2018 Winter Updates – UDC Hits and Misses
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SPS 321.24 (3) (d) (e) & (f).

- Improper flashing and counter flashing at windows, doors and roof flashing at wall and rooflines and kick-out flashing at roof eave and sidewall.

- SPS 321.24 (3) (d) (e) & (f). (d) 1. Flashing shall be provided at all the following locations: At the top of all exterior door and window openings, unless using self-flashing windows that provide at least one inch of flashing around the opening, including corners. 2. At the intersection of chimneys. 3. Under and at the ends of masonry, wood or metal copings and sills. 4. Above all projected trim. 5. Where porches, decks or stairs attach to a wall or floor assembly of wood frame construction.
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.

Less than 2” Height
Requires Treated Lumber
Per AWPA Std or Be Decay Resistant
SPS 321.24 (1)
SPS 321.08

- Tub/showers abutting the house/dwelling ¾-hour rated wall without the gypsum board behind it to maintain the continuity for the rating of the wall. **SPS 321.08 (1) (a).** Attached garages: The walls and ceiling between an attached garage and any portion of the dwelling, including attic or soffit areas, shall be ¾-hour fire-resistive construction or shall be constructed with a). One layer of 5/8-inch Type X gypsum drywall shall be used on the garage side of the separation wall or ceiling. B) One layer of ½-inch gypsum drywall shall be used on each side of the separation wall or ceiling. C) Two layers of ½-inch gypsum drywall shall be used on the garage side of the separation wall or ceiling.
Separation Option

METHOD #2
SPS 321.08 (2) (b) 2
Separation Options

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

Dwelling Unit separation from foundation to roof deck
5/8" gypsum wallboard or equivalent on each side of the wall
Two-family separation wall
Draftstops and Fireblocking

- SPS 321.08
- Dropped soffits
- Shower soffits
- Fireplace chases
- Mechanical chases
- Interconnections ceiling and walls
- Openings through floors
- Penetrations.
Typical Fire-Blocking Locations

**Soffit**
- Without fire blocking, a soffit provides a path for fire to spread from a wall cavity to the joint bays above.
- Installing a single piece of material across the faces of the studs is often faster than using individual blocks.

**Tub Deck**
- Fire blocking is required in the stud bays around a drop-in tub.

**Perimeter Basement Walls**
- A space behind a 2.4 meter basement wall must be separated from the stud bays above.

**Concealed Spaces in Walls**
- When a wall is not drywalled or lined on both sides, it is typical of framed-out basement walls and double stud walls; there must be a full-height fire block every 10 feet horizontally.

**Balcony-Transit Bays**
- Full-height rake walls need fire blocking to separate the stud bays from the attic space above.

**Stair Stringers**
- The space between stringers must be separated from the upper-story floor/joint bays.

**Stairway Landings**
- If the area underneath the landing is unfinished, the wall bays must be blocked.

**Stair Stringers**
- If the area beneath the stair is unfinished, fire blocks are required in the stud bays alongside the stringer. If the area beneath is finished with minimum V-2 gypsum, this blocking is typically not required.
**Typical Fire-Blocking Locations**

**Soffits**
Without fire blocking, a soffit provides a path for fire to spread from a wall cavity to the joist bays above. Installing a single piece of material across the face of the studs is often faster than using individual blocks.

**Tub Deck**
Fire blocking is required in the stud bays around a drop-in tub.

**Perimeter Basement Walls**
A space behind a 2x4 perimeter basement wall must be separated from the joist bays above.

**Concealed Spaces in Walls**
When a wall is not drywalled or sheathed on one side (which is typical of framed-out basements and double stud walls) there must be a full-length fire-block every 10 feet horizontally.
SPS 321.085

(2) **Fireblocking Materials.** Fireblocking shall consist of one of the following:

- SPS\textsuperscript{321.085(2)(a)} (a) 2-inch nominal lumber.
- SPS\textsuperscript{321.085(2)(b)} (b) Two layers of one-inch nominal lumber.
- SPS\textsuperscript{321.085(2)(c)} (c) One thickness of \(\frac{3}{4}\)-inch nominal plywood or wood structural panel with any joints backed with the same material.
- SPS\textsuperscript{321.085(2)(d)} (d) One thickness of \(\frac{1}{2}\)-inch gypsum wallboard, face nailed or face screwed to solid wood, with any joints backed with the same material.
(e) Fiberglass or mineral wool batt insulation may be used if both of the following conditions are met:

- **SPS 321.085(2)(e)1.** 1. The least dimension of the opening may not exceed 4 inches.
- **SPS 321.085(2)(e)2.** 2. The batt shall be installed to fill the entire thickness of the opening or stud cavity.
321.08 & 321.085 Fiberglass Insulation as Draftstopping & Fireblocking

Question: Is fiberglass insulation acceptable as a fireblocking and draftstopping material?

