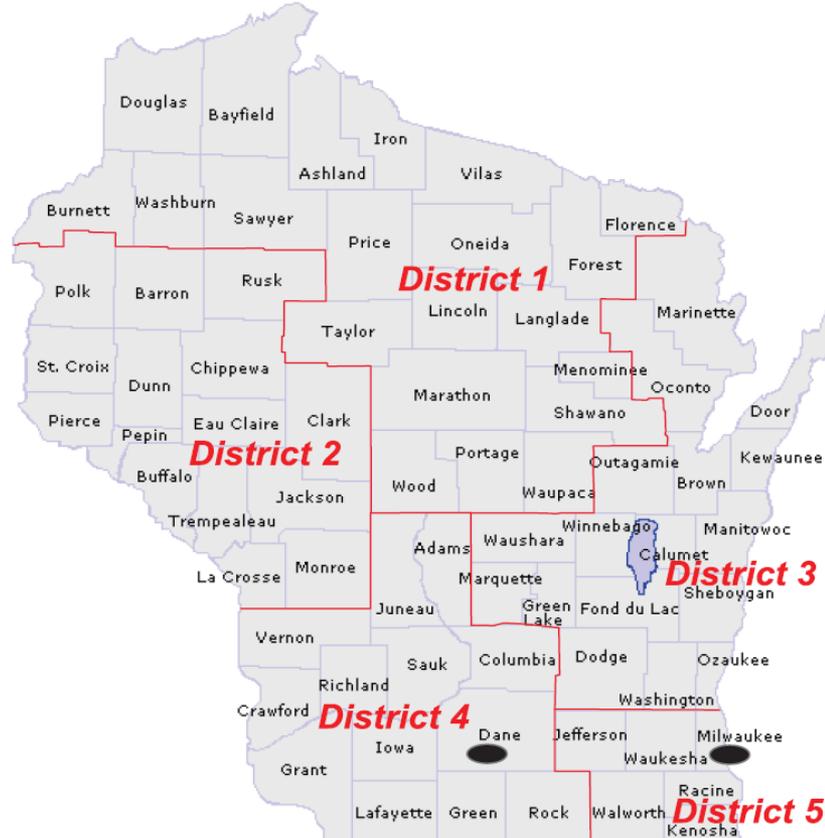


		Phone	Fax
1 - Duane Leetch Lead Worker	Duane.Leetch@Wisconsin.gov	715-559-8817	608-283-7431
2 – Temporary Assignment	See Below		
3 – Michael J. Schmidt	MichaelJ2.Schmidt@Wisconsin.gov	920-360-2193	608-283-7433
4 - Terence Waldbillig	Terence.Waldbillig@Wisconsin.gov	414-303-8575	608-283-7429
Supervisor Kim Schmitt	Kim.Schmitt@Wisconsin.gov	262-524-3950	
Submit general questions to:	DpsSbBoilertech@wisconsin.gov		

● Contact Damarc Quality Inspection Services LLC (866-361-4321) for inspections outside of districts.

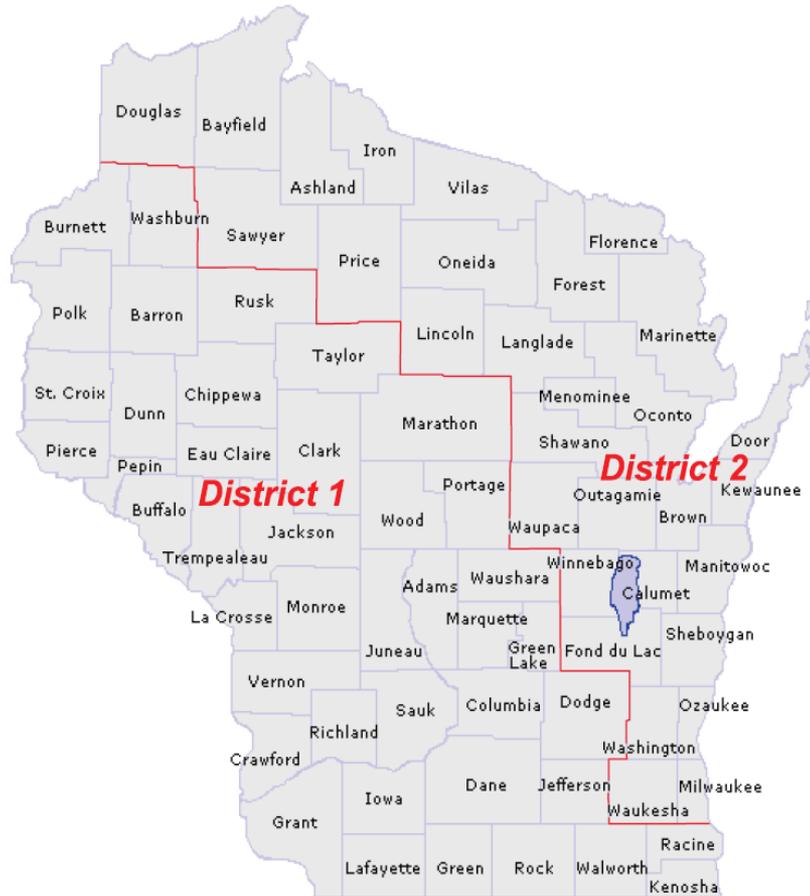
Temporary assignment: Buffalo/Trempealeau/Jackson	Duane Leetch	District 1
Adams/Juneau/Sauk	Michael Schmidt	District 3
La Crosse/Vernon/Monroe/Richland/Crawford		Damarc Quality Insp

ELEVATOR DISTRICT MAP



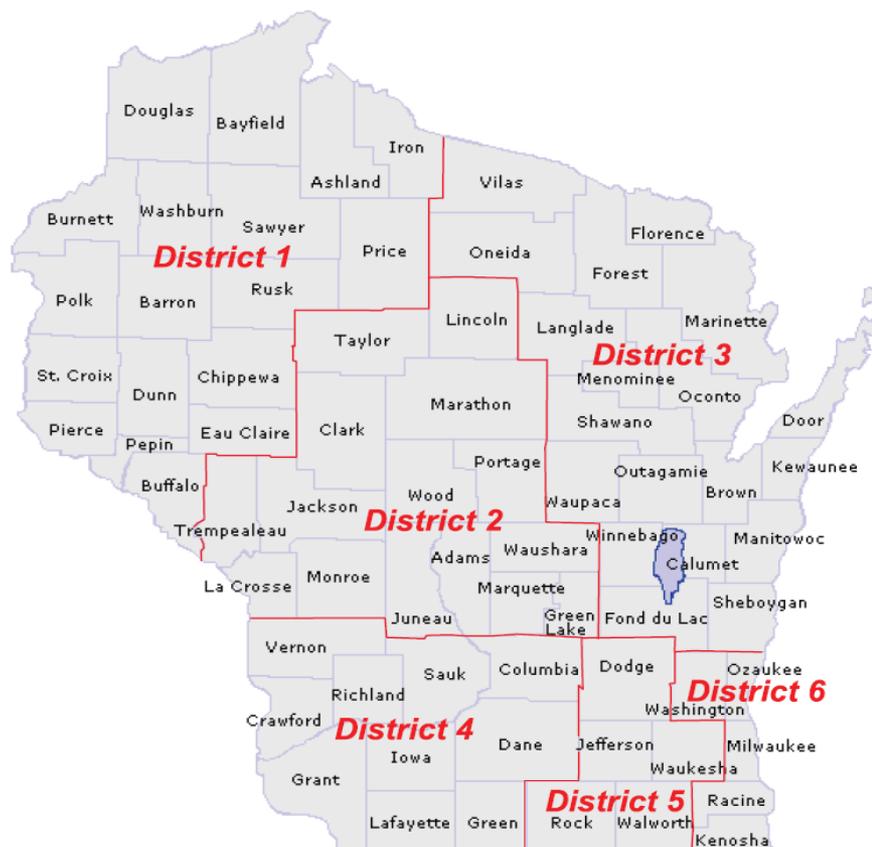
		Phone	Fax
1 – National Elevator Inspections	mimi.ziemann@us.bureauveritas.com	262-560-6220	262-560-0710
2 – National Elevator Inspections	mimi.ziemann@us.bureauveritas.com	262-560-6220	262-560-0710
3 – John Kastner	John.Kastner@Wisconsin.gov	414-313-2834	608-283-7440
4 – National Elevator Inspections	mimi.ziemann@us.bureauveritas.com	262-560-6220	262-560-0710
5 – Ed Sabo	Edward.Sabo@Wisconsin.gov	262.930.3098	
Supervisor – Kim Schmitt	Kim.Schmitt@Wisconsin.gov	262-524-3950	
Submit general questions to:	DspsSbElevatorTech@wi.gov		
Elevator Plan Review	Brian.Rausch@Wisconsin.gov	262 521-5444	

MINE SAFETY DISTRICT MAP



		Phone	Fax
1 – Mike Kollver	Michael.Kollver@Wisconsin.gov	262 923-0738	608-283-7498
2 – Patrick Murphy	Patrick.Murphy@Wisconsin.gov	414 852-3648	608-283-7497
Supervisor – Greg DiMiceli	Gregory.DiMiceli@Wisconsin.gov	608-267-9378	
Submit general questions to:	DSPSMineSafety@wisconsin.gov		

AMUSEMENT RIDE AND SKI DISTRICT MAP

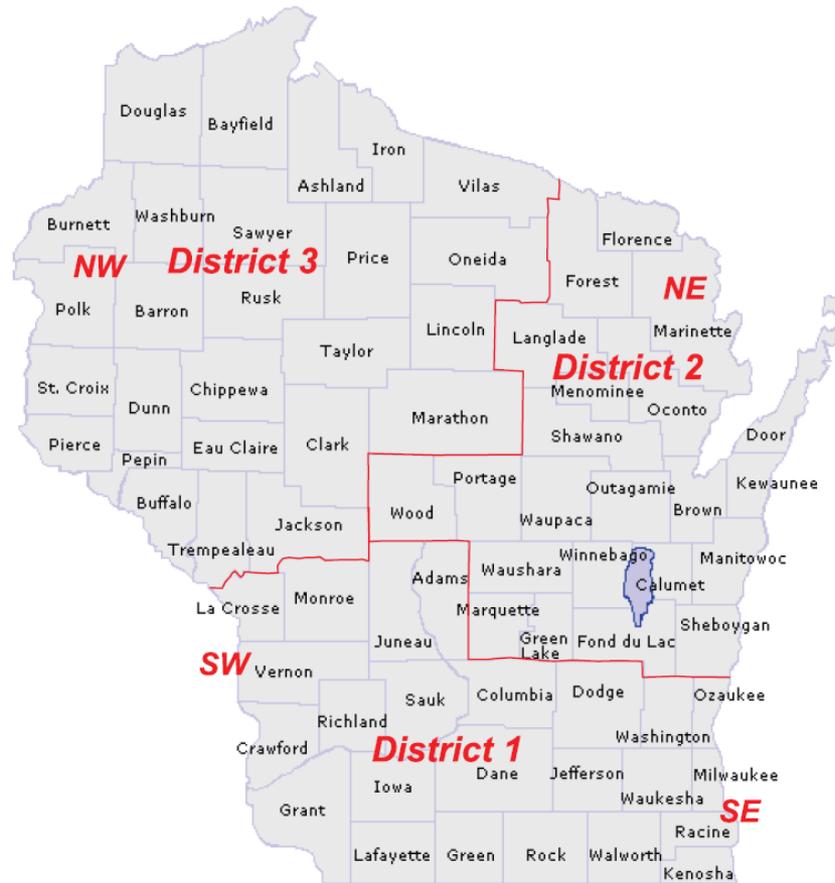


		Phone	Fax
1 – Vacant			
2 – Dustin Heacox	Dustin.Heacox@Wisconsin.gov	715- 571-1605	608-283-7493
3 – Tim Condon	Tim.Condon@Wisconsin.gov	414-852-3660	608-283-7495
4 – April Hammond	April.Hammond@Wisconsin.gov	608-225-6593	608-283-7489
5 – Dave Vriezen	David.Vriezen@Wisconsin.gov	414-416-3196	608-283-7425
6 – Vacant			
Supervisor – Greg DiMiceli	Gregory.DiMiceli@Wisconsin.gov	608-267-9378	
Submit general questions to:	healthandsafety@wi.gov		
Ann Jurkowski	Ann.Jurkowski@Wisconsin.gov	608-438-6331	

TECHNICAL SERVICES BUREAU

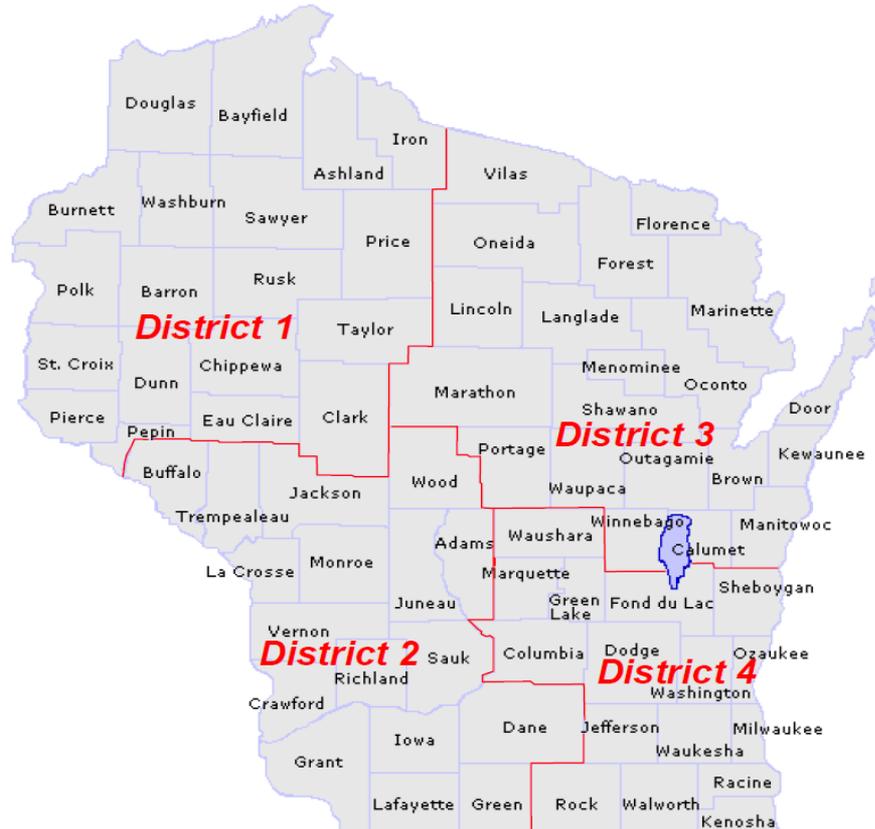
- ◉ Scott Mau, Section Chief over UDC, Electrical & Fire Suppression Plan Review
- ◉ Steve Dobratz, Section Chief over Commercial Plan Review
- ◉ Tom Braun, Section Chief over Plumbing

ELECTRICAL DISTRICT MAP



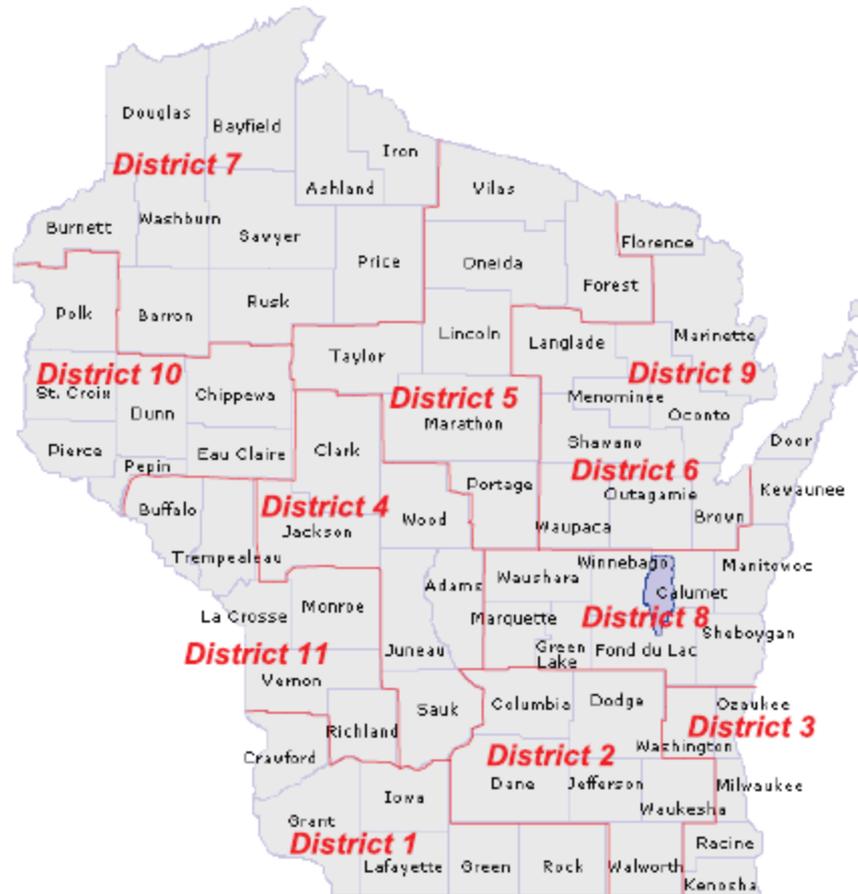
		Phone
1	Tony Tadysak	Anthony.Tadysak@Wisconsin.gov 262-895-9078
2	Craig Mulder	Craig.Mulder@Wisconsin.gov 608-444-5701
3	Steve Rasmusson	Steven.Rasmusson@Wisconsin.gov 608-617-2985
	Supervisor – Scott Mau	Scott.Mau@Wisconsin.gov 608-261-0342
	Submit general questions to:	DSPSSBElectrictech@wi.gov
	Please leave a voice mail question, calls will be returned by staff.	608-264-7823

FIRE PREVENTION DISTRICT MAP



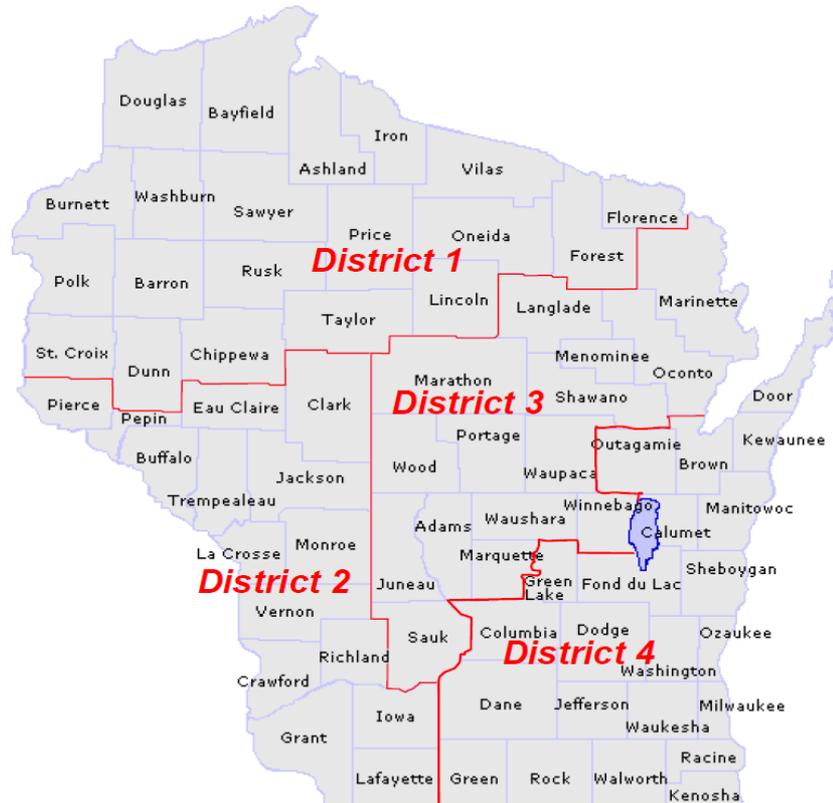
		Phone	Fax
1 - Rick Sommerfeld	Richard.Sommerfeld@Wisconsin.gov	715-944-4114	
2 - Mike Fehrenbach	Mike.Fehrenbach@Wisconsin.gov	608-575-0179	
3 - Carl Frisque	Carl.Frisque@Wisconsin.gov	920-366-2469	
4 - Sue Birren	Susan.Birren@Wisconsin.gov	414-416-3339	
Fire Prevention - Madison Office			
Fire Dues - Audrey Fries	Audrey.Fries@Wisconsin.gov	608-266-9375	
NFIRS - Audrey Fries	Audrey.Fries@Wisconsin.gov	608-266-9375	
Supervisor - Greg DiMiceli	Gregory.DiMiceli@Wisconsin.gov	608-267-9378	

COMMERCIAL BUILDING DISTRICT MAP



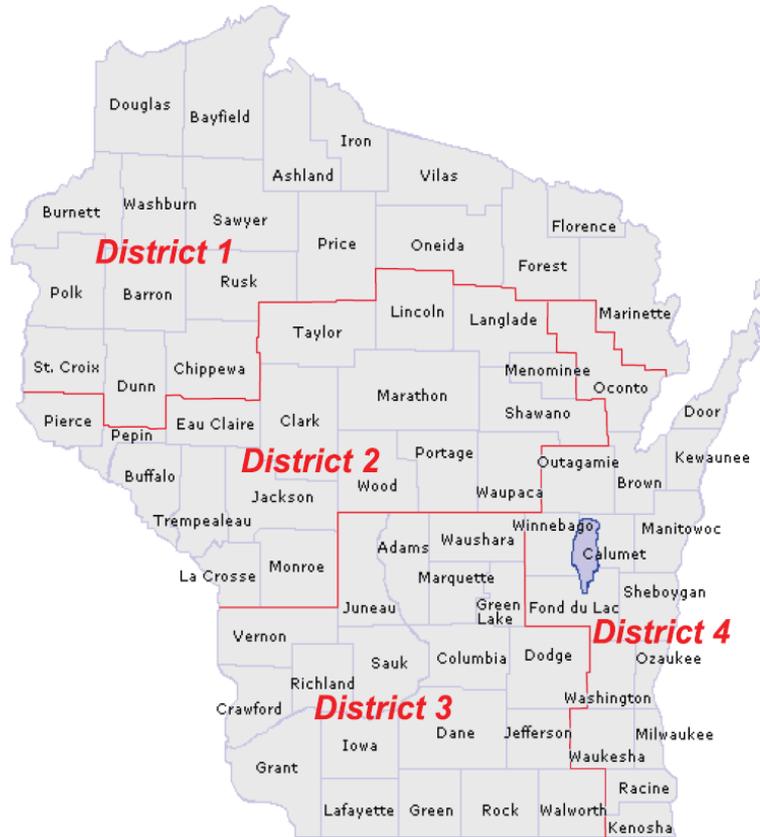
		Phone	Fax
1 - Charlotte Martin	Char_Martin@Wisconsin.gov	608-235-0579	608-283-7478
2 - Steve Gothard	Steve.Gothard@Wisconsin.gov	608-235-0568	608-283-7474
3 - Betty Wiese	Betty.Wiese@Wisconsin.gov	414-852-3694	608-283-7467
4 - Leonard Alexander	Len.Alexander@Wisconsin.gov	608-235-0582	608-283-7384
5 - Lucas Dederich	Lucas.Dederich@Wisconsin.gov	608-445-6558	715-345-5269
6 - John Anderson	John.Anderson@Wisconsin.gov	715-460-4503	920-492-5604
7 - Teresa Black	Teresa.Black@Wisconsin.gov	715-634-8114	608-283-7485
8 - Brian Noe	Brian.Noe@Wisconsin.gov	920-420-4796	608-221-6935
9 - Temporary Coverage			
10 - Joe Merchak	Joe.Merchak@Wisconsin.gov	715-821-1928	608-223-7702
11 - Bret Radke	Bret.Radke@Wisconsin.gov	608-386-1301	608-785-9330
Supervisor - Robin Zentner	Robin.Zentner@Wisconsin.gov	608-266-3723	
Submit general questions to:	DenisShBuildingtech@Wisconsin.gov		

POWTS DISTRICT MAP



		Phone	Fax
1 - Ed Taylor	Edwin.Taylor@Wisconsin.gov	715-634-3484	715 634-5150
2 - Charles Bratz	Charles.Bratz@Wisconsin.gov	608-789-7893	608 785-9330
3 - Matt Janzens	Matthew.Janzen@Wisconsin.gov	715-340-0407	608 283-7465
4 - Mark Finger	Mark.Finger@Wisconsin.gov	608-574-1189	608 267-9566
Supervisor - Brad Johnson	Bradley.Johnson@Wisconsin.gov	920-492-5605	920-492-5604
Submit general questions to:	DSPSSBPowttech@wi.gov		

PLUMBING AND POOLS



		Phone	Fax
1. Don Hough	Donald.Hough@Wisconsin.gov	715-558-2690	608-785-7451
2. Bruce Meiners	Bruce.Meiners@Wisconsin.gov	608-399-4156	608-283-7452
3. Ryan Boebel	Ryan.Boebel@Wisconsin.gov	608-412-3998	608-283-7449
4. Phil Mruk	Philip.Mruk@Wisconsin.gov	262-354-5167	262-548-8614

Supervisor: Tom Braun Thomas.Braun@Wisconsin.gov 715-634-5124
 Submit General Questions to: DspsSbPlbgTech@wi.gov or DspsSbPoolTech@wi.gov

Please leave a voice mail question, calls will be returned by staff. 608-267-9421

UDC PROGRAM ASSIGNMENTS

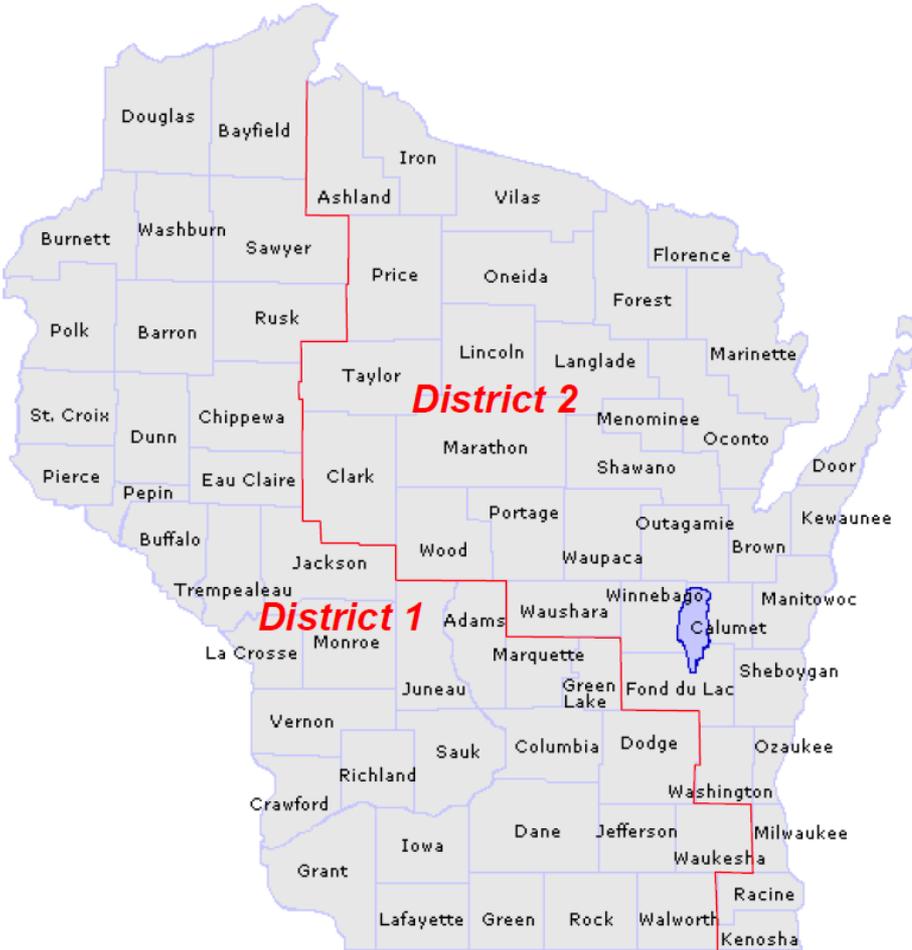
- ◉ Bureau Director : Amy Millard
(608) 266-1816
- ◉ Supervisor: Scott Mau (608) 261-0342
- ◉ E-mail `firstname.lastname@wisconsin.gov`

DYNAMIC DUO



DISTRICT 1: LENNY KANTER

DISTRICT 2: JACK WOTRUBA



UDC PROGRAM ASSIGNMENTS

UDC Consultants:

Jack Wotruba (920) 360-0020

Lenny Kanter (608) 261-6541

1 Vacancy

MUNICIPAL ENFORCEMENT STATUS

- As of January, 2016 Municipalities with:

- State Enforcement = 140
- Municipal Enforcement = 1518
- County Enforcement = 194

- There are 12 Counties that provide County wide Enforcement:

Adams

Chippewa

Florence

Iron

Marquette

Trempealeau

Buffalo

Eau Claire

Forest

Langlade

Richland

Waushara

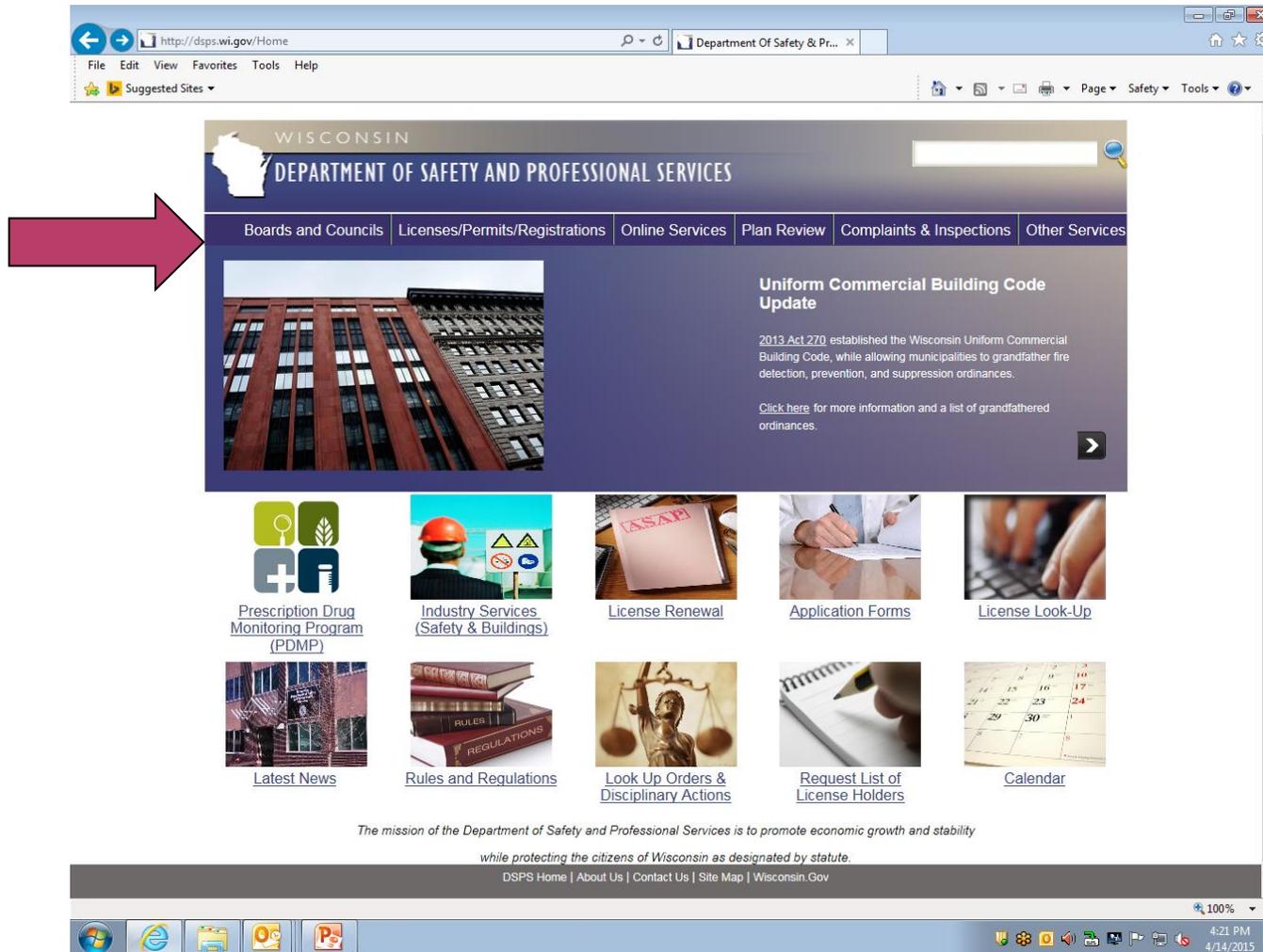
STATE CONTRACTS

- ⦿ Expired 12/31/2015
- ⦿ One year extension offered and accepted with 1 change in Taylor County
 - CSC Assessment Services

Municipalities include: Town of Cleveland, Town of Greenwood, Town of Grover, Town of Jump River, Town of Maplehurst, Town of Molitor, Town of Pershing, Town of Roosevelt and Village of Lublin.

RULE MAKING PROCESS

TO SUBMIT AN ITEM FOR CONSIDERATION AT A BOARD OR COUNCIL MEETING



The screenshot shows the homepage of the Wisconsin Department of Safety and Professional Services (DPS). The browser address bar displays <http://dps.wi.gov/Home>. The website header includes the Wisconsin state logo and the text "WISCONSIN DEPARTMENT OF SAFETY AND PROFESSIONAL SERVICES". A navigation menu contains the following items: "Boards and Councils", "Licenses/Permits/Registrations", "Online Services", "Plan Review", "Complaints & Inspections", and "Other Services". A red arrow points to the "Boards and Councils" link. Below the navigation menu is a featured article titled "Uniform Commercial Building Code Update" with a sub-headline "2013 Act 270 established the Wisconsin Uniform Commercial Building Code, while allowing municipalities to grandfather fire detection, prevention, and suppression ordinances." Below this are ten service tiles: "Prescription Drug Monitoring Program (PDMP)", "Industry Services (Safety & Buildings)", "License Renewal", "Application Forms", "License Look-Up", "Latest News", "Rules and Regulations", "Look Up Orders & Disciplinary Actions", "Request List of License Holders", and "Calendar". The footer contains the mission statement: "The mission of the Department of Safety and Professional Services is to promote economic growth and stability while protecting the citizens of Wisconsin as designated by statute." and navigation links: "DPS Home | About Us | Contact Us | Site Map | Wisconsin.Gov". The system tray at the bottom shows the date and time as 4:21 PM on 4/14/2015.

TO SUBMIT AN ITEM FOR CONSIDERATION AT A BOARD OR COUNCIL MEETING

The screenshot shows a web browser window displaying the website for the Wisconsin Department of Safety and Professional Services. The browser's address bar shows the URL <http://dps.wi.gov/Boards-Councils>. The website header includes the Wisconsin state logo and the text "WISCONSIN DEPARTMENT OF SAFETY AND PROFESSIONAL SERVICES". Below the header is a navigation menu with links for "Boards and Councils", "Licenses/Permits/Registrations", "Online Services", "Plan Review", "Complaints & Inspections", and "Other Services". The main content area is titled "BOARDS AND COUNCILS" and features eight interactive tiles, each with an image and a text link:

- [Administrative Rules and Statutes](#)
- [Agendas](#)
- [Apply to Serve on a Board or Council](#)
- [Board Member Access](#)
- [Board and Council Listing](#)
- [Calendar](#)
- [Meeting Minutes](#)
- [Request Agenda Item](#)

A large red arrow points to the "Request Agenda Item" link. The footer of the website contains the text "DPS Home | About Us | Contact Us | Site Map | Wisconsin.Gov". The Windows taskbar at the bottom shows the system tray with the date and time "4:24 PM 4/14/2015" and a zoom level of "100%".

SUBMIT ITEMS FOR CONSIDERATION

Boards and Councils

Licenses/Permits/Registrations

Online Services

Plan Review

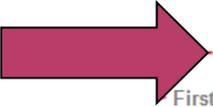
Complaints & Inspections

Other Services

DSPS PUBLIC BOARD AGENDA ITEM

Please use this form to submit an item for consideration at a board or council meeting. Please visit our [Board and Council Listing](#) page for information on professions regulated by each board. You may be asked to appear at the meeting to present and explain your request. Before submitting your request, please consult your [Profession Specific Codebook](#) which will contain the answer to most questions. Please note, neither the Department nor the Boards can respond to the following issues: potential or ongoing litigation, billing, business advice, employer / employee disputes, legal opinions, and questions involving professional judgment or discretion.

FILL OUT THIS FORM



Board:

First Name:

Last Name:

Association/Organization:

Address Line 1:

Address Line 2:

City:

State:

Zip:

Phone Number:

Email:

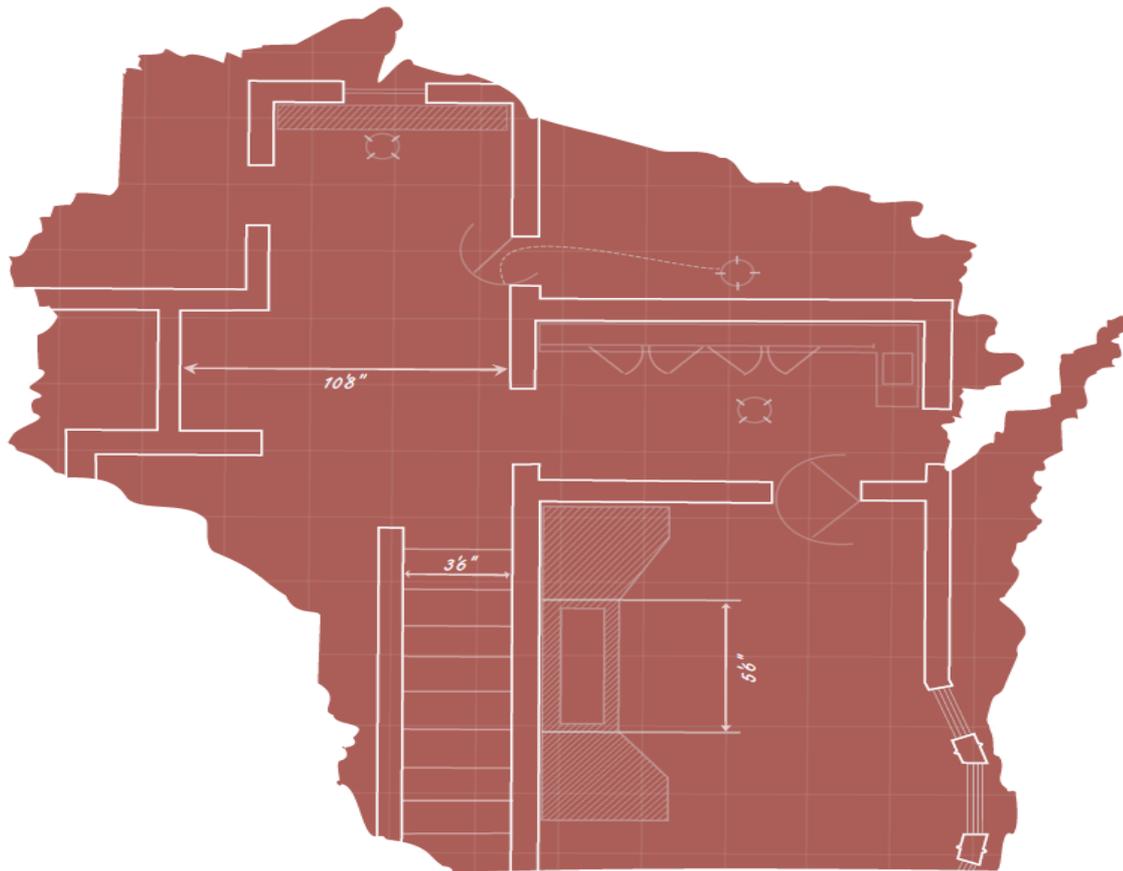
Subject:

Message:

Select "Dwelling Code Council" to Submit Codes Items for Consideration

CODE UPDATE PROCESS

- Advisory committee needs to be assembled.
 - Members may need to be from specific group, ie. Inspectors, Contractors, A/E or material suppliers. Goal of a balanced committee of stakeholders.
- Committee review of new standard(s)
 - Typically monthly meetings to review sections and chapters of the standards. Several codes reference multiple standards. IBC has numerous secondary references that need review.
- Statutory rulemaking process 12-18 months.
- Publication and implementation date maybe delayed for seasonal reasons.



WISCONSIN DWELLING CODE COUNCIL

DEPARTMENT OF SAFETY AND
PROFESSIONAL SERVICES

One- and Two-Family Dwelling Code Review and Recommendations

July 2014

RULEMAKING PROCESS



RULE MAKING PROJECTS

WISCONSIN
DEPARTMENT OF SAFETY AND PROFESSIONAL SERVICES

Boards and Councils | Licenses/Permits/Registrations | Online Services | Plan Review | Complaints & Inspections | Other Services



Renew Your License

Credit Card Charges

As of December 2, 2015, the Dept. of Safety & Professional Services will begin charging a 2% credit card convenience fee for all credit card transactions, per Wis. Stat. 440.055(2).



Prescription Drug Monitoring Program (PDMP)



Industry Services (Safety & Buildings)



License Renewal



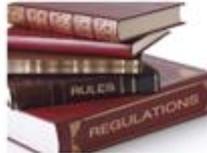
Application Forms



License Look-Up



Latest News



Rules and Regulations



Look Up Orders & Disciplinary Actions



Request List of License Holders



Calendar



ADMINISTRATIVE RULES AND STATUTES

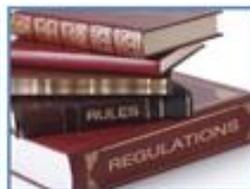
There are many laws, rules, and regulations covering the various professions and services for which the Department of Safety and Professional Service (DSPS) has responsibility. These laws, rules, and regulations come from actions of the Legislative and Executive Branches which pass laws that modify Wisconsin Statutes and the Rulemaking process which involves agencies such as DSPS working together with professional boards to develop rules which will carry out requirements set out in Wisconsin Statutes. These rules, when they are developed and finalized, become part of the Wisconsin Administrative Code. More information on each of these topics can be found by following the links below.



[Wisconsin Statutes](#)



[Wisconsin Administrative Code](#)



[Profession/Entity Specific Statutes and Administrative Rules](#)



[Rulemaking](#)



[Public Hearing Comments on Proposed Administrative Rules](#)



[Comment on Economic Impact of Proposed Administrative Rules](#)



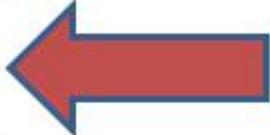


THE RULEMAKING PROCESS AT DSPS

The Wisconsin Department of Safety and Professional Services routinely reviews and updates, as needed, the Administrative Rules that relate to the professions, establishments and activities we regulate. Rulemaking involves a number of distinct and important steps.

Active Rulemaking Projects:

A list of active rulemaking projects can be obtained here: <http://dps.wi.gov/Boards-Councils/Rulemaking/Pending-Rule-Projects/>



Review of existing rules affecting small businesses:

DSPS is currently conducting a comprehensive review of existing rules affecting small business. This review is being conducted in accordance with Governor Walker's Executive Order #61. We are reviewing our existing rules to identify those that hinder small business job creation and small business growth. We will then recommend changes to these rules that will both reduce their burden on job creators while continuing to comply with the intent of the statutes that created them.

Comment on rulemaking projects:

Each rulemaking project has a legally prescribed process for submitting comments. Please consult a specific project for the timetable and methods for submitting comments.

Suggest a rulemaking project:

If there are existing rules that you think should be reviewed and considered for modification, please e-mail at DSPS@wisconsin.gov.

Safety and Professional Services	SPS 305: Certification to inspect fire detection, prevention, and suppression devices - Emergency Rule	Rule Adopted	Daniel2.Smith@wisconsin.gov
Safety and Professional Services	SPS 316: Electrical Code	Scope Published	Daniel2.Smith@wisconsin.gov
Safety and Professional Services	SPS 320-325: One and Two Family Dwellings	Legislative Review	Daniel2.Smith@wisconsin.gov
Safety and Professional Services	SPS 320-325: One and Two Family Dwelling Decks	Legislative Review	Daniel2.Smith@wisconsin.gov
Safety and Professional Services	SPS 321: Ground Anchors for Manufactured Homes	Legislative Review	Daniel2.Smith@wisconsin.gov
Safety and Professional Services	SPS 320: Electronic Notifications	Legislative Review	Daniel2.Smith@wisconsin.gov
Safety and Professional Services	SPS 321: Natural Light in Rooms over Garages	Legislative Review	Daniel2.Smith@wisconsin.gov
Safety and Professional Services	SPS 322: Crawl Space Ventilation	Legislative Review	Daniel2.Smith@wisconsin.gov
Safety and Professional Services	SPS 330: Fire Department Safety and Health Standards	Drafting Rule	Daniel2.Smith@wisconsin.gov
Safety and Professional Services	SPS 361-366: Wisconsin Commercial Building Code	Scope Published	Daniel2.Smith@wisconsin.gov
Safety and Professional Services	SPS 381-387 and 391: Comprehensive update of the POWTS (private onsite wastewater treatment systems) and Wisconsin Fund	Drafting Rule	Sandy.Cleveland@wisconsin.gov

RULEMAKING PACKAGES(COMPLETED)

- ⦿ SPS 305 - Credentialing, Updates for Statute changes.
- ⦿ SPS 314-Fire Prevention, adoption of 2012 NFPA 1
- ⦿ SPS 318 - Elevators, Adoption of 2011 ASME A18.1 and 2013 ASME A17.1.
- ⦿ SPS 320-325 Uniform Dwelling Code Updates, Wall Bracing and Deck packages
- ⦿ SPS 321 Manufactured Homes - Ground Anchors
- ⦿ SPS 326 - Manufactured Housing, Complete update.
- ⦿ SPS 332 Public Employee Safety, Update to 2010 OSHA Standards
- ⦿ SPS 333 Rope and Ski, Update to 2011 ANSI B77.1.
- ⦿ SPS 341 - Boilers, Update to 2010 ASME
- ⦿ SPS 384 - Emergency Rule on water treatment devices

RULEMAKING PROJECTS (IN PROGRESS)

- ◉ SPS 305 Certification to Inspect Fire Detection, Prevention and Suppression Devices(Emergency Rule in Effect)
- ◉ SPS 316 2017 NEC adoption
- ◉ SPS 330 Fire Department Health and Safety Update
- ◉ SPS 360-366 - Commercial Building Code,
 - Update to 2015 ICC Suite(IBC,IMC, IEBC, IEEC,IFGC)
- ◉ SPS 381-387 POWTS and Wisconsin Fund review and update

RULEMAKING PROJECTS (ON DECK)

- ◉ SPS 307, 308 Explosives, Fireworks, Mines, Pits and Quarries - Updates
- ◉ SPS 320 Electronic Notification of Inspection Results
- ◉ SPS 321 Natural Light in Rooms over Garages
- ◉ SPS 322 Crawl Space Ventilation
- ◉ SPS 327 Camping Units
- ◉ SPS 360 Erosion Control, Update Package
- ◉ SPS 381-387 and 390 Plumbing, Update
- ◉ SPS 390 Swimming Pools

ADDITIONAL RULEMAKING

- ◉ Additional rulemaking that DSPS is responsible for includes:
- ◉ A/E, Chiropractic, Cosmetology, Dentistry, Medical Examining, Nursing, Optometry, Pharmacy, Psychology, Real Estate and other Boards and Councils.

CODE REVISIONS

- ⦿ Code revision work is not done by the **Division of Industry Services**
- ⦿ Since October 2011, all DSPS code development is done in the Department's **Division of Policy Development.**

2013 WISCONSIN ACT 270

Establishes a Uniform Commercial Building Code (UCBC) for the State of Wisconsin, as well as a Building Code Council for the purpose of reviewing the code and making recommendations to the Wisconsin Department of Safety and Professional Services (DPS) to keep the UCBC current. The previous Commercial Building Code acted as a minimum standard and allowed for municipalities to enact ordinances above and beyond those detailed in the code. The UCBC replaces the previous Commercial Building Code and eliminates municipal variations. However, Act 270 allows for municipalities to submit ordinances to the DPS within 60 days of publication of the law for review and exemption if the ordinance meets all of the following requirements:

- ⦿ 1. The ordinance was enacted before May 1, 2013.
- ⦿ 2. The ordinance was published by the town, village, or city in the manner required under Statute 60.80, 61.50, or 62.11(4).
- ⦿ 3. The ordinance relates to fire detection, prevention, or suppression components of buildings.
- ⦿ 4. The building is not a multifamily dwelling, as defined in Statute 101.971(2).
- ⦿ 5. The ordinance is submitted to the department within 60 days after the effective date of this subdivision, Friday, April 18, 2014.
- ⦿ 6. The department determines that the ordinance requires standards that are at least as strict as the rules promulgated by the department.

2013 WISCONSIN ACT 270

- ◉ Submitted ordinances were reviewed for compliance with statutory provisions and limitations and determined to either be grandfathered, unenforceable, or outside the scope.
- ◉ Notification was sent to each municipality that submitted an ordinance indicating the status of the ordinance(s).
- ◉ DSPS website has been updated with a list of ordinances determined to be enforceable.
- ◉ Requires fire detection, prevention and suppression devices to be inspected by a certified fire inspector. An emergency rule to implement this requirement has been passed.
- ◉ Allows 2nd class cities certified by the department to do plan review, to also review petitions for variance.

2013 WISCONSIN ACT 143

Established new licensure standards for electricians which went into effect on April 1, 2014. These standards require all individuals (see Act 143 for exemptions) engaged in the business of installing, repairing, and maintaining electrical wiring be licensed by the Wisconsin Department of Safety and Professional Services (DSPS). The new licensure law does not apply to any person with 15 years of experience who was born on or before January 1, 1956.

About a year ago the 'grandfathering' provision was amended and individuals meeting the criteria must now submit an application and fee to obtain a certification. Additional exemptions to the licensing requirement were added for well pump installers and for POWTS system installers.

WI State Statute 101.862 - License or registration required.

<http://docs.legis.wisconsin.gov/statutes/statutes/101/IV/862/>

ASSEMBLY BILL 571

- **DSPS required to update Permit form to include:**
 - A space in which the municipal authority issuing the permit must insert the name of the person to whom the building permit is issued and the number and expiration date of the certificate of financial responsibility issued by DSPS to that person.
- **Each political sub division is required to:**
 - Provide an annual report to the department, on or before January 1, that contains the name of each person to whom the political subdivision issued a building permit for the construction of a one- or 2- family dwelling in the previous year. The report shall include the number and expiration date of each current contractor credential held by that person.

2015 WISCONSIN ACT 211

AN ACT *to renumber and amend* 101.63 (7); *to amend* 101.65 (3); and *to create* 101.63 (7) (b) and 101.63 (7m) of the statutes; relating to: information required on building permit forms, requiring the establishment of an electronic system for building permits, and granting rule-making authority.

The people of the state of Wisconsin, represented in senate and assembly, do enact as follows:

SECTION 1. 101.63 (7) of the statutes is renumbered 101.63 (7) (intro.) and amended to read:

101.63 (7) (intro.) Prescribe and furnish to ~~municipalities~~ municipal authorities a standard building permit form for all new one- and 2-family dwellings. On or before January 2, 2017, the department shall furnish to municipal authorities the standard building permit form prescribed under this subsection in electronic form. The standard permit form shall include ~~a~~ all of the following:

(a) A space in which the municipal authority issuing the permit shall insert the name and license number of the master plumber engaged in supervising the installation of plumbing or installing the plumbing at a new one- or 2-family dwelling.

SECTION 2. 101.63 (7) (b) of the statutes is created to read:

101.63 (7) (b) A space in which the municipal authority issuing the permit shall insert the name of the person to whom the building permit is issued and the number and expiration date of the certificate of financial responsibility issued to that person under s. 101.654.

SECTION 3. 101.63 (7m) of the statutes is created to read:

101.63 (7m) On or before January 2, 2017, establish by rule a system through which a person may electronically submit an application to a municipal authority for a building permit, through which the person may be issued the building permit in electronic form from the municipal authority, and through which the municipal authority may submit copies of issued building permits to the department. The rule shall prescribe a standard building permit application form that shall be furnished to all municipal authorities and used by all applicants for building permits for new one- and 2-family dwellings, except that the department may approve a municipal authority's use of a different application form. The rule shall require a municipal authority to use the standard building permit form prescribed under sub. (7), unless the department approves a municipal authority's use of a different form. A municipal authority shall begin implementation of the system established under this subsection no later than January 2, 2018.

SECTION 3R. 101.65 (3) of the statutes is amended to read:

101.65 (3) Shall use the standard building permit form prescribed and furnished by the department ~~and~~.

(4) Not later than the 15th day of the first month beginning after issuance of each building permit, electronically file a copy of each such the permit issued with the department. If a city, village, town, or county fails to file with the department an electronic copy of an issued permit not later than the last day of the first month beginning after the issuance of the permit, the city, village, town, or county shall refund to the person to whom the building permit was issued an amount equal to the difference between the amount paid by that person to the respective city, village, town, or county for that permit and the portion of the permit fee remitted by the city, village, town, or county to the department, if any. This subsection first applies to a city, village, town, or county beginning on the date the city, village, town, or county begins implementation of the system required under s. 101.63 (7m).

2016 WISCONSIN ACT 211

- Prescribe and furnish to municipal authorities a standard building permit form for all new one- and 2-family dwellings.
- On or before January 2, 2017, the department shall furnish to municipal authorities the standard building permit form prescribed under this subsection in electronic form.

2016 WISCONSIN ACT 211

- The standard permit form shall include a all of the following:
 - A space in which the municipal authority issuing the permit shall insert the name and license number of the master plumber engaged in supervising the installation of plumbing or installing the plumbing at a new one- or 2-family dwelling.
 - A space in which the municipal authority issuing the permit shall insert the name of the person to whom the building permit is issued and the number and expiration date of the certificate of financial responsibility issued to that person under s. 101.654.

2016 WISCONSIN ACT 211

- On or before January 2, 2017, establish by rule a system through which a person may electronically submit an application to a municipal authority for a building permit, through which the person may be issued the building permit in electronic form from the municipal authority, and through which the municipal authority may submit copies of issued building permits to the department.

2016 WISCONSIN ACT 211

- The rule shall prescribe a standard building permit application form that shall be furnished to all municipal authorities and used by all applicants for building permits for new one- and 2-family dwellings.
- The rule shall require a municipal authority to use the standard building permit form prescribed under sub. (7), unless the department approves a municipal authority's use of a different form. A municipal authority shall begin implementation of the system established under this subsection no later than January 2, 2018.

2016 WISCONSIN ACT 211

- ⦿ Not later than the 15th day of the first month beginning after issuance of each building permit, electronically file a copy of the permit with the department.

QUESTION????

What happens if a city, village, town, or county fails to file with the department an electronic copy of an issued permit not later than the last day of the first month beginning after the issuance of the permit?

ANSWER

- The city, village, town, or county shall refund to the person to whom the building permit was issued an amount equal to the difference between the amount paid by that person to the respective city, village, town, or county for that permit and the portion of the permit fee remitted by the city, village, town, or county to the department, if any.
- **This subsection first applies to a city, village, town, or county beginning on the date the city, village, town, or county begins implementation of the system required under s. 101.63 (7m).**

2015 WISCONSIN ACT 55

- ◉ With the enactment of the 2015-2017 Biennial Budget (2015 WI Act 55), effective July 14, 2015, a waiver from certain UDC code requirements is available to members of established religious sects whose tenets and beliefs prohibit compliance with those requirements and who submit a signed application for a waiver.

The following requirements may be waived:

- ◉ 1) Smoke detectors as required under s. 101.645 (3), Stats., and section SPS 321.09;
- ◉ 2) Carbon monoxide detectors as required under s. 101.647 (3), Stats., and section SPS 321.097; and
- ◉ 3) Any electrical or plumbing code requirement imposed under any provision of chs. 101 or 145, Stats., chs. SPS 324 or SPS 325, or under any ordinance of a political subdivision relating to standards for electrical wiring or plumbing in one- and 2-family dwellings.

2015 WISCONSIN ACT 55

A political entity that issues building permits to work on a one- or 2-family dwelling shall issue a waiver upon receipt of a signed and completed application form if all of the following apply:

- 1) The political entity has no reason to believe the statements provided by the applicant are untrue;
- 2) The political subdivision is satisfied the waiver will not result in an unreasonable risk to public health or safety; and
- 3) The waiver specifies those eligible code requirements with which the applicant is not required to comply.

2015 WISCONSIN ACT 55

If a political entity finds that one or more conditions for approval are not met, the entity may recommend denial of the waiver. If the municipality recommends denial of the waiver the municipality must submit the application to DSPS along with a description of the reasons for recommending denial. The department will either deny the waiver or issue the waiver to the applicant and notify the political entity of its decision.

- The application form 1000IS is found on the department's website under the forms tab in the One- and Two-Family Dwellings (Uniform Dwelling Code) Program .

QUESTION????

What if, after all of the restrictions are met to comply with the waiver, down the road the property is sold to a person who is not of religious belief? You then would potentially have a home that does not comply with any of these codes and would be unsafe for that person. Can the home be forced to be brought up to current code at that time?

ANSWER

- The application for waiver form that they sign states that the waiver holder agrees to modify the dwelling, if necessary, to sell to someone with different beliefs for resale.
- It's not a requirement in the law to have a recorded deed restriction so the municipality cannot require it. The municipality can do it on their own, however.

WEB SITE APPLICATIONS

DSPS WEBSITE - DSPS.WI.GOV

WISCONSIN
DEPARTMENT OF SAFETY AND PROFESSIONAL SERVICES

Boards and Councils | Licenses/Permits/Registrations | Online Services | Plan Review | Complaints & Inspections | Other Services



Trades Professions Continuing Education Changes

A recent change to the Wisconsin Administrative Code SPS 305 allows an extra 3 months for trades credential holders to complete and submit their required Continuing Education (CE) credits prior to license renewal.

Previously, all trades credential holders were required to complete their CE credits three months before their renewal date.



[Prescription Drug Monitoring Program \(PDMP\)](#)



[Industry Services \(Safety & Buildings\)](#)



[Rules and Regulations](#)



[Application Forms](#)



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[License Renewal](#)



[Request List of License Holders](#)

ONE-AND TWO- FAMILY UNIFORM DWELLING CODE

ALL DIVISION PROGRAMS



Amusement Rides



Boilers, Pressure Vessels



Commercial Buildings



Electrical & Lighting



Elevators and Conveyances



Energy



Explosives Safety



Fire Department Safety and Health



Fire Prevention (2% Dues) (NFIRS)



Fire Protection Systems



Fire Safe Cigarettes



Gas Systems



Heating, Ventilation, & Air Conditioning



Manufactured/Mobile Homes



Mine Safety



One- and Two-Family (Uniform Dwelling Code)



Plumbing



Private Onsite Wastewater Treatment Systems (POWTS)



[Boards and Councils](#)[Licenses/Permits/Registrations](#)[Online Services](#)[Plan Review](#)[Complaints & Inspections](#)[Other Services](#)

ONE- AND TWO-FAMILY DWELLINGS (UNIFORM DWELLING CODE) PROGRAM



The Uniform Dwelling Code (UDC) is the statewide building code for one- and two-family dwellings built since June 1, 1980. The Industry Services Division provides consultation and education concerning UDC construction standards and inspection procedures. Building materials are evaluated for conformance with standards. UDC inspection and contractor credentials are administered. The UDC is enforced in all Wisconsin municipalities.

Building Inspector Association Winter Update Training Presentations

[*Inspector Association Winter Update 2016*](#)

[*Winter Update 2015 True or False*](#)

[*Wall Bracing Update 2015*](#)

[*CBRF and Residential DHS Regulatory Model - 2015 Winter Code Updates*](#)

[*Wisconsin Dwelling Code Council - 2013 Report*](#)

Per 2013 Wisconsin Act 23, the Dwelling Code Council is required to prepare a report detailing its review of and subsequent recommendations to the Wisconsin Uniform Dwelling Code. The Council approved the report by unanimous vote.

[Please click here to view the report.](#)

[Highlights of the 2016 Uniform Dwelling Code Changes \(Link\)](#)

WALL BRACING PERMANENT RULES – download the wall bracing rules and [HOW TO USE guide](#)

[Wall Bracing Rules](#)

[Wall Bracing Compliance Worksheet](#)

[Wall Bracing FAQ](#)

[Administrative Code and Statutes](#)[Forms](#)[Publications](#)[FAQs](#)[Training](#)[Contacts](#)[Links](#)

FREQUENTLY ASKED QUESTIONS



ONE- AND TWO-FAMILY DWELLINGS (UNIFORM DWELLING CODE) PROGRAM



The Uniform Dwelling Code (UDC) is the statewide building code for one- and two-family dwellings built since June 1, 1980. The Industry Services Division provides consultation and education concerning UDC construction standards and inspection procedures. Building materials are evaluated for conformance with standards. UDC inspection and contractor credentials are administered. The UDC is enforced in all Wisconsin municipalities.

[Administrative Code and Statutes](#)

[Forms](#)

[Publications](#)

[FAQs](#)

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[Links](#)

Building Inspector Association Winter Update Training Presentations

[Inspector Association Winter Update 2016](#)

[Winter Update 2015 True or False](#)

[Wall Bracing Update 2015](#)

[CBRF and Residential DHS Regulatory Model - 2015 Winter Code Updates](#)

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Per 2013 Wisconsin Act 23, the Dwelling Code Council is required to prepare a report detailing its review of and subsequent recommendations to the Wisconsin Uniform Dwelling Code. The Council approved the report by unanimous vote.

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[UDC Dwelling Council \(Link\)](#)

DSPS EMAIL BLASTS

WISCONSIN
DEPARTMENT OF SAFETY AND PROFESSIONAL SERVICES

Boards and Councils	Licenses/Permits/Registrations	Online Services	Plan Review
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ONLINE SERVICES



Licensing/Credentialing



Credential/License Search



Industry Services (Safety & Buildings)





WISCONSIN

DEPARTMENT OF SAFETY AND PROFESSIONAL SERVICES



[Boards and Councils](#)

[Licenses/Permits/Registrations](#)

[Online Services](#)

[Plan Review](#)

[Complaints & Inspections](#)

[Other Services](#)

TECHNICAL AND FIELD SERVICES ONLINE RESOURCES

Plan Review Related

- [Commercial Buildings Plan Review Scheduler](#)
- [Plumbing Plan Review Scheduler](#)
- [Fire Protection Systems Plan Review Scheduler](#)
- [Plan Review Availability](#)
- [Plan Review Status](#)
- [Plan Review Address Change](#)

Product Related

- [Cross Connection Control Assembly](#)
- [Plumbing Products Search](#)
- [Manufactured Homes Search](#)
- [Regulated Object Search](#)

Other Services

- [Email List Sign Up](#)
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You can sign up to receive occasional messages from the Department of Safety and Professional Services about news we feel is important to people interested in **specific programs and other topics**.

You can un-subscribe at any time via a link from the bottom of each email you receive as part of the list. If you change your email address, go through the sign-up process with the new address. The old address will go away when the automatic email system finds it not valid.

Be aware that email addresses gathered by state agencies may be subject to open records laws.

