

SPECIFICATIONS FOR CEMENT CONCRETE SIDEWALKS,  
DRIVEWAYS, CURBS AND GUTTER.

GENERAL REQUIREMENTS. Cement concrete sidewalks, driveways, curbs and gutters shall be built of Portland Cement, fine aggregate and coarse aggregate.

CEMENT. All cement shall be as specified in the Standard Specifications and tests for Portland Cement of the American Society of Testing Materials.

FINE AGGREGATE. (Concrete) The fine aggregate shall be a clean sharp sand, free from all vegetable matter, and clay. The fine aggregate shall be uniformly graded in size from one quarter ( $\frac{1}{4}$ ) inch down.

FINE AGGREGATE. (Top Finish or Wearing Surface) The fine aggregate shall be a clean sharp sand, known as "Lone Star Torpedo Sand" free from all vegetable matter and clay. The fine aggregate shall be uniformly graded in size from one quarter ( $\frac{1}{4}$ ) inch down.

COARSE AGGREGATE. The coarse aggregate shall be a clean washed gravel, varying in size from one quarter ( $\frac{1}{4}$ ) inch to one and one half ( $1\frac{1}{2}$ ) inches.

EXPANSION JOINTS. All expansion joints used, shall be built up "Commercial Expansion Joints"

WATER. Water shall be clean, free from oil, acid, alkali, vegetable or other organic matter.

CONCRETE. All concrete shall be composed of one (1) part Portland Cement, two and one half ( $2\frac{1}{2}$ ) parts fine aggregate, and five (5) parts of coarse aggregate. The ingredients of the concrete shall be thoroughly mixed, and sufficient water added, to obtain a satisfactory consistency, and the mixing continued until the materials are uniformly distributed, and each particle of fine aggregate is thoroughly coated with cement, and each particle of coarse aggregate is completely coated with cement mortar. The concrete prepared as above specified shall be immediately deposited, and shall be solidly tamped or puddled, with proper tools, so as to fill all voids.

TOP FINISH OR WEARING SURFACE. The top finish or wearing surface shall be a mortar, composed of one (1) part Cement, and one and one half ( $1\frac{1}{2}$ ) parts Lone Star torpedo sand, and thoroughly mixed dry, before water is added, and only sufficient water to be added, to give a good plastic consistency.

SUB-GRADE. The foundation shall consist of firm, hard soil, from which all vegetable matter and other loose material has been removed. In the event that it is necessary to build up the foundation, the same shall be done with selected earth or material satisfactory to the Engineer, which shall be built up and tamped in three (3) inch layers. The top of all fills under sidewalks shall extend at least one (1) foot on each side, and shall have a slope of not less than one (1) on one and one half ( $1\frac{1}{2}$ ).

FORMS. Materials for forms shall be free from warp and shall have sufficient strength to resist springing out of shape, all forms shall be thoroughly cleaned, before depositing materials against them.

SETTING FORMS. The Forms shall be well staked or otherwise held to the established lines and grades.

**MEASURING.** The method of measuring for the concrete or mortar, including water shall be one which will insure separate and uniform proportions of each of the materials at all times. A bag of Portland Cement (94 pounds net) shall be considered one (1) cubic foot.

**MACHINE MIXING.** All concrete shall be mixed by machine, except when the Engineer shall otherwise permit under special conditions. A batch mixer of any approved type shall be used. The ingredients of the concrete or mortar shall be mixed to specified consistency, and the mixing shall be continued for at least one (1) minute after all materials are in the drum. The drum shall be completely emptied before receiving material for the succeeding batch.

**HAND MIXING.** When it is necessary to mix by hand, the materials shall be mixed dry on a watertight platform until the mixture is of uniform color, the required amount of water added, and the mixing continued until the mass is of proper consistency and homogeneous.

**RETEMPERING.** Retempering of the mortar or the concrete which has partially hardened, that is, remixing with or without additional materials or water, shall not be permitted.

**PLACING.** After mixing, the concrete shall be handled rapidly and the successive batches deposited in a continuous operation completing individual sections to the required depth and width. Under no circumstances shall concrete that has partly hardened be used. The forms shall be filled and the concrete struck off and tamped to a surface the thickness of the wearing course below the established grade. If dirt, sand or dust collects on the base it shall be removed before the wearing course is applied. Workmen shall not be permitted to walk on the freshly laid concrete.

The wearing course shall be placed immediately after mixing. It shall be deposited on the fresh concrete of the base before the latter has appreciably hardened, and brought to the established grade with a strike board, straight edge or template. In no case shall more than forty five (45) minutes elapse between the time the concrete for the base is mixed and the wearing course is placed.

**FINISHING.** After the wearing course has been brought to the established grade by means of a strike board, straight edge or template, it shall be worked with a wood float in a manner which will thoroughly compact it and provide a surface free from depressions or irregularities of any kind. When required, the surface shall be steel trowelled, to a smooth and even surface, but excessive working shall be avoided. The surface edges of all slabs shall be rounded to a radius of not less than one half ( $\frac{1}{2}$ ) inch.

**LOCATION AND GRADE.** All sidewalks, curb and gutters shall be built as located by the City Engineer, and on the grade established by him. At street intersections and other places, the curb and gutter may be built on a curve having a radius as specified by the City Engineer, and the Contractor shall receive no extra compensation on account of such work being on a curved alignment. Where driveways occur into private property across the parkways between the curb line and the sidewalk, such driveways shall be built with a return curb, having a vertical face and joining the main curb of the street with not less than a two (2) foot radius.

COMBINED CURB AND GUTTERS. The combined curb and gutters shall consist of a curb six (6) inches in thickness and fourteen (14) inches in height, combined with standard gutter, eighteen (18) inches in width, and six (6) inches in thickness, all built as a monolithic structure. The outer corner of the curb shall be rounded to a three quarter ( $\frac{3}{4}$ ) inch radius. The combined curb and gutters will have the exposed surfaces finished with three quarter ( $\frac{3}{4}$ ) inch top finish or wearing surface.

SIDEWALKS. Sidewalks will be composed of not less than three and one half ( $3\frac{1}{2}$ ) inches of concrete, and one half ( $\frac{1}{2}$ ) inch top finish or wearing surface, making a total of four (4) inches in thickness.

DRIVEWAYS. Concrete driveways from the curb line to the sidewalk shall be built of five (5) inches of concrete, and one (1) inch of top finish or wearing surface.

JOINTS. Sidewalks to be jointed into slabs or stones, not larger than five (5) foot long. Combined curb and gutters to be jointed into six (6) foot sections.

EXPANSION JOINTS. A one half ( $\frac{1}{2}$ ) inch Commercial Expansion Joint shall be placed where two lines of sidewalks intersect, and at least every forty (40) feet in straight walk.

#### GENERAL.

WORKMENS COMPENSATION INSURANCE. Workmens Compensation Insurance shall be provided for by the contractor.

PERMITS. All permits from the City of Houston, shall be secured by the Contractor.

MATERIALS. Materials delivered on the site, shall be neatly, safely and compactly piled, in such a manner, as to cause the least inconvenience to the owners and the general public.

RED LANTERNS. The Contractor shall maintain proper red lanterns from sunset to sunrise.

WORKMEN. The Contractor shall provide a competent foreman, (a practical mechanic of his craft) during the progress of the work.

PROGRESS OF WORK. Work to commence at once, and to be completed at the earliest possible dispatch, the Contractor to avoid all unnecessary delays.