

SECTION 190

WATERING

190.1 DESCRIPTION

This work consists of furnishing and applying water either directly on the road or to the materials being incorporated in the work.

These provisions do not apply to any water used in the production or curing of concrete.

190.2 MATERIALS

The water shall be furnished by the Contractor and shall be free from injurious matter.

190.3 CONSTRUCTION REQUIREMENTS

Watering may be accomplished by sprinkling, pre-irrigation, pre-mixing or by other methods approved by the Engineer. [The contractor shall make every reasonable effort to minimize fugitive dirt or dust because of construction activities. The Engineer may require the Contractor to water or take other actions necessary to prevent blowing dirt and/or dust and other nuisance conditions.](#)

A. Sprinkling

Sufficient equipment shall be available to apply the amount of water required to secure the proper compaction before evaporation, absorption or drainage prevents or interferes with the specified results to be obtained.

The moisture content of the material shall be uniform throughout the full depth and extent of each layer. Excess moisture in the material shall be removed by drying operations. The drying under such circumstances shall be carried on until the required moisture content is attained for compaction and without additional compensation.

B. Pre-Irrigation

Pre-irrigation of excavation areas shall be under the control of the Engineer. The Engineer shall have the authority to prohibit or stop pre-irrigation when wind, temperature or soil conditions are such that satisfactory results cannot be obtained.

The Contractor shall furnish to the Engineer the manufacturer's charts for recommended pressure, rate of discharge and effective area of irrigation for the

various nozzles to be used. The pressure at the sprinkler head or nozzle shall be adjusted to minimize atomization and subsequent evaporation. The recommendation of the manufacturer shall be followed. The use of pressure reducing valves may be required to maintain uniform nozzle pressure.

Prior to pre-irrigation, the Contractor shall drill test holes to the depth and spacing required over the area to be watered to determine the average natural moisture percentage present in the soil and the average optimum moisture requirement. Unless otherwise permitted, drill holes shall be at least 6 in. in diameter.

The Contractor shall furnish the Engineer, for review, a detailed layout showing the limits of excavation, sprinkler placement, depth of cut to be watered by each sprinkler and the anticipated length of operating time of each sprinkler.

This layout shall be drawn to scale using 1 in. equals one-half the diameter of nozzle coverage (in feet).

The natural vegetation on the area to be watered shall be left in place until all watering of the area has been completed. Vegetation on the watered areas shall be removed or the growth substantially halted within a reasonable time after watering. The Contractor shall perform necessary measures to keep future vegetation growth to a minimum.

Should soil or vegetation conditions warrant, the Engineer may require the Contractor to rip areas to be pre-irrigated. Such ripping shall be along the contour of the ground to a minimum depth of 2 feet.

Pre-irrigated areas shall not be excavated until a sufficient time has elapsed, normally about one day per foot of excavation depth, to allow the water to penetrate to the lower levels of the cut.

Prior to the start of grading operations, the Contractor shall drill test holes in the pre-irrigated areas to check the penetration of moisture.

C. Pre-Mixing

Water added to the material before delivery or placement on the roadbed shall be mixed uniformly into the material. The amount of water added shall be carefully controlled to conform to the requirements of the particular item of work.

D. Equipment Loading/Filling

Equipment filled from City water mains or other potable water systems shall be equipped with an air gap or backflow preventer to prevent backflow into the potable water system.

190.4 METHOD OF MEASUREMENT

Where a separate bid item for water is included in the bid proposal water will be measured by the thousand-gallon (M/Gal.) to the nearest one-tenth M/Gal. and will be furnished and applied as specified herein.

Measurement may be made by means of calibrated tanks or by approved metering devices, which record in U.S. gallons.

Prior to use of any meter used for measurement for payment purposes, the Contractor shall furnish the Engineer a certified statement that such meter conforms to Standard AWWA requirements. The statement shall show that the meter has been calibrated within the past year; however, should subsequent measurements prove the meter measurement unreliable, another certified meter producing satisfactory measurements shall be furnished for use. The head of each meter shall be sealed when calibrated, and the absence of such seal shall be just cause to prohibit the use of the meter.

Quantities of water measured by meters, which are accurate within the tolerance specified in AWWA, will be accepted without adjustment for meter error.

Authority for deduction of water lost through carelessness of the Contractor or otherwise wasted will be vested solely in the Engineer.

Where no separate bid item for water is included, payment shall be incidental to the items requiring water and no measurement will be made.

190.5 BASIS OF PAYMENT

Watering will be paid for at the contract unit price per thousand gallons (M/Gal.).

Payment will be full compensation for equipment, labor and incidentals necessary to complete the work as specified.

Where no separate bid item for water is included, payment shall be incidental to the items requiring water and no payment will be made.

END OF SECTION