Answer: This section allows other non-combustible materials in lieu of the traditional 2 inch nominal wood or drywall firestops. Unfaced fiberglass batt insulation has passed the E-136 (ASTM) test for non-combustibility. Therefore, such insulation will be allowed as firestopping if it is tightly packed such that it will be held in place.
FIGURE 4: TYPICAL FIRE BLOCKING DETAIL WHEN STUDWALL IS OFFSET FROM BASEMENT WALL
321.085(1) Fireblocking

Question: How should tub/shower units be fireblocked?

Answer: For most units, there should be no need for fireblocking since interconnected vertical concealed spaces do not require fireblocking. However, if the unit has a canopy with a dropped soffit, then the fireblocking requirements would apply to the interconnected vertical and horizontal concealed spaces, similar to kitchen cabinet soffits. Also, the floor below a tub shall be fireblocked around plumbing penetrations if it allows air/fire passage between levels within concealed spaces.
Missing or not providing proper fireblocking material at wall/ceiling interconnections, built down soffits, chases, etc.

**SPS 321.085 (1).** Fireblocking shall be provided in all the following locations: (a). In concealed spaces of walls and partitions, including furred spaces, at the ceiling and floor levels. (b). At all interconnections between stair stringers at the top and bottom of the run and at any intervening floor level. (c). At all interconnections between concealed vertical and horizontal spaces including the attachment between a carport and a dwelling.
Garage Side Dwelling Separation Wall
(fireblocked?)
Fireblocked at Cathedral Ceiling Line
Proper Wind-Washing Insulation Support
For cathedral or raised ceilings, all air permeable insulation materials installed in any position other than horizontal shall be covered on the cold-in-winter side with a permanently attached material of low permeability to maintain the R-value of the insulation. (Suitable materials include house wrap permanently attached with batten strips, asphalt-impregnated felt or tar paper, plywood, OSB, siding material or rigid insulation sheeting).
Proper wind-wash at exterior dwelling wall & porch ceiling
SPS 321.085 & SPS 322.21

- SPS 321.085 Fireblocking at ceiling wall interconnection

- SPS 322.21 (2). Wind-washing material at the backside of studs of unconditioned space.
Soffit Without Fireblock / Draftstop
Insulation compressed into the stud cavity and not properly fit per the manufacture’s requirements.

SPS 322.20 (4) (b) All insulation materials shall be installed in accordance with the manufacturer’s installation instructions.
SPS 322.20 (4) (b) (c).

- (b) All insulation materials shall be installed in accordance with the manufacturer’s installation instructions.
- (c) Manufacturer’s installation instructions shall be available on the job site at the time of inspection.
- (d) Roof and ceiling, floor and wall cavity batt or board insulation shall be installed in a manner which will permit inspection of the manufacturer's R-value identification mark.
Does it meet the required R value for a 2 x 6 wall?
SPS 321.24 (2). During Construction
SPS 321.24 (2).

(2) During Construction. During construction, wall cavity insulation may not be installed until a water-resistive covering is in place over the wall cavity and windows, door and a roof with at least underlayment are installed.
SPS 322.20

Insulation markers are required in the attic every 300 sq.ft. Attached to a truss or joist and facing the attic opening.
SPS 322.20 (5) (b)

- Not properly displaying depth markers for insulation in the attic space.

- SPS 322.20 (5) (b) 1, 2, & 3. The thickness of blown-in roof and ceiling insulation shall be identified by thickness markings that are labeled in inches and installed at least one for every 300 square feet through the attic space. 2). The markers shall be affixed to trusses or joists marking the minimum initial installed thickness and minimum settled thickness with numbers a minimum of one-inch in height. 3). Each marker shall face the attic access.
Bonus Rooms Above a Garage

- Optimal insulation
- Draftstop.
- Fireblocking.
- Sealing at knee-wall and subfloor.
- Sealing around supply boots.
- Natural light
- Ceiling height.
Air barrier/thermal barrier?
Proper floor joist cavity air barrier
Supply Ducts Properly Sealed
UL 181A Tape (for Rigid Ducts)
Sealed Ducts in Unconditioned Space Required per 322.43
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 $\leq 8$ cfm/100 sf of conditioned floor area OR
  - Total leakage $\leq 12$ 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 ≤ 4 cfm/100 sf of conditioned floor area.
322.42 Ducts in Unconditioned Spaces

Ducts located outside conditioned space, including those in attics, unheated garages, and vented crawl spaces and under slabs, shall be insulated to at least R-8. Per SPS 322.10(3), conditioned is defined as being heated to 50 degrees or more at design conditions. Burying the ducts in attic insulation that provides the minimum R-8 value is acceptable, except if the ducts are used for cooling purposes. Per (1m) of this section, cooling supply ducts require at least R-8 duct insulation with an exterior vapor retarder to reduce surface condensation. Note that any ducts outside the conditioned space, which per SPS 322.37 includes the required air barrier, would generally trigger duct sealing and testing of the complete duct system per SPS 322.44.
Ducts in Conditioned Space

- Ducts that are in insulated ceilings, floors or walls that are insulated on the unconditioned side the same as the rest of the component (unless a different R-value of at least R-8 for the duct area has been entered into Rescheck) and there is a continuous air barrier separating the duct from the outdoors, are considered to be in the conditioned space and are exempt from the insulating, sealing and testing provisions.
Ducts in Conditioned Space

- An insulated floor, as below a bonus room over an unheated garage, would require sealing of the ceiling finish as well as the required windwash protection, per SPS 322.21(2), at any exposed, non-horizontal insulation.

