

2015 NUCLEAR DENSITY PROGRAM

Introduction

- ▣ Nuclear Program Specialist and the currently the Assistant RSO. Will be the departments RSO in May 2015 after all training is complete.
- ▣ 14 years of Service for the Department in NCR Wisconsin Rapids Project Development Section as a Highway Construction Project Leader.
- ▣ Currently Headquartered out of the NCR Wisconsin Rapids sign shop.

Discussion Items

- ▣ CMM Chapter 8-15 was revised
- ▣ Central Office Calibration Blocks have been moved to the Wisconsin Rapids Sign Shop.
- ▣ New model of CPN Gauges will be in service for 2015.
- ▣ QMP Gauge Correlation Process

CMM Chapter 8-15

- ▣ Revised this past fall and will be released for the 2015 construction season.
- ▣ Department acceptance testing for mainline pavement will be based on 1500 LF sub lots which replaced the 750 ton sub lots.
- ▣ Added lot layout references drawings for intersections and appurtenances.
- ▣ Added moisture dry back procedures for soils and base courses.
- ▣ Provided additional guidance for the QMP correlation process and for the C.O. calibration block process.

Lot Layout Intersection Example



STH 13

Intersection Area Calculation

Area calculation for trapezoid = $A = (a+b) \div 2 \times h$
Area = $(38' + 30') \div 2 \times 250' = 8500 \text{ ft}^2$

Intersection Lot Tonnage Determination

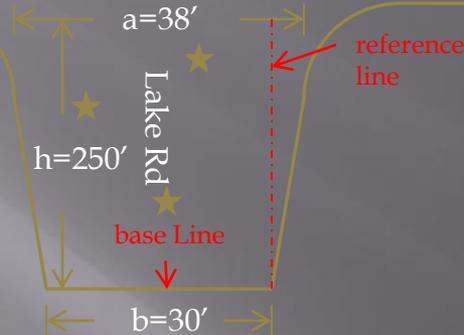
$\frac{8500 \text{ ft}^2 \text{ Area} \times 2.5'' \text{ nominal inches (depth)} \times 110}{9 \text{ Square Feet (Yard)} \times 2000 \text{ Pounds (Ton)}}$

Intersection Tonnage = 130 tons

Computations

Lot Tonnage 130 tons

A minimum of 3 tests are required per
CMM 8-15.10.2.3 table 2



Random Test Locations

Distance from Base Line

Test #1 $0.912 \times 250' = 228'$

Test #2 $0.333 \times 250' = 83'$

Test #3 $0.664 \times 250' = 166'$

Offset from Reference Line

Test #1 $0.444 \times 30' = 13'$

Test #2 $0.513 \times 30' = 15'$

Test #3 $0.867 \times 30' = 26'$

Table 2

Side Roads, Turn Lanes, Crossovers, Ramps, Roundabouts Lot/ Layer Tonnage	Minimum Number of Tests Required
< 25 Tons	0
25 to 100 Tons	1
101 to 250 tons	3
251 to 500 tons	5
501 to 750 tons	7

Lot Layout Turn Lane Example



Turn lane Area 1 Calculation

Area calculation for trapezoid = $A = (a+b) \div 2 \times h$
 Area = $(150' + 225') \div 2 \times 12' = 2250 \text{ ft}^2$

Tonnage Determination

$2250 \text{ ft}^2 \text{ Area} \times 2.5'' \text{ nominal inches (depth)} \times$
 $\frac{110}{9 \text{ Square Feet (Yard)}} \times 2000 \text{ Pounds (Ton)}$
 Intersection Tonnage = 34 tons

Computations

Lot Tonnage 34 tons
 A minimum of 1 test is required per
 CMM 8-15.10.2.3 table 2

Random Test Locations

Location	Offset
Test #1 $0.777 \times 225' = 175'$	$0.376 \times 12' = 5' \text{ LT}$

Turn lane Area 2 Calculation

Area calculation for trapezoid = $A = (a+b) \div 2 \times h$
 Area = $(500' + 625') \div 2 \times 12' = 6750 \text{ ft}^2$

Tonnage Determination

$6750 \text{ ft}^2 \text{ Area} \times 2.5'' \text{ nominal inches (depth)} \times$
 $\frac{110}{9 \text{ Square Feet (Yard)}} \times 2000 \text{ Pounds (Ton)}$
 Intersection Tonnage = 103 tons

