

One of the most common and serious types of frost damage is by frost heaving of foundations. It is absolutely essential to prevent freezing of the ground below the foundation when frost susceptible soils are encountered. If a basement is left open or unheated, insulation must be provided over the entire foundation, and on concrete floors. A twenty-inch layer of straw or hay will usually provide the required amount of protection for short periods.

Forms for foundations should not be placed on ice or snow. All ice or snow on the inside surfaces of forms and between forms must be removed before concrete is placed. This can readily be done by steaming. The base must be thawed before footings are placed and kept that way thereafter. Steel reinforcement and construction joints must be free of snow and ice and preferably warm.

*Masonry units for foundations* should be thoroughly cured. Those having a moisture content greater than 20 per cent should not be used. Blocks that have ice on them should not be used. Dry blocks permit mortar to set faster. Blocks should be warmed when temperatures fall below 40°F. These precautionary measures lessen the chances of damage by frost.

*Mortar* for block foundations should be prepared from warm aggregate and the mixing water must be heated when the temperature is below 40°F. Mortar should be prepared in small batches and kept warm until it is used. Mortar and masonry materials should be maintained at a temperature of not less than 40°F. during laying. The masonry should not be subjected to below freezing temperatures during the first 48 hours after laying.

*Drain tile* may be placed around the footings and covered with crushed rock or other granular material. Straw or hay should then be placed on top of this material to prevent frost heaving and freezing of the tile and footings. Proper outlets for the tile must be provided to take care of early spring runoff. No backfilling should be done until spring unless unfrozen material is used.