

RESIDENTIAL DECK CONSTRUCTION



The City of Wausau has compiled the following excerpts from the “Wisconsin Administrative Code/Uniform Dwelling Code (UDC)” and “Wisconsin Public Service Corporation Service Manual—Gas & Electric” to assist City of Wausau property owners and contractors in their deck construction projects.

Please be advised a building permit is required for the construction of a deck or for replacement of an existing deck. Appropriate drawings with the size of the deck, size and spacing of supportive members, stair and railing details, and a plot plan showing distance to the lot lines shall be submitted to the Inspections Department.

Questions regarding these codes—contact the Department of Inspection and Electrical Systems at (715) 261-6780.

ILHR 21.225 Decks.

Decks attached to dwellings and detached decks which serve an exit shall comply with the applicable provisions of this chapter, including but not limited to:

- (1) Excavation requirements of s. COMM 21.14;
- (2) Footing requirements of s. COMM 21.15 (1) (f);
- (3) Frost penetration requirements of s. COMM 21.16;
- (4) Load requirements of s. COMM 21.02;
- (5) Stair, handrail and guardrail requirements of s. COMM 21.04; and
- (6) Decay protection requirements of s. COMM 21.10.

COMM 21.02 Loads and materials.

Every dwelling shall be designed and constructed in accordance with the requirements of this section.

(1) DESIGN LOAD. Every dwelling shall be designed and constructed to support the actual dead load, live loads and wind loads acting upon it without exceeding the allowable stresses of the material.

MINIMUM LIVE LOADS FOR FLOORS (TABLE 21.02)	
Component	Live Load (pounds per sq. ft.)
Exterior balconies, decks, porches	40

*for floor joist calculations, see App. 34–37 & App. 25 Table F-2 of the Wisconsin Administrative Code
for beam calculations, see COMM/ILHR 21.22 (TABLES A, B, and C) of the Wis. Adm. Code
If you need help in calculating joist and beam sizes, consult a lumber supplier.*

COMM 21.04 Stairs and elevated areas.

Every exterior stair shall conform to the requirements of this section.

(1) STAIR DETAILS. (a) *Width.* Stairs shall measure at least 36 inches in width. Handrails and associated trim may project no more than 4½ inches into the required width at each side of the stairs.

(b) *Headroom.* Stairs shall be provided with a minimum headroom clearance of 76 inches. The clearance shall be measured vertically from a line parallel to the nosing of the treads to the ceiling or soffit directly above that line.

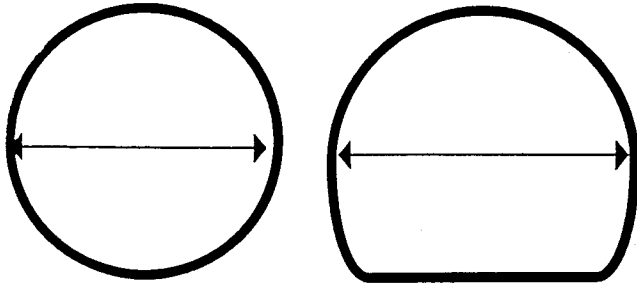
(c) *Treads and risers.* 1. Except for spiral stairs and winders, risers may not exceed 8 inches in height measured vertically from tread to tread. Treads shall be at least 9 inches wide measured horizontally from nosing to nosing.

2. Within individual stairways, tread widths and riser heights may vary in uniformity by a maximum of 3/16 inches. Variations in uniformity may not cause either dimension in subd. 1. to be exceeded.

App 48

21.04(2)(a)5. HANDRAIL SHAPES

ROUND



MAXIMUM 2"
←→
DIAMETER

RECTANGULAR

OK (w x ht):
1/2"x 2-5/8"
3/4"x 2-1/2"
1"x 2-3/8"
1-1/8"x 2-5/16"
1-1/2"x 2-1/8"
1-7/8"x 1-15/16"

OK (w x ht):
2"x 1-7/8"
2-1/2"x 1-5/8"
←→ 2-3/4"x 1-1/2"
2-7/8"x 1/2" TO 1-7/16"

