



BUILDING DEPARTMENT
401 WHITNEY BLVD. BELVIDERE, IL 61008
815-547-7177

*****NOTICE*****

**3 INSPECTIONS NOW
REQUIRED FOR ALL
DECK & RAMP
PERMITS**

1. When Footing is ready, but **BEFORE** pouring concrete.
2. When Framing is complete, but **BEFORE** decking is installed.
3. When installation is complete, but **BEFORE** occupancy.

Requirements for Deck permits

- 1) Site plan sketch
 - Existing structures
 - Proposed deck
 - Dimensions from proposed deck to property lines
 - Specifications on deck: plans preferred
- 2) Owner Name, Address and Phone Number
- 3) Contractors Name, Address and Phone Number
- 4) Value of construction

City of Belvidere Building Department

401 Whitney Blvd. Suite 300, Belvidere, Illinois 61008 (815)547-7177

Codes for Decks in Residential Districts

Note: All lumber shall be treated if exposed to weather.

Deck: Exterior floor system supported on at least two opposing sides for an adjoining structure and or posts, piers, or other independent supports, as approved by the Building Department.

R311.5.1 Width. Stairways shall not be less than 36 inches in clear width at all points above the permitted handrail height.

R311.5.3 Tread and Risers. The maximum riser height shall be 7 3/4 inches and the minimum tread depth shall be 10 inches. The riser height shall be measured vertically between leading edges of the adjacent treads. The tread of the foremost projection of adjacent treads and at a right angle to the treads leading edge. The walking surface of treads and landing surface of a stairway shall be sloped no steeper than one unit vertical and 48 units horizontal. (2% slope) The greatest riser height within any flight of stairs shall not exceed the smallest by more than 3/8 of an inch. The greatest tread depth within any flight of stairs shall not exceed the smallest by more than 3/8 in.

R311.5.6 Handrails. Handrails having minimum and maximum heights of 34 inches and 38 inches, respectively, measured vertically from the nosing of the treads shall be provided on at least one side of stairways of four or more risers. All handrails must end at posts or return to walls.

R312.1 Guardrail Details. Porches, balconies, or raised floor surfaces located more than 30 inches above the floor or grade below shall have a guardrail not less than 36 inches in height. Open sides of stairs with a total rise of more than 30 inches above the floor or grade below shall have guards not less than 34 inches in height measured vertically from the nosing of the treads.

R312.2 Guardrail Opening Limitations. Required guardrails of open sides of stairways, raised floor areas, balconies and porches, shall have immediate rails or ornamental closures which do not allow passage of an object 4 inches or more in diameter.

Exception: The triangular openings formed by a riser, tread, and bottom rail of a guard at the open side of a stairway may be of such a size that a sphere 6 inches cannot pass through.

R502.3 Allowable Joist Spans. Spans for floor joists shall be in accordance with Tables R502.3.1 (1) and R502.3.1 (2). For other grades and species and for other load conditions, refer to the AF & PA Span Tables for Joists and Rafters.

Frost Footings: defined as the lowest level below ground surface to which a temperature of 32° F (0° C) extends. In this region it is 42 inches according to the U.S. Weather Bureau which can be found in the International Building Code 2003, section 1805.2.

R504.1.3 Uplift & Buckling. Where required, resistance to uplift or restraint against buckling shall be provided by interior bearing walls or properly designed stub walls anchored in the supporting soil below.
Setbacks: See zoning inspector.

Requirements for permits

- 1) Site plan sketch
 - Existing structures
 - Proposed deck
 - Dimensions from proposed deck to property lines
 - Specifications on deck: plans preferred
- 2) Owner Name, Address and Phone Number
- 3) Contractors Name, Address and Phone Number
- 4) Value of construction

***** Information in this handout is not complete; if you have any questions please feel free to contact the City of Belvidere Building Department at 815-547-7177.**

R311.5 Stairways

R311.5.1 Width. Stairways shall not be less than 36 inches in clear width at all points above the permitted handrail height and below the required headroom height. Handrails shall not project more than 4.5 inches on either side of the stairway and the min. clear width of the stairway at and below the handrail height, including treads and landings, shall 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. EXCEPTION: The width of spiral stairways shall be in accordance with Section R311.5.8.

R311.5.2 Headroom. The minimum headroom in all parts of the stairway shall not be less than 6 feet 8 inches measured vertically from the sloped plane adjoining the tread nosing or from the floor of the landing or platform.

R311.5.3 Stair Treads & Risers

R311.5.3.1 Riser Height. The max. riser height shall be 7 $\frac{3}{4}$ inches. The riser shall be measured vertically between leading edges of the adjacent treads. The greatest riser height within any flight of stairs shall not exceed the smallest by more than $\frac{3}{8}$ inch.