<input type="checkbox"/> Amusement Rides / Ski Lifts, Tows <input type="checkbox"/> Boilers / Pressure Vessels <input type="checkbox"/> Building / Dwelling Contractor <input type="checkbox"/> Commercial Buildings <input type="checkbox"/> Electrical <input type="checkbox"/> Elevators / Conveyance Safety <input type="checkbox"/> Explosives <input type="checkbox"/> Fire Department Safety and Health <input type="checkbox"/> Fire Prevention <input type="checkbox"/> Fire Protection Systems <input type="checkbox"/> Gas Systems <input type="checkbox"/> HVAC / Energy <input type="checkbox"/> Manufactured / Mobile Homes <input type="checkbox"/> Mine Safety <input type="checkbox"/> News Reports, IS Division-Wide <input type="checkbox"/> Plumbing <input type="checkbox"/> Private Onsite Wastewater Treatment <input type="checkbox"/> Public Sector Safety <input type="checkbox"/> Public Swimming Pools <input type="checkbox"/> Refrigeration <input type="checkbox"/> Rental Unit Energy Efficiency <input type="checkbox"/> Soil Erosion <input checked="" type="checkbox"/> Uniform Dwelling Code <input type="checkbox"/> Welding	<p>Check the list(s) you wish to be part of. Enter your email address and name, then click "subscribe." You will automatically be sent a confirmation message (in order to validate your email address). Follow the instructions in the confirmation message to complete the subscription process.</p> <p>If you do not receive a confirmation message, something did not work correctly and you will need to try again. The most common reason for a problem is an incorrectly-typed email address.</p>		
	<table border="1"> <tr> <td data-bbox="676 963 966 1063">Email address:</td> <td data-bbox="966 963 1530 1063"><input type="text"/></td> </tr> </table>	Email address:	<input type="text"/>
Email address:	<input type="text"/>		
	<table border="1"> <tr> <td data-bbox="676 1063 966 1163">Your name <i>(optional)</i>:</td> <td data-bbox="966 1063 1530 1163"><input type="text"/></td> </tr> </table>	Your name <i>(optional)</i> :	<input type="text"/>
Your name <i>(optional)</i> :	<input type="text"/>		
	<p><input type="button" value="Subscribe"/></p> <p>Personal information you provide may be used for secondary purposes. [Privacy Law, s.15.04(l)(m)]</p>		

TECH EMAIL BOXES:

- ◉ DSPSSBUdctech@wisconsin.gov
- ◉ DSPSSBElectricTech@wisconsin.gov
- ◉ DSPSSBPlbgTech@wisconsin.gov

INDUSTRY SERVICES UPDATE

◉ Farewells:

- Doug Erler - Holmen, Commercial Building plan reviewer
- Roger Strege - State Building Inspector (Northeast region)
- Duane Hubeler - Madison, UDC Consultant
- Tom Garvey - Electrical Consultant
- Dean Yourchuck - Boiler Inspector
- Jim Pacala - Elevator Inspector
- Scott Amacher - Public Sector Safety Inspector
- Terry Clark - Public Sector Safety Inspector
- Paul Parsons - Public Sector Safety Inspector
- Brian Ferris - Section Chief
- Sharon Blattner-Held - Section Chief
- Brock McHenry - Section Chief
- Paula Veltum - Bureau Director
- Jeff Weigand, Division Administrator

INDUSTRY SERVICES UPDATE

◉ Welcome aboard:

- Joe Monfre - Madison, Commercial Building plan reviewer
- Dave Lintz - Green Bay, Commercial Building plan reviewer
- Larry Wiest - Green Bay, Commercial Building plan reviewer
- Tom Westlund - Hayward, Commercial Building plan reviewer
- Lucas Dederich - State Building Inspector (Northcentral region)
- Bret Radke - State Building Inspector (Southwest region)
- Mike Dubois - Green Bay, Plumbing plan reviewer
- Robert Franke - Waukesha, Plumbing plan reviewer
- Richard Rochelt - Holmen, Plumbing plan reviewer
- Steve Rasmusson - Electrical Inspector (Northwest region)
- Dustin Heacox - Public Sector Safety Inspector
- Kim Schmitt - Section Chief - Elevators, Boilers & Pressure Vessels, Mechanical Refrigeration and Anhydrous Ammonia, Structural Steel Welding
- Amy Millard - Bureau Director, Technical Services
- Scott Mau - Section Chief, UDC and Manufactured Homes, Fire Protection, Electrical
- Kirsten Reader - Division Administrator, Division of Industry Services

QUESTIONS?



- Please feel free to submit feedback regarding this presentation at the following link:

<https://www.surveymonkey.com/r/industryservicespeakingevent>

THANK YOU FOR YOUR TIME



2016 Winter Updates

UDC Code Updates 2016

SPS 320 – 323

Changes and Additions Part I



Lenny Kanter
UDC Consultant

SPS 320.02(1) New Language

“Group Homes”

SPS 320.02 (1) (ce), (cm), and (cs) are created to read:

SPS 320.02 (1) (ce) A one- or 2-family dwelling built on or after the effective dates under s. SPS 320.03 that is used as a **foster home or group home, or as a residential care center for children and youth that has a capacity for 8 or fewer children,** all as defined in s. 48.02, Stats. Where such a home or center is operated in each dwelling unit of a 2-family dwelling, the **capacity limit for each unit is independent of the other unit only if the two operations are independent of each other.**

**Refers to Separate Business Ownership
Not Property Ownership**

SPS 320.02(1) New Language

"Day – Care Center"

(cm) A one- or 2-family dwelling built on or after the effective dates under s. SPS 320.03, in which a **public or private day care center for 8 or fewer children** is located. Where such a day care center is operated in each dwelling unit of a 2-family dwelling, the **capacity limit for each unit is independent of the other unit only if the two operations are independent of each other.**

**Refers to Separate Business Ownership
Not Property Ownership**

SPS 320.02(1) New Language

“Home Occupation”

Mirrors Commercial Code 361.02(4)

(cs) 1. Any portion of or space within a one- or 2-family dwelling built on or after the effective dates under s. SPS 320.03, in which a home occupation is located.

2. In this paragraph, “**home occupation**” means any business, profession, trade, or employment conducted in a person’s dwelling unit, that may involve the person’s immediate family or household and a maximum of one other unrelated person, but does not involve any of the following:

a. Explosives, fireworks, or repair of motor vehicles.

b. More than 25% of the habitable floor area of the dwelling unit.

SPS 320.07 (36r) and (37m) are created to read:

SPS 320.07 (36r) “Guard” means a barrier erected to prevent a person from falling to a lower level.



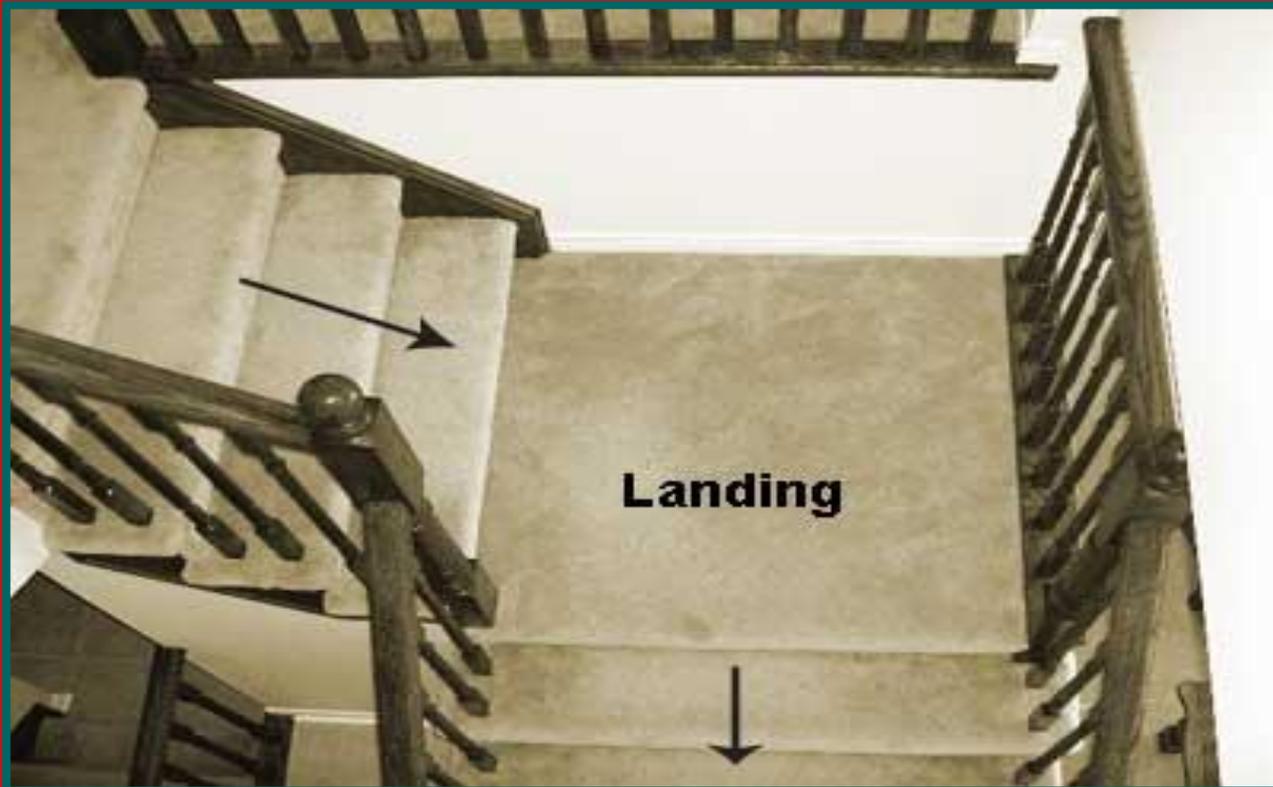
SPS 320.07 (37m)

(37m) "Handrail" means a horizontal or sloping rail intended for grasping by a hand, for guidance or support or preventing a fall down a stair.



SPS 320.07 (47) is amended to read:

SPS 320.07 (47) “Landing” means the level portion of a stairs located between flights of stairs or located at the top and foot base of a stairs.



SPS 320.07 (50) is amended to read:

(50) “Loft” means an upper room or floor which has at least 50% of the common wall open to the floor below. The opening may be infringed upon by an open ~~guardrail~~ **guard** constructed in compliance with s. SPS 321.04 (2), but not by a window or half-wall ~~guardrail~~ **guard**. All habitable rooms of lofts are open to the floor below.



SPS 320.07 (66) is amended to read:

(66) A ~~“stairway”~~ is “Stair,” “stairs,” or “stairway” means one or more flights of steps, risers and the necessary treads, platforms and landings connecting them, to which form a continuous passage from one elevation to another. Multiple stairways can be connected by platforms and landings.

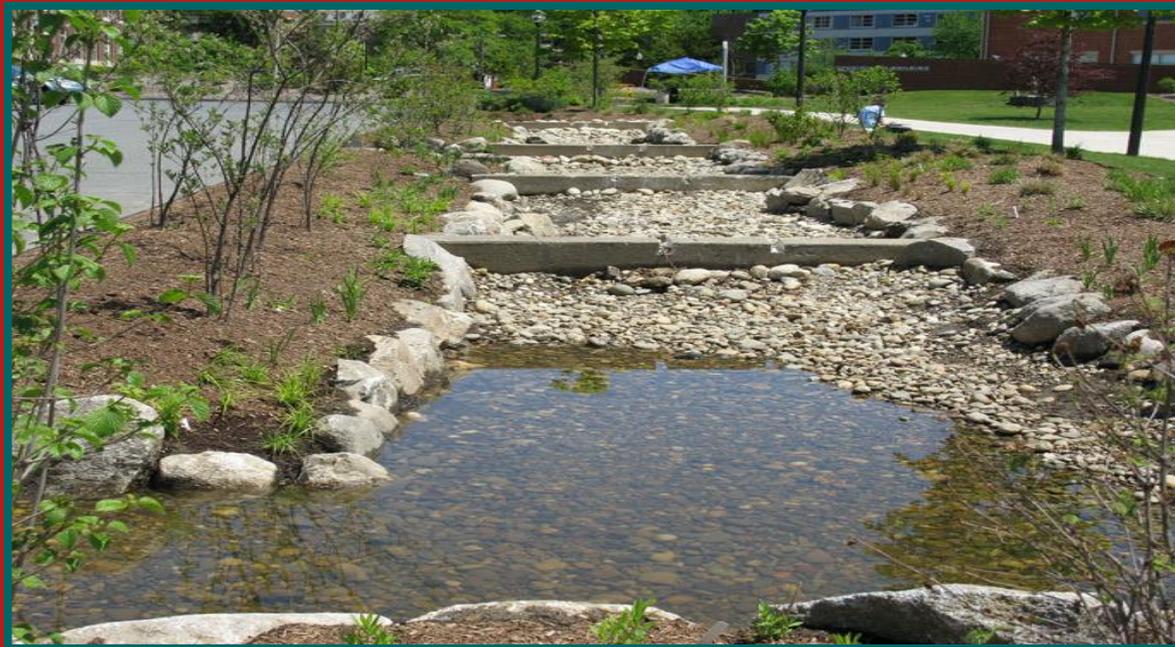


SPS 320.085 is repealed

Notice of Intent Submittals for Erosion Control
and Post Construction Stormwater Management

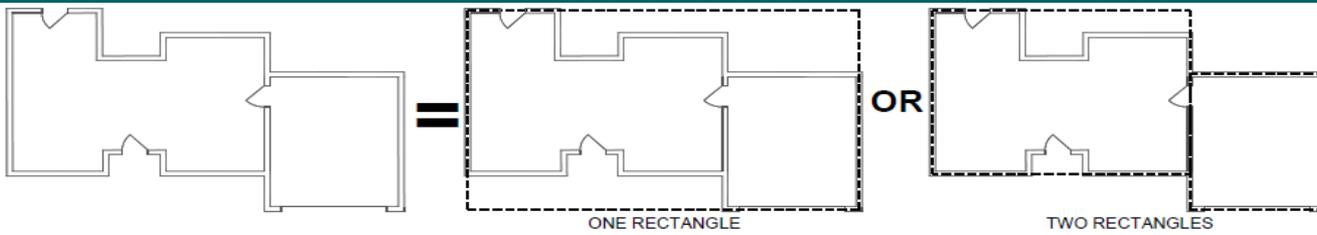
Affected sites with an acre or more of land disturbance

Note in 321.125: Authority for sites of an acre or
more of land disturbance transferred to DNR July 2013



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

SPS 320.09 (5) (b) 2. d. The location and construction details of wall bracing on each building side and floor level. **The details may consist of the Wall Bracing Compliance Worksheet or a legend showing which wall bracing method is used and the lengths or number of braced wall panels and demarcation of the circumscribed rectangles if more than one is used.**



(1) Basic floor plan

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						

SPS 320.09 (5) (d) is repealed.

Post Construction Stormwater Management Plan for sites w/ an acre or more of disturbance. Still required per DNR codes but not in the UDC

No DSPS Authority



SPS 320.09 (6) (d) is amended to read:

SPS 320.09 (6) (d) The name of the initial downstream receiving water of the state from the dwelling shall be identified, regarding erosion and sediment control. ~~and storm water management.~~



New Concrete Standard Introduced

Table 320.24-1 Is Amended

NOTE: Changes To All Adopted Standards

ACI

**American Concrete Institute
P.O. Box 9094
Farmington Hills, MI 48333
www.concrete.org**

Standard Reference Number

Title

~~1. 318-05~~ 318-14

Building Code Requirements
for Structural Concrete

2. 332-14

Residential Code Requirements for
Structural Concrete

~~23. 530-05~~ 530-13

Building Code Requirements for
Masonry Structures

~~34. 530.1-05~~ 530.1-13

Specification for Masonry Structures

SPS 321.02 (3) (d) is created to read:

SPS 321.02 (3) (d) Note: Concrete construction in one- and two-family dwellings should meet the standards established in ACI 318 & 332.

Prescriptive language in UDC still applies: Footings, Foundation, etc.

NOTE: Construction means, materials, or methods not addressed in ACI 332 should meet the standards established in ACI 318.



SPS 321.02 (3) (g) and 2. are consolidated, renumbered SPS 321.02 (3) (g), and amended

SPS 321.02 (3) (g) *Whole logs.* Dwellings constructed of whole logs shall conform to the following standards: ~~2. ICC/ANSI~~ ICC 400, Standard on the Design and Construction of Log Structures.



SPS 321.03 (1) (b) **is created to read:**

(1) EXITS FROM THE FIRST FLOOR. (a)

Except as allowed under par. (h), every dwelling unit shall be provided with at least 2 exit doors accessible from the first floor.

SPS 321.03 (1) (b) Note: Under this paragraph, only one of the two exit doors that are addressed in par. (a) is required to exit directly to grade.

SPS 321.03 (1) (c) **is amended to read:**

SPS 321.03 (1) (c) ~~An additional~~ **Any** exit **that does not comply with par. (b)** may discharge to an outside balcony that complies with sub. (8).

SPS 321.03 (8)(c) 2. The floor level of the balcony *shall be no more than 15 feet above the grade below.*

SPS 321.03 (1) (d) is amended to read:

(d) ~~An additional~~ Any exit that does not comply with par. (b) may discharge into an attached garage provided the garage has an exit door that discharges to grade. An overhead garage door may not be used as an exit door.



SPS 321.03 (1) (h) 3. is created to read:

SPS 321.03 (1) (h) 3. One of the exit doors required in par. (a) may be omitted for a dwelling unit that has one or more egress windows on the first floor. If there are bedrooms, each must have a window that complies with sub. (6).

Sub. (6) Windows Used For Exiting

ie. With an egress window, only one exit door is required from first floor

SPS 321.03 (2)

(a) At least 2 exits shall be provided from the second floor. ~~One~~ At least one of the exits shall be a stairway or ramp and lead to the first floor or discharge to grade. The second exit may be via a stairway or ramp which that discharges to grade, ~~or may discharge~~ or to a balcony which complies with sub. (8), or to a deck that complies with s. SPS 321.225 and that is no more than 15 feet above the grade below.

Balcony – Deck: Same thing for this purpose

SPS 321.03 (2)

(b) ~~Except as provided in par. (c), windows~~
Windows which that comply with sub. (6) may be provided in each second floor bedroom – or in another location on the second floor if there are no bedrooms on that floor – in lieu of the second exit from the that floor.

SPS 321.03 (2)

(C) Where the second floor of a building is the lowest floor level in a dwelling unit, as in an up-and-down duplex, ~~windows may not be provided as the second exit from the floor~~ no exit from the unit may go through another dwelling unit or other party's occupancy on the first floor.

One exit door to grade required

Second exit can be a door to a balcony

OR... Egress Window

SPS 321.03 (6)

(d) 5. A ~~Step~~ stair used for the sole purpose of reaching the top of the platform or fixture is exempt from the requirements of s. SPS 321.04.

SPS 321.03 (6)

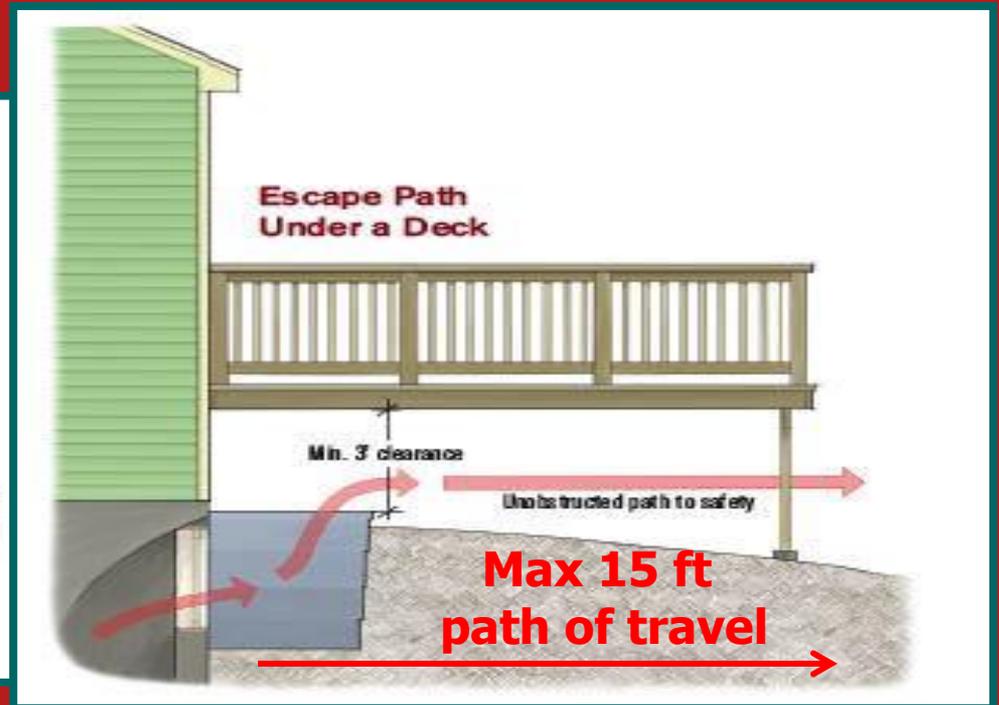
(e) 4. If the bottom of the areaway is more than 46 inches below adjacent grade or the top of the areaway enclosure, the areaway shall be provided with a ladder or ~~at least one additional step~~ stair to aid egress. ~~Steps~~ Stairs used to comply with this section are exempt from the requirements of s. SPS 321.04.

SPS 321.03 (6)

(e) 5. a. Ladders or other steps stairs used to comply with subd. 4. may infringe on the required area of the areaway by a maximum of 6 inches.

SPS 321.03 (6) (f) and note are created:

321.03(6)(f) An egress window under a deck or porch shall discharge through a clear path of **at least 36 inches in height and 36 inches in width**, and no more than **15 feet in length**, to a yard or open space.



SPS 321.03 (6) (f) and note are created:

Note: Under this paragraph, there is no maximum height above grade for an egress window. Similarly, egress windows are not prohibited from discharging to a roof, ***regardless of the slope of the roof.***



SPS 321.03 (7)

(7) (a) 4. Where sliding doors are used as a required exit, the clear opening shall be at least 30 29 inches wide and be at least 76 inches high.



SPS 321.03(8)

(8) (b) Balconies shall be provided with guardrails guards in accordance with s. SPS 321.04 (3).

(c) 1. The balcony guardrail guard shall terminate no more than 46 inches above the floor level of the balcony.

3. The floor of the balcony shall have minimum dimensions of 3 feet by 3 feet. The guardrail-guard and its supports may infringe on the dimensions of the required area no more than 4.5 inches.



SPS 321.03(11)

is created to read:

(11) EXITS TO COURTYARDS. No exit may discharge to a courtyard having a perimeter that is entirely enclosed by exterior building walls or other obstructions that prevent pedestrian passage.



SPS 321.04

(2) (a) 1. Except for spiral staircases under subd. 2., stairways shall measure at least 36 inches in width. Handrails and associated trim may project a maximum of 4.5 inches into the required width at each side of the stairway. **The minimum clear width at and below the handrail, including at treads and landings, may not be less than 31.5 inches where a handrail is installed on one side, and 27 inches where handrails are provided on both sides.**



27"

36"

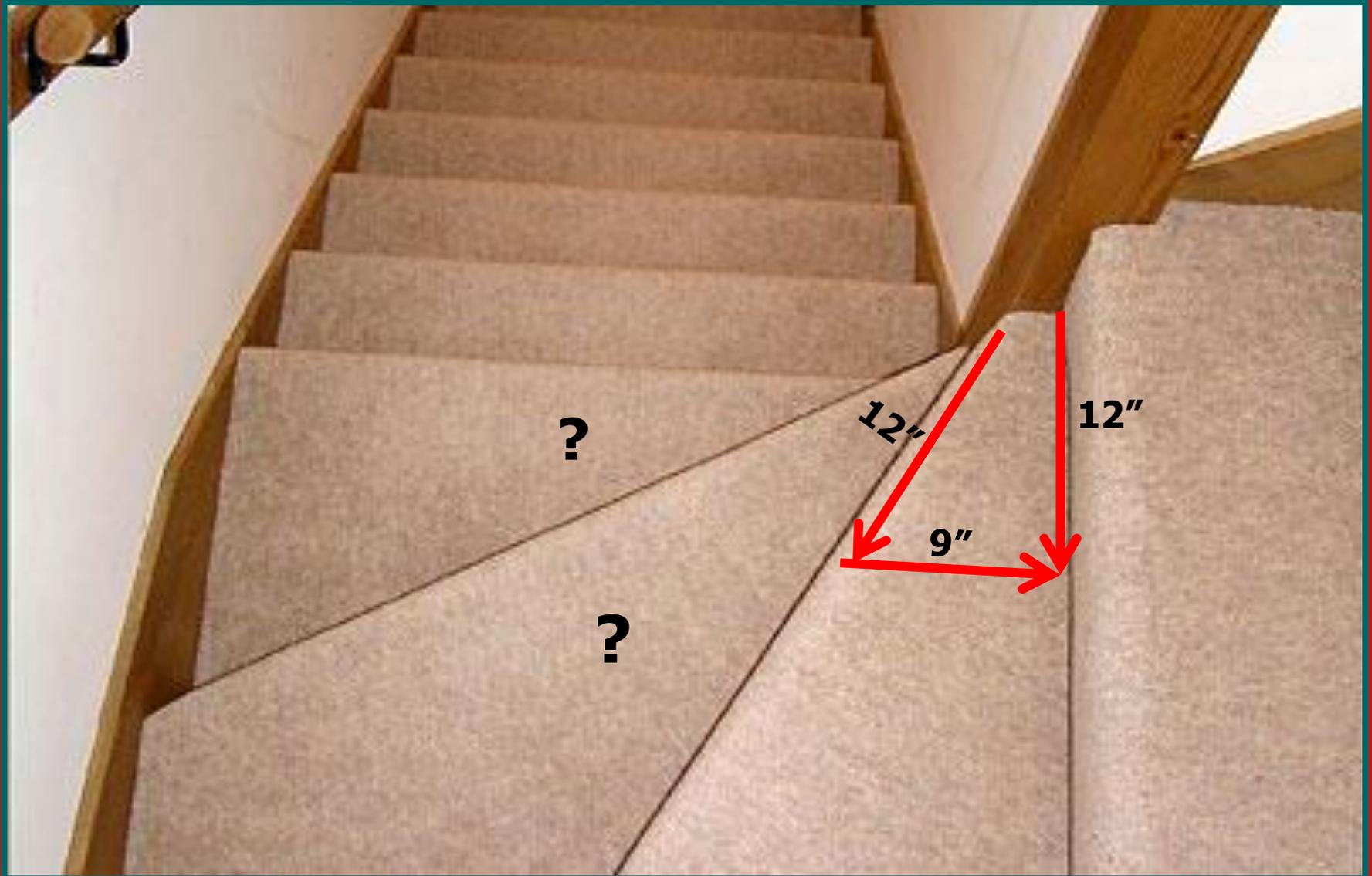
SPS 321.04

(2)(c) 4. a. An individual winder tread may be placed between rectangular treads or at the end of a flight of rectangular treads provided the tread depth is **at least 9 inches, when** measured at a point **distance** of 12 inches from the narrow end, ~~is equal to the tread depth of the rectangular steps in the flight of the tread~~ **or from the inside face of the wall.**

b. There may be more than one individual winder tread in a stairway. ~~or in a flight of stairs.~~

321.04 (2)(c) 4. a.

Translated



All Winders Must Meet These Reqs.



How About These Apples ?





SPS 321.04(3)

(3) HANDRAILS AND ~~GUARDRAILS~~ GUARDS.

(a) ~~1. Stair flights~~ A flight of stairs with more than 3 risers shall be provided with at least one handrail for the full length of the ~~stair~~ flight.

~~2. Handrails or guardrails~~ Guards shall be provided on all open sides of ~~stair flights~~ stairs consisting of more than 3 risers and on all open sides of areas that are elevated more than 24 inches above the floor or exterior grade.

Note: A handrail provided at 30 to 38 inches above the tread nosing meets the height requirement for a guardrail guard on a stairway.

SPS 321.04(3)

3. a. Except as provided in subd. 3. b., ~~handrails and guardrails~~ **guards** shall be constructed to prevent the through-passage of a sphere with a diameter of **4 3/8** inches or larger, **when applying a force of 4 pounds.**

b. The triangular area formed by the tread, riser and bottom rail shall have an opening size that prevents the through-passage of a sphere with a diameter of 6 inches ~~or larger~~, **when applying a force of 4 pounds.**

SPS 321.04 (3)(a)

3. C. Rope, cable, or similar materials used in ~~handrail or guardrail~~ guard infill shall be strung with maximum openings of 3½ inches with vertical supports a maximum of 4 feet apart.



SPS 321.04 (3)(a)

- 4. a.** Handrails and guardrails guards shall be designed and constructed to withstand a 200 pound load applied in any direction.
- b.** Handrail or guardrail guard infill components, balusters and panel fillers shall withstand a horizontally applied perpendicular load of 50 pounds on any one-foot-square area.
- c.** Glazing used in handrail or guardrail guard assemblies shall be safety glazing.
- 5.** Exterior handrails and guardrails guards shall be constructed of metal, decay resistant or pressure-treated wood, or shall be protected from the weather.

SPS 321.04

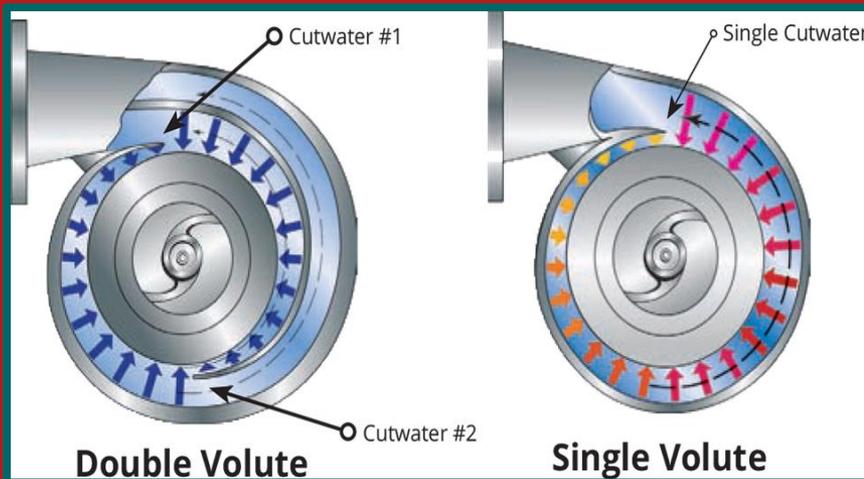
(3) (b) 1. a. Handrails shall be located at least 30 inches, but no more than 38 inches above the nosing of the treads, **except as provided in subds. 1. b. to d.** Measurement shall be taken from the hard structural surface beneath any finish material to the top of the rail. Variations in uniformity are allowed only when a rail contacts a wall or newel post or where a *turnout* or *volute* is provided at the bottom step **tread.**

What's a Volute?

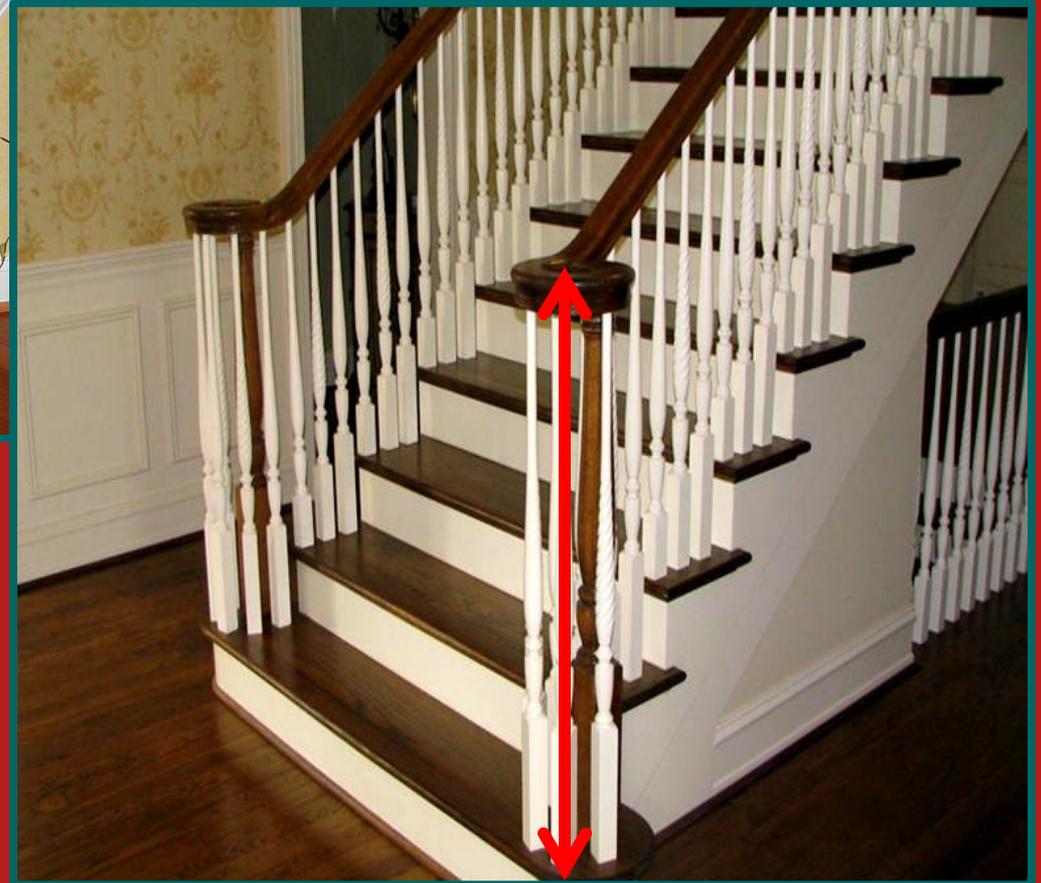
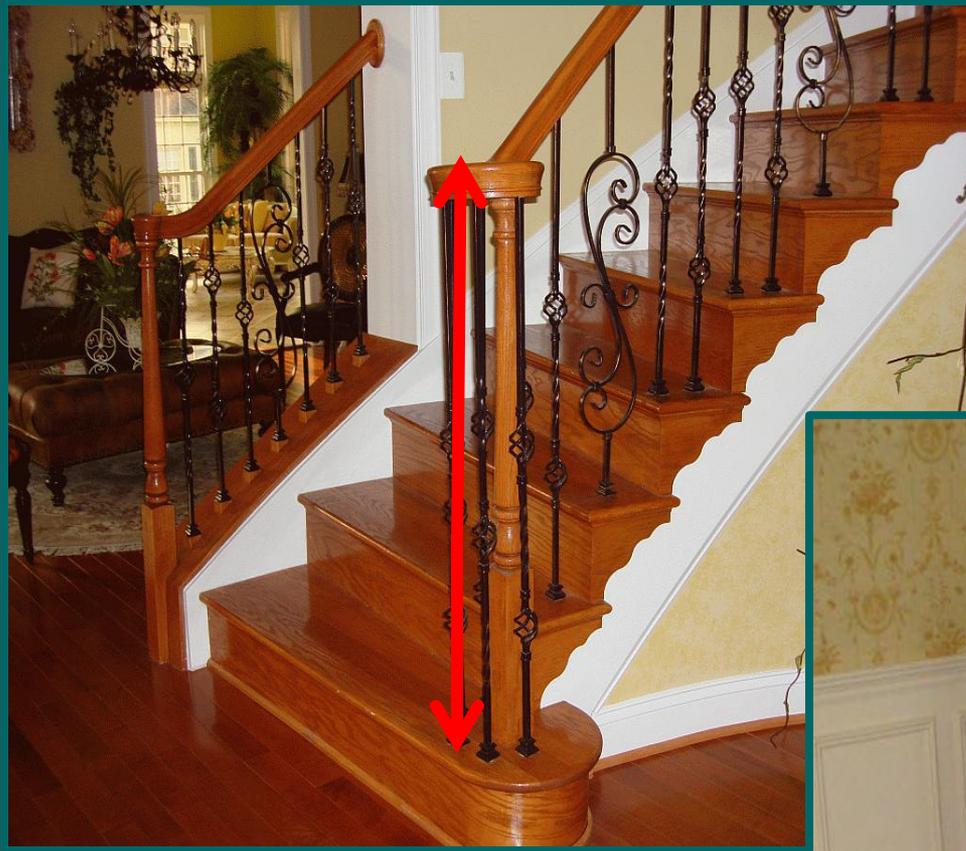
Volute Snail



Volute Pumps



Height of Volute



May Exceed 38"

**Volute May Protrude
Over the Nosing**

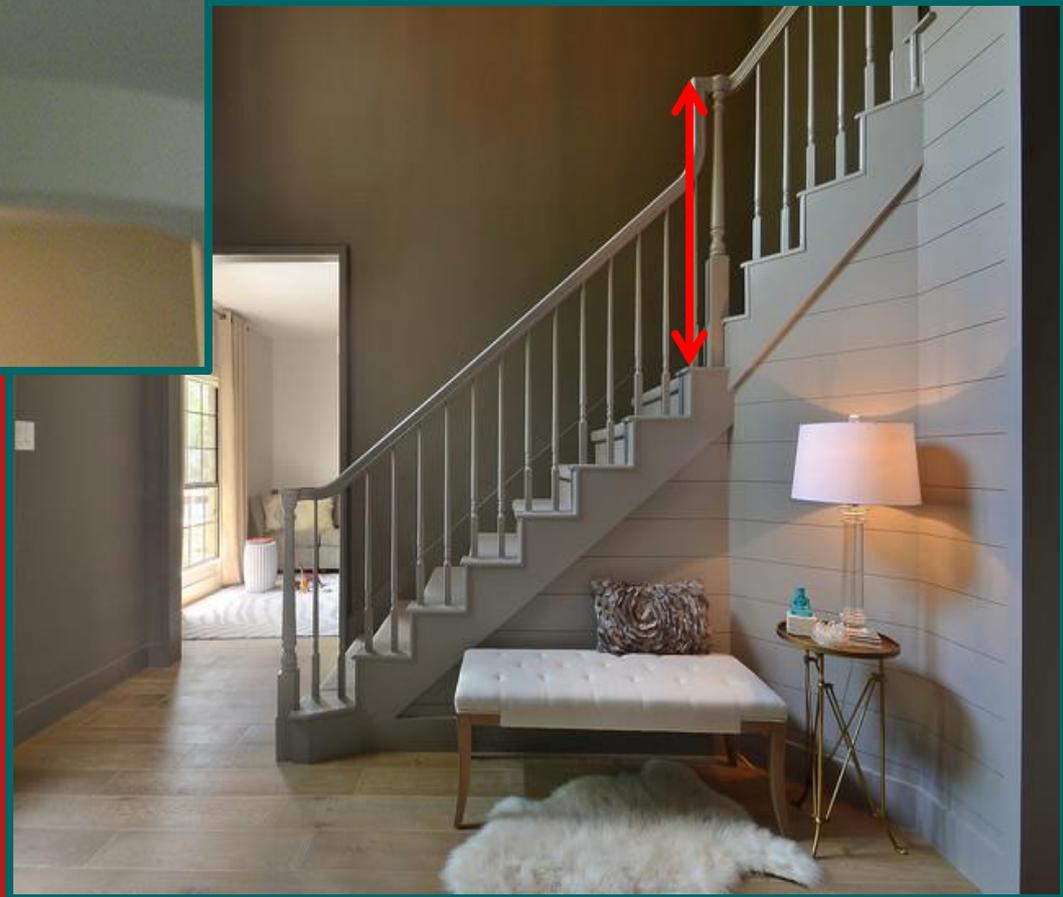
SPS 321.04 (3) (b)

- 1. b.** A volute, turnout, or starting easing that does not comply with subd. 1. a. may extend over the lowest tread.

- c.** Transition fittings on handrails may extend above the 38-inch height limit.

- d.** Where handrail fittings or bendings are used to provide a continuous transition between flights, or at winder treads, or from a handrail to a guard, or at the start of a flight, the height at the fittings or bendings may exceed 38 inches.

Transition Handrails



**May Extend
Beyond 38"
In *Height***

SPS 321.04 (3) (b) 3.

'Winders.' a. Except as provided under subd. 3. b., the required handrail on winder-~~steps~~-stairs shall be placed on the side where the treads are wider.

b. Where all winder ~~steps~~-treads in a flight have a tread depth of at least **9 inches (now required)** from nosing to nosing measured at a point 12 inches from the narrow end of the tread, the required handrail may be located on either side of the stairway.

(c) ~~Guardrails~~ **Guards.**

1. a. All openings between floors, and open sides of landings, platforms, balconies or porches that are more than 24 inches above grade or a floor shall be protected with ~~guardrails~~ guards.

SPS 321.04 (3) (c)

1. d. This paragraph does not apply to window wells, egress wells, and retaining walls.

2. 'Height.' Guardrails Guards shall be located extend to at least 36 inches above the floor or to the underside of a stair handrail complying with s. SPS 321.04 (3) (b). Measurement shall be taken from the hard structural surface beneath any finish material to the top of the rail guard.

3. 'Opening size.' Guardrails Guards shall be constructed to prevent the through-passage of a sphere with a diameter of 4 3/8 inches ~~or larger,~~ when applying a force of 4 pounds.

SPS 321.04 (4)

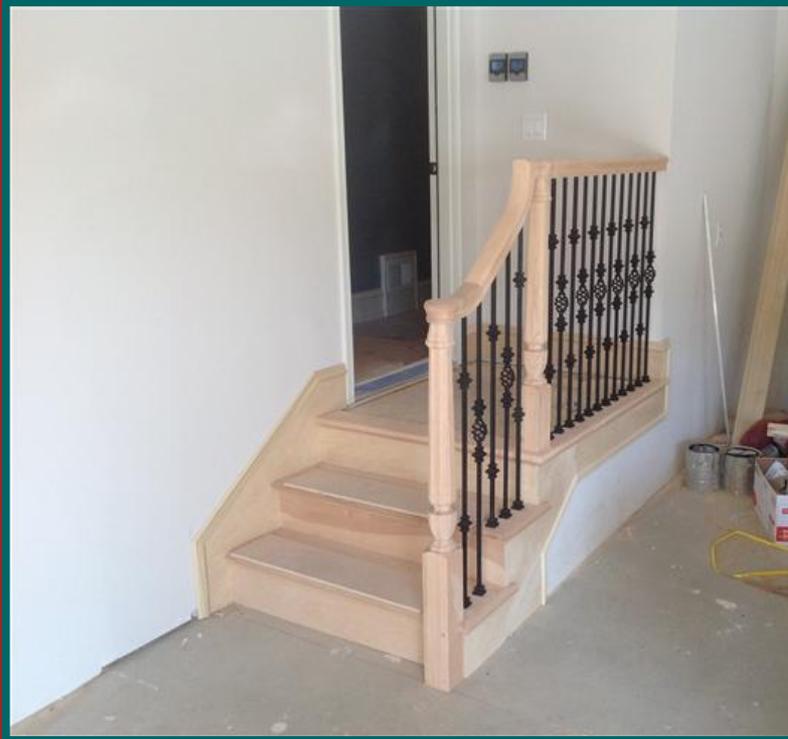
(a) 2. Intermediate landings that connect 2 or more straight flights of stairs, or 2 flights of stairs at a right angle, shall be at least as wide as the ~~stairway~~ **treads** and shall measure at least 36 inches in the direction of travel.

(b) *Landings at the top and base of stairs.* A level landing shall be provided at the top and base of every stairs **except as provided in par (d).** **(exterior landings)** The landing shall be at least as wide as the ~~stairs~~ **treads** and shall measure at least 3 feet in the direction of travel.

SPS 321.04 (4) (c)

Doors at landings. Except as provided in subd. subds. 1. a. to e. **3. and par. (d)**, level landings shall be provided on each side of any door located at the top or base of a ~~stairs~~ **stair**, regardless of the direction of swing. In the following exceptions, stairways to **a stairway between a dwelling and an** attached ~~garages~~ garage, carports **carport** or porches are **porch** is considered **to be an** interior stairs **stair**:

Landing Not Required Where Door Swings In Toward House Garage Example: Treated as Interior Stair



SPS 321.04(4)(c) 3.

3. A landing is not required between a sliding glass door or an in-swinging glass door and the top of an exterior stairway of 3 or fewer risers.



SPS 321.04 (4)

(d) 1. The exterior landing, platform, or sidewalk at an exterior doorway shall be located a maximum of 8 inches below the interior floor elevation, **be sloped away from the doorway at a minimal rate that ensures drainage**, and shall have a length of at least 36 inches in the direction of travel out of the dwelling.

1:50 Slope



Must Slope Away From Doorway

SPS 321.04 (4)

(d) 2. *Exterior landings.*

The landing at the base of an exterior stair shall be sloped away from the stair at a minimal rate that ensures drainage.

1:50 Slope



SPS 321.045 (4)

(c) 1. Open-sided ramps shall have the area below the handrail protected by intermediate rails or an ornamental pattern to prevent the passage of a sphere with a diameter of 4 3/8 inches or larger when applying a force of 4 pounds, except as provided in subd. 2.



SPS 321.045 (4)

(c) 2. This paragraph does not apply to ramps having a walking surface that is less than 24 inches above adjacent grade, if a toe-kick or side rail is provided to 4 inches above the walking surface, and a mid-rail is provided between the toe-kick or side rail and the handrail.



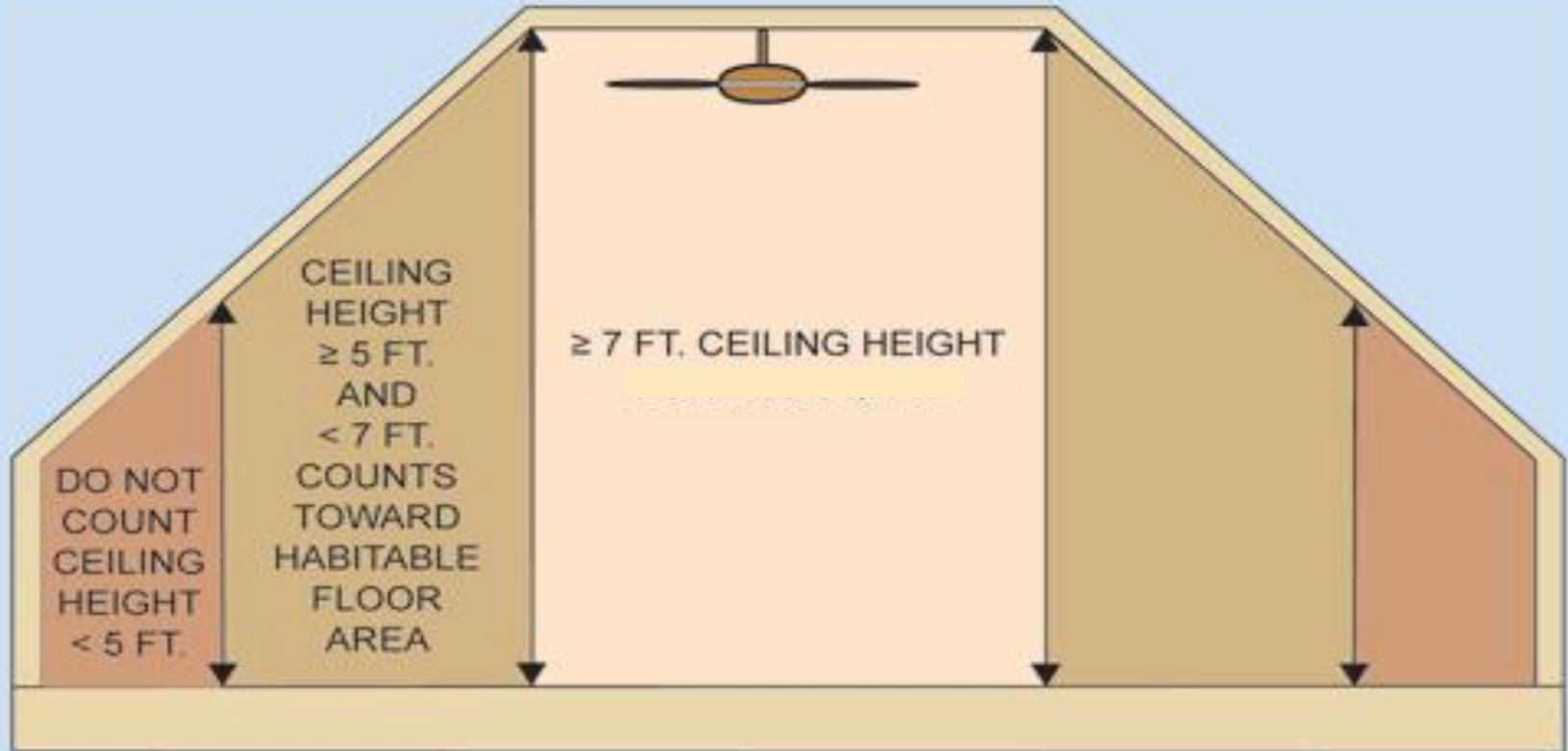
SPS 321.05

(1) Natural Light (8%) and (2) Ventilation (3.5%)

(1m) NET FLOOR AREA. For the purposes of subs. (1) and (2), “net floor area” does not include any area with a ceiling height of less than 5 feet.



Ceiling Heights to Calculate Net Floor Area



Ceiling Height in Rooms with Sloped Ceilings

SPS 321.05 (2)

Ventilation

(a) 2. Any area with a ceiling height of less than 5 feet may be excluded from the net floor area.



SPS 321.05 (3)

Safety Glazing

(am) Except as provided in par. ~~(e)~~**(bm)**, glazing shall consist of safety glass meeting the requirements of CPSC **either** 16 CFR, Part 1201 **or** ANSI Z97.1 when installed in any of the following locations:

(a) In any sidelight or glazing adjacent to a door, that meets all of the following:

1. The nearest point of the glazing is within 2 feet of the door **when the door is in the closed position.**

5. In guard assemblies. Must Still Withstand 200# Force

SPS 321.05 (3) (am)

5. In guard assemblies.



SPS 321.05 (3)

(bm) Safety glass is not required where ~~the size of an individual pane of glass is 8 inches or less in the least dimension.~~ **glazing meets any of the following:**

- 1.** The size of an individual pane of glass is 8 inches or less in the least dimension.
- 2.** The safety glass is required by sub. (3) (am) 1. and the only door within 2 feet of the glazing is the fixed panel of a patio door.
- 3.** The safety glass is required by sub. (3) (am) 1. and there is an intervening wall or other permanent barrier between the door and the glazing.

(bm) 2. The safety glass is required by sub. (3) (am) 1. and the only door within 2 feet of the glazing is the fixed panel of a patio door.



SPS 321.06

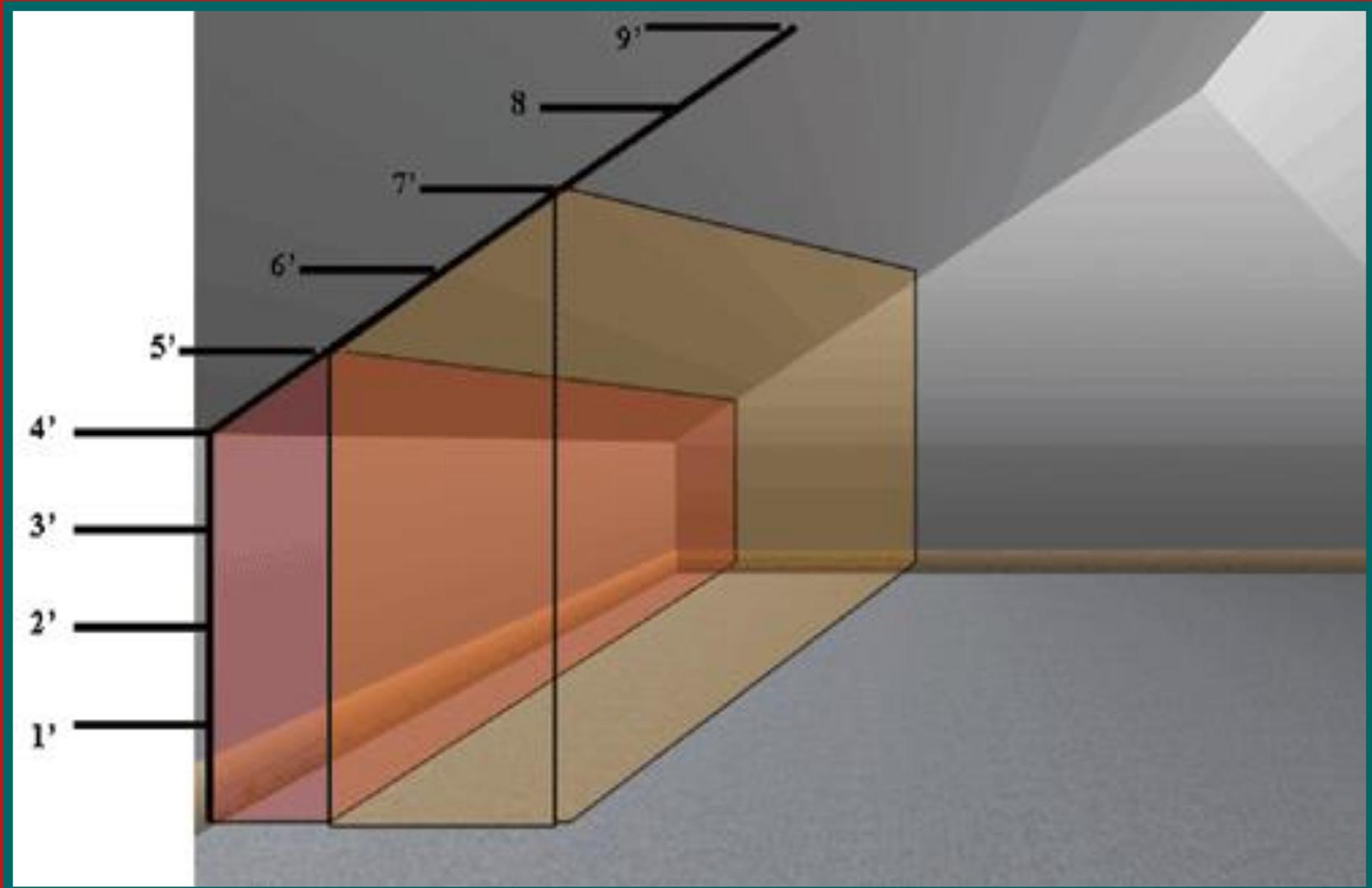
Ceiling Height

Ceiling height. All habitable rooms, kitchens, hallways, bathrooms and corridors shall have a ceiling height of at least 7 feet. ~~Habitable rooms,~~ **except as follows:**

(1)(a) Rooms may have ceiling heights of less than 7 feet provided at least 50% of the room's floor area has a ceiling height of at least 7 feet. **Any area with a ceiling height of less than 5 feet may be ignored in this calculation.**

(2) Beams and girders or other projections ~~shall not~~ **may** project **to no** more than 8 inches below the required ceiling height.

Ceiling Height 7 Foot Minimum



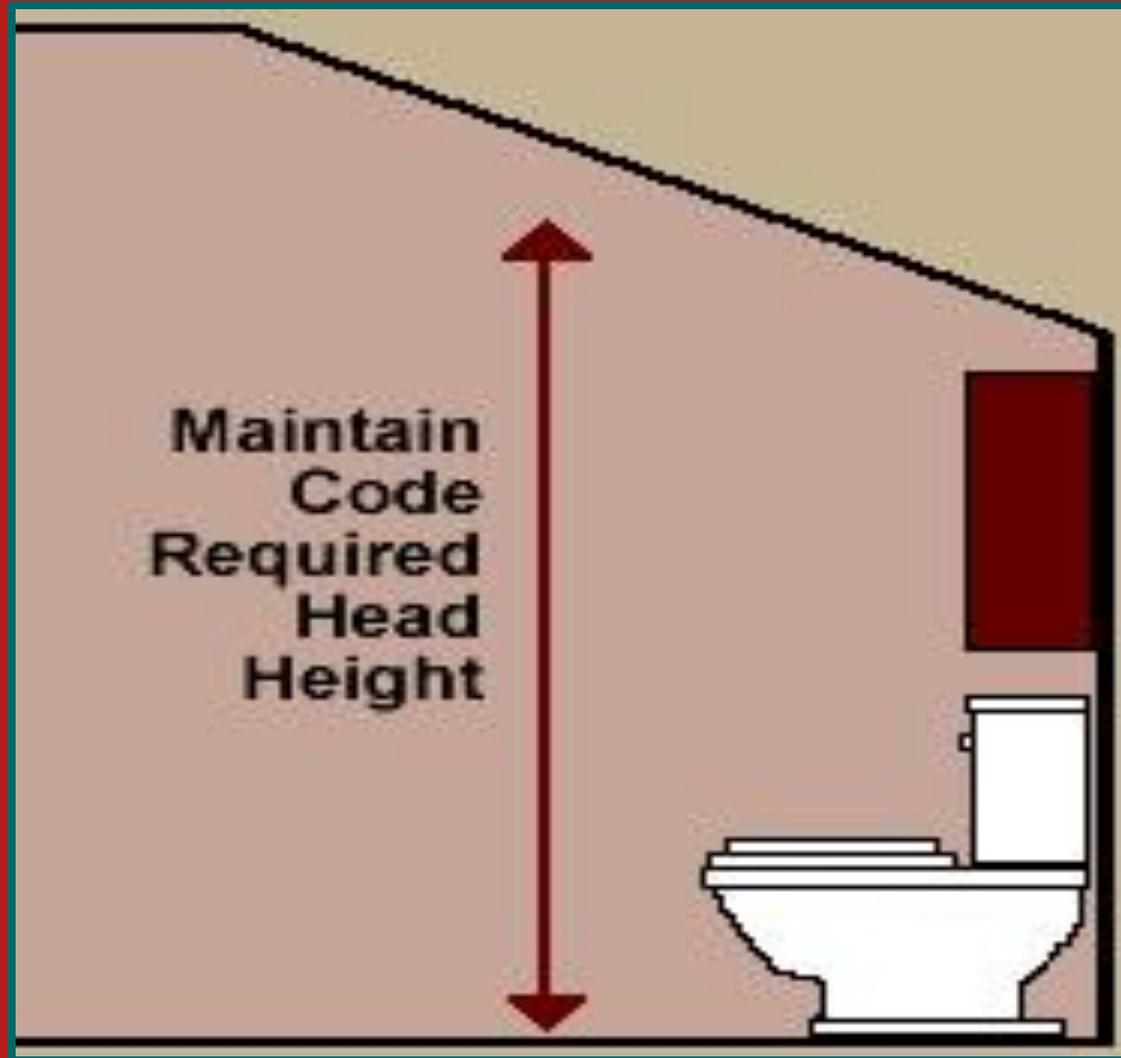
SPS 321.06

(1) (b) The 50% limit in par. (a) does not apply to subs. (3) to (6).

(3) The ceiling height extending back from the front edge of a water closet may slope to below 7 feet, but may not go below 5 feet until beyond the back of the water closet.

(4) The ceiling height extending back from the front edge of a lavatory may be less than 7 feet, but may not go below 5 feet until beyond the back of the lavatory.

(3) The ceiling height extending back from the front edge of a water closet may slope to below 7 feet, but may not go below 5 feet until beyond the back of the water closet.



SPS 321.06

(5) A ceiling height of less than 7 feet may be provided between the rear rim of a bathtub and a wall of the room abutting that rim, or between the side rim and a room wall abutting that rim.

(6) A ceiling height of less than 7 feet may be provided between the rear wall of a shower stall and a wall of the room abutting that rear wall, or between the side wall of a shower and a room wall abutting that side wall.

(5) A ceiling height of less than 7 feet may be provided between the rear rim of a bathtub and a wall of the room abutting that rim, or between the side rim and a room wall abutting that rim.



7 ft ceiling to floor

Note: Section SPS 384.20(5)(o)4. establishes minimum horizontal clearances for water closets, and reads as follows:

“A water closet may not be located closer than 15 inches from its center to any side wall, partition, vanity, or other obstruction, nor closer than 30 inches center to center, between water closets.

There shall be at least 24 inches clearance in front of a water closet to any wall, fixture or door.”

Fire Separation 321.08

SPS 321.08 Table 321.08

Between Dwelling And:	Distance Between Objects ¹	Fire Rated Construction ^{2,5}
Detached garage, or accessory building on same property	Less than 5 feet	3/4-hour wall ³ 1/3-hour door or window ³
Another dwelling on same property	Less than 5 feet	3/4-hour wall ⁴ 1/3-hour door or window ⁴
Detached garage, accessory building, or other dwelling on same property	5 to 10 feet	3/4-hour wall ³ No requirement on openings <u>1/3-hour door or window³</u>
Detached garage, accessory building, or other dwelling on same property	More than 10 feet	No requirements
Property Lines	Less than 3 feet	3/4-hour wall 1/3-hour door or window
Property Lines	3 feet or more	No requirements
Zero Lot Line	None	Follow sub. (2) (d) requirements

¹ Distance shall be measured perpendicular from wall to wall or property line, ignoring overhangs.

² Fire rated construction shall protect the dwelling from an exterior fire source.

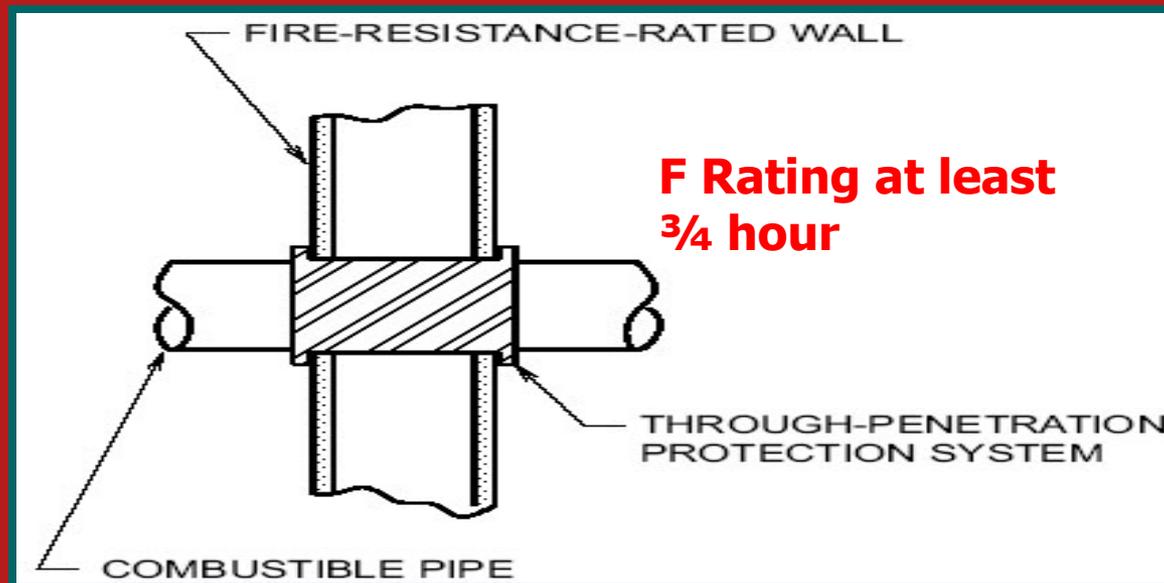
³ Fire rated construction may be in either facing wall.

⁴ Fire rated construction shall be in both facing walls.

⁵ The methods for garage separation in par. (a) 1. are examples of ¾ hour wall construction.

SPS 321.08 (3) (c)

Plastic Piping. Penetrations of a required separation by plastic pipe shall be protected by a penetration firestop system approved by the department and **installed as tested in accordance with ASTM E 814 or UL 1479**, with a minimum positive pressure differential of 0.01 inch of water (3 pa), and **shall have an F rating of not less than the required fire-resistance rating of the assembly penetrated.**



SPS 321.09 (2) (a)

Smoke Detectors

Note: Wireless interconnectivity is permitted under this paragraph.



