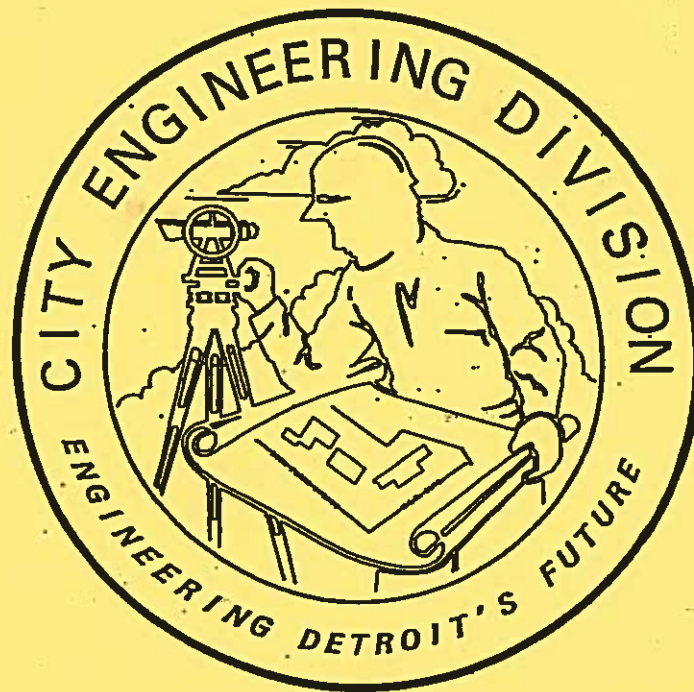


**CITY OF DETROIT**  
**DEPARTMENT OF PUBLIC WORKS**  
**CITY ENGINEERING DIVISION**



**STANDARD SPECIFICATIONS**  
**FOR**  
**PAVING AND RELATED CONSTRUCTION**

**PREPARED BY**  
**ENGINEERING SERVICES**

**MAY 2012**

# SIDEWALKS, SIDEWALK RAMPS AND DRIVEWAYS

12.1

## DIVISION 12

### I. SCOPE

#### 12.1.1 WORK INCLUDED

The work under this Division shall consist of:

- A. The removal of existing and/or disintegrated concrete sidewalks and/or driveways.
- B. The disposal of the broken concrete and other waste materials.
- C. The excavation, backfilling, and grading, for sidewalks and driveway construction to the established grades and cross-sections.
- D. The protection of trees and the trimming of tree roots, as required.
- E. The furnishing, care, storage, and mixture of all materials which are necessary to be incorporated into the concrete, including contraction and expansion material; the furnishing, erection, stripping, care and maintenance of forms; the handling, transportation, and placement of concrete for the proposed sidewalks and driveways; and the protection and care of the partially completed and completed work until final acceptance.

#### 12.1.2 REFERENCED PUBLICATIONS

##### American Society for Testing and Materials Standards (A.S.T.M.)

###### Code

###### Identification      Title

D 1751      Standard Specification for Performed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)

##### American Association of State Highway and Transportation Officials (A.A.S.H.T.O.)

###### Code

###### Identification                      Title

M 213/As Revised      Prefomed Expansion Joint Fillers for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)

Reference specifications for concrete shall be as specified in Division 4.

III. WORKMANSHIP12.III.1 WORKMANSHIP BY REFERENCE

Articles referenced here from other Divisions are to apply to this Division as though repeated herein.

Disposal of Excavated Material	3.III.4
Concrete Walk Removal	3.IV.2.E
Concrete Drive Removal	3.IV.2.F
Handling and Storage of Concrete Materials	4.III.1
Proportioning Concrete Materials	4.III.2
Air Entrainment and Consistency (Slump)	4.III.3
Batching, Mixing, and Transporting Concrete	4.III.4
Cold Weather Work	5.III.15
Final Cleanup	5.III.16

12.III.2 CONTROL ELEVATIONS

21. All sidewalks, whether repaired, replaced, or entirely new, shall ordinarily be constructed with a cross slope of 20 mm per meter ( 1/4-inch per foot) upward from the top of the pavement curb, or from the established grade therefore, towards the property line. The edge of the sidewalk at the curb side shall not exceed 150 mm (6 inches) as a maximum height above the top of the curb or above the established grade of the street. At intersection of streets, junctions with existing work, and other special conditions where it is not practical and reasonable to follow such cross slope, the sidewalks shall be constructed as directed by the Engineer.

