

# PUBLIC WORKS

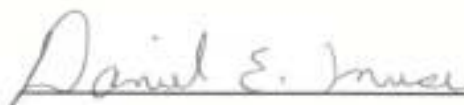
# RULES & REGULATIONS

OF THE MANAGER OF THE DEPARTMENT OF PUBLIC WORKS, CITY & COUNTY OF DENVER

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FOR THE CONSTRUCTION OF CURBS,  
GUTTERS, SIDEWALKS, DRIVEWAYS, STREET  
PAVING, AND OTHER PUBLIC RIGHT-OF-  
WAY IMPROVEMENTS

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October 15, 1993

Adopted Pursuant to Article II  
of the Charter of the City & County of  
Denver and Section 2-91 et seq. of the  
Revised Municipal Code

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**CITY AND COUNTY OF DENVER  
DEPARTMENT OF PUBLIC WORKS  
CITY ENGINEER'S OFFICE**

**RULES AND REGULATIONS FOR  
CONSTRUCTION OF CURBS, GUTTERS, SIDEWALKS, DRIVEWAYS,  
STREET PAVING, AND OTHER PUBLIC RIGHT-OF-WAY IMPROVEMENTS**

**1.00 General.**

1.01 Description.

These Rules and Regulations shall govern the construction of curbs, gutters, sidewalks, detached sidewalks, driveways, street paving, and other public right-of-way improvements within the rights of way of all public streets in the City and County of Denver.

1.02 Definitions.

1.02.01 AASHTO - American Association of State Highway and Transportation Officials.

1.02.02 ASTM - American Society for Testing Materials.

1.02.03 City - The City and County of Denver, Colorado.

1.02.04 Contractor - Wherever referred to in these Regulations, the term "Contractor" shall be understood to mean a Contractor that is properly licensed and bonded for the proposed work as detailed in Article XVII, Chapter 49, of the Denver Revised Municipal Code

1.02.05 Curb Cuts - The portion of curbing that is removed to permit access to driveways. Includes the area from the curb lip line to the back of walk or property line. Sometimes referred to as a "driveway entrance".

1.02.06 Curb Walk - Sidewalk constructed adjoining curb throughout a block where no setback sidewalk is constructed.

1.02.07 Driveways - The entrance driveways extending back from the edge of the curb cut to property line. Sometimes referred to as "aprons".

1.02.08 Engineer - The City Engineer of the City and County of Denver or his duly authorized representative.

1.02.09 Inspector - The duly authorized representative, or representatives, of the Engineer at the site of the work. More than one single individual person can be sever as the "inspector" due to the different Departments or Sections having authority and jurisdiction with the right-of-way.

1.02.10 Manager - The Manager of Public Works of the City and County of Denver or his duly authorized representative.

1.02.11 Service Walk - An entrance walk extending from the property line to the curb line exclusive of any public sidewalk, and also along the curb for a limited distance such as a landing strip.

1.02.12 Sidewalks - Sidewalks referred to herein shall mean those located between roadway curbs and the property lines,. and shall not include sidewalks integral with curbs and gutters or service walks.

1.02.13 Standard Specifications - Wherever referred to in these Regulations, the term "Standard Specifications?" shall be understood to mean the standard construction specifications contained in the current publication Standard Construction Specifications and Drawings of the City and County of Denver.

1.02.14 Standard Drawings - Wherever referred to in these Regulations, the term "Standard Drawings" shall be understood to mean the standard construction drawings and details contained in the current publication Standard Construction Specifications and Drawings of the City and County of Denver.

### 1.03 Application, Permit, and Fee.

All permits for the construction or repair of curbs, gutters, sidewalks, service walks, driveways, street pavement, and related public right-of-way improvements within the confines of public streets must be obtained from the Construction Engineering Section (640-5419), Office of the City Engineer, before any work is commenced. If the proposed work is due to remodeling or reconstruction of a site and the owner is required to obtain a Street Development Requirement Agreement (SDR) from Transportation Engineering, then the owner (or the contractor if acting as owner's agent with owner's written authorization) must first complete an "Application for Permission to Design, Plan, Construct, Reconstruct or Remodel a Public Improvement" and provide a good and sufficient performance collateral in an approved form before a permit can be issued. A permit is effective for THIRTY (30) days only, and if the work is not started within thirty days after issuance of the permit, a new permit must be secured.