Hardwired with Battery Back-up Still Required

SPS 321.10 (2) (f) 2.

Protection Against Decay and Termites

Siding and sheathing in contact with concrete or masonry and **within 2 inches** above an **impervious surface**.

Impervious Surface
refers to surface adjacent
to the foundation-structure



SPS 321.12 (1)

Grade

GRADE. The finished grade of the soil shall slope away from the dwelling at a rate of at least $\frac{1}{2}$ inch per foot for a ~~minimum distance of~~ at least 10 feet, ~~or to the lot line, whichever is less~~ except as provided in subs. (2) and (3).



1:24 slope

SPS 321.12 Drainage

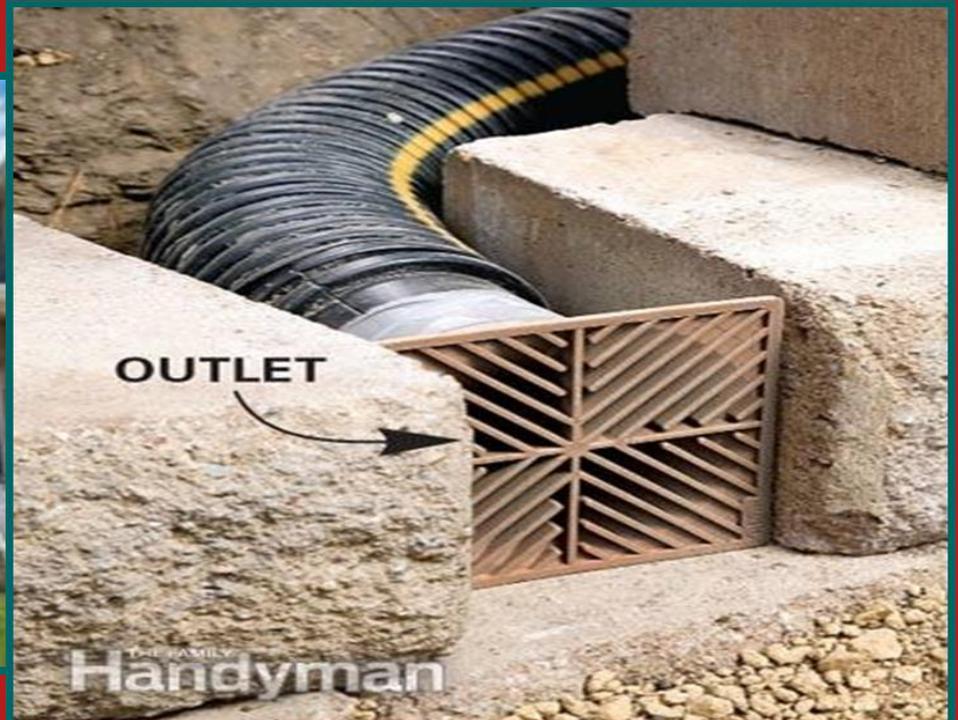
(2) OTHER SURFACES. Where the finished surface is **impervious**, it shall slope away from the dwelling for at least 10 feet at a rate that ensures **equivalent drainage**.

Approx. 1:50 slope



SPS 321.12 Drainage

(3) OBSTRUCTIONS. Where lot lines, walls, slopes, or other barriers prevent having the 10-foot distance in sub. (2), swales or other means shall be provided to ensure *equivalent drainage* away from the dwelling.



SPS 321.15 (1) (e)

Footings – Isolation Joints

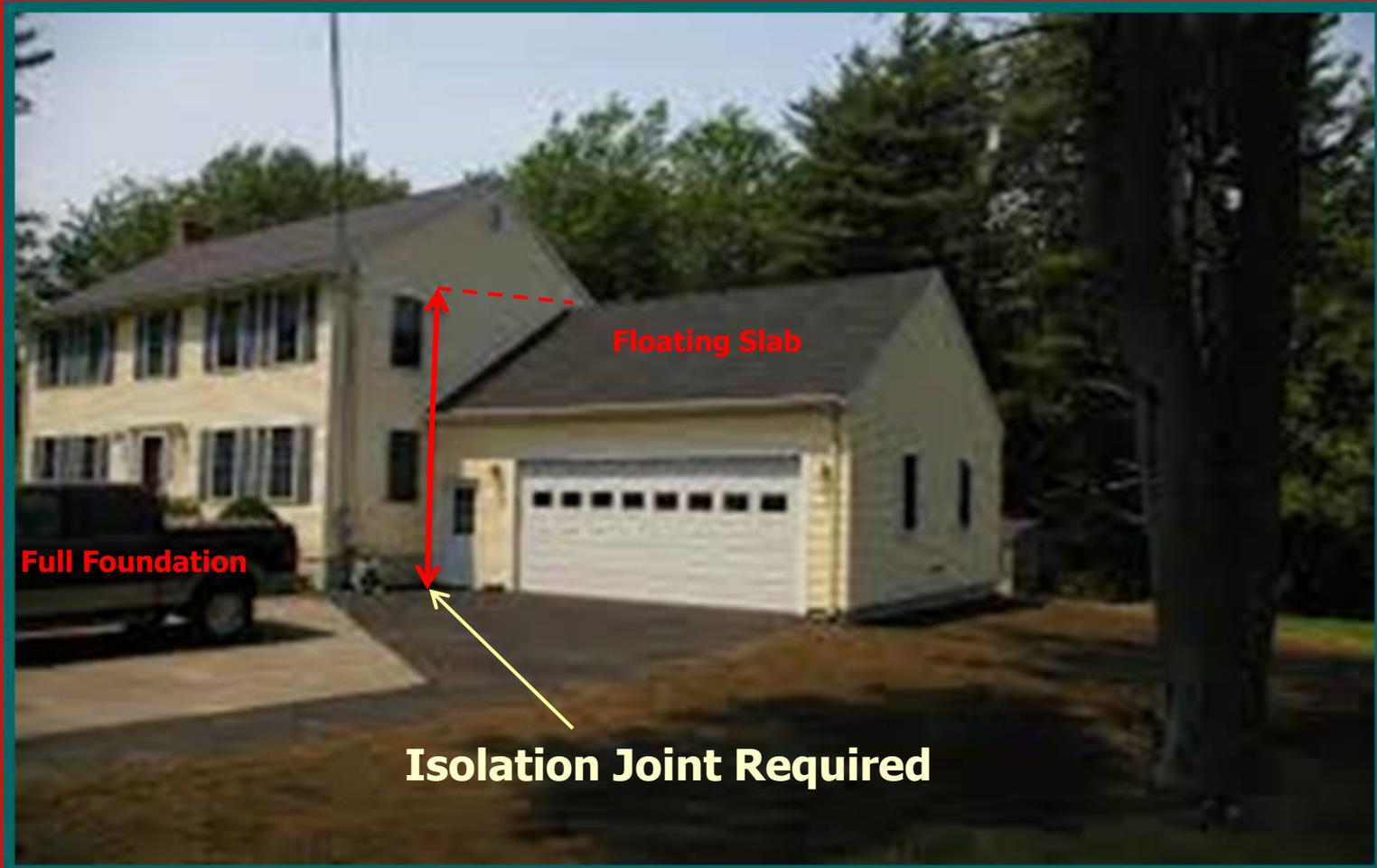
- 1.** Structures supported on floating slabs or similar shallow foundations may not be physically attached to structures that are supported by footings that extend below the frost line unless an isolation joint is used between the structures, **except as provided in subd. 2.** This isolation shall extend for the full height of the structure.

SPS 321.15 (1) (e)

Isolation Joint Required

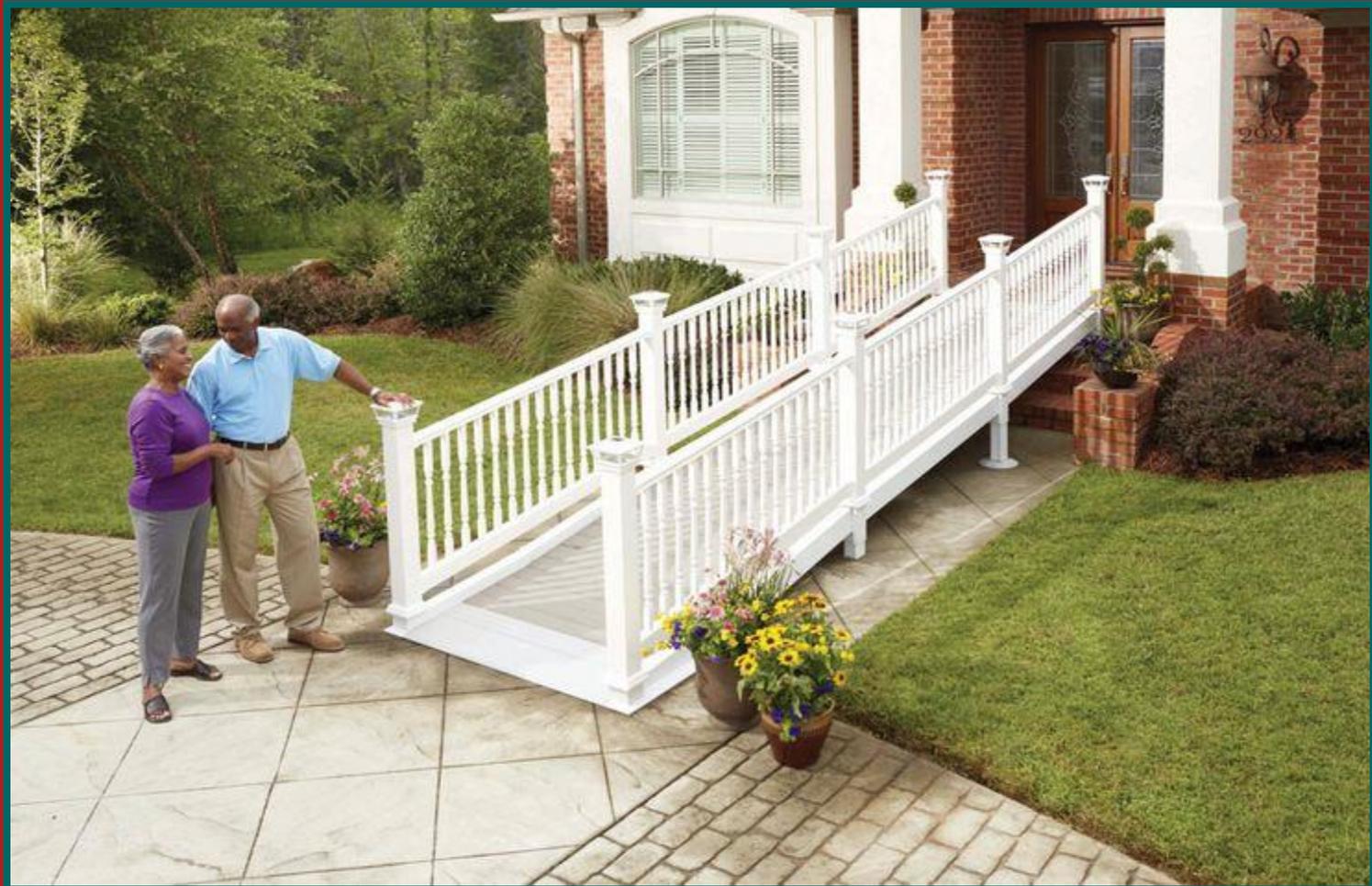
(Not New)

Except as per subd. 2



SPS 321.15 (1) (e) 2.

Exterior ramps are not required to comply with subd. 1.

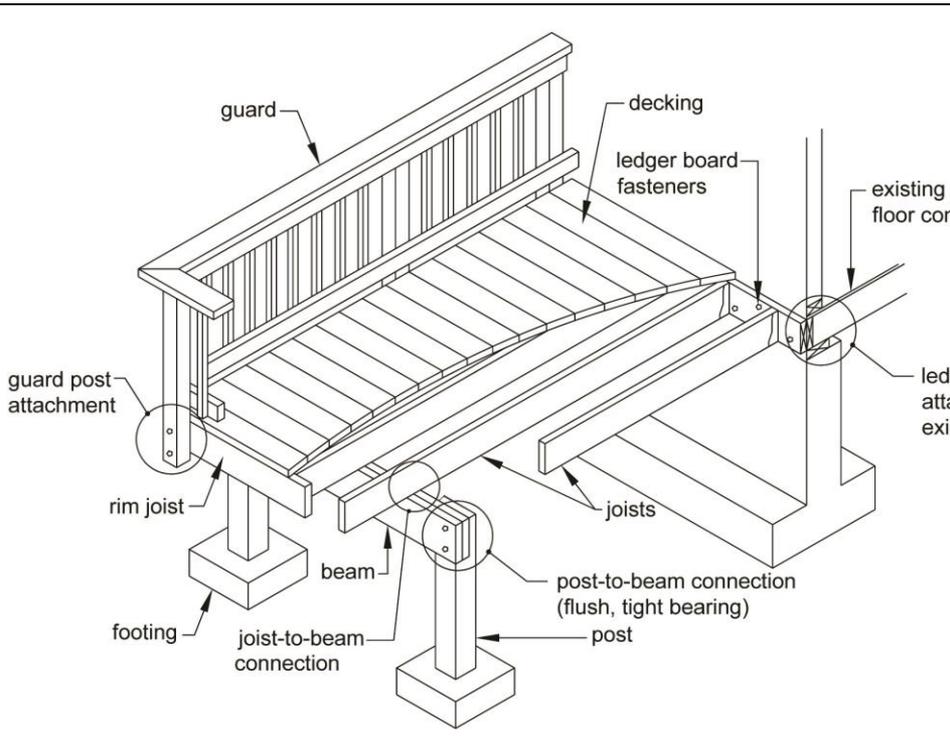


Questions?



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robert.kanter@wisconsin.gov

2016 Winter Updates



Design for Code Acceptance

6

Prescriptive Residential Wood Deck Construction Guide
Based on the 2012 International Residential Code

guard
blocking
decking
ledger board fasteners
existing house floor construction
joists
rim joist
guard post attachment
beam
footing
joist-to-beam connection
post-to-beam connection (flush, tight bearing)
post

Where applicable, provisions and details contained in this document are based on the International Residential Code (IRC) [bracketed text references applicable sections of the IRC]. Prescriptive construction methods recommended meet or exceed minimum requirements of the IRC. Provisions that are not found in the IRC are recommended as good industry practice. Where provisions exist between provisions of this document and the IRC, provisions of the IRC shall apply. This document is not intended to preclude the use of other construction methods or materials. All construction and materials must be approved by the authority having jurisdiction. Every effort has been made to reflect the language and intent of the IRC. However, no assurance can be given that designs and construction made in accordance with this document meet the requirements of any particular jurisdiction.

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Prescriptive Residential Wood Deck Construction Guide – DCA 6

2012 IRC Version

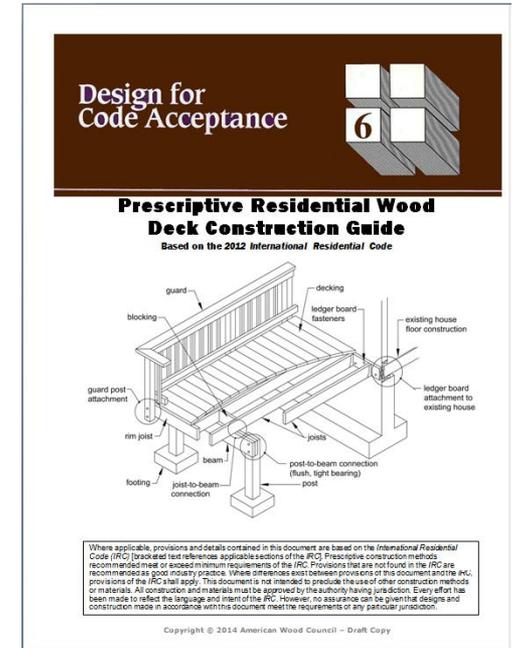
Free Downloads

- DCA6 Deck Guide

www.awc.org/publications/DCA/DCA6/DCA6-12.pdf

- DCA6 Presentation

www.awc.org/pdf/education/20140522_webinar_dca6_2012ircversion.pdf



Why is this Important?

- **Deck & Porch Injury Study**
www.buildingonline.com/news/pdfs/Outdoor-Deck-and-Porch-Injury-Study.pdf
- **Nearly 15% of all deck-related injuries resulted from structural failure**
- **60% of structural failures are the deck connection to the house**
- **33% are the railing**

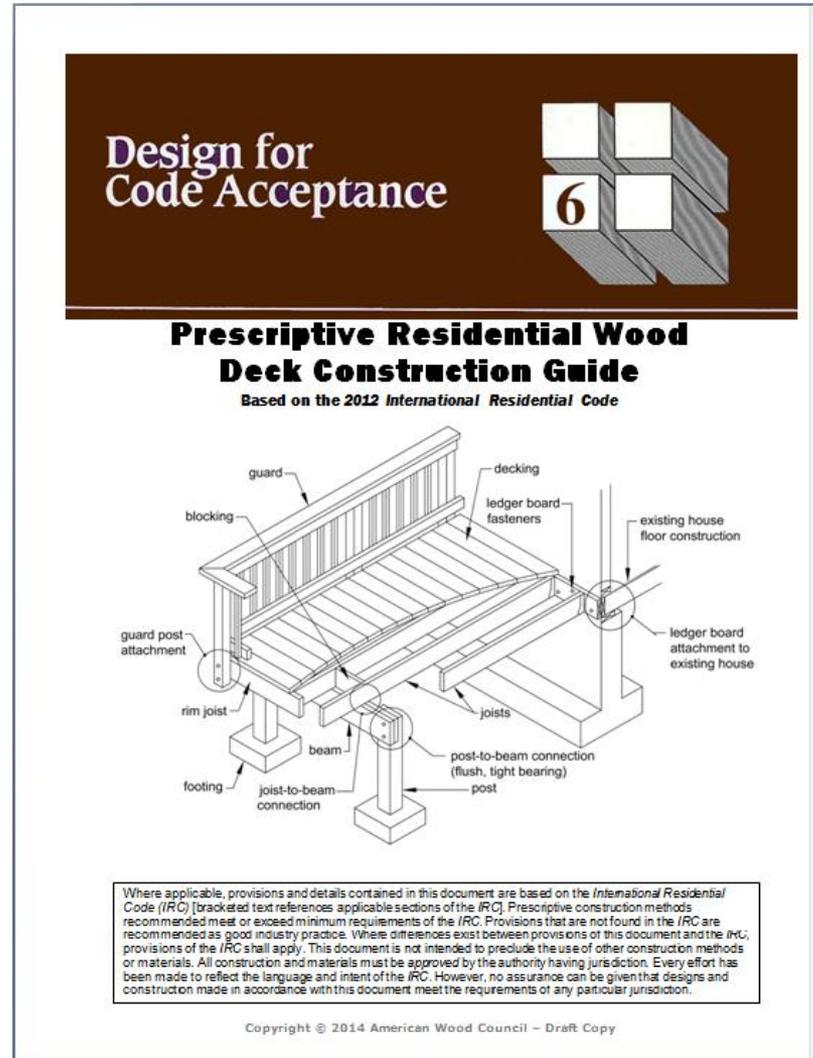


“Except for hurricanes and tornadoes, more injuries may be connected to deck failures than all other wood building components and loading cases combined!”

Dr. Frank Woeste, P.E.

Objectives

- Identify changes to DCA6-2012
- Identify minimum prescriptive wood deck requirements
- Describe minimum material requirements for deck construction including wood members and fasteners
- Discuss design requirements and resources if prescriptive limits are exceeded
- Provide deck design examples



Cooperators

- **Prescriptive Residential Wood Deck Construction Guide – Design for Code Acceptance No. 6 (DCA 6)**



AMERICAN WOOD COUNCIL

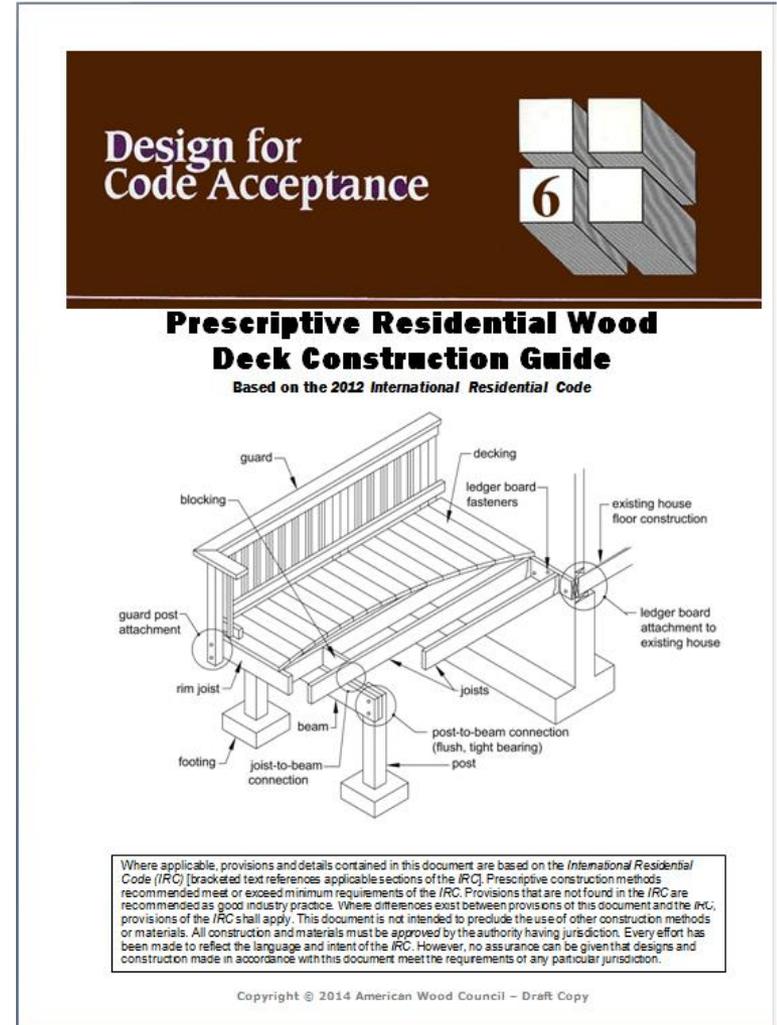
- **Primary Cooperators**

- **American Wood Council**
- **International Code Council**
- **Fairfax County, Virginia**



Cooperators

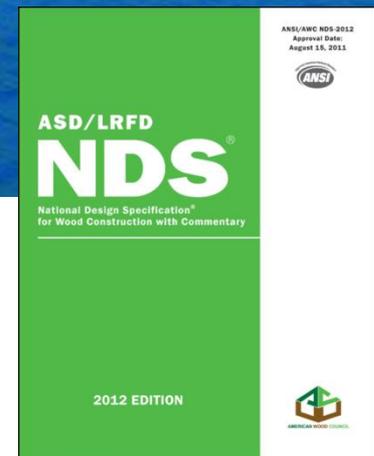
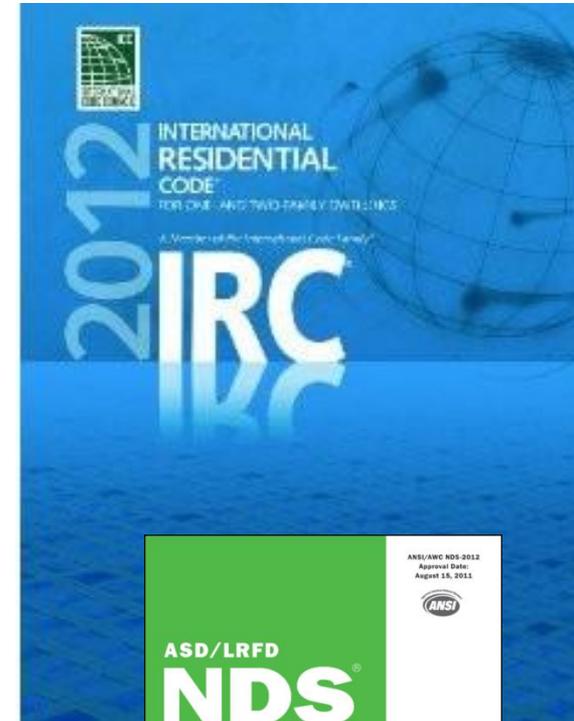
- **Additional Cooperators**
 - **APA-The Engineered Wood Association**
 - **National Association of Home Builders**
 - **Simpson Strong-Tie Company**
 - **Southern Forest Products Association**
 - **Southern Pine Inspection Bureau**
 - **Stairway Manufacturers' Association**
 - **Virginia Polytechnic Institute and State University**
 - **Washington State University**
 - **NADRA – North American Deck and Railing Association**
 - **WIJMA – Wood I-Joist Manufacturers Association**



Code Basis

- **Basis and Applicability**

- 2012 International Residential Code (IRC)
- Bracketed text shows reference to applicable IRC sections ex. [R317 and R318]. **Text in RED font refers to the Wisconsin Uniform Dwelling Code (UDC)**
- Recommended prescriptive construction methods meet or exceed IRC minimum requirements
- Provisions not included in IRC are considered good practice recommendations
- Where differences exist, IRC applies
- Not intended to preclude use of other construction methods or materials
- All construction and materials approved by the authority having jurisdiction



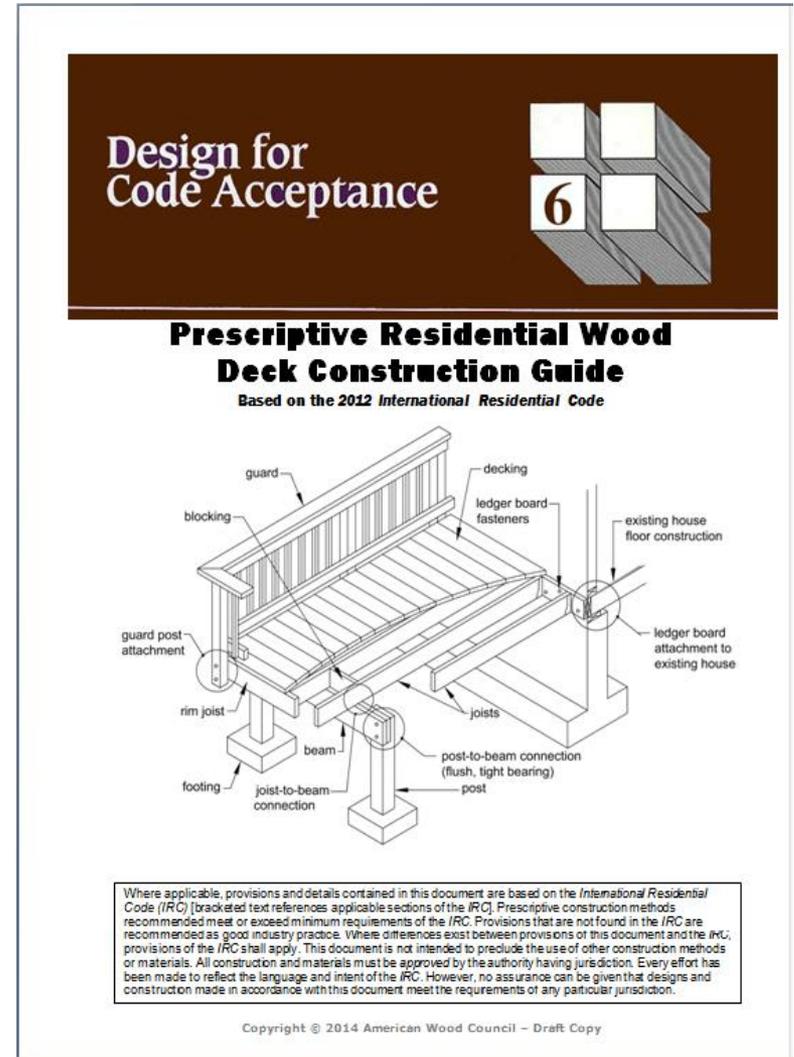
Changes to DCA 6-12

- **Hold-Downs Tension Devices on all Decks**
- **Aspect Ratio 1:1**
- **Post Height based on Tabulated Values**
- **No Hollow Masonry Connection to Ledger**
- **2x6 Joists Added**
- **I-joist Details for Hold-Down Tension Device**
- **Overhang Tables**
- **Glued Laminated Timber Beams Added**
- **Footing Options Added**
- **Knee Braces**



Objectives

- Identify changes to DCA6-2012
- Identify minimum prescriptive wood deck requirements
- Describe minimum material requirements for deck construction including wood members and fasteners
- Discuss design requirements and resources if prescriptive limits are exceeded
- Provide deck design examples



Minimum Requirements

- **Single level residential decks only**
- **Hot tubs outside scope**
- **Does not apply for snow loads, snow drift loads, or sliding snow loads that exceed 40 psf**
- **Decks shall not be used or occupied until final inspection and approval is obtained**
- **Alternate methods and materials approved by the building official**



Minimum Requirements

- **Lumber**

- **American Lumber Standards Committee (ALSC) approved grade mark**

- **Naturally durable**

- Redwood or Western Cedar

- **Preservative treated**

- American Wood Protection Association (AWPA)

- Ground contact

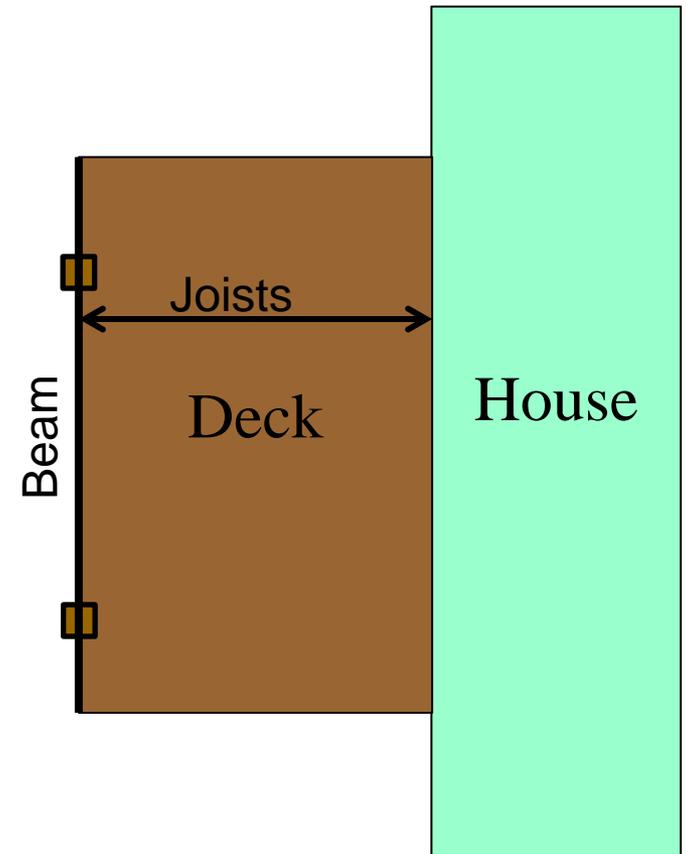
Table 1. Common Species and Use Categories for Decay Resistance. ^a

	Species	Above Ground	Ground Contact
Preservative-Treated^b	Southern Pine	X	X
	Douglas Fir-Larch	X	X
	Hem-Fir	X	X
	SPF	X	
	Ponderosa Pine	X	X
	Red Pine	X	X
	Redwood	X	X
	Western Cedars	X	
Naturally Durable^c	Redwood	X	
	Western Cedars	X	

Revised in 2012 DCA-6

Deck Design Example 1

- **Deck height = 1'-6"**
- **8' x 12' deck surface**
- **Structural members: southern pine**
- **Decking: 5/4 radius edge southern pine decking**
- **Determine sizes for joists, beams, hangers, footings, stringers, and treads**
- **Determine fastener spacing for lag screws in southern pine house band joist**



Decking

- **Dimension lumber (2" nominal)**
- **Span rated decking**
 - ALSC decking policy
- **Attachment**
 - 2-8d commons
 - 2-#8 screws
- **Spacing 1/8"**
- **Perpendicular or 45°**
- **Bear on 3 joists minimum**
- **Substitution**
 - **Approved by building official**



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Minimum Requirements

- **Fasteners**
 - **Nails – ASTM F 1667**
 - Threaded nails as stated in this document include helical (spiral) and annular (ring-shank) nails.
 - **Screws – ANSI/ASME B18.6.1**
 - **Bolts/Lags – ANSI/ASME B18.2.1**
- **1/2" bolts and lag screws prescribed extensively**
 - **Edge distance and spacing based on diameter**
 - **Need to adjust for larger or smaller fasteners**



Minimum Requirements

- **Corrosion Resistance 2012 IRC R317.3**

Also see WI UDC SPS 321.10(5)

- **Screws, bolts, nails**

- Hot-dipped galvanized
- Stainless
- Silicon bronze
- Copper

- **Hangers and anchors**

- Galvanized
- Stainless

- **Saltwater exposure**

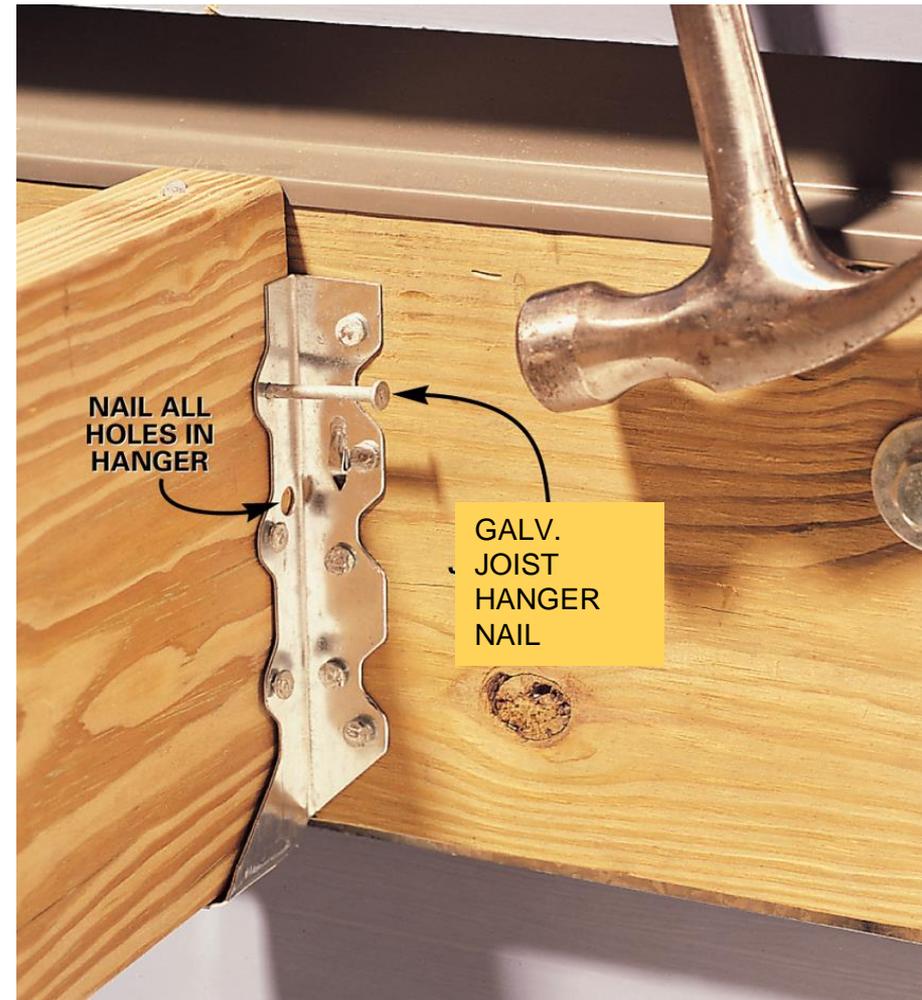
- Stainless

- **Other fasteners/hardware**

- Approved by building official

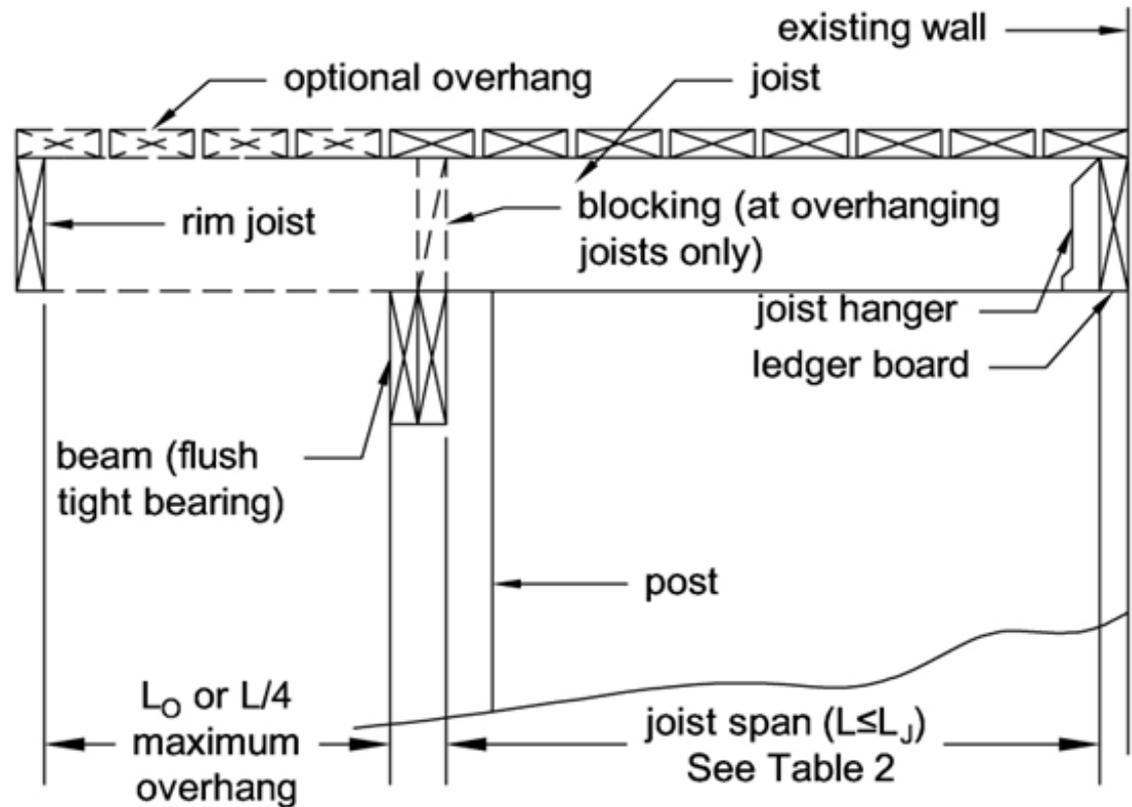
- **Flashing**

- Nominal 0.019" min.



Joists

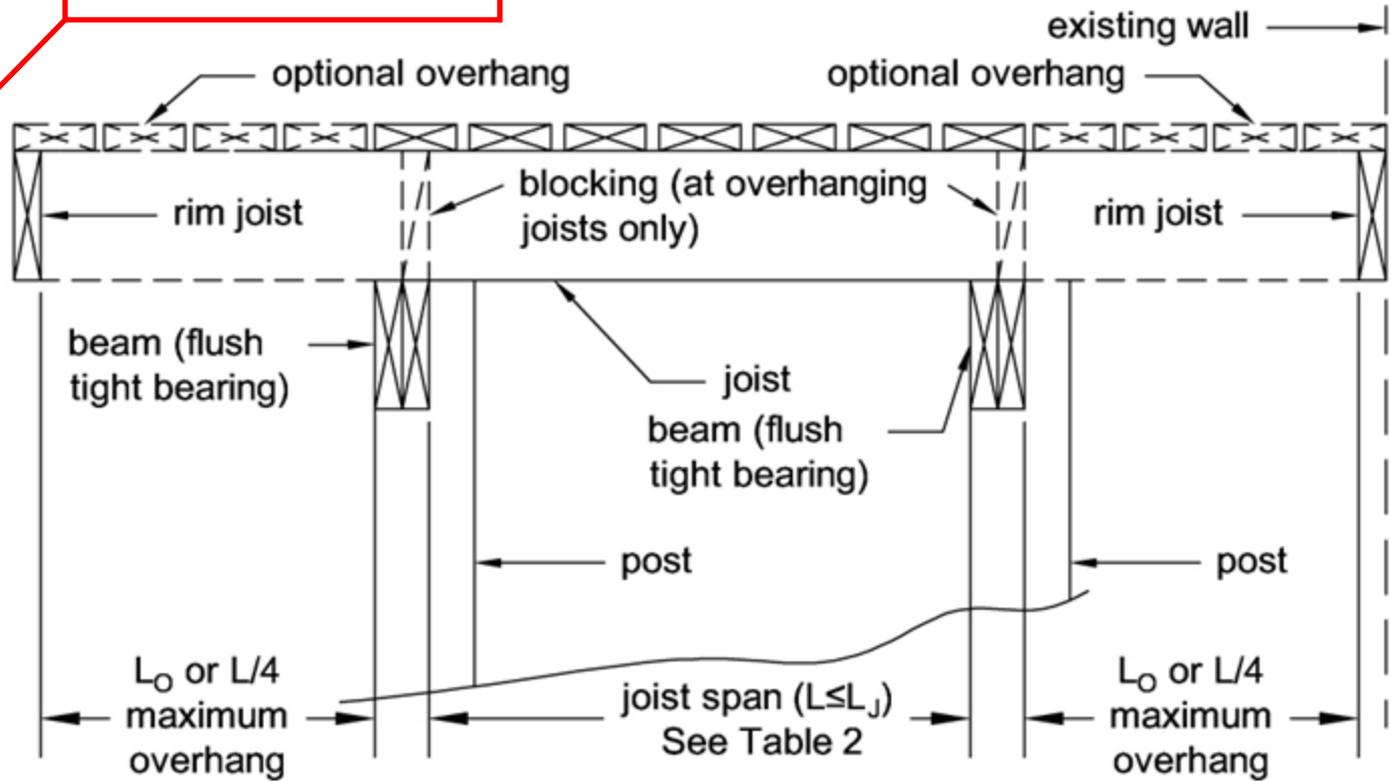
Figure 1A: Joist Span – Deck Attached at House and Bearing Over Beam



Joists

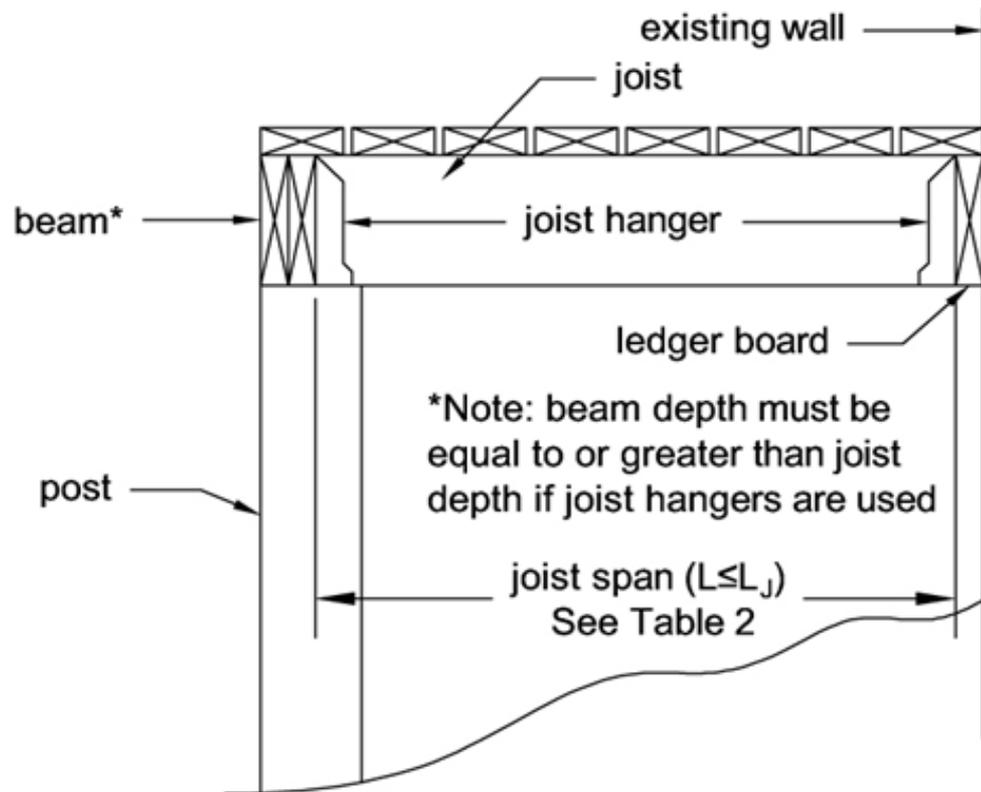
Figure 2: Joist Span - Non-Ledger Deck

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DCA6



Joists

Figure 1B: Joist Span – Joists Attached at House and to Side of Beam



Deck Design Example 1

- **Joist Size for 8' span dimension (w/out overhang)**
 - **DCA 6 Table 2**
 - **2x6 @ 16" o.c.**

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Table 2. Maximum Joist Spans and Overhangs

Species	Size	Joist Spacing (o.c.) ¹					
		Allowable Span ² (L _J)			Allowable Overhang ³ (L _O)		
		12"	16"	24"	12"	16"	24"
Southern Pine	2x6 ⁶	9' - 11"	9' - 0"	7' - 7"	1' - 0"	1' - 1"	1' - 3"
	2x8	13' - 1"	11' - 10"	9' - 8"	1' - 10"	2' - 0"	2' - 4"
	2x10	16' - 2"	14' - 0"	11' - 5"	3' - 1"	3' - 5"	2' - 10"
	2x12	18' - 0" ⁷	16' - 6"	13' - 6"	4' - 6"	4' - 2"	3' - 4"

Joists

- **DCA 6 Table 2**
 - Allowable overhangs more clearly defined
 - New southern pine design spans

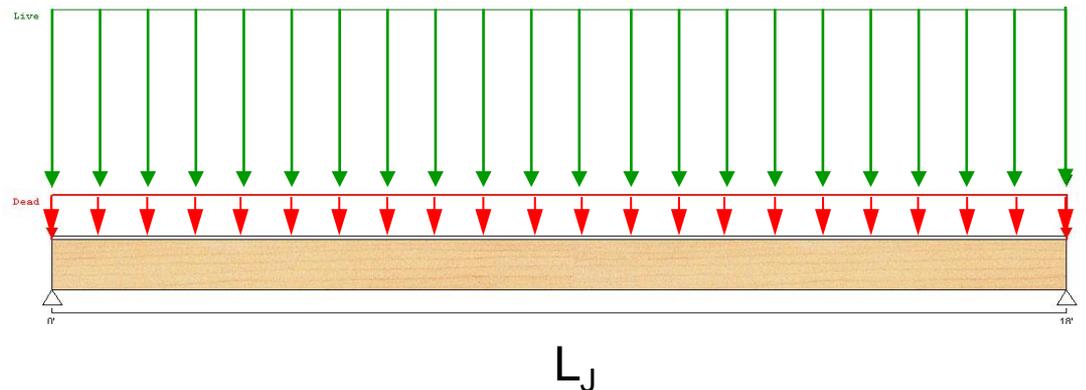
**New to 2012
DCA6**

Table 2. Maximum Joist Spans and Overhangs

Species	Size	Joist Spacing (o.c.) ¹					
		Allowable Span ² (L _J)			Allowable Overhang ³ (L _O)		
		12"	16"	24"	12"	16"	24"
Southern Pine	2x6 ⁶	9' - 11"	9' - 0"	7' - 7"	1' - 0"	1' - 1"	1' - 3"
	2x8	13' - 1"	11' - 10"	9' - 8"	1' - 10"	2' - 0"	2' - 4"
	2x10	16' - 2"	14' - 0"	11' - 5"	3' - 1"	3' - 5"	2' - 10"
	2x12	18' - 0" ⁷	16' - 6"	13' - 6"	4' - 6"	4' - 2"	3' - 4"

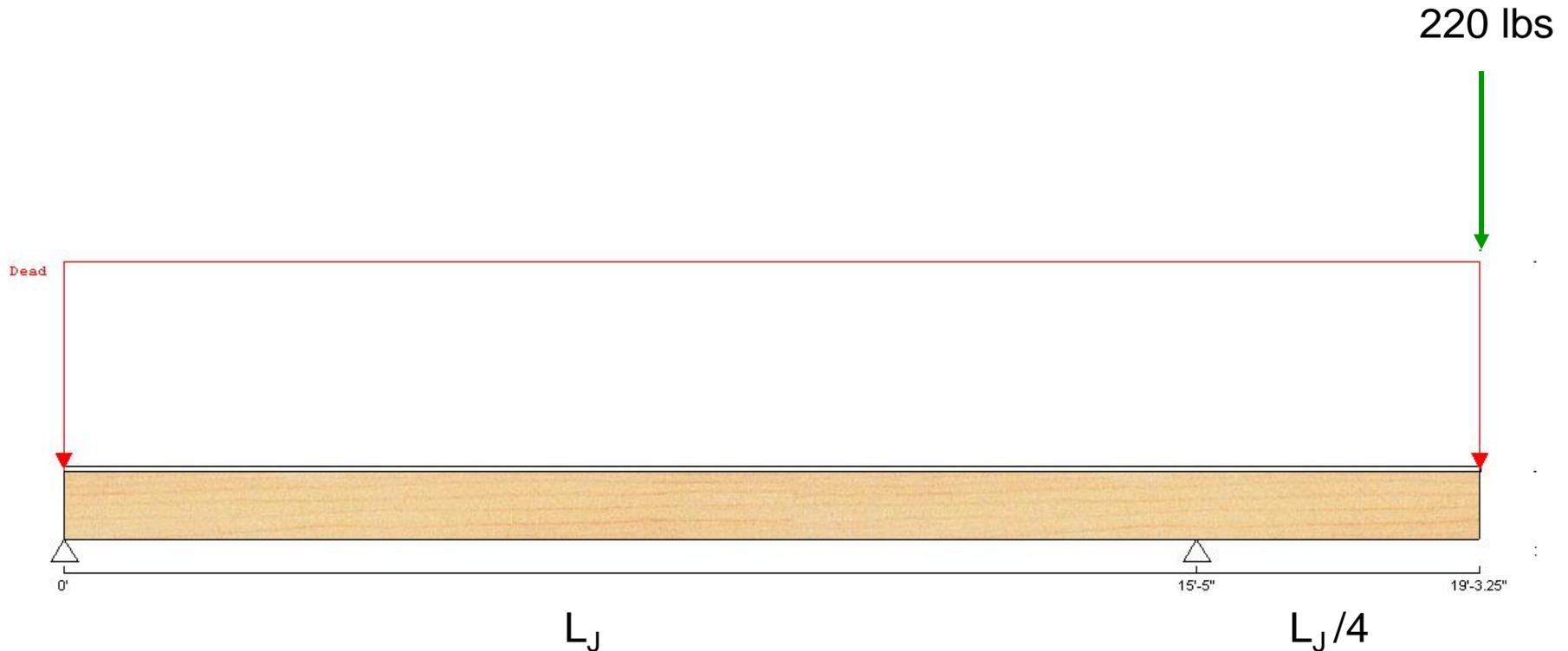
Joists

- Span table development – without overhangs
 - 40 psf uniform live load
 - 10 psf uniform dead load
 - No. 2 Grade
 - L/360 Deflection Limits
 - Wet Service Condition & Incising



Joists

- Span table development – with overhangs
 - $L/180$ cantilever deflection limit
 - 220 lb point load at the end of cantilever



Joists

Species	Southern Pine
Size	2x10
Grade	No. 2
Member Type	Floor Joists
Deflection Limit	L/360
Spacing (in)	16
Exterior Exposure	Wet service conditions? Yes
	Incised lumber? No
Live Load (psf)	40
Dead Load (psf)	10

Calculate Maximum Horizontal Span

Go To SPAN OPTIONS CALCULATOR for Joists & Rafters

LIMITS OF USE

HELP

RESTART

Apps – not free



- AWC Online Span Calculator
 - Simple spans (no cantilever)
 - Uniform loads
 - Wet service conditions
 - Incising factor
 - 18'-0" MAX (DCA 6)
 - Free at www.awc.org

The Maximum Horizontal Span is:

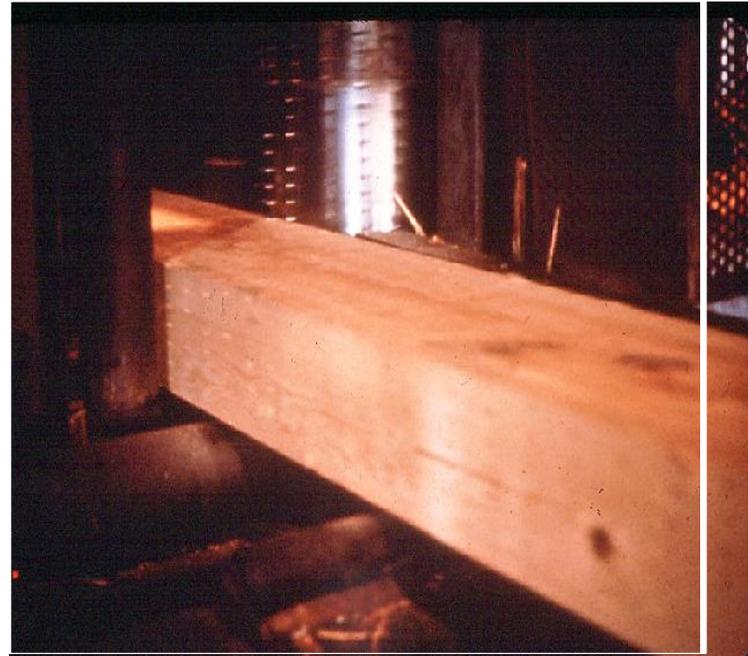
15 ft. 10 in.

with a minimum bearing length of **0.93 in.** required at each end of the member.

Property	Value
Species	Southern Pine
Grade	No. 2
Size	2x10
Modulus of Elasticity (E)	1440000 psi
Bending Strength (F_b)	1207.5 psi
Bearing Strength (F_{ϕ})	378.55 psi
Shear Strength (F_v)	169.75 psi

Joists

- Incising factor
 - Refractory species
 - DFL, HF, SPF
 - Reduces strength and stiffness



Joists

Species	Douglas Fir-Larch
Size	2x10
Grade	No. 2
Member Type	Floor Joists
Deflection Limit	L/360
Spacing (in)	16
Exterior Exposure	Wet service conditions?
	Yes
Exterior Exposure	Incised lumber?
	Yes
Live Load (psf)	40
Dead Load (psf)	10

Calculate Maximum Horizontal Span

Go To SPAN OPTIONS CALCULATOR for Joists & Rafters

LIMITS OF USE

HELP

RESTART

Incising factor

The Maximum Horizontal Span is:

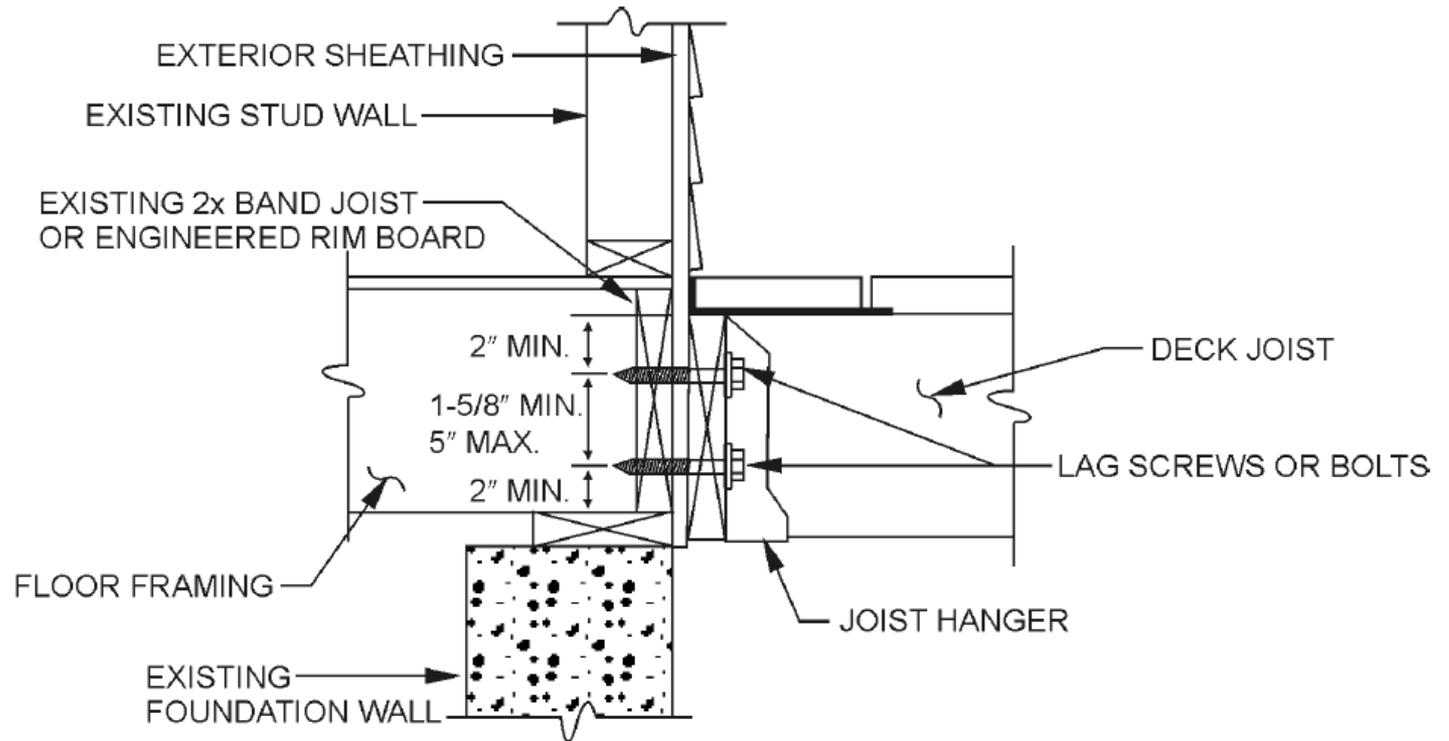
13 ft. 11 in.

with a minimum bearing length of **0.74 in.** required at each end of the member.

Property	Value
Species	Douglas Fir-Larch
Grade	No. 2
Size	2x10
Modulus of Elasticity (E)	1368000 psi
Bending Strength (F_b)	910.8 psi
Bearing Strength (F_{cp})	418.75 psi
Shear Strength (F_v)	139.68 psi

Deck Ledger

2012 IRC



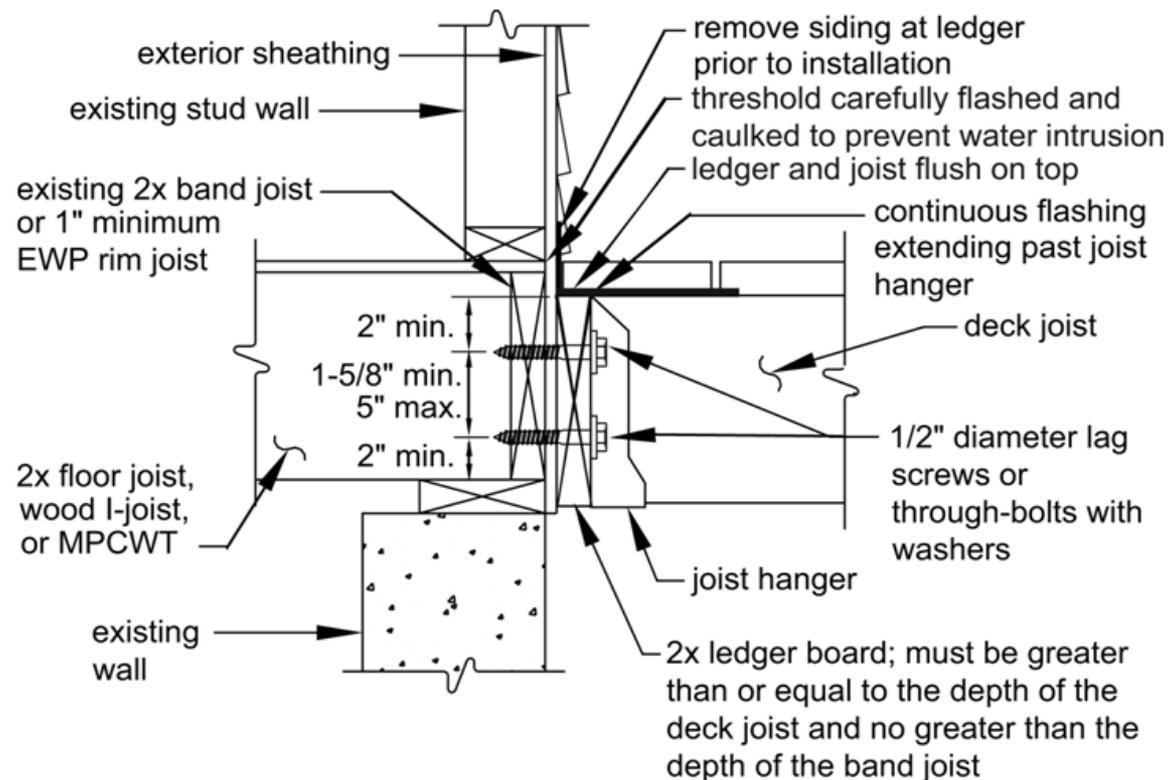
For SI: 1 inch = 25.4 mm.

