

Borough of State College Public Works Department Public Sidewalk Repair and Construction Criteria

Tripping Hazards

Repair/replacement of a sidewalk block is necessary when a tripping hazard exists as follows:

- 1) a crack or joint has separated greater than 1";
- 2) the edge(s) of a crack are chipped or broken, creating a surface opening of 1" or more;
- 3) vertical offset at a crack creates a trip hazard;
- 4) a block is raised or sunken greater than 1" above or below the adjacent block (measured 15" from the edge of the block);
- 5) greater than 25% of the horizontal surface of a block and at any point has deteriorated ½" below the original surface;
- 6) a 16 square inch area has deteriorated, and a 1" deep hole has also developed;
- 7) any other deficiency deemed a trip hazard as determined by the Borough Engineer.

Blocks damaged by tree roots may need special attention and methods of repair which are listed below.

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. In no case should the remaining block be less than 2" thick. 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.

Re-inspection

Repairs must be re-inspected once complete. Please call 234-7140 to schedule a re-inspection.

Graffiti

When choosing to do the work yourself or when hiring a contractor, please remember that keeping the freshly poured concrete from graffiti is your responsibility. **The Borough has an ordinance against graffiti on sidewalk blocks and unfortunately, you will be required to remove and replace the new block if it has graffiti.**

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 fiber mesh 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(s) 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 \$35 for the first sidewalk block and \$15 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.

Re-inspection

Upon completing the sidewalk replacement, please call 234-7140 to schedule a re-inspection.

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 sub base 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 requires 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.

Complete sidewalk specifications and details can be found on the Borough's website:

www.statecollegepa.us

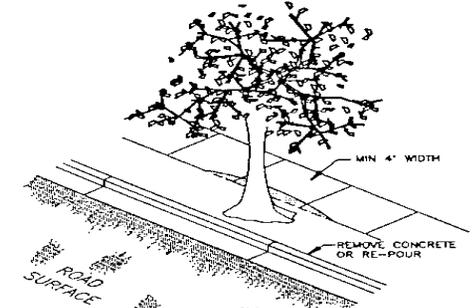


FIGURE 1
SIDEWALK CUTOUT

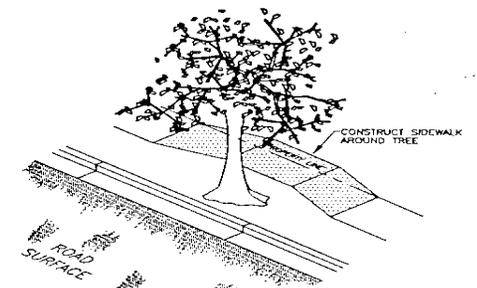


FIGURE 2
SIDEWALK RELOCATION

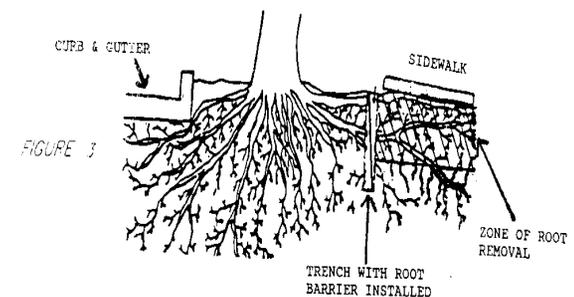


FIGURE 3