BUREAU OF MATERIALS
MATERIALS PROCEDURES

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APPROVAL: *Edward Inman*

CONCRETE TRUCK INSPECTION

PURPOSE:

To establish a standard procedure for the inspection and/or calibration of Central Mixing, Transit Mixing and Non-Agitating Concrete Trucks

REFERENCES:

Special Provisions, Supplemental Specifications, Addenda and Attachments
Standard Specifications for Road and Bridge Construction
National Ready Mixed Concrete Association (NRMCA) Plant Inspector Guide

FORMS:

LB-491 Concrete Mixer Truck Inspection Worksheet

INSTRUCTIONS:

I. Assignment Procedures

A. The NJDOT Plant Supervisor shall:

1. Assure that the Plant Inspector receives the following:

a. The quantity and identification of trucks by truck number are going to be inspected.

b. Time and location of concrete plant for scheduled inspection including the name of contact person at supplier's plant.

c. Truck inspection forms and truck approval stickers which identify the truck number and an approval date, which is good for a maximum of 14 months.

B. The Supplier's Supervisor shall:

1. Assure the DOT plant inspector receives the following:

a. The Statement of Qualifications for the personnel assisting in the inspection of the delivery vehicles.

1. Supplier personnel assisting in the inspection of the delivery vehicles should be familiar with the requirements needed in conducting the inspection.

2. The demonstration of delivery inspection procedures is an essential requirement to assure the State Inspector that defective units that adversely affect the quality of delivered concrete are properly identified and corrective actions, if any, are made.

b. A copy of the manufacturers design for each truck showing the dimensions and the arrangement of the blades, the dimensions of the drum, the gross volume of the drum, the recommended rates of rotation for all types of operations, and any other pertinent information.

II. Inspection Duties

A. Transit and Central mixed trucks will be inspected for the mechanical condition of the truck mixer, the mixing and agitation rates, the accuracy of the water-measuring device, the sizes of the discharge opening and chute, and the general condition and wear of the blades.

1. Truck (Transit) Mixers

A. Shall conform to the following requirements:

1. Interior condition satisfactory: no appreciable accumulation of hardened concrete; the mixers will not be approved if the pickup and throw-over blades are broken, missing or excessively worn. Blade wear shall be checked at the point of maximum drum diameter nearest to the drum head. When the height of the blade at this point, measured from the drum shell, is less than 90 percent of the original radiant height the blade is considered excessively worn. The concrete supplier will replace broken, missing or excessively worn blades with a new blade of original dimensions.

2. Charging and Discharging openings and chute be in good condition: free from appreciable accumulations of cement or concrete; hopper and chute surfaces clean and smooth.

3. The mixers have a fixed metal plate or plates on which the following information is plainly marked:

a. The manufacturer's capacity rating in terms of the gross drum volume (should not exceed 63 percent of the gross volume of the mixer, disregarding blades).

b. The capacity of the drum in terms of the volume of mixed concrete.

c. The manufacturers designated drum speed of rotation for both mixing and agitation.

4. Equipped with a counter in working condition to indicate the number of revolutions (mixing and total) of the drum.

a. Ensure the truck is equipped with an electrically operated counter unit, containing two counters, that is non-resettable except by use of a 110-volt device utilizing a nonstandard plug located at the batching plant. Use one counter to record only those revolutions at speeds recommended by the manufacturer of the truck mixer as mixing speed and to record the total of all such mixing revolutions from the time the truck is loaded. Use the other counter to record revolutions of the drum at all speeds and to record the total revolutions from the time the truck is loaded. Ensure that the unit includes an indicator on the front panel that shows if the instrument has been turned off or tampered with in any manner after being reset at the time of loading. Ensure that the counter and the resetting device conform to the NEC. Ensure that the counter unit is positioned on the truck and plainly visible if the driver's door is open.

5. Ensure that the mixing water- measuring device is plainly visible to the truck operator when operating the mixing water and the drum controls, and to the ME while standing on the ground.

a. Equipment to be in proper working condition: gauge glasses or water meters clean and legibly graduated; water pump or injection system in good working order with nozzles unobstructed and without leakage into mixer.

1. The inspector shall test the water systems operationally by injecting side water into the mixing drum. A few seconds will determine if the water system is operational. Look for dripping from injection point which indicates a water leak.

b. Water measurement checked annually and found accurate within +/-1 percent of mixing water capacity or +/-1 gallon, whichever is greater. (For water-measuring equipment that is graduated in pounds instead of gallons, use 10 pounds as the basic increment instead of one gallon.)