Computations

Lot Tonnage 103 tons
 A minimum of 3 tests are required per
 CMM 8-15.10.2.3 table 2

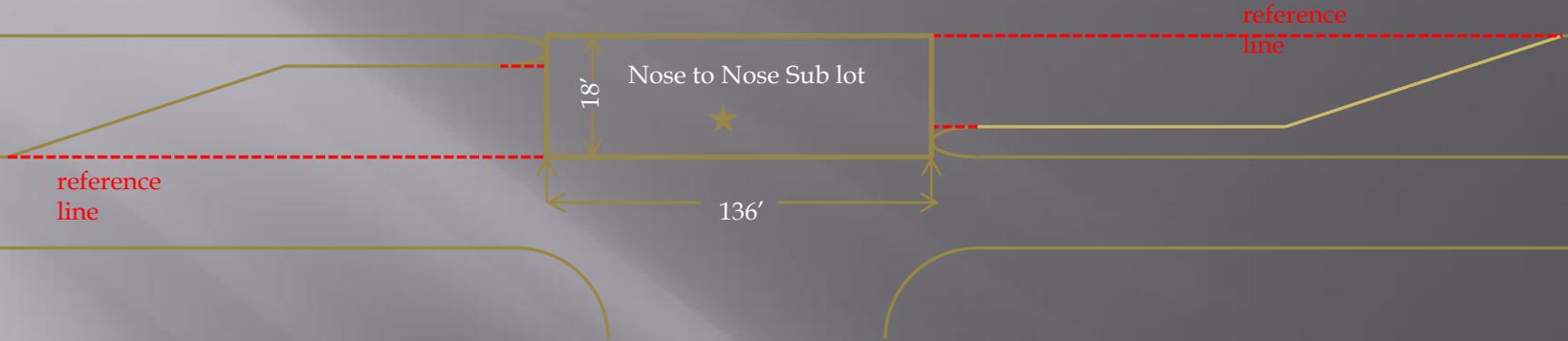
Random Test Locations

Location	Offset
Test #1 $0.399 \times 625' = 212'$	$0.221 \times 12' = 3'$
Test #2 $0.660 \times 625' = 413'$	$0.746 \times 12' = 9'$
Test #3 $0.134 \times 625' = 84'$	$0.555 \times 12' = 7'$

Table 2

Side Roads, Turn Lanes, Crossovers, Ramps, Roundabouts Lot/ Layer Tonnage	Minimum Number of Tests Required
< 25 Tons	0
25 to 100 Tons	1
101 to 250 tons	3
251 to 500 tons	5
501 to 750 tons	7

Lot Layout Turn Lane Example



Tonnage Determination

18ft width x 136ft x 2.5" nominal inches (depth) x
 $\frac{110}{9}$ Square Feet (Yard) x 2000 Pounds (Ton)
 Intersection Tonnage = 37 tons

Table 2

Computations

Lot Tonnage 34 tons
 A minimum of 1 test is required per
 CMM 8-15.10.2.3 table 2

Random Test Locations

Location Offset
 Test #1 0.545 x 136' = 74' 0.376 x 12' = 5' LT

Side Roads, Turn Lanes, Crossovers, Ramps, Roundabouts Lot/ Layer Tonnage	Minimum Number of Tests Required
< 25 Tons	0
25 to 100 Tons	1
101 to 250 tons	3
251 to 500 tons	5
501 to 750 tons	7

"Note pick your reference line and determine offset and use up station for distance of test"

Central Office Calibration Blocks

- ▣ Located in Wisconsin Rapids Sign Shop
- ▣ The blocks are by appointment only and will need to call ahead to schedule.
- ▣ Blocks can and should be used in the trouble shooting process.



The NEW MC1 Elite!



Standard Poly Block



Aluminum Plate to the Back
(away from source)

YELLOW

Standard Test

Use New Standard Even if it Fails?