MAXIMUM 2-7/8"
←→
CROSS SECTION
MAX. 6-1/4"
GRIPPING
SURFACE INCL.
MIN. 1/4"
RECESS ON
EACH SIDE

OTHERS

MAXIMUM 2-7/8"
←→
CROSS SECTION
4" TO 6-1/4" GRIPPING
SURFACE, INCLUDING A
MIN. 1/4" RECESS ON
EACH SIDE

(2) **HANDRAILS AND GUARDRAILS.** Handrails or guardrails shall be provided on all open sides of 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. Handrails and guardrails shall be constructed to **prevent** the through passage of a sphere with a diameter of 6 inches or larger. Handrails and guardrails shall be designed and constructed to withstand a 200 pound load applied in any direction. Exterior handrails and guardrails shall be constructed of metal, decay resistant or pressure-treated wood, or shall be protected from the weather.

(a) *Handrails.* Stairs of more than 3 risers shall be provided with at least one handrail for the full length of the stairs.

1. **Height.** Handrails shall be located at least 30 inches, but no more than 38 inches above the nosing of the treads. Measurements 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 steps.

2. **Clearance.** The clearance between a handrail and the wall surface shall be at least 1½ inches.

...

4. **Projection.** Handrails and associated trim may project into the required width of stairs and landings a maximum of 4½ inches on each side.

5. **Size and configuration.** Handrails shall be symmetrical about the vertical centerline to allow for equal wraparound of the thumb and fingers.

a. Handrails with a round or truncated round cross sectional gripping surface shall have a maximum whole diameter of 2 inches.

b. Handrails with a rectangular cross sectional gripping surface shall have a maximum perimeter of 6¼ inches with a maximum cross sectional dimension of 2f inches.

c. Handrails with other cross sections shall have a maximum cross sectional dimension of the gripping surface of 2f inches with a maximum linear gripping surface measurement of 6¼ inches and a minimum linear gripping surface of 4 inches.

6. **Continuity.** Handrails shall be continuous for the entire length of the stairs except in any one of the following cases:

a. A handrail may be discontinuous at an intermediate landing.

b. A handrail may have newel posts.

c. A handrail may terminate at an intermediate wall provided the lower end of the upper rail is returned to the wall or provided with a flared end, the horizontal offset between the two rails is no more than 12 inches measured from the center of the rails, and both the upper and lower rails can be reached from the same tread without taking a step.

(c) *Guardrails.* 1. **Application.** 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.

2. **Height.** Guardrails shall be located at least 36 inches above the floor. Measurement shall be taken from the hard structural surface beneath any finished material to the top of the rail.

(3) **LANDINGS.** (a) *Intermediate landings.* A level intermediate landing shall be provided for any stairs with a height of 12 feet or more. Intermediate landings shall be at least as wide as the stairs and shall measure at least 3 feet in the direction of travel. For curved or semicircular landings, the radius of the landing shall be at least equal to the width of the stairs.

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

(c) *Doors at landings.* Except as provided in subds. 1. to 4., level landings shall be provided on each side of any door located at the top or base of a stairs, regardless of the direction of swing.

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

4. The exterior landing, platform or sidewalk at an exterior doorway shall be located a maximum of 8 inches below the interior floor elevation. The landing, platform or sidewalk shall have a length at least equal to the width of the door.

COMM 21.10 Protection against decay and termites.

(3) **IDENTIFICATION.** (a) All pressure-treated wood and plywood shall be identified by a quality mark or certificate of inspection of an approved inspection agency which maintains continued supervision, testing and inspection over the quality of the product in accordance with the adopted standards of the American Wood Preservers Association.

COMM 21.14 Excavations for footings and foundations.

(2) **EXCAVATIONS FOR FOOTINGS.** All footings shall be located on undisturbed or compacted soil, free of organic material, unless the footings are reinforced to bridge poor soil conditions.

COMM 21.15 Footings.

(1) **SIZE AND TYPE.**

(f) *Deck footings.* Decks attached to dwellings and detached decks which serve an exit shall be supported on a structural system designed to transmit and safely distribute the loads to the soil. Footings shall be sized to not exceed the allowable material stresses. The bearing area shall be at least equal to the area required to transfer the loads to the supporting soil without exceeding the bearing values of the soil.

(2) **SOIL-BEARING CAPACITY.** No footing or foundation shall be placed on soil with a bearing capacity of less than 2,000 pounds per square foot unless the footing or foundation has been designed through structural analysis. The soil-bearing values of common soils may be determined through soil identification.

