



CONCRETE SIDEWALK SPECIFICATIONS

GENERAL

Concrete sidewalks shall be constructed in accordance with these specifications and the requirements of the State of Wisconsin, Department of Transportation, Standard Specifications for Road and Bridge Construction, Current Edition (hereafter "Standard Specifications"). Concrete sidewalks shall conform to the lines and grades established by the City Engineer. All removal and replacements will be made as ordered by the City Engineer.

The Contractor shall construct one-course sidewalks shall be a minimum of forty-eight inches (48") in width, with a minimum thickness of four (4) inches in accordance with the plans and specifications. Sidewalk through a driveway section and concrete driveway approaches shall be a minimum thickness of six (6) inches in residential areas and a thickness of eight (8) inches through commercial driveway sections and concrete driveway approaches.

Pedestrian Safety

All pedestrian walkways are to adhere to ADA (American Disability Act) standards as well as align with the recommendations set forth in the current edition of The Wisconsin Guide to Pedestrian Best Practices. Pedestrian safety hazards include but are not limited to obstruction hazards, tripping hazards, protruding objects, ground level obstacles and slopes with extreme grade.

Obstruction of Pedestrian Travel

Changes in level between formed concrete block which construct the pedestrian walkway is to be no more than one-half inch (1/2") pursuant of ADAAG Chapter 4, Section 4.5. Concrete forms with a change in level above one-half inch (1/2") shall be replaced to obtain a maximum grade of 8.3 percent (8.3%) per inspection by the City Engineer. Changes in level between formed concrete block from one-quarter inch (1/4") to one-half inch (1/2") may be beveled with a maximum bevel slope of fifty percent (50%).

Ground level obstacles which include but are not limited to; offsets, gaps or openings in drainage grates, tree grates, manhole covers, hatches, valves, vaults or other utility coverings, sanitary clean-out covers, pull boxes, water curb boxes and other access features. The features promote concentrated stress and premature failure of the concrete forms which make up pedestrian walkways. The best way to eliminate these areas of concentrated stress is to not locate these features in the pedestrian walkway. In areas where it is unavoidable to include these features in the pedestrian walkway,



then these features shall be mounted so that they are flush with the level of the walkway and adhere to the same standards in level changes as for concrete forms. Additionally, there shall be four feet (4') of walkway provided that is free and clear of any ground level obstacle.

Slopes

Cross Slope

The cross slope of a walking area is the slope measured perpendicular to the direction of travel. Cross slopes facilitate drainage of the walking surface as well as pose difficulties for pedestrians during inclement weather. Sidewalks shall have a cross slope of two percent (2%) grade, as cross slopes with a less than two percent (<2%) grade are known to cause drainage issues.

Running Slope

Running slope or grades of a walking surface is the gradient measured parallel to the direction of travel. Sidewalks with steep grades may cause difficulties for all pedestrians, especially during inclement weather. The maximum grade for any sidewalk shall be five percent (5%) for up to a maximum two and one half feet (2-1/2 ft) of vertical change. A section of sidewalk may have a grade of five to eight point three percent (5-8.3%) if level landings are provided every two and one half feet (2-1/2 ft) of vertical change.

SUBGRADE

A new sub-base may be required by the City Engineer if the soil in the subgrade is soft or spongy in places and will swell or shrink with changes in temperature and moisture content. Any material found to be unsuitable, such as muck, peat, marl, soft clay and other such materials subject to frost heaving, differential frost action or unable to provide adequate support for surface improvements, shall be excavated and removed from the job site. If a new sub-base is required, it shall consist of granular material and shall be spread to a depth of at least three inches (3") and thoroughly compacted. While compacting the sub-base the material shall be thoroughly wet and shall be wet when the concrete is deposited but should not show any pools of water. Where necessary for the construction of ramps and drive approaches, the curb shall be cut for its full depth. If the Contractor undercuts the subgrade two inches (2") or more, at the contractor's expense, the subgrade shall be brought to grade by using gravel fill and it shall be thoroughly compacted. Where sidewalk is placed over excavations such as tree roots or sewer laterals, four and one-half inch (4-1/2") reinforcing bars shall be placed to prevent settling or cracking of the sidewalk. Where necessary to cut or remove tree roots, adequate precautions shall be taken so as to protect exposed roots and preserve existing trees. In a fill section, the subgrade for the sidewalk shall be extended one foot (1 ft) on each side of the walk before sloping down at a 3:1 slope.



