

Foundation/Site

General Requirements

- Permits req'd EXC: fences <6ft., walls <4ft., sheds, painting[105.2]
- Approved plans and permit card on site[106.3.1]
- Are special inspection reports req'd?bt-12 [109.2]
- Verify setbacks—min. 3ft. to property line[302.1]
- Setbacks <3ft. req. 1hr. construction & no openings[302.1]
- Inspection and approval prior to covering any work[109.1]
- Pipe trench below footing offset min. 45°Fig. b2 [2603.7]
- Temporary power (see p. 25)[107.3]

Slope/Grade

- Surface graded away from foundation min. 6in./10ft.[401.3]
- Setbacks & clearances to slopes ≥ 1 vert.: 3 horiz.Fig. b3 [403.1.7]
- Lot slope >1:10—foundation stepped or level[403.1.5]
- Graded site—top of foundation min. 12in.+2% above street drain [403.1.7.3]

Forms

- Pipe penetrations must be sleeved[2603.5]
- Excavation free of debris and roots[408.4,506.2]
- Beam connections $\frac{1}{2}$ in. air space on 3 sides[323.1]

Rebar

- 12in. min. splice lap or per design[local]
- SDC D1&D2: Min. #4 bar in top and bottom of footing/wall ...[403.1.3.1,2]
- SDC D1&D2: Min. #4 vertical bar 4ft. on center[403.1.3]
- SDC D1&D2: Min. 3in. clearance to soil (dobies not bricks) Fig. b1 [403.1.3]
- 5in. min. clear soil to rebar in 8in. walls[T404.1.1(2)]
- 6.75in. min. clear soil to rebar in 10in. walls[T404.1.1(4)]
- 8.75in. min. clear soil to rebar in 12in. walls[T404.1.1(3)]

Plates & Sills

- Bottom of sill 8in. to earth[323.1]
- Sill material treated or naturally decay-resistant[323.1]

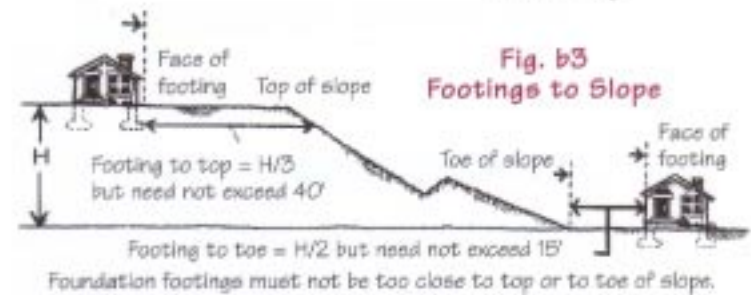
Fig. b1 • T Foundation with Forms



Fig. b2
Pipes
near
Footings



Fig. b3
Footings to Slope



bt-1 • Footing Sizing^a

Dimension	Stories			a—based on 2000psi soil bearing value and conventional wood frame b—12in. min. or below frost level
	1	2	3	
Below grade ^b	12in.	12in.	12in.	Based on IRC 403.1
Ftg. width	12in.	15in.	17in.	
Thickness	not less than walls—see bt-2			

Anchor Bolts

- 1/2 in. bolts min. 7 in. embedment max. 6 ft. spacing[403.1.6]
- Within 12 in. of end of sill Fig. b5 [403.1.6]
- SDC D1&D2: 2 in. plate washers, bolts 4 ft. o.c. for 2 story[403.1.6.1]

Hold-Downs

- Bolts installed to manufacturer's specs Fig. b5 [manu.]
- All load transfers floor to floor to design specs[601.2]
- Hold-down embedment per design specs. [manu.]

Concrete Masonry Units (CMUs)

General

- 6 in. block OK for one story ≤9 ft.[606.2.1]
- 8 in. block if more than one story or >9 ft.[606.2.1]
- Beam connections 1/2 in. air space on 3 sides[323.1]
- Roof & floor structures to be anchored to masonry walls[606.10]

Grout

- All cells with reinforcement must be filled.[609.4.1]
- Cleanouts req'd at bottom of each grouted cell for pours >4 ft. ...[609.1.5.2]
- Grout continuous pour, max. lift 5 ft.[609.1.4]
- Clean grout space-max. 1/2 in. projections[609.1.3]

Reinforcing

- SD Category D1&D2: Min. #3 vertical bars 4 ft. o.c.[404.1.4]
- Vertical Rebar ≤ 6% of grout space.[T609.1.2]
- Lap Rebar splices 40x bar dia.[P606.10(2)]
- Support/positioners min. 200 bar dia. (8 ft. #4 bar).[609.4.1]
- Cover min. 1/2 in.; 2 in. to weather or soil.[606.12]

Retaining Walls

- Walls supporting >4 ft. of backfill req. design[404.1.3]
- Surcharge within 45° must be engineered Fig. b4 [105.2,404.1.3]
- Enclosing habitable space-req's. moisture barrier[406.1]

bt-2 • Foundation Walls			
Max. Wall Height	Max. Unbalanced Backfill Ht.	Plain Concrete Thickness ^a	Plain Masonry Thickness ^a
5ft.	4ft.	6in.	6in. solid ^b or 8in. 8in.
	5ft.	6in.	8in.
6ft.	4ft.	6in.	6in. solid ^b or 8in. 8in.
	5ft.	6in.	8in.
	6ft.	8in.	10in.
7ft.	4ft.	6in.	8in.
	5ft.	6in.	10in.
	6ft.	8in.	12in.
8ft.	5ft.	6in.	10in.
	6ft.	8in.	12in.
	7ft.	10in.	12in. solid ^b
9ft.	5ft.	8in.	10in.
	6ft.	8in.	12in.
	7ft.	10in.	12in. solid ^b
	8ft.	10in.	12in. solid ^b design req'd

a. Assumes moderate bearing soil per T401.4.1
 b. Must be grout-filled Based on IRC T404.1.1(1)