FIGURE R507.2.1(2)
PLACEMENT OF LAG SCREWS AND BOLTS IN BAND JOISTS

Ledger Requirements [R507.2.1]

- Ledger board depth \geq deck joist depth
- Ledger board depth \leq rim joist depth
- Flashing with drip edge
 - Corrosion resistant

Figure 14: General Attachment of Ledger Board to Band Joist or Rim Joist

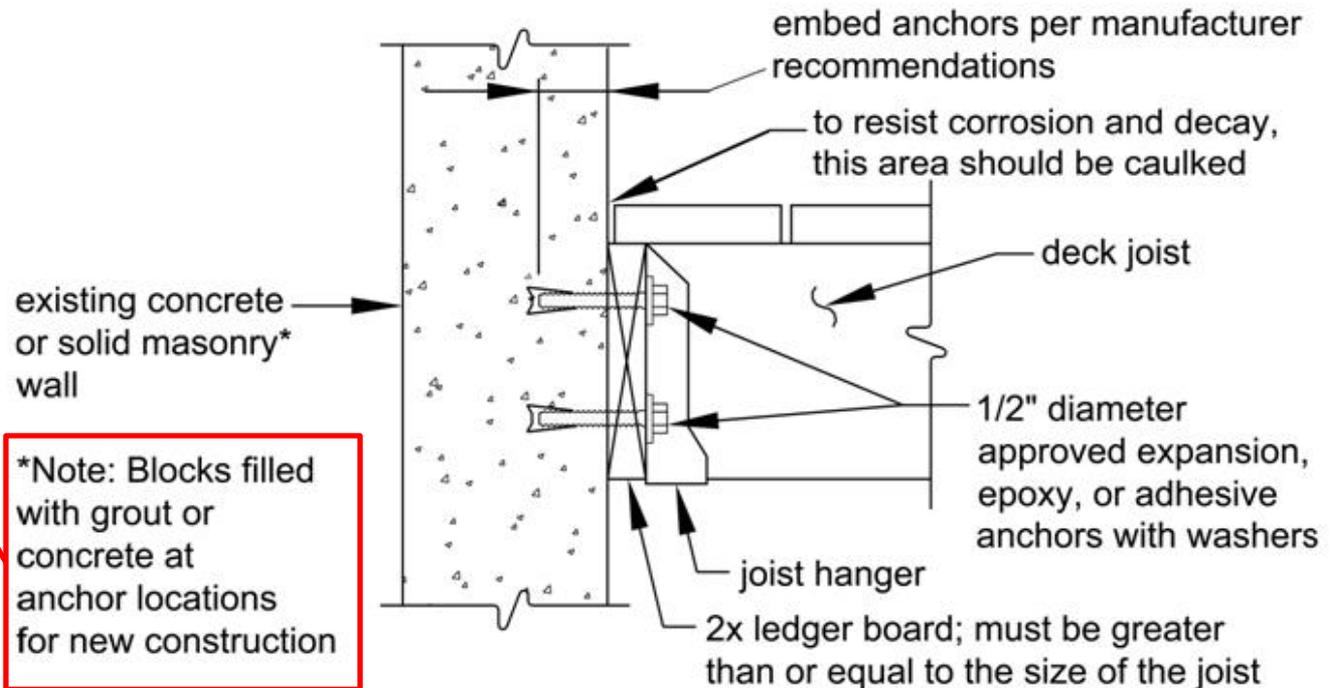


Also see:
SPS 321.225 – Gen. deck requirements
SPS 321.02 – Design requirements

Ledger Requirements

- Ledger board to foundation wall
 - Concrete or solid masonry
 - 1/2" approved anchors

Figure 15: Attachment of Ledger Board to Foundation Wall (Concrete or Solid Masonry)



New to
2012 DCA-6

Ledger Requirements

- I-joists
 - 1" or thicker EWP rim joist
 - OSB
 - SCL including LVL
 - <1" rim joist
 - Non-ledger deck
 - Full plan submission
- Trusses
 - 2x4 ribbon
 - No deck attachment
 - Requirements
 - Standard details
 - Non-ledger deck
 - Full plan submission
 - SBCA tech note

Figure 13A. Wood I-Joist Profile

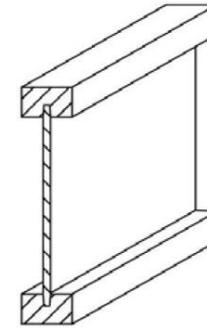
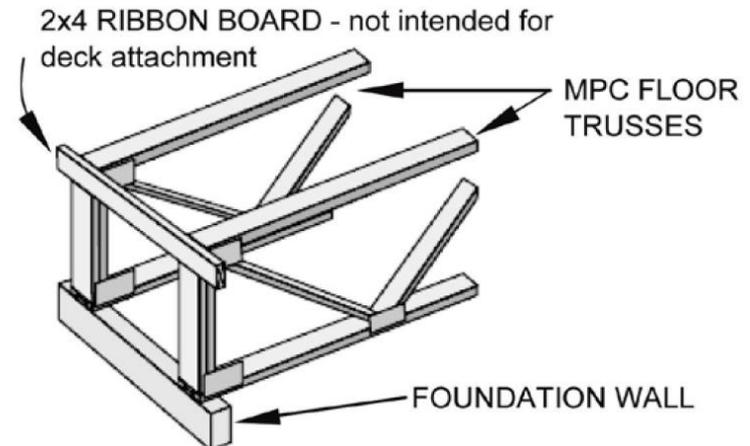


Figure 13B. Metal Plate Connected (MPC) Wood Floor Trusses with a 2x4 Lumber "Ribbon" at the Ends of the Trusses



Prohibited Ledger Attachment

- Exterior veneers
 - Brick
 - Masonry
 - Stone
- Requires non-ledger deck

Figure 17. No Attachment to or Through Exterior Veneers (Brick, Masonry, Stone)

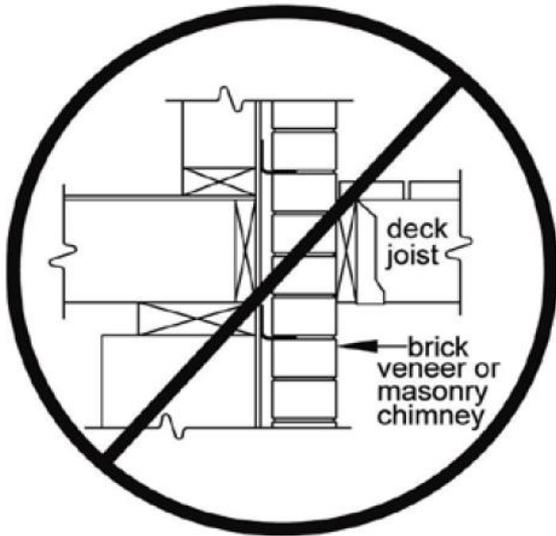


Photo courtesy of John Bouldin. All rights reserved.

Prohibited Ledger Attachment

- Cantilevered floors
- Bay windows
- Requires non-ledger deck

Figure 18. No Attachment to House Overhang



Ledger Board Fasteners

Also see WI UDC SPS 321.02

IRC 2012

TABLE R507.2
FASTENER SPACING FOR A SOUTHERN PINE OR HEM-FIR DECK LEDGER AND
A 2-INCH-NOMINAL SOLID-SAWN SPRUCE-PINE-FIR BAND JOIST^{c, f, g}
 (Deck live load = 40 psf, deck dead load = 10 psf)

JOIST SPAN	6' and less	6'1" to 8'	8'1" to 10'	10'1" to 12'	12'1" to 14'	14'1" to 16'	16'1" to 18'
Connection details	On-center spacing of fasteners ^{d, e}						
$\frac{1}{2}$ inch diameter lag screw with $\frac{15}{32}$ inch maximum sheathing ^a	30	23	18	15	13	11	10
$\frac{1}{2}$ inch diameter bolt with $\frac{15}{32}$ inch maximum sheathing	36	36	34	29	24	21	19
$\frac{1}{2}$ inch diameter bolt with $\frac{15}{32}$ inch maximum sheathing and $\frac{1}{2}$ inch stacked washers ^{b, h}	36	36	29	24	21	18	16

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

- a. The tip of the lag screw shall fully extend beyond the inside face of the band joist.
- b. The maximum gap between the face of the ledger board and face of the wall sheathing shall be $\frac{1}{2}$ inch.
- c. Ledgers shall be flashed to prevent water from contacting the house band joist.
- d. Lag screws and bolts shall be staggered in accordance with Section R507.2.1.
- e. Deck ledger shall be minimum 2 × 8 pressure-preservative-treated No. 2 grade lumber, or other approved materials as established by standard engineering practice.
- f. When solid-sawn pressure-preservative-treated deck ledgers are attached to a minimum 1-inch-thick engineered wood product (structural composite lumber, laminated veneer lumber or wood structural panel band joist), the ledger attachment shall be designed in accordance with accepted engineering practice.
- g. A minimum 1 × 9 $\frac{1}{2}$ Douglas Fir laminated veneer lumber rimboard shall be permitted in lieu of the 2-inch nominal band joist.
- h. Wood structural panel sheathing, gypsum board sheathing or foam sheathing not exceeding 1 inch in thickness shall be permitted. The maximum distance between the face of the ledger board and the face of the band joist shall be 1 inch.

Deck Ledger Testing

- Virginia Tech & Washington State University
- 3 common conditions
- 1/2" diameter lag screws & bolts
- Fastener spacing values limited to:
 - Deck LL=40 psf and DL=10 psf
 - Band joist lumber $G \geq 0.42$
 - Composite rim board with thickness $\geq 1"$ and equivalent $G \geq 0.50$
 - PPT deck ledger lumber with $G \geq 0.43$
 - Deck ledger can be incised and wet
 - Proper installation including flashing
 - No decay present
 - No fastener corrosion

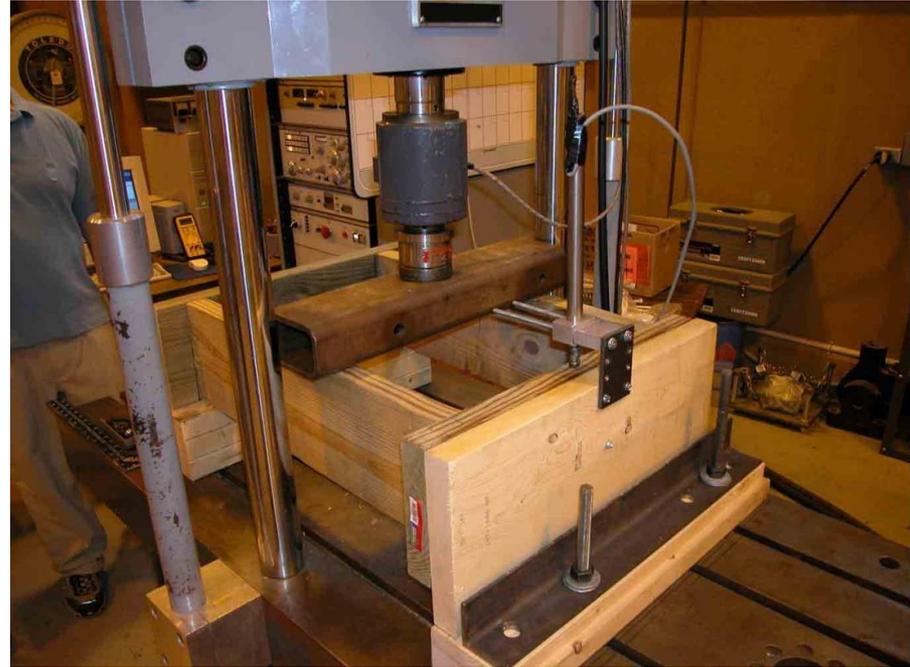


Photo courtesy of Frank Woeste and Joseph Loferski. All rights reserved.

Ledger Fastener Spacing

- **DCA 6 Table 5**
 - **1/2" f lag screws or bolts**
 - **Solid sawn or EWP**
 - **Stacked washer option**

Table 5. Fastener Spacing for a Southern Pine, Douglas Fir-Larch, or Hem-Fir Deck Ledger or Rim Joist and a 2-inch Nominal Solid-Sawn Spruce-Pine-Fir Band Joist or EWP Rim Board^{3,4,5,6,8}
(Deck Live Load = 40 psf, Deck Dead Load = 10 psf)

Joist Span	Rim Board or Band Joist	6'-0" and less	6'-1" to 8'-0"	8'-1" to 10'-0"	10'-1" to 12'-0"	12'-1" to 14'-0"	14'-1" to 16'-0"	16'-1" to 18'-0"
Connection Details	On-Center Spacing of Fasteners							
1/2" diameter lag screw ¹ with 15/32" maximum sheathing	1" EWP	24"	18"	14"	12"	10"	9"	8"
	1-1/8" EWP	28"	21"	16"	14"	12"	10"	9"
	1-1/2" Lumber	30"	23"	18"	15"	13"	11"	10"
1/2" diameter bolt with 15/32" maximum sheathing	1" EWP	24"	18"	14"	12"	10"	9"	8"
	1-1/8" EWP	28"	21"	16"	14"	12"	10"	9"
	1-1/2" Lumber	36"	36"	34"	29"	24"	21"	19"
1/2" diameter bolt with 15/32" maximum sheathing and 1/2" stacked washers ^{2,7}	1-1/2" Lumber	36"	36"	29"	24"	21"	18"	16"

Deck Design Example 1

- **Ledger Fastener Spacing**
 - Assume 2x10 southern pine house rim board
 - Assume 2x8 southern pine ledger
 - DCA 6 Table 5
 - 1/2" f lag screws @ 23" o.c.

Table 5. Fastener Spacing for a Southern Pine, Douglas Fir-Larch, or Hem-Fir Deck Ledger and a 2-inch Nominal Solid-Sawn Spruce-Pine-Fir^{7,9} Band Joist or EWP Rim Board⁶

(Deck Live Load = 40 psf, Deck Dead Load = 10 psf)^{3,6}

Joist Span	Rim Board or Band Joist	6'-0" and less	6'-1" to 8'-0"	8'-1" to 10'-0"	10'-1" to 12'-0"	12'-1" to 14'-0"	14'-1" to 16'-0"	16'-1" to 18'-0"
Connection Details	On-Center Spacing of Fasteners^{4,5}							
1/2" diameter lag screw with 15/32" maximum sheathing ¹	1" EWP ⁶	24"	18"	14"	12"	10"	9"	8"
	1-1/8" EWP ⁶	28"	21"	16"	14"	12"	10"	9"
	1-1/2" Lumber ^{7,9}	30"	23"	18"	15"	13"	11"	10"

Ledger Board Fasteners

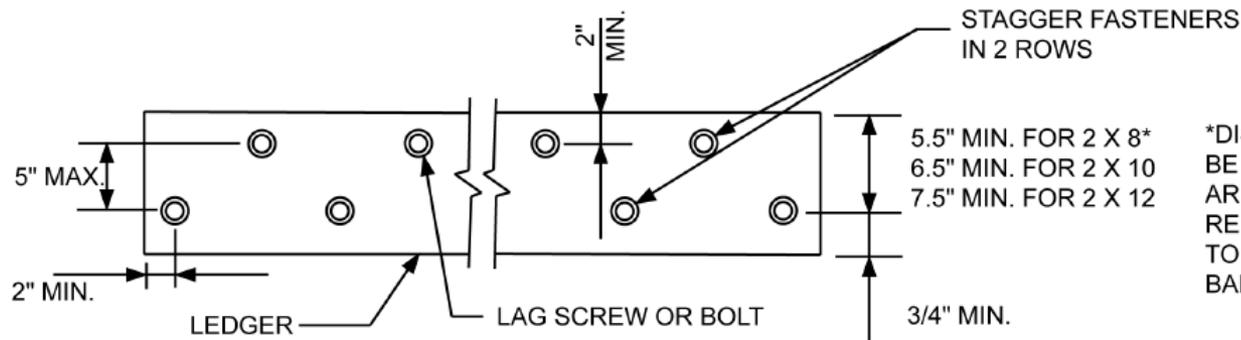
IRC 2012

TABLE 507.2.1
PLACEMENT OF LAG SCREWS AND BOLTS IN DECK LEDGERS AND BAND JOISTS

MINIMUM END AND EDGE DISTANCES AND SPACING BETWEEN ROWS				
	TOP EDGE	BOTTOM EDGE	ENDS	ROW SPACING
Ledger ^a	2 inches ^d	1/4 inch	2 inches ^b	1 5/8 inches ^b
Band Joist ^c	3/4 inch	2 inches	2 inches ^b	1 5/8 inches ^b

For SI: 1 inch = 25.4 mm.

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



*DISTANCE SHALL BE PERMITTED TO BE REDUCED TO 4.5" IF LAG SCREWS ARE USED OR BOLT SPACING IS REDUCED TO THAT OF LAG SCREWS TO ATTACH 2 X 8 LEDGERS TO 2 X 8 BAND JOISTS.

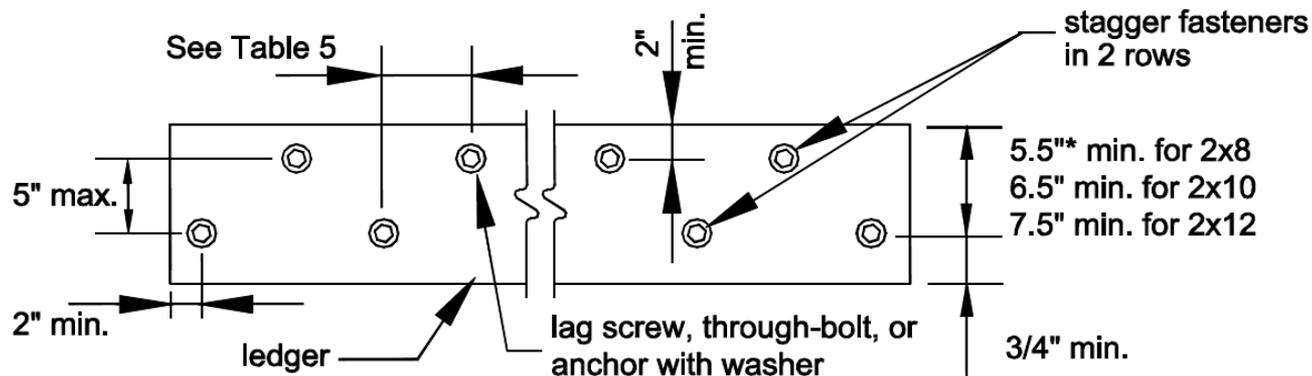
For SI: 1 inch = 25.4 mm.

FIGURE R507.2.1(1)
PLACEMENT OF LAG SCREWS AND BOLTS IN LEDGERS

Ledger Board Fasteners

- Placement
 - 2" min. for top row
 - 2" min. from ends
 - Staggered in 2 rows
 - Bottom row depends on ledger depth
 - 5" max. between rows
- Bolts
 - 1/2" diameter with washers
- Expansion/Adhesive Anchors
 - 1/2" diameter with washers
 - Concrete or solid masonry
 - Hollow masonry with grouted cells
 - Embedment length per manufacturer

Figure 19. Ledger Board Fastener Spacing and Clearances.



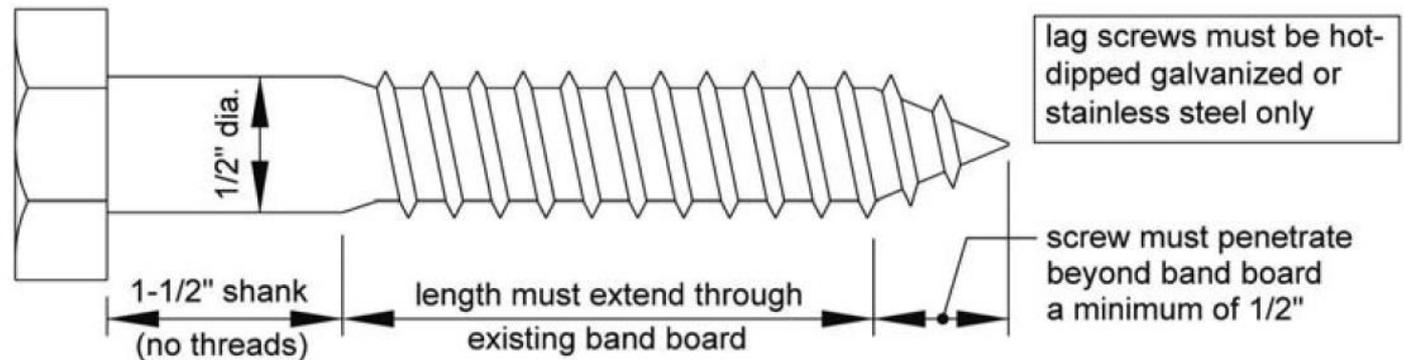
See Figure 14 for rim joist fastener spacing

*Distance can be reduced to 4.5" if lag screws are used or bolt spacing is reduced to that of lag screws to attach 2x8 ledgers to 2x8 band joists (1/2" stacked washers not permitted)

Ledger Board Fasteners

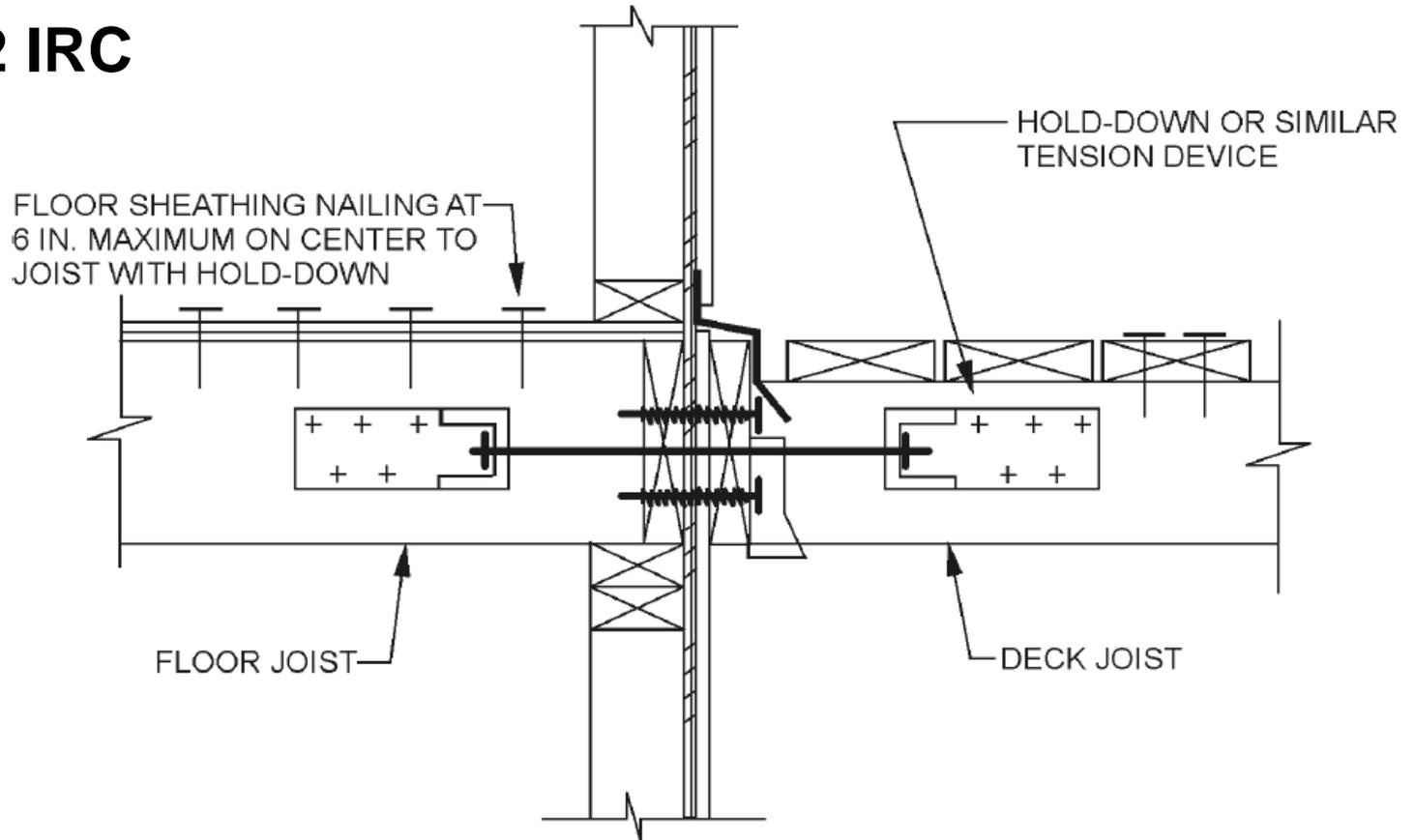
- Lag Screws
 - 1/2" diameter with washers
 - Threads in band board
 - Extend 1/2" beyond band board
- Lag Screw Installation
 - Pilot holes
 - 1/2" diameter in ledger
 - 5/16" diameter in band board
 - Insert by turning
 - Do not hammer
 - Soap or lubricant
 - Snug but not over-tightened

Figure 20: Lag Screw Requirements



Deck Lateral

2012 IRC



For SI: 1 inch = 25.4 mm.

FIGURE 507.2.3
DECK ATTACHMENT FOR LATERAL LOADS

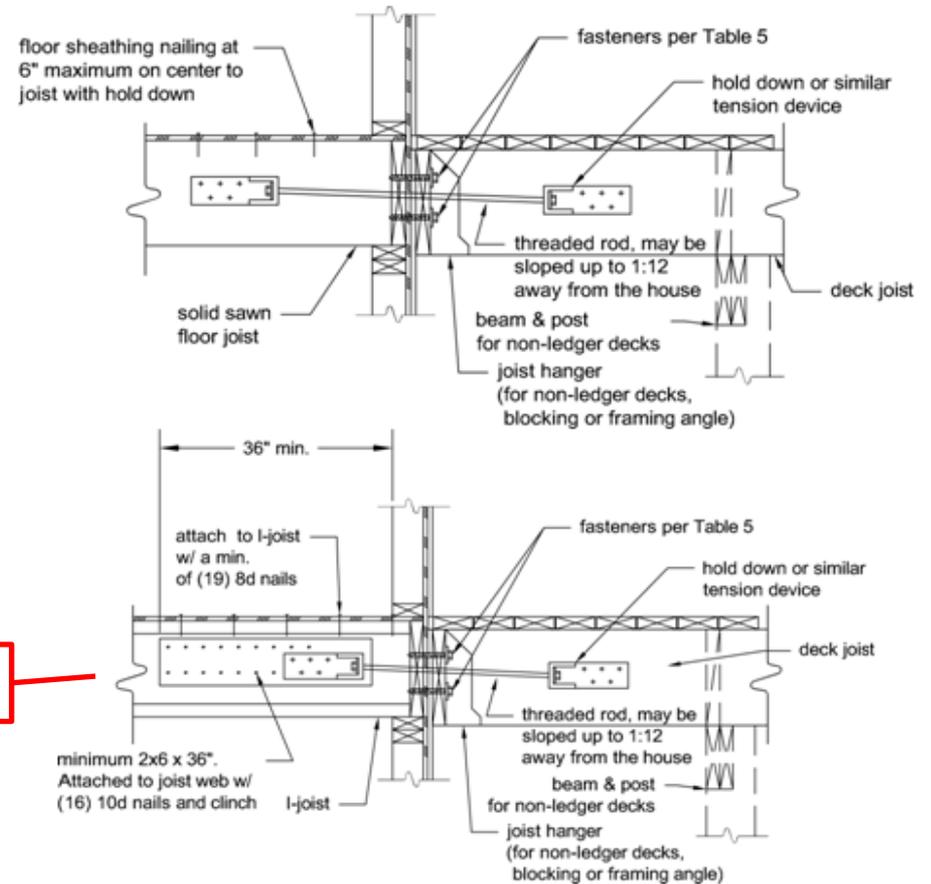
Also see WI UDC SPS 321.02

Deck Lateral

- Attachment to House
 - Lateral attachment to house floor system
 - *2012 IRC*
 - 2 locations per deck
 - 1500 lb capacity
 - Always required

New to 2012 DCA-6

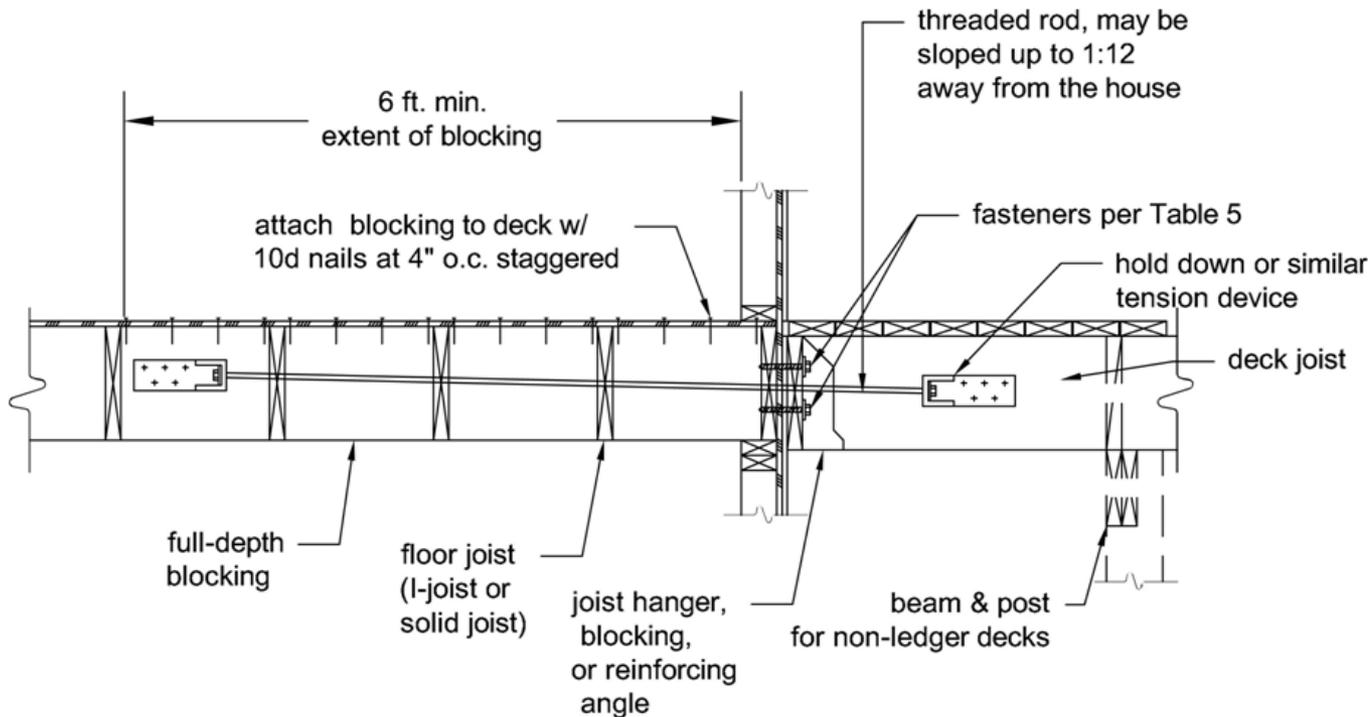
Figure 22 Lateral Load Device with Joists Parallel to Deck Joists



Deck Lateral

New to 2012 DCA-6

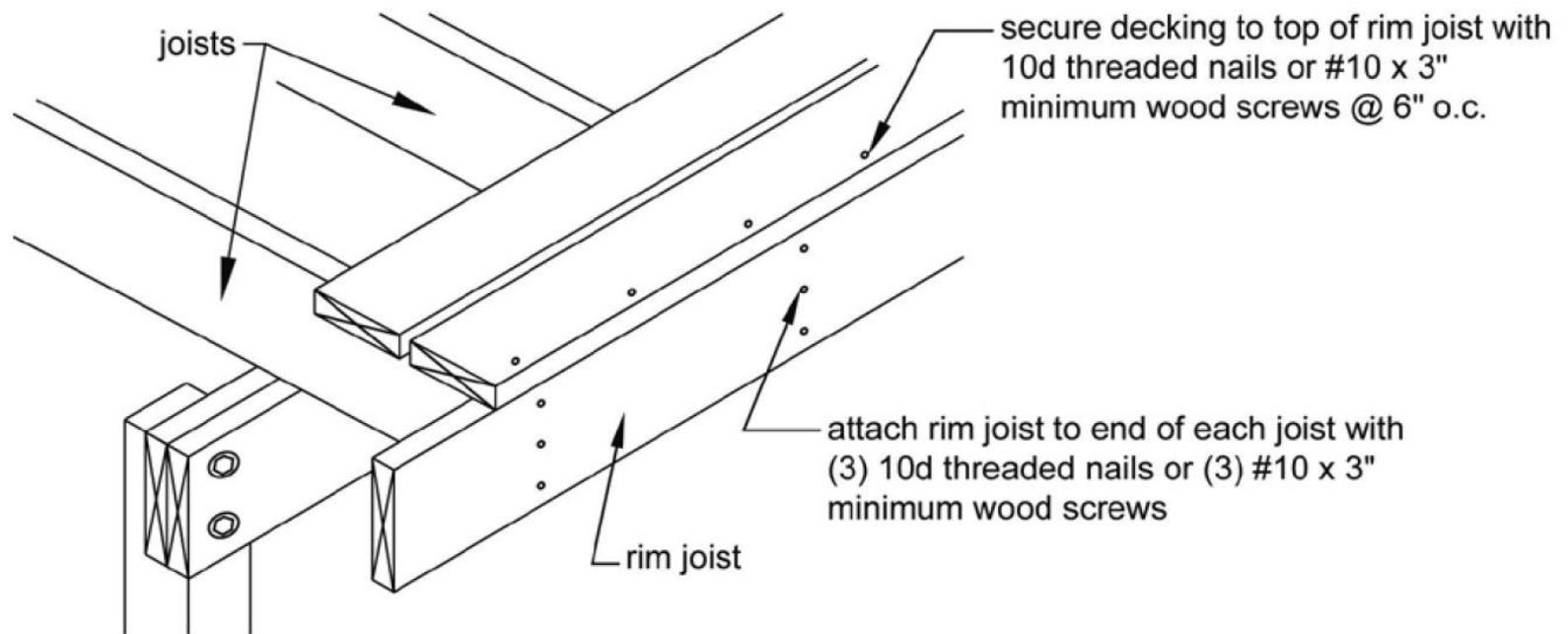
Figure 23: Lateral Load Device with Joists Perpendicular to Deck Joists



Rim Joist Requirements

- Decking attachment
 - #10 x 3" min. wood screws @ 6" o.c.
 - 10d threaded nails @ 6" o.c.
- Joist attachment
 - (3) #10 x 3" min. wood screws
 - (3) 10d threaded nails

Figure 11. Rim Joist Connection Details



Joist-to-Beam Connections

- Options
 - Toe-nails
 - Hurricane clip
 - Joist hanger

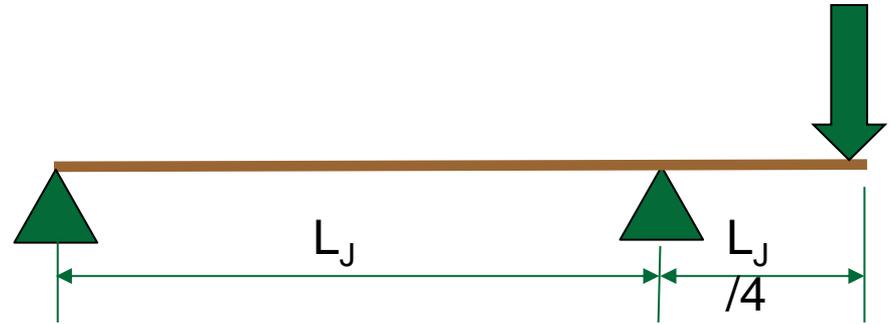
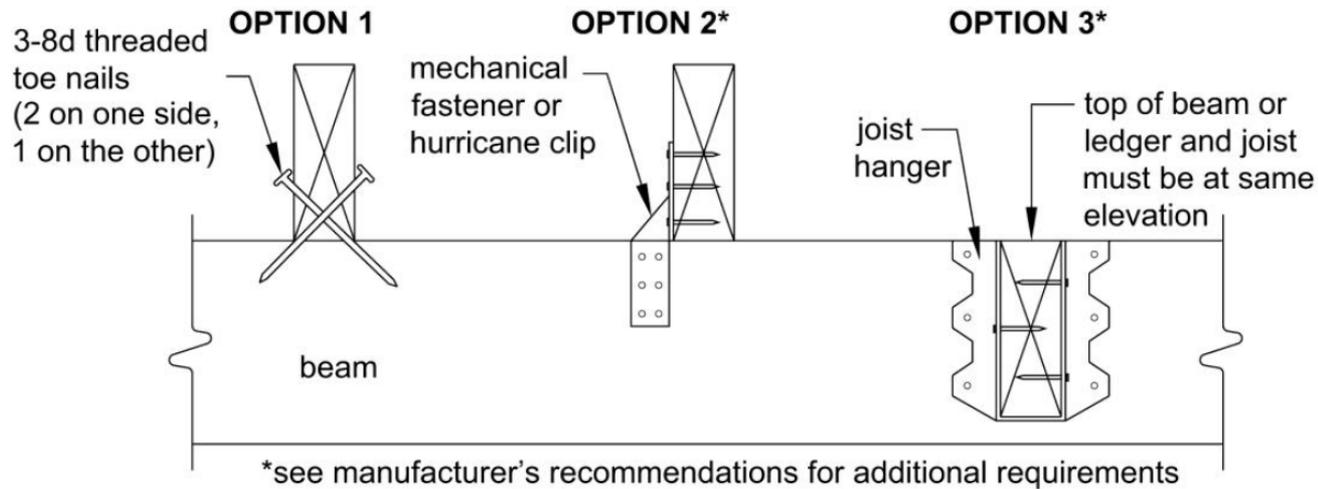


Figure 6. Joist-to-Beam Detail.



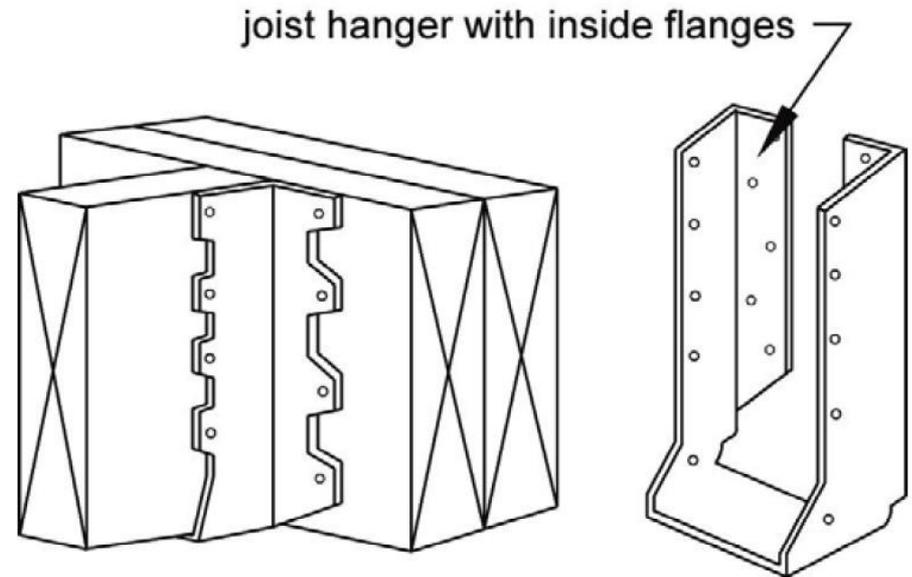
Joist-to-Beam Connections

- Joist Hangers
 - Capacity per Table 3A
 - Galvanized
 - No clips/brackets

Table 3A: Joist Hanger Vertical Capacity

Joist Size	Minimum Capacity, lbs
2x6	400
2x8	500
2x10	600
2x12	700

Figure 7: Typical Joist Hangers

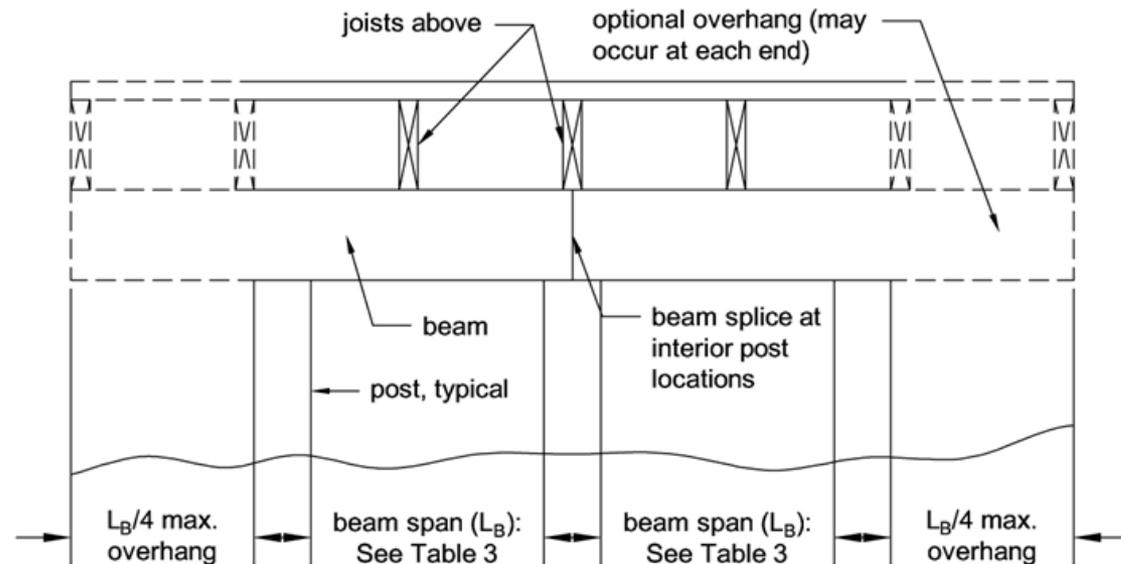


- Joist Hanger Size
 - DCA 6 Table 3A
 - For 2x6
 - 400 lb joist hanger

Beams

- Spans
 - $L/4$ maximum overhang
 - Splice over posts
 - Joists cannot be attached to opposite sides of the same beam

Figure 3: Beam Span



Deck Design Example 1

- **Beam Size for 12' span dimension**

- DCA 6 Table 3A
- For 8' joist span
- Try 2-2x8: spans 7'-4"
- $L_B/4 = 7'-4" / 4 = 1'-10"$
- $7'-4" + 1'-10" + 1'-10" = 11'-10" < 12'$ **NG**

- Try 3-2x8: spans 9'-3"
- $L_B/4 = 9'-3" / 4 = 2'-3\frac{3}{4}"$
- $9'-3" + 2'-3\frac{3}{4}" + 2'-3\frac{3}{4}" = 13'-10\frac{1}{2}" > 12'$ **OK**
- Use 8' span with 2' overhangs at each end
*2-2x10 also works

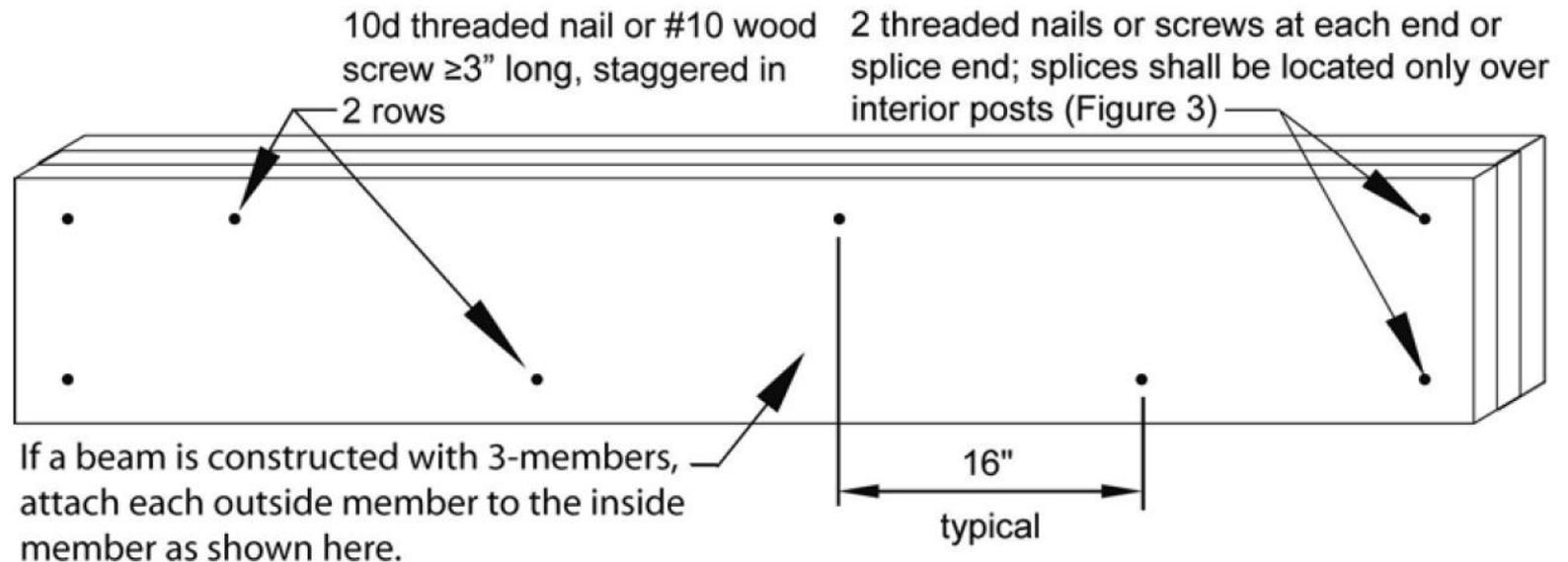
Table 3A. Dimension Lumber Deck Beam Spans (L_B)¹ for Joists Framing from One Side Only.

Species	Size ⁴	Joist Spans (L) Less Than or Equal to:						
		6'	8'	10'	12'	14'	16'	18'
Southern Pine	2-2x6	6' - 8"	5' - 8"	5' - 1"	4' - 7"	4' - 3"	4' - 0"	3' - 9"
	2-2x8	8' - 6"	7' - 4"	6' - 6"	5' - 11"	5' - 6"	5' - 1"	4' - 9"
	2-2x10	10' - 1"	8' - 9"	7' - 9"	7' - 1"	6' - 6"	6' - 1"	5' - 9"
	2-2x12	11' - 11"	10' - 4"	9' - 2"	8' - 4"	7' - 9"	7' - 3"	6' - 9"
	3-2x6	7' - 11"	7' - 2"	6' - 5"	5' - 10"	5' - 5"	5' - 0"	4' - 9"
	3-2x8	10' - 7"	9' - 3"	8' - 3"	7' - 6"	6' - 11"	6' - 5"	6' - 1"
	3-2x10	12' - 9"	11' - 0"	9' - 9"	8' - 9"	8' - 3"	7' - 8"	7' - 3"
	3-2x12	15' - 0"	13' - 0"	11' - 7"	10' - 6"	9' - 9"	9' - 1"	8' - 7"

Beams

- Assembly
 - For built-up beams
 - 10d threaded or #10 wood screws
 - 16" o.c. staggered

Figure 4. Beam Assembly Details

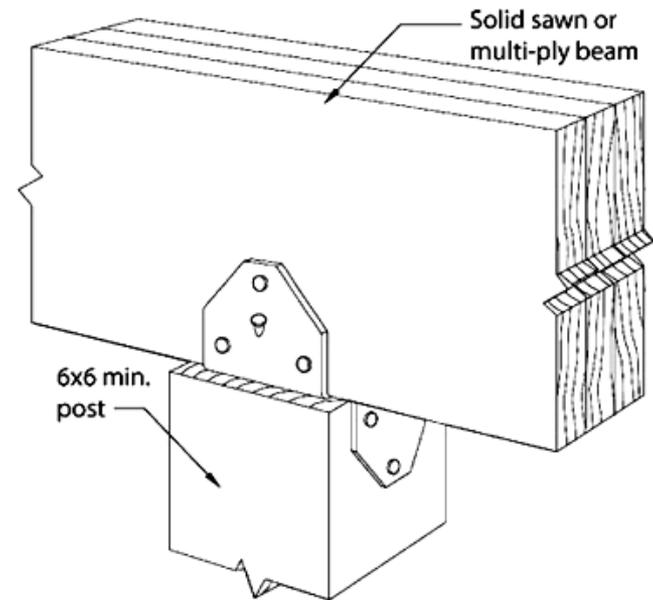


Post Requirements

- 6x6 or larger
- Centered on footings
- Cut ends field treated
 - Copper naphthenate
 - [R402.1.2]

Also see WI UDC SPS 321.10

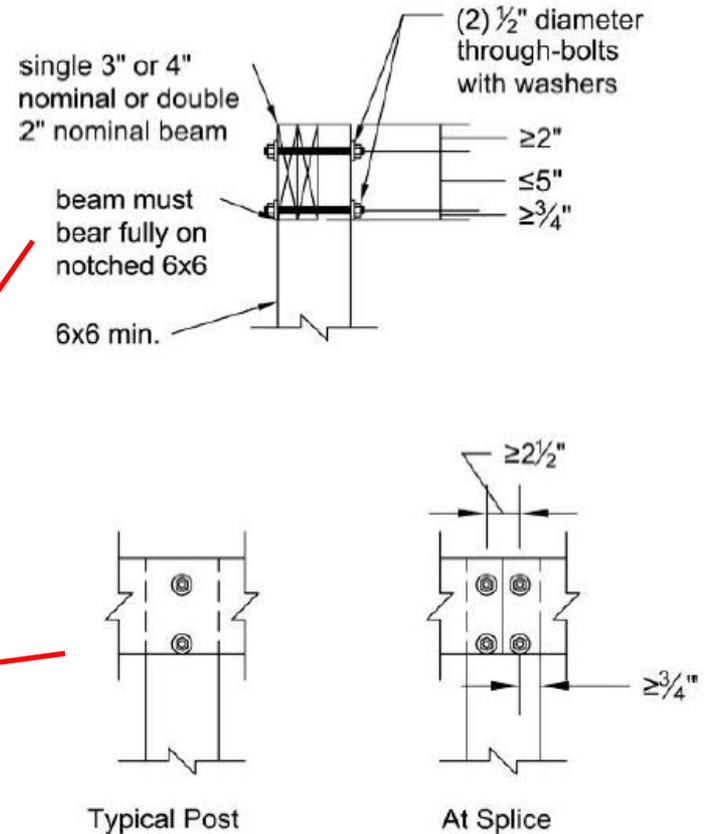
Figure 8B: Alternate *Approved* Post-to-Beam Post Cap Attachment



Post Requirements

- Post-to-Beam
 - Notch
 - 3x or 4x beam
 - 2-ply beam
 - Two 1/2" f bolts w/ washers
 - Post cap
 - 3-ply beams

Figure 8A. Post-to-Beam Attachment Requirements.

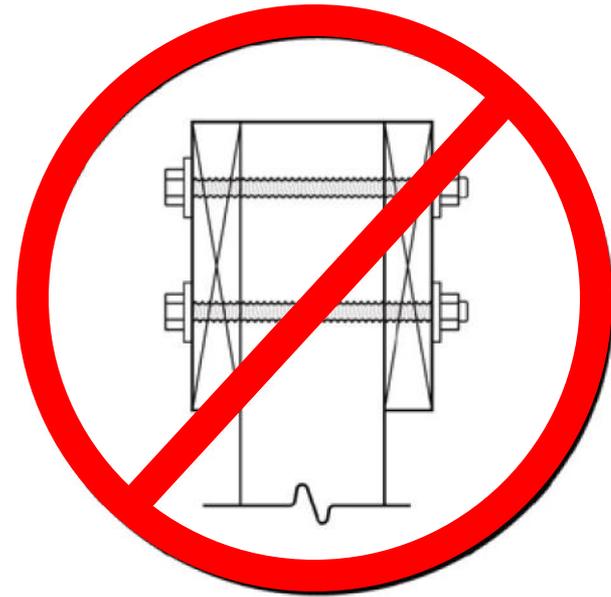


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Post Requirements

Figure 9. Prohibited Post-to-Beam Attachment Condition

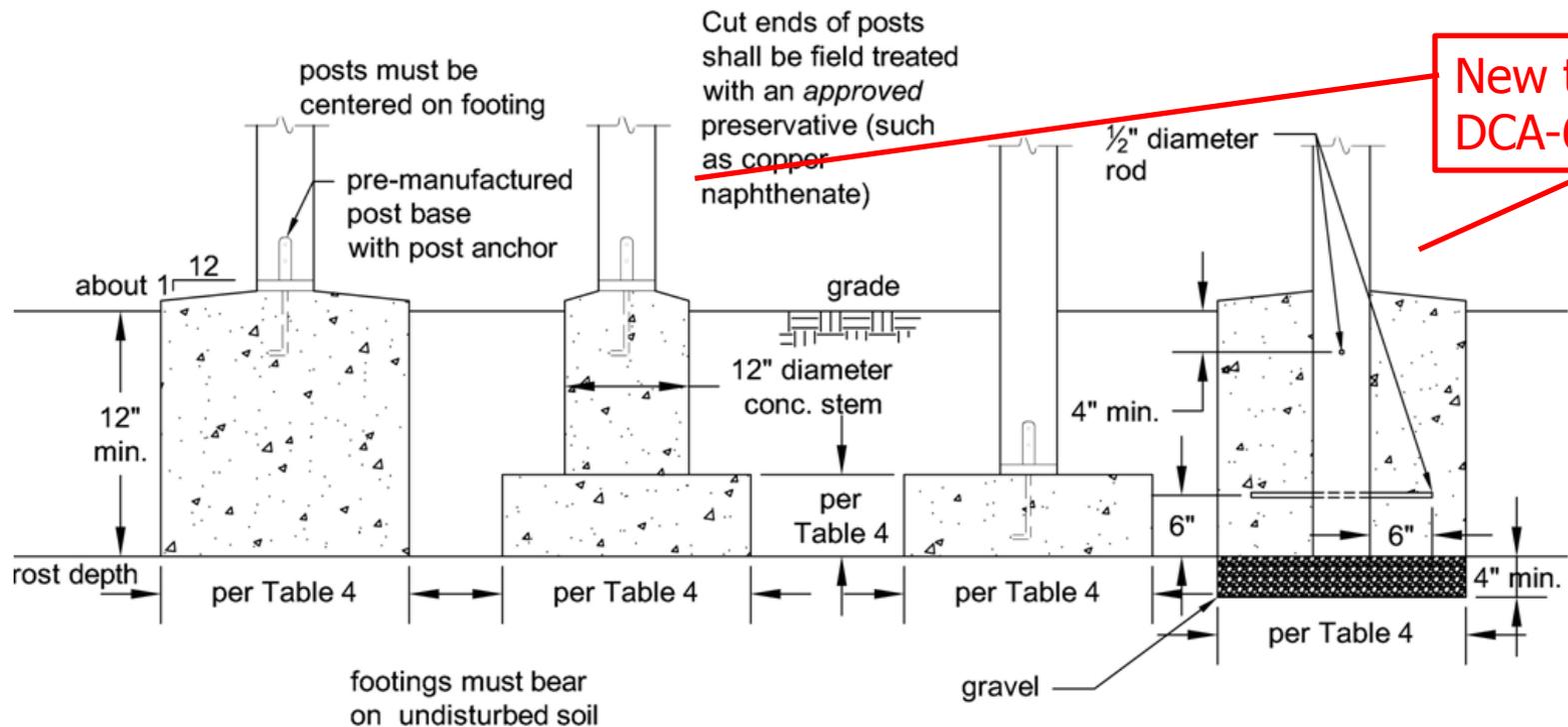
- Prohibited connection
 - Beam to side of post
 - Ensures wood-to-wood bearing
 - Avoids potential issues with non-compliant fasteners
 - Bolts in wet service environments have reduced capacity



Footings [R403]

- Depth $\geq 12''$ or frost line
- Soil 1,500 psf bearing capacity

Figure 12: Typical Footing Options



Footling Sizes and Post Heights

Table 4. Post Height for 6x6 and Footling Sizes for all Posts

Beam Span, L _B	Joist Span L _J	Post Heights ¹					Footling Sizes ²		
		Southern Pine	Douglas Fir-Larch ³	Hem-Fir ³ , Western Cedars	Redwood	Ponderosa Pine, Red Pine, SPF ³	Round Footling Diameter	Square Footling	Footling Thickness ⁴
6'	<10'	14'	14'	14'	14'	14'	18"	16"x16"	7"
	<14'	14'	14'	14'	14'	14'	21"	18"x18"	8"
	<18'	14'	14'	12'	14'	11'	24"	21"x21"	10"
8'	<10'	14'	14'	14'	14'	14'	20"	18"x18"	8"
	<14'	14'	14'	14'	14'	11'	24"	21"x21"	10"
	<18'	14'	13'	11'	12'	8'	27"	24"x24"	11"

New to 2012 DCA-6

Deck Design Example 1

Table 4. Post Height for 6x6 and Footing Sizes for all Posts

- **Footing Size**

- DCA 6 Table 4
- Thickness = 8"
- Square = 18"
- Round f = 20"
- Below frost line
- Post Height = 14'

Beam Span, L _B	Joist Span L _J	Post Heights ¹					Footing Sizes ²		
		Southern Pine	Douglas Fir-Larch ³	Hem-Fir ³ , Western Cedars	Redwood	Ponderosa Pine, Red Pine, SPF ³	Round Footing Diameter	Square Footing	Footing Thickness ⁴
6'	<10'	14'	14'	14'	14'	14'	18"	16"x16"	7"
	<14'	14'	14'	14'	14'	14'	21"	18"x18"	8"
	<18'	14'	14'	12'	14'	11'	24"	21"x21"	10"
8'	<10'	14'	14'	14'	14'	14'	20"	18"x18"	8"
	<14'	14'	14'	14'	14'	11'	24"	21"x21"	10"
	<18'	14'	13'	11'	12'	8'	27"	24"x24"	11"

2. Assumes 1,500 psf soil bearing capacity and 150 pcf concrete. Value may be multiplied by 0.9 for corner posts.

New to 2012 DCA-6

Footing Design

- **DCA 6 Commentary**

Post load: $R = 50 \left(\frac{L_J}{2} + \frac{L_J}{4} \right) \left(\frac{L_B}{2} + \frac{L_B}{4} \right)$

Square footing: $B = 12 \sqrt{\frac{R}{1500}}$

Round footing: $D = 12 \sqrt{\frac{4R}{1500\pi}}$

Footing thickness: $T \geq P$; $T = \frac{D - 5.5}{2}$

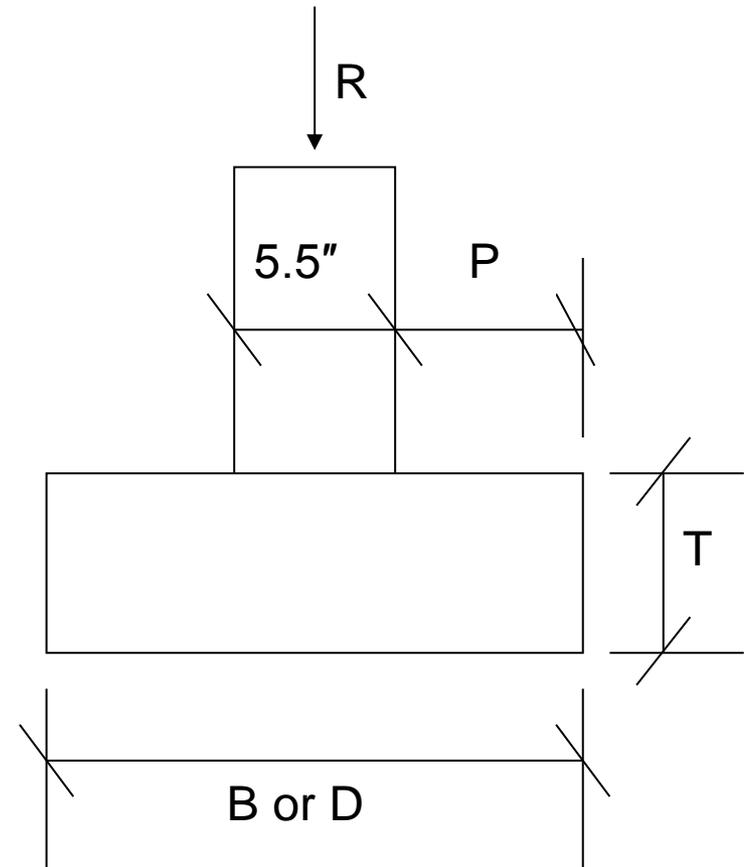
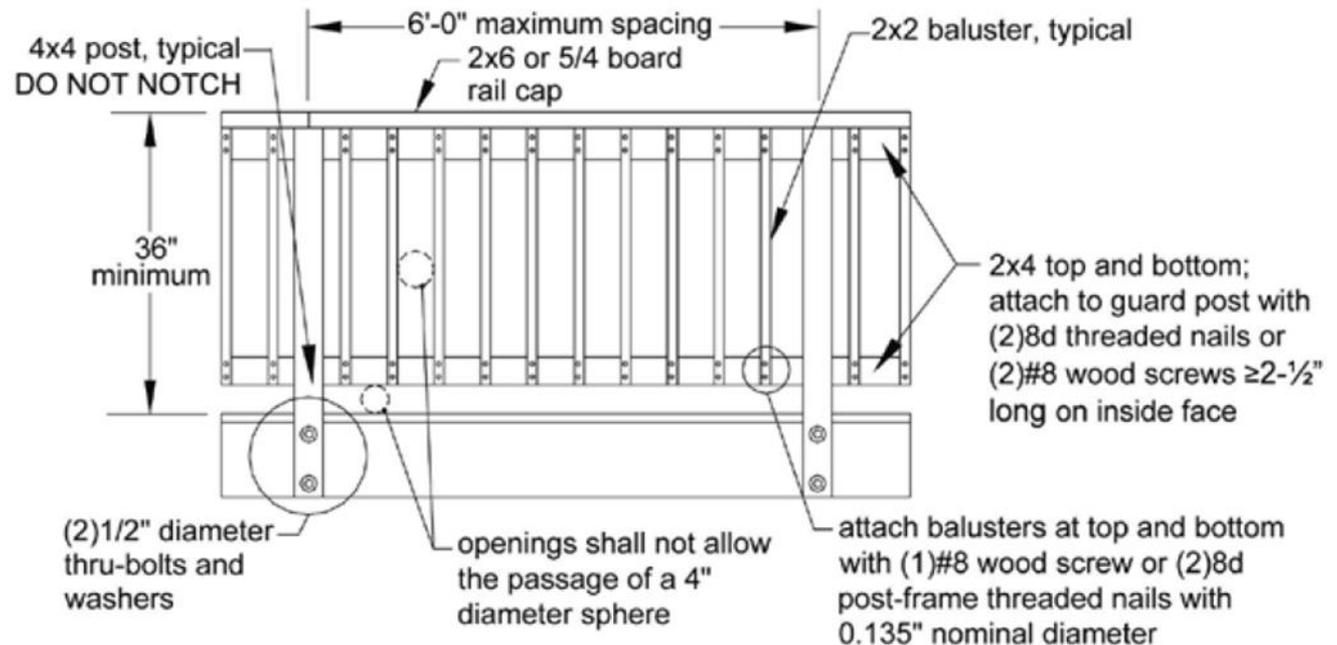


Figure C12. Footing dimensions and variables.

