

**ADDENDUM TO THE
CITY OF AKRON
BUREAU OF ENGINEERING
CONSTRUCTION AND MATERIAL SPECIFICATIONS
2008 EDITION
ITEM 456 - SIDEWALKS, DRIVEWAYS AND STEPS**

- 456.01 Description**
- 456.02 Materials**
- 456.03 Concrete Walks, Driveways and Driveway Aprons**
- 456.04 Concrete Steps**
- 456.05 Curb Ramps- Fiber Reinforced**
- 456.06 Sidewalk Relaid**
- 456.07 Method of Measurement**
- 456.08 Basis of Payment**

456.01 Description. This item shall consist of constructing sidewalks, driveways, driveway aprons, fiber reinforced curb ramps, and steps of specified materials in reasonably close conformity with lines, grades and dimensions shown on the plans or established by the Engineer. All removal and restoration related to construction of the items listed herein shall also be included in this item.

456.02 Materials. Materials shall be:

Concrete (Class C).....	499 and 511
Concrete (Class C with fiber reinforcing for ramps).....	499 and 511
Expansion joint material	705.03
Reinforcing steel.....	509.02

456.03 Concrete Walks, Driveways and Driveway Aprons. (a) Excavation shall be made to the required depth and to a width that will permit the installation of forms. Excavation to the finished surface of the sidewalk, driveway or apron shall be included under 203. Embankment to the top of subgrade shall be included under 203. The entire subgrade shall be uniformly compacted to a surface conforming to the plans or as directed. The Contractor shall provide and use a template, riding on the forms, for checking the subgrade before the concrete is placed. A subbase course, if specified in the plans, shall be as required in 310.

(b) Forms shall be of metal, unless otherwise permitted by the Engineer, and shall extend for the full depth of the concrete and be of sufficient strength to resist the pressure of the concrete without deflection. Forms shall be kept clean and shall be oiled just before placing the concrete.

Unless otherwise shown on the plans or ordered by the Engineer, forms shall be set so that the back edge of the walk will be on the property line, at the designated grade, and the walk will have a uniform cross slope of 1/4 inch per foot of width toward the street center line.

Steel plates, 1/8 inch thick, shall be used to divide the walk for its full width and thickness into blocks five or six feet in length or as directed by the Engineer. In lieu of using divider plates, the walks may be saw cut to a minimum depth of 2 inches. Sawing shall be done as soon as practicable but no later than 24 hours after the concrete is placed. Driveway aprons shall be divided in a similar manner. If the driveway apron and sidewalk are placed integrally, joints in the sidewalk shall be in line with the edges and joints of the apron, and one of the two joints in line with the edge of the apron shall be an expansion joint. A longitudinal joint in line with the front edge of the walk shall be sawed between the sidewalk and apron.

All covers of shut-off boxes, manhole or coal hole covers, valves, platforms or area covers, and other similar fixtures, shall be adjusted to the grade of the completed walk prior to pouring the concrete.

Where the sidewalk concrete surrounds posts, poles, fire hydrants, gratings, castings, and the like, the concrete immediately adjacent to such objects shall be separated from the remaining concrete by means of 1/2 inch expansion joints extending through the full depth of the sidewalk concrete. In general, these joints shall be placed about 6 inches from poles, hydrants, etc., and arranged in the form of squares or rectangles or as directed by the Engineer.

(c) Placing and Finishing. The subgrade shall be moistened thoroughly, immediately prior to placing concrete. The concrete shall be deposited in a single layer. It shall be struck off with a template and smoothed

with a float and a uniform broom finish applied. No plastering will be permitted. All outside edges and joints shall be edged with a 1/4 inch radius edging tool. Premolded expansion material 1/2 inch thick, extending the full depth of the walk, shall be installed between the new concrete and existing curbs, drives, aprons, walks, any fixed structure and at intervals of approximately 30 feet.

All concrete walks shall have the name of the Contractor or person constructing the walk, together with the year the walk is constructed, stamped in the surface of the walk in front of each lot. When single blocks of walk are constructed, they shall be separated from the existing walk by means of at least one expansion joint 1/2 inch in thickness. All such isolated blocks shall be stamped with the Contractor's name.

Where drain pipes cross underneath sidewalks, the walk shall be marked near the edge with a small circle, not less than 1 inch in diameter, impressed into the concrete.

(d) Concrete shall be cured as required in 451 except that membrane cure shall be applied at a rate of not less than 1 gallon per 200 square feet of surface. Cold weather protection shall be in accordance with 451.07.

456.04 Concrete Steps. (a) Excavation and forms shall conform to 456.03 (a) and (b) where applicable.

(b) Placing and finishing shall be in accordance with 511 except that treads of steps shall be finished to produce a sandy texture.

(c) Slopes of step treads shall be 1/4 inch per foot toward the next lower step.

(d) Curing shall be in accordance with 511.

(e) Hand railing, when specified, shall be in accordance with pertinent provisions of 517.

456.05 Curb Ramps- Fiber Reinforced. All Excavation, forming, cost addition to add fiber reinforcement to concrete, placing and finishing and curing shall conform to 456.03. The final surface texture shall be obtained by coarse brooming or other method approved by the Engineer. This item includes furnishing and installing approved detectable warnings **as described below**, unless paid for under a separate item. All curb ramps shall conform to all requirements of the American Disabilities Act (ADA) and the City of Akron Standard Construction Drawings.