Fig. b4 • Retaining Wall Engineering Required

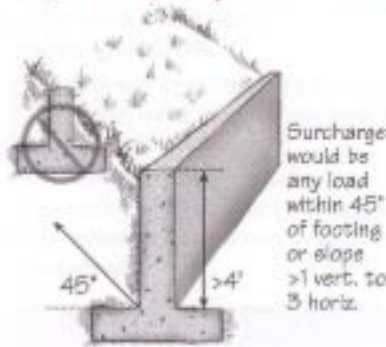
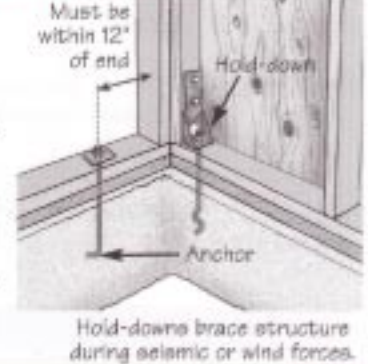


Fig. b5 • Anchor Bolts and Hold-Downs



Underfloor

General

- All formboards must be removed[408.4]
- Repair rock pockets or voids[local]
- Cripple wall <14in. sheathed or solidly blocked[602.9]
- Cripple wall >14in. braced as if first story + 15%, 18ft. max. spacing[602.10.2]
- Anchor bolts and hold-downs tightened (inspect before frieze blocking)[manu.]
- Frieze blocking req'd on sloped foundations \geq 1:10[local]

Ventilation

- 1 sq.ft./150sq. ft. of under-floor area[408.1]
- Vent openings within 3ft. of each corner[408.1]
- Vents \leq 3ft. of property line OK[302.2X2]

Access Openings

- Min. 18in. x 24in. if no mechanical equipment[408.3]
- Min. 22in. x 30in. if mechanical equipment present[1305.1.4]

Slab

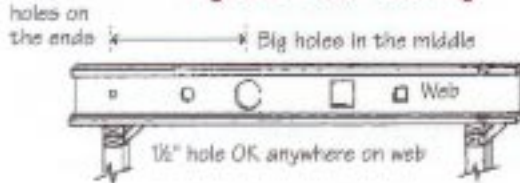
General

- Slab floor on grade min. 3/4in. thick[506.1]
- Vapor barrier under habitable space[506.2.3]

Structural Slabs

- Elevated or wood-supported slab must be engineered[local]

Fig. b6 • TJI® Boring



Install "designed system" to manufacturer's instructions (installer must have copy on site).

Floor Framing

General

- Notching and boring joists and beams bt-3, Fig. b11 [502.8.1]
- Floor/ceiling draftstopped if >1,000 sq. ft. (open web trusses)[502.12]
- Double joists under bearing walls[502.4]

Subfloor

- Untreated wood soil clearance: joists min. 18in., beams min. 12in. ...[323.1]
- Cripple wall <14in. sheathed or solidly blocked[602.9]

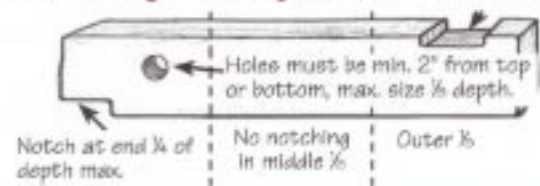
Joist Bearing

- On concrete—min. 3in.[502.6]
- On wood plates—min. 1/2in.[502.6]
- Joist lap min. 3/4in. and three 10d nails[502.6.1]

Joist Blocking

- Joists blocked @ ends (SDC D1&D2 @ all supports)[502.7]
- Joists >2x12 blocked or bridged @ 8ft. o.c.[502.7.1]

Fig. b11 • Notching & Boring Joists Notch max. 1/8 depth



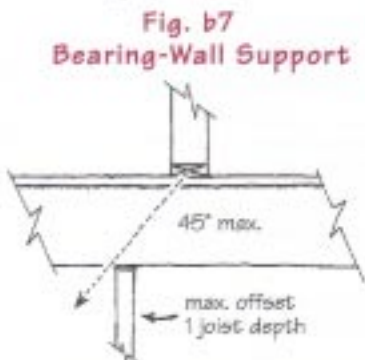
bt-3 • Floor-Joist Spans, Notching & Boring

DF #2	Floor-joist spans-40lb. live load			Notching		Boring
	12" o.c.	16" o.c.	24" o.c.	End	Outer 1/6	2" to edge
2x6	10'9"	9'9"	8'1"	1 1/2"	1/8"	1 1/2"
2x8	14'2"	12'7"	10'3"	1 1/2"	1 1/4"	2 3/4"
2x10	17'9"	15'5"	12'7"	2 1/4"	1 1/2"	3 1/4"
2x12	20'7"	17'10"	14'7"	2 1/4"	1 1/2"	3 3/4"

Based on IRC T502.3.1(G) & 502.8.1 and 10b, dead load

Steel Framing

- Studs in line with joists, rafters, and trusses max. $\frac{1}{2}$ in. offset [603.1.2]
- No splicing of studs or structural members [603.3.6]
- SDC D1&D2 and high wind areas (≥ 110 mph) req. add'l bracing OR [603.8.1] engineering [301.2]
- Harsh environments (e.g. coastal areas) req. min. G-90 protective coating [manu.]
- Sheathing fastened #8 min. screws every 6in. at edges 12in. field [T603.3.2(1)]



*60% hole OK on bearing wall if through only 2-doubled successive studs. All holes must be min. $\frac{1}{8}$ " from edge.

