

er(s) of the adjoining buildings shall extend the foundations of their buildings to a depth of 12 feet below grade at their own expense as provided in the preceding paragraph.

History: Cr. Register, February, 1978, No. 266, eff. 3-1-78.

ILHR 53.27 Cut or fill slopes. (1) **PERMANENT CUT OR FILL SLOPES.** Cuts or fills adjacent to any building, structure or property line shall be so constructed or protected that they do not endanger life and/or property. Permanent cut slopes shall not be steeper than 1½ horizontal to one vertical and permanent fill slopes shall not be steeper than 2 horizontal to one vertical unless substantiating data justifying steeper slopes are submitted.

(2) **TEMPORARY CUT OR FILL SLOPES.** For temporary cuts and fills, refer to chs. Ind 6—Trench, Excavation and Tunnel Construction and Ind 35—Safety in Construction.

History: Cr. Register, July, 1974, No. 223, eff. 1-1-75.

ILHR 53.28 Pole foundations. Structures that use poles embedded in earth or embedded in concrete footings in the earth to resist axial and lateral loads shall have their depth of embedment determined as specified in this section.

(1) **CONSTRUCTION BACKFILL REQUIREMENTS.** The space around the pole shall be backfilled in accordance with one of the following methods:

(a) The hole shall be made 4 inches larger than the diameter or diagonal dimension of rectangular or square poles. It shall be backfilled with 2,000 psi concrete.

(b) The backfill shall be of thoroughly compacted clean sand.

(2) **ALLOWABLE LATERAL SOIL PRESSURE.** In the design of nonrestrained and restrained poles, unless a more exact soil analysis method is used, the allowable passive soil pressure shall be determined in accordance with Table 53-III.

TABLE 53-III
 ALLOWABLE LATERAL SOIL PRESSURE

Soil Types (see Table 53-II)	Allowable Passive Soil Pressure (p) ¹ psf per foot of depth below grade ^{2 3}
1 and 2 (not well drained)	100
2 (well drained)	150
3 (well drained)	200
4 (well drained)	300
5 and 6 (well drained)	400

¹S₁ and S₃ values shall not exceed 12 times the allowable passive soil pressure (p).

²Values may be increased 33% for wind loads.

³Where ½-inch horizontal movement of the pole at ground surface can be tolerated, the values shown in Table 53-III may be increased 100%, provided the individual poles are spaced a minimum distance of 6 times B center to center.

(3) **DESIGN-NONRESTRAINED POLES.** The following formula shall be used in determining the depth of embedment required to resist lateral

loads where no restraint is provided at the ground surface, unless other methods are approved by the department.

$$d = \frac{A}{2} \left(1 + \sqrt{1 + \frac{6.36 h}{A}} \right)$$

where: d = depth of embedment, ft.

$$A = \frac{2.34 P}{S_1 B}$$

P = applied horizontal force on pole, lb.
 S_1 = $pd/3$, see Table 53-III

Note: For first approximation of "d", the following formula may be used:

$$d = \sqrt[3]{\frac{12 h P}{B p}}$$

B = diameter of concrete casing, ft.; when nonencased in concrete, diameter or diagonal dimension of square or rectangular pole, ft.

h = height above the ground, in feet, at which the force "P" is applied. If the pole has fixity at the top, such as provided by a knee brace, the force "P" acts at the inflection point. The inflection point may be assumed at $\frac{2}{3}$ of the distance from the ground to the knee brace for round poles, or $\frac{1}{2}$ of the distance from the ground to the knee brace for square poles.

p = allowable lateral passive soil pressure, psf.

Note #2: When a frame analysis is used, $h = M/P$, where M = bending moment on the pole at the ground surface.

(4) DESIGN—RESTRAINED POLES. Where restraint is provided at the ground surface, such as a rigid floor or pavement, the depth of embedment shall be in accordance with the following formula:

$$d = \sqrt{\frac{4.25 h P}{S_3 B}} \quad \text{where: } S_3 = pd, \text{ see Table 53-III}$$

(5) MOISTURE. A preservative treatment shall be applied to poles subjected to moisture.

Note: The department will accept poles treated in accordance with the standards of the American Wood Preservers Association for preservative treatments.

History: Cr. Register, July, 1974, No. 223, eff. 1-1-75; am. (2) and (3), cr. (4), Register, December, 1976, No. 252, eff. 1-1-77; renum. (2), (3) and (4) to be (3), (4) and (5), cr. (2), Register, December, 1977, No. 264, eff. 1-1-78.

Part III — Masonry

ILHR 53.30 General. (1) SCOPE. The requirements of ss. ILHR 53.30 through 53.36 herein shall apply to the design, construction and materials used in all masonry and similar work under this code.

(2) DEFINITION. Masonry as used herein shall be considered as any built-up construction or combination of building units or materials of clay, shale, concrete, stone, gypsum, glass, metal or other approved units.