Permit fees shall be in accordance with the most current Department of Public Works "Schedule of Fees" as established by the Manager of Public Works.

Permits will be issued only to properly licensed and bonded contractors. Any Contractor found working in the public right of way of the City without a valid permit will be deemed

in violation of these Rules and Regulations. In cases where the Inspector deems the public health, safety, and welfare to be at risk, an immediate "Stop Work!" order can be issued to the violating party. Repeated violations can result in a recommendation for revocation of the Contractor's license as provided for in the Denver Revised Municipal Code (D.M.R.C.).

Other permits that may be required prior to commencing work in the public right-of-way include but not are limited to:

Street Occupancy Permit, Revocable Permit, Street Cut Permit, Building Dept Permit, Zoning Department Permit, Parks Permit.

#### 1.04 Standards.

Public right-of-way improvements shall be constructed in conformance with the Standard Construction Specifications and Drawings. Any deviations from these standards shall require the approval of the Engineer, and such approval must be obtained before proceeding with construction.

#### 1.05 Authority of Inspector.

The Engineer shall have the right to assign an Inspector, or Inspectors, to check on any and all work performed under a permit issued for construction of public right-of-way improvements, including the condition and type of equipment, tools, and forms to be used, materials to be incorporated in the work, construction methods and practices, and suitability of existing conditions and/or projected weather for the type(s) of construction proposed.

The Inspector is assigned to assist the Contractor with compliance with these Regulations and the Standard Specifications and Drawings. The Contractor is required to notify the Inspector a minimum of one working day prior to needing an inspection or test, such as approval of compaction and forming prior to pouring concrete, and stating the time an inspection is wanted. The Inspector has the authority to reject defective materials and workmanship and to stop work until such time as the Contractor corrects that which is unsatisfactory. Corrective actions that can be required include removal and replacement of incorrect or defective materials and workmanship. Such actions of the Inspector can be appealed to the Engineer, and ultimately to the Manager of Public Works in accordance with D.R.M.C. 56-106.

#### 1.06 Inspection Facilities.

The Contractor shall furnish all reasonable facilities and assistance to the Inspector necessary for proper inspection of materials and construction methods to be used to determine compliance with these Regulations and the Standard Specifications and Drawings.

### 1.07 Materials.

Materials used in the construction of concrete and asphaltic public right-of-way improvements shall meet or exceed the material requirements of the Standard Construction Specifications.

### 1.08-Construction Methods.

1.08.01 -Grading. The Contractor shall do all necessary grading, either excavating or filling, required to permit construction of the curbs, gutters, sidewalks, service walk, driveways or other improvements to the plan grades or as the grade set forth in Section 1. 16. The subgrade shall be firm, compact and of uniform density. Compaction equipment shall be of a type and size that is suitable for the subgrade material and size of the work area.

Fills shall be made in lifts of not to exceed six (6) inches, each lift to be thoroughly compacted before the next lift is made. Embankments shall be constructed to a width two (2) feet greater than the width of the walk or driveway to be constructed, and be level with top surface of sidewalk. -All soft or spongy material, tree roots and other vegetation shall be removed from the subgrade and replaced with suitable material placed in layers not exceeding six (6) inches in thickness, each layer being thoroughly compacted before next layer is placed. All excavations and embankments shall be compacted to a minimum of 90% modified proctor density (T-1 80) and compaction of select material shall be to 95% modified protor density (T-180), unless otherwise approved by the Inspector.

1.08.02-Forms. Forms shall be made of metal or straight sound lumber at least two (2) inches in thickness. They shall be free from warp and bends and of sufficient strength to resist springing out of line. Forms that have been previously used shall be cleaned of all mortar and dirt before being set. Forms must be set true to established line and grade, and shall be thoroughly staked in place.

1.08.03 Concrete. Concrete shall attain a compressive strength of not less than 4,000 pounds per square inch at the age of 28 days. It shall contain not less than six (6) sacks of cement per cubic yard and a maximum of six (6) gallons of water per sack of cement, including surface water contained in the aggregates. The concrete shall be discharged from the truck and placed within ninety (90) minutes of water being introduced to the concrete mix at the plant.

