**North Carolina Department of Transportation**

#  **NCDOT M&T Form 250VM**

 **AGGREGATE MOISTURE REPORT**

 **FOR VOLUMETRIC CONCRETE MOBILE MIXER**

 Date of Calibration  Project Number

 Fine Aggregate Source

 Coarse Aggregate Source

|  |  |  |  |
| --- | --- | --- | --- |
| Class of Concrete | Mix Design No. | Number of Loads | Total Yards Batched |
|  |  |  |  |
|  |  |  |  |

 **MOISTURE IN AGGREGATES**

 **Fine Aggregate:**

 ***Trial 1***Time: \_     \_

 Wet Wt. \_     \_ **Minus** Dry Wt. \_     \_

* **------------------------------------------------------------------------------------------------------------------------------------------------------------------------- =** \_     \_ **X** 100 = \_     \_ % Total Moisture

 Dry Wt. \_     \_

* Total Moisture \_     \_ **Minus** Absorbed Moisture \_     \_ = \_     \_ % Free Moisture

 ***Trial 2***Time: \_     \_

 Wet Wt. \_     \_ **Minus** Dry Wt. \_     \_

* **------------------------------------------------------------------------------------------------------------------------------------------------------------------------- =** \_     \_ **X** 100 = \_     \_ % Total Moisture

 Dry Wt. \_     \_

* Total Moisture \_     \_ **Minus** Absorbed Moisture \_     \_ = \_     \_ % Free Moisture

 **Coarse Aggregate:**

 ***Trial 1*** Time: \_     \_

 Wet Wt. \_     \_ **Minus** Dry Wt. \_     \_

* **------------------------------------------------------------------------------------------------------------------------------------------------------------------------- =** \_     \_ **X** 100 = \_     \_ % Total Moisture

 Dry Wt. \_     \_

* Total Moisture \_     \_ **Minus** Absorbed Moisture \_     \_ = \_     \_ % Free Moisture

 ***Trial 2***Time: \_     \_

 Wet Wt. \_     \_ **Minus** Dry Wt. \_     \_

* **------------------------------------------------------------------------------------------------------------------------------------------------------------------------- = ­­­**\_     \_ **X** 100 = \_     \_ % Total Moisture

 Dry Wt. \_     \_

* Total Moisture \_     \_ **Minus** Absorbed Moisture \_     \_ = \_     \_ % Free Moisture

 Certified Technician:  Certification No.

North Carolina Department of Transportation

**Field Calibration Report for Volumetric Concrete Mobile Mixer**

Mixer Number:  Calibrated By:

Date of Calibration:  Mix Design:

Project:  Resident Engineer:

***Step 1 - Cement Output per Conveyor Count***

1. Use a stopwatch to determine the exact time and meter counts required to discharge a minimum of 100 pounds of cement into a container.

**Record all weights and counts to the nearest tenth, time in seconds to the nearest hundredth.**

 \*\*Note: Aggregate bins must be empty during cement calibration so that sand and/or small stone particles are not

 conveyed into the cement.

1. **At least 5 of these determinations/runs should be made.**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Run 1 | Run 2 | Run 3 | Run 4 | Run 5 |  | e. Total |
| Cement Weight in lbs. |        |        |        |        |        |        |   |
| MeterCounts |        |        |        |        |        |        |   |
| TimeIn seconds |        |        |        |        |        |        |        |

1. Determine the Cement Output per One Count:

       ÷       =       lbs.

Total Cement Weight Total Meter Counts Cement Output per count

1. Determine the number of Counts per One cubic Yard of Concrete:

       ÷       =

Total Design Cement Weight Cement Output per count Counts per One yd³

1. Determine the Time to produce 1 yd³ of concrete:

       ÷       X       =  sec.

Total Time Total Cement Weight Total Design Cement Weight Time per One yd³

 \*\*Note: The calculated result “Time to produce 1 cubic yard of concrete” will be used in the Sand Gate Calibration,

 Stone Gate Calibration and Water Flow Calibration calculations.

***Step 2 - Sand Gate Calibration***

1. Determine the amount of free moisture on the surface of the fine aggregate.
2. Determine the amount of wet sand to be batched for one cubic yard of concrete:

       X       =       +       =       lbs.

SSD Design Sand Weight Free Sand Moisture SSD Design Sand Weight Wet Sand Weight

1. Determine the weight of wet sand to be batched for 1/12 of the mix design:

*\*\*Note: 1/12 part of the mix will be considered optimal weight of aggregates for the calibration process only.*

       ÷ *12* =  lbs.