R311.5.3.2 Tread Depth. The min. tread depth shall be 10 inches. The tread depth shall be measured horizontally between the vertical planes of the foremost projection of adjacent treads and at a right angle to the tread's edge. The greatest tread depth within any flight of stairs shall not exceed the smallest by more than $\frac{3}{8}$ inch. Winder treads shall have a min. tread depth of 10 inches measured as above at a point 12 inches from the side where the treads are narrower. Winder tread shall have a min. tread depth of 6 inches at any point. Within any flight of stairs, the greatest winder tread depth at the 12 inch walk line shall not exceed the smallest by more than $\frac{3}{8}$ inch.

R311.5.3.3 Profile. The radius of curvature at the leading edge of a tread shall be no greater than $\frac{9}{16}$ inch. A nosing not less than $\frac{3}{4}$ inch but not more than $1\frac{1}{4}$ inch shall be provided on stairways with solid risers. The greatest nosing projection shall not exceed the smallest nosing projection by more than $\frac{3}{8}$ inch between two stories, including the nosing at the level of floors and landings. Beveling of nosing shall not exceed $\frac{1}{2}$ inch. Risers shall be vertical or sloped from the underside of the leading edge to the tread above at an angle not more than 30 degrees from the vertical. Open risers are permitted, provided that the opening between treads does not permit the passage of a 4-inch diameter sphere. EXCEPTIONS: 1. A nosing is not required where the tread depth is a minimum of 11 inches. 2. The opening between adjacent treads is not limited on stairs with a total rise of 30 inches or less.

R311.5.4 Landings for Stairways. There shall be a floor or landing at the top and bottom of each stairway. EXCEPTION: A floor landing is not required at the top of an interior flight of stairs, provided a door does not swing over the stairs. A flight of stairs shall not have a vertical rise greater than 12 feet between floor levels or landings. The width of each landing shall not be less than the stairway served. Every landing shall have a min. dimension of 36 inches measured in the direction of travel.

R311.5.5 Stairway Walking Surface. The walking surface of treads and landings of stairways shall be sloped no steeper than one unit vertical in 48 inches horizontal (2 percent slope).

R311.5.6 Handrails. Handrails shall be provided on at least one side of each continuous run of treads or flight with four or more risers.

R311.5.6.1 Height. Handrail height, measured vertically from the sloped plane adjoining the tread nosing, or finish surface of ramp slope, shall be not less than 34 inches and not more than 38 inches.

R311.5.6.2 Continuity. Handrails for stairways shall be continuous for the full length of the flight, from a point directly above the top riser of the flight to a point directly above lowest riser of the flight. Handrail ends shall be returned or shall terminate in newel posts or safety terminals. Handrails adjacent to a wall shall have a space of not less than 1 ½ inch between the wall and the handrails.

EXCEPTIONS: 1. Handrails shall be permitted to be interrupted by a newel post at the turn. 2. The use of a volute, turnout, starting easing or starting newel shall be allowed over the lowest tread.

R311.5.6.3 Handrail Grip Size. All required handrails shall be one of the following types or provide equivalent graspability. 1. Type I. Handrails with a circular cross section shall have an outside diameter of at least 1 ¼ inches and not greater than 2 inches. If the handrail is not circular it shall have a perimeter dimension of at least 4 inches and not greater than 6 ¼ inches with a max. cross section of dimension of 2 ¼ inches. Type II. Handrails with a perimeter greater than 6 ¼ inches shall provide a graspable finger recess area on both sides of the profile. The finger recess shall begin within a distance of ¾ inch measured vertically from the tallest portion of the profile and achieve a depth of at least 5/16 inch within 7/8 inch below the widest portion of the profile. This required depth shall continue for at least 3/8 inch to a level that is not less than 1 ¼ inches below the tallest portion of the profile. The min. width of the handrail above the recess shall be 1 ¼ inches to a max. of 2 ¾ inches. Edges shall have a min. radius of 0.01 inches.

R311.6 Ramps

R311.6.1 Maximum Slope. Ramps shall have a max. slope of one unit vertical in eight units horizontal (12.5 percent slope).

R311.6.2 Landings Required. A min. 3 foot by 3 foot landing shall be provided: 1. At the top and bottom of ramps, 2. where doors open onto ramps, 3. where ramps change direction.

R311.6.3 Handrails Required. Handrails shall be provided on at least one side of all ramps exceeding a slope of one unit vertical in 12 units horizontal (8.33 percent slope).

R311.6.3.1 Height. Handrail height, measured above the finished surface of the ramp slope, shall be not less than 34 inches and not more than 38 inches.

R311.6.3.2 Handrail Grip Size. Handrails on ramps shall comply with Section R311.5.6.3

R311.6.3.3 Continuity. Handrails where required on ramps shall be continuous for the full length of the ramp. Handrail ends shall be returned or shall terminate in the newel posts for safety terminals. Handrails adjacent to a wall shall have a space of not less than 1.5 inches between the wall & the handrails.