Concrete shall have a slump of not more than five (5) inches and the entrained air content shall range be 6.5% +/- 1.5% when tested in accordance with current ASTM Procedures. The concrete may be tested by the City's Quality Control Laboratory and concrete out of specification is subject to rejection as per Section 1.09.

1.08.04-Placing Concrete. Before concrete is placed, the subgrade shall be thoroughly sprinkled but not to such an extent as to cause a muddy condition or pools of water. All concrete shall be deposited in place in such a manner as to secure as nearly as possible a monolithic walk or driveway without joints except as specified. Under no circumstances shall it be deposited on a muddy subgrade, in water, or on frozen ground. It shall not be placed in freezing weather or at such a time that it may be subjected to freezing soon after being deposited without permission of the Engineer. Formed surfaces which are to be exposed to view after removal of the forms shall have the concrete well spaded against the forms so as to bring the mortar against the forms and avoid honeycombing or exposure of coarse aggregate. After thorough consolidation, the concrete shall conform to the specified thickness. Any evidence of lack of consolidation shall be regarded as sufficient reason for requiring the removal of the section involved and its replacement with new concrete. The Contractor shall be responsible for any defects in the quality and appearance of all completed work.

1.08.05-Expansion Joints. Expansion joints shall be provided approximately every one hundred twenty-five (125) feet in sidewalks and shall extend for the full depth and width of the concrete. Expansion joint material shall also be installed between new sidewalk and driveway slabs and existing concrete slabs, masonry building, etc.; also around fire plugs, poles, etc.; and also between the ends of sidewalk slabs and existing curbs. Expansion joint material must be set vertical and with the top edge flush with the finished surface of the concrete.

1.08.06-Finishing. All concrete walks and driveways shall be given a wood float or brush finish satisfactory to the Engineer. Upon request, the Engineer will advise contractors where walks or driveways with acceptable finish may be inspected to determine what finish will be required. For uniformity, sidewalks shall be marked with dummy joints approximately every five (5) feet, with large areas being marked into approximately five (5) foot squares. On narrow walks, the dummy joints may be placed closer than five-foot intervals if appearance will be improved by doing so. Joints for driveways and curb cuts shall be as per the approved plans or as directed by the Inspector. **No dusting or topping of the surface or sprinkling with water to facilitate finishing will be permitted.**

1.08.07 Curing. As soon as concrete surfaces have been finished, the concrete shall be cured by the application of an impervious membrane curing compound containing a white pigment which will clearly show that the surface has been properly coated and sealed. Application shall be made at the rate of not less than one (1) gallon per one hundred fifty (150) square feet.

1.08.08-Backfilling. When side forms are removed from walks or driveways, the space adjoining the walks or driveways shall be promptly backfilled with earth or other suitable material, properly compacted, and brought flush with the surface of the walks or driveways and the adjoining ground surface. After removal of side forms and unless backfill is to be placed immediately, the exposed surface shall be treated with curing compound.



1.08.09 Opening to Traffic. Walks shall not be opened to pedestrian traffic for at least twenty-four (24) hours. Driveways shall not be opened to traffic for at least seven (7) days unless high early-strength cement has been used, in which event a shorter period, as determined by the Engineer, will be acceptable. The Contractor shall maintain suitable barricades to comply with the foregoing requirements.

1.09 Rejected Materials and Work.

Whenever the Inspector rejects materials or defective work, the Contractor must promptly remove such rejected materials and defective construction. The Engineer may arrange for such removal if the Contractor does not act promptly. In either case all costs of removing the unacceptable materials or workmanship will be at the Contractor's expense. Failure of the Contractor to promptly reimburse the City for any costs incurred by the City in correcting any deficiencies as noted above can result in a demand being placed upon the Contractors bond and/or any other collateral posted to guarantee satisfactory construction of such improvements.

1.10 Sidewalk Underdrains.

Downspout drainage is not permitted to flow across the surface of sidewalks or public right-of-way but must be carded under sidewalks and/or the surface of the right-of-way and discharged through the curbing into the gutter through an underdrain constructed in accordance with the Standard Drawings. Any other method of conveying drainage across sidewalks must be approved in advance by the Engineer.

