Borough of State College Public Works Department

Public Sidewalk Repair and Construction Criteria

Tripping Hazards

Repair or replacement of a sidewalk block is necessary when a tripping hazard exists. Tripping hazards exist when a sidewalk block, or a portion of it, has risen or sunk 1" higher or lower than an adjacent sidewalk block. A tripping hazard also exists when a crack or joint separates more than 1", or when the edges of a crack are chipped or broken to create a 1" or greater opening. Blocks damaged by tree roots may need special attention and methods of repair are listed below. A sidewalk square must also be repaired or replaced when the surface has chipped or crumbled to allow exposed aggregates, creating excessive peaks and valleys of more than ½".

Suggested Repair Methods

Patching

Repairs may be made using a half-and half mixture of Portland cement and sand, or with a commercial two-part epoxy-type concrete patch material. The minimum thickness for a patch is 1". Thicknesses less than 1" generally do not bond well.

Prior to patching, the deteriorated material should be removed to expose sound concrete. The surface should be prepared with a bonding material or epoxy as prescribed by the patch material manufacturer.

Grinding

The edge of a raised block may be "shaved" off by using a concrete grinder, as long as the height of the raised portion is no more than 1½". After grinding, the area should be smooth in texture and level with the adjacent block. Chipping or chiseling of the raised portion is not acceptable.

PLACING A WEDGE OF PATCH MATERIAL OVER A PORTION OF A SQUARE IS NOT ACCEPTABLE BECAUSE WEDGES WILL NOT ADHERE PROPERLY NOR WILL THEY WITHSTAND FROST MOVEMENT.

Reinspection

Repairs must be reinspected once complete. Please call 234-7140 to schedule a reinspection.

Sidewalk Replacement

If the deterioration of the sidewalk block is severe, it may be in your best interest to replace the entire block. Please follow the guidelines listed below for new concrete sidewalk construction.

Hiring a Contractor

Contractor names can be found in the Yellow Pages of the telephone book under "Concrete Contractors". The contractor should remove and dispose of the old block. Specify to the Contractor that the concrete is to be Class A, 3300 PSI concrete, and reinforced with fibrillated fibermesh MD fibers (1-1/2 pounds per cubic yard). The block must be at least 4 inches thick in residential areas, 5 inches thick in the Central Business District, and at least 6 inches thick for a driveway area. The side of the sidewalk block should be formed using 2 x 4's (or 2 x 6's for the Central Business District and at a driveway). Surface edges shall have a 1/4" radius. The finished surface should be slip resistant by coarse-brooming in a direction perpendicular to the street. The width of the sidewalk block should be at least 5 feet, unless an exception has been granted by the Borough Engineer. When having two or more blocks poured continuously, the contractor should create a saw cut no greater than 6 feet apart and to a depth of 2". Joints should be placed no greater than 6 feet apart. Expansion joints shall be constructed of pre-molded one-half inch (½") expansion material placed the full depth of the sidewalk for 2 or more adjacent blocks in the same pour. For one single block, the expansion joint may be one-quarter inch (¼"). Expansion material shall be placed between the sidewalk and any rigid structure (e.g. another sidewalk, curb or curb gutter, inlet, concrete driveway, light post, buildings). All hand-formed contraction and expansion joints shall be edged with an edger having one-fourth inch (¼") maximum radius. Expansion joints in sidewalks shall be caulked with SikaFlex-1A sealant manufactured by Sika Corporation, or equal. A curing compound should be placed on the new concrete after brooming the finish. An application of boiled linseed oil 45-60 days after the pour should be placed to seal the concrete, which will reduce future salt damage.

Do It Yourself

Property owners may complete the work themselves by following the same guidelines listed for contractors. The Borough will dispose of the old sidewalk block after it is removed and broken into pieces small enough for one person to handle. The pieces should be placed between the sidewalk and curb and scheduled for pickup by calling 234-7135. A fee of $25 for the first sidewalk block and $5 for each additional sidewalk block will be charged for disposal.

The property owner may use 80# bags of pre-packaged concrete mix in lieu of ordering from a concrete supplier. (Concrete suppliers normally require a minimum order which usually is in excess of the 1/3 cubic yard that is needed for one 4" thick, 5' x 5' sidewalk block) Approximately 17-80# bags will be needed for one 4" thick, 5' x 5' block. Carefully follow the directions on the package. The pour must be made in one course. Finishing and curing should be done as described above under "Hiring a Contractor".