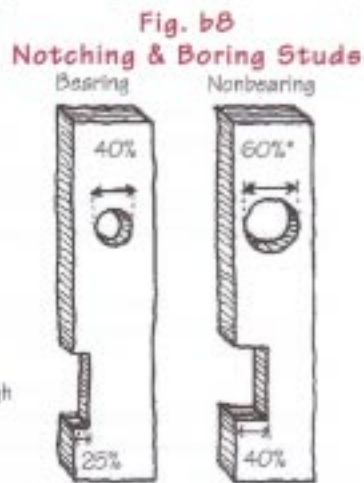


Fig. b9 • Hurricane & Seismic Retrofit

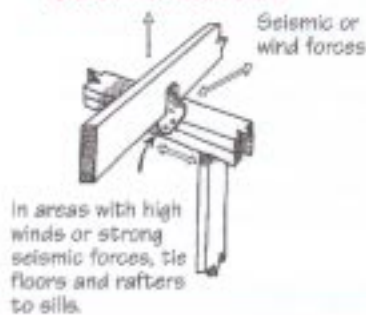
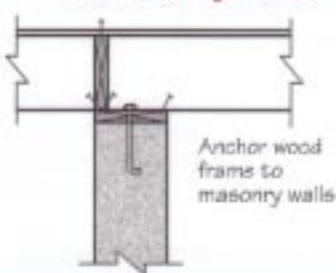


Fig. b10 • Anchoring to Masonry Walls



Wall Framing

Top Plates

- Bearing wall intersections and corners must overlap [602.3.2]
- End joints must offset 24in. min. [602.3.2]
- #16 gauge steel straps over notches $\geq 50\%$ of plate width [602.6.1]
- Single top plate OK if tied with 3in. x 6in. steel plate with 6-8d nails AND joists/trusses/rafters land within 1in. over stud [602.3.2X]
- Top plates face nailed 10d max. 24in. o.c. **bt-11** [T602.3(1)]

Bearing Wall Support

- Double joists under parallel bearing walls [502.4]
- Wall perpendicular to joist max. offset from girder 1 joist size **Fig. b7** [local]

Corner Framing

- Exterior corners—3 studs min. [F602.3(2)]
- Hold-downs in place and tightened [manu.]

Stud Notching and Boring

- Bearing or exterior wall max. notch 25% boring 40%. **Fig. b8** [602.6]
- Boring to 60% OK if stud doubled and not >2 successive studs bored [602.6X]
- Nonbearing notches OK to 40%, boring OK to 60% **Fig. b8** [602.6]
- Holes no closer than $\frac{1}{8}$ in. to face of stud [602.6]

bt-4 • Stud Sizing, Spacing, Notching & Boring

Stud Size	2x4	3x4	2x6
Bearing walls (to 10ft. high)			
Supporting roof & ceiling	24in. o.c. ^a	24in. o.c. ^a	24in. o.c.
Roof & ceiling + 1 floor	16in. o.c.	24in. o.c.	24in. o.c.
Roof & ceiling + 2 floors	n/a	16in. o.c.	16in. o.c.
Notching Fig. b8	$\frac{1}{2}$ in.	$\frac{1}{2}$ in.	1 $\frac{1}{2}$ in.
Boring Fig. b8	1 $\frac{1}{2}$ in.	1 $\frac{1}{2}$ in.	2 $\frac{1}{2}$ in.
Boring 2 doubled consec.	2in.	2in.	3 $\frac{1}{2}$ in.
Nonbearing walls			
Notching	1 $\frac{1}{2}$ in.	1 $\frac{1}{2}$ in.	2 $\frac{1}{2}$ in.
Boring	2in.	2in.	3 $\frac{1}{2}$ in.

a. Reduce to 16in. if utility grade studs are used.
Based on IRC T602.3(5) and 602.6

Fire Protection

Fire Stopping

- In concealed spaces every 10ft. horiz. and vert.[602.8]
- Horiz./vert. intersections such as soffits, drop & cove ceilings[602.8]
- Concealed space under stairs at top and bottom of stringers[602.8]
- Gaps around ducts and pipes must be sealed w/approved material @ floor & ceiling level penetration[602.8]
- Material may be 2x lumber, 1/2in. gyp. board, compressed glass fiber [602.8.1]

Fire-Resistive Construction between 2 Dwellings

- 1hr. construction req'd at walls & floor/ceiling between dwelling units [321.1]
- Rating of 1/2hr. OK if automatic sprinkler system present[321.1X]
- 16sq.in. max. size for electrical boxes penetrating membrane[321.3.2X]
- No back-to-back electrical boxes (24in. horiz. separation)[321.3.2X]
- Max. 100sq.in. of boxes per 100sq.ft. of wall area (six 4in.sq. electrical boxes)[321.3.2X]
- Metal pipe/conduit penetrations caulked with rated material[321.3.1X]
- Exterior walls <3ft. from property line 1hr. construction[302.1]