The width of all cuts and fills shall be such that they conform to the final grading requirements as hereinafter stated.

FORMS

Forms shall be of wood or metal and shall be straight and of sufficient strength to resist spring, tipping or other displacement during the process of depositing and consolidating the concrete. If of wood, forms shall be surfaced plank of at least two inch (2") nominal thickness stock except for curved sections; and if of metal they shall be of approved section and shall have a flat surface on top. The forms shall have a depth of at least equal to the depth of the sidewalk. They shall be securely staked and braced to the required line and grade of the City Engineer and shall be sufficiently tight to prevent leakage of mortar. All forms shall be cleaned thoroughly and oiled before the concrete is placed against them. The transverse slope toward the curb shall be one-quarter inch (1/4") per foot (1 ft) unless otherwise directed by the Engineer.

CONCRETE

Concrete used for sidewalks shall be according to pertinent sections of Section 501 of the Standard Specifications for Air-Entrained, Grade A-2 Concrete.

PLACING AND FINISHING CONCRETE

The foundation, forms and reinforcement, when required, shall be checked and approved by the Engineer before the concrete is placed. The concrete shall be placed on a moist foundation, deposited to the required depth and consolidated and spaded sufficiently to bring the mortar to the surface, after which it shall be struck off and floated with a wooden float. Before the mortar has set, the surface shall be steel troweled and lightly brushed.

JOINTS

Sidewalk shall be divided in sections by means of contraction joints.

Insofar as feasible, sidewalk shall be divided into sections not less than three feet (3 ft) nor more than twelve feet (12 ft) in any dimension.

A contraction joint in sidewalk shall consist of a slot or groove, at least one inch (1") in depth and one-fourth inch (1/4") in width.

One-half inch (1/2") transverse expansion joint filler shall be placed through the sidewalk at uniform intervals of not more than ninety-six feet (96 ft).



Expansion joint filler shall extend to the full depth of the concrete and the top shall be slightly below the finished surface of the sidewalk.

One-half inch (1/2") expansion joint filler shall be placed between the sidewalk and back of abutting parallel curb and gutter and one inch (1") between sidewalk and buildings or other rigid structures.

One-half inch (1/2") expansion joint filler shall be placed between sidewalk approaches and the back of curb and gutter or edge of pavement.

The concrete at the faces of all joints shall be thoroughly spaded and compacted to fill the voids and the surface shall be finished smooth and true to grade. The edges of the sidewalk along forms and joints shall be rounded with an edger of one-fourth inch (1/4") radius.

CURING OF CONCRETE

All concrete work shall be cured by the impervious coating method, the wet fabric method or the paper method.

For the initial curing, while the concrete is fresh, water shall be applied in a fine spray to avoid injury, and the burlap shall be kept wet.