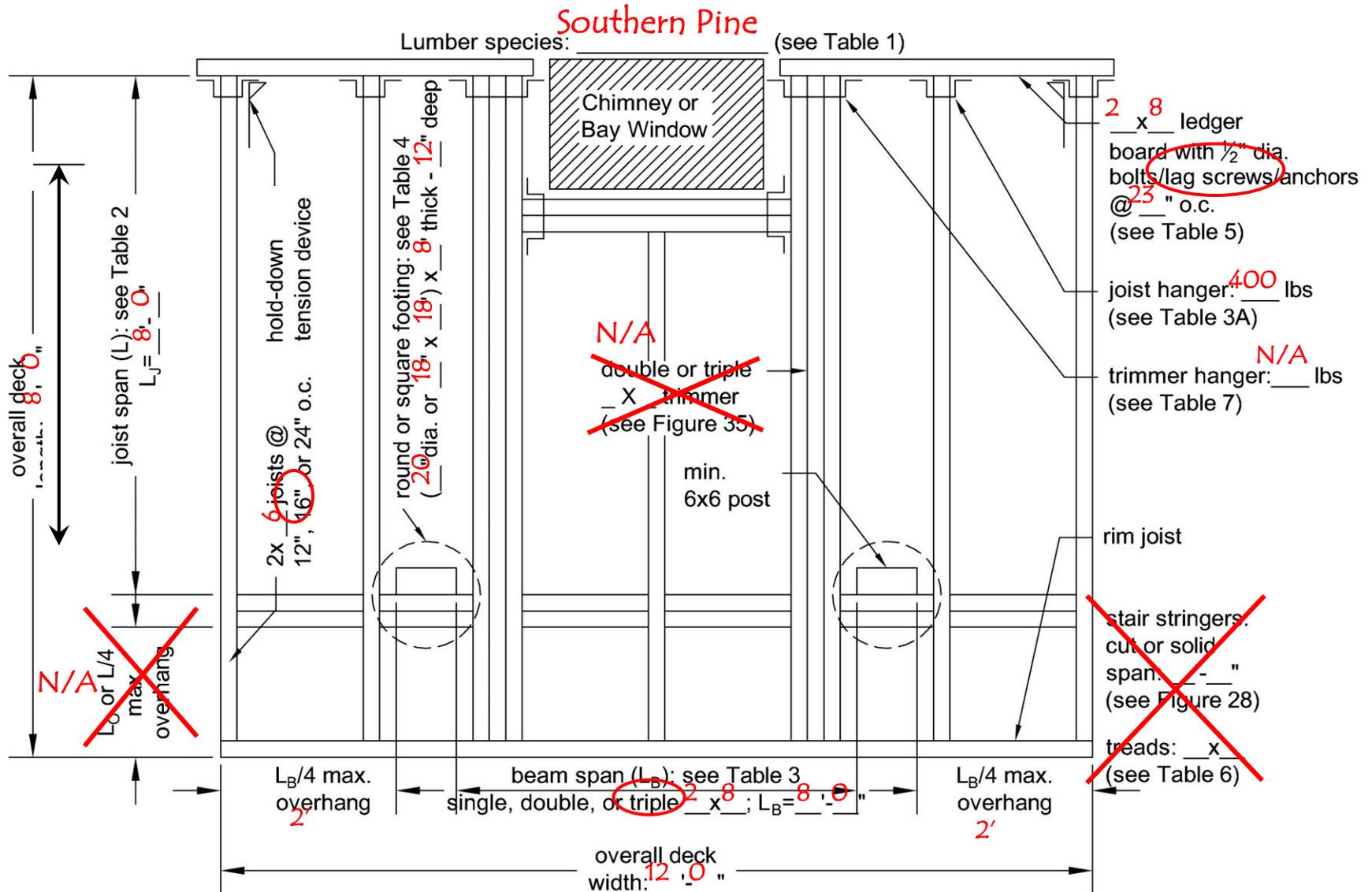
Deck Design Example 1

- **Guard requirements**
 - Deck height < 30"
 - Guard optional

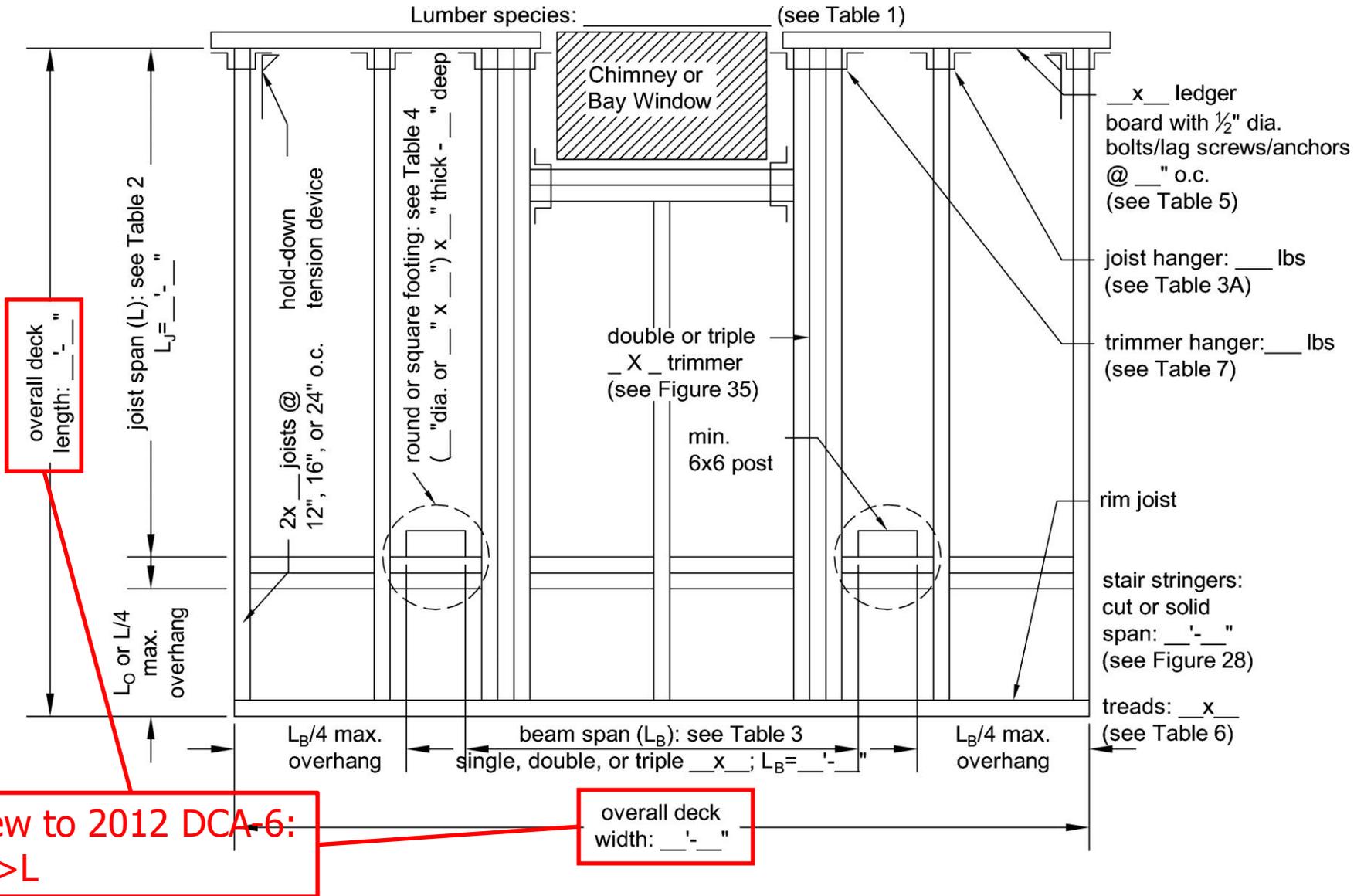
Figure 24. Example Guard Detail



Deck Design Ex. #1- Framing Plan

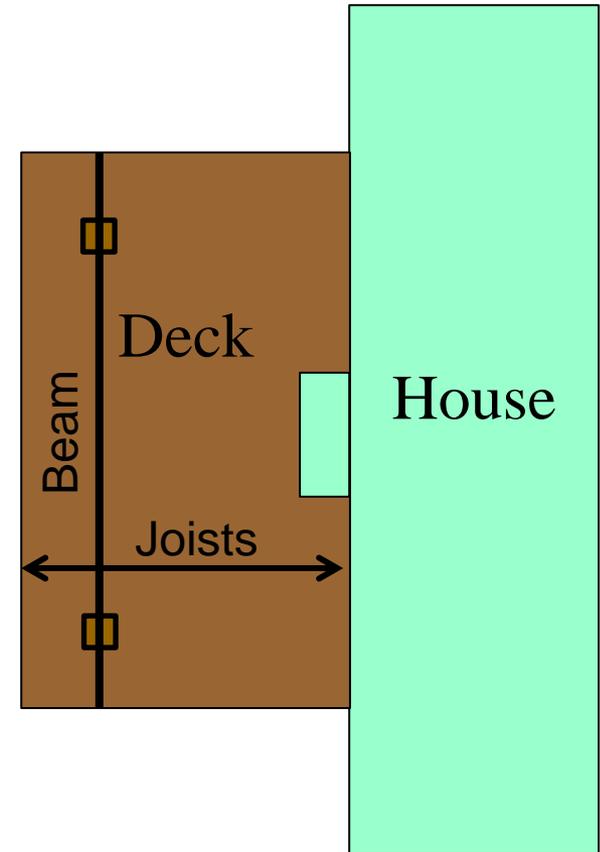


Typical Framing Plan



Deck Design Example 2

- **Deck height = 8'-0"**
- **16' x 20' deck surface**
- **Structural members: southern pine**
 - **Glued Laminated Timber Beam**
- **Decking: 5/4 radius edge southern pine decking**
- **Framing around a 5' wide by 2½' deep bay window**
- **Determine sizes for joists, beams, hangers, footings, stringers, and treads**
- **Determine fastener spacing for bolts in 1-1/8" EWP house rim joist**



Deck Design Example 2

- **Joist Size for 16' span dimension (w/ overhang)**
 - **DCA 6 Table 2**
 - **2x10 @ 16" o.c. w/ 2'-0" overhang**

Table 2. Maximum Joist Spans and Overhangs

Species	Size	Joist Spacing (o.c.) ¹					
		Allowable Span ² (L _J)			Allowable Overhang ³ (L _O)		
		12"	16"	24"	12"	16"	24"
Southern Pine	2x6 ⁶	9' - 11"	9' - 0"	7' - 7"	1' - 0"	1' - 1"	1' - 3"
	2x8	13' - 1"	11' - 10"	9' - 8"	1' - 10"	2' - 0"	2' - 4"
	2x10	16' - 2"	14' - 0"	11' - 5"	3' - 1"	3' - 5"	2' - 10"
	2x12	18' - 0" ⁷	16' - 6"	13' - 6"	4' - 6"	4' - 2"	3' - 4"

Deck Design Example 2

Table 4. Post Height for 6x6 and Footing Sizes for all Posts

- Footing Size**

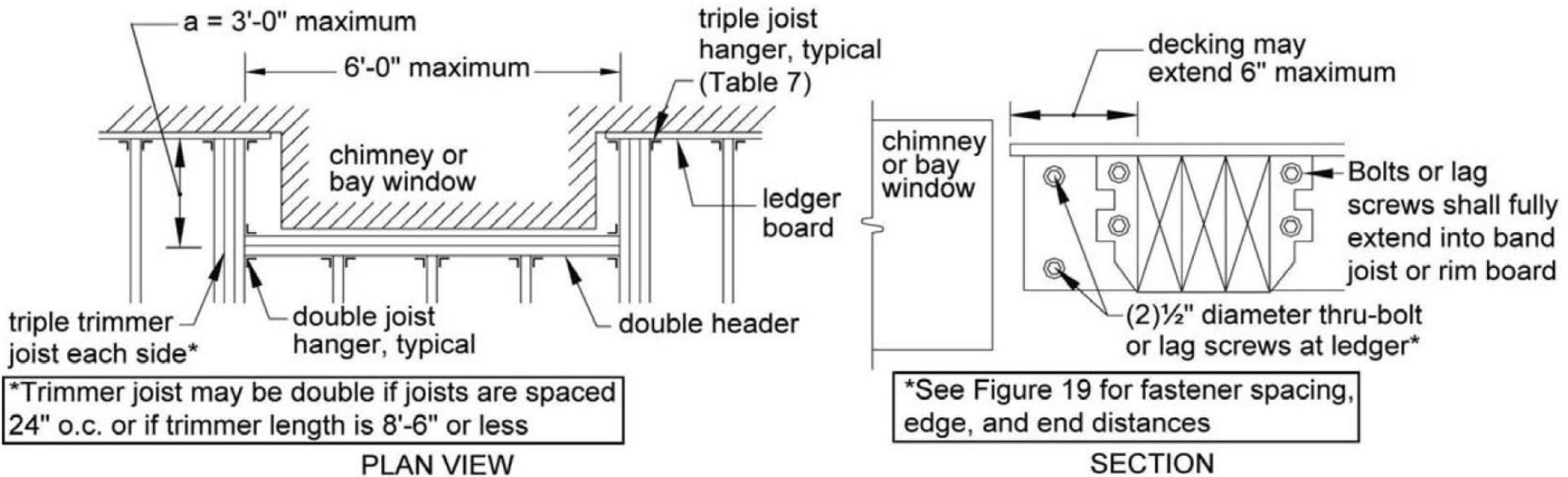
- DCA 6 Table 4
- Thickness = 14"
- Square = 29"
- Round f = 32"
- Below frost line
- Post Height = 11'

Beam Span, L _B	Joist Span L _J	Post Heights ¹					Footing Sizes ²		
		Southern Pine	Douglas Fir-Larch ³	Hem-Fir ³ , Western Cedars	Redwood	Ponderosa Pine, Red Pine, SPF ³	Round Footing Diameter	Square Footing	Footing Thickness ⁴
6'	<10'	14'	14'	14'	14'	14'	18"	16"x16"	7"
	<14'	14'	14'	14'	14'	14'	21"	18"x18"	8"
	<18'	14'	14'	12'	14'	11'	24"	21"x21"	10"
8'	<10'	14'	14'	14'	14'	14'	20"	18"x18"	8"
	<14'	14'	14'	14'	14'	11'	24"	21"x21"	10"
	<18'	14'	13'	11'	12'	8'	27"	24"x24"	11"
10'	<10'	14'	14'	14'	14'	12'	23"	20"x20"	9"
	<14'	14'	13'	11'	13'	8'	27"	24"x24"	11"
	<18'	12'	11'	8'	11'	2'	31"	27"x27"	13"
12'	<10'	14'	14'	12'	14'	10'	25"	22"x22"	10"
	<14'	13'	12'	9'	11'	5'	30"	26"x26"	13"
	<18'	11'	9'	6'	9'	2'	34"	30"x30"	15"
14'	<10'	14'	13'	11'	13'	8'	27"	24"x24"	11"
	<14'	11'	10'	7'	10'	2'	32"	29"x29"	14"
	<18'	9'	8'	2'	8'	NP	37"	33"x33"	16"

Framing at Chimney or Bay Window

- Headers 6' maximum span
 - Use 6x6 post to reduce spans to $\leq 6'$
 - $>6'$ span requires plan submission

Figure 35: Detail for Framing Around a Chimney or Bay Window



Framing at Chimney or Bay Window

- Trimmers
 - Triple
 - 12"-16" joist spacing
 - Spans > 8'-6"
 - Double
 - 24" joist spacing
 - Spans \leq 8'-6"
 - "a" \leq 3'

Table 7: Trimmer Joist Hanger Vertical Capacity

Joist Size	Minimum Capacity, lbs
2x6	870
2x8	1155
2x10	1420
2x12	1575

Deck Design Example 2

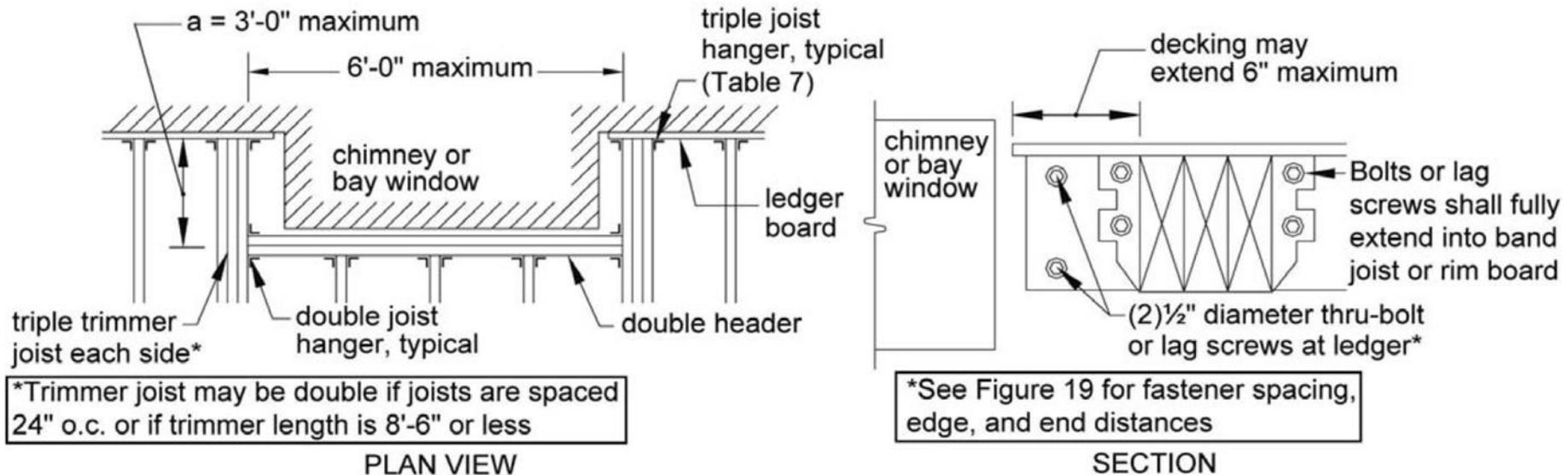
- **Bay Window**

- Header = 6'
- $a = 2'-6''$
- Triple trimmer joist
- Trimmer hanger = 1,420 lbs

Table 7: Trimmer Joist Hanger Vertical Capacity

Joist Size	Minimum Capacity, lbs
2x6	870
2x8	1155
2x10	1420
2x12	1575

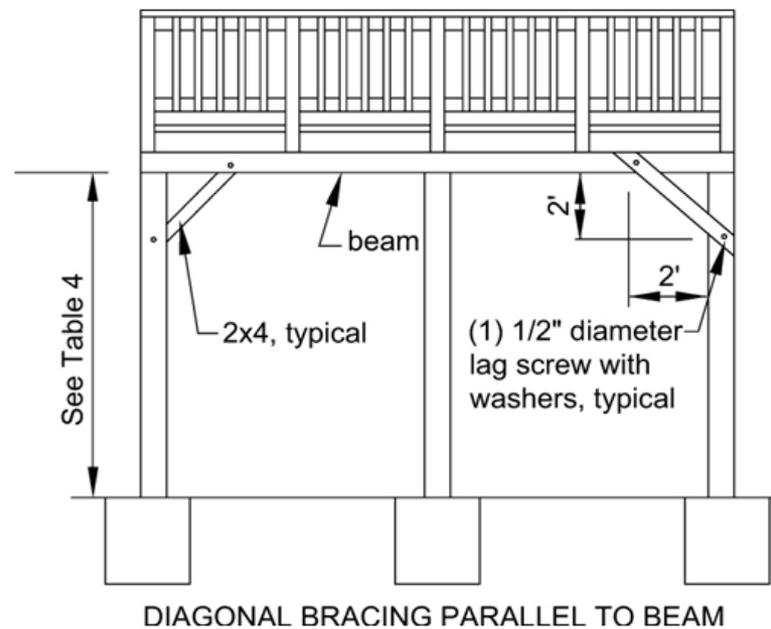
Figure 35: Detail for Framing Around a Chimney or Bay Window



Knee Braces

- Decks > 2' above grade
 - require diagonal bracing
- Parallel to beam
 - Lag Screw to beam and post
- Perpendicular to beam
 - Bracing not required

Figure 10: Diagonal Bracing



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DCA-6

Guard Requirements

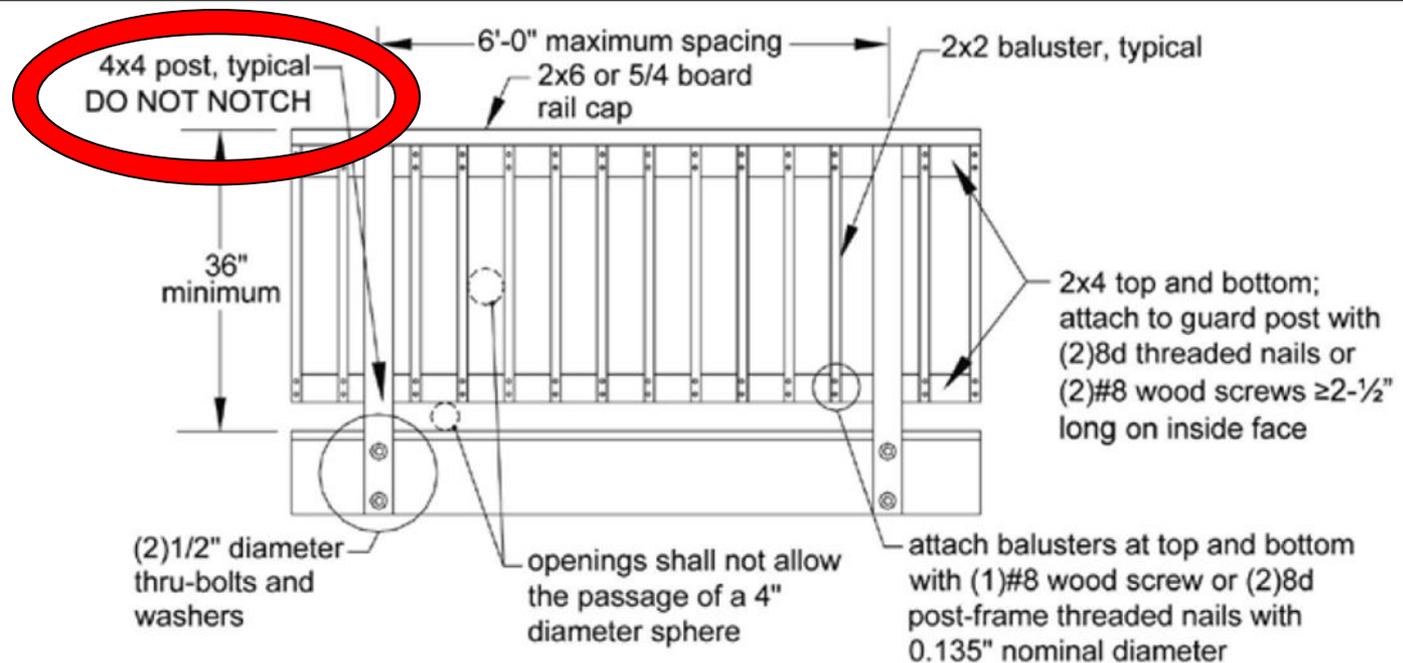
- Adjacent Fixed Seating Requirement
- 36" measurement from seat
 - R312.2 Height. Required *guards* at open-sided walking surfaces, including stairs, porches, balconies or landings, shall be not less than 36 inches (914 mm) high measured vertically above the adjacent walking surface, adjacent fixed seating or the line connecting the leading edges of the treads.



Guard Requirements

- **Guard requirements**
 - Deck height > 30"
 - Guard Required

Figure 24. Example Guard Detail



Guard Post Testing

- IBC/IRC require guard rails to resist 200 lb concentrated load. See WI UDC SPS 321.04(3)(a)4.a.
- Tests require 2.5 safety factor per IBC
- Virginia Tech Research
 - Typical 1/2" bolt or lag screw connections failed
 - Commercial hold down passed

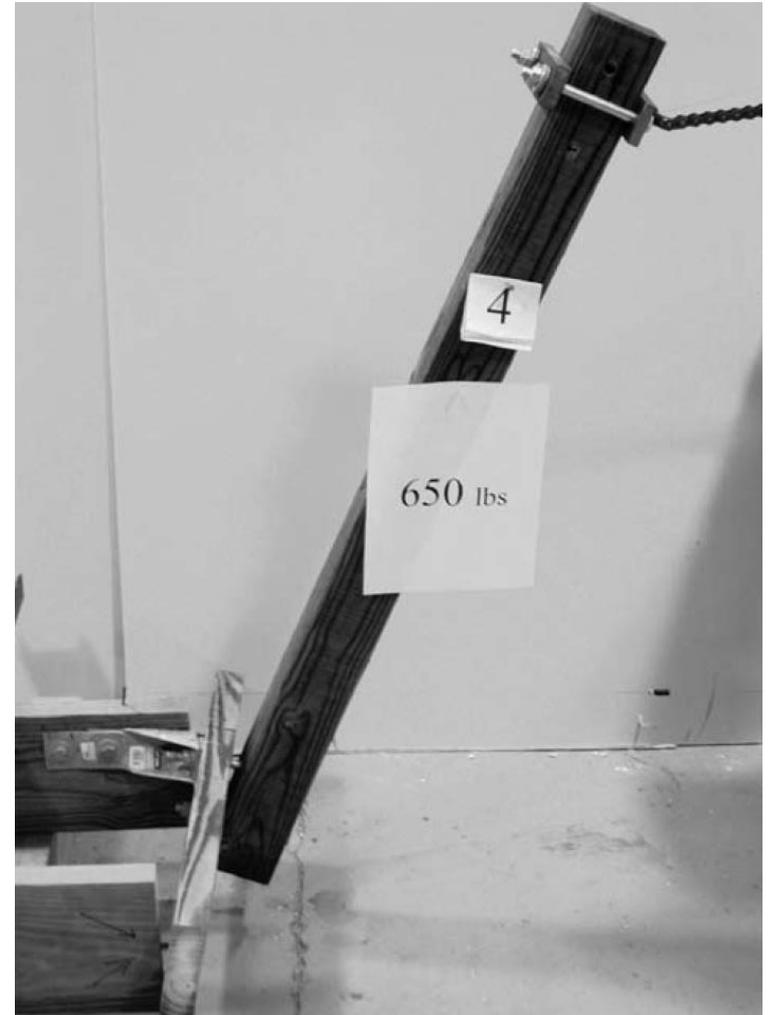
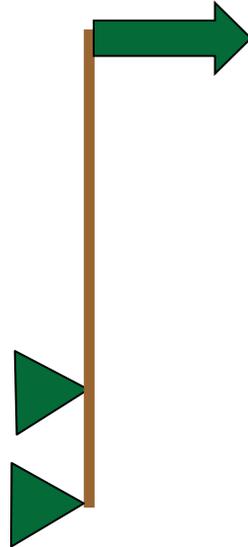
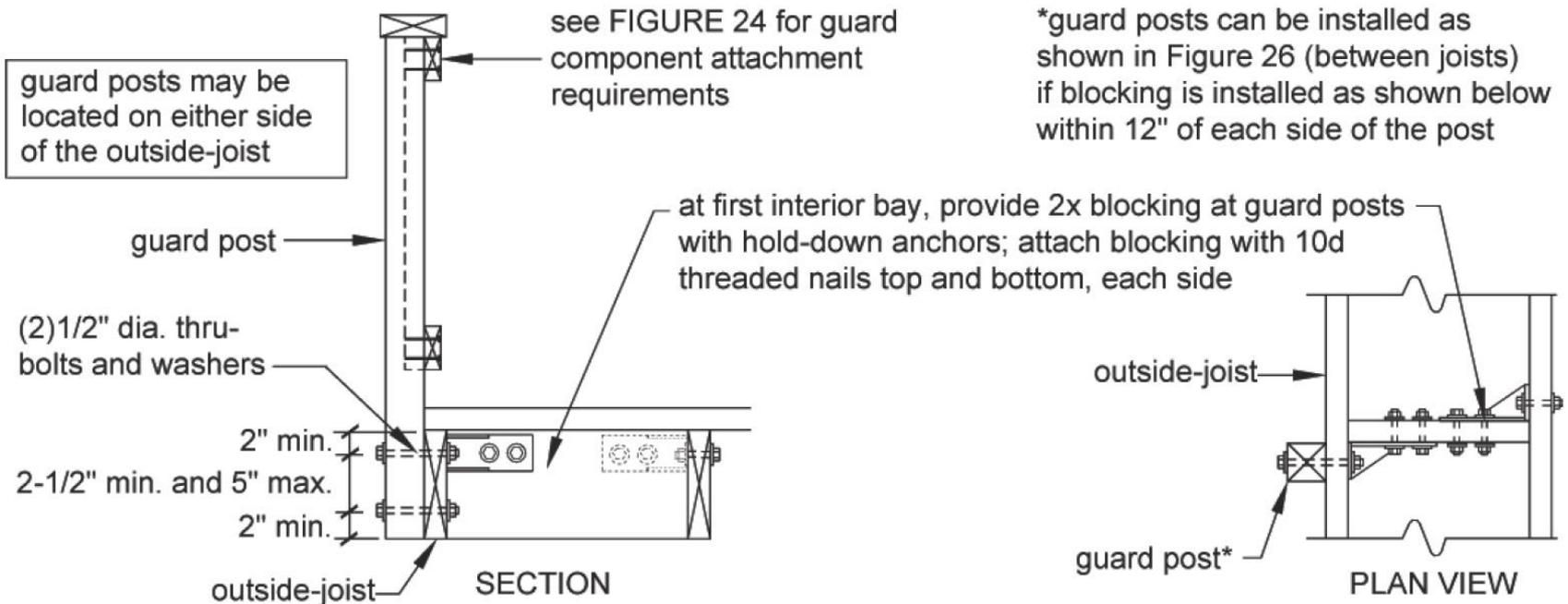


Photo courtesy of Frank Woeste and Joseph Loferski. All rights reserved.

Guard Requirements

- Minimum 4x4 post
- Bending design value $\geq 1,100$ psi
 - All No.2 species shown in Table 2
 - $C_M = 0.85$, $C_i = 0.80$, $C_D = 1.6$

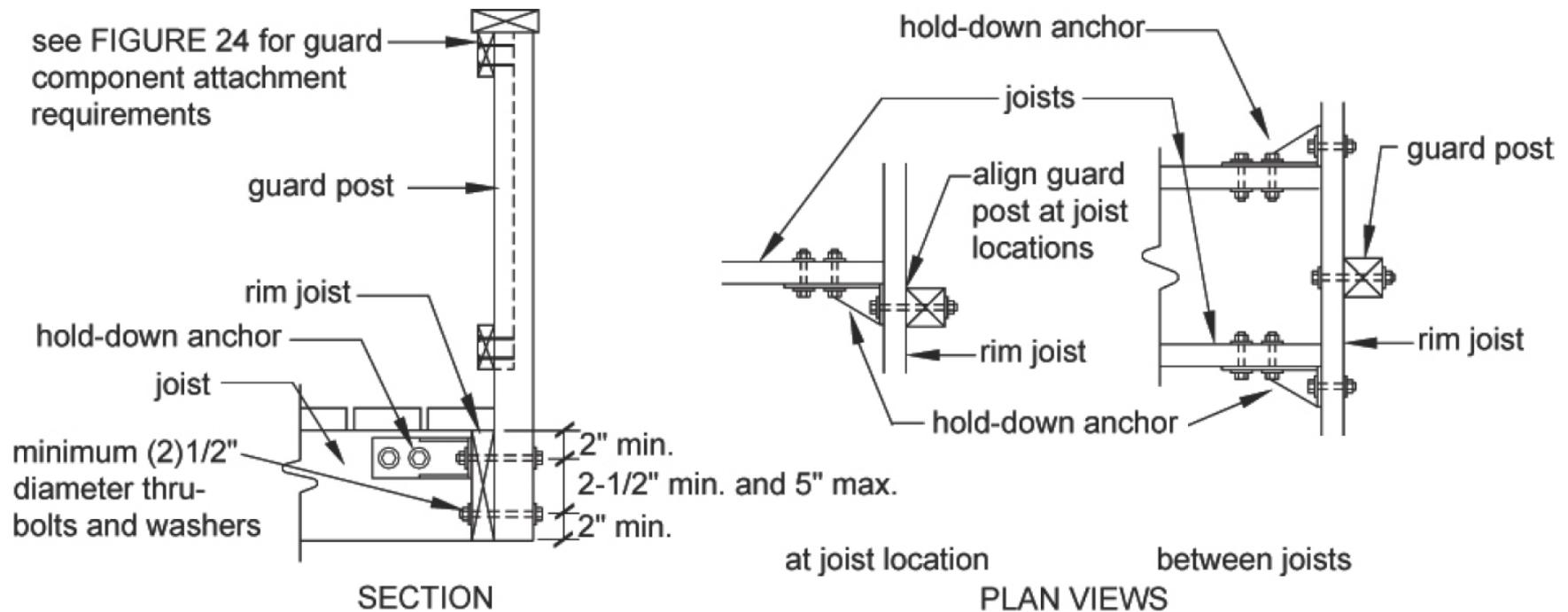
Figure 25. Guard Post to Outside Joist Example



Guard Requirements

- Guard Post to Rim Joist
 - Hold down anchors
 - Minimum of two 1/2" bolts

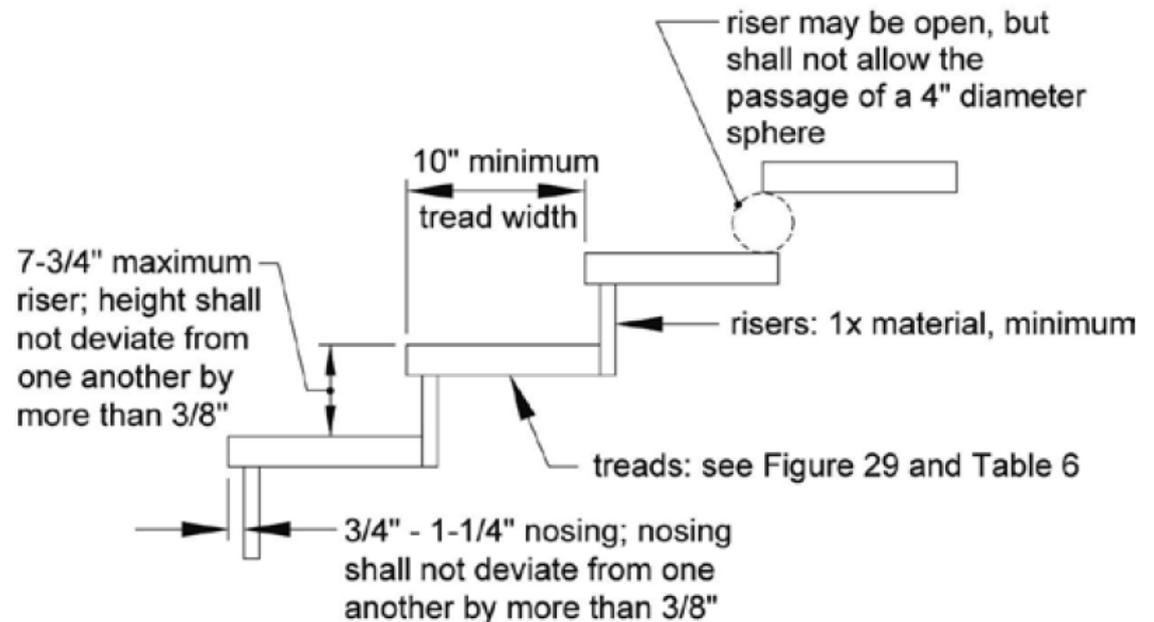
Figure 26. Guard Post to Rim Joist Example



Stair Requirements

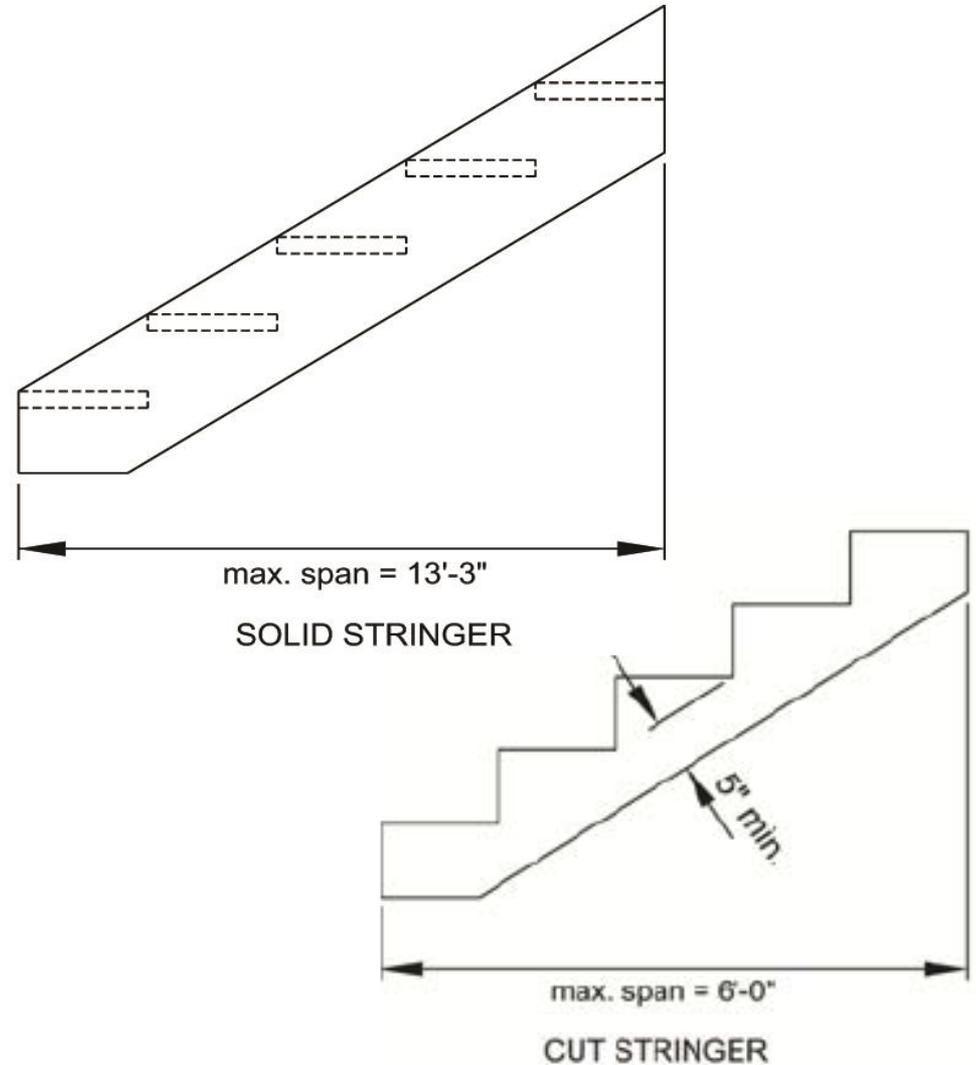
- Treads and Risers
 - 7-3/4" rise & 10" run [See WI UDC SPS 321.04 - 8" rise and 9" run in Wisconsin]
 - Except where amended
 - 1x risers
 - Treads per Table 6
 - Openings < 4" diameter sphere

Figure 27. Tread and Riser Detail



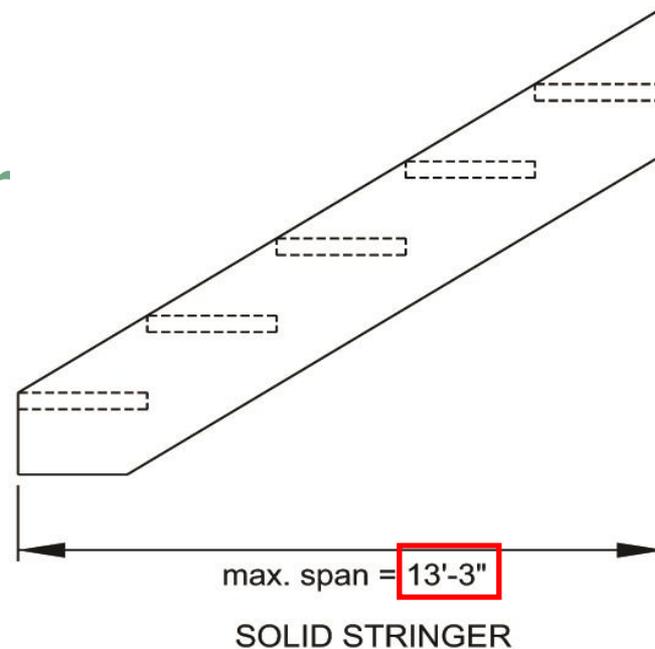
Stair Requirements

- Stringers
 - Minimum 2x12
 - Spans per Figure 28
 - Intermediate landings permitted



Deck Design Example 2

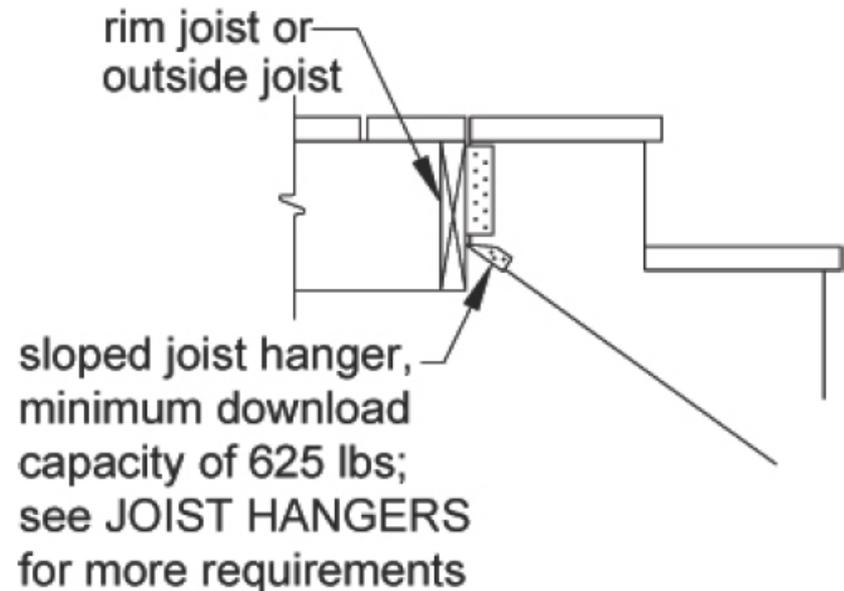
- **Stair Stringers**
 - DCA 6 Figure 28
 - 8' deck height
 - Requires 10'-4" solid stringer span assuming 7³/₄" rise and 10" run 13'-3" > 10'-4" **ok**
 - Use a Solid stringer



Stair Requirements

- Stringer Attachment
 - Hangers
 - Sloped joist hanger
 - Per manufacturer

Figure 31. Stair Stringer Attachment Detail

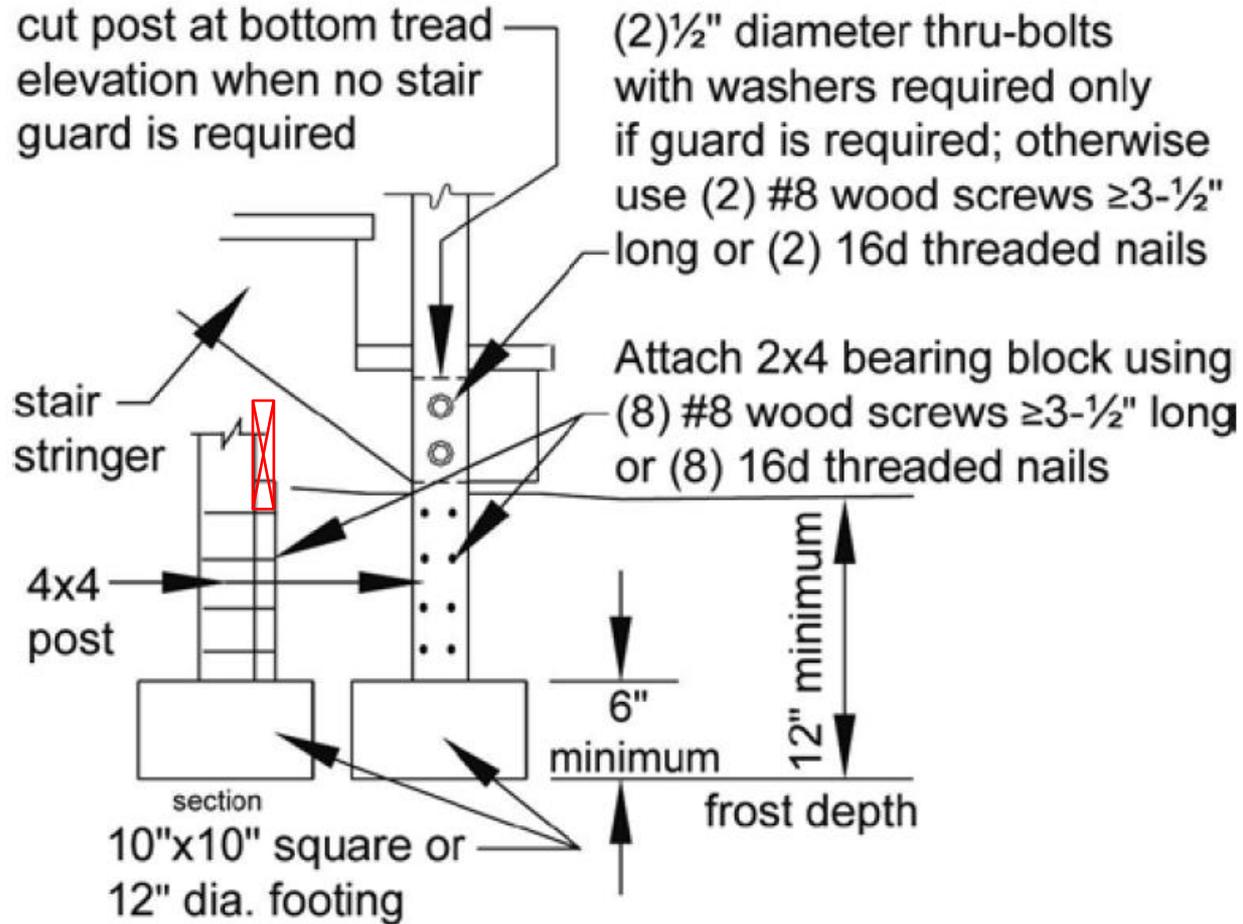


ATTACHMENT WITH HANGERS

Stair Footings [R403] [SPS 321.15]

- Lighting
 - Top landing
 - Illuminate all landings
 - Light switch inside the house

Figure 34. Stair Footing Detail

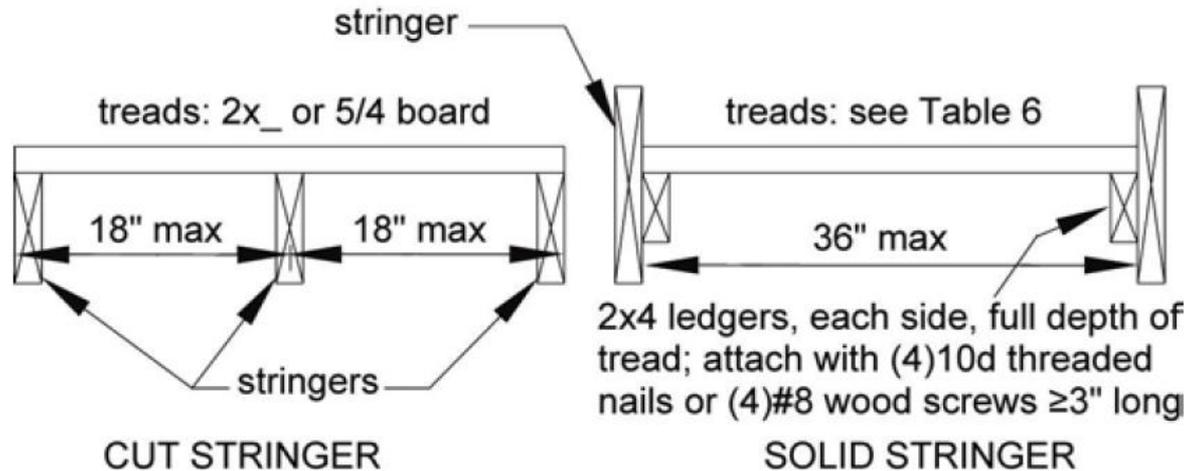


Stair Requirements

- Stringers
 - Cut $\leq 18''$ o.c.
 - Solid $\leq 36''$ o.c.
- Treads
 - Sizes per Table 6
 - Connections per Fig 29

Figure 29. Tread Connection Requirements

Attachment per tread at each stringer or ledger:
2x_ or 5/4 treads - (2)8d threaded nails or (2)#8 screws $\geq 2\text{-}1/2''$ long
3x_ treads - (2)16d threaded nails or (2)#8 screws $\geq 3\text{-}1/2''$ long



Deck Design Example 2

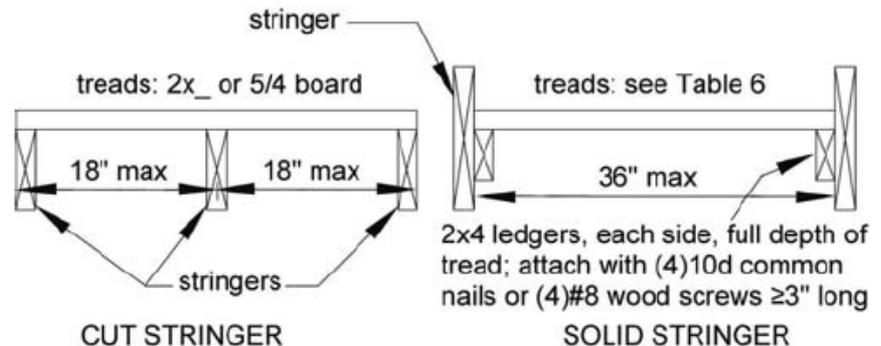
- **Stair Treads**
 - DCA 6 Table 6
 - Solid Stringer
 - 2x8 southern pine treads

Table 6: Minimum Tread Size for Cut and Solid Stringers¹

Species	Cut Stringer	Solid Stringer
Southern Pine	2x4 or 5/4	2x8
Douglas Fir Larch, Hem-Fir, SPF ²	2x4 or 5/4	2x8 or 3x4
Redwood, Western Cedars, Ponderosa Pine ³ , Red Pine ³	2x4 or 5/4	2x10 or 3x4

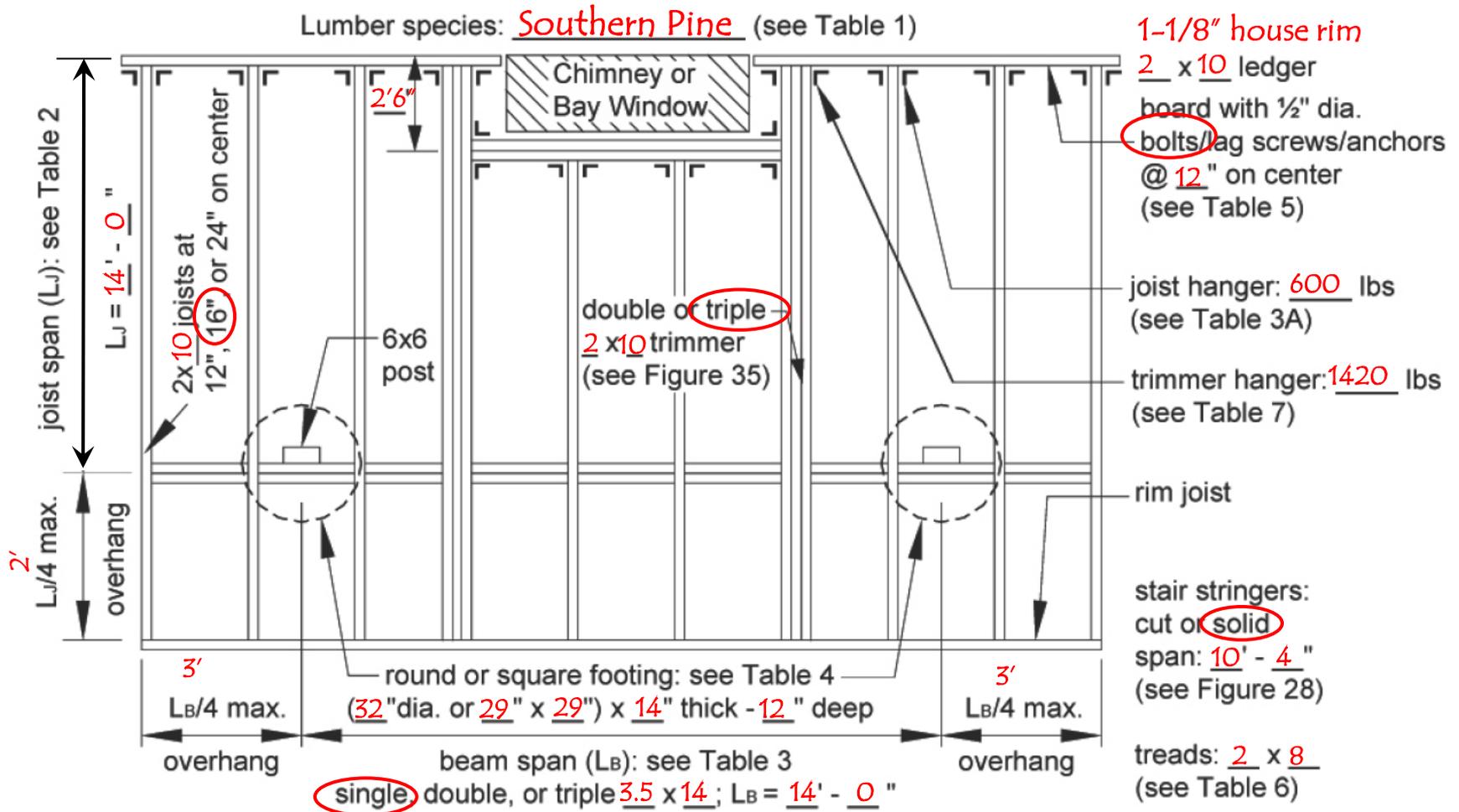
Figure 29: Tread Connection Requirements

Attachment per tread at each stringer or ledger:
 2x_ or 5/4 treads - (2)8d common nails or (2)#8 screws $\geq 2\text{-}1/2"$ long
 3x_ treads - (2)16d common nails or (2)#8 screws $\geq 3\text{-}1/2"$ long



Deck Design Ex. #2 - Framing Plan

Figure 5. Typical Deck Framing Plan

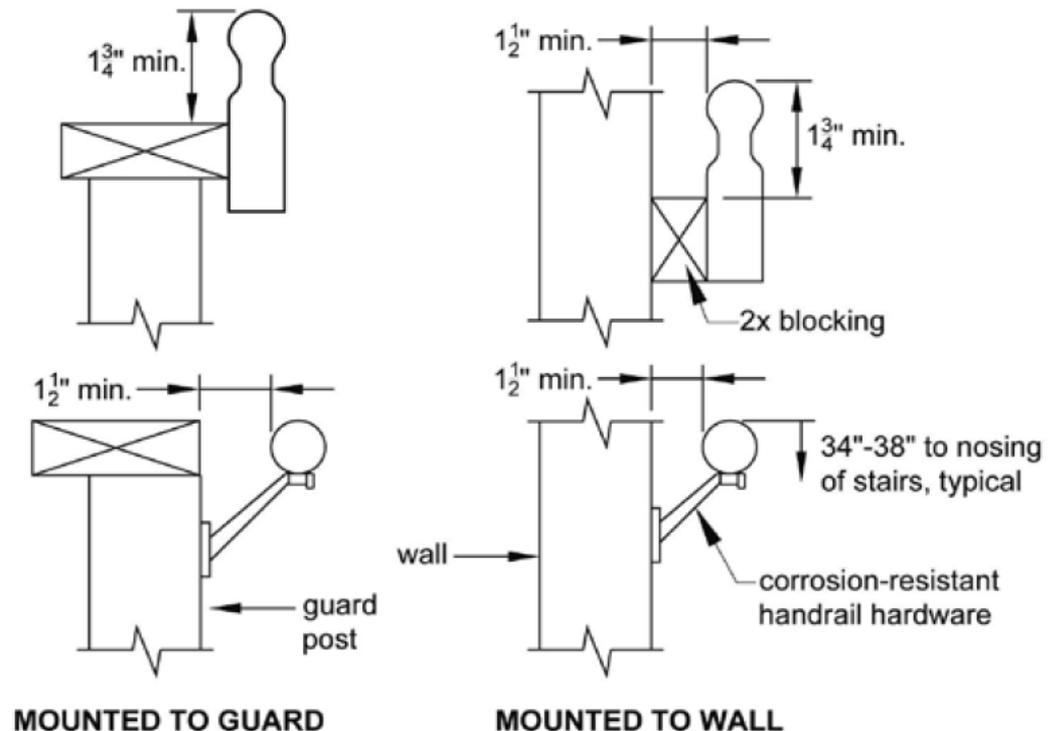


Stair Requirements

- Handrails
 - Required for stairs with 4 or more treads
 - Height 34" – 38"

Figure 32A. Handrail Mounting Examples

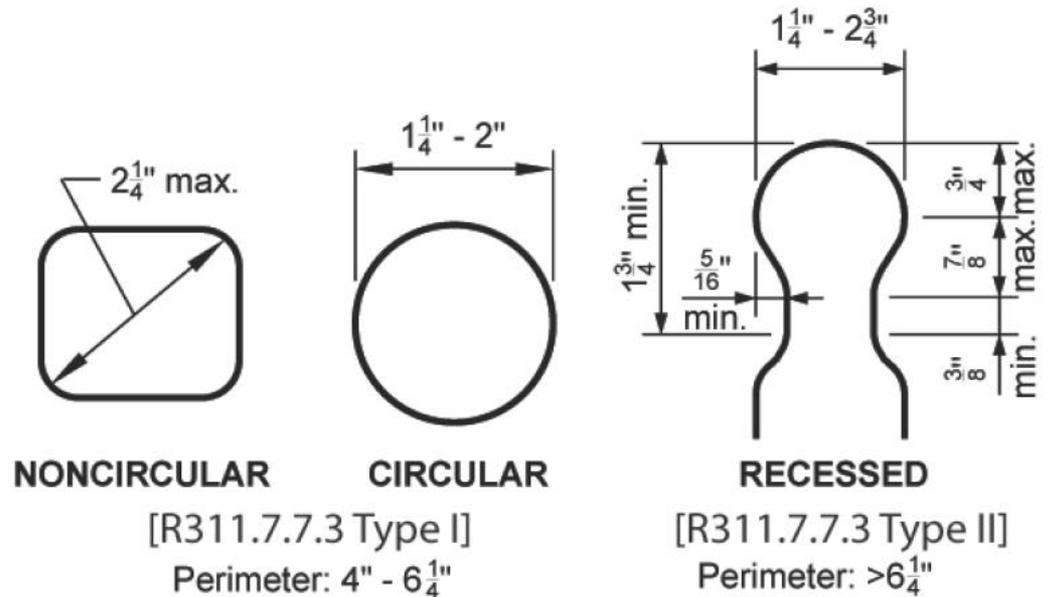
Fasten handrails per manufacturer recommendations



Stair Requirements

- Handrails
 - Type I: 4" – 6 $\frac{1}{4}$ " perimeter
 - Circular
 - 1 $\frac{1}{4}$ " – 2" diameter
 - Noncircular
 - Max. cross section 2 $\frac{1}{4}$ "
 - Type II: >6 $\frac{1}{4}$ " perimeter
 - Graspable recess

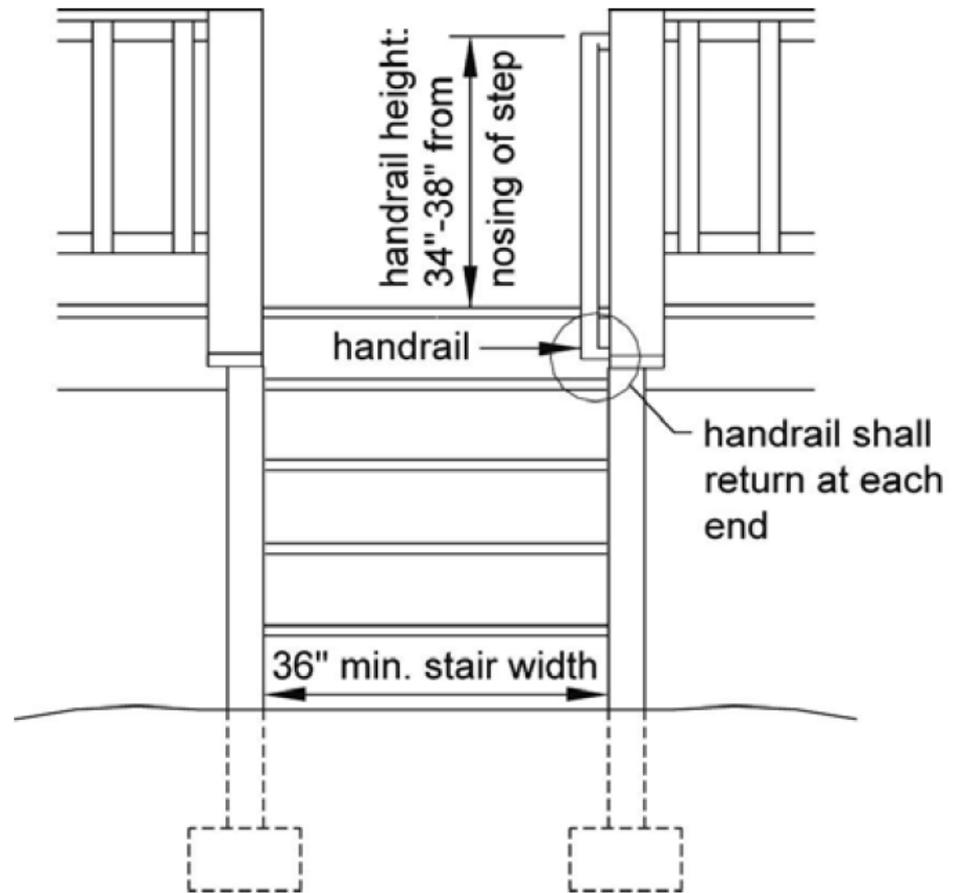
Figure 32B. Handrail Grip Size



Stair Requirements

Figure 33. Miscellaneous Stair Requirements

- Handrails
 - Continuous from lowest to highest riser
 - Return to guard at each end
 - May be interrupted by guard at turn
 - Height 30" to 38" in Wisconsin



DCA 6 Commentary

- Background information
- Example calculations
- Alternate prescriptive provisions
 - Ex: Joists framing into 2 sides of the same beam
 - 8'-0" joists from opposite sides
 - Use 16'-0" joist spans for equivalent tributary area

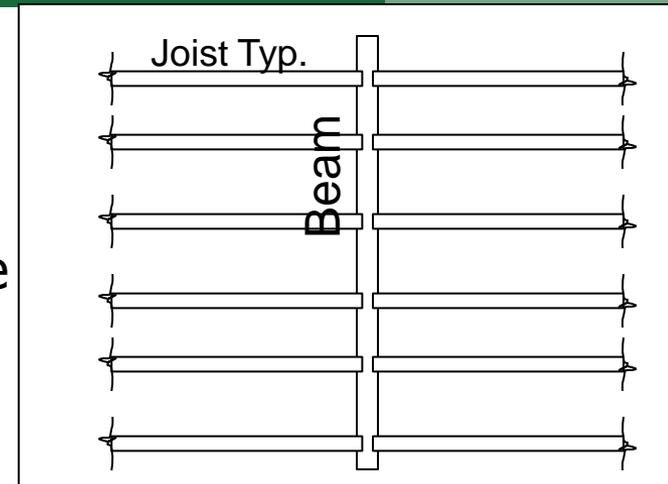
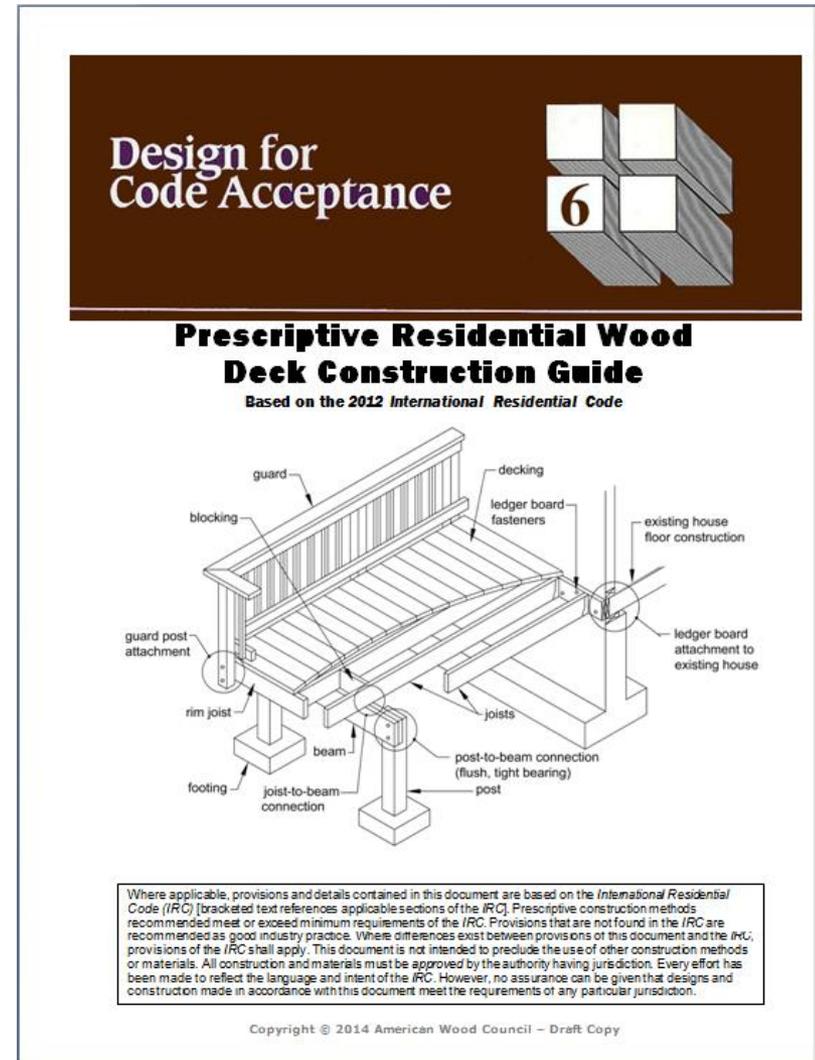


Table 3A. Dimension Lumber Deck Beam Spans (L_B)¹ for Joists Framing from One Side Only.