Garage

- Min. 1/2in. gyp. board on garage side of walls/ceilings common to house [309.2]
- Min. 1/2in. gyp. board on walls supporting ceilings common to house [309.2]
- Exterior walls <3ft. from property line 1hr. construction[302.1]
- Ducts through wall or ceiling common to house min. 26ga. steel ..[309.1.1]
- No duct openings in garage[309.1.1]
- No openings from garage to sleeping room[309.1]
- Door to house rated 20-minute or 1 1/2in. solid core[309.1]
- Non-combustible floor with slope to vehicle door or to a drain[309.3]

General Requirements

- Heat req'd in habitable rooms min. 68° 3ft. above floor[303.6]
- Min. one room ≥120sq.ft.[304.1]
- Other habitable rooms 70sq.ft. min. 7ft. min. dimension except kit. [304.2,3]
- Kitchen min. 50sq.ft.[304.2X]
- Glazed openings ≥8% of floor area[303.1]
- Natural ventilation (windows, doors, louvers) ≥4% of floor area[303.1]

Egress

Doors & Landings

- Door with direct access to exterior req'd (not through garage)[311.1]
- Req'd exit is min. 3ft. hinged door[311.3]
- All doors req' keyless operation from interior[311.2]
- Stairs and balconies positively anchored (not toenailed)[311.5]
- Landing min. 36in. deep x width of door or stair[312.2]
- Floor or landing each side of exit doors and top & bottom of stairs [312.1.1,2]
- Door (interior stair only) may open at but not swing over top step [312.1.1X]
- Floor or landing max. 1 1/2in. below door threshold[312.1.2]
- Exterior door landing max. 8in. below threshold[312.1.2X]
- Door (except screen door) may not swing over landing[312.1.2X]

Bedroom & Basement Egress Windows

- Sill height 44in. max. above finished floorFig. b12 [310.1]
- 5.7sq.ft. min. clear openingbt-5 [310.1.1]
- Min. 20in. width and min. 24in. heightbt-5, Fig. b12 [310.1.2,3]
- No windows <3ft. to property line[302.2]
- Security bars must have approved release hardware[310.4]
- Window wells min. 9sq.ft. and 36in. min. dimension[310.2]
- Window wells >44in. below grade must have permanent ladder ... [310.2.1]

min. width

bt-5 • Bedroom Window Egress: Min. height and width requirements (in inches)

width	20	20 1/4	21	21 1/2	22	22 1/4	23	23 1/4	24	24 1/4	25	25 1/4	26	26 1/4	27	27 1/4	28	28 1/4	29	29 1/4	30	30 1/4	31	31 1/4	32	32 1/4	33	33 1/4	34
height	41	40	39 1/4	38 1/2	37 1/2	36 1/2	35 1/4	35	34 1/4	33 1/2	33	32 1/4	31 1/2	31	30 1/2	30	29 1/4	29	28 1/2	28	27 1/2	27	26 1/2	26 1/4	25 1/2	25 1/4	25	24 1/2	24

min. height

bt-6 • Hearth Protection

Factory-made fireplaces come with recommendations for hearth-protection materials. Substitution of materials requires calculation to determine the minimum thickness of the proposed material.

	k per 1"	r=1" ÷ k
Portland cement	5.8	0.17
Micore 300™	0.5	2.00
Micore 230™	0.4	2.50
Micore 180™	0.36	2.78
Ceraboard™	0.34	2.94
Ceraform 126™	0.27	3.70
Metal lath & plaster	0.27	3.70
Durock™	0.84	1.19
Wonderboard™	3.2	0.31
Brick	5	0.20
Mortar	5	0.20
Limestone	6.5	0.15
Marble	11	0.09
Tile	12	0.08
Hardiboard (½")	6.6	0.15

T = Thickness required to meet specs
 R-value = req'd. by manu.
 r = Thermal resistance of chosen material
 k = Thermal conductivity of chosen material
 kl = Thermal conductivity of listed material
 Tl = Thickness of listed material
 Ta = Thickness of chosen material

Example for brick when R-value is given Req'd. R = 1.19

$$T = R \div r = 1.19 \div 0.2 = 5.95" \text{ (2 courses)}$$

Example where a material is listed

Listed material is Durock™ k = 0.84, Tl = ½"

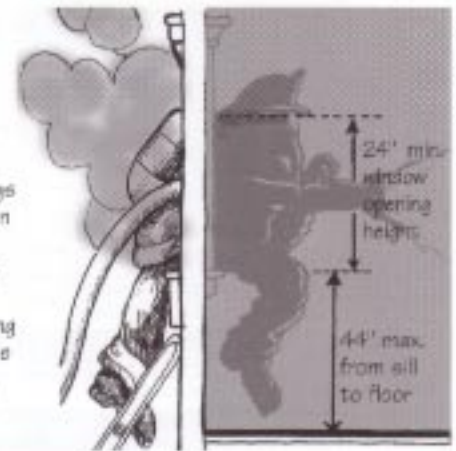
Alternate material chosen Micore™, Tl ¾"

$$T = k \times Tl \div kl = 0.4 \times \frac{3}{4} \div 0.84 = 0.238" \text{ is } < \frac{3}{8}"$$

¾" thick Micore™ 230 is adequate.