Driveways across public property shall be constructed to the grades established by the Engineer.

On unpaved streets, the Engineer will establish the line and grade.

All site preparation shall be so performed that the finished concrete sidewalks and driveway will conform to these requirements.

12.III.3 SIDEWALK AND DRIVEWAY REMOVAL

- A. Site Clearance: Existing sidewalks and driveways shall be removed and paid for as specified in 3.IV.2.E, "Concrete Walk Removal" and in 3.IV.2.F, "Concrete Drive Removal".
- B. Repair Work: The work consists of the removal and disposal of existing sidewalks and driveways within the limits shown on the plans or as indicated on City Engineer Division permit Form C of D - 20 -PE-A.

**12.III.4 SUBGRADE AND SUBBASE CONSTRUCTION (CONTD)**

- A. Excavation below the subgrade when not so directed by the Engineer will be deemed unauthorized and the space of such excess excavation shall be backfilled in the same manner as specified above but at no additional cost to the City.
- B. Subgrade (Repair and New Work): The excavated subgrade area shall be uniformly compacted. A pneumatic or vibratory type mechanical tamper shall be used. The subgrade shall be so tamped as to closely approximate the required grade and cross-section.

Where the subgrade is at the required elevation, not requiring a subbase, the tamped and partially formed subgrade shall be trimmed and smoothed to the grade and cross-section required by the concrete construction, by a suitable method approved by the Engineer.

A subbase, when required, shall be placed on the tamped subgrade, as specified below in Sub-Article C, "Subbase (Repair and New Work)".

The subgrade, or subbase where used, shall be moist, but not muddy, soft, or frozen, at the time of concrete placement. When necessary, the area shall be uniformly wetted by a method that will prevent forming pools of water.

Immediately prior to concrete placement, the prepared subgrade and subbase when used, shall be again tested for conformity with the required grade and cross-section, using an approved scratch template on the side forms or rails. Material shall be removed, or added and tamped, if and as required, to bring all portions of the exposed surfaces to the required elevations. The surfaces shall be again checked with the template. All loose material which may have fallen on the prepared surfaces shall be carefully removed.

The prepared subgrade and subbase shall be approved by the Engineer before any concrete is placed thereon.

- C. Subbase (Repair and New Work): The subbase wherever required on the subgrade shall be composed of (Grade A) fill material, except as hereinafter specified. The fill material shall be deposited and spread in not more than 200-mm (8-inch) layers loose measure, or as otherwise directed by the Engineer. Each layer shall be compacted in a similar manner to that specified above for the subgrade. The subbase shall be brought up to the grade required for the concrete construction. The final surface finish of the subbase shall be as specified above for subgrade.

Where the top of the concrete sidewalk or driveway will be above the original ground, the subbase fill shall be brought up to the top of the concrete and extend out level at least 300 mm (12 inches) from the edge of the concrete. From such outside point, the fill shall extend to natural grade on a maximum slope of 1 1/2 horizontal to 1 vertical.

Where necessary to provide for natural surface drainage, and when so directed by the Engineer, subbase shall be composed of (22A) fill material, deposited, spread, and compacted in the same manner as specified for (Grade A) fill material.

12.III.5 BERMS (CONTD)

- B. Replaced Sidewalks and Driveways: The area excavated at the edges of existing sidewalks and driveways for the construction of the new work, shall be backfilled and graded to conform to the existing ground elevation. Selected backfill only shall be used. Existing sod previously removed shall be carefully replaced with sufficient earth placed along the edges to prevent premature drying.

Berm restoration and backfilling shall be completed within two days after the concrete placement and approved by the Engineer.

Such work will not be paid for as a separate item but will be considered incidental to and part of the respective pay items "Sidewalk Removal" and "Driveway Removal".

12.III.6 TREES

- A. Protection and Root Trimming: Trees shall be protected from damage by the construction operations. The sidewalk adjacent to a tree shall, where necessary and when directed by the Engineer, be arced to provide an 460-mm (18-inch) clearance between the edge of the sidewalk and the tree trunk or root system at ground level. Such arcs shall be as uniform and symmetrical in appearance as is practicable to meet existing conditions.