Wet Sand Weight Wet Sand Weight per 1/12 part of the Mix

(*With tolerance ±2%:*      to       lbs.)

1. Determine the time to produce 1/12 of the mix design:

       ÷ *12* =       sec.

Time per One yd³ Time for 1/12 part of the Mix

1. Adjust gate settings to allow the target amount of sand (*±2%)* to be discharged in the same amount of time that it takes to discharge 1/12 amount of cement:

 *\*\*Note: Tolerance of aggregate weight is ±2%.*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Run 1 | Run 2 | Run 3 | Run 4 | Run 5 |  |
| Gate Settings |       |       |       |       |       |       |
| Timein seconds |       |       |       |       |       |       |
| Sand Weightin lbs. |       |       |       |       |       |       |

1. It is recommended 5 determinations/ runs should be conducted.

 **Sand Gate Setting:**

***Step 3 - Stone Gate Calibration***

1. Determine the amount of free moisture on the surface of the coarse aggregate.
2. Determine the amount of wet stone to be batched for one cubic yard of concrete:

       X       =       +       =       lbs.

SSD Design Stone Weight Free Stone Moisture SSD Design Stone Weight Wet Stone Weight

1. Determine the weight of wet stone to be batched for 1/12 of the mix design:

 *\*\*Note: 1/12 part of the mix will be considered optimal weight of aggregates for the calibration process only.*

       ÷ *12* =  lbs.

Wet Stone Weight Wet Stone Weight per 1/12 part of the Mix

(*With tolerance ±2%:*      to       lbs.)

1. Determine the time to produce 1/12 of the mix design:

       ÷ *12* =       sec.

Time per One yd³ Time for 1/12 part of the Mix

1. Adjust the gate settings to allow the target amount of stone (*±2%)* to be discharged in the same amount of time that it takes to discharge 1/12 amount of cement:

 *\*\*Note: Tolerance of aggregate weight is ±2%.*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Run 1 | Run 2 | Run 3 | Run 4 | Run 5 |  |
| Gate Settings |       |       |       |       |       |       |
| Timein seconds |       |       |       |       |       |       |
| Stone WeightIn lbs. |       |       |       |       |       |       |

1. It is recommended 5 determinations/ runs should be conducted.

 **Stone Gate Setting:**

***Step 4 - Water Flow Calibration***

* 1. Determine the total weight of free water that is on the surface of the sand and the stone together. Convert this weight into gallons (divide by 8.33):

Sand:       X       =       lbs.

SSD Design Sand Weight Free Sand Moisture Weight of Free Water in Sand

Stone:       X       =       lbs.

SSD Design Stone Weight Free Stone Moisture Weight of Free Water in Stone

       +       =       ÷ \_*8.33*\_=       gal.

Weight of Free Water in Sand Weight of Free Water in Stone Volume of Free Water

* 1. Determine the target weight of water for 1/6 part of design mix:

 \*\**Note: 1/6 part of the mix will consider optimal weight (volume) of Water for calibration process only.*

       gal. -       gal. =       gal. X \_*8.33*\_=       lbs.

Design Water Volume Volume of Free Water Target Water Volume Total Water Weight

       lbs. ÷ *6* =  lbs.

Total Water Weight Target Water Weight for 1/6 part of the Mix

(*With tolerance ±1%:*      to       lbs.)

* 1. Determine the target time for water calibration:

       ÷ *6* =       sec.

Time per One yd³ Target Time for 1/6 part of the Mix

* 1. Recommend 5 determination/runs of water to be conducted:

 *\*\*Note: Tolerance of water weight or Volume is ±1%.*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Run 1 | Run 2 | Run 3 | Run 4 | Run 5 |  |
| Water Flow Setting |       |       |       |       |       |       |
| Timein Seconds |       |       |       |       |       |       |
| Water WeightIn lbs. |       |       |       |       |       |       |

 ***Water Flow Setting:***

**Field Calibration Summary**

Volumetric Concrete Mobile Mixer #

 Concrete Producer:

 Date of calibration:

 Project:

 Calibrated by:

 Mix Design:

 Moisture during Calibration: FA\_%

 CA \_%

|  |  |
| --- | --- |
| **FINE AGGREGATE****GATE SETTING** |  |
| **COARSE AGGREGATE****GATE SETTING** |  |
| **WATER FLOW SETTING** |  |
| **METER COUNT PER****1 CUBIC YARD OF CONCRETE** |  |
| **METER COUNTS PER ¼ YD³****(For Yield Test Purpose)** |  |