**Fig. b12
Bedroom Window
Egress**

The second exit required in a bedroom is usually a window. The dimensions of the openings are to ensure the residents an escape route, but equally important, they are designed to allow a firefighter with a backpack to enter. This opening must be 24" high and 20" wide min. (bt-5). The window sill must not be higher than 44" from the floor.



Fireplace

- Hearth slab min. thickness 4in.[1003.9.1]
- Hearth exten. depth 16in. front 8in. side if opening <6sq.ft.[1003.10]
- Hearth exten. depth 20in. front 12in. side if opening ≥6sq.ft. **Fig. b13** [1003.10]
- Glass doors req'd[energy]
- All combustion air from outside[1005.1]
- Min 2in. separation between chimney & combustibles[1001.15]

Factory-Built Fireplaces

- Hearth exten. distinguishable from surrounding floor[1004.2]
- Decorative chimney shrouds must be listed for fireplace system [1002.2,1004.3]

**Fig. b13
Masonry-Fireplace
Clearances**

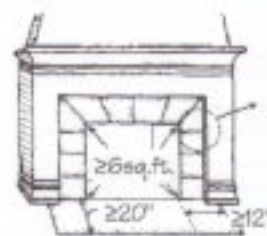
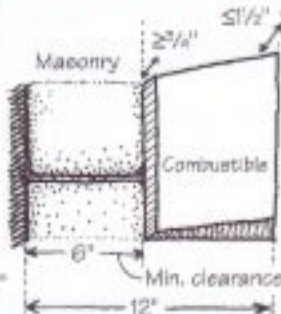


Fig. b14 • Fireplace Surround



1" clearance per ½" projection of combustible material surrounding fireplace opening up to 12". ¾" projection needs 6" clearance; 1½" projection needs 12" clearance.

Roof

General

- Eaves <3ft. from property line—1hr. construction[302.1]
- Install per manu. specs, materials identified on packaging[904.1,904.4]
- Asphalt shingles min. slope—2:12 (double underlayment if ≤4:12) [905.2.2]
- Wood shingles min. slope—3:12[905.7.2]
- Wood shakes min. slope—3:12[905.8.2]
- Clay/concrete tile min. slope—2½:12 (double underlayment if ≤4:12) [905.3.2]
- Flashing at roof/wall intersections, penetrations, chimneys, etc.[903.2]
- Ice dam membrane min. 24in. inside ext. wall line in cold climates [905.2.7.1]
- Chimney cricket req'd if >30in. wide[1001.17]

Trusses

- Uplift >20p.s.f. req's tie down to foundation[802.11]
- No field modification, e.g., notching, cutting[802.10.4]
- Provide design drawings, calculations & approvals w/shipment .. [802.10.1]

Rafters & Ceiling Joists

- Supports for <3:12 slope designed as beams not rafters[802.3]
- Rafter ties—1x4, 4ft. o.c.[802.3.1]
- Ridge board min. 1x must be full depth of cut rafter[802.3]
- Hip & valley rafters of 2x material and full depth of cut rafter[802.3]
- Attics >30in. high & >30sq.ft. require access—min 22in. x 30in. opening [807.1]
- Headers & trimmers >4ft. must be doubled[802.9]
- Headers & trimmers >6ft. must be hung with hardware[802.9]

Attic Ventilation

- Vent each enclosed attic and rafter bay[806.1]
- ½in. to ½in. mesh screen over openings[806.1]
- Net area of openings min. ½with of vented area OR[806.2]
- ½with if 50%–80% of venting near top OR vapor barrier[806.2]

Structural Sheathing/Bracing

Materials

- Plywood—¾in. min for studs 16in. o.c.; ½in. for studs 24in. o.c. ... [602.10.3]
- Fiberboard—½in. for studs 16in. o.c.[602.10.3]
- Gypsum board—nailed (not screwed) at 7in. o.c.[602.10.3]
- Wood panels must have span rating on grade stamp[503.2.1]
- Block all horizontal edges[602.10.7]
- Nail to schedule (6in.–12in. min.)bt-11 [T602.3(1&2)]

bt-7 • Ceiling Joist Span, Notching & Boring

Attics with limited storage, 10lb. live load				Notch size		Bore size
DF#2	12" o.c.	16" o.c.	24" o.c.	End	Outer ½	2" to edge
2x4	9'10"	8'9"	7'2"	¾"	¾"	—
2x6	14'10"	12'10"	10'6"	1½"	¾"	1½"
2x8	18'9"	16'3"	13'3"	1½"	1¼"	2½"
2x10	22'11"	19'10"	16'3"	2½"	1½"	3½"

Based on IRC T602.4(2)

bt-8 • Roof Rafter Span (no snow load)

20lb. live load, 10lb. dead load, ceiling attached to rafters at bearing points				Adjustment factors if ties or ceiling higher than bearing points			
DF#2	12" o.c.	16" o.c.	24" o.c.	H _c /H _s	Adjustment factor	½	0.83
2x4	9'10"	8'11"	7'10"	½	0.50	¾	0.90
2x6	15'6"	14'1"	11'9"	½	0.58	¾.5	1.00
2x8	20'5"	18'2"	14'10"	½	0.67	¾ = height of ceiling or rafter ties above top of bearing walls ½ = height of ridge	
2x10	25'8"	22'3"	18'2"	½	0.76		

Based on IRC T602.5.1(2)

Fig b15 • Don't Mess with TJI® Ends



bt-9 • Wall Bracing (based on IRC T602.10.3)