Species	Size ⁴	Joist Spans (L) Less Than or Equal to:						
		6'	8'	10'	12'	14'	16'	18'
Southern Pine	2-2x6	6' - 8"	5' - 8"	5' - 1"	4' - 7"	4' - 3"	4' - 0"	3' - 9"
	2-2x8	8' - 6"	7' - 4"	6' - 6"	5' - 11"	5' - 6"	5' - 1"	4' - 9"
	2-2x10	10' - 1"	8' - 9"	7' - 9"	7' - 1"	6' - 6"	6' - 1"	5' - 9"
	2-2x12	11' - 11"	10' - 4"	9' - 2"	8' - 4"	7' - 9"	7' - 3"	6' - 9"
	3-2x6	7' - 11"	7' - 2"	6' - 5"	5' - 10"	5' - 5"	5' - 0"	4' - 9"
	3-2x8	10' - 7"	9' - 3"	8' - 3"	7' - 6"	6' - 11"	6' - 5"	6' - 1"
	3-2x10	12' - 9"	11' - 0"	9' - 9"	8' - 9"	8' - 3"	7' - 8"	7' - 3"
	3-2x12	15' - 0"	13' - 0"	11' - 7"	10' - 6"	9' - 9"	9' - 1"	8' - 7"

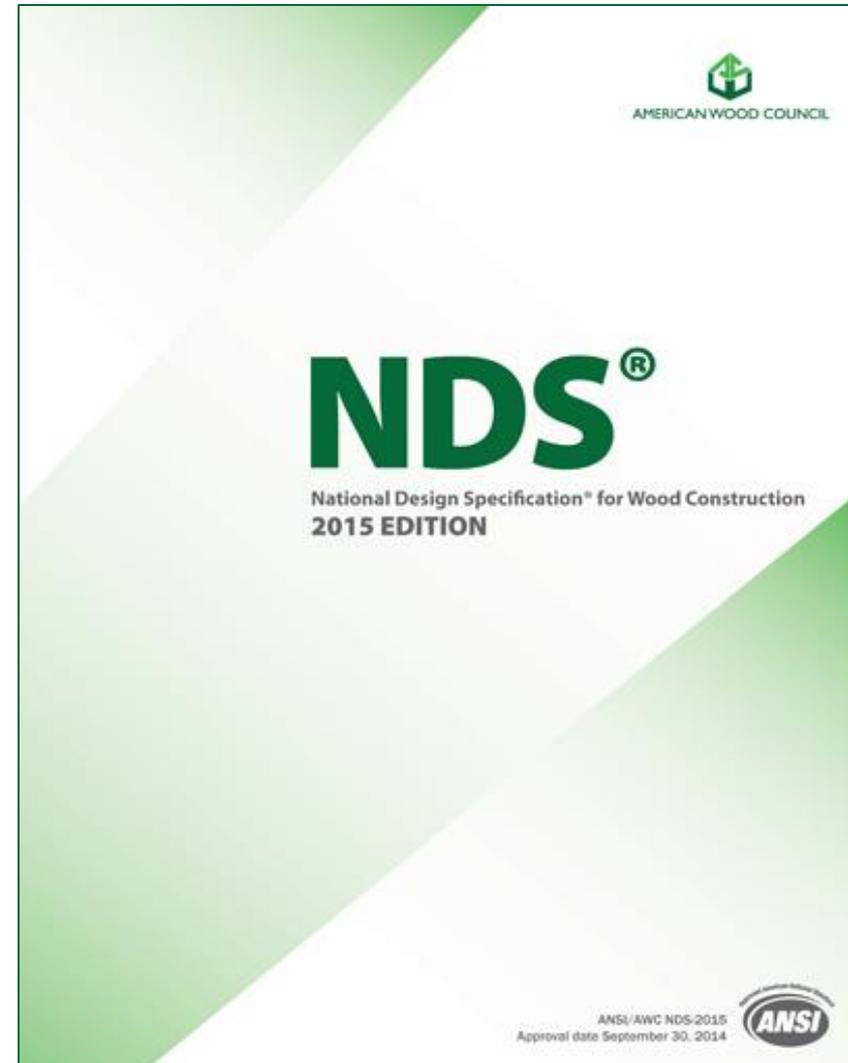
Objectives/Outline

- Identify minimum prescriptive wood deck requirements
- Describe minimum material requirements for deck construction including wood members and fasteners
- Discuss design requirements and resources if prescriptive limits are exceeded
- Provide a deck design example



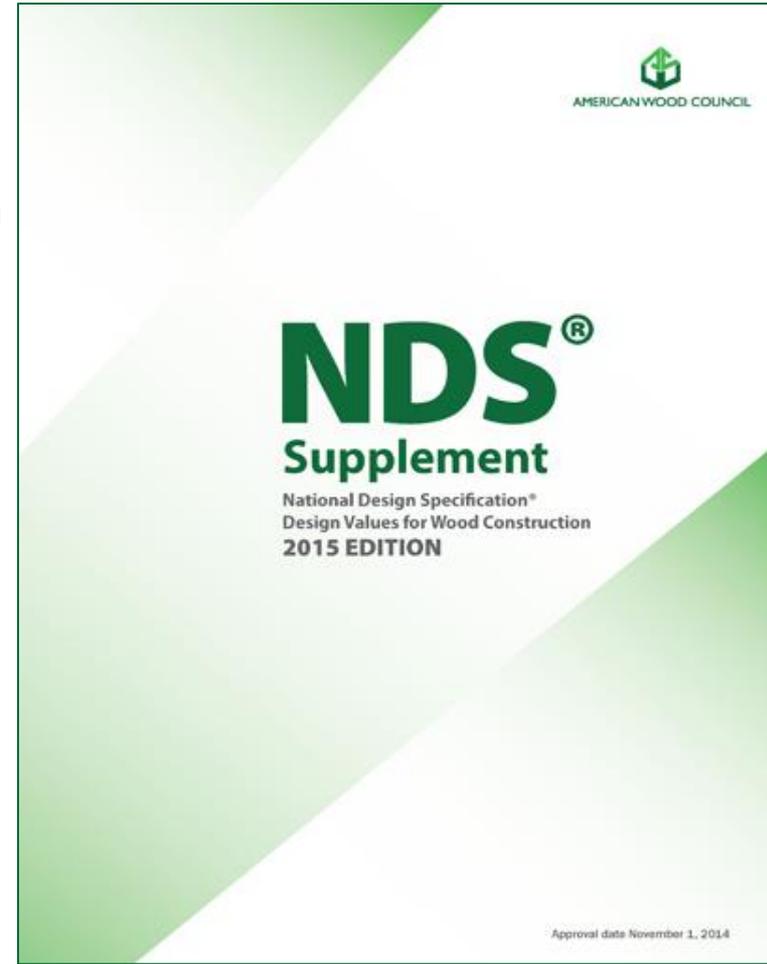
Additional Resources

- **2015 National Design Specification® (NDS®) for Wood Construction**
 - **Structural lumber**
 - Design values
 - **Column design**
 - **Beam design**
 - **Connection design**
- **Footing design**
 - **Per engineering mechanics**



Design Values

- **Structural Lumber Classifications**
- **Dimension Lumber**
 - Rectangular or square cross-section
 - 2" - 4" thick and 2" or more wide
- **Beams and Stringers**
 - Rectangular cross-section
 - 6" x 8" and larger
 - Graded for strength in bending on narrow face
- **Posts and Timbers**
 - Square or nearly square cross-section
 - 5" x 5" and larger
 - Graded for use as posts



Design Values

- Design values are assigned to predict strength and stiffness properties to meet engineering design requirements



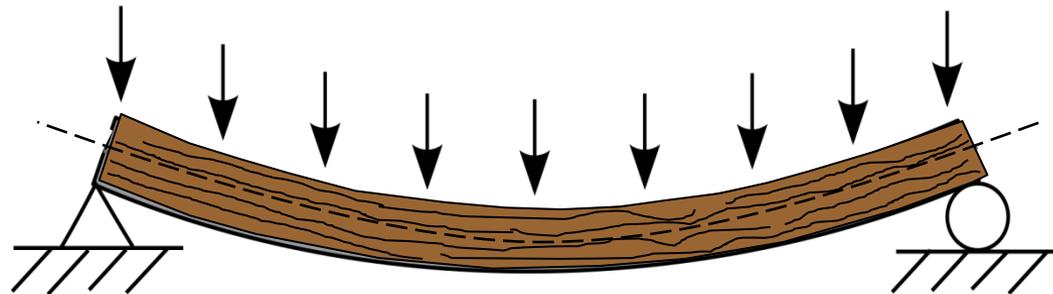
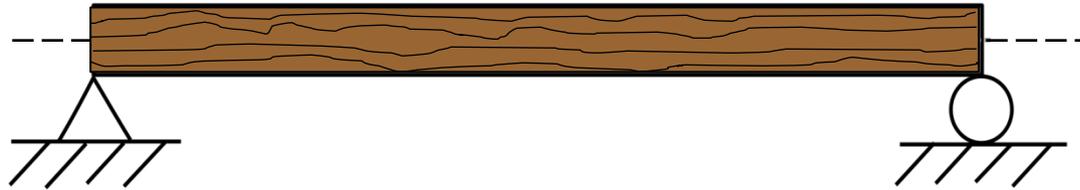
Table 4A Reference Design Values for Visually Graded Dimension Lumber (Cont.) (2" - 4" thick)^{1,2,3}

(All species except Southern Pine— see Table 4B) (Tabulated design values are for normal load duration and dry service conditions. See NDS 4.3 for a comprehensive description of design value adjustment factors.)

USE WITH TABLE 4A ADJUSTMENT FACTORS

Species and commercial grade	Size classification	Design values in pounds per square inch (psi)							Specific Gravity ⁴	Grading Rules Agency
		Bending F_b	Tension parallel to grain F_t	Shear parallel to grain F_v	Compression perpendicular to grain $F_{c\perp}$	Compression parallel to grain F_c	Modulus of Elasticity			
							E	E_{min}		
REDWOOD										
Clear Structural	2" & wider	1,750	1,000	160	650	1,850	1,400,000	510,000	0.44	RIS
Select Structural		1,350	800	160	650	1,500	1,400,000	510,000	0.44	
Select Structural, open grain		1,100	625	160	425	1,100	1,100,000	400,000	0.37	
No. 1		975	575	160	650	1,200	1,300,000	470,000	0.44	
No. 1, open grain		775	450	160	425	900	1,100,000	400,000	0.37	
No. 2		925	525	160	650	950	1,200,000	440,000	0.44	
No. 2, open grain		725	425	160	425	700	1,000,000	370,000	0.37	
No. 3		525	300	160	650	550	1,100,000	400,000	0.44	
No. 3, open grain		425	250	160	425	400	900,000	330,000	0.37	
Stud		575	325	160	425	450	900,000	330,000	0.44	
Construction	2" - 4" wide	825	475	160	425	925	900,000	330,000	0.44	
Standard		450	275	160	425	725	900,000	330,000	0.44	
Utility		225	125	160	425	475	800,000	290,000	0.44	

Design Properties - Bending

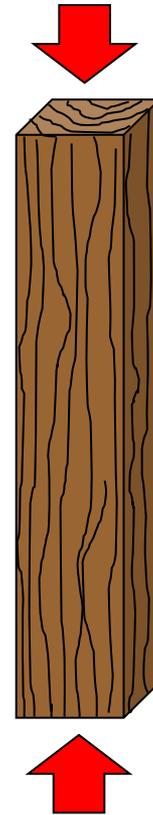


Fiber Stress in Bending F_b

Design Properties - Compression

Compression
Parallel to Grain

$$F_{c||}$$



Lumber Adjustment Factors

Most common adjustment factors for decks

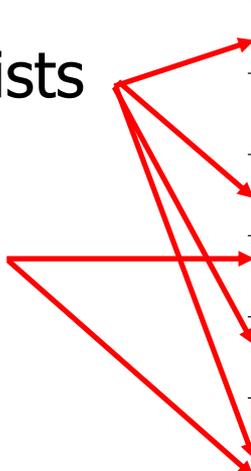
Table 4.3.1 Applicability of Adjustment Factors for Sawn Lumber

	ASD only	ASD and LRFD											LRFD only			
		Load Duration Factor	Wet Service Factor	Temperature Factor	Beam Stability Factor	Size Factor	Flat Use Factor	Incising Factor	Repetitive Member Factor	Column Stability Factor	Buckling Stiffness Factor	Bearing Area Factor	Format Conversion Factor	Resistance Factor	Time Effect Factor	
													K_F	ϕ		
Beams/Joists	$F_b' = F_b$	X	C_D	C_M	C_t	C_L	C_F	C_{fu}	C_i	C_r	-	-	-	2.54	0.85	λ
	$F_t' = F_t$	X	C_D	C_M	C_t	-	C_F	-	C_i	-	-	-	-	2.70	0.80	λ
	$F_v' = F_v$	X	C_D	C_M	C_t	-	-	-	C_i	-	-	-	-	2.88	0.75	λ
Columns	$F_c' = F_c$	X	C_D	C_M	C_t	-	C_F	-	C_i	-	C_p	-	-	2.40	0.90	λ
	$F_{c\perp}' = F_{c\perp}$	X	-	C_M	C_t	-	-	-	C_i	-	-	-	C_b	1.67	0.90	-
	$E' = E$	X	-	C_M	C_t	-	-	-	C_i	-	-	-	-	-	-	-
	$E_{min}' = E_{min}$	X	-	C_M	C_t	-	-	-	C_i	-	-	C_T	-	1.76	0.85	-



Beams/Joists

Columns



Load Duration Factors

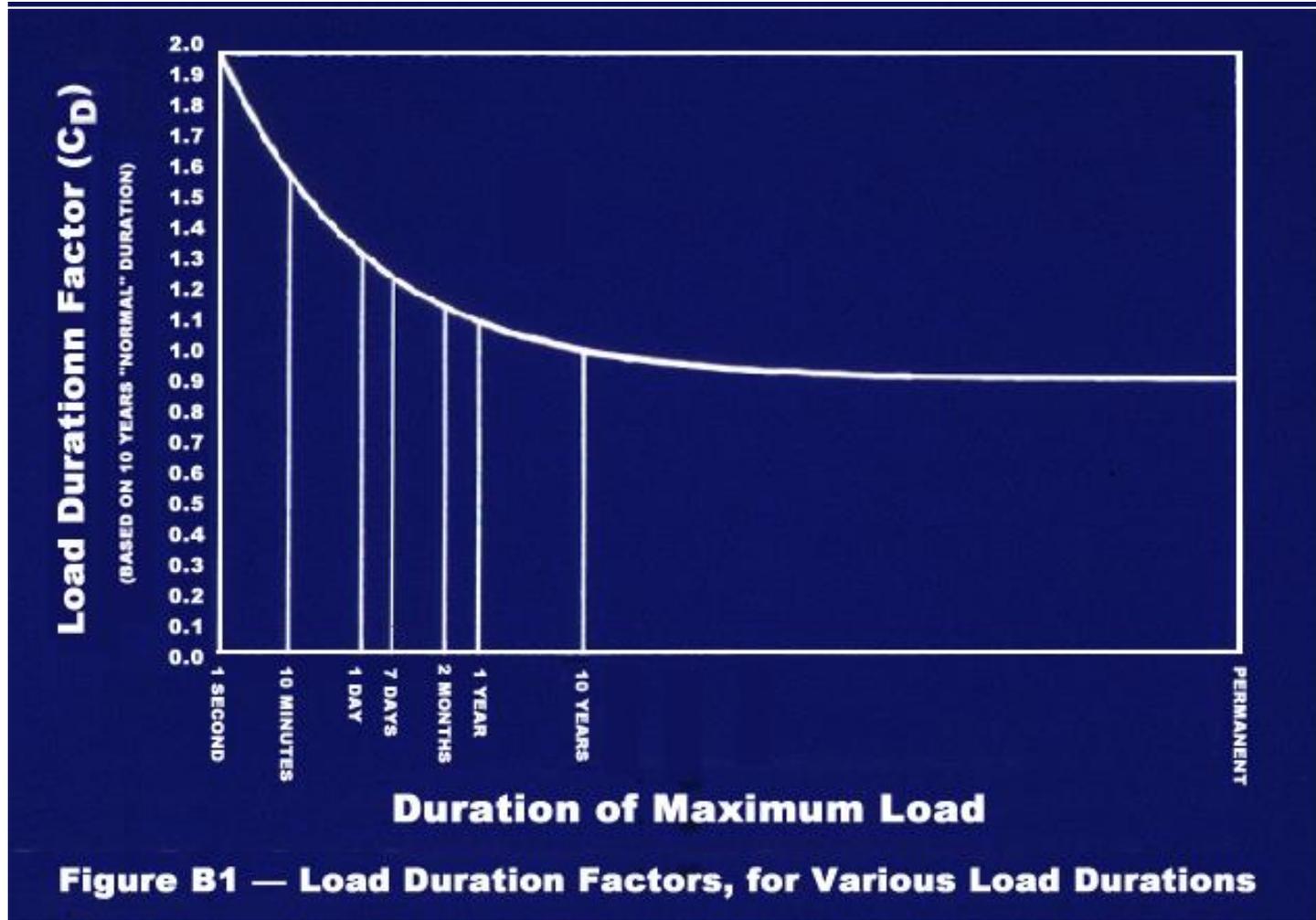
Assumption for
decks is
occupancy live
load

Table 2.3.2 Frequently Used Load Duration Factors, C_D ¹

Load Duration	C_D	Typical Design Loads
Permanent	0.9	Dead Load
Ten years	1.0	Occupancy Live Load
Two months	1.15	Snow Load
Seven days	1.25	Construction Load
Ten minutes	1.6	Wind/Earthquake Load
Impact ²	2.0	Impact Load

1. Load duration factors shall not apply to reference modulus of elasticity, E , reference modulus of elasticity for beam and column stability, E_{min} , nor to reference compression perpendicular to grain design values, $F_{c\perp}$, based on a deformation limit.
2. Load duration factors greater than 1.6 shall not apply to structural members pressure-treated with water-borne preservatives (see Reference 30), or fire retardant chemicals. The impact load duration factor shall not apply to connections.

Load Duration Curve



Size Adjustment Factor

Common for joists/beams

Size Factors, C_F

Grades	Width (depth)	F_b		F_t	F_c
		Thickness (breadth)			
		2" & 3"	4"		
Select Structural, No.1 & Btr, No.1, No.2, No.3	2", 3", & 4"	1.5	1.5	1.5	1.15
	5"	1.4	1.4	1.4	1.1
	6"	1.3	1.3	1.3	1.1
	8"	1.2	1.3	1.2	1.05
	10"	1.1	1.2	1.1	1.0
	12"	1.0	1.1	1.0	1.0
	14" & wider	0.9	1.0	0.9	0.9
Stud	2", 3", & 4"	1.1	1.1	1.1	1.05
	5" & 6"	1.0	1.0	1.0	1.0
	8" & wider	Use No.3 Grade tabulated design values and size factors			
Construction, Standard	2", 3", & 4"	1.0	1.0	1.0	1.0
Utility	4"	1.0	1.0	1.0	1.0
	2" & 3"	0.4	—	0.4	0.6

Repetitive Member Factor, C_r

- 2"- 4" dimension lumber
- 24" o.c. or less
- 3 or more members
- Load distributing element
- Applies to Fb

- For decks
 - Joists
 - Built-up beams

$$C_r = 1.15$$



Wet Service Factor, C_M

F_b	F_t	F_v	$F_{c\perp}$	F_c	E and E_{\min}
0.85*	1.0	0.97	0.67	0.8**	0.9

* when $(F_b)(C_F) \leq 1,150$ psi, $C_M = 1.0$

** when $(F_c)(C_F) \leq 750$ psi, $C_M = 1.0$

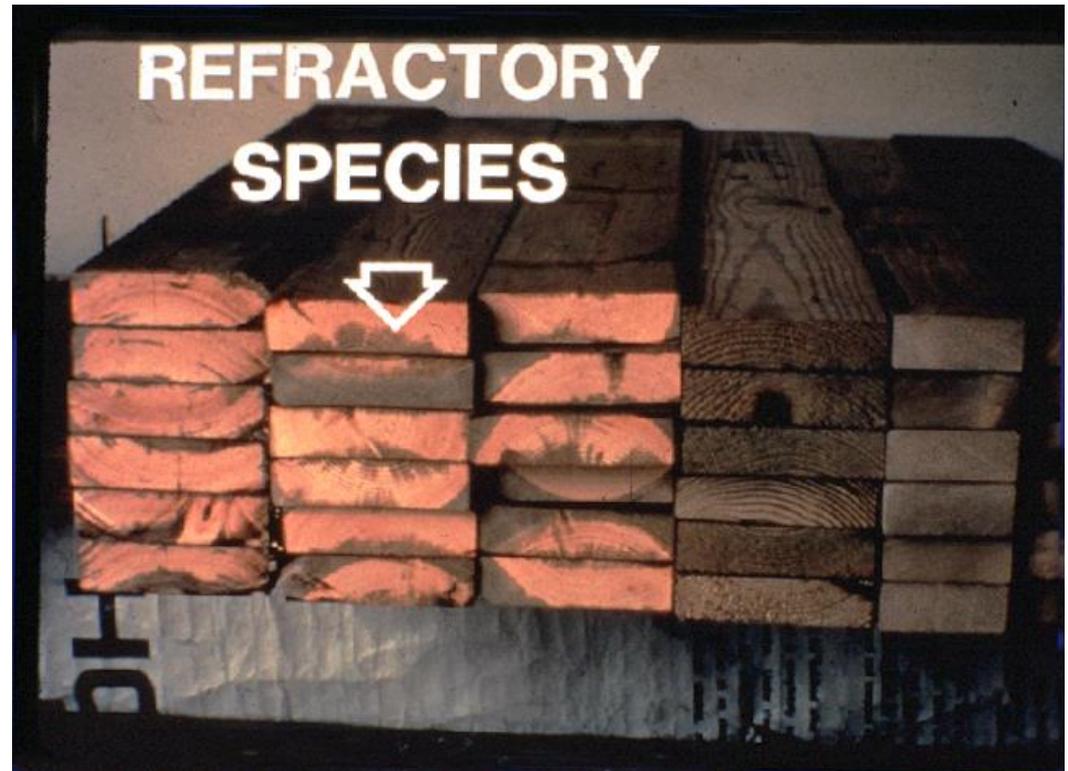
Note the adjustment is
unity if:

$$F_b C_F \leq 1150 \text{ psi}$$



Incising Factor, C_i

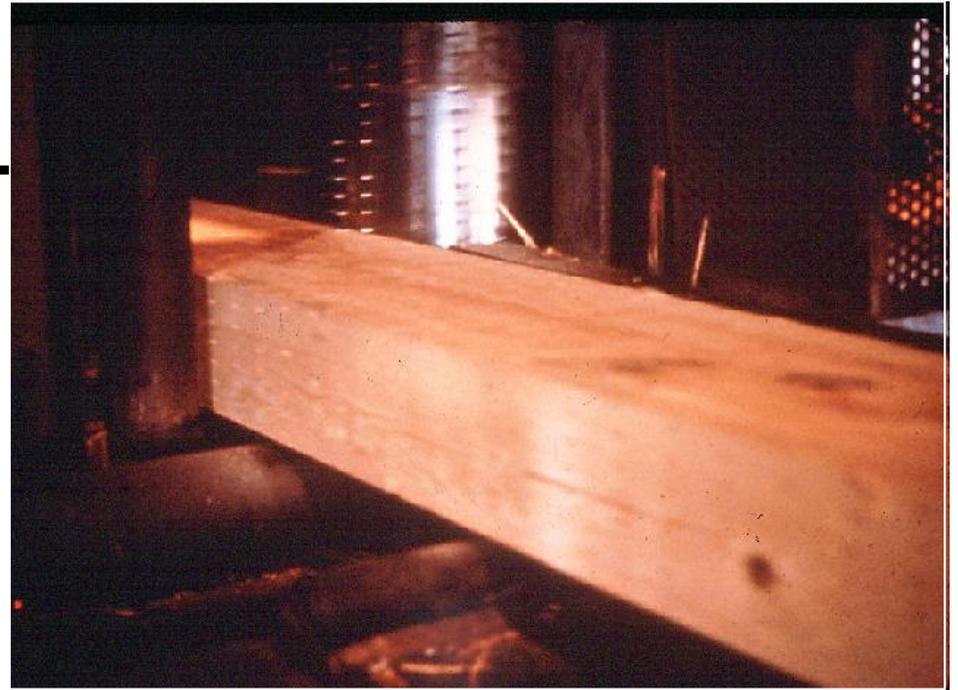
- **Sawn Lumber - Refractory Species**
- **Increase Preservative Penetration**
- **0.4" Depth**
- **3/8" Length**
- **1100 teeth / ft² density**



Incising Factor, C_i

Table 4.3.8 Incising Factors, C_i

Design Value	C_i
E, E_{\min}	0.95
F_b, F_t, F_c, F_v	0.80
$F_{c\perp}$	1.00



Adjustment Factors - Example

- **No. 2 grade, 2x8 Hem Fir deck joist, 16" o.c., incised, wet use, tabulated Fb = 850 psi**

- **CF = 1.2**
- **CM = 1.0**
- **Ci = 0.80**
- **Cr = 1.15**

- **Allowable Fb' is:**

- **$850(1.2)(1.0)(0.80)(1.15) = 938$ psi**

- **Used to calculate joist spans**

Table 2. Maximum Joist Spans (L_j)¹

Species	Size	Joist Spacing (o.c.)		
		12"	16"	24"
Southern Pine	2x8	10' - 6"	10' - 6"	10' - 2"
	2x10	15' - 2"	15' - 2"	13' - 1"
	2x12	18' - 0"	18' - 0"	15' - 5"
Douglas Fir-Larch, Hem-Fir, SPF ²	2x8	9' - 3"	9' - 3"	9' - 1"
	2x10	13' - 4"	13' - 4"	11' - 1"
	2x12	17' - 10"	15' - 9"	12' - 10"
Redwood, Western Cedars, Ponderosa Pine ³ , Red Pine ³	2x8	8' - 4"	8' - 4"	8' - 4"
	2x10	12' - 0"	12' - 0"	10' - 7"
	2x12	16' - 1"	15' - 1"	12' - 3"

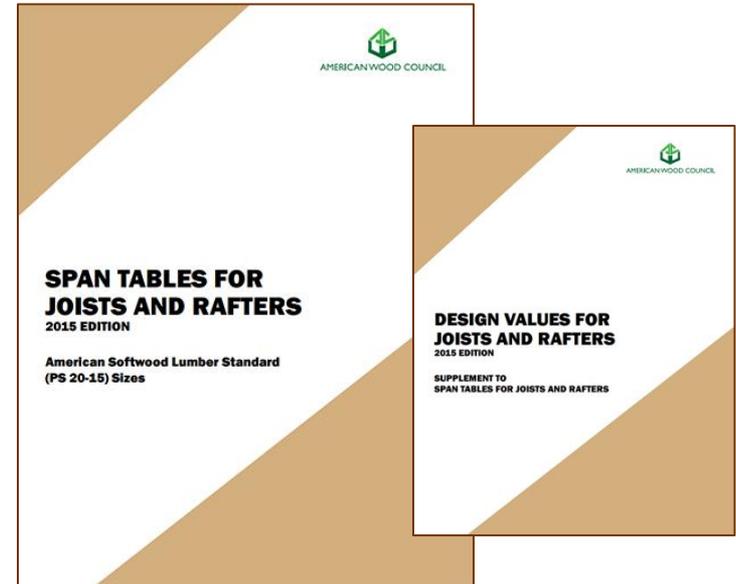
1. Assumes 40 psf live load, 10 psf dead load, L/180 cantilever deflection with 230 lb point load, No. 2 grade, and wet service conditions. See span calculator at www.awc.org for simple span conditions without cantilevers.

2. Incising assumed for refractory species including Douglas fir-larch, hem-fir, and spruce-pine-fir.

3. Design values based on northern species with no incising assumed.

Span Tables for Joists and Rafters

- **Floors, ceilings, rafters**
- **Loads**
 - **Dead loads - 5, 10, & 20 psf**
 - **Live loads - 20, 30, 40, 50, & 60 psf**
 - **Deflection criteria**
 - L/180, L/240, & L/360
 - Adjustment factors for L/480 & L/600
- **Design value adjustments**
 - **Size factor**
 - **Repetitive member**
 - **Load duration**
 - **Wet service**
 - **Incising**
- **Free at www.awc.org**
- **Span table tutorial**
www.awc.org/technical/spantables/tutorial.php



Understanding Loads and Using Span Tables

revised and reprinted with kind permission from Paul Fisette

Using span tables to size joists and rafters is a straight-forward process when you understand the structural principles that govern their use.

by Paul Fisette
© 1997

Span Calculator

- AWC Online Span Calculator – www.awc.org
- Simple spans (no cantilever)
- Uniform loads
- Wet service conditions
- Incising factor

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AMERICAN WOOD COUNCIL 100 YEARS BUSINESS GOLD 1918-2018 100 YEARS GOLD 1918-2018

Species	Southern Pine
Size	2x10
Grade	No. 2 (Eff. 6/1/13)
Member Type	Floor Joists
Deflection Limit	L/360
Spacing (in)	16
Exterior Exposure	Wet service conditions?
	Yes
Exterior Exposure	Incised lumber?
	No
Live Load (psf)	40
Dead Load (psf)	10

Calculate Maximum Horizontal Span

The Maximum Horizontal Span is:

14 ft. 0 in.

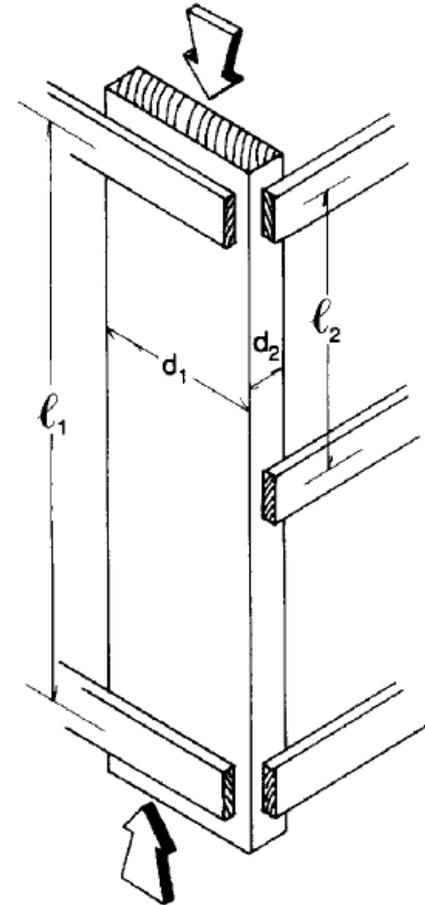
with a minimum bearing length of **0.82 in.** required at each end of the member.

Property	Value
Species	Southern Pine
Grade	No. 2 (Eff. 6/1/13)
Size	2x10
Modulus of Elasticity (E)	1260000 psi
Bending Strength (F_b)	920 psi
Bearing Strength (F_{cp})	378.55 psi
Shear Strength (F_v)	169.75 psi

Column Design

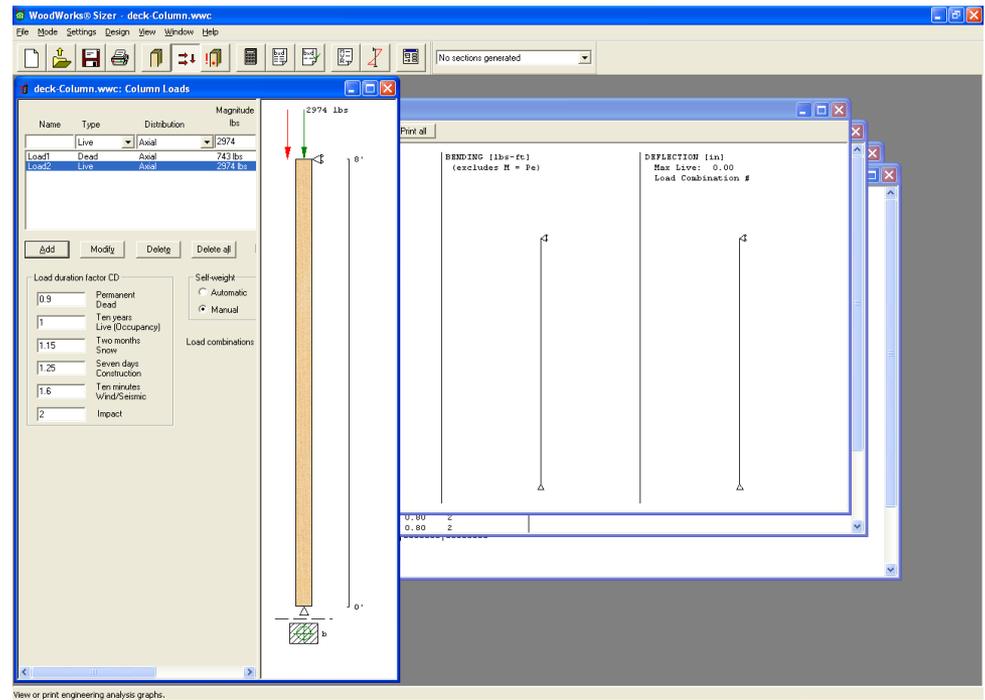
- **Columns and posts must be designed for stability and load carrying capacity**
 - Tributary area
 - Floor/deck load
 - Column or post length (height)
- **Design of solid columns with unbraced lengths in either the strong or weak axis requires buckling analysis in accordance with NDS 3.7**

Figure 3F Simple Solid Column



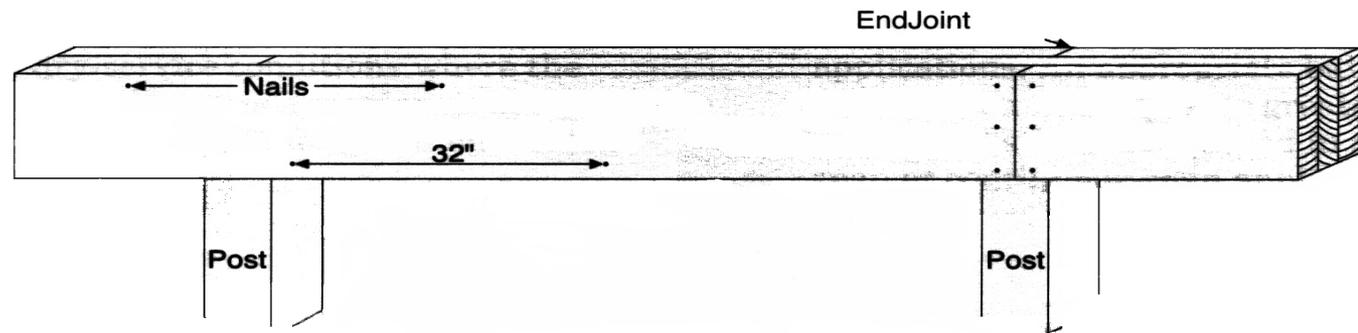
Post Height for DCA 6

- **6x6 minimum**
- **8x8 Alternate**
 - **DCA 6 Commentary**
 - **14' max. height**



Beam/Joist Design

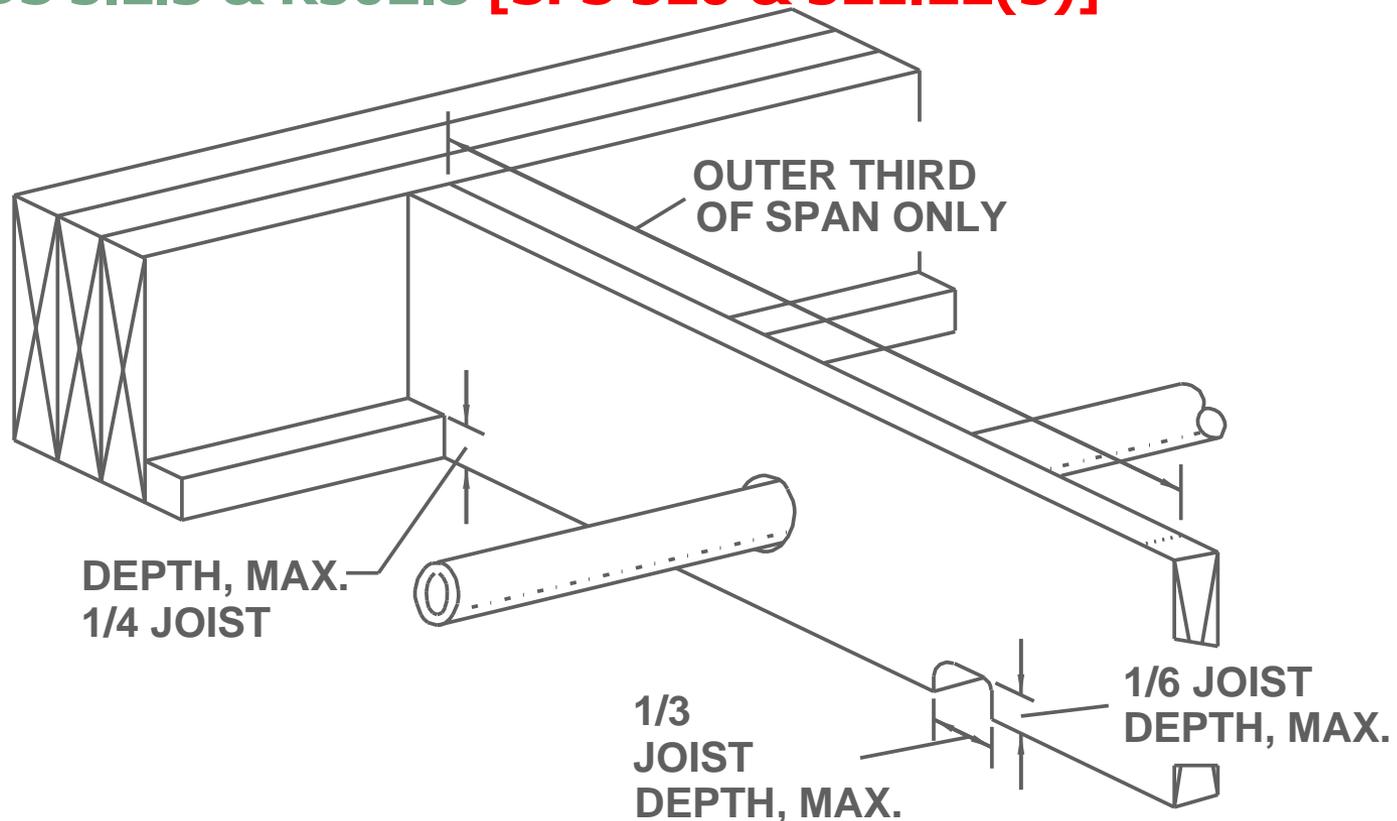
- **Beam/Joist Spans are based on**
 - Species and grade of lumber
 - Cross-sectional size of beam
 - Tributary load it supports
- **Design Considerations**
 - Bending
 - Shear
 - Deflection
 - Bearing



Joist/Beam Design - Notches

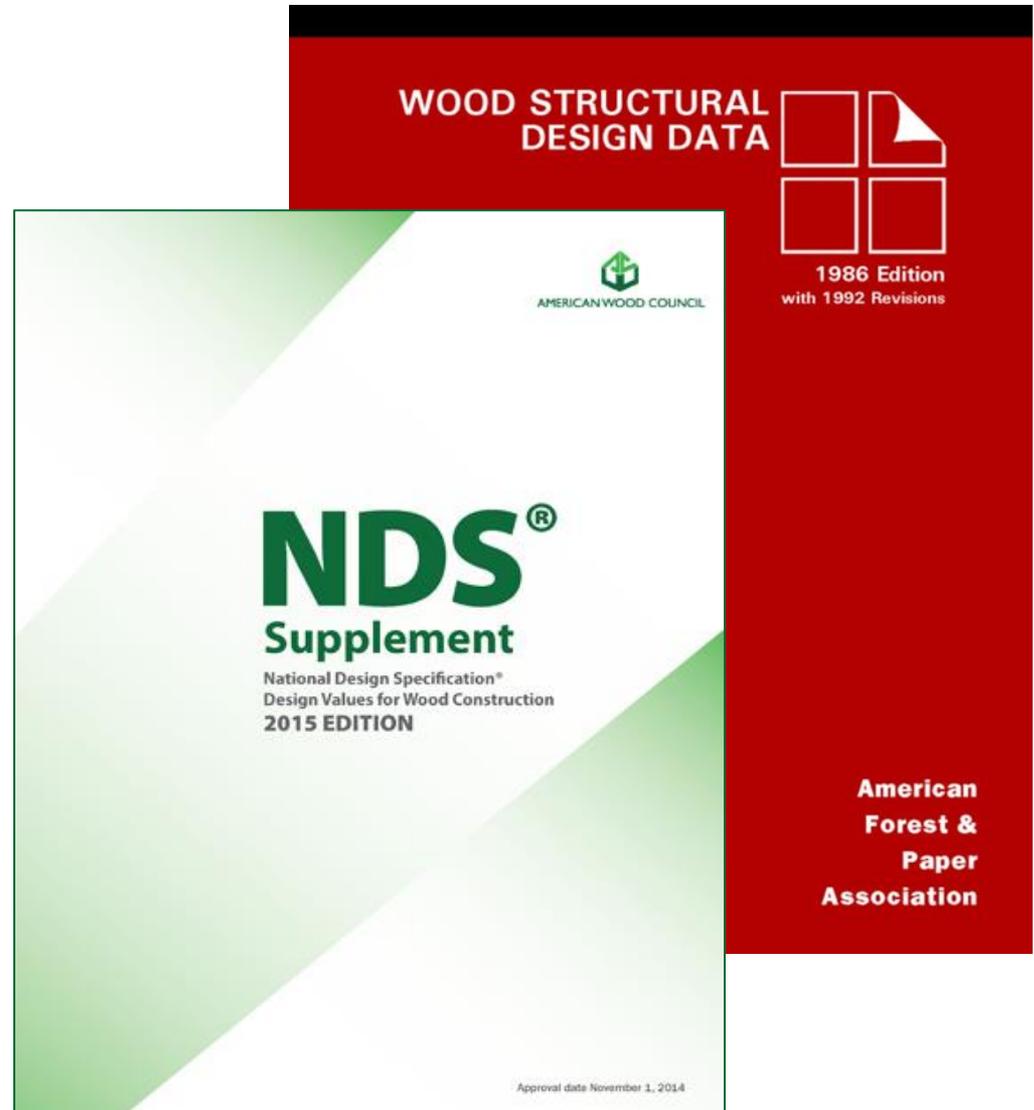
- **Notching Provisions – Sawn Lumber**

- **NDS 3.2.3 & R502.8 [SPS 320 & 321.22(5)]**



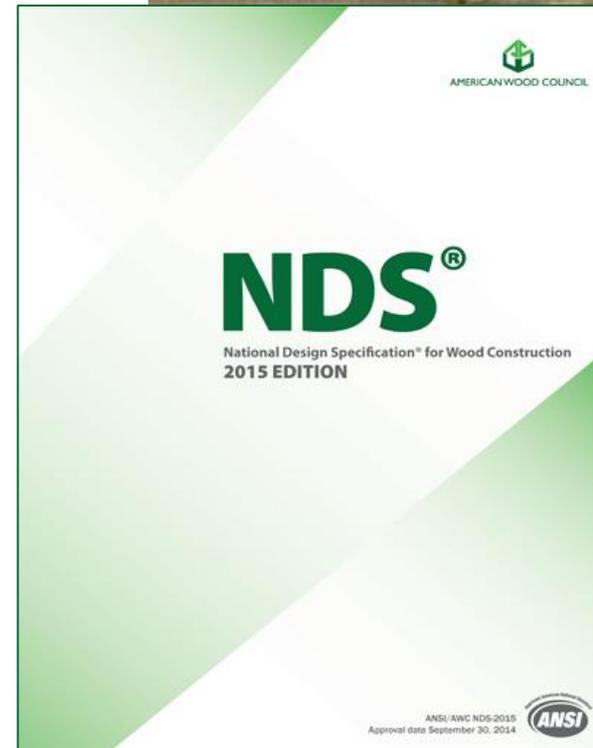
Column and Beam Design

- **Tables simplify process**
- **Wood Structural Design Data (WSDD)**
 - Column load tables
 - Beam load tables
 - Requires adjusted design values
- **Free at www.awc.org**



Connection Design

- NDS design values
 - Equations
 - Tables
 - Penetration
 - Spacing, end, and edge distance
 - Tension perpendicular to grain
- Materials
 - Wood to wood
 - Wood to steel
 - Wood to concrete



NDS Capacity Tables

LAG SCREWS

Table 12J LAG SCREWS: Reference Lateral Design Values, Z, for Single Shear (two member) Connections^{1,2,3,4}

for sawn lumber or SCL with both members of identical specific gravity
(tabulated lateral design values are calculated based on an assumed length of lag screw penetration, p, into the main member equal to 8D)



Side Member Thickness t_s in.	Lag Screw Diameter D in.	G=0.67 Red Oak				G=0.55 Mixed Maple Southern Pine				G=0.50 Douglas Fir-Larch				G=0.49 Douglas Fir-Larch(N)				G=0.46 Douglas Fir(S) Hem-Fir(N)			
		$Z_{ }$ lbs.	Z_{sL} lbs.	Z_{mL} lbs.	Z_{\perp} lbs.	$Z_{ }$ lbs.	Z_{sL} lbs.	Z_{mL} lbs.	Z_{\perp} lbs.	$Z_{ }$ lbs.	Z_{sL} lbs.	Z_{mL} lbs.	Z_{\perp} lbs.	$Z_{ }$ lbs.	Z_{sL} lbs.	Z_{mL} lbs.	Z_{\perp} lbs.	$Z_{ }$ lbs.	Z_{sL} lbs.	Z_{mL} lbs.	Z_{\perp} lbs.
1/2	1/4	150	110	110	110	130	90	100	90	120	90	90	80	120	90	90	80	110	80	90	80
	5/16	170	130	130	120	150	110	120	100	150	100	110	100	140	100	110	90	140	100	100	90
	3/8	180	130	130	120	160	110	110	100	150	100	110	90	150	90	110	90	140	90	100	90
5/8	1/4	160	120	130	120	140	100	110	100	130	90	100	90	130	90	100	90	120	90	90	80
	5/16	190	140	140	130	160	110	120	110	150	110	110	100	150	100	110	100	150	100	110	90
	3/8	190	130	140	120	170	110	120	100	160	100	110	100	160	100	110	90	150	100	110	90
3/4	1/4	180	140	140	130	150	110	120	110	140	100	110	100	140	100	110	90	130	90	100	90
	5/16	210	150	160	140	180	120	130	120	170	110	120	100	160	110	120	100	160	100	110	100
	3/8	210	140	160	130	180	120	130	110	170	110	120	100	170	110	120	100	160	100	110	90
1	1/4	180	140	140	140	160	120	120	120	150	120	120	110	150	110	110	110	150	110	110	100
	5/16	230	170	170	160	210	140	150	130	190	130	140	120	190	120	140	120	180	120	130	110
	3/8	230	160	170	160	210	130	150	120	200	120	140	110	190	120	140	110	180	110	130	100
1-1/4	1/4	180	140	140	140	160	120	120	120	150	120	120	110	150	110	110	110	150	110	110	100
	5/16	230	170	170	160	210	150	150	140	200	140	140	130	200	140	140	130	190	130	140	120
	3/8	230	170	170	160	210	150	150	140	200	140	140	130	200	130	140	120	190	120	140	120
1-1/2	1/4	180	140	140	140	160	120	120	120	150	120	120	110	150	110	110	110	150	110	110	100
	5/16	230	170	170	160	210	150	150	140	200	140	140	130	200	140	140	130	190	140	140	130
	3/8	230	170	170	160	210	150	150	140	200	140	140	130	200	140	140	130	190	140	140	120

NDS Connection Calculator

- Single fasteners
- All 6 yield modes
- ASD and LRFD
- Free at www.awc.org

Connection Yield Modes

Im	726 lbs.
Is	311 lbs.
II	271 lbs.
III _m	335 lbs.
III _s	199 lbs.
IV	247 lbs.

Adjusted ASD Capacity	199 lbs.
------------------------------	-----------------

- Bolt bending yield strength of 45,000 psi is assumed.
- The Adjusted ASD Capacity is only applicable for bolts with adequate end distance, edge distance and spacing per NDS chapter 11.



Design Method	Allowable Stress Design (ASD)
Connection Type	Lateral loading
Fastener Type	Bolt
Loading Scenario	Single Shear - Wood Main Member
<input type="button" value="Submit Initial Values"/>	

Main Member Type	Redwood (open grain)
Main Member Thickness	3.5 in.
Main Member: Angle of Load to Grain	0
Side Member Type	Redwood (open grain)
Side Member Thickness	1.5 in.
Side Member: Angle of Load to Grain	0
Fastener Diameter	1/2 in.
Load Duration Factor	C _D = 1.0
Wet Service Factor	C _M = 0.4
Temperature Factor	C _t = 1.0

Calculate Connection Capacity

Connection Yield Mode Descriptions

Limits of Use

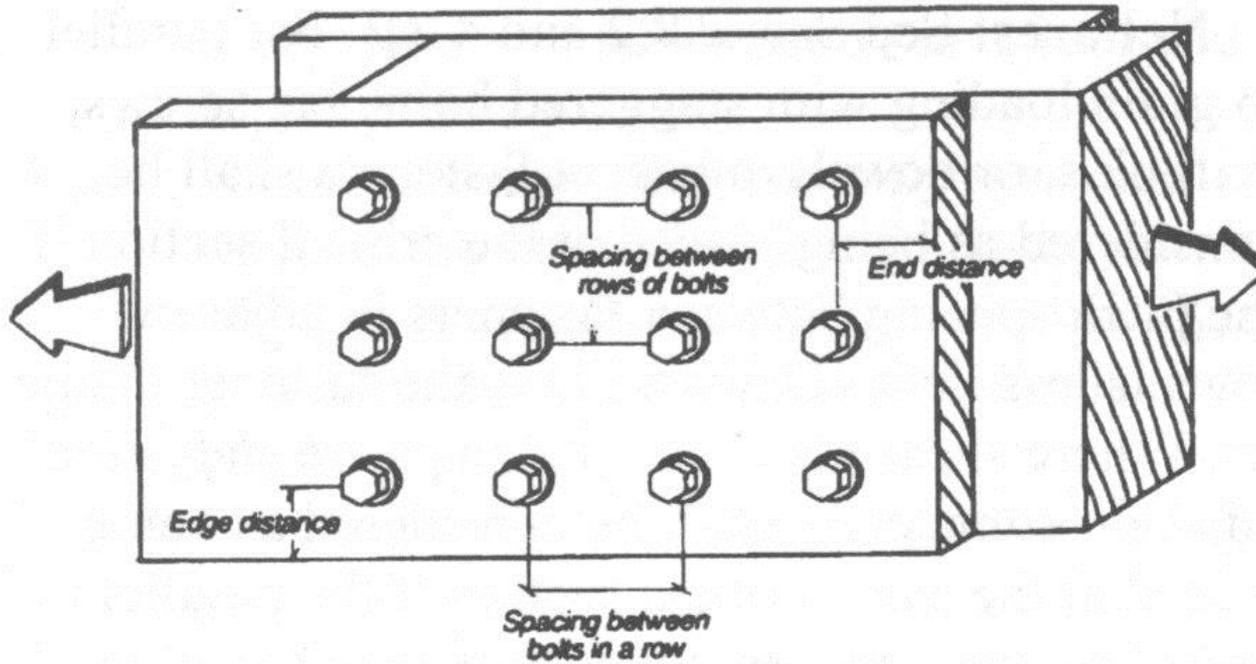
[Diaphragm Factor Help](#)

[Load Duration Factor Help](#)

[Technical Help](#)

[Show Printable View](#)

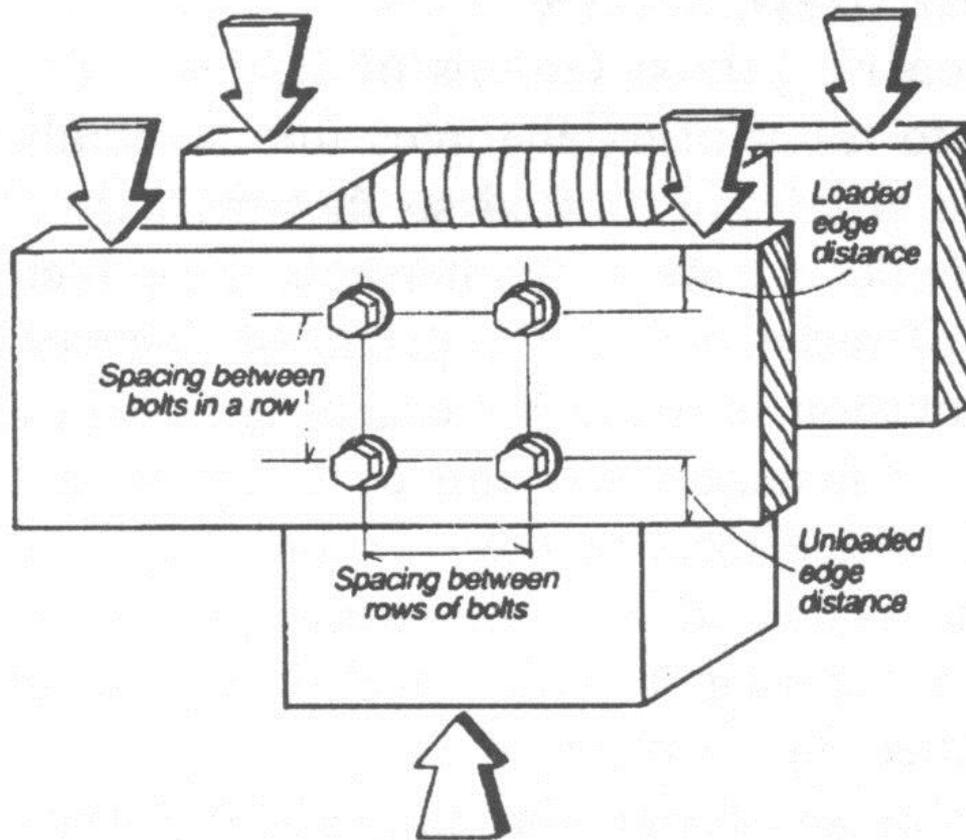
Spacing, End, & Edge Distances



Parallel to
Grain

Parallel to grain loading

Spacing, End, & Edge Distances

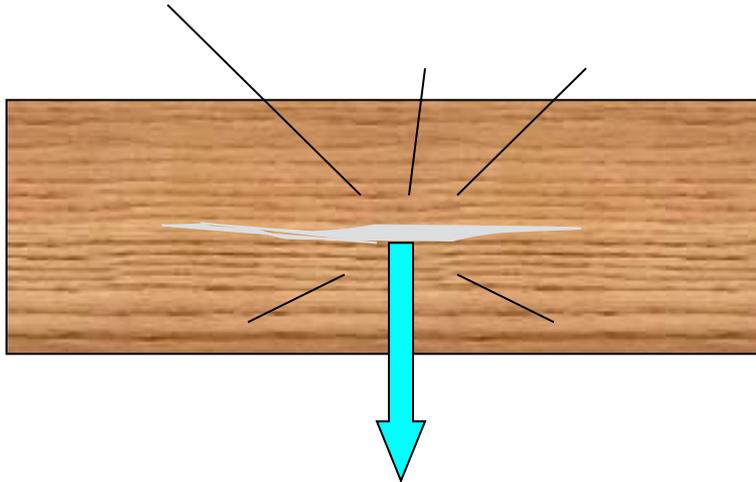


Perpendicular to grain loading

**Perpendicular
to Grain**

Connecting Wood

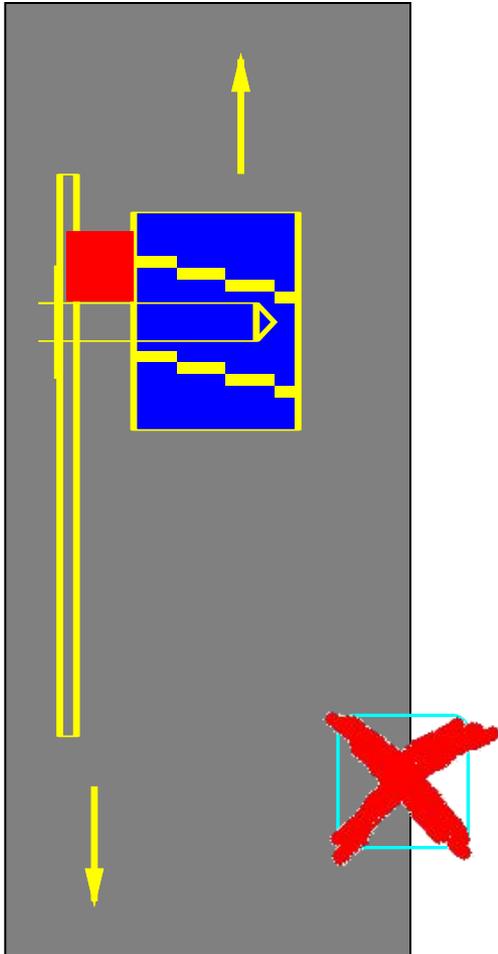
- **Tension perpendicular to grain**
 - **Achilles heel of wood connections**



initiators:

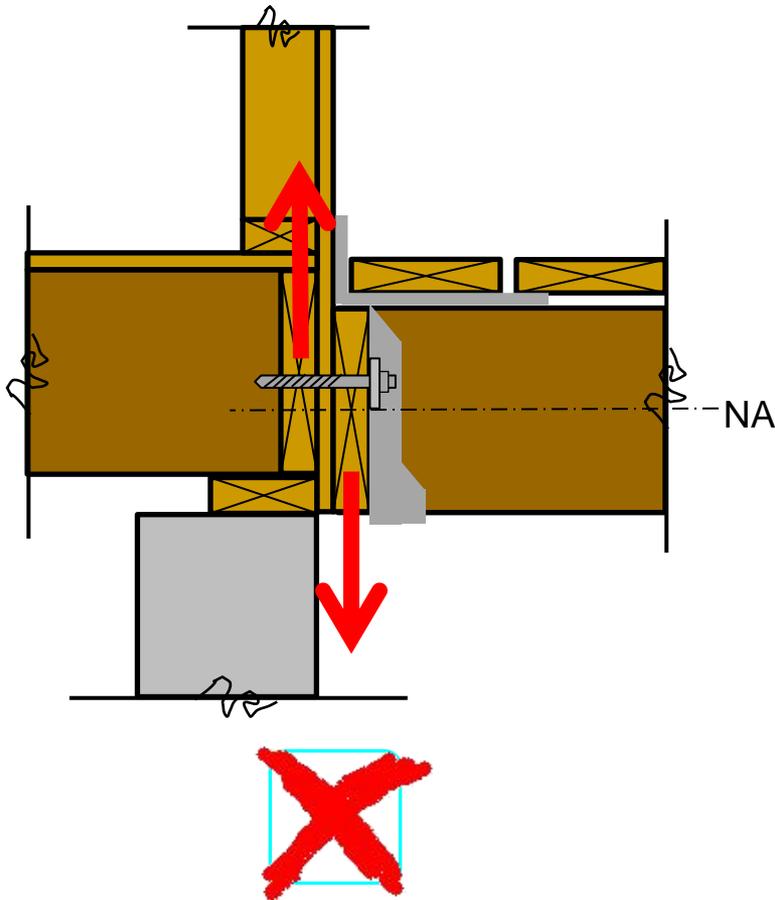
- notches
- large diameter fasteners
- hanging loads
- shrinkage

Tension Perpendicular-to-Grain



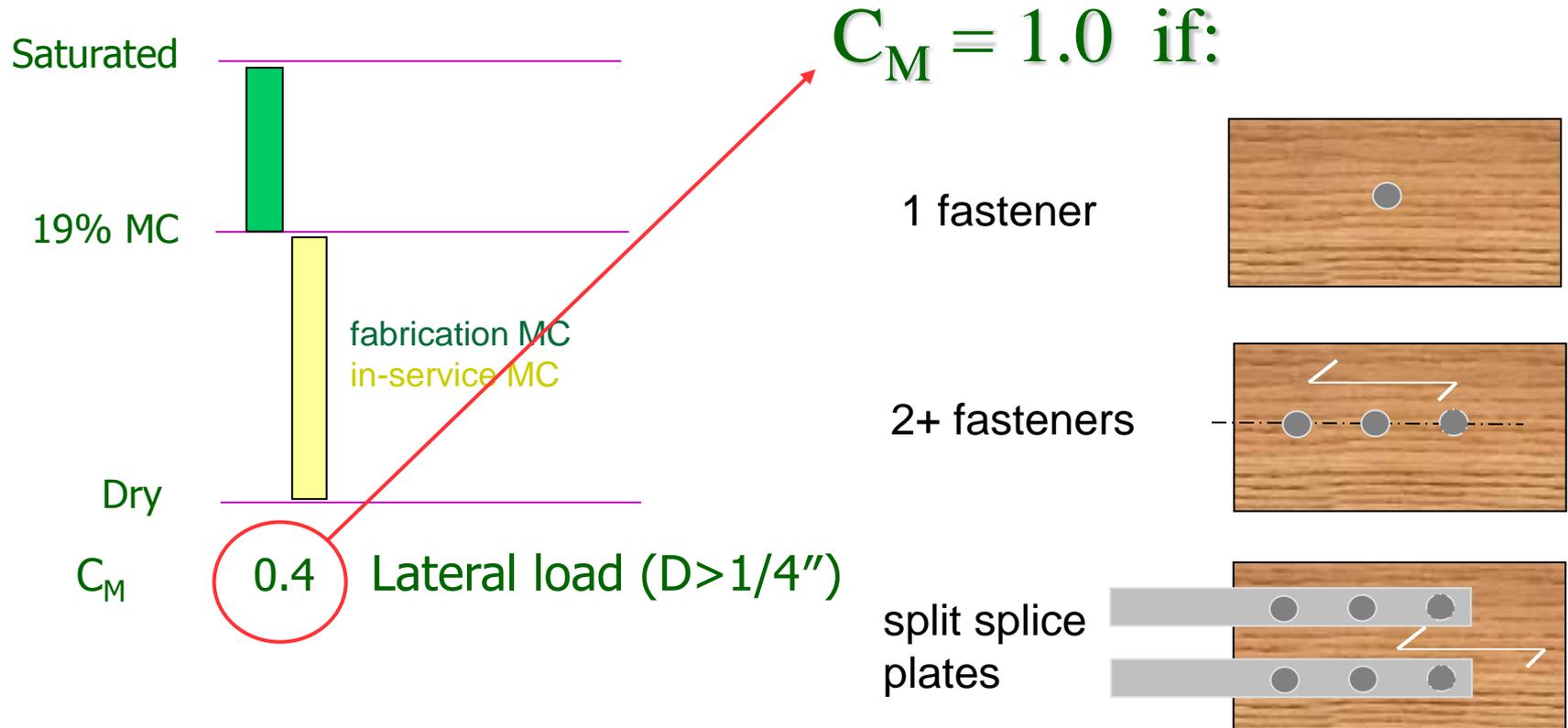
- **NDS Table 12.5.1C**
 - **Footnote 2**
 - **Restricts loading the tension zone**
 - **Applies to ledgers if constructed with a single row of fasteners as shown**

Tension Perpendicular-to-Grain



- **NDS Table 12.5.1C**
 - Footnote 2
 - Restricts loading the tension zone
 - Applies to ledgers if constructed with a single row of fasteners as shown

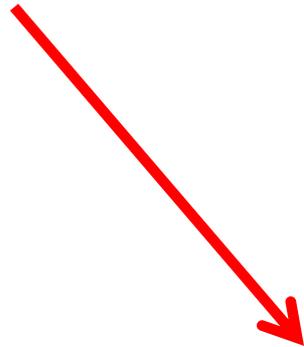
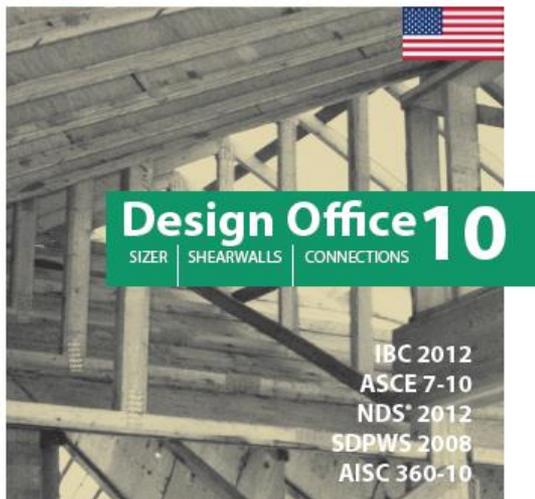
Wet Service Factor, C_M



Resources

Free to Code Officials

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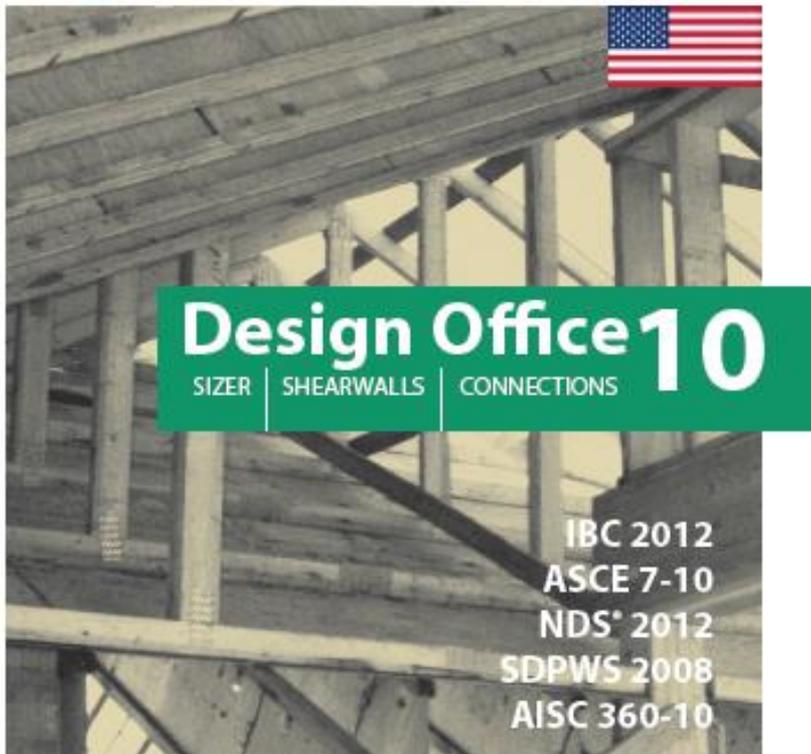
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The image shows a vertical stack of software modules from the Design Office SUITE. Each module is represented by a small image and a text label with a logo icon.