Synthetic Macro Fiber Reinforcement shall be added to Class C concrete used for the purpose of controlling temperature and drying shrinkage cracking. Fibers shall provide a minimum post-crack residual strength capacity of 250 psi as measured by ASTM C1399 and shall meet the requirements of ASTM C 1116 for Type III synthetic fibers. Fibers shall be 100 percent virgin polypropylene fibrillated fibers containing no reprocessed olefin materials and specifically manufactured to an optimum gradation for use as concrete secondary reinforcement. Fibers shall have a Specific gravity: 0.91, Tensile strength: 70,000 to 110,000 pounds per square inch in accordance with ASTM D2256, fiber length: 1-1/2 inch minimum, and aspect ratio: 0.7 minimum. Volume of fibers shall be as recommended by the fiber manufacturer, or minimum 4 lbs./C.Y.

All cost associated with adding fiber reinforcing, placing, and finishing, in the ramp area is to be included in the cost of Curb Ramp- Fiber Reinforced.

Detectable Warnings shall be preformed material as listed below, and concrete stamping will not be acceptable. Cast-in-place products shall be used for new curb ramps and surface applied mats for retrofitting existing ramps that are not being replaced. Acceptable manufactures and products are:

New ramps (cast-in-place material):

- A. Engineered Plastics, Inc., 300 International Drive, Suite 100, Williamsville, NY 14221, (800) 682-2525, Armor-Tile cast-in-place system, 24"x48".
- B. ADA Solutions, Inc., One Survey Circle – 2nd Floor, North Billerica, MA 01862, (800) 372-0519, Composite Tactile Warning Paver Unit (cast-in-place), 24"x48".

Existing ramp retrofit (surface applied material):

- A. Engineered Plastics, Inc., 300 International Drive, Suite 100, Williamsville, NY 14221, (800) 682-2525, Armor-Tile surface applied system, 24"x48".

- B. ADA Solutions, Inc., One Survey Circle – 2nd Floor, North Billerica, MA 01862, (800) 372-0519, Composite Tactile Warning Flush Mount Unit (surface applied), 24”x48”.

Additional Ramp Requirements

- A. All detectable warning products shall be brick red in color. Tile size and color may vary at the direction of the Engineer. Contractor shall maintain a total of 6-inches depth of concrete sidewalk including the thickness of the detectable warning product unless otherwise specified.
- B. All detectable warning products (new and retrofit) shall be installed in strict accordance with the manufacturer’s installation instructions. Cost for anchors, adhesives, or other materials necessary for complete installation are included in the cost of the curb ramp. All detectable warning products shall have a written 5-year warranty including defective work, breakage, deformation, and loosening of tiles.
- C. Detectable warning products shall meet the pattern requirements as follows. The older diagonal aligned pattern will not be acceptable.

Dome Size. Truncated domes in a detectable warning surface shall have a base diameter of 0.9 inches (23 mm) minimum to 1.4 inches (36 mm) maximum, a top diameter of 50% of the base diameter minimum to 65% of the base diameter maximum, and a height of 0.2 inches (5 mm).

Dome Spacing. Truncated domes in a detectable warning surface shall have a center-to-center spacing of 1.6 inches (41 mm) minimum and 2.4 inches (61 mm) maximum, and a base-to-base spacing of 0.65 inches (16 mm) minimum, measured between the most adjacent domes on square grid.

Dome Alignment. Domes shall be aligned on a square grid in the predominant direction of travel to permit wheels to roll between domes.

456.06 Sidewalk Relaid. Existing concrete or flagstone sidewalk slabs that are suitable for relaying will be designated on the plans or by the Engineer. Slabs that are to be relaid shall be carefully removed, and a new bed of cushion sand spread and tamped to such elevation as is necessary to bring the relaid walk to proper grade. Then the slab shall be placed upon the new bed and tamped to line and grade, care being exercised not to break the slab. Any slabs broken by the Contractor while being relaid shall be replaced with new concrete sidewalk at the price bid for relaying. If the Contractor so elects, he may, at the price bid for relaying, provide new concrete sidewalks, constructed as specified above, in lieu of relaying the existing slabs.

456.07 Method of Measurement. Walks, aprons, driveway reconstruction and sidewalk will be measured by the square foot of finished surface complete in place. Steps will be measured by the linear foot, along the front edge of each tread. Where steps are constructed with integral walls, each tread will be considered to extend from out to out of such walls.

Curb ramps in concrete walk will be measured as the number of each complete and shall include the cost of any additional materials, grading, forming and finishing not included in the walk which is measured through the curb ramp area. New curbs required for curb ramps shall be constructed and paid for in accordance with Item 455 Curbing.

456.08 Basis of Payment. The accepted quantities of specific items will be paid for at the contract prices designated for each pay item listed. Excavation, backfill, base course material, reinforcing steel, hand railing, expansion joint material and other related miscellaneous items will not be paid for separately, but the cost thereof shall be included in the cost of the item of which they are a part.

Payment for accepted quantities will be made at the contract price for:

<u>Item</u>	<u>Unit</u>	<u>Description</u>
456	Square Foot	Concrete walk, _____ inches thick
456	Square Foot	Sidewalk relaid
456	Each	Curb ramps- Fiber Reinforced
456	Linear Foot	Concrete steps
456	Square Foot	Concrete Driveway Reconstruction, _____ inches thick
456	Square Foot	Concrete aprons, _____ inches thick