R312 Guards

R312.1 Guards Required. Porches, balconies or raised floor surfaces located more than 30 inches above the floor or grade below shall have guards not less than 36 inches in height. Open sides of stairs with a total rise of more than 30 inches above the floor or grade below shall have guards not less than 34 inches in height measured vertically from the nosing of the treads. Porches and decks which are enclosed with

insect screening shall be provided with guards where the walking surface is located more than 30 inches above the floor or grade below.

R312.2 Guard Opening Limitations. Required guards on open sides of stairways, raised floor areas, balconies and porches shall have intermediate rails or ornamental closures which do not allow passage of a sphere 4 inches or more in diameter. EXCEPTIONS: 1. The triangular openings formed by the riser, tread and bottom rail of a guard at the open side of a stairway are permitted to be of such a size that a sphere 6 inches cannot pass through. 2. Openings for required guards on the sides of stairtreads shall not allow a sphere 4 3/8 inches to pass through.

R501 General

R501.1 Applications. The provisions of this chapter shall control the design and construction of the floors for all buildings including the floors of attic spaces used to house mechanical and/or plumbing fixtures and equipment.

R501.2 Requirements. Floor construction shall be capable of accommodating all loads according to Section R301 and of transmitting the resulting loads to the supporting structural elements.

R502 Wood Floor Framing

R502.1 Identification. Load-bearing dimension lumber for joists, beams and girders shall be identified by a grade mark of a lumber grading or inspection agency that has been approved by an accreditation body that complies with DOC PS20. In lieu of a grade mark, a certificate of inspection issued by a lumber grading or inspection agency meeting the requirements of this section will be accepted.

R502.1.1 Preservatively treated lumber. Preservatively treated dimension lumber shall also be identified as required by Section R319.1

R502.1.2 Blocking and Subflooring. Blocking shall be a min. of utility grade lumber. Subflooring may be a min. of utility grade lumber #4 common grade boards.

R502.1.3 End-Jointed Lumber. Approved end-jointed lumber identified by a grade mark conforming to Section 501.2 may be used interchangeably with solid-sawn members of the same grade.

R502.1.4 Prefabricated wood I-joists. Structural capacities and design provisions for prefabricated wood I-joists shall be established and monitored in accordance with ASTM D 5055.

R502.1.5 Structural glued laminated timbers. Glued laminated timbers shall be manufactured and identified as required in AITC A1901.1 and ASTM D3737.

R502.2 Design and Construction. Floors shall be designed and constructed in accordance with the provisions of this chapter, Figure R502.2 and Sections R319 and R320 or in accordance with AF&PA/NDS.

R502.2.1 Decks. Where supported by attachment to exterior wall, decks shall be positively anchored to the primary structure and designed for both vertical and lateral loads as applicable. Such attachment shall not be accomplished by the use of toenails or nails subject to withdrawal. Where positive connection to the primary building structure cannot be verified during inspection, decks shall be self-supporting. For decks with cantilevered framing members, connections to exterior walls or other