- Design Office SUITE** (Header)
- SIZER Gravity Design**: Icon shows a building with downward arrows.
- SHEARWALLS Lateral Design**: Icon shows a building with lateral arrows.
- CONNECTIONS Fasteners**: Icon shows a close-up of a wood joint with fasteners.
- DATABASE EDITOR**: Icon shows a software interface with a $\sqrt{2 \times 4}$ label.
- WOOD STANDARDS**: Icon shows a PDF document with the Adobe logo.

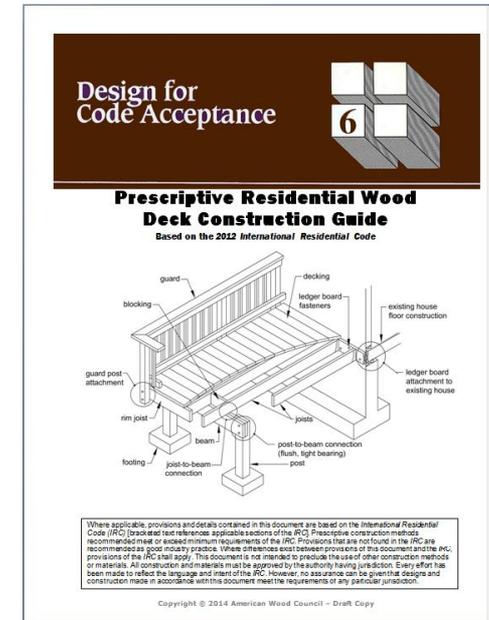
Resources

- DCA6 Deck Guide

www.awc.org/publications/DCA/DCA6/DCA6-12.pdf

- DCA6 Presentation

www.awc.org/pdf/education/20140522_webinar_dca6_2012irc_version.pdf



Resources

- Wood Design Focus
 - Deck Issue
 - www.forestprod.org/



Figure 2. Cyclic Loading Caused by Occupants Swaying Side to Side in Unison

**A JOURNAL OF
CONTEMPORARY
WOOD ENGINEERING**

Volume 23, Number 2 Summer 2013

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Downloads

AWC DCA6 Deck Guide

www.awc.org/publications/DCA/DCA6/DCA6-12.pdf

AWC DCA6 Presentation

www.awc.org/pdf/education/20140522_webinar_dca6_2012ircversion.pdf

AWC DCA6 One-Pager to Post to Website

www.awc.org/pdf/DCA6-ResidentialDeckGuide-2012-onepager.pdf

Forest Products Society - Wood Design Focus

www.forestprod.org

Questions



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Questions



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2016 Winter Updates

2016 Winter Updates

DECK CODE UPDATES

SPS 321.225

APPENDIX B

APPENDIX C

Supplemental Information

SPS 321.225 (1)

Decks attached to dwellings and any detached decks that serve an exit shall comply with appropriate provisions of Subchs. II to X of SPS 321, including all of the following:

SPS 321.225 (1) Decks

- (a) Excavation requirements
- (b) Footing requirements
- (c) Frost penetration requirements
- (d) Load requirements
- (e) Stair, handrail and guard requirements
- (f) Decay protection requirements

Decks (p. 3 continued)

SPS 321.225(2)

A deck that complies with the standards in ch. SPS 325 Appendix B and ch. SPS Appendix C, *if applicable*, shall be considered as complying with sub. (1).

321.24(3)(d)8. New Flashing Requirements

SPS 321.24 (3) (d) 8. Along the bottom of door openings that are elevated above-grade.

Note: Flashing placed along the bottom of a door opening that is elevated above-grade can subsequently accommodate adding a deck outside the door.

Decks (continued)

Appendix B = DCA 6

James B. Smith, P.E.

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WOOD PRESERVATIVES

APPENDIX C (P. 28)

Ground Contact Table C - 1

Retention Levels in lbs/ft³

Southern Pine	.40 ACQ
DF-L	.40 ACQ
Hem-Fir	.40 ACQ
Ponderosa Pine	.40 ACQ
Red Pine	.40 ACQ

Use Correct Treatment for Actual Conditions

What About Other Conditions?

* Excerpt from AWPA U1-11 Copyright 2011 AWPA, All rights reserved

Use Category	Service Conditions	Typical Applications
UC1™	Interior construction Above Ground Dry	Interior construction and furnishings
UC2™	Interior construction Above Ground Damp	Interior construction
UC3B™	Exterior construction Above Ground Uncoated or poor water runoff	Decking, deck joists, railings, fence pickets, uncoated millwork
UC4A™	Ground Contact or Fresh Water Non-critical components	Fence, deck and guardrail posts, crossties & utility poles (low decay areas)
UC4B™	Ground Contact or Fresh Water Critical components or difficult replacement	Permanent wood foundations, building poles, horticultural posts, crossties & utility poles (high decay areas)

Which wood preservative systems are listed in AWWA Standards?

In today's marketplace, there are many wood preservative systems available to the public. It is important that those wood preservatives reviewed by AWWA's Technical Committees and listed in AWWA Standard U1 are selected at retentions that are appropriate for each Use Category. The following table is specific to Southern pine and Douglas-fir, but should be helpful in determining if the treated wood at your local retailer is treated with the correct preservative at the proper retention (expressed in pounds active ingredient per cubic foot of wood):

<u>Code</u>	<u>Preservative Name</u>	<u>UC1, 2</u>	<u>UC3B</u>	<u>UC4A</u>	<u>UC4B</u>
ACC	Acid Copper Chromate	0.25	0.25	0.50	---
ACQ	Alkaline Copper Quaternary (Type B or C)	0.25	0.25	0.40	0.60
ACQ	Alkaline Copper Quaternary (Type A or D)	0.15	0.15	0.40	0.60
ACZA	Ammoniacal Copper Zinc Arsenate	0.25	0.25	0.40	0.60
CA-B	Copper Azole, Type B	0.10	0.10	0.21	0.31
CA-C	Copper Azole, Type C	0.060	0.060	0.15	0.31
CuN-W	Waterborne Copper Naphthenate	0.070	0.070	0.11	---
CX-A	Copper HDO	0.206	0.206	---	---
EL2	DCOI-Imidicloprid-Stabilizer	0.019	0.019	---	---
PTI	Propiconazole-Tebuconazole-Imidicloprid	0.013	0.018	---	---
PTI	PTI plus Stabilizer	0.013	0.013	---	---
SBX	Inorganic Boron (Formosan termites)	0.28	---	---	---
SBX	Inorganic Boron (non-Formosan termites)	0.17	---	---	---

Appendix C (continued)

Table C-2 Alternate Wood Species

Joist Span table for:

Western Cedars, Ponderosa Pine and Red Pine

Table C-2
MAXIMUM JOIST-SPAN LENGTH¹ FOR REDWOOD,
WESTERN CEDARS, PONDEROSA PINE², AND RED PINE²

Joist Spacing (on center)	Joist Size	Without Overhang	With Overhangs
12"	2x6	8'-5"	7'-3"
	2x8	11'-8"	8'-6"
	2x10	14'-11"	12'-3"
	2x12	17'-5"	16'-5"
16"	2x6	7'-8"	7'-3"
	2x8	10'-7"	8'-6"
	2x10	13'-0"	12'-3"
	2x12	15'-1"	15'-1"
24"	2x6	6'-7"	6'-7"
	2x8	8'-8"	8'-6"
	2x10	10'-7"	10'-7"
	2x12	12'-4"	12'-4"

¹Spans are based on 40 psf live load, 10 psf dead load, normal loading duration, wet service conditions and deflections of $\Delta=L/360$ for main span and $L/180$ for overhang with a 220-lb. point load.

²Design values based on northern species with no incising assumed.

Question:

If you have a joist length of 10' – Douglas Fir Larch Beam,

With column spacing of 8' OC,

- ▣ What is the beam sizing?
- ▣ What is the Footing Thickness and Diameter?
(for intermediate footing)

Presume 3000 PSF soils.

Beam and Footing Size

Beam sizing and footing sizing for joist lengths 6' to 16'

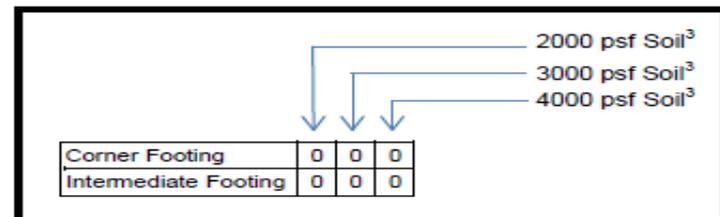
Beam and Footing Sizes with Overhangs

Based on No. 2 or better Southern Pine, Douglas Fir-Larch2, and Ponderosa Pine

Joist Length (JL) ¹		Post Spacing (Measured Center to Center)											
		4'	5'	6'	7'	8'	9'	10'	11'	12'	13'	14'	
10'	Southern Pine Beam	1-2x6	1-2x8	2-2x8	2-2x8	2-2x10	2-2x12	2-2x12	3-2x12	3-2x12	Eng Bm	Eng Bm	
	Douglas Fir-Larch Beam	1-2x8	2-2x6	2-2x8	2-2x10	2-2x10	2-2x12	3-2x10	3-2x12	3-2x12	Eng Bm	Eng Bm	
	Ponderosa Pine Beam	1-2x8	2-2x6	2-2x8	2-2x10	2-2x10	2-2x12	3-2x10	3-2x12	Eng Bm	Eng Bm	Eng Bm	
	Corner Footing	10 9 8	12 10 8	12 10 9	13 11 10	14 12 10	15 12 11	16 13 11	16 14 12	17 14 12	18 15 13	18 15 13	
	Intermediate Footing	13 11 9	14 12 10	15 13 11	17 14 12	18 15 13	19 15 13	20 16 14	21 17 15	21 18 15	22 18 16	23 19 16	
	Footing Thickness	6	6	6	6	8	8	8	8	8	8	10	
11'	Southern Pine Beam	1-2x8	2-2x6	2-2x8	2-2x10	2-2x10	2-2x12	3-2x12	3-2x12	Eng Bm	Eng Bm	Eng Bm	
	Douglas Fir-Larch Beam	1-2x8	2-2x8	2-2x8	2-2x10	2-2x10	2-2x12	3-2x12	3-2x12	Eng Bm	Eng Bm	Eng Bm	
	Ponderosa Pine Beam	1-2x8	2-2x6	2-2x8	2-2x10	2-2x12	2-2x12	3-2x12	3-2x12	Eng Bm	Eng Bm	Eng Bm	
	Corner Footing	11 9 8	12 10 9	13 11 9	14 12 10	15 12 11	16 13 11	16 14 12	17 14 12	18 15 13	19 15 13	19 16 14	

Notes:

1. Joist Length (J_L) is Joist Span (L_J) plus any cantilever at the beam that is being sized.
2. Incising assumed for refractory species Douglas Fir-Larch.
3. All footing sizes above are base diameters (in inches) and are listed for THREE SOIL CAPACITIES. Soil capacity is based on the requirements of State of Wisconsin SPS 321.15 (3).⁴
4. For square footings, insert the diameter (d) into the following formula: $\sqrt{((d/2)^2 \times \pi)}$. This number will give you the square dimension and shall be rounded up to the nearest inch.



Answer:

Beam Sizing:

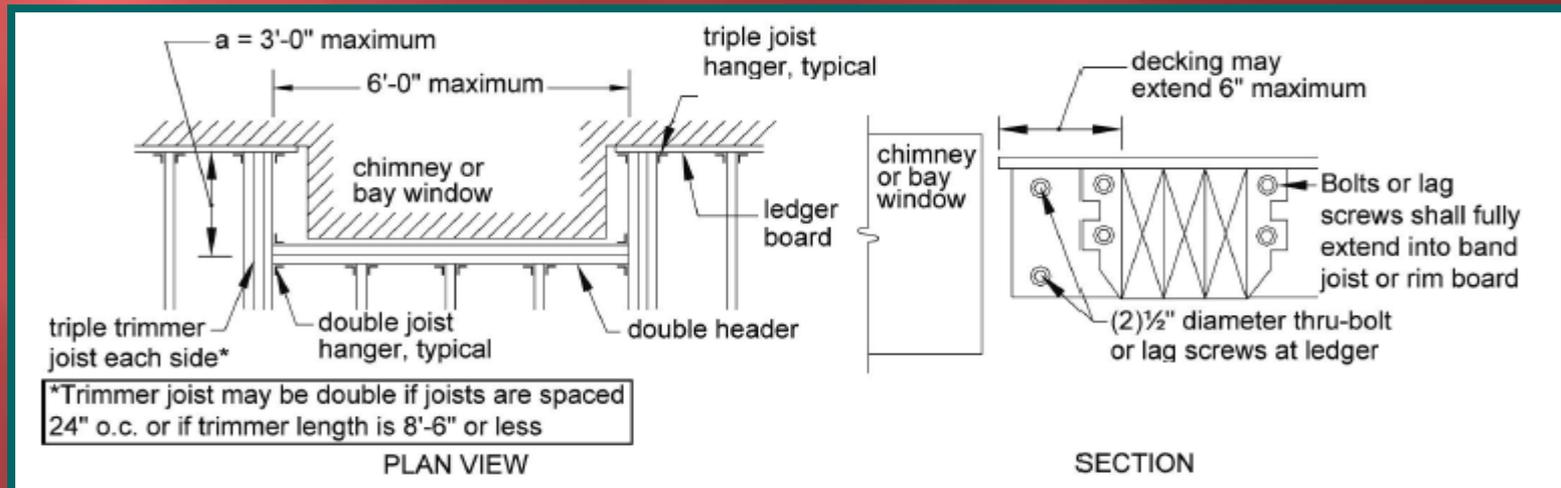
2-2x10

Footing Thickness and
Diameter:

8" Thick by 15" diameter
(Intermediate Footing)

Framing around Projections

- ❑ Double where joist tees into member
- ❑ Triple where the double member tees into beam
- ❑ Fasteners should extend into all members of the trimmer joists, hanger or ledgers. Necessary to transfer loads to all members and load distribution.



Deck Ledger to Floor Truss Joists

Ledger Board to Floor Truss End Members

- Stagger Lag screws/bolts to develop full strength of ledger board @ 2" from top and 2" from bottom. Do not want to drive into end grain of top or bottom chord of truss. Much less strength.
- Use 1/2 Dia. X 6" long lag screws or bolts.
- Pre-drill lead holes.

Wood Truss Floor Systems

Decks connected to Wood Truss
Floor Systems

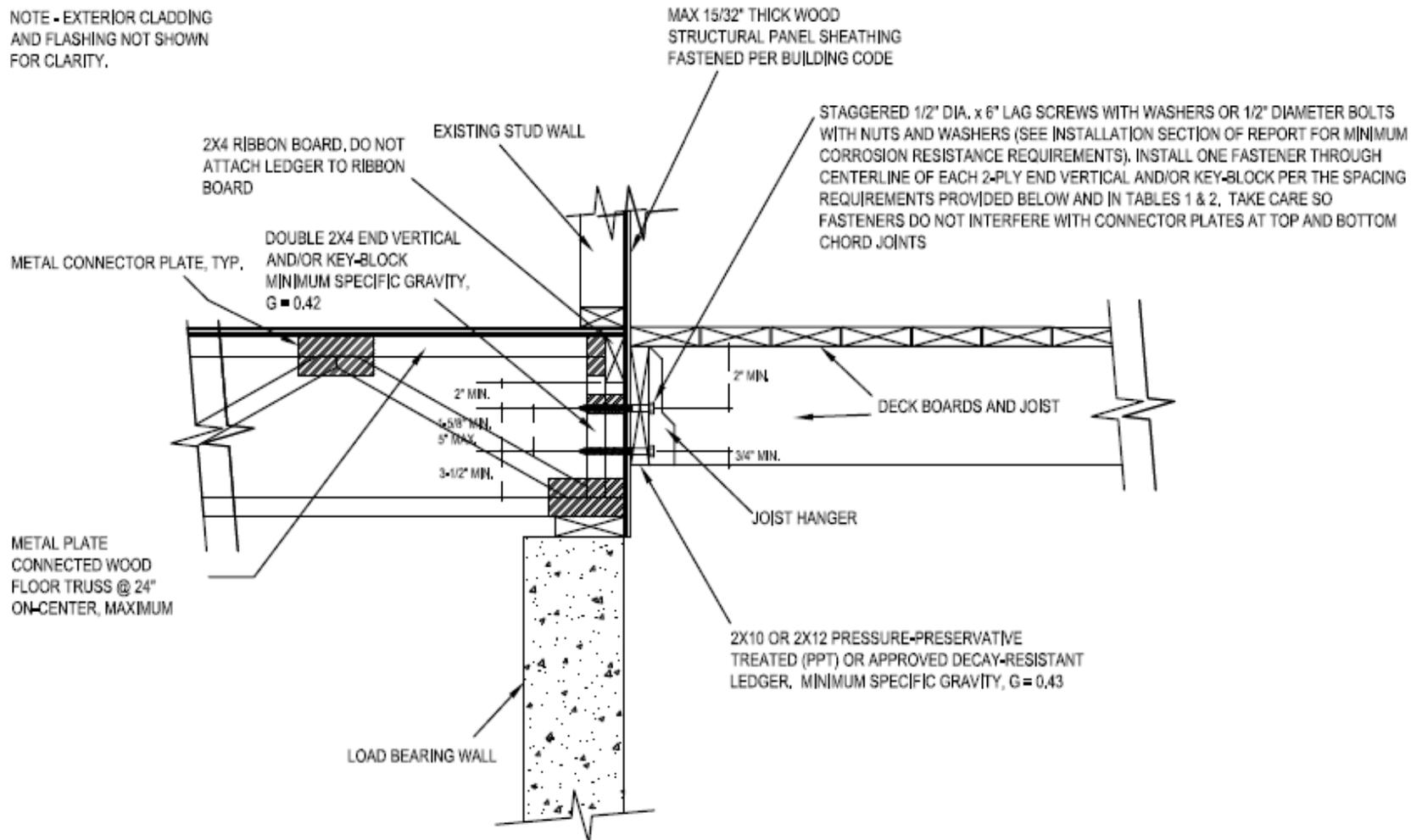
Detail for decks framing
into trusses *perpendicular* with
foundation walls

Detail 1

Ledger Perpendicular to Floor Truss

WALL SECTION

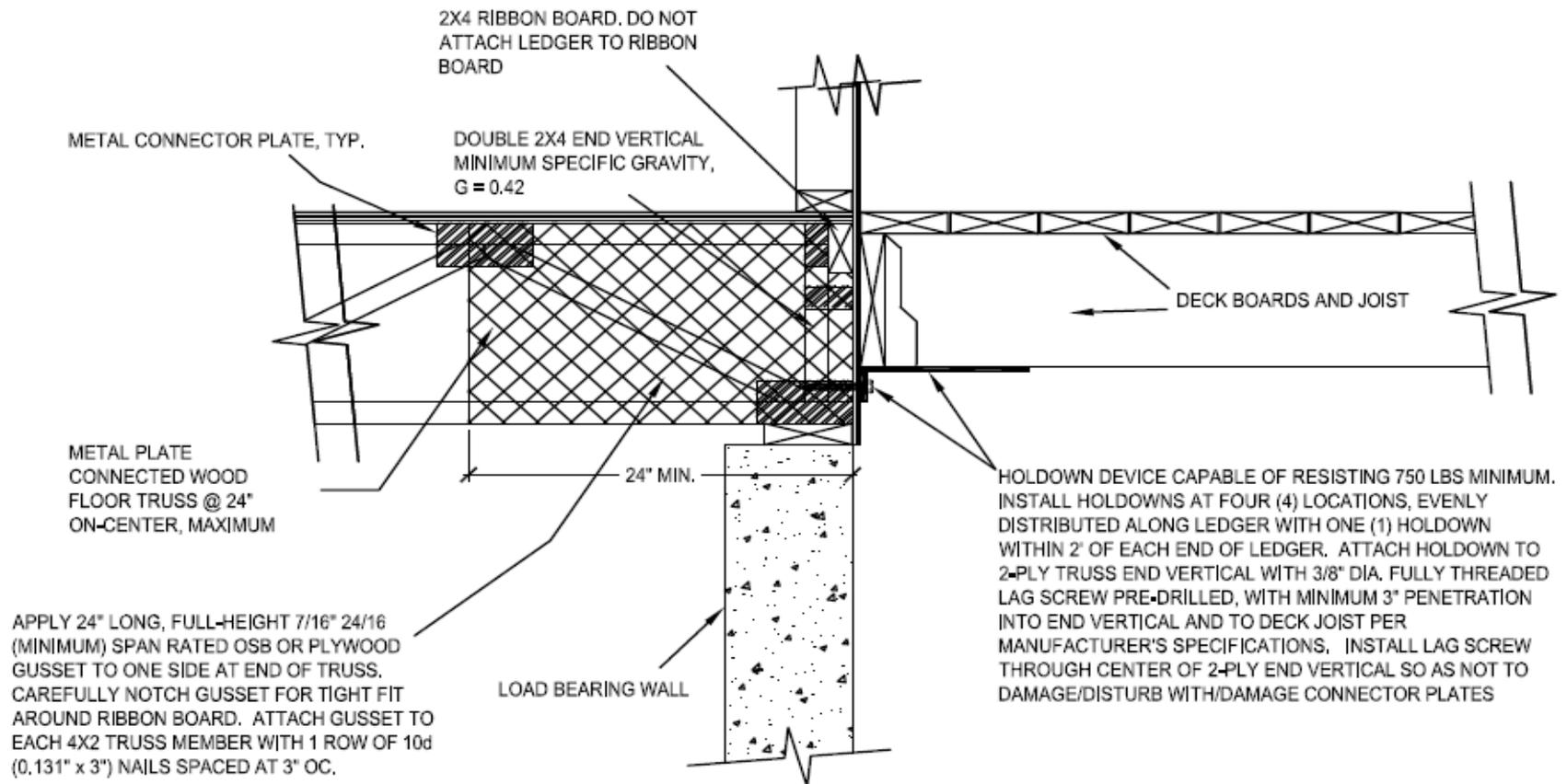
NOTE - EXTERIOR CLADDING AND FLASHING NOT SHOWN FOR CLARITY.



Ledger Board Attachment Detail 3 Perpendicular to Floor Truss

LEDGER ATTACHED TO ENDS OF TRUSSES

REFER TO DETAIL 1 FOR
ADDITIONAL INFORMATION



Wood Truss Floor Systems

- ▣ Decks framing into Wood Truss Floor Systems *parallel* with foundation wall

Detail 2

Parallel to Floor Truss

WALL SECTION

NOTE - EXTERIOR CLADDING AND FLASHING NOT SHOWN FOR CLARITY.

12" LONG 2X4 SPF (MIN) KEEPER-BLOCKS AT EACH KEY-BLOCK LOCATION, CENTER KEEPER-BLOCKS ABOUT KEY-BLOCK, ATTACH TO LADDER FRAME CHORDS W/ 3-12d (0.131"X3.25") NAILS AND TO EACH KEY-BLOCK WITH 2-12d NAILS. (SEE KEEPER-BLOCK DETAIL).

MAX 15/32" THICK WOOD STRUCTURAL PANEL SHEATHING FASTENED PER BUILDING CODE

STAGGERED 1/2" DIA. x 6" LAG SCREWS WITH WASHERS OR 1/2" DIA. BOLTS WITH NUTS AND WASHERS (SEE INSTALLATION SECTION OF REPORT FOR MINIMUM CORROSION RESISTANCE REQUIREMENTS), INSTALL ONE FASTENER THROUGH CENTERLINE OF EACH 4x4 VERTICAL TRUSS WEB AND/OR KEY-BLOCK PER THE SPACING REQUIREMENTS PROVIDED BELOW AND IN TABLES 3 & 4. TAKE CARE SO FASTENERS DO NOT DAMAGE/DISTURB WITH CONNECTOR PLATES AT TOP AND BOTTOM CHORD JOINTS

EXISTING STUD WALL

2" MIN.

1-5/8" MIN.
5" MAX.

3-1/2" MIN.

2" MIN.

3/4" MIN.

DECK BOARDS AND JOIST

JOIST HANGER

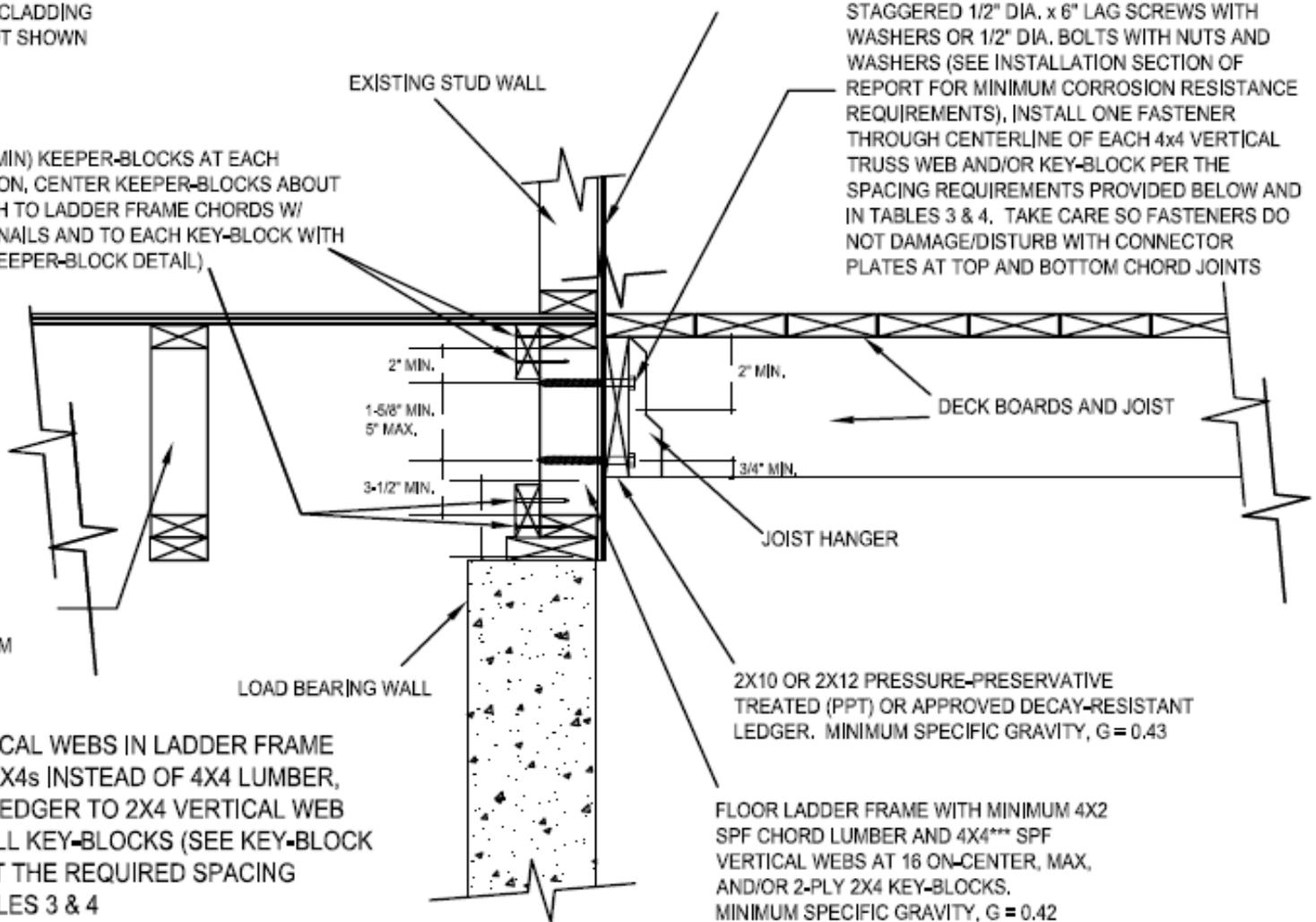
METAL PLATE
CONNECTED WOOD
FLOOR TRUSS @ 24"
ON-CENTER, MAXIMUM

LOAD BEARING WALL

2X10 OR 2X12 PRESSURE-PRESERVATIVE TREATED (PPT) OR APPROVED DECAY-RESISTANT LEDGER. MINIMUM SPECIFIC GRAVITY, $G = 0.43$

***NOTE - IF VERTICAL WEBS IN LADDER FRAME ARE ONLY 1-PLY 2X4s INSTEAD OF 4X4 LUMBER, DO NOT ATTACH LEDGER TO 2X4 VERTICAL WEB MEMBERS. INSTALL KEY-BLOCKS (SEE KEY-BLOCK DETAIL BELOW) AT THE REQUIRED SPACING INDICATED IN TABLES 3 & 4

FLOOR LADDER FRAME WITH MINIMUM 4X2 SPF CHORD LUMBER AND 4X4** SPF VERTICAL WEBS AT 16 ON-CENTER, MAX, AND/OR 2-PLY 2X4 KEY-BLOCKS. MINIMUM SPECIFIC GRAVITY, $G = 0.42$

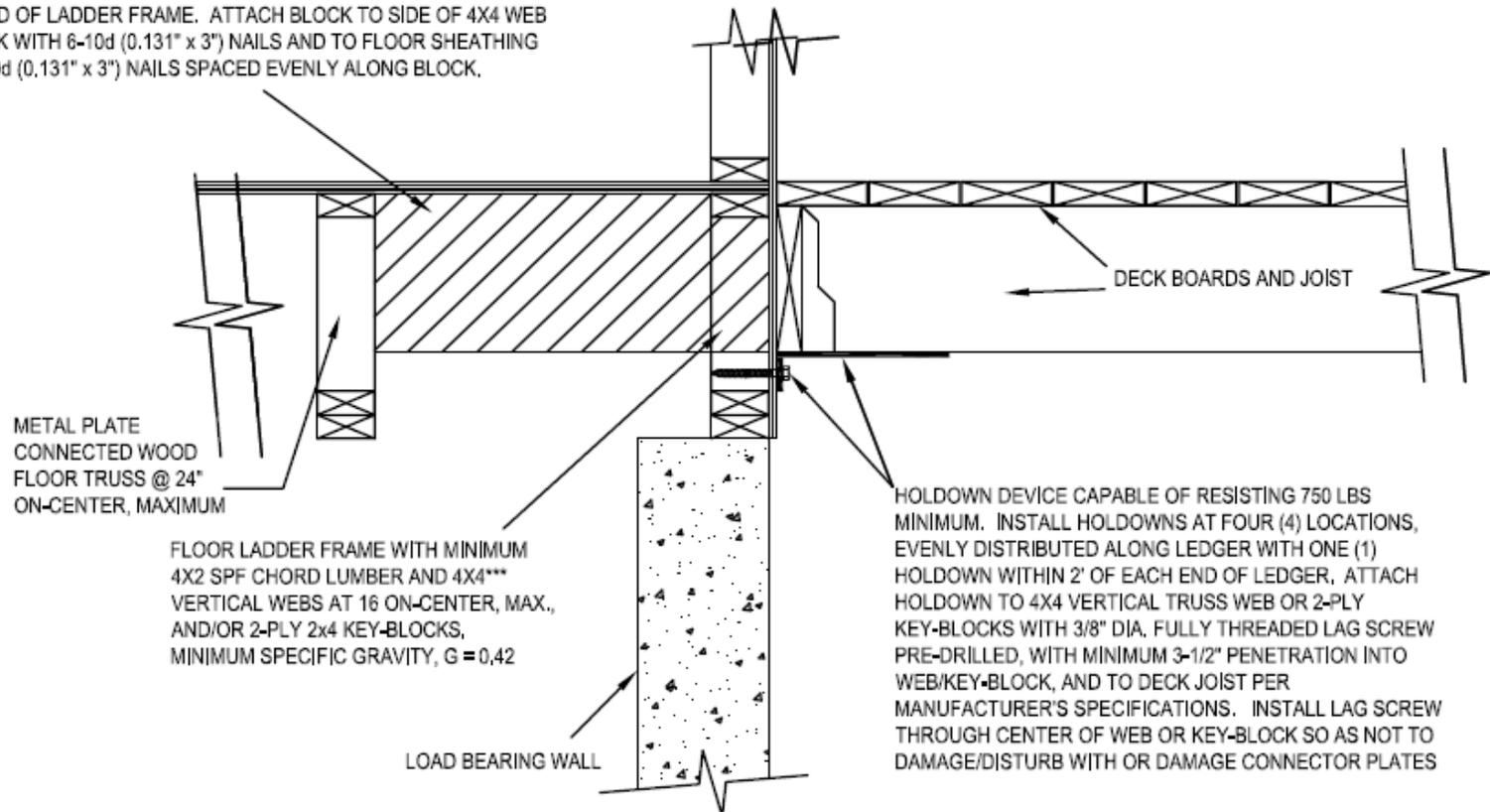


Ledger Board Attachment Detail 3

LEDGER ATTACHED TO SIDE OF FLOOR LADDER FRAME

APPLY MINIMUM 2x_ SPF BLOCK OF SAME DEPTH AS DECK JOISTS TO ONE SIDE OF EACH 4X4 VERTICAL WEB OR KEY-BLOCK TO WHICH THE HOLDDOWN IS ATTACHED. CUT BLOCK TO FIT TIGHT BETWEEN EXTERIOR SHEATHING AND SIDE OF FIRST INTERIOR FLOOR TRUSS. CAREFULLY NOTCH BLOCK FOR TIGHT FIT AROUND TOP CHORD OF LADDER FRAME. ATTACH BLOCK TO SIDE OF 4X4 WEB OR 2-PLY KEY-BLOCK WITH 6-10d (0.131" x 3") NAILS AND TO FLOOR SHEATHING WITH 1-ROW OF 7-10d (0.131" x 3") NAILS SPACED EVENLY ALONG BLOCK.

REFER TO DETAIL 2 FOR
ADDITIONAL INFORMATION



Ledger Boards

- ▣ Nominal 2 x 10 or 2 x 12 lumber.
- ▣ Follow Fastener schedule.
- ▣ For heavy loads or where truss conditions may be compromised, utilize 1/2 inch plywood gusset fastened to the end panel of the truss with nails spaced 3" OC.

Final Thoughts

- ▣ Make sure care is taken not to split members.
- ▣ Make sure care is taken not to damage truss plates or joist hangers.
- ▣ Make sure care is taken to properly flash ledger boards so as to prevent moisture penetration into the structure.
- ▣ Do it right the first time.

2016 Winter Updates

2016 UDC CODE CHANGES - PART II

A quick look at the up-coming code
changes

YOUR PRESENTER

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- ◉ UDC/HUD Consultant - DSPS
- ◉ 26 years with the department
- ◉ Last 9 in the UDC Program
- ◉ Contact information: Phone: (920)360-0020
e-mail: jack.wotruba@wisconsin.gov
- ◉ (Cards Available)

CHANGES

- Presentation II
- Covering Sections 70 - 142 in the proposed rules package.

SPS 321.16(1)(A)

- Removed ramps from this section.
- Created **SPS 321.16 (2) (d)** Subsection (1) (a) does not apply to the footing for a ramp and its handrail posts unless the ramp abuts a frost-protected stoop or landing, in which case only the footing for that abutting end of the ramp is required to have the frost protection under sub. (1) (a), such as by bearing onto the stoop or landing, so that a tripping hazard is not created.

SPS 321.18 (1)(C)3.D. (CREATED)

- ◎ **SPS 321.18 (1) (c) 3. d.** - Alternate foundation anchorage, designed and spaced in accordance with structural analysis and as required to provide equivalent anchorage to the requirements of subd. 3. a., is allowable.

SPS 321.18(1)

- **SPS 321.18 (1) (d) 2. c.** Fastening of the blocking or bridging shall be in accordance with structural analysis or the fastener Table 321.02-2.

SPS 321.18(1) CONT.

- **SPS 321.18 (1) (d) 2. c. Note:** The floor-framing elements required in this section are intended to provide lateral support to the top of the foundation wall. See SPS 321.22 (9) for further requirements relating to floor framing, including for bridging of floor framing to provide restraint against rotation or lateral displacement of the floor framing.

PORTION OF TABLE 321.02-2

- SPS 321.02 (2) (h) Table 321.02-2
- MINIMUM FASTENER SCHEDULE 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 Fastener¹
2 3
- Floor Framing
- Joist to joist, face nailed over support 2-12d 3-8d
- Joist to sill or girder, toe nail 2-16d, 3-8d
- Band or rim joist to joist, end nail 3-16d
- Band or rim joist to sill or top plate 2-16d at 16" o.c.
- Bridging to joist, toe nail each end 2-8d
- Built-up girder and beams, top loaded 10d at 32" o.c. at top and bottom and
staggered and two at ends and at each splice
- Built-up girder and beams, side-loaded 16d at 16" o.c. at top and bottom and
staggered and two at ends and at each splice
- Ledger strip to beam, face nail 3-16d each joist
- Joist on ledger to beam, toe nail 3-8d

SPS 321.18 (4)

- ◎ **SPS 321.18 (4) WOOD FOUNDATIONS.** Wood foundations shall be designed and constructed in accordance with the wood-foundation standard adopted in Table 320.24-6m.

SPS 321.22(9)(A)

- **SPS 321.22 (9) (a) Note:** This 4:1 ratio means bridging is required for wood-framed floors having nominal 2X10 or deeper solid-sawn-lumber joists, to provide restraint against rotation or lateral displacement.
- **(b) Note:** See SPS 321.18 (1) (d) for further requirements relating to floor framing, including for bridging or blocking of floor framing to provide lateral support to the top of foundation walls.

SILL PLATES

- ◎ 10) SILL PLATES. All of the following requirements apply to a sawn-lumber sill plate with uniform loading that is partially extended beyond the load-bearing surface of a foundation wall in order to put the exterior surface of an upper-lying wall flush with or beyond the exterior surface of insulation that is placed on the outside of the foundation wall:

SILL PLATES CONTINUED

- ⦿ (a) The center of any anchor bolt shall be set back from the side edge of the sill plate by a distance of at least 4 times the diameter of the bolt.
- ⦿ (b) The thickness of the concrete or mortar cover around any anchor bolt shall comply with ACI 318 section 7.7.
- ⦿ **Note:** Under ACI 318 section 7.7, the minimum cover for a 5/8-inch-diameter or smaller bolt is 1 1/2 inches.

SILL PLATES (CONT.)

- c) With wood floor joists that are parallel to the foundation wall, the sill plate may not extend beyond the load-bearing surface of the wall by more than one-half of the nominal thickness of the joist that bears on the sill plate.
- **Note:** As used throughout this chapter and in the standards that the chapter incorporates by reference, the shorter side of the cross-sectional area of a wood member is the thickness of the member. The longer side of the cross-sectional area is the depth, when the longer side is vertical; and it is the width when the longer side is horizontal.

SILL PLATES

CONTINUED

- ◉ **Note:** Under sub. (6), wood floor joists that are perpendicular to the foundation wall can extend beyond the foundation wall by a distance of up to the depth of the joist.
- ◉ **Note:** Subsection (1) (d) requires a full-width sill plate for floor joists over open-core masonry units.

FLASHING

- ◉ **SPS 321.24 (3) (e)** For a roof that intersects with an upper-lying head wall and rake wall, such as where a dormer is provided, the vertical metal flashing along the rake wall shall extend down the roof at least one-half inch past the vertical flashing on the head wall.
- ◉ **Note:** A head wall as addressed in this paragraph intersects a sloping roof at a horizontal line along the top of a roof segment. A rake wall intersects a sloping roof along the side of a roof segment.
- ◉ (f) For a roof eave that intersects with a sidewall, the end of the roof flashing shall be installed so that it diverts water away from the sidewall and onto the roof or into the gutter.
- ◉ **Note:** See s. SPS 321.26 (8) for further requirements relating to flashing for masonry.

BOTTOM PLATES 321.25(2M)

- ① 1. Where a masonry foundation wall has an open top course, a bottom plate at least as wide as the foundation wall shall be fastened to the foundation.

BOTTOM PLATES

CONTINUED

- ⦿ **SPS 321.25 (2m) BOTTOM PLATES.** (a) *Masonry foundation walls with open top course*, the minimum width of an individual piece making up the bottom plate shall be at least 5 1/2 inches.

Note: A sill plate can be made of multiple pieces to achieve the full width.

BOTTOM PLATES (CONT.)

- ◉ (b) *Extension beyond the bearing surface.*
All of the following requirements apply to a sawn-lumber sill plate with uniform loading that is partially extended beyond the load-bearing surface of a foundation wall in order to put the exterior surface of an upper-lying wall flush with or beyond the exterior surface of insulation which is placed on the outside of the foundation wall:

BOTTOM PLATE OVERHANG

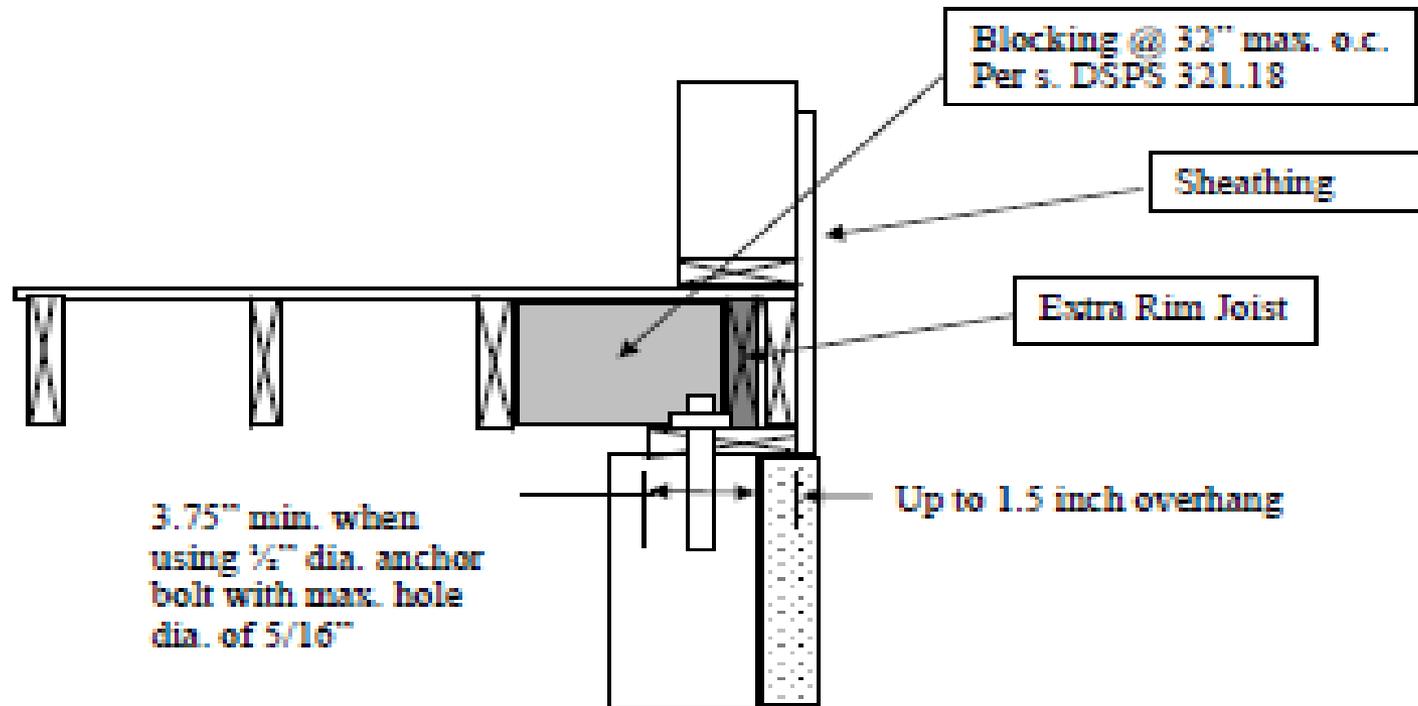


Figure 2

Floor framing parallel to foundation wall (Option 1)

BOTTOM PLATES

CONTINUED

- ⦿ 1. The center of any anchor bolt shall be set back from the side edge of the sill plate by a distance of at least 4 times the diameter of the bolt.
- ⦿ 2. The thickness of the concrete or mortar cover around any anchor bolt shall comply with ACI 318 section 7.7.

Note: Under ACI 318 section 7.7, the minimum cover for a 5/8-inch-diameter or smaller bolt is 1 1/2 inches.

BOTTOM PLATES (CONT.)

- 3. Where a stud wall bears directly on a double bottom plate, the plate may not extend more than 1 1/2 inches beyond the load-bearing surface of the foundation wall.
- 4. Where a stud wall bears directly on a single bottom plate, the plate may not extend more than 1 inch beyond the load-bearing surface of the foundation wall.

DOUBLE BOTTOM PLATE

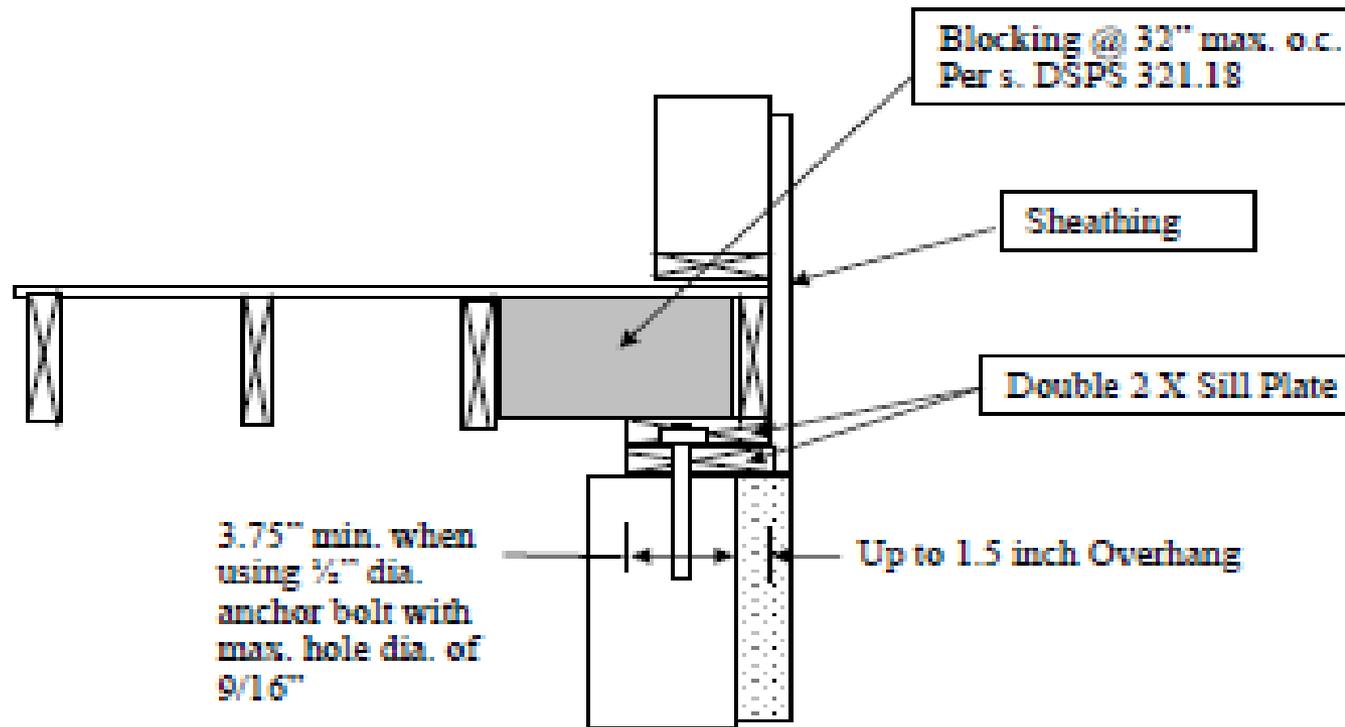


Figure 3
Floor framing parallel to foundation wall (Option 2)

SINGLE OR DOUBLE PLATE

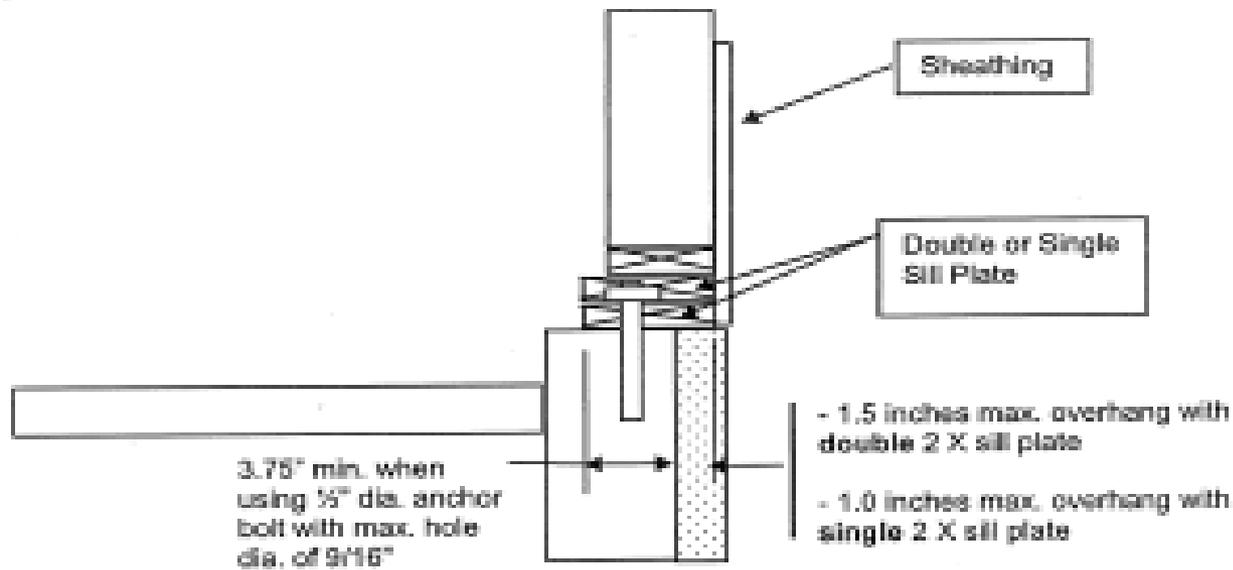


Figure 4
Stud wall directly on sill plate

WALL BRACING NOTES

- SPS 321.25 Table 321.25-A footnote ^d Use of stud heights that range from over 10 feet to 12 feet for bearing and exterior nonbearing walls is prohibited unless supported by structural analysis. The allowable deflection may 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.

WALL BRACING

CONTINUED

- ⦿ 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.

TABLE - I

- ◉ Table 321.25-I (Intermittent Sheathing)
- ◉ **REQUIRED NUMBER OF INTERMITTENT BRACED WALL PANELS ON WALLS PARALLEL TO EACH RECTANGLE SIDE AT EACH FLOOR LEVEL**_{a,b,c,d,e,f,h,j}

TABLE - J

- Table 321.25-J (Continuous sheathing)
- **REQUIRED LENGTH OF CONTINUOUS BRACING ON WALLS PARALLEL TO EACH RECTANGLE SIDE AT EACH FLOOR LEVEL** a,b,c,d,e,g,h,j

FOOTNOTE - J

- ⦿ **SPS 321.25 Table 321.25-I** footnote ^j Any floor, habitable or otherwise, that is contained wholly within the roof rafters or roof trusses is exempt from being considered a floor for purposes of determining wall bracing if the top-of-wall-to-ridge height does not exceed 20 feet and if no opening in the roof exceeds 48 inches in height.
- ⦿ **Table 321.25-J** footnote ^j Any floor, habitable or otherwise, that is contained wholly within the roof rafters or roof trusses is exempt from being considered a floor for purposes of determining wall bracing if the top-of-wall-to-ridge height does not exceed 20 feet and if no opening in the roof exceeds 48 inches in height.

WALL BRACING

- **SPS 321.25 (8) (a) (Note) [2]:** For a walk-out basement where some of the walls are concrete and other walls or portions thereof are wood-framed, the Department considers a minimum 8-inch-nominal-thickness poured-in-place concrete basement wall as being equivalent in lateral load and shear resistance to any of the allowable wood-framed wall bracing materials.

BASEMENT WALL BRACING

- To determine the required bracing for a walk-out basement, first draw a rectangle around the entire floor plan and projections as if all of the walls are wood-framed. Determine the required bracing amounts per the chosen bracing material and method and then locate the bracing to meet the requirements of Figure 321.25-C.

BASEMENT WALL BRACING

- Any required braced wall panel locations that occur on a wall or portion of a wall that is actually of poured-in-place concrete construction is considered equivalent, and that amount of bracing will count towards the minimum required amount and will not need to be provided in another location on that rectangle side.

BEARING

- **SPS 321.27 (4) (d) *Bearing*.** The required bearing for wood rafters shall be in accordance with the NDS adopted in Table 320.24-6m, except in no case shall the bearing be less than 1½ inches on wood or metal or less than 3 inches on masonry or concrete.

SHINGLES

- **SPS 321.28 (3) (a) 2.** Each shingle package shall be labeled by the manufacturer to indicate conformance to the applicable ASTM standard for each type of shingle or the exception in par. (b).
- **SPS 321.28 (3) (a) 6.** All fasteners for shingles shall be corrosion-resistant.

VALLEYS

- **SPS 321.28 (7) (c) *Flashing of closed valleys.***
Where shingles are laced or woven over the valley, the valley shall be flashed with one of the following:
 1. At least one layer of 50-pound roofing, at least 20 inches wide, over a layer of number 15 roofing underlayment.
 2. A product labeled as meeting the requirements of ASTM D1970.

CHAPTER 322 CHANGES

- ◉ Quick overview of changes and/or updates

RES-CHECK CHANGES

- As of January 1, 2016, Rescheck will no longer have a “Wisconsin 2009” code tab for demonstrating building envelope and heat loss calculations.
- Res-Check can be used, but one must select “IECC 2009” to demonstrate building envelope compliance. Heat loss calculations will no longer be addressed by Rescheck.

PRESCRIPTIVE INSULATION & FENESTRATION REQUIREMENTS SPS 322.31-1



TABLE 322.31-1

INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT^a

Zone	Fenestration U-Factor	Skylight U-Factor	Ceiling R-Value	Wood Frame Wall R-Value	Mass Wall R-Value ⁱ	Floor R-Value	Basement or Crawl Space Wall R-Value ^b	Crawl Space Wall R-Value ^b	Heated Slab R-Value ^c	Unheated Slab R-Value ^d
1	0.35	0.60	49 ^e	19 ^f 20 ^f or 13+5 ^g	15/19	30 ^h	10/13 15/19	10/13	10/15	10
2	0.35	0.60	49 ^e	21 ^f	19/21	30 ^h 38 ^h	10/13 15/19	10/13	10/15	10

^a R-values are minimums. U-factors are maximums.

^b ~~The first R-value applies to continuous insulation. The second R-value applies to framing cavity insulation. Either insulation meets the requirement.~~ “15/19” means R-15 continuous insulated sheathing on the interior or exterior of the home or R-19 cavity insulation at the interior of the basement wall. “15/19” shall be permitted to be met with R-13 cavity insulation on the interior of the basement wall plus R-5 continuous insulated sheathing on the interior or exterior of the home. “10/13” means R-10 continuous insulated sheathing on the interior or exterior of the home or R-13 cavity insulation at the interior of the basement wall.

EQUIVALENT U-FACTORS SPS 322.31-2

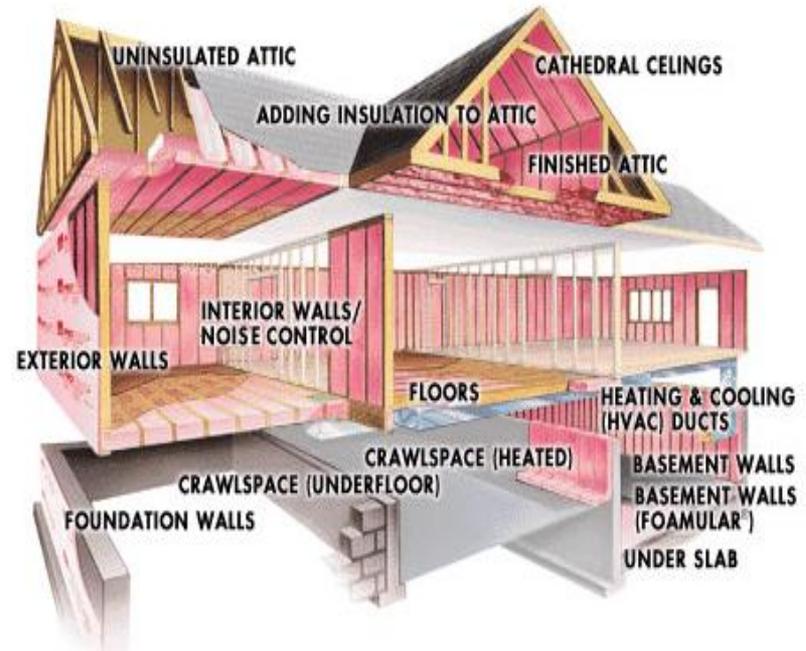


TABLE 322.31-2
EQUIVALENT U-FACTORS

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 Wall U-Factor	Unheated Slab U-Factor
1	0.35	0.60	0.026	0.060 0.057	0.060 ^a	0.033	0.065 0.050	0.065	10
2	0.35	0.60	0.026	0.057	0.057 ^a	0.033 0.028	0.065 0.050	0.065	10

^a When more than half the insulation is on the interior, the mass wall U-factors shall be the same as the frame wall U-factor.

TOTAL UA ALTERNATIVE (RESCHECK APPROACH) SPS 322.31-4

■ Per Table 322.31-4

○ Per Proposed Bldg

- $U_{\text{wall}} \times A_{\text{wall}}$
- $U_{\text{roof}} \times A_{\text{roof}}$
- $U_{\text{door}} \times A_{\text{door}}$
- $U_{\text{window}} \times A_{\text{window}}$
- $U_{\text{skylight}} \times A_{\text{skylight}}$
- Etc.