SDC	Condition	Type of brace	Amt. of bracing ^a
A & B ^b	1 story, top of 2 nd or 3 rd story; 1 st story of 2, 2 nd story of 3	let-in 1x4 or structural sheathing	16%
A & B	1 st story of 3 story	structural sheathing	25%
C	1 st story of 2 or 2 nd of 3	structural sheathing	30%
	1 st story of 3 story	structural sheathing	45%
D ₁	1 story, top of 2 nd or 3 rd	structural sheathing	20%
	1 st story of 2 or 2 nd of 3	structural sheathing	45%
	1 st story of 3 story	structural sheathing	60%
D ₂	1 story or top of 2 story	structural sheathing	25%
	1 st story of 2 story	structural sheathing	55%
	Cripple walls	wood structural panels	75%

a. Bracing must be at each end and a maximum of 25ft. on center
b. Also acceptable for category C top 1 story or top of 2nd or 3rd story

Exterior Wall Covers

Stucco over Wire Fabric

Paper

- Paper lap—horiz. 2in.; vert. 6in.[703.2]
- Min. 14# felt paper over wood studs or sheathing[703.2]

Wire

- Wire lap min. one mesh or 1in.[trade]
- Nail or staple spacing max. 6in.[703.6.1]
- Over solid sheathing no fasteners in field (not random)[manu.]
- Lap paper/paper & wire/wire (not wire/paper/wire/paper)[703.1]
- No holes on the top of horiz. surfaces (copings, etc.)[703.1]
- Weep screed 4in. to earth, 2in. to concrete[manu.]

Stucco Repairs

- No paper/wire paper/wire laps[703.2]
- Expose 2in.—4in. of old paper; lap new under old except at top[703.2]

Exterior Insulation Finish Systems (EIFS)

- Must follow manu. instructions[703.9]
- No decorative trim face nailed through EIFS[703.9]
- Special inspections req'd unless over masonry or weather barrier **bt-12** [703.9.1]

Shower/Wet Walls

Greenboard (Water-Resistant Gypboard)

- Ordinary greenboard not OK directly behind glued tile[local]
- All edges must be sealed with water-resistant sealant[702.4.2]
- Not on ceilings with >12in. o.c. framing[702.4.2]

Cement Board

- Suitable for glue-on tile[local]
- Req.'s. building-paper backing[manu.]
- Corrosion-resistant fasteners[manu.]
- All joints covered with water-resistant sealant[702.4.2]
- Finish to extend min. 72in. above drain[307.2]

Dry Walls

Gypsum Board

- Installed only after all rough inspections complete[109.4]
- Installed after building is weathertight[701.2]
- Nailing per schedule**bt-10** [T702.3.5]

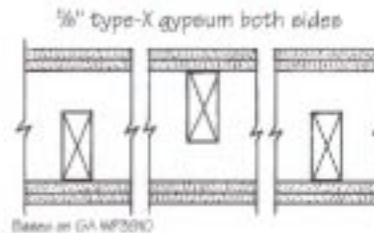
Insulation

- Vapor barrier facing conditioned space[1101.3]
- Tight around insulation-rated ceiling lights[1102.1.10]

SOUND & FIRE ASSEMBLIES

Assemblies are tested and recommended by the Gypsum Association. Adjoining dwelling units should have a minimum sound rating of STC 50 (Sound Transmission Class) and a 1hr. fire-resistance rating. These are only samples of the numerous assemblies possible. See Gypsum Association manuals for more.

Fig. b16 • Wall



Based on GA WFD30

Fig. b17
Sound Channel

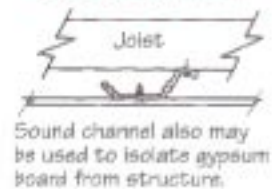
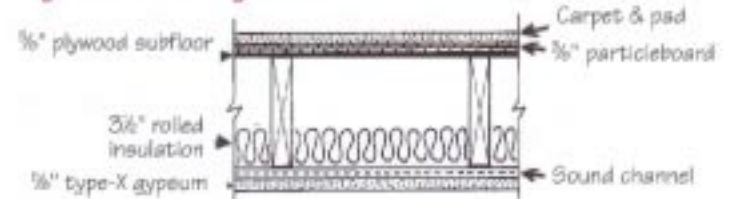


Fig. b18 • Ceiling/Floor Based on GA WFD30



bt-10 • 1/2 in. Gypsum Board Nailing Schedule

Location	Orientation to framing	Max. frame spacing	Nails	Screws
Ceilings	Perpendicular	24in.	7in.	12in.
Ceilings	Either	16in.	7in.	12in.
Walls	Either	24in.	8in.	12in.
Walls	Either	16in.	8in.	16in.