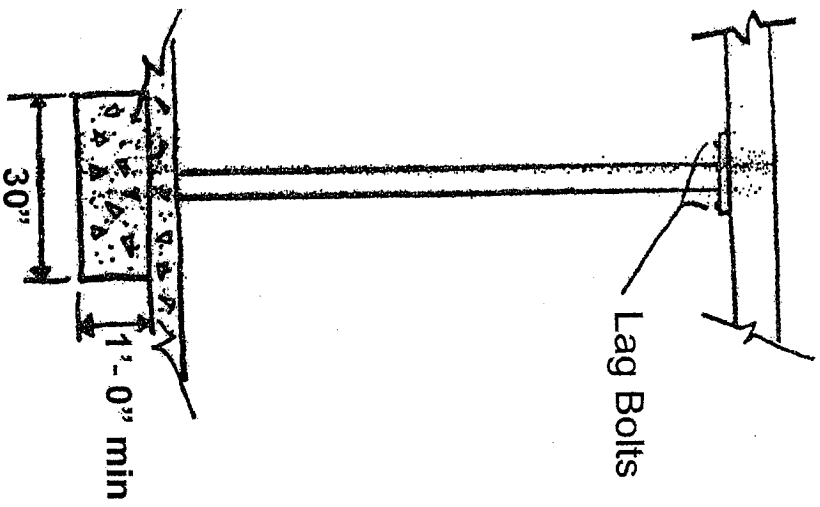
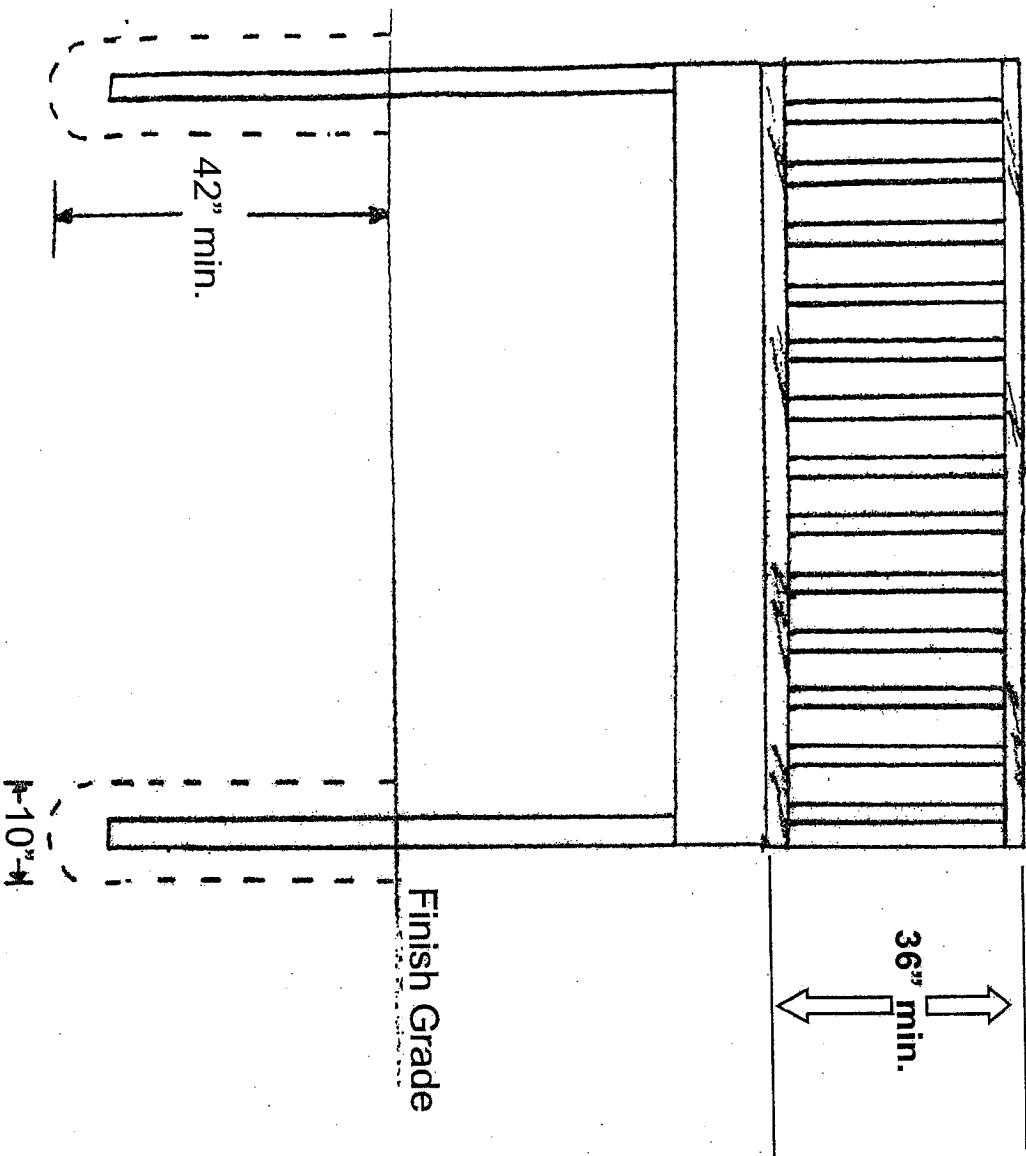
framing members, shall be designed and constructed to resist resulting from the full live load specified in Table R301.4 action on the cantilevered portion of the deck.

R502.3 Allowable Joist Spans. Spans for floor joists shall be in accordance with Tables R502.3.1(1) and R502.3.1(2). For other grades and species and for other loading conditions, refer to the AF&PA Span Tables for Joists & Rafters.

R502.3.3 Floor Cantilevers. Floor cantilever spans shall not exceed the nominal depth of the wood floor joist. Floor cantilevers constructed in accordance with Table R502.3.3(1) shall be permitted when supporting a light frame bearing wall and roof only. Floor cantilevers supporting an exterior balcony are permitted to be constructed in accordance with Table R502.3.3(2).

R502.5 Allowable Girder Spans. The allowable girder spans of girders fabricated of dimension lumber shall not exceed the values set forth in Tables R502.5(1) and R502.5(2).