1.11 Concrete Stamp.

All sidewalks and driveways shall have the name of the Contractor and the year of construction impressed therein, using block letters not less than one (1) inch high and three-eighths (3/8) inch deep. One impression shall be made in each driveway. Impressions shall be made in sidewalks at each end of construction or at one hundred (100) foot intervals and at each extension to curbing.

1. 12 Parking Meters and Traffic Signs.

At the time application is made for any permit to construct sidewalks, service walks and driveways, the Traffic Engineer shall be advised of any parking meters, traffic signs and street signs that may be affected by the proposed construction, and no such meters or signs shall be removed or relocated until the approval of the Traffic Engineer has been secured.

1.13 Utility Poles.

Whenever a utility pole is in conflict with proposed construction, the Contractor shall be responsible for making arrangements with all affected utilities for the relocation of such pole. Concrete shall not be placed at a utility pole location until the pole has been moved or the Engineer advises the Contractor that it is acceptable to proceed without the pole being moved. All such relocation of poles shall be done without cost to the City.

#### 1. 14 Trees.

When trees located within an area to be concreted are to be left in place, approval must be obtained from the City Forester. An open space, as specified by the City Forester, shall be left around each tree. In certain areas a tree well and grate may be required for safety reasons.

The contractor shall notify the City Forester prior to cutting any tree roots or in any other way damaging trees or shrubs with the right-of-way. The Contractor shall comply with all requirements of Chapter 57 of the Denver Revised Municipal Code .

#### 1. 15 Water Stop Boxes, Meter Pits, and Manholes.

Water stop boxes, meter pits, and manholes located within areas to be concreted or areas of grade change (cut or fill) shall be adjusted by the Contractor to be flush with the surface of the finished grade.

#### 1. 16 Grades.

Sidewalks shall slope toward the street at the rate of one-third ( $1/3$ ) inch per foot of width. When curbing is in place at a proposed sidewalk site, the grade from the top of the curb back to the edge of the sidewalk shall rise at a rate of one-third ( $1/3$ ) inch per foot. The ground between the back edge of the sidewalk and the property line shall also slope down toward the curb at the rate of one-third ( $1/3$ ) inch per foot. Any proposed crossslope that will not meet this criteria must be approved by the Engineer before construction is commenced.

When curbing is not in place at the site, and the extent of the proposed work is relatively minor, a grade survey may be requested from the Office of the City Engineer before work is undertaken. This survey will establish the correct elevation for the back edge of the sidewalk. Such grade survey will not be furnished in connection with issuance of a permit for construction of sidewalks, but must be requested and paid for separately. The cost for providing such design and construction survey stakes, if requested, shall be in accordance with the most current Department of Public Works "Schedule of Fees" as established by the Manager of Public Works.

When, in the opinion of the Engineer, the extent of the proposed work is not minor, a construction plan and profile drawing prepared by a Colorado Registered Professional Engineer can be required to be submitted and approved prior to commencement of the work.

#### 1. 17 Traffic Control.

The Contractor must obtain a Street Occupancy Permit from the Transportation Engineering Division of Public Works, Right-of-Way Permit Section. An approved traffic control plan showing any proposed detour and sign locations must be provided to the Right-of-Way Permit Section prior to the issuance of the Street Occupancy Permit. The Contractor shall provide and maintain proper barricades, lights, and construction signage in accordance with the approved traffic control plan at each of his construction locations until such time as construction has been completed and the sites can be reopened to

public use. The traffic control plan must be approved by the prior to beginning work in the public right-of-way. Any changes to the final traffic control plan must be approved by Transportation Engineering a minimum of twenty-four (24) hours in advance of implementation, except when the Engineer or his duly authorized representative determines that an emergency situation exists. The Contractor's construction traffic control shall comply with the approved traffic control plan, as well as with all the general specifications as set forth in the Manual on Uniform Traffic Control Devices, Part VI. Traffic Controls for Street and Highway Construction and Maintenance Operations, D.O.T. 1987, and any revisions thereof. As a supplementary guide, the Contractor may refer to the Traffic Manual, City and County of Denver, 1985 and any revisions thereof. Maintenance of proper barricades and lights shall in no manner relieve the Contractor of liability for injuries to persons or damage to property incurred as a result of construction. Lights shall be lit before dusk and shall remain lighted until after daylight the next morning. The Contractor will be responsible for restoring or replacing any existing pavement markings, signing, traffic signal conduit, or other traffic control devices that may be covered, removed or damaged during construction.