Based on IRC T702.3.5 for application without adhesive

Final Inspection

General

- Paperwork—special inspection reports on filebt-12 [109.2]
- Floor finishes that affect stairs or landings must be complete[109.1.6]
- Appliances and fixtures must be in place[109.1.6]
- Exterior pipe penetrations must be caulked[2606.1]
- Wood siding and trim 6in. from earth[323.1]
- Smoke detectors installed and operational Fig. b25 [317.1]
- Exterior doors and windows must be weathertight[703.8,1102.1.10]

Building Address

- Numbers or address legible from street[325.1]
- Illuminated numbers[local]

Tempered Glass in Bathrooms (see p.10)

- Req'd for glazing with lower edge <5ft. above tub or pan[308.4]
- Req'd for all shower/tub doors[308.4]
- Hinged shower door must open outward[2708.1]

Dwelling/Garage Separation

- Solid 1 1/2in. or 20-minute fire-rated door[309.1]
- Garage walls common to house covered with 1/2in. gyp.[309.2]

Fireplace

- Glass doors req'd[energy]
- Combustion air openings screened and from outside (not garage) [1005.1.2]
- Hearth exten. depth 16in. front 8in. side if opening <6sq. ft.[1003.10]
- Hearth exten. depth 20in. front 12in. side if opening ≥6sq. ft. Fig. b13 [1003.10]
- Hearth exten. distinguishable from surrounding floor[1004.2]

Attic

Insulation

- Vapor barrier facing conditioned space[1101.3]
- Tight around insulation-rated ceiling lights[1102.1.10]
- Sheet metal shield [to 2in.] above insulation in attic [2425.4]

Ventilation

- Vents for each enclosed attic and rafter bay[806.1]
- 1/2in. to 1/4in. mesh over openings[806]
- Net area of openings min. 1/10th of vented area.[806.2]
- Min. 1in. clearance of insulation to sheathing near vents[806.3]

Reduction to 1/300th OK if

- 50%–80% of venting is >3ft. above eave vents OR.[806.2]
- Vapor barrier faces conditioned space[806.2]

Stairs

- Headroom min. 6ft.8in. (spiral 6ft.6in.)Fig. b20 [314.3,5]
- Illumination req'd. for stairs and landings[303.4,314.7]
- Min. stair & landing width 36in. Fig. b21 [312.2,314.1]
- Max. riser height 7 1/2in., min. tread depth 10in. Fig. b21 [314.2]
- Riser or tread maximum differential 1/8in.[314.2]
- Winder-tread min. 6in., develop 10in. @ 12in. from inside . Fig. b23 [314.4]
- Slope of tread max 1:48 (2%)[314.2]
- Concrete over wood steps; roll membrane up sides (between tread and side wall) w/counterflashing Fig. b22 [703.8]

Guardrail

- Req'd for any walkoff >30in. above floor or grade[316.1]
- Min. height 36in. (34in. stair handrail)[316.1]
- Max. opening size <4in. (6in. opening at tread/riser/rail triangle) ... [316.2]

Handrail

- Grippable rail req'd if 2 or more risers[315.1]
- Railing height min. 34in. and max. 38in. Fig. b20 [315.1]
- Grips must be 1/4in.–2 1/2in. circular cross section Fig. b24 [315.2]
- Maximum projection into stairway 4 1/2in. Fig. b24 [314.1]
- Ends shall return to wall or newel post[315.1]

Landings

- Landing min. 36in. deep x width of door or stair[312.2]
- Floor or landing each side of exit doors and top & bottom of stairs [312.1.1,2]
- Door (interior stair only) may open at but not swing over top step [312.1.1X]
- Floor or landing max. 1 1/2in. below door threshold[312.1.2]
- Exterior door landing max. 8in. below threshold[312.1.2X]
- Door (except screen door) may not open over landing[312.1.2X]

Fig. b20

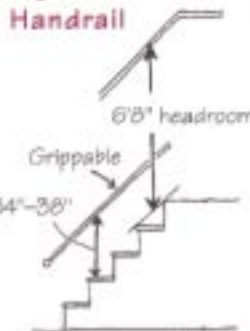


Fig. b21 Steps

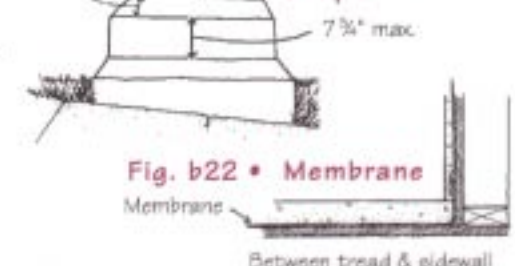


Fig. b22 • Membrane

Membrane Between tread & sidewall

Windows

General

- No windows <3ft. to property line[302.2]
- Effective flashing around windows & door openings[703.8]
- Bedroom & habitable basement req. emergency escape to exterior ...[310.1]

Tempered Glass Required

- In glazing <60in. above tub or shower[308.4]
- Vert. edge of glazing <24in. of door swing & bottom <60in. from floor [308.4]
- Req'd if walk-through hazard exists—all of following:[308.4]

- Exposed area of pane >9sq.ft. **Fig. b19 • Hazardous Window**
- Bottom edge <18in. above floor or ground

- Top edge >36in. above floor or ground
- Within 36in. of walking surface

- Exception: 1½in. wide protective guard installed 36in. above floor **Fig. b19** [308.4X5]

Glazing Requirements

- In habitable rooms, natural light min. 8% floor area[303.1]
- Bathrooms min. 3sq.ft. OR artificial light and vent fan[303.3]

Ventilation

- Natural ventilation (windows, doors, louvers) ≥4% of floor area OR [303.1]
 - Mechanical 0.35 air changes/hr. or 15cfm per occupant[303.1X]
 - Bathrooms 1½sq.ft. operable window OR 50cfm fan to outside ...[303.3X]
- Two rooms are considered one if:
- Opening between them is min. 50% of common wall AND ≥10% floor area of interior room AND at least 25sq.ft.[303.2]