Note: Must be less than 4"
Clear opening between balusters



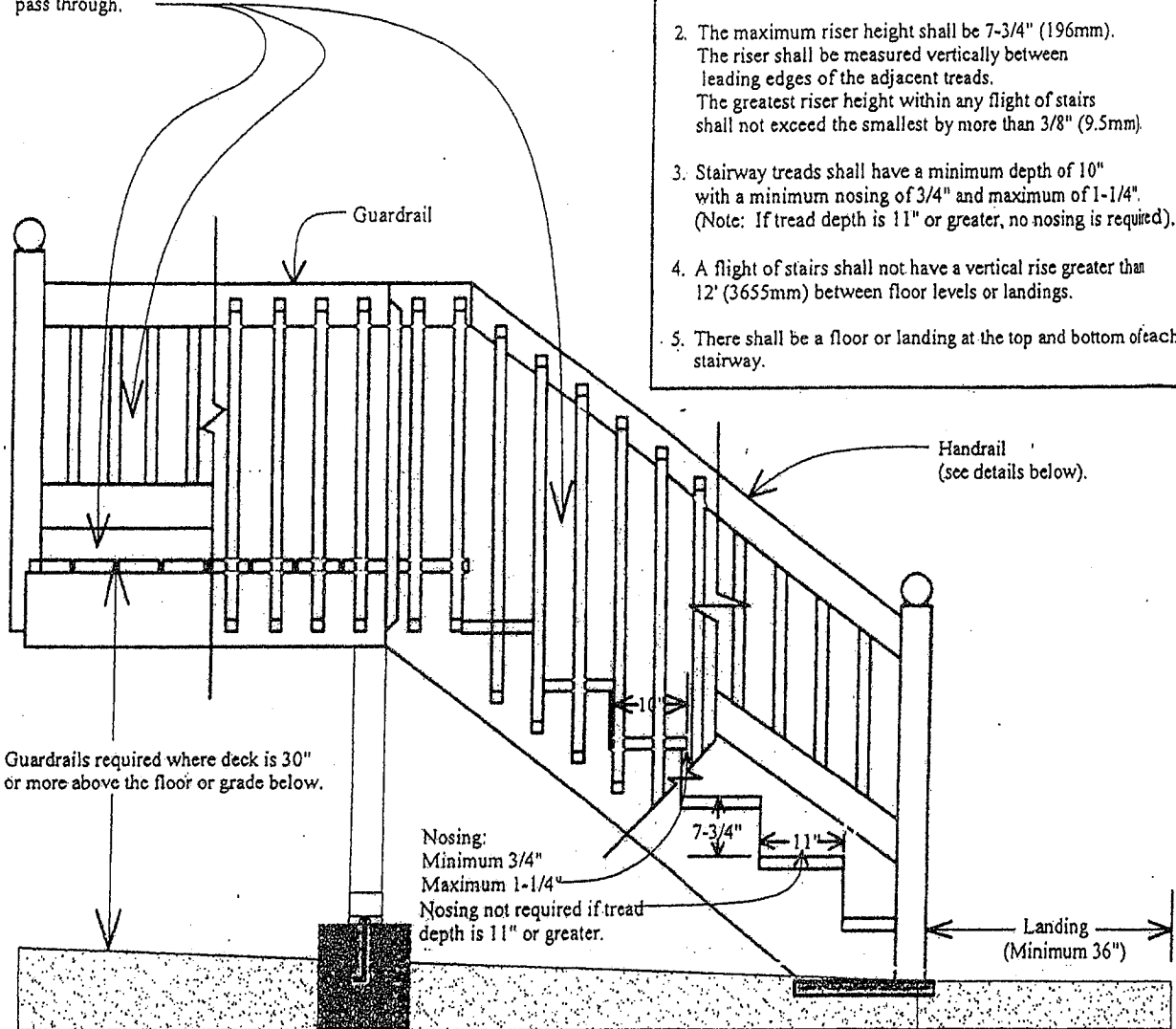
Typical Column and Pad Footing

Guardrail, Handrail and Stairway Examples

Open guardrails and open handrails on decks and stairways more than 30" above grade shall have pickets, balusters or intermediate rails spaced so that a 4" diameter sphere cannot pass through.

Stair treads and riser notes:

1. Stairways shall not be less than 36" in width.
2. The maximum riser height shall be 7-3/4" (196mm). The riser shall be measured vertically between leading edges of the adjacent treads. The greatest riser height within any flight of stairs shall not exceed the smallest by more than 3/8" (9.5mm).
3. Stairway treads shall have a minimum depth of 10" with a minimum nosing of 3/4" and maximum of 1-1/4". (Note: If tread depth is 11" or greater, no nosing is required).
4. A flight of stairs shall not have a vertical rise greater than 12' (3655mm) between floor levels or landings.
5. There shall be a floor or landing at the top and bottom of each stairway.



Guardrails required where deck is 30" or more above the floor or grade below.

Nosing:
Minimum 3/4"
Maximum 1-1/4"
Nosing not required if tread depth is 11" or greater.