Tree roots 75 mm (3 inches) and larger in diameter within the sidewalk or driveway area shall not be completely severed when they may be trimmed and still not protrude. Smaller roots which would protrude into the new concrete entirely or in part shall be completely removed. Cutting of tree roots 75 mm (3 inches) and larger in diameter shall be done under the supervision of the Engineer.

Tree protection and root trimming will be considered as incidental to other work and will not be paid for as a separate item.

- B. Removal: Trees and stumps shall be removed as specified under 3.IV.1, "Tree and Stump Removal".
- C. Cold Patching: At all junctions of the new sidewalk with existing trees, cold-patch material, as specified under 3.II.2.D, shall be placed in the area between the tree and walk and to an average depth of 50 mm (2 inches) as directed by the Engineer.

Cold patching will be paid for at the Contract Unit Price per square meter (square yard) for "Cold Patching".

**12.III.9 PLACING SIDEWALK AND DRIVEWAY CONCRETE (CONTD)**

The concrete shall be struck off to the required grade and cross-section.

Where gutters are replaced in conjunction with sidewalk ramps, the gutter shall be constructed to the same dimensions and profile and contain the same reinforcement as the existing gutter, unless otherwise shown on the plans.

**12.III.10 JOINTS**

All concrete sidewalks and driveways shall have expansion joints and contraction joints in accordance with these specifications and Detail Standard No. C-4462, "Sidewalk Jointing Standard".

Joints shall be constructed true to line with their faces perpendicular to the surface of the sidewalk and shall not vary more than 6 mm (1/4-inch) from their designated position.

When the sidewalk is constructed in partial width slabs, transverse joints in the succeeding slab shall be placed in line with like joints in the adjacent slab. In the case of widening existing sidewalks, transverse joints shall be placed in line with joints in the existing sidewalk.

The concrete at the faces of all joints shall be thoroughly spaded or vibrated and compacted to fill all voids, and the surface shall be finished smooth and substantially true to grade.

A. Expansion: Expansion joints shall be placed at right angles to the rail forms and perpendicular to the subgrade, and shall extend from 25 mm (1 inch) below the bottom of the pavement to the top of and flush with the finished concrete surface.

When a driveway apron abuts an existing private driveway or a sidewalk abuts a driveway the expansion joint filler shall extend 25 mm (1 inch) below the bottom of the thinner pavement.

Sidewalks less than 2.1 meter (7 feet) in width shall have transverse expansion joints 13 mm (1/2-inch) in thickness at lot lines, except:

1. Where individual lots are 7.6 meters (25 feet) or less in width, an expansion joint shall be placed at every two lots on the lot line, and a divider joint shall be placed at the intervening lot line.

**12.III.10 JOINTS (CONT'D)**

- B. Premolded joint filler paper shall be 6 mm (1/4-inch) in thickness. The paper shall permanently remain in place. The surface of the concrete shall be finished with an edger on both sides of the paper, as specified under "Finishing".

Sawed contraction joints may be used in lieu of the above methods upon specific authorization of the Engineer based upon methods and equipment proposed by the Contractor.

All work involved in the construction of joints will be considered incidental to the cost of construction.

**12.III.11 FINISHING WALKS AND DRIVEWAYS**

As soon as free mortar appears on the placed concrete, a straight edge template shall be used as a strike-off across the rail forms to produce a true surface. While the concrete is still plastic, the surface shall be finished with wood or steel floats, bringing the surface to the required grade and cross-section. Care shall be taken not to overwork the concrete and bring an excess of water to the surface. Neat cement shall not be used as a dryer to facilitate finishing the surface.

When the concrete is sufficiently hard, the surface shall be carefully and uniformly scored by brooming with a brush having fine bristles, or by other means giving comparable results when approved by the Engineer. The surface of sidewalk ramps shall be textured with a course broom transversely to the ramp slope.

The edges of the concrete areas shall be rounded with approved finished tools having a radius not exceeding 6 mm (1/4-inch). Such edging shall be carefully done so as to produce an evenly rounded edge, true to both line and grade.

