

CEILING HEIGHTS FOR EQUIPMENT BUILDINGS

1. GENERAL

1.01 This section covers ceiling heights for new buildings housing local and toll central office equipment.

1.02 The purpose of this section is to recommend minimum ceiling clearances required for telephone equipment relative to structural framing, ventilating ducts, and other overhead obstructions of the building itself. These are for consideration in the design of equipment buildings with the objective of keeping such buildings at a minimum volume and yet sufficient to provide for superstructure, cabling and mechanical air distribution associated with ventilating and air conditioning systems where required.

1.03 It is important during the building design stage for the building engineers of the Telephone Company and the architects to work together and arrive at the best method to house equipment arrangements, cabling, floor framing, and means of air distribution in order to effect minimum building story heights. This will coordinate the planning necessary for an economical building and eliminate the possibility of providing heights of stories which might not be effectively used.

1.04 This section is revised and reissued to include recommended minimum ceiling clearances in power rooms for the efficient housing of various size power plants. The adherence to these and other clearances recommended in this section will permit shorter cable runs with resultant less over-all cabling costs that greatly exceed the cost of providing modestly greater ceiling clearances. A review of P.E.L. 6260 Standard Equipment Area Floor Plans and P.E.M. 7132 Supplementary Building Information for Standard Equipment Area Floor Plans is also recommended.

1.05 Arrows indicate major revisions in the text.

2. BASIS OF CLEARANCE RECOMMENDATIONS

2.01 Because the most economical types of structural floor systems differ in various areas, and because there are numerous variations in the size and arrangement of ventilating ducts, this section specifies minimum clearances under all obstructions that are needed to insure a straightforward and economical cabling job. The building engineer and architect can then design the floor system and ducts in whatever way is most economical, so long as none of this encroaches on these minimum clearances. In the case of ducts, the clearances specified are understood to be free clearances under all protrusions of the duct structure such as flanges, bracing, hangers, reinforcing angles, or insulation.

3. MINIMUM CEILING CLEARANCES FOR CENTRAL OFFICE EQUIPMENT

No. 1 and No. 5 Crossbar and No. 1 Step-by-Step Local Equipment Rooms

3.01 A minimum clearance of 13 ft. 0 in. under all obstructions is required. This is sufficient for 303 high protector main distributing frames. For 404 high protector main distributing frames, a clearance under all obstructions of 15 ft. 0 in. is required. For double-sided 404 high protector frames and associated main distributing frames, this clearance should be increased to 15 ft. 6 in.

Toll Terminal Equipment Rooms

3.02 Where the toll terminal equipment includes broadband carrier, such as "L" carrier, it is necessary to provide a 6-in. separation between cable runs carrying certain classes of circuits. For this reason, 13 ft. 6 in. clearance is required under all obstructions. In toll terminal rooms not involving broadband carrier, it would be practicable to adhere to a 13 ft. 0 in. clearance. In view, however, of the expanding use of broadband carrier, it is recommended that 13 ft. 6 in. clearance be adopted for toll terminal equipment rooms generally.

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Combined Local Dial and Toll Terminal Equipment Rooms

3.03 In the frequent situations where the same floor accommodates both local dial and toll terminal equipment, the toll clearances will, of course, govern the ceiling height.

No. 4A Toll Crossbar Equipment Rooms

3.04 Owing to the necessity of separating power cable runs from other cabling, a minimum clearance of 13 ft. 6 in. is required under all obstructions. While this clearance is adequate for most No. 4A toll crossbar equipment rooms, cases have arisen when still more clearance is required. These are usually installations involving large switchboards, where both the switchboard cabling and the 4A cabling feed to the same distributing frame. Since the need for more than 13 ft. 6 in. clearance is a function of both the size and the layout of the equipment, it is recommended that the building engineer check the probable future cabling requirements with the equipment and cabling engineers before settling on the 13 ft. 6 in. clearance.

Small Offices

3.05 In community dial offices and in main and auxiliary repeater and carrier stations where 9 ft. 0 in. frames are used, a clearance of 10 ft. 6 in. under all obstructions is usually adequate. Since many of these buildings do not require duct work and many have a flat roof structure, this results in an actual ceiling height of 10 ft. 6 in. Where a limited amount of duct work is required, for example, in main repeater stations, it may frequently be possible to install the duct work without any increase in the ceiling height. The proposed layout should be checked with the equipment and cabling engineers.

Power Rooms

3.06 The ceiling clearances cited for equipment rooms are adequate for all power rooms where these are located on equipment floors. Where power rooms are located in basements, or in a separate annex to an equipment building or in portions of floors with lower ceiling heights, the recommended ceiling clearances are as follows:

- (a) Power plants which do not have overhead bus bars, e.g., 111A, 302A up to 1200 amperes capacity, 303A, 410B, 702C, etc., and all

standard engines up to and including 225 kw capacity require 9 ft. 0 in. clearance.

(b) A 10 ft. 0 in. ceiling clearance is recommended for power plants which have overhead bus bars, i.e., 302A power plants over 1200 amperes capacity and the 350 kw standard engine.

(c) A 12 ft. 6 in. ceiling clearance is recommended for the 500 kw standard engine.

(d) Engine sets larger than 500 kw have not been standardized, and the ceiling heights required for such units will be governed by the dimensions of the particular make and model that is used.

Operating Rooms and Nonequipment Spaces

3.07 Operating rooms, lounges, test bureaus, assignment quarters, business offices, and other nonequipment areas located in an equipment building may be arranged in a very satisfactory manner with a finished ceiling height of 10 ft. 0 in. Where these rooms are on equipment floors the ceiling height as determined by the equipment is normally ample to provide for the installation of 10 ft. 0 in. suspended ceilings with duct work concealed above the ceiling, flush-type air diffusers, and recessed lighting fixtures if desired. Of course, ceiling height limits are not involved where the acoustic treatment is applied directly to the slab. Where such quarters are not located on equipment floors, such as an entire operating room floor or a side building appendage for nonequipment areas, it is recommended that they be designed for a finished ceiling height of 9 ft. 6 in. to 10 ft. 0 in.

Additions to Existing Buildings

3.08 Where ventilating ducts are to be installed in existing equipment rooms, it is recommended that the proposed layout be carefully checked with the equipment engineers in charge of cabling to minimize interference with present and future cable runs. Where lateral additions are being made to existing buildings, it may sometimes be desirable to consider changing the design of the floor system of the addition in order to approximate the recommended clearances. Where vertical additions are made, the new floors can ordinarily be designed for the recommended clearances.