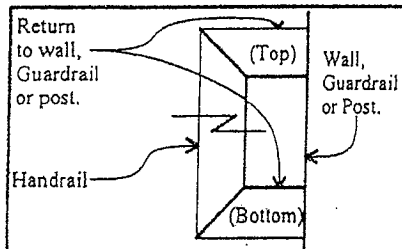
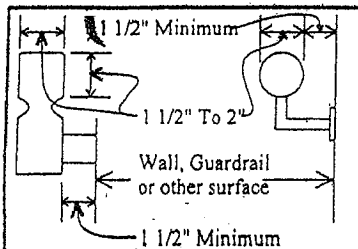
Handrail
(see details below).

Landing
(Minimum 36")

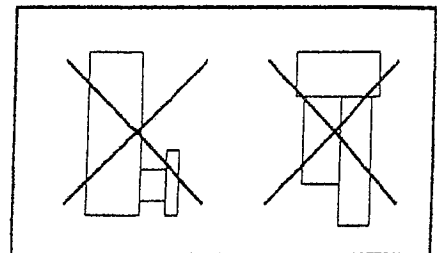
Handrail Notes:

1. Handrails shall be continuous on at least one side of stairs with 4 or more risers.
2. Handrails shall be placed not less than 34" nor more than 38" above stair nosing. *
3. The handgrip portion of handrails shall not be less than 1 1/2" nor more than 2" in diameter.
4. Handrails shall be placed not less than 1 1/2" from any connected wall, guardrail or other surface.
5. Handrails must return and end to a wall or post.

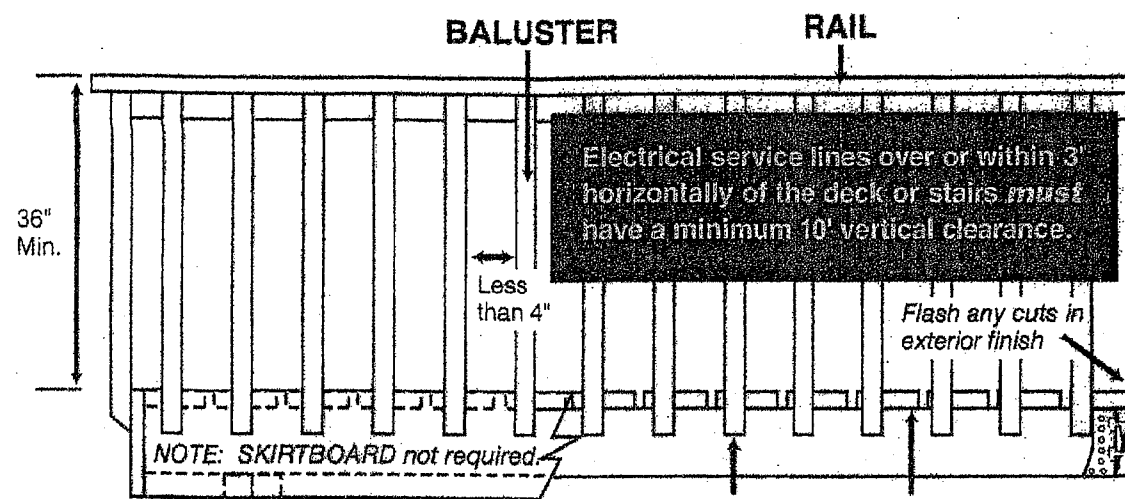
Acceptable Handrail Details



Unacceptable Handrails

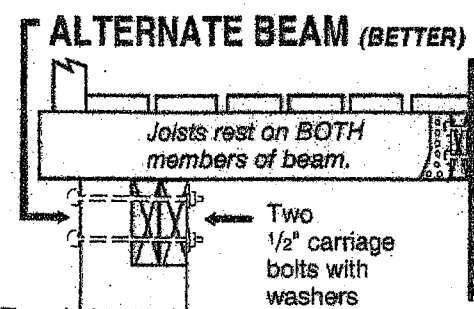


Possible handrail solutions at stairs
See Single-Family Stairways/Guards



BEAM (BEST)
See Beam and Footing Table
NOTES:
Any splices in beam must be over a support. All beams of 2 or more members shall be nailed together with 2 rows of 16d Nails at 16" O.C.

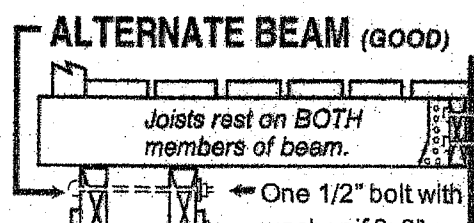
MANUFACTURED BEAM SUPPORT
JOIST See Joist Span Table
DECKING 16" or less Span: 1" and 5/4" Over 16" Span: 2"



LEDGER
Same size as joists. Install leg screws that penetrate 1 1/2" minimum into rim joist or wall studs. (Minimum two 3/8" lag screws every 16")
NOTE: Joist hangers must be correct size for joist size used.