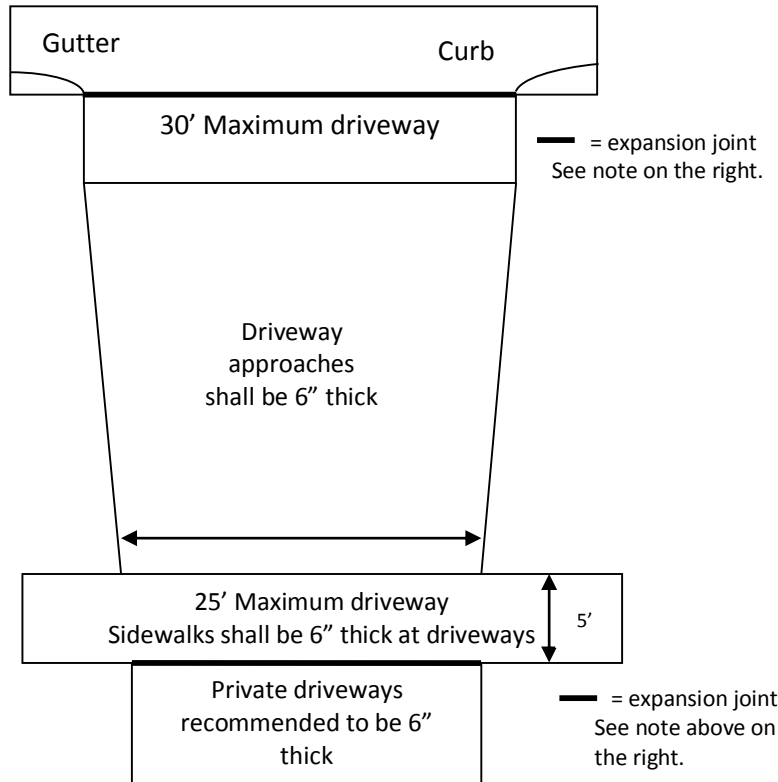
On the day following the placing of concrete, for the wet fabric method or the paper method, and on the final curing the concrete surface shall show the presence of free water under the covering for the following 72 hours.

PROTECTION OF WORK

The Contractor and property owner shall furnish and maintain adequate barriers and lights to protect the work and the public both by day and night. They will be held responsible for any damages caused by themselves, their agents or employees neglecting to take such precautions.

SPECIFICATIONS AND PLANS FOR CONCRETE DRIVEWAY APPROACHES, SIDEWALKS AND TERRACE WALKS

DRIVEWAY APPROACHES



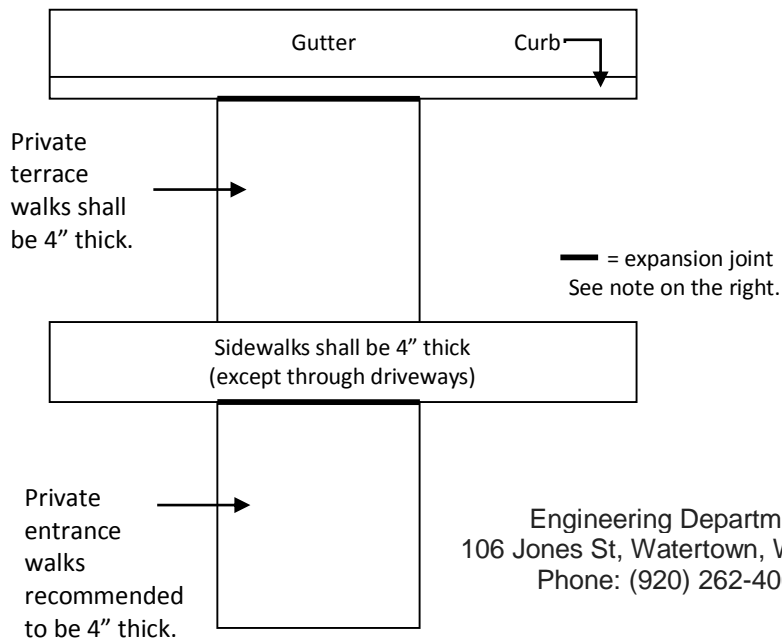
1/2" expansion joints shall be used at these two locations and shall completely separate all concrete in the driveway approach and driveway from the concrete in the sidewalk and in the curb, including the rolled-up portion of the curb and driveway approach.

6 bag mix, air entrained concrete of a relatively dry mix (not over a four-inch slump) shall be used in all sidewalks, driveway approaches and terrace walks and is recommended for driveways and entrance walks.

Grades

15% recommended maximum
10% desirable maximum

TERRACE WALKS AND ENTRANCE WALKS



1/2" expansion joints shall be used at these two locations and shall completely separate all concrete in the terrace walks from the concrete in the curb and shall completely separate all concrete in the entrance walk from the concrete in the sidewalk.

Complete detail specifications for grades, subgrades, reinforcing over service ditches, and depositing, finishing, curing and protecting of the concrete, etc. may be secured from the City Engineering Department.