#### 1.18 Clean Up.

The Contractor shall remove all rubbish, debris and old concrete promptly as work progresses, leaving the site and adjoining property in a neat condition within 24 hours after completion of the work. Such rubbish and debris will not be permitted to be piled in City streets.

#### 1.19 Compliance.

In the event that the Contractor fails to comply with these Rules and Regulations to the satisfaction of the Engineer, additional permits for the construction of public right-of-way improvements may be withheld by the City until assurance is received that the Engineers instructions will be complied with, and disapproved work will be replaced satisfactorily. Any further failure to comply on the part of the Contractor can result in the City 1) revoking the Contractor's license, and/or 2) completing the work, including the replacement of unsatisfactory or deficient work, and/or 3) restoring the site to its original condition as nearly as practicable. Failure of the Contractor to promptly reimburse the City's reasonable expenses incurred in such actions will result in a demand being placed on the Contractors bond and/or other performance collateral.

### **2.00 Sidewalks and Service Walks.**

#### 2.01 Widths.

2.01.01 Sidewalks in residential areas shall in general conform to existing walks in the same block or district.

2.01.02 Sidewalks set back away from curbs shall be five (5) feet in width unless otherwise approved by the Engineer. The back edge of the walk shall usually be set out from the property line as follows:

<u>Street Width</u>	<u>Distance between Back Edge of Walk and Property Line</u>
Less than 80 feet	2 feet
80 feet and less than 100 feet	4 feet
100 feet and over	6 feet

2.01.03 Sidewalks constructed adjoining existing curbs shall be a minimum of five (5) feet wide measured from the back of the curb head, with expansion joint between sidewalk and curb, unless otherwise specified by the Engineer.

2.01.04 Service walks extending from property line the curb shall be not less than thirty (30) inches in width. In areas where setback sidewalks are used and service walks are to be constructed extending from the setback sidewalk to the curb and along the curb for landing strips, the width of the service walk extending along the curb shall be not less than twenty-four (24) inches.

2.01.05 Sidewalks in front of commercial buildings shall be constructed for the full width between property lines and curbs unless otherwise approved by the Engineer.

#### 2.02 Connections with Existing Sidewalks.

Where new sidewalk construction abuts existing sidewalks, the work shall be accomplished so that no abrupt change in grade between the old and the new work results. Where necessary, flagstone walks or other type walks not at established grade shall be adjusted to fit the new work.

#### 2.03 Repairs

Where repairs are made in existing sidewalks, all edges of the old sidewalk allowed to remain shall be saw cut to a minimum depth of one-half of the slab thickness. In general, no rough edges will be permitted where new construction joins old. If less than a complete stone of sidewalk or combination curb, gutter and sidewalk is removed, a saw cut will be required for a minimum depth of one-half (1 /2) of the slab thickness across the entire width. No stones of less than five (5) feet in length will be permitted as the result of such removals. If this condition cannot be met, the removal of the entire stone to the next joint will be required.

#### 2.04 Underground Vaults and Projecting Basement Areas.

Sidewalks to be constructed over underground vaults or basement areas projecting out into the street right-of-way may be constructed only in accordance with plans which the Engineer has previously approved.

### **3.00 Curb Cuts and Driveways.**

#### 3.01 General.

All curb cuts shall be for the width and location approved by the Engineer. Driveway entrances shall be constructed from curb to property line, or as directed by the Engineer, in accordance with the Standard Specifications and Drawings.

#### 3.02 Construction Requirements.

The Contractor shall remove only as much of the curb and gutter as is necessary to permit proper construction of the driveway entrance. If less than a complete stone of sidewalk, curb, curb and gutter, or curb, gutter and sidewalk is removed, a saw cut will be required for a minimum depth of one-half (1/2) of the slab thickness across the entire width. No stones of less than five (5) feet in length will be permitted as the result of such removals. If this condition cannot be met, the removal of the entire stone to the next joint will be required. When new driveway entrances cross existing sidewalks, the sidewalk must be removed and reconstructed to current standards. Curb cuts must be constructed using either steel forms or two-inch wood forms on all four sides.

