**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**

 **Latex Modified Concrete Mobile Continuous Mixer**

Mixer Number:  Calibrated By:

Project: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date of Calibration:  Mix Design:

Resident Engineer: \_\_\_\_\_\_\_\_\_\_

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

 c. 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.*

 d. 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. |       |       |       |       |       |       |       |
| Meter Counts |       |       |       |       |       |       |       |
| Time in 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 1 yd³ of concrete:

       ÷       =

Total Design Cement Weight Cement Output per count Counts per 1 yd³

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

       ÷       X       =       sec.

Total Time Total Cement Weight Total Design Cement Weight Time per 1 yd³

 *\*\*Note: The calculated result “Time to produce 1 yd³ 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 1 yd3 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 1 yd³ mix Time for 1/12 part of the Mix

 (Calculation in Step 1(c)

1. It is recommended 5 determinations/runs of Sand be conducted.
2. Adjust the 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 Setting |       |       |       |       |       |       |
| Timein seconds |       |       |       |       |       |       |
| Sand Weightin lbs. |       |       |       |       |       |       |

 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 1 yd³ 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 1 yd³ of mix Time for 1/12 part of the Mix

 (Calculation result from step 1C)

1. It is recommended 5 determinations/runs of Stone be conducted.
2. 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 Setting |       |       |       |       |       |       |
| Timein seconds |       |       |       |       |       |       |
| Stone Weightin lbs. |       |       |       |       |       |       |

 Stone Gate Setting:

***Step 4 – Latex Flow Calibration***

1. Latex flow calibration can be determined by using the actual unit weight of latex emulsion

 per gallon, or use the default value of the unit weight = 8.5 lb./gal.

1. Determine the target weight of latex emulsion per 1/6 part of the mix design:

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

       gal. ÷ *6* = \_\_\_\_     \_\_\_\_\_\_\_\_\_\_\_\_\_ gal.

Total Latex Volume Target Latex Volume for 1/6 part of the Mix

\_\_      gal. \_\_\_\_\_\_\_\_\_\_ X *8.5*\_lb./gal\_ = \_\_     \_\_\_\_\_\_\_\_\_\_ lbs.

 Target Latex Volume for 1/6 part of the Mix Unit weight of latex Target weight of latex for 1/6 mix

(*With tolerance ±3%:*       to       lbs.)

1. Determine the target time for latex emulsion calibration per 1/6 of the mix design:

       \_\_\_\_ ÷ 6=       sec.

Time per One c. yd. of mix Target Time for 1/6 part of the Mix

(Calculation result from step 1C)

1. It is recommended 5 determinations/runs of Latex be conducted.

 *\*\*Note: Tolerance of Latex Weight or Volume is ±3%.*

1. Adjust the Latex flow setting to discharge the target weight of Latex (*±3%)* in the same amount of

 time that it takes to discharge 1/6 amount of cement.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Run 1 | Run 2 | Run 3 | Run 4 | Run 5 |  |
| Latex Flow Setting |       |       |       |       |       |       |
| Timein seconds |       |       |       |       |       |       |
| Latex Weightin lbs. |       |       |       |       |       |       |

*Latex Flow Setting:*

***Step 5 - 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 per 1/6 of the mix design:

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

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

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

       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 1 yd³ of mix Target Time for 1/6 part of the Mix

(Calculation result from step 1C)

* 1. It is recommended 5 determinations/runs of water to be conducted:

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

* 1. Adjust the Water flow setting to discharge the target weight of Water (*±1%)* in the same amount of

 time that it takes to discharge 1/6 amount of cement.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Run 1 | Run 2 | Run 3 | Run 4 | Run 5 |  |
|  Water Flow  Setting |       |       |       |       |       |       |
| Time in seconds |       |       |       |       |       |       |
| Water Weightin lbs. |       |       |       |       |       |       |

*Water Flow Setting:*

**Field Calibration Summary**

LMC Mobile Continuous Mixer #

Concrete Producer:

Date of calibration:

Project:

Calibrated by:

Mix Design:

Moisture during calibration: FA  %

CA  %

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