COMM 21.16 Frost penetration.

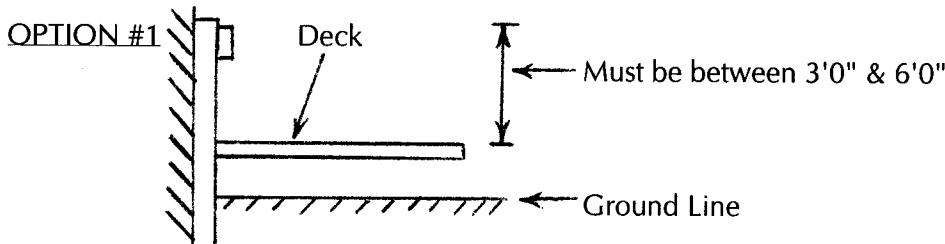
(1) **GENERAL.** Footings and foundations, including those for ramps and stoops, shall be placed below the frost penetration level, but in no case less than 48 inches below grade measured adjacent to the footing or foundation. Footings shall not be placed over frozen material.

**WISCONSIN PUBLIC SERVICE CORPORATION SERVICE MANUAL
WPSC POLICIES — METERING (8-3d)**

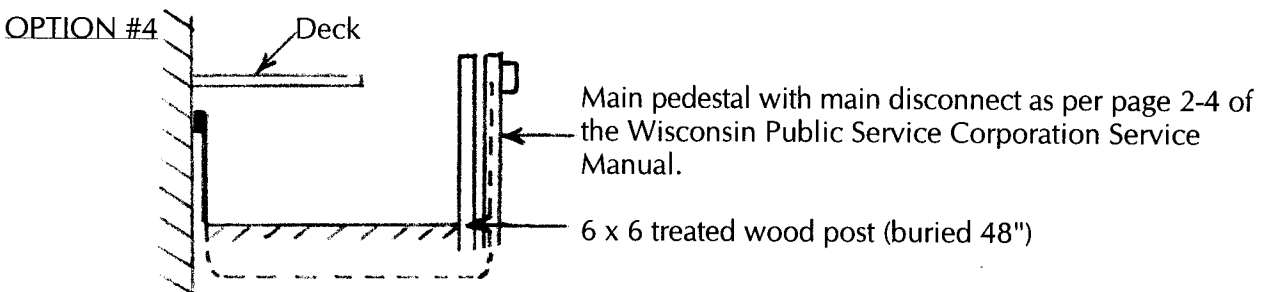
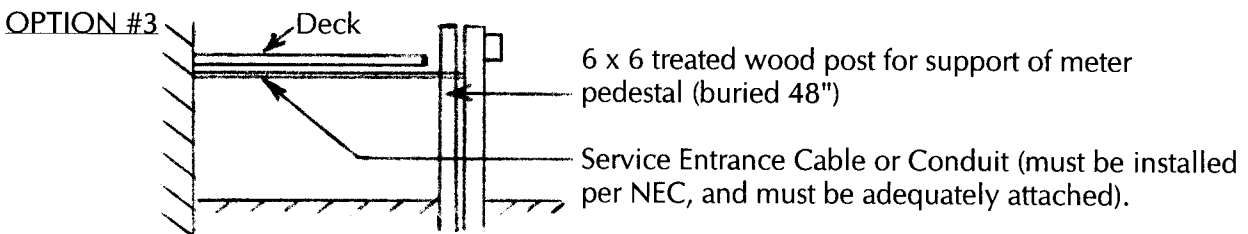
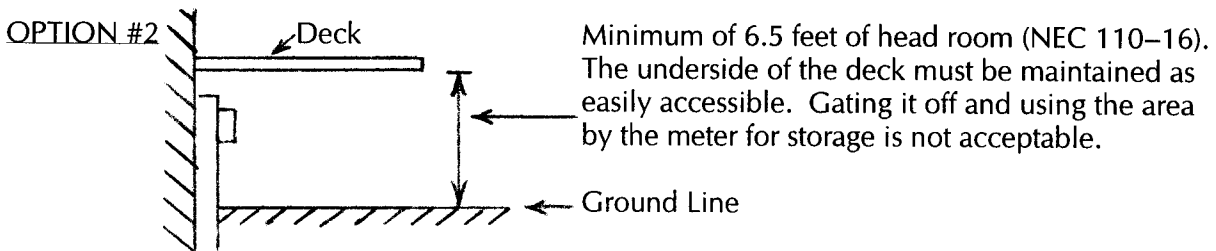
- K. The clear working space in front of meter panels shall be a minimum of 4 feet and a vertical clearance of 6 feet 6 inches. Two feet of horizontal clearance on either side shall also be provided. Free space in front of instrument transformer cabinets shall be 2 feet beyond the cover in the extended position or a minimum of 4 feet, whichever is greater.