You can also mix your own concrete using 1 part Portland cement, 2 parts fine sand, 3 parts course aggregate mixed with 6 gallons of water (maximum) per sack of cement.

Reinspection
Upon completing the sidewalk replacement, please call 234-7140 to schedule a reinspection.

Tree and Sidewalk Conflicts

The natural, vigorous growth of healthy street trees occasionally will cause damage to sidewalks due to expanding roots. Several options are available to minimize the reoccurrence of this situation. Each of the options listed below must be approved by the Borough Engineer prior to construction.

Reduce Sidewalk Width (Figure 1)
The sidewalk block may be reduced to a width of 4' (four feet) around an existing tree. If this option is selected, consideration should be given to the installation of root barriers as described below.

Construct Sidewalk around Tree onto Private Property (Figure 2)
If there are multiple sidewalk blocks to be replaced due to tree root damage, a by-pass walk may be constructed back onto private property. Place concrete on a subbase of 6" of gravel (2RC stone), which will deter root growth and provide drainage.

Root Removal/Root Barriers (Figure 3)
One solution is to remove roots for a depth of 6" to 8" below the sidewalk (12" total) and install a root barrier. A 12" deep root barrier will be furnished to the property owner by the Borough upon request. Installation is the responsibility of the property owner, but the Borough can provide installation instructions. All roots removed should be pruned off cleanly. Removal of roots greater than 2" in diameter require a permit from the Borough. New concrete should be placed on 6" of gravel (2RC stone) to deter future root growth.

Temporary Measures
The use of brick, asphalt, or quartered concrete squares may be used as a temporary measure, when approved by the Arborist and Borough Engineer. The temporary measure may only be used until the time the tree is removed. Upon the removal of the tree, the property owner will be expected to replace the temporary material with concrete, as noted in the above guidelines.

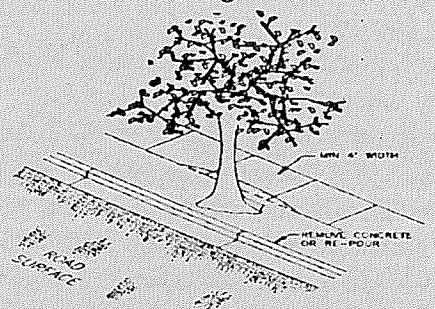

FIGURE 1
SIDEWALK CUTOUT

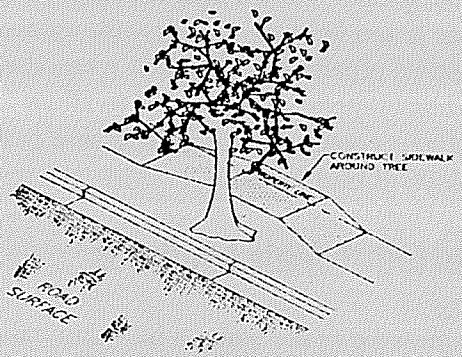

FIGURE 2
SIDEWALK RELOCATION

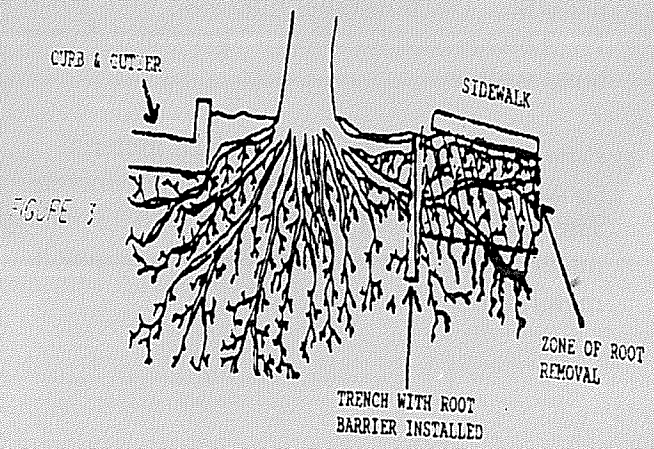

FIGURE 3