- In attics, a sealed chase would be accepted as keeping the ducts within the conditioned space. If the sides of the chase are insulated with air permeable insulation exposed to the attic at more than 30 degrees from horizontal, then that insulation requires windwash protection per SPS 322.21(2).
Ducts in Conditioned Space.

- Just the ductwork in the unconditioned space may be tested at rough-in stage, meaning the remaining ductwork would not need to be sealed and tested. The "conditioned floor area" for calculation purposes would be the area served by the tested ducts.

- Ductwork located under a slab that is insulated for underground ducts, will be considered within the conditioned space if the foam insulation joints are taped or otherwise sealed.
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
Not providing proper uniformity to the riser height and tread depth.

SPS 321.04 (2) (e). 1. Within a stair flight, the greatest tread depth may not exceed the smallest read depth by more than 3/8-inch and the greatest riser height may not exceed the smallest riser height by more than 3/8-inch.
SPS 321.04 (2) (B) & (C).

- Stair riser exceeding the maximum 8-inch rise or the minimum tread depth of 9 inches.

- SPS 321.04 (2) (b) & (c). Risers may not exceed 8 inches in height measured vertically from tread to tread. At the top and bottom of a flight, measurement shall be taken from the top of the nosing to the finished floor surface, unless the finished surface is carpeting, in which case the measurement shall be made to the hard surface below the carpeting.
321.04 (2)(c) 4. a.
4. `Individual winder treads.'

. 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 distance of 12 inches from the narrow end of the tread or from the inside face of the wall.
Winder or Landing?

18 inches

16 inches

18 inches
4. Curved or irregular landings shall have a minimum straight line measurement of 26 inches between the nosing of the 2 connecting treads measured at a point 18 inches from the narrow end of the landing measured along the nosing of the 2 treads.
SPS 321.04 (b) 3. & 6.

- Handrails not continuous through winder type treads in stairs.

- SPS 321.04 (b) 3. & 6. The required handrail on a winder stairs shall be placed on the side where the treads are wider, except where all winder treads in a flight have a depth of at least 9 inches 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. Handrails shall be continuous for the entire length of the stairs.
Handrails?
SPS 321.04 (3)(a)1.

(3) Handrails and Guards.

SPS 321.04(3)(a)1. 1. A flight of stairs with more than 3 risers shall be provided with at least one handrail for the full length of the flight.
SPS 321.04 (2) (d).

- *Improper headroom clearance for a stairs.*

- SPS 321.04 (2) (d). Stairways shall be provided with a minimum headroom clearance of 76 inches (6’ 4”) measured vertically from a line parallel to the nosing of the treads to the ceiling, soffit or any overhead obstruction directly above that line.
SPS 321.04 (3) (b) 2.

- Not providing proper clearance from handrail to wall surface.

- 2. Clearance. The clearance between a handrail and a wall surface shall be at least 1 ½ inches.
(a) At least 2 exits shall be provided from the second floor. **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 **that** discharges to grade, 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.**
(b) Windows 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.

(6) (b) The nominal size of the net clear opening shall be at least 20 inches by 24 inches irrespective of height or width.
(c) Where the second floor of a building is the lowest floor level in a dwelling unit, as in an up-and-down duplex, no exit from the unit may go through another dwelling unit or other party’s occupancy on the first floor.
SPS 321.03 (6) (f)

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.*
(7) (a) 4. Where sliding doors are used as a required exit, the clear opening shall be at least 29 inches wide and be at least 76 inches high.
(8) (b) Balconies shall be provided with guards in accordance with s. SPS 321.04 (3).

(c) 1. The balcony 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 guard and its supports may infringe on the dimensions of the required area no more than 4.5 inches.
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.
Door Swings In Toward House  
Landing Not Required  
Considered to be Interior Stair
(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 322.37 (a) & (b).

- Not air sealing around the annular space at plumbing drain and vent penetrations through exterior walls under sinks and lavatories.

- SPS 322.37 (3) (a) (b). Air sealing shall be provided at the attic and crawl space panels, at recessed lights and around all plumbing and electrical penetrations, where these openings are located in the dwelling thermal envelope.
Under the sink plumbing
SPS 321.24 (4) (e) 2. & 3.

- Not sealing around exterior penetrations at the cladding.

- SPS 321.24 (4) (e) 2. & 3. 1). Penetrations of 5 square inches or less with an annular space of no more than \( \frac{1}{2} \)-inch shall be sealed with caulk or similar material. 2). Penetrations of greater than 5 square inches shall be flashed.
Not providing proper exterior landings serving swing type doors when more than 8-inch rise to grade or landing.

SPS 321.04 (4) (d). 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 have a length of at least 36 inches in the direction of travel out of the dwelling.
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 321.12 (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 at least 10 feet, except as provided in subs. (2) and (3).
(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.
That’s All Folks..........

► Any Questions?

► Thanks for your time and attention.