RESIDENTIAL DECK PROCEDURE (Section 2-6):

The first priority is to avoid decks when installing new underground services. This procedure is on how to deal with problems once decks are built around meters.

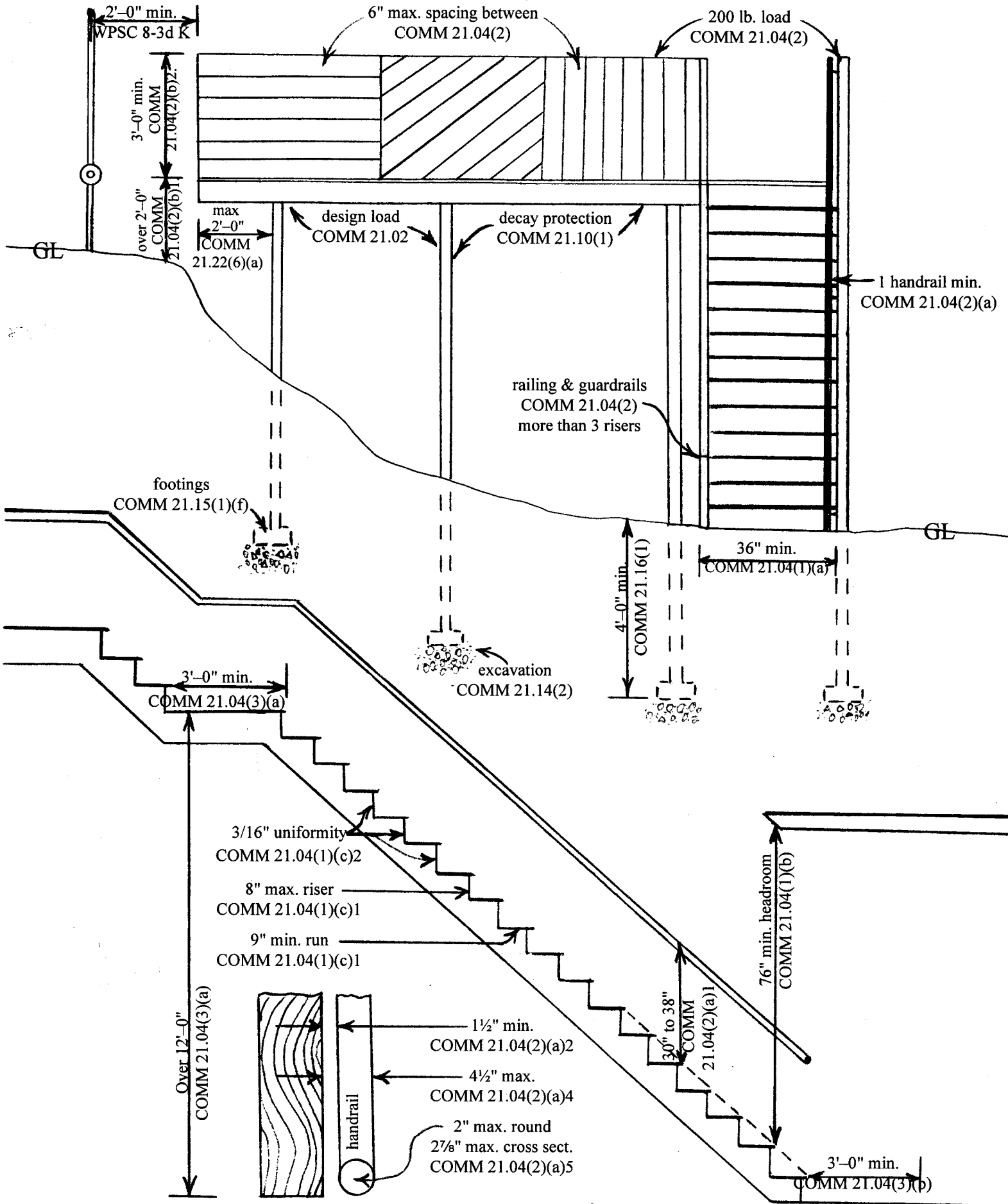


Use pedestal extensions to get the above minimum dimension. The lower dimension is critical for safety reasons when pulling or plugging in a meter in the event that a fault occurs. The connections in the pedestal must be