**12.III.12 CONTRACTOR'S STAMP**

The Contractor's name and the year in which the walk or drive was laid shall be carefully and clearly impressed in the concrete surface of each isolated flag, each flag at the property line, and in each end flag or slab of two or more adjoining flags or slabs. Each individual flag adjacent to a tree, whether arced or not, shall be also marked, as directed by the Engineer.

The stamp or plate used for marking shall have an approximate maximum dimension 100 mm x 150mm (4 x 6 inches), outside dimension. The Contractor's name and the current year's date shall be in such characters and arrangement that legible and indelible impression may be made in the concrete.

The work will be considered incidental to the cost of construction.

**12.III.15 BASIS OF PAYMENT**

Sidewalk and driveway replacement or new construction will be paid for at the respective Contract Unit Price per square meter (square foot) for "Sidewalks" and "Driveways" for designated thickness.

Sidewalk ramps for the different types and thicknesses, as shown on the Plans as directed by the Engineer, will be paid for at the Contract Unit Price per square meter (square foot) for "Sidewalks" for designated thickness. Any curb removal necessary to construct the ramps shall be incidental to ramp construction.

Mower ramps for the different thicknesses as shown on the Plans will be paid for at the Contract Unit Price per square meter (square foot) of sidewalks, square meter (square yard) of pavement, or per meter (lineal foot) of separate type curb.

"Temporary Walks", as described under 12.III.8, will be paid for per square meter (square foot) for "Temporary Walks".

**IV. TESTS AND GUARANTEES**

**12.IV.1 FINAL TESTS AND GUARANTEES**

The thickness and compressive strength of the placed concrete will be checked by the Engineer.

The minimum compressive strength at 28 days for Grade "A" concrete shall be 27.6 M Pa (4,000 pounds per square inch).

The Contractor accepts and agrees that the specified requirements for materials, proportioning, mixing, transporting, placing and curing of concrete are such that will produce a finished pavement having a minimum compressive strength, at 28 days after placing, of 27.6 M Pa (4,000 pounds per square inch) for Grade "A" concrete. The Contractor further agrees that any concrete test cylinder showing a compressive strength less than specified may be considered as indicative of concrete having an undue variance from the Contract requirements for which he assumes full responsibility.

All sidewalks, driveways, and curbs constructed under this Contract and found to be satisfactory by the Engineer at the close of the paving season - November 1st of the year constructed - shall be removed and replaced if the said sidewalk, driveway, or curb is not in the same acceptable condition, as determined by the Engineer, after two winters have passed.



# REMOVAL AND REPLACEMENT OF CURBS AND SIDEWALKS

13.1

## DIVISION 13

### I. SCOPE

#### 13.I.1 WORK INCLUDED

The work under this Division shall consist of the following:

- A. Separate type curb replacement
- B. Step curb
- C. Modified curb replacement
- D. Integral curb and sidewalk replacement
- E. Curb backing removal
- F. Sidewalk replacement
- G. Joint sawing
- H. Bituminous walk
- I. New (non-replacement) items: curbs, ramps, walks, etc.

#### 13.I.2 REFERENCED PUBLICATIONS

Reference specifications for concrete shall be as specified in Division 4, "Concrete".

Reference specifications for joint material shall be as specified in Division 12, "Sidewalks, Sidewalk Ramps and Driveways".

#### 13.I.3 SUPPLEMENTAL TABLES

Supplemental tables for concrete shall be as specified in Division 4, "Concrete".

### II. MATERIALS

#### 13.II.1 MATERIALS BY REFERENCE

Material of Excavation	3.II.1
Cold Patch Mixture	3.II.2D
Water	4.II.1
Cement	4.II.2
Fine Aggregate (sand)	4.II.3
Coarse Aggregate	4.II.4
Admixtures	4.II.5
Curing Materials	5.II.4
Joint Material	12.II.2

**13.III.3 BERMS**

The berm area excavated at the edges of existing sidewalks for the construction of the new work, shall be backfilled and graded to conform to the existing ground elevation. Selected excavated fill material or material approved by the Engineer shall be used for backfill. Existing sod previously removed shall be carefully replaced with sufficient earth placed along the edges to prevent premature drying.

Berm restoration and backfilling shall be completed within two days after the concrete placement and approved by the Engineer.

**13.III.4 CURB REMOVAL**

Existing curbs which are to be removed will be designated in the field by the Engineer. The required removal shall be done in a manner that will avoid damage to property and to any existing sidewalks that are to remain.