POST 3 1/2" Minimum

POST 5 1/2" Minimum (4X6 or 6X6)



BUILDING

Pin or other approved fastener

POST 3 1/2" Minimum

GRADE

CONCRETE PIER FOOTING
8" Minimum

42" Min.

ALTERNATE FOOTING

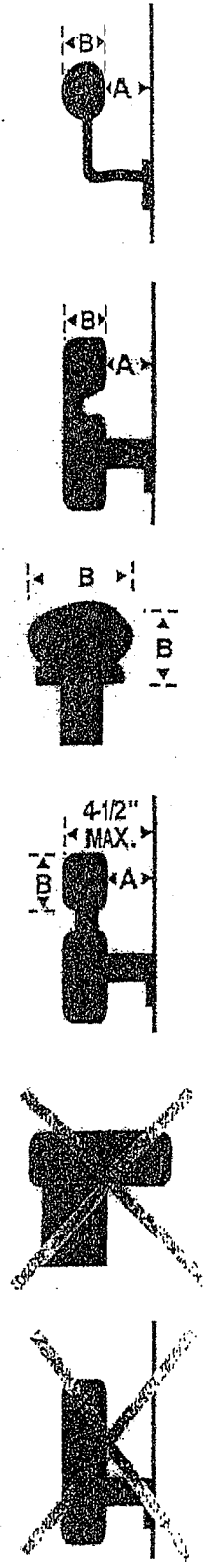
BACKFILL MATERIAL

WOOD POST

POURED CONCRETE FOOTING
8"

See Table for Footing Size

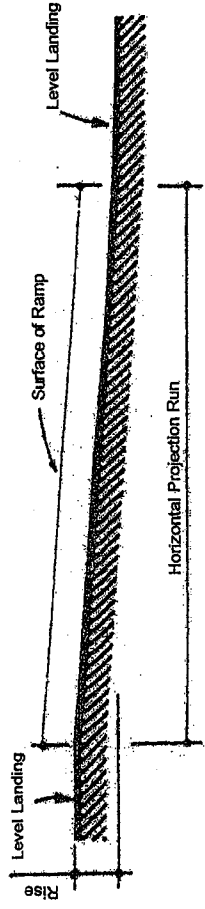
See Table for Footing Size



A = 1-1/2" MIN.

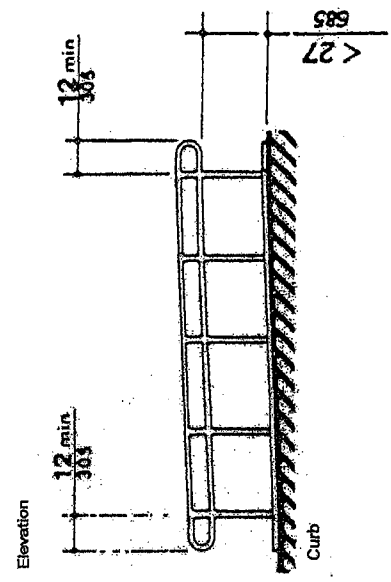
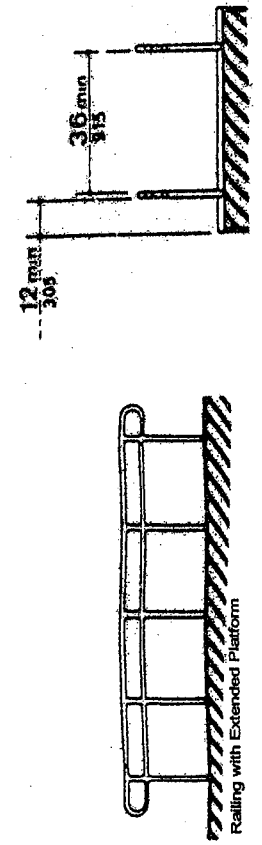
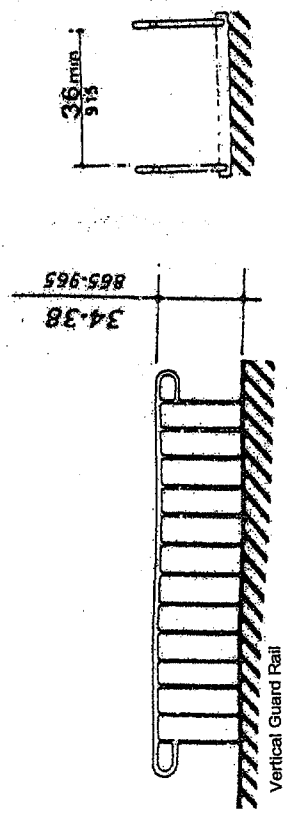
Ramps