- $U_{\text{wall}} \times A_{\text{wall}}$
- $U_{\text{roof}} \times A_{\text{roof}}$
- $U_{\text{door}} \times A_{\text{door}}$
- $U_{\text{window}} \times A_{\text{window}}$
- $U_{\text{skylight}} \times A_{\text{skylight}}$
- Etc.

$$\text{Total } U_{\text{Proposed}} \times A_{\text{Proposed}} \leq \text{Total } U_{\text{Allowed}} \times A_{\text{Proposed}}$$

ATTIC-ACCESS COVER TO BE INSULATED SPS 322.32(1)(B)

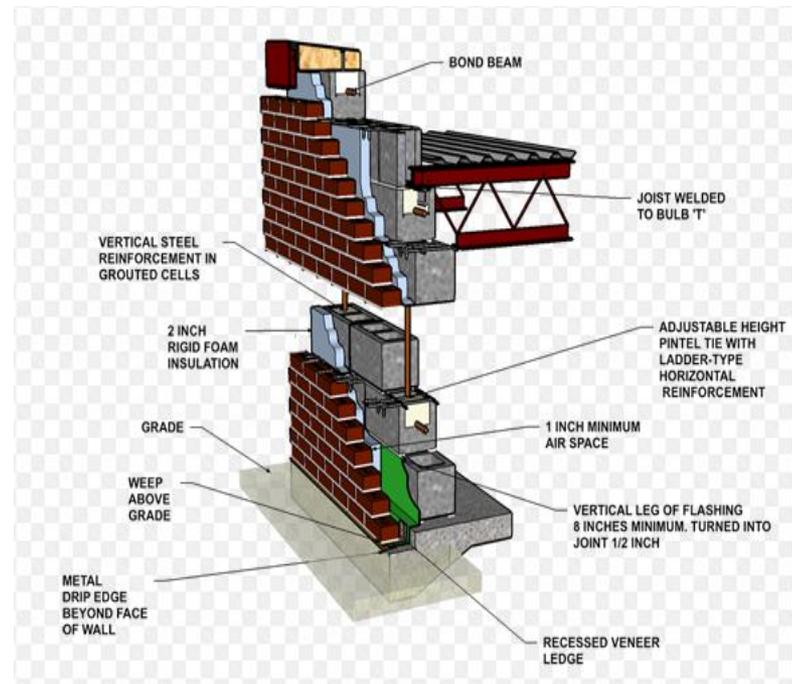


- To be weatherstripped & insulated to level equivalent to insulation on the surrounding surfaces
- Wood framed or equivalent baffle or retainer is required to be provided when loose fill insulation is used
- Req't to prevent loose fill insulation from spill into living space, as well a provide permanent means of maintaining the installed R-value

MASS WALLS

SPS 322.32(3)

- The requirements of Table 322.31-1 are applicable to mass walls
- No longer requires at least 50% of the required insulation to be on the exterior of, or integral to, the wall



SKYLIGHT INSULATION REQ'TS

SPS 322.32(9)(B)

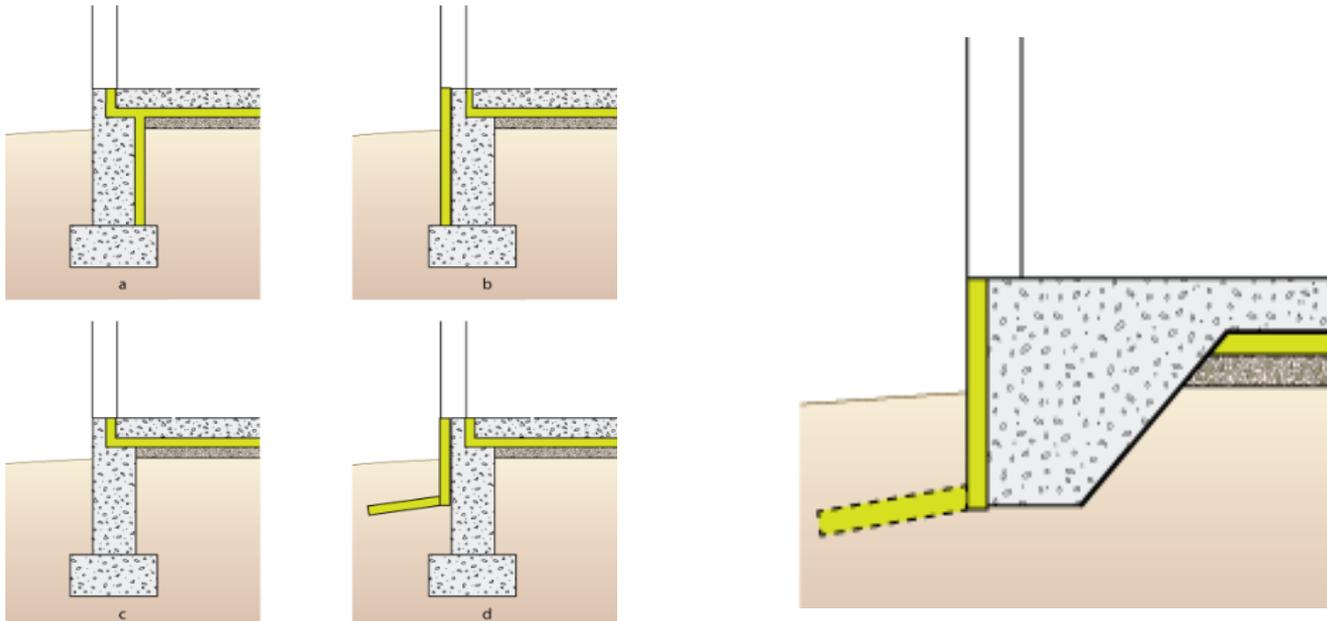
- The vertical and flared walls in a skylight shall meet the insulation requirements for walls. Tube skylights shall be insulated per manufacturer's recommendations



SLAB ON GRADE INSULATION REQ'T

SPS 322.33(1)(A)

- Any heated or unheated slab floor, the bottom of which is $< 12''$ below adjacent grade, shall be provided with perimeter insulation in accordance with Table 322.31-1 or Table 322.31-4, except as provided in par. (b).



FOUNDATION INSULATION CONTINUITY SPS 322.33(3)(C)

- Insulation on a foundation wall for a basement may be interrupted at the junction with a foundation wall.

VAPOR RETARDER AT THE FOUNDATION WALL

SPS 322.34(2)(D)

- The edges of the vapor retarder shall extend at least 6 inches up the foundation wall and shall be attached and sealed to the foundation wall or insulation.

AIR SEALING AND INSULATION

SPS 322.37(6)

- 2 options to demonstrate compliance
 - When tested air leakage is < 7 ACH when tested with a blower door at pressure of 33.5 psf
Testing after rough in and installation of building envelope penetrations
 - When items listed in Table 332.37, applicable to the method of construction, are field verified. Inspector may request an approved party independent from the installer to inspect the air barrier & insulation



TABLE 332.37**AIR BARRIER AND INSULATION INSPECTION COMPONENT CRITERIA**

COMPONENT	CRITERIA
Air barrier and thermal barrier	Exterior thermal envelope insulation for framed walls is installed in substantial contact and continuous alignment with building envelope air barrier. Breaks or joints in the air barrier are filled or repaired.
	Air-permeable insulation is not used as a sealing material. Air-permeable insulation is inside of an air barrier.
Ceiling/attic	Air barrier in any dropped ceiling/soffit is substantially aligned with insulation and any gaps are sealed. Attic access (except unvented attic), knee wall door, or drop down stair is sealed.
Walls	Corners and headers are insulated. Junction of foundation and sill plate is sealed.
Windows and doors	Space between window/door jambs and framing is sealed.
Rim joists	Rim joists are insulated and include an air barrier.
Floors (including above-garage and cantilevered floors)	Insulation is installed to maintain permanent contact with underside of subfloor decking. Air barrier is installed at any exposed edge of insulation.
Crawl space walls	Insulation is permanently attached to walls. Exposed earth in unvented crawl spaces is covered with Class I vapor retarder with overlapping joints taped.
Shafts, penetrations	Duct shafts, utility penetrations, knee walls and flue shafts opening to exterior or unconditioned space are sealed.

TABLE 332.37

CONT.

Narrow cavities	Batts in narrow cavities are cut to fit, or narrow cavities are filled by sprayed/blown insulation.
Garage separation	Air sealing is provided between the garage and conditioned spaces.
Recessed lighting	Recessed light fixtures are air tight, IC rated, and sealed to drywall. Exception—fixtures in conditioned space.
Plumbing and wiring	Insulation is placed between outside and pipes. Batt insulation is cut to fit around wiring and plumbing, or sprayed/blown insulation extends behind piping and wiring.
Shower/tub on exterior wall	Showers and tubs on exterior walls have insulation and an air barrier separating them from the exterior wall.
Electrical/phone box on exterior walls	Air barrier extends behind boxes or air sealed-type boxes are installed.
Common wall	Air barrier is installed in common wall between dwelling units.
HVAC register boots	HVAC register boots that penetrate building envelope are sealed to subfloor or drywall.
Fireplace	Fireplace walls include an air barrier.

History: CR 08-043; cr. Register March 2009 No. 639, eff. 4-1-09; CR 15-041; cr. (6), Table 332.37 Register December 2015 No. 720, eff. 1-1-16; correction in 6) (a) 6. made under s. 35.17, Stats., Register December 2015 No. 720.

VAPOR RETARDER INSTALLATION

SPS 322.38(1)(B)

- ⦿ Vapor retarder shall be continuous.
 - ⦿ Except as provided in subd. 2.
- ⦿ Seams that are not over a framing member shall be taped or sealed.





VAPOR RETARDER INSTALLATION

SPS 322.38(1)(B)2.

- Taping or sealing a vapor retarder is not required around doors and windows, behind bathtub enclosures, and at top and bottom wall plates, if the retarder is held to those materials in an airtight manner by other building components, such as gypsum wallboard.



VAPOR RETARDER INSTALLATION

SPS 322.38(1)(B)2.

- No vapor retarder is required over cavities that have at least 50% of the required R-value provided by spray-applied foam having a perm rating of 1.0 or less, unless required by the foam manufacturer.



VAPOR RETARDER INSTALLATION

SPS 322.38(2)(C)5.

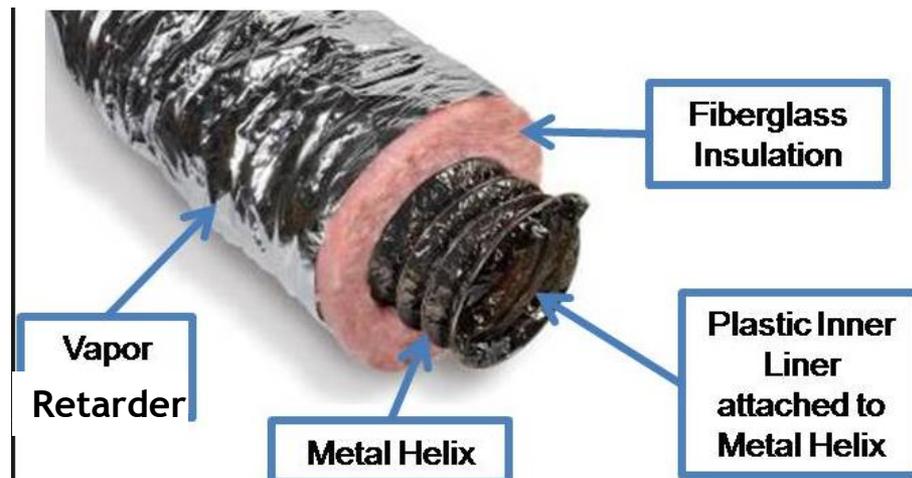
- A vapor retarder for a floor over an open unheated area may consist of 5/8" tongue-and-groove oriented-strand board, or 3/4-inch tongue-and-groove CDX plywood, which is exposure-rated plywood.



VAPOR RETARDER INSTALLATION

SPS 322.42(2)

- Cooling supply ducts that pass through unconditioned spaces (attics, garages) to be provided w/min. R-8 insulation.
- Exterior of the insulation shall be covered w/vapor retarder that meets the requirements in SPS 322.38(1)



DUCT TIGHTNESS

SPS 322.43(7)



- Tightness Test **NOT** req'd if the air handler and all ducts are located within conditioned space
- **Postconstruction Test:**
 - Leakage to outdoor ≤ 8 cfm/100 sf of conditioned floor area OR
 - Total leakage ≤ 12 cfm per 12 sf of conditioned floor area when tested at a pressure differential of 0.1 inches w.g. (25 Pa) across the entire system, including the manufacturer's air handler enclosure.
 - All register boots shall be taped or otherwise sealed during the test.

DUCT TIGHTNESS

SPS 322.43(7)

⦿ Rough-in Test:

- Total leakage shall be less than or equal to 6 cfm/100 sf of conditioned floor area when tested @ pressure differential of 0.1 inches w.g. (25 Pa) across the roughed in system (includes air handler enclosure)
- All register boots shall be taped or sealed during test
- If no air handler is installed at test time, total leakage shall be \leq 4 cfm/100 sf of conditioned floor area

PIPING INSULATION

SPS 322.44

- ⦿ Minimum **R-3** required on
 - HVAC systems
 - Exception: Piping that conveys fluids between 55 & 105° F
- ⦿ Minimum **R-2** required on
 - All circulating domestic hot water systems
 - Systems also require a readily accessible manual switch



AUTOMATIC OR GRAVITY DAMPERS

SPS 322.47(1)

- Mechanical ventilation outdoor air intakes & exhausts require automatic (motorized) or gravity dampers that close when the ventilation system is not operating.



SNOW MELT SYSTEM CONTROLS

SPS 322.47(2)



- Applicable to snow- and ice-melting systems supplied with energy service through the bldg.
- Require automatic controls capable of shutting off the system when the pavement temperature is $> 50^{\circ}\text{F}$ and no precipitation is falling and automatic or manual control that will allow shutoff when the outdoor temperature is above 40°F when the potential for snow or ice is negligible.

INDOOR POOLS

SPS 322.48



○ Indoor Pool Heaters

- with a readily accessible on-off switch
- fired by natural gas not allowed to have continuously burning pilot lights

○ Time switches to automatically turn off and on heaters and pumps according to a preset schedule installed on swimming pool heaters and pumps.

■ Exceptions

- Public health standards require 24-hour pump operation
- Pumps operating pools with solar-waste-heat recovery heating systems

LIGHTING EQUIPMENT

SPS 322.49

- A minimum of 50% of the lamps in permanently installed lighting fixtures shall be high-efficacy lamps
- Definition of “high-efficacy lamp”
 - *Compact fluorescent lamps T-8 or smaller diameter linear fluorescent lamps, or lamps with a minimum efficacy of:*
 - *60 lumens/W for lamps > 40 watts,*
 - *50 lumens/W for lamps > 15 watts up to 40 watts, and*
 - *40 lumens/W for lamps ≤ 15 watts or less*
- Incandescent lamps are NOT “high efficacy lamps”



MINIMUM CLEARANCE

SPS 323.04, TABLE 323.04 A

Footnote⁵ To combustible materials or metal cabinets. If the underside of such combustible material or metal cabinet is protected with asbestos millboard at least ¼” thick covered with sheet metal of not less than No. 28 gauge, the distance may be < 24”. Also, if the manufacturer of the range, cooktop, or cooking stove specifies a shorter clearance, that clearance may be used instead.

SOLID FUEL-FIRED WATER-HEATING

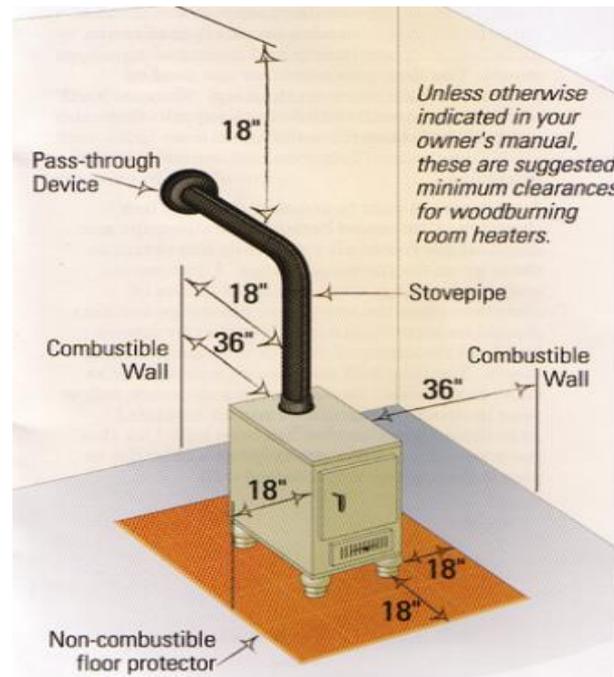
SPS 323.04(4)(B)

- Solid fuel-fired water-heating appliances installed inside one or two family dwellings are exempt from the requirements of SPS 341.49(3) (ie. boiler code requirements)

SOLID FUEL-FIRED BURNING APPLIANCE MOUNTING

SPS 323.45(5M)

- Ground-based solid-fuel-burning appliances shall be installed in accordance with the manufacturer's specifications



TANKLESS WATER HEATERS

SPS 325.01(2)(A)

- Min. Flow rate of tankless water heater determined by multiplying 0.65 by the calculated hot water gallons/minute demand, as determined by SPS 383 Tables 382.40-1b and 382.40-3, provided the heater will achieve a water temperature of 110°F at the terminal fitting or faucet.



TANKLESS WATER HEATERS

The screenshot shows a Google search for "picture of a tankless water heater". The search results include several images of tankless water heaters, some labeled "BEFORE" and "AFTER" showing installation. A large, detailed diagram titled "How Does A Tankless Water Heater Work?" is prominently displayed. The diagram shows a cross-section of the heater with labels for "Hot Water Out", "Cold Water In", "Gas", "Burner", "Heat Exchanger", and "Fan". To the right of the diagram is a list of steps titled "The Process:".

How Does A Tankless Water Heater Work?

The Process:

1. A hot water tap is turned on.
2. Water enters the Heater.
3. The water flow sensor detects the water flow.
4. The computer automatically ignites the burner.
5. Water circulates through the heat exchanger.
6. The heat exchanger heats the water to the designated temperature.
7. When the tap is turned off, the unit shuts down.

Tankless Water Heaters - Cost, Savings and...
www.welzig-heating-and-air.com - 525 x 394 - Search by image
How does a tankless water heater work

Visit page View image

Related images:

Images may be subject to copyright. - Send feedback

http://www.welzig-heating-and-air.com/tankless-water-heaters/

TANKLESS WATER HEATERS

SPS 325.01(2)(B)

- The sizing method listed previously, may not be used for sizing a water heater serving a high-flow fixture, hose bibb, a hydrant, or a fixture that is required to have a supply line with a diameter larger than $\frac{1}{2}$ ".



TANKLESS WATER HEATERS

SPS 325.01(2)(C), (3)

- ⦿ “High-flow fixture” means a fixture with a flow rate > 4 gallons/minute, @ 80 lbs/inch, and water velocity ≤ 8 ft/sec
- ⦿ A trap may be omitted in local waste piping having a length ≤ 20 ft



FLOOR DRAINS FOR GARAGES

SPS 325.1(4)

- Trap may be omitted for garage-floor drain that discharges to the ground surface
- Sediment trap shall be removable.
- Grate may be nonmetallic if it has a thickness & strength that will withstand the anticipated loads.



QUESTIONS???



2016 Winter Updates

Separation of Buildings, “Faux” Four Plex, Zero Lot Lines, Duplex Party Walls, etc.



“Separation Walls” Which is Which?

- Separate exterior walls sharing common footing
- Zero Lot Line Unit Separation
(Dual Ownership: Twin Home vs Condo Agreement)
- Dwelling Unit Separation “Party Wall”
with single ownership

Separation of Buildings Using a Shared Footing 4-Plex and “Faux 4-Plex”



Multi Unit Bldgs Have Been Around A Long Time



So You Want To Build a 4-Plex? Or Any # plex for that matter



Separated Buildings

320.04 (6) – Dwelling Separations

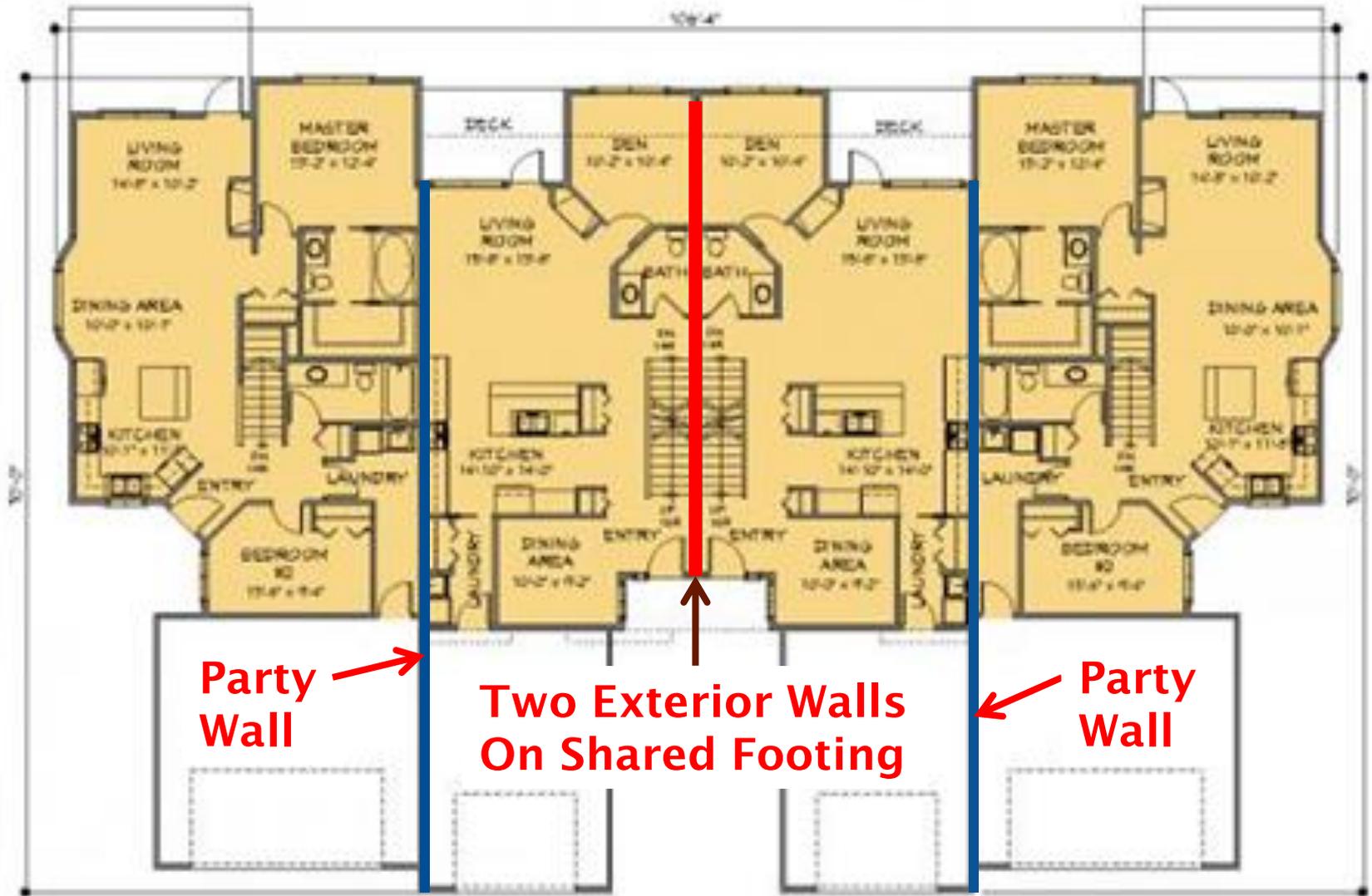
Normally, for 3 or more attached dwelling units, the Commercial Building Code (CBC) applies. Attached means some construction (other than footings and their bearing material) is shared by the units.

Fire Sprinklers Required for 3 Units or Greater by Commercial Code

**SPS 321.095 Automatic fire
sprinklers. (2) (a) The
requirements of NFPA 13D sections
6.3 (4), 8.1.3 and 8.6 **are not
included as part of this code.****

Separated Buildings

Where 3 or more **adjacent but unattached** dwelling units are each built with the **outside walls that comply with the** Uniform Dwelling Code **(UDC)**, the UDC applies throughout and the **CBC does not apply**, even if those outside walls are adjacent to or adjoin each other.



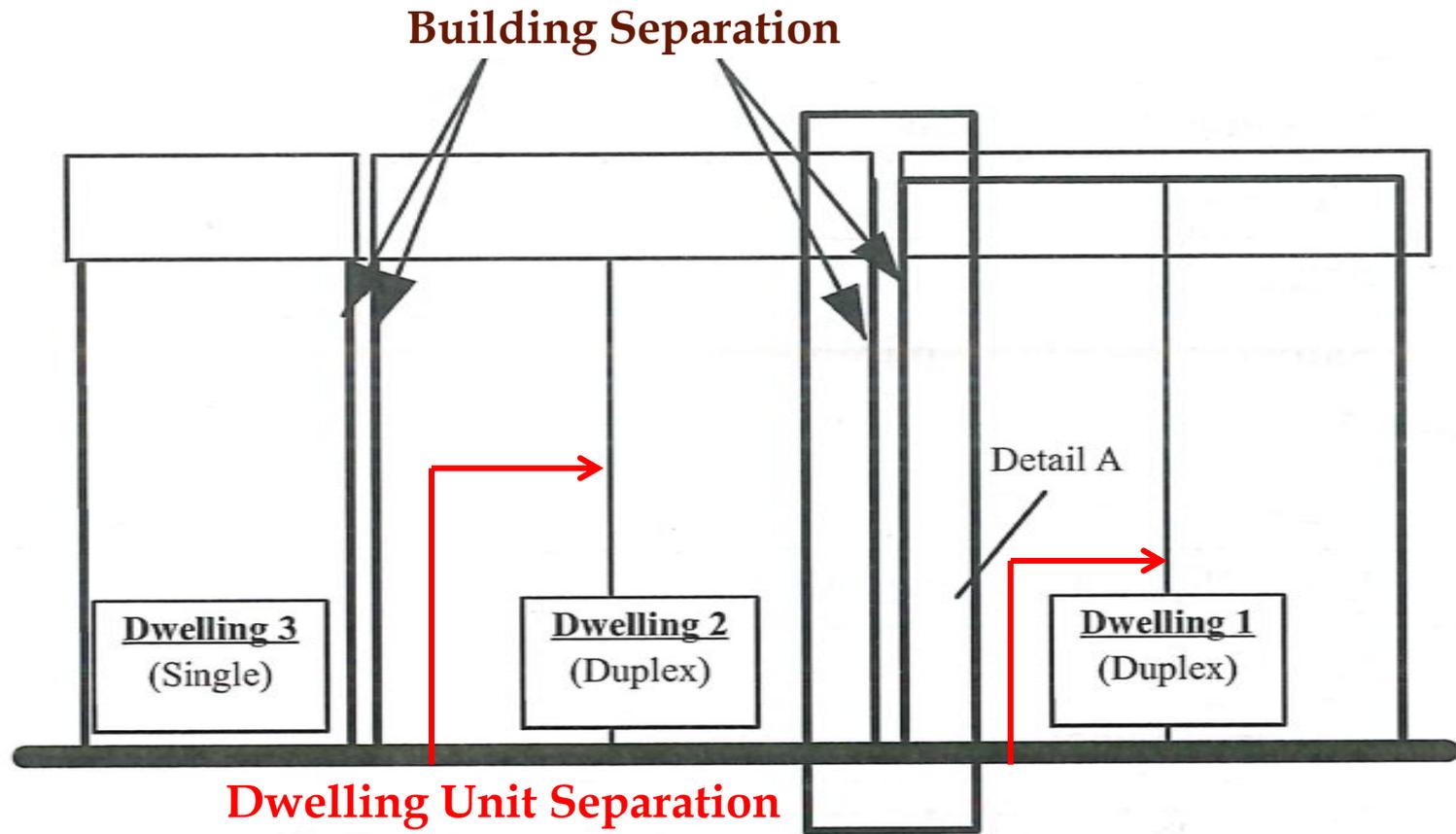
MAIN FLOOR AREA
1,211 SQ. FT.

MAIN FLOOR AREA
947 SQ. FT.

MAIN FLOOR AREA
947 SQ. FT.

MAIN FLOOR AREA
1,211 SQ. FT.

Separated Buildings



Separated Buildings

If flashing is added over the top of two such adjoining walls, the UDC would still apply.

Joint may be covered with **non-structural** components

Flashing

Soffits – Fascia

Siding

SEPARATED BUILDINGS

SPS 320.04(6) SEPARATED BUILDINGS. For a building to be considered a separate single-family dwelling or a separate 2-family dwelling within the scope of this code, regardless of ownership or occupancy arrangements, all of the following conditions shall be met:

- (a) No structural members other than a common footing may be shared between any 2 dwellings.**

Note: Two separated, insulated foundation walls may share the same structural footing.

Separated Buildings

(b) The adjoining exterior walls of the separate dwellings shall each have exterior coverings meeting the requirements of s. SPS 321.24.

(c) The adjoining exterior walls, including foundations, of the separate dwellings shall each meet the energy requirements under ch. SPS 322, irrespective of any adjacent dwelling.

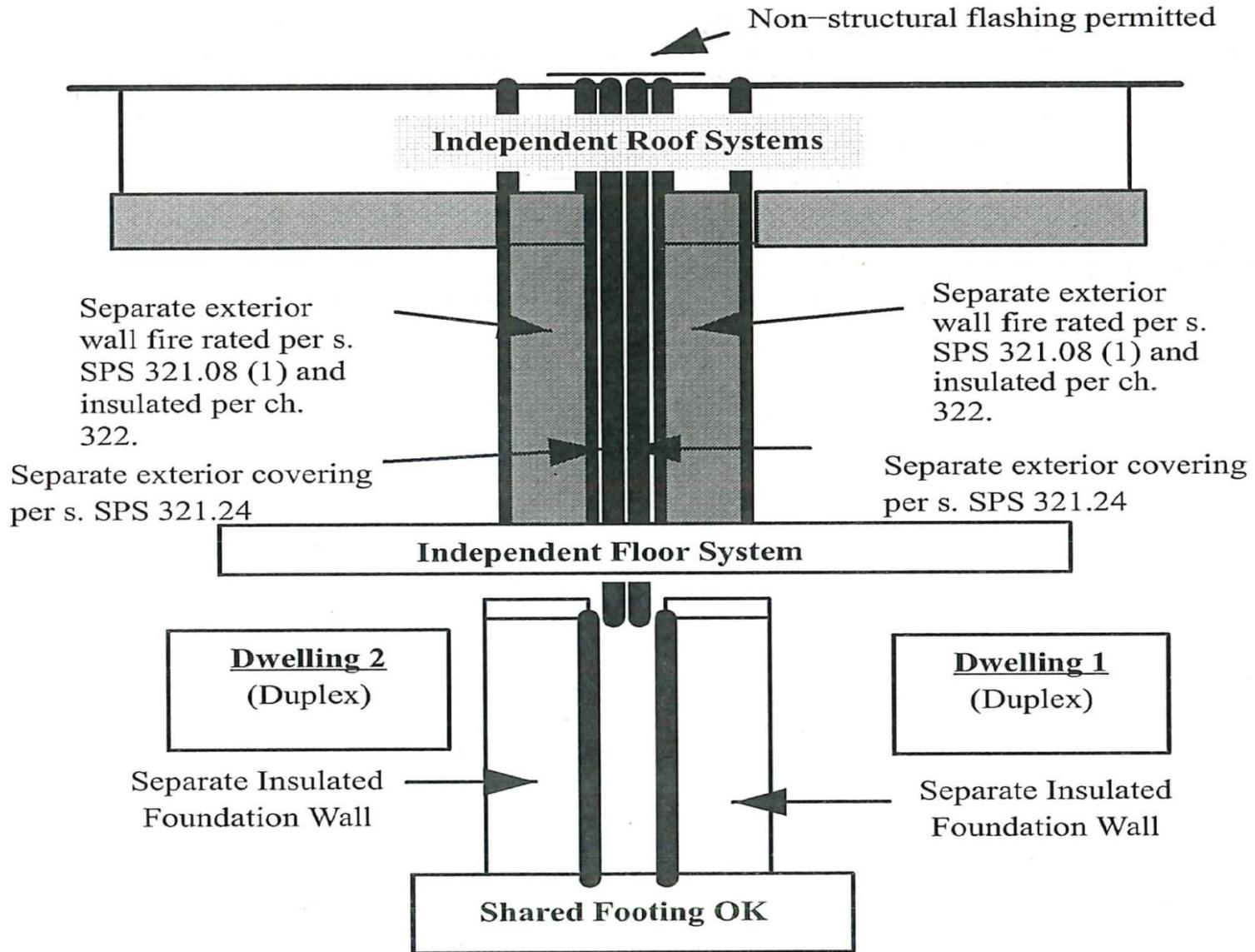
Separated Buildings

(d) Both sides of any 2 adjoining walls, floors, ceilings and attics between dwellings shall meet the dwelling separation requirements of s. SPS 321.08 (1) **for 2 dwellings on the same property less than 5 feet apart.**

Separated Buildings

Note: 1. Flashing is acceptable to connect the roofs between dwelling units. See appendix for further information.

2. A building of 3 or more dwelling units without the separations specified in this section is a commercial building and shall meet the requirements set forth in chs. SPS 361 to 366.



Detail A

SPS 321.08 Fire Separation

Dwelling units shall be separated from garage spaces, accessory buildings, property lines and **other dwelling units**

See Table 321.08

In 2-family dwellings, units shall be separated from each other and from shared tenant spaces including attics, basements, garages, vestibules and corridors

SEPARATED BUILDINGS

Table 321.08

Between Dwelling And:	Distance Between Objects ¹	Fire Rated Construction ^{2,5}
Detached garage or accessory building on same property	Less than 5 feet	3/4-hour wall ³ 1/3-hour door or window ³
Another dwelling on same property	Less than 5 feet	3/4-hour wall ⁴ 1/3-hour door or window ⁴
Detached garage, accessory building, or other dwelling on same property	5 to 10 feet	3/4-hour wall ³ 1/3 hour door or window ³
Detached garage, accessory building, or other dwelling on same property	More than 10 feet	No requirements
Property Lines	Less than 3 feet	3/4-hour wall 1/3-hour door or window
Property Lines	3 feet or more	No Requirements
Zero Lot Line	None	Follow sub. (2) (d) requirements

¹Distance shall be measured perpendicular from wall to wall or property line, ignoring overhangs.

² Fire rated construction shall protect the dwelling from an exterior fire source.

³ Fire rated construction may be in either facing wall.

⁴ Fire rated construction shall be in both facing walls.

⁵ The methods for garage separation in par. (a) 1. are examples of 3/4 hour wall construction.

Non Structural Flashing *Recommended* Over Gap In Roof Decking



What About “Twin Homes*”

*Not a defined UDC term

Twin home looks like duplex, walks like a duplex, but doesn't act like a duplex.

Different ownership interest for each unit and lot

Twin homes are basically half-homes with their own respective lot with a lot line landing between the two homes.

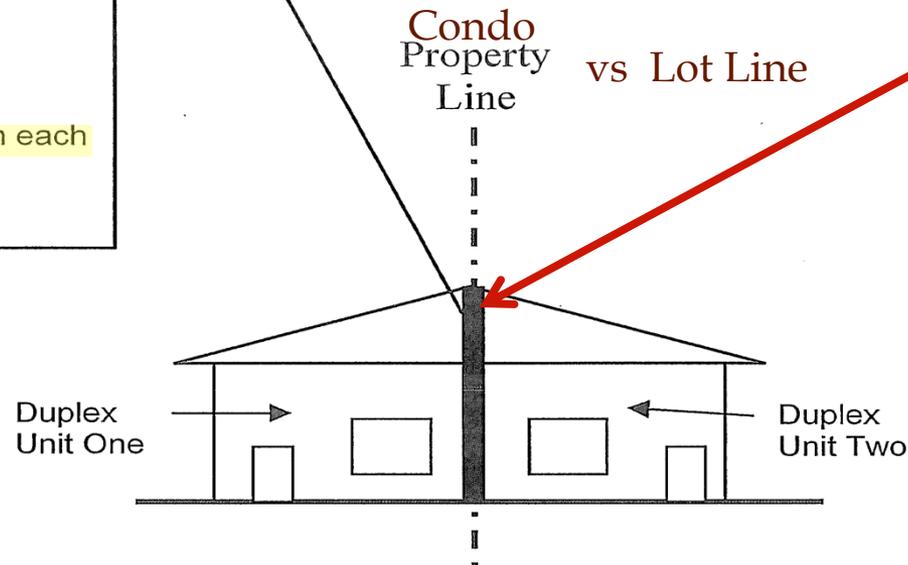
Not Twin Home You can have duplexes that have different owners but they have a condo ownership interest meaning that there is shared lot ownership.

Zero Lot Line Duplex aka “Twin Home”

Dwelling Unit separation from foundation to roof deck, exterior wall to exterior wall, and into eaves consisting of:

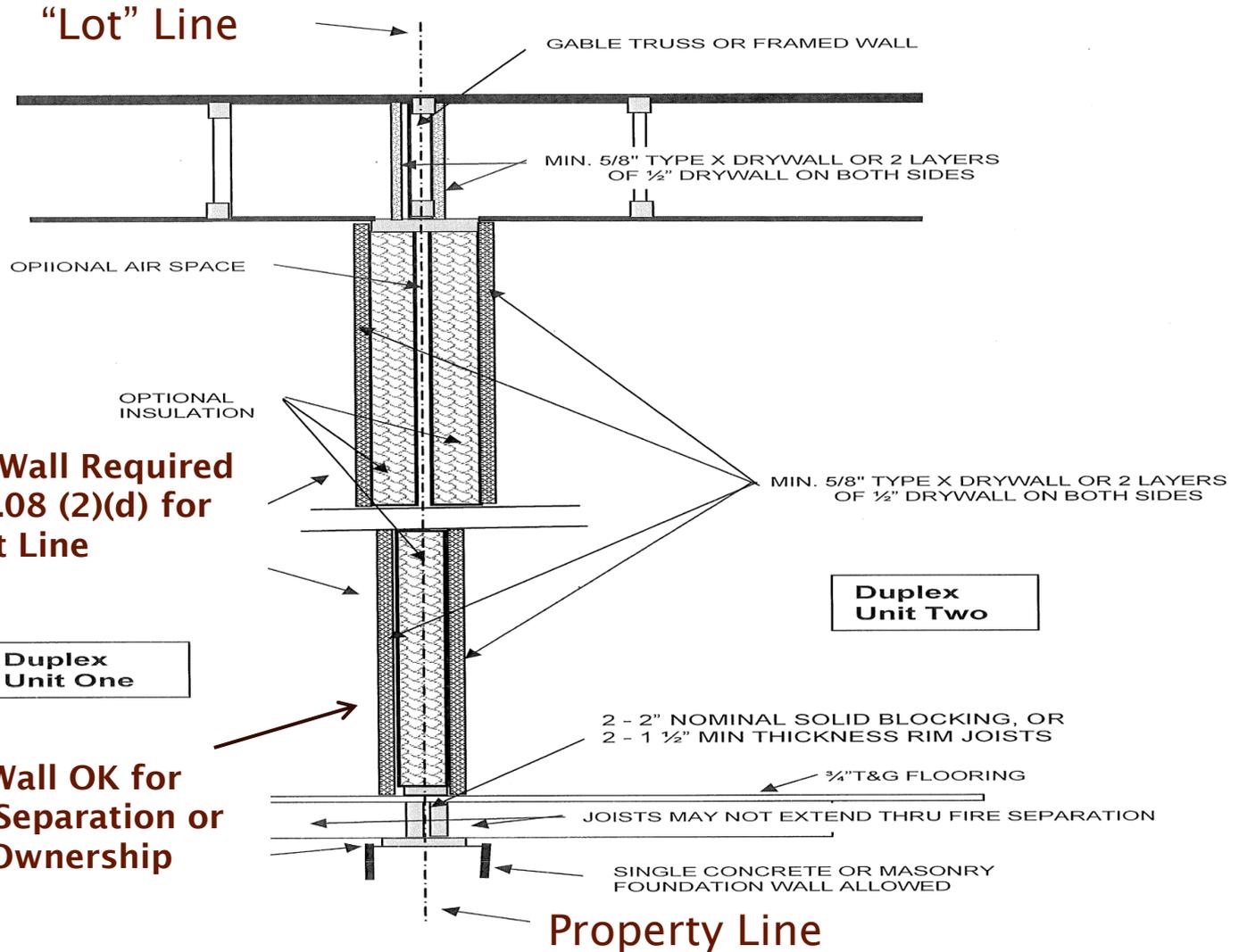
- 5/8" Type “X” gypsum wallboard,
- 2 layers 1/2" gypsum wallboard,
- or, equivalent layers on each side of the wall

Requires Two Separate Walls



Unit Separation per DSPS 321.08 (2) (d)
as referenced in Table 321.08

Zero Lot Line Duplex



Double Wall Required per 321.08 (2)(d) for Zero Lot Line

Single Wall OK for Condo Separation or Single Ownership Duplex

Zero Lot Line Duplex Separation Construction Detail

Duplex Party Wall Separation

Single Ownership

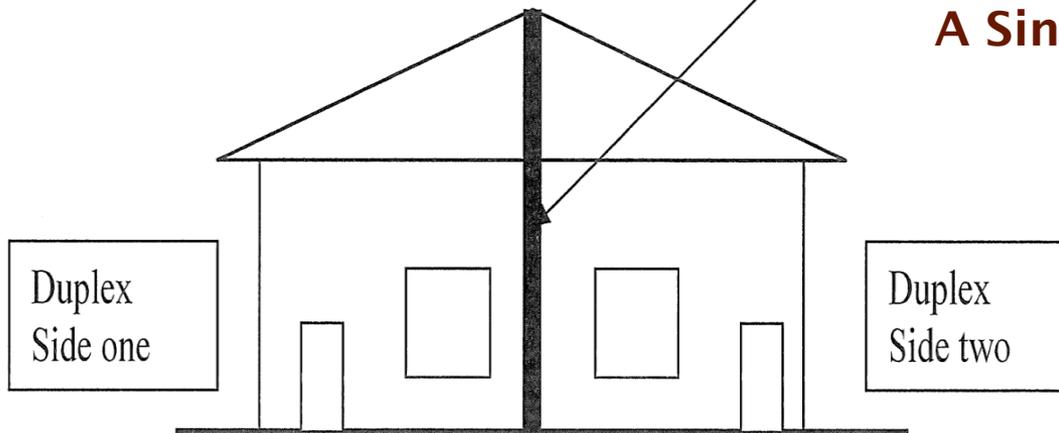
321.08(2)(b) Dwelling Unit Attic Separation

Dwelling Unit separation from
foundation to roof deck

Type "X"

5/8" gypsum wallboard or
equivalent on each side of the wall

A Single Wall



METHOD #1

DSPS 321.08 (2) (b) 1.



Duplex Party Wall Separation

Attic draft stopping in line with unit separation

- 3/8" wood structural panel
- 1/2" gypsum board

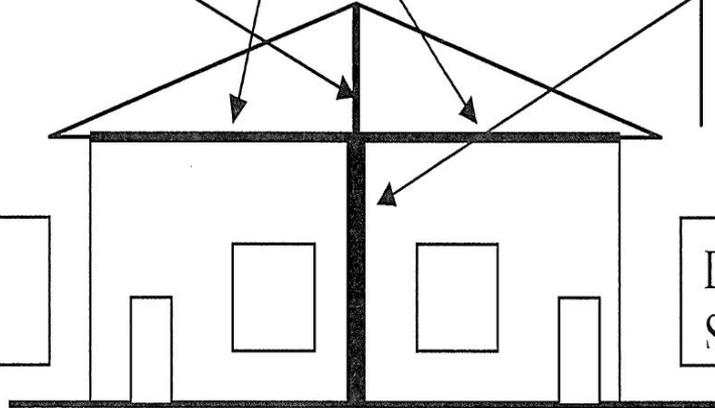
5/8-inch type "X" gypsum ceiling

Dwelling Unit separation from foundation to ceiling

Type "X"

- 5/8" gypsum wallboard or equivalent on each side of wall

Duplex Side one



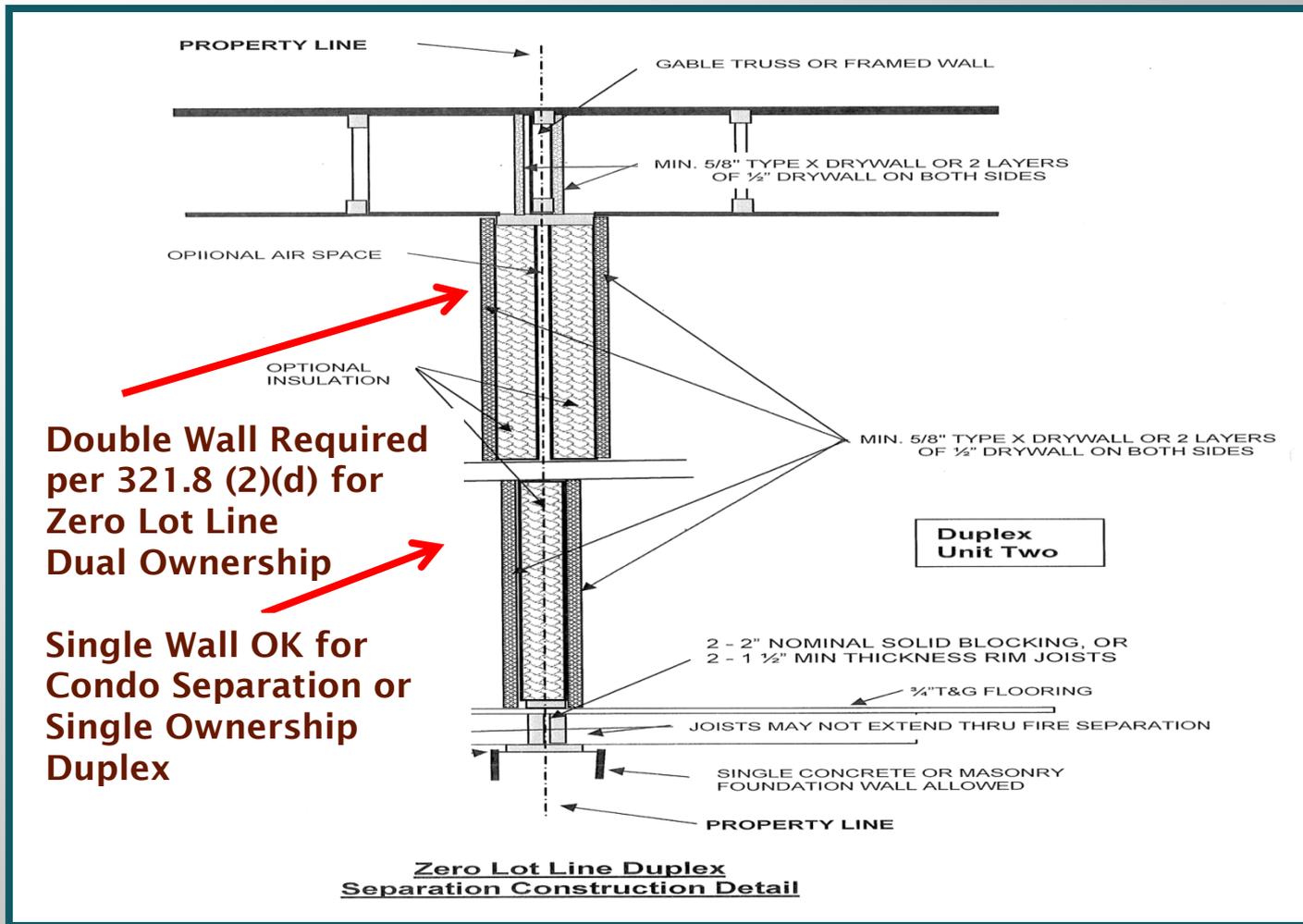
Duplex Side two

Single Ownership

METHOD #2

DSPS 321.08 (2) (b) 2

Show Wall Detail On Plans



From Footing to Roof Deck

Why Do We Bother?



Because... It's Effective



Because... It's Effective



Questions?



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and Professional Services
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Erosion Control Refresher

Back By Popular Demand

(And Necessity)



SPS 321.126 is repealed.

SPS 321.126 Storm water management.

Storm water management practices shall be employed in accordance with s.NR 151.12 and maintained **when the land disturbing construction activity involves one or more acres.**

REPEALED

SPS 321.126 is repealed.

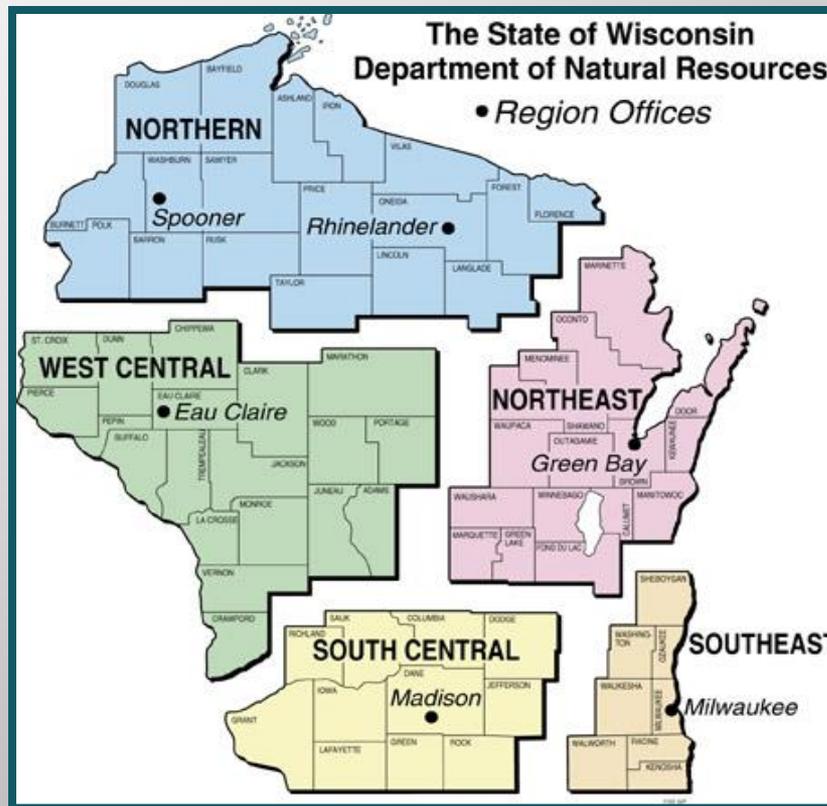
Note: Authority over storm water management at construction sites, including all authority for all the requirements in this section, was consolidated within the Department of Natural Resources (DNR) under 2013 Wis. Act 20, sections 2088 and 2089.

Consequently, the Department of Safety and Professional Services no longer administers the requirements in this section. Information regarding the DNR permit requirements and standards may be available at <http://dnr.wi.gov/topic/stormwater/construction>.

DNR Website

Storm water staff:

Choose the region in which your facility/site/municipality is located, or scroll down for the full list of Storm Water Staff.



Maintain ESC Measures Till Stabilization



Maintain ESC Measures Till Stabilization



Maintain ESC Measures Till Stabilization



Overall FAIL



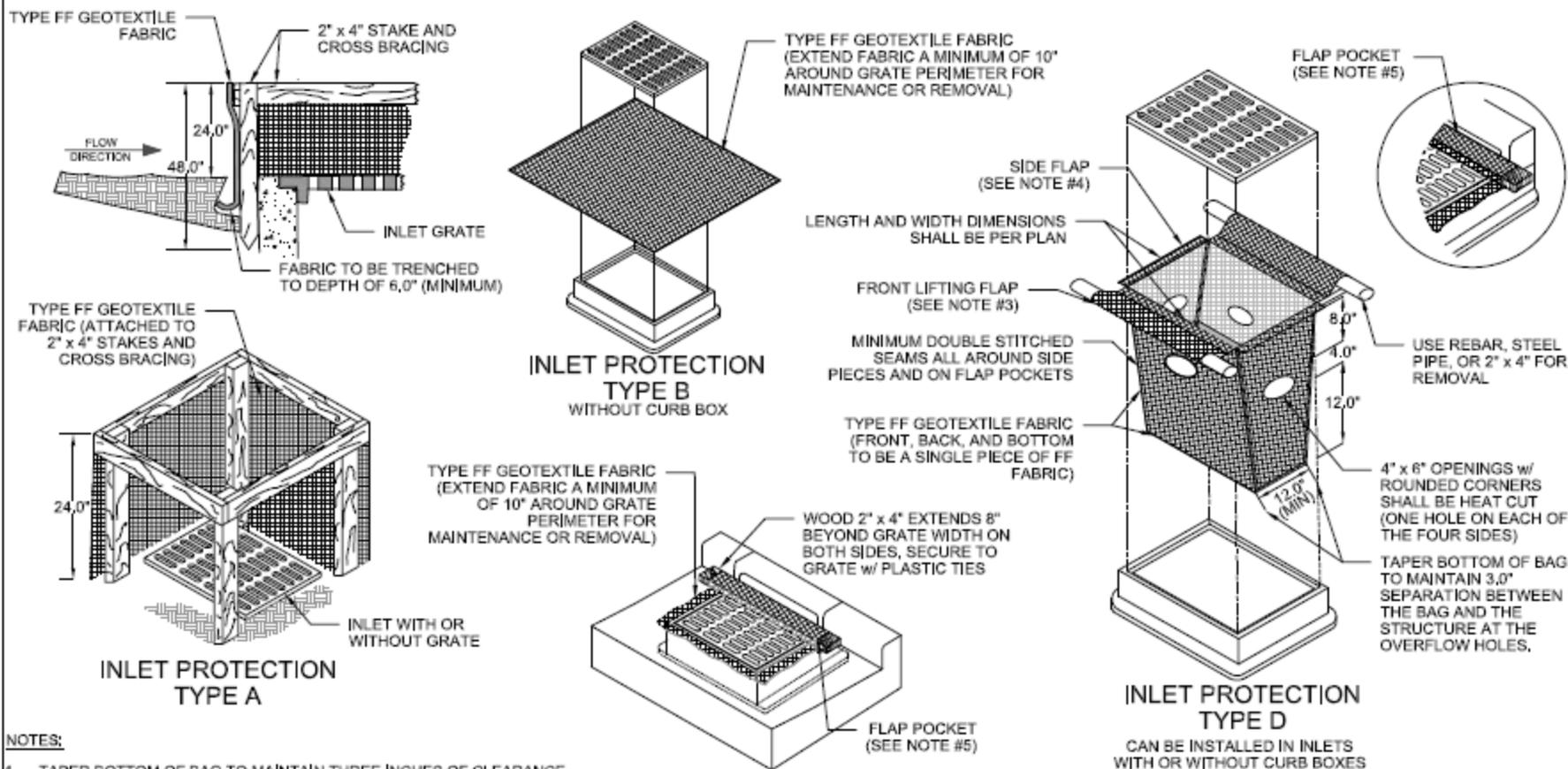
Erosion Control Measures Must Be Maintained



Inlet Protection DNR Tech St. (1060)



FIGURE 1. INLET PROTECTION TYPES A, B, C AND D



NOTES:

1. TAPER BOTTOM OF BAG TO MAINTAIN THREE INCHES OF CLEARANCE BETWEEN THE BAG AND THE STRUCTURE, MEASURED FROM THE BOTTOM OF THE OVERFLOW OPENINGS TO THE STRUCTURE WALL.
2. GEOTEXTILE FABRIC TYPE FF FOR FLAPS, TOP AND BOTTOM OF OUTSIDE OF FILTER BAG, FRONT, BACK, AND BOTTOM OF FILTER BAG BEING ONE PIECE.
3. FRONT LIFTING FLAP IS TO BE USED WHEN REMOVING AND MAINTAINING FILTER BAG.
4. SIDE FLAPS SHALL BE A MAXIMUM OF TWO INCHES LONG. FOLD THE FABRIC OVER AND REINFORCE WITH MULTIPLE STITCHES.
5. FLAP POCKETS SHALL BE LARGE ENOUGH TO ACCEPT WOOD 2" x 4". THE REBAR, STEEL PIPE, OR WOOD SHALL BE INSTALLED IN THE REAR FLAP AND SHALL NOT BLOCK THE TOP HALF OF THE CURB FACE OPENING.

MAINTENANCE NOTES:

1. WHEN REMOVING OR MAINTAINING INLET PROTECTION, CARE SHALL BE TAKEN SO THAT THE SEDIMENT TRAPPED IN THE FABRIC DOES NOT FALL INTO THE STRUCTURE. MATERIAL THAT HAS FALLEN INTO THE INLET SHALL BE IMMEDIATELY REMOVED.

1060
 TECHNICAL STANDARD No.
 08/2014
 REVISION DATE
 NOT TO SCALE

Tracking Pad

DNR Tech St. (1057)



Rock access shall be non-tracking, MIN 3 IN, DIAM. CLEAN STONE, min. 12 in depth, 50 ft min. length, width of egress

Tracking FAIL



Tracking FAIL



Silt Fence DNR Tech Std (1056)

*Properly Spaced Silt
Fence*



Silt Fence Spacing Guidelines

Slope

Spacing

>2%

100 feet

2-5%

75 feet

5-10%

50 feet

10-33%

25 feet

33 - 50%

20 feet

>50%

not allowed

Silt Fence

Code Compliant Materials Only

Must Meet WisDOT
WDNR Specifications



Where to Use

- Down slope of *small* disturbed areas
- With ends extended upslope
- With room for water to pond behind the fence
- In parallel lines on long or steep slopes, along the contour
- NOT on slopes greater than 50% (2:1)
- NOT across channels or gullies
- May NOT be installed below the ordinary high watermark or placed perpendicular to flow in streams, swales, or ditches

Where to Use

- ▣ Down slope sides of small disturbed areas
- ▣ In parallel lines on long or steep slopes, along the contour
- ▣ NOT across channels or gullies
- ▣ NOT in streams or ditches

Ditch Checks/Erosion Mat

DNR Tech Std (1062/1053)



**Constructed in
ditches to
reduce runoff
velocity and trap
sediment**

**Ditch checks
placed at every
2ft of drop**

Channel Protection FAIL



Channel Protection FAIL



Vegetated Buffer Criteria Tech Std. (1054)

- Disturbed area draining to buffer $\leq 6\%$
- Width of buffer slopes $< 5\%$
- Buffer width **25-ft minimum** for up to 125 feet of disturbed area. Add an additional foot of buffer for every 5 feet exceeding 125 feet of disturbed area



Manufactured Perimeter Control and Slope and Interruption Products



Straw Wattle

Safety & Buildings Approval List for Perimeter Control Products

- ▣ Approved as Ditch Checks on the DOT's product acceptability list (PAL)
- OR
- ▣ Approved by S & B based on test results performed by an approved testing facility
- ▣ Specific installation requirements based on height of product, degree and length of slope

Maintain ESC Measures Till Stabilization



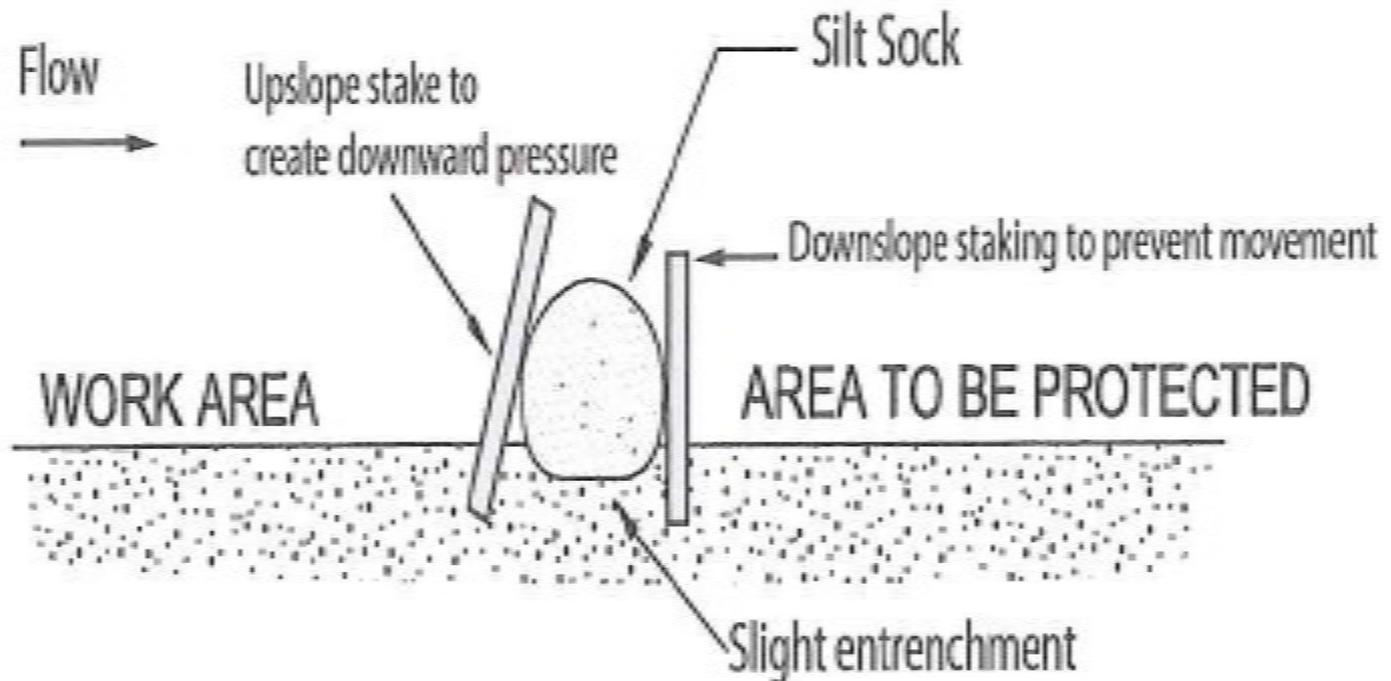
Maintain Ground Contact



Installation Stipulations for Approved Products

Manufactured Perimeter Control and Slope Interruption Products (1071)

Installation for higher risk of run off



Ditch Check (1062)

- **Manufactured products must be listed on the WisDOT PAL**
- **Center must be lower than sides forming a weir**
- **Installed every 2 feet of vertical drop**
- **Min. top width = 2 feet in direction of slope with a max. slope of 2:1**
- **Stone checks constructed of angular stone with a D_{50} of 3" or greater (breaker run/shot rock)**



Silt Fence?

Matting?

Or Both?





Someone's Done Their Homework Here



It Can Be Done



Inspector's Role

Enforcement And Education

Provide staff and contractors with a clear understanding of basic ESC concepts

Preserve existing vegetation

Divert upland runoff around exposed soil

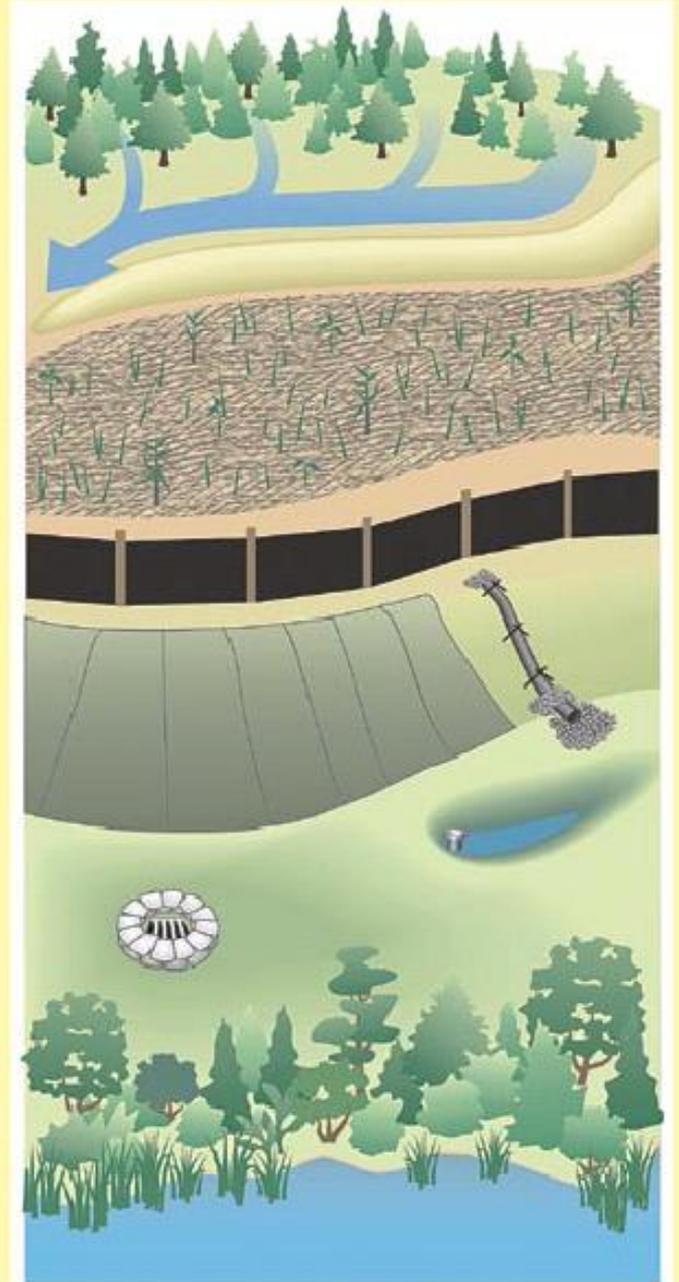
Seed/mulch/cover bare soil immediately

Use silt fences to trap sediment in runoff

Protect slopes and channels from gullying

Install sediment traps and settling basins

Preserve vegetation near all waterways



**Thank you for attending the 2016
Winter Updates presentation.**

**We hope you found the
information valuable.**

Please feel free to submit feedback
regarding this presentation
at the following link:

<https://www.surveymonkey.com/s/industryservicespeakingevent>