Where existing curb is located over a gas service line, the use of a drop-weight type pavement breaker, crane and ball type breaker, hydraulic ram, or breaker called a "Woodpecker" shall not be used for curb removal.

Separate type curb shall be completely removed, including existing concrete backing or fill, unless otherwise directed by the Engineer.

Curb removal for integral curb and sidewalk and modified separate type curb shall be done in accordance with the requirements shown on the Standard Plans.

Earth removal at the back of and adjacent to existing curbs shall be limited to that reasonably required for the subsequent concrete construction including the necessary form work.

**13.III.5 CURB FORMS**

Forms for curbs shall conform to the applicable provisions of sidewalk forms as specified in 12.III.7. Curb forms shall be of metal, except that wood forms may be used on sharp turns and for special sections when approved by the Engineer. The forms shall be of an approved section, the full depth of the curb, and shall be so constructed to permit the inside forms to be securely fastened to the outside forms.

The forms shall be securely staked and braced to the required line and grade, and sufficiently tight to prevent leakage of mortar. The forms shall be oiled with a light clean paraffin oil which will not stain the concrete.

Slip forms for curbs will be permitted upon approval of the Engineer as to methods and equipment.

**13.III.10 FINISHING SEPARATE TYPE CURB, INTEGRAL CURB AND SIDEWALKS AND STEP CURB**

Finishing shall be as described under 11.III.4D, "Finishing".

**13.III.11 CURING**

The concrete shall be cured as specified under Concrete Base Course Pavement.

**13.III.12 WEATHER AND TEMPERATURE LIMITATIONS**

The requirements for the protection of the curbing shall be in accordance with the requirements as specified under 5.III.15, "Cold Weather Work".

**13.III.13 RESTORATION OF ASPHALT SURFACES**

Any asphalt surface damaged during curb replacement work shall be replaced by:

1. Saw cutting the pavement 300 mm (1 foot) from the face of the curb and parallel to it; and
2. Stripping the wearing course, and replacing with a wearing course mixture with bond coat on the base course.

Such sawing and asphalt surface replacement shall be incidental to the curb replacement items.

**13.III.14 FINAL CLEANUP**

Final cleanup shall be performed in the same manner as specified under 5.III.16, "Final Cleanup".

Berm restoration and backfilling shall be as described under 13.III.3, "Berms".

13.III.15 BASIS OF PAYMENT (CONT'D)

- C. 3. The sawing of curb joints as directed by the Engineer to prevent excessive curb removal.
4. Curb backing removal and disposal (See Subsection F).
- D. **Step Curb:** Step curb will be paid for in lineal meters (lineal feet) at the Contract Unit Price for "Step Curb". This price shall be full compensation for the following work:
1. The removal of existing, broken, disintegrated, and/or sunken curb and sidewalk, in accordance with the Standard Plans and replacement with new step curb and sidewalk as shown in detail on the Standard Plans at such locations as designated in the field by the Engineer.
  2. The excavation, backfilling, compacting, and grading of the berm strip not to exceed 0.6-meter (two feet) in width paralleling the curb replaced as required or as directed by the Engineer.
  3. The sawing of curb joints as directed by the Engineer to prevent excessive curb removal.
  4. Curb backing removal and disposal (See Subsection F).
- E. **Integral Curb and Sidewalk Replacement:** Integral curb and sidewalk will be paid for in lineal meters (lineal feet) at the Contract Unit Price for "Integral Curb and Sidewalk Replacement", various widths. This price shall be full compensation for the following work:
1. The removal of existing broken, disintegrated, and/or sunken curb and sidewalk, in accordance with the Standard Plans and replacement with new integral curb and sidewalk at such locations as designated in the field by the Engineer.
  2. The excavation, backfilling, compacting, and grading of the berm strip not to exceed 0.6-meter (two feet) in width paralleling the curb replaced as required or as directed by the Engineer.
  3. The sawing of curb joints as directed by the Engineer to prevent excessive curb removal.
  4. Curb backing removal and disposal (See Subsection F).

IV. TESTS AND GUARANTEES

---

**13.IV.1 FINAL TESTS AND GUARANTEES**

Final tests and guarantees shall be in accordance with Article 12.IV.1 "Final Tests and Guarantees".