1. General. Any part of an accessible route with a slope greater than 1:20 shall be considered a ramp and shall comply with the following requirements unless another means of accessible vertical access (e.g., accessible elevator or accessible platform lift) is provided. (ADAAG 4.8.1)
2. Slope and Rise. The least possible slope shall be used for any ramp. The max. slope of a ramp in new construction shall be 1:12. the max. rise for any run shall be 30 inches. Curb ramps and interior or exterior ramps to be constructed on existing sites or in existing buildings or facilities where space limitations prohibit the use of a 1:12 slope or less may have slopes and rises as follows: A. A slope between 1:10 and 1:12 is allowed for a max rise of 6 inches. B. A slope steeper than 1:8 is NOT allowed.
3. Clear Width. The min. clear width of a ramp shall be 36 inches (ADAAG 4.8.3)
4. Landings. Ramps shall have level landings at the bottom and top of each ramp and each ramp run. Landings shall have the following features: The landing shall be at least as wide as the ramp run leading to it. The landing length shall be a min. of 60 inches clear. If ramps change directions at landings the min. landing size shall be 60" x 60". If a door way is located at a landing, then the area in front of the doorway shall comply with subsection (j)(5) of this Section. (ADAAG 4.8.4)
5. Handrails. If a ramp run has a rise greater than 6 inches or a horizontal projection greater than 72 inches, then it shall have handrails on both sides. Handrails are not required on curb ramps or adjacent to seating in assembly areas. Handrails shall comply with subsection (p) of this Section and shall have the following features: Handrails shall be provided along with both sides of ramp segments. The inside handrail on switchback or dogleg ramps shall always be continuous. If handrails are not continuous, they shall extend at least 12 inches beyond the top and bottom of the ramp segment and shall be parallel with the floor or ground surface. The clear space between the handrail and the wall shall be 1 ½ inches. Gripping surface shall be continuous. Top of handrail gripping surfaces shall be mounted between 34 inches and 38 inches above ramp surfaces. Ends of handrails shall be either rounded or returned smoothly to floor, wall, or post. Handrails shall not rotate within their fittings.
6. Cross Slope and Surfaces. The cross slope of ramp surfaces shall be not greater than 1:50. Ramp surfaces shall comply with subsections (a)(5), (7), 911) and 912) of this section.
7. Edge Protection. Ramps and landings with drop-offs shall have curbs, walls, railings or projecting surfaces that prevent people from slipping off the ramp. Curbs shall be a min. of 2 inches high.
8. Outdoor Conditions. Outdoor ramps and their approaches shall be designed so that water will not accumulate on walking surfaces.
9. Exceptions: The following areas do NOT have to be served by accessible ramps provided that such areas comply with Section 400.320 (a)(1), and further provide that the same functions and services are available on an accessible level of the space: temporary raised platforms; seating tiers; theater rows; stadium rows; and auditorium rows utilizing fixed seating. Ramps do not have to be provided to all levels of a multi-level platform. For requirements for restaurants and cafeterias, see Section 400.320(1).

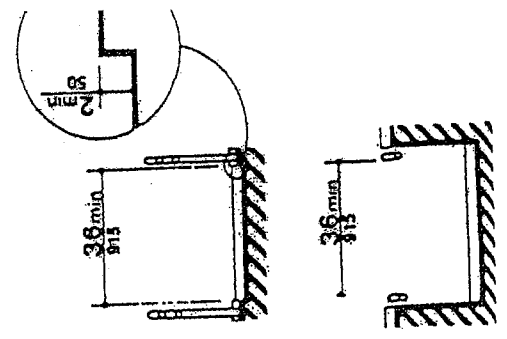


Slope	Maximum Horizontal Projection	
	in.	mm.
1:12 to < 1:16	30	760
1:16 to < 1:20	30	760
	40	1015

Components of a Single Ramp Run and Single Ramp Dimensions



Section





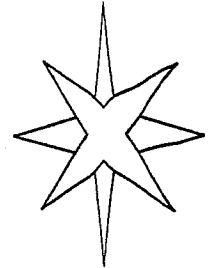
CITY OF BELVIDERE BUILDING DEPARTMENT

401 Whitney Blvd. Suite 300 Belvidere, IL 61008 phone:815-547-7177 fax:815-547-0789

SITE PLAN (NOT TO SCALE)

Directions:

1. Show dimensions of all lot lines and approximate lot shape.
2. Indicate north point and the name of the street / road.
3. Show locations of all existing buildings in reference to lot lines.
4. Show location of intended improvement. Label all dimensions of building and distance to all lot lines.
5. If corner lot draw additional road.



Lot line

Lot line

Lot line

Lot line

R.O.W.

R.O.W.

Center line of street