### **4.00 Heated Walks and Driveways.**

#### 4.01 General.

Where heated walks and driveways are proposed, a detailed plan of the heating system must be presented to the Engineer for approval. A construction permit will not be issued nor will construction be allowed to start before a Revocable Permit for the heated section has been issued.

#### 4.02 Revocable Permit.

A heating system is deemed to be a private improvement located in the public right-of-way, and as such requires an application for and approval of a revocable permit. Contact Right-of-Way Engineering (640-5405) for further information and submittal requirements.

### **5.00 Street Paving.**

#### 5.01 General.

All street paving shall be constructed to the widths and thicknesses shown on the approved plans and specifications or as directed by the Engineer.

#### 5.02 Construction Requirements.

Design mixes for both asphalt and concrete shall be submitted to the Quality Control Laboratory for approval prior to use. The contractor shall use the appropriate methods and equipment to construct the pavement. All construction shall be done in accordance with the approved plans and specifications and the Standard Specifications and Drawings.

The sawing of the joints for concrete pavement shall be as per the approved jointing plan. The sealant type shall be submitted to the Engineer for approval.

#### 5.03 Asphalt Patching along Curbs and Gutters.

Patching is the replacement of the asphalt pavement when the width is less than six (6) feet. The existing pavement shall be saw cut to provide a neat edge for the patch. The patch thickness is twelve (12) inches and shall be constructed in at least three lifts, with proper compaction being achieved in each lift before the next lift is placed.

#### 5.04 Repair of Street Cuts.

The repair of street cuts will be constructed as per the Rules and Regulations titled "Governing the repair and rehabilitation of damage caused by street cuts in City streets." The following requirements are in addition to the above requirements and will apply to the repair of concrete paved streets and alleys that are cut for the installation and/or replacement of utility poles or underground utilities.

5.04.01. The portion of existing pavement to be removed shall be outlined by sawing to a minimum depth of 3 inches (normal alley pavement is 6 inches thick). In no case shall the depth of saw cut be less than one-third (1/3) of the existing pavement thickness.

5.04.02. Worn out saw blades, which cause raveling of concrete edges, shall not be used and could be the cause for the removal of a larger portion of pavement to correct this situation.

5.04.03. No saw cut shall be made less than twelve (12) inches from any edge of an existing or proposed pole. The width of pavement removed for trenches shall be a minimum of twelve (12) inches wider than the width of the trench, with a minimum of six (6) inches required to be removed on each side. The shape of the slab to be removed will be rectangular or square unless directed otherwise.

5.04.04. Jack-hammer practices resulting in chipping or in any way damaging the surface or edges of the concrete pavement outside the limits of the service cut will not be permitted.

5.04.05. Not less than three (3) feet of concrete shall exist between a saw cut and any existing joint or pavement edge. If this condition cannot be met, the concrete must be completely removed to the nearest existing joints or pavement edge and replaced.

5.04.06. Any existing contraction joint dowels, expansion joint material, expansion joint dowels or caps shall be protected from damage during the removal operation. All dowels shall be straight and contraction joint dowels shall be greased or painted prior to the placement of any concrete.

5.04.07. All poles are to be wrapped for full-depth of concrete pavement with 3/8 inch premolded asphaltic joint material.

5.04.08. All edges of existing pavement shall be thoroughly cleaned (by washing if necessary) to insure an adequate bond between the existing and new slabs prior to the placement of concrete.

5.04.09. Concrete shall be replaced on a firm compacted base, and in no case shall the new slab be of less depth than the original pavement.

5.04.10. Concrete used for replacement shall conform to the most recent City Standard Specifications for concrete pavement.

## **6.00 Guarantee.**

### 6.01 General.

The Contractor shall guarantee public right-of-way improvements for a period of two (2) years after completion against defective workmanship and materials and shall keep the same in good order and repair. The determination of the necessity during such guarantee period for the Contractor to repair or replace said walks and driveways or any portion thereof shall rest entirely with the City's Manager of Public Works, whose decision upon the matter shall be final and obligatory upon the Contractor.