Fig. b23
Winding Stairs

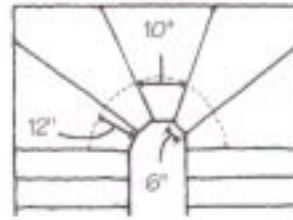
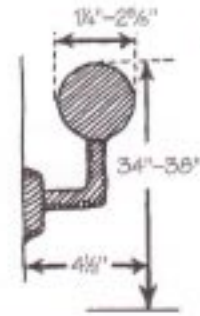


Fig. b24
Handrail Sizing



Swimming Pools

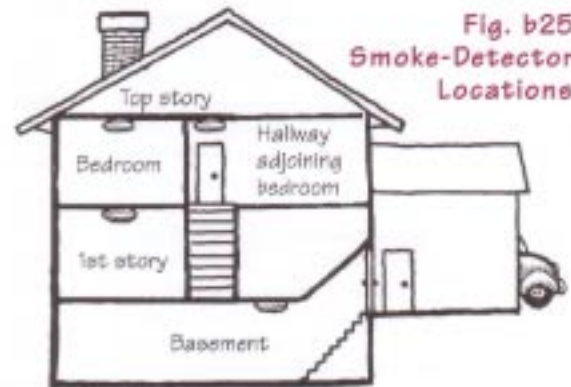
Barrier

- Min. 48in. height, bottom max. 2in. above grade[AG105.2]
- Max. 4in. openings[AG105.2]
- Difficult to climb over[AG105.2]

Gates & Doors

- Lockable, self-closing, open away from pool[AG105.2]
- If latch <54in. high: Must be poolside—min. 3in. below top, no openings >½in. within 18in.[AG105.2]
- Doors & screens with direct pool access req. alarm audible for 30 seconds throughout house[AG105.2]
- Alarm control min. 54in. high, must reset automatically[AG105.2]

Fig. b25
Smoke-Detector Locations



Smoke Detectors

- New construction hard-wired with battery backup[317.2]
- Req'd in each bedroom & adjoining hall**Fig. b25** [317.1]
- At least one req'd each story & basement**Fig. b25** [317.1]
- Must be interconnected and audible from sleeping rooms[317.1]
- Compliance req'd for interior remodeling requiring permit[317.1.1]
- Battery operated OK if no finishes removed[317.1.1X]

bt-11 • Nailing Schedule—Based on IRC T602.3(1)	
Connection	Nailing
Joist to sill or girder, toe nail	3-8d
1x6 subfloor or less to each joist, face nail	2-8d, 2-1½ staples
2in. subfloor to joist or girder, blind- and face nail	2-16d
Sole plate to joist or blocking, face nail	16d 16in. o.c.
Top or sole plate to stud, end nail	2-16d
Stud to sole plate, toe nail	3-8d or 2-16d
Double studs, face nail	10d 24in. o.c.
Double top plates, face nail	10d 24in. o.c.
Sole plate to joist or blocking at braced wall panels	3-16d 16in. o.c.
Doubled top plates, face nail of lap splice	8-16d
Blocking between joists or rafters to top plate, toe nail	3-8d
Rim joist to top plate, toe nail	8d 6in. o.c.
Top plates, laps and intersections, face nail	2-10d
Built-up or continuous header	16d 16in. o.c. each edge
Ceiling joists to plate, toe nail	3-8d
Continuous header to stud, toe nail	4-8d
Ceiling joists, laps over partitions, face nail	3-10d
Ceiling joists to parallel rafters, face nail	3-10d
Rafter to plate, toe nail	2-16d
1in. brace to each stud and plate, face nail	2-8d, 2-1½ staples
1x6 sheathing to each bearing, face nail	2-8d, 2-1½ staples
1x8 sheathing to each bearing, face nail	2-8d, 3-1½ staples
Wider than 1x8 sheathing to each bearing, face nail	3-8d, 4-1½ staples
Built-up corner studs	10d 24in. o.c.
Built-up girders and beams, 2in. lumber layers	10d each layer 32in. o.c. top & bottom staggered & two nails at ends & each splice
2in. planks	2-16d@each bearing
Roof rafters to ridge, valley, or hip rafters, toe nail	4-16d
Roof rafters to ridge, valley, or hip rafters, face nail	3-16d
Rafter ties to rafters, face nail	3-8d
Wood structural sheathing & particle board wall sheathing 6in. o.c. at edge, 12in. o.c.* in field: ¾"-½" subfloor, wall 6d common ¾"-½" roof 8d common ¾"-1" 8d common 1"-1½" 10d common or 8d deformed	
* In high wind areas nailing is 6in. o.c. in field.	
Fiberboard wall sheathing 3in. o.c. at edge, 6in. o.c. in field: ½" regular 6d common, 1½ roofing nail or 16 ga. staple 1½in. ½" structural 8d common, 1½ roofing nail or 16 ga. staple 1½in. ¾" structural 8d common, 1½ roofing nail or 16 ga. staple 1½in.	

bt-12 • Special Inspections Required		
	Required	Received
All S.I. reports must be received before final inspection.		
Concrete >2,500 psi		
Piling, drilled piers & caissons		
Special grading, excavation, fill		
Structural masonry		
Bolts in concrete		
Structural welding/steel moment frames		
Glu-Lam certificate		
Shear nailing <4" o.c.		
Shotcrete		
Spray-applied fireproofing		
High-strength bolting		
Prestressed concrete: rebar & tendons		
Special moment/concrete		
Reinforced gypsum concrete		
Insulating concrete fill		
EIFS:		
Special case:		
Special case:		
Special case:		