1. The side tank for water shall be fitted with a glass or plastic tube and calibrated gauge to indicate the water level within the tank. An alternate to the sight

gauge is a water meter within the water system, usually placed between the water tank and the rear of the truck.

2. The ME shall check the accuracy of sight-gauge or water meter by reading measuring device, drawing 5 gallons of water into a calibrated bucket and rechecking the reading on the measuring device (sight gauge or meter). Trucks should be on level ground when inspecting sight gauges.

6. Pony Tanks

a. With the increased use of admixtures being incorporated in the concrete at the project site, the addition of truck mounted auxiliary tanks (pony tanks) need to be inspected and calibrated in the same manner as the water tanks.

2. Agitator (Central Mixed) Trucks:

A. Shall conform to the following requirements:

1. Interior condition satisfactory: no appreciable accumulation of hardened concrete; the mixers will not be approved if the pickup and throw-over blades are broken, missing or excessively worn. Blade wear shall be checked at the point of maximum drum diameter nearest to the drum head. When the height of the blade at this point, measured from the drum shell, is less than 90 percent of the original radiant height the blade is considered excessively worn. The concrete supplier will replace broken, missing or excessively worn blades with a new blade of original dimensions.

2. Charging and Discharging openings and chute be in good condition: free from appreciable accumulations of cement or concrete; hopper and chute surfaces clean and smooth.

3. Ensure that the trucks have a revolving, watertight drum that is capable of uniformly transporting and discharging the mixed concrete.

4. The mixers have a fixed metal plate or plates on which the following information is plainly marked:

a. The manufacturer's capacity rating in terms of the gross drum volume (should not exceed 80 percent of the gross volume of the mixer, disregarding blades).

b. The capacity of the drum in terms of the volume of mixed concrete.

c. The manufacturers designated drum speed of rotation for both mixing and agitation.

5. Equipped with a counter in working condition to indicate the number of revolutions (total) of the drum.

a. Ensure the truck is equipped with electrically operated counters allowing easy verification of the number of revolutions of the drum and is non-resettable except by use of a 110-volt device utilizing a nonstandard plug located at the batching plant. Ensure that the unit includes an indicator on the front panel that shows if the instrument has been turned off or tampered with in any manner after being reset at the time of loading. Ensure that the counter and the resetting device conform to the NEC. Ensure that the counter unit is positioned on the truck and plainly visible if the driver's door is open.

6. Ensure that the mixing water- measuring device is plainly visible to the truck operator when operating the mixing water and the drum controls, and to the ME while standing on the ground.

a. Equipment to be in proper working condition: gauge glasses or water meters clean and legibly graduated; water pump or injection system in good working order with nozzles unobstructed and without leakage into mixer.

1. The inspector shall test the water systems operationally by injecting side water into the mixing drum. A few seconds will determine if the water system is operational. Look for dripping from injection point which indicates a water leak.

b. Water measurement checked annually and found accurate within +/-1 percent of mixing water capacity or +/-1 gallon, whichever is greater. (For water-measuring equipment that is graduated in pounds instead of gallons, use 10 pounds as the basic increment instead of one gallon.)

1. The side tank for water shall be fitted with a glass or plastic tube and calibrated gauge to indicate the water level within the tank. An alternate to the sight gauge is a water meter within the water system, usually placed between the water tank and the rear of the truck.

2. The ME shall check the accuracy of sight-gauge or water meter by reading measuring device, drawing 5 gallons of water into a calibrated bucket and rechecking the reading on the measuring device (sight gauge or meter). Trucks should be on level ground when inspecting sight gauges.

7. Pony Tanks

a. With the increased use of admixtures being incorporated in the concrete at the project site, the addition of truck mounted auxiliary tank's (pony tanks) need to be inspected and calibrated in the same manner as the water tanks.

B. Non-Agitating Units (Containers, mounted on trucks or other vehicles, for delivering

central-mixed concrete, not constructed or equipped to keep the mass of concrete in motion in the container.)

1. Shall conform to the following requirements:

   a. Interior surface smooth and watertight, with rounded corners.
   b. Gates or other means provided to control the concrete discharge.
   c. Interior free from excessive accumulation of hardened concrete and from other obstruction or deterioration sufficient to interfere with proper discharge of concrete.

III. Calculations

A. When figuring the accuracy of site gauge water measuring device:

1. The allowable error is +/- 1% of mixing water capacity which is usually 100 gallons to 150 gallons or +/- 1 gallon, whichever is greater.

Example:

125 gallon tank x 0.01 = 1.25 gallons
1.25>1.0 gallons, therefore accuracy required is 1.25 gallons.

IV. Distribution of Forms

Form	Distribution
LB-491	Original –ME