accessible (cover able to come off). A possible solution is to design the deck so that one or two boards can be easily unscrewed to provide access.



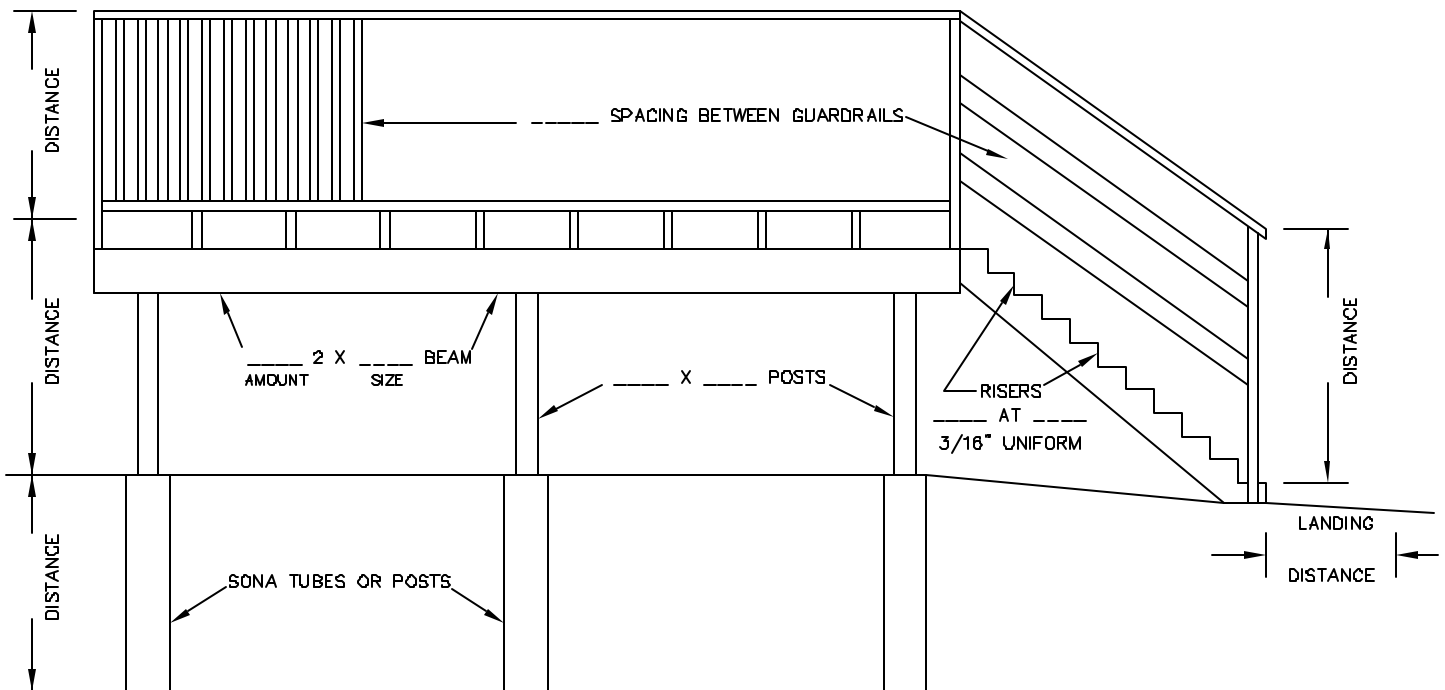
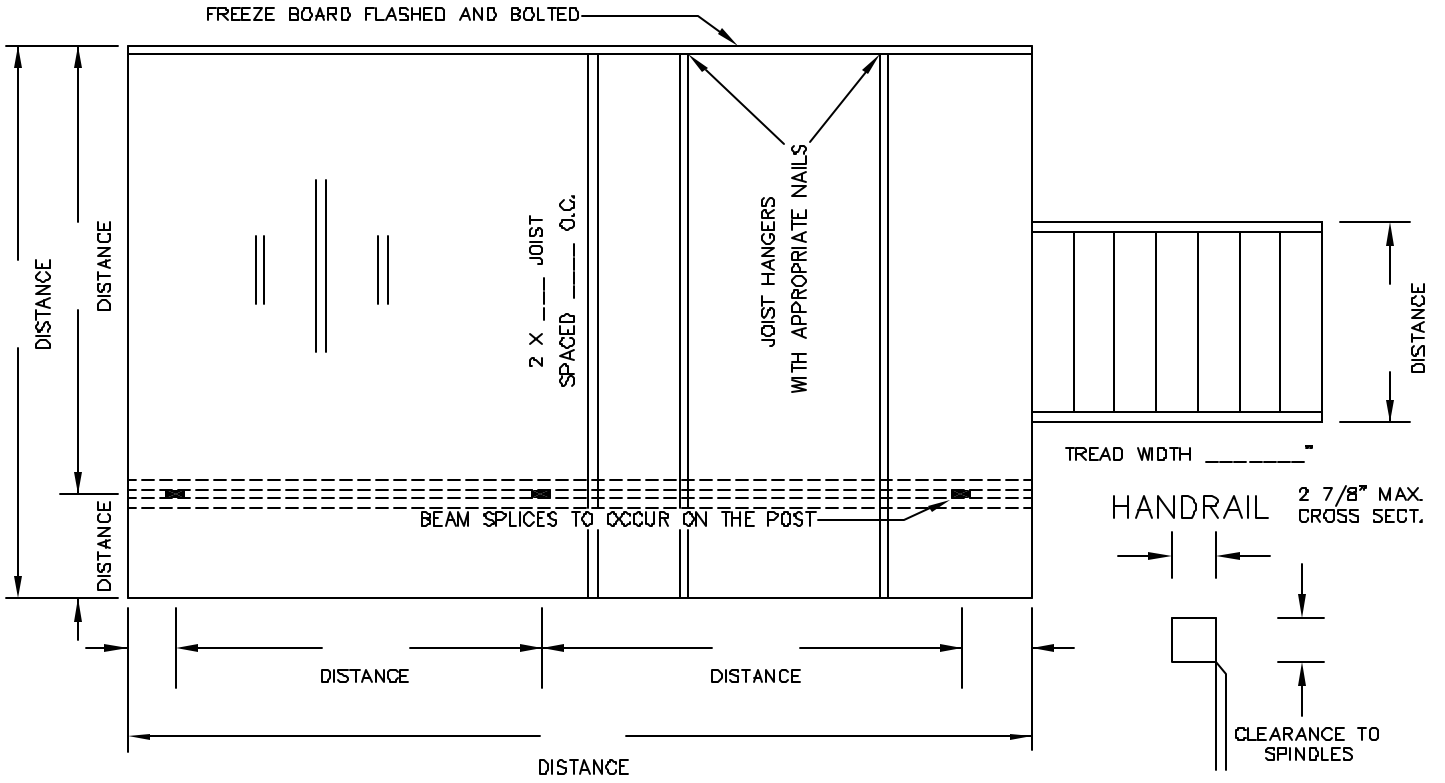
OPTION #5

Move meter pedestal to an area on the house away from the deck. The service entrance conduit or cable can then go around the house to the old service pedestal site. If this is done with underground, WPSC requires that it be in conduit (see 8-3a).



DECK EXAMPLE DRAWING

ALL MATERIALS TO BE TREATED OR DECAY RESISTANT
ALL JOIST, BEAM, POST & RAILING CONNECTIONS TO NAILED OR BOLTED TOGETHER
(EXCEPTION: DECK BOARDS & GUARD RAILS MAY BE SCREWED)



RESIDENTIAL 1&2 FAMILY DECK ZONING

ADDRESS _____ ZONED R- _____
OWNER _____ PHONE# _____
CONTRACTOR _____ STATE# _____ PHONE# _____
DOLLAR VALUE OF CONSTRUCTION \$_____.00 DECK AREA _____ SQ. FT.
LOCATION OF DECK FRONT SIDE BACK YARD - COMPLETION DATE _____