YES



CPN Moisture - Density Gauge

DS=4148 -0.8% PASS
MS=1169 -0.3% PASS
Use New STD Count?
Press YES or NO

MC1-ELITE™

2
InstroTek®
Inc.

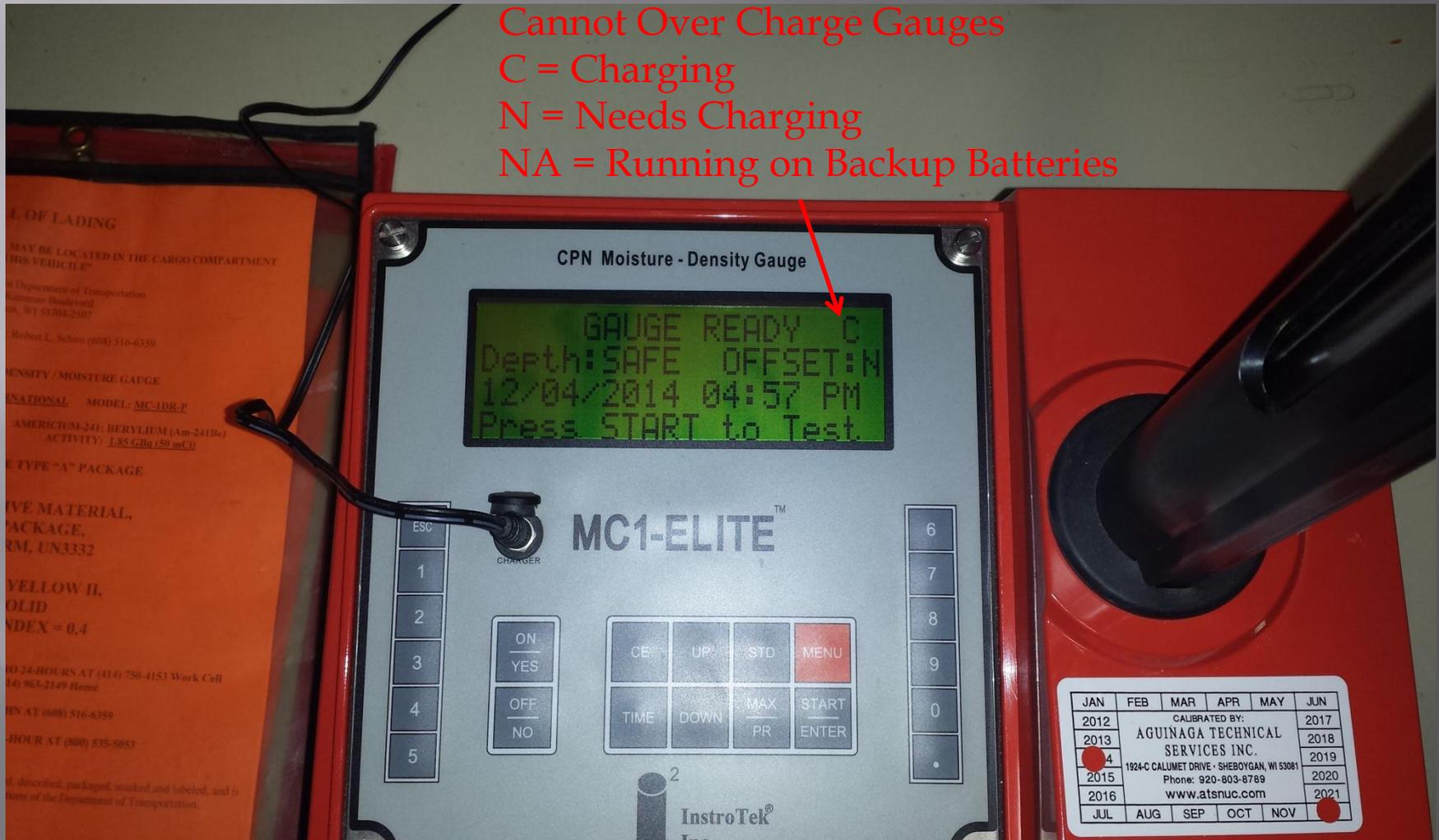
JAN	FEB	MAR	APR	MAY	JUN
2012					
2013					
2014					
2015					
2016					
JUL	AUG	SEP	OCT	NOV	DEC

AGUINAGA TECHNOLOGICAL SERVICES INC.
1824-C CALLUMET DRIVE - SUITE 300 - FALLS CHURCH, VA 22041
Phone: 920-808-8769
www.atsnuc.com

GREEN

Charging The MC1 Elite

Cannot Over Charge Gauges
C = Charging
N = Needs Charging
NA = Running on Backup Batteries



Charging with Car Port

- ▣ Charging with the Car port should only be done in emergency's and only done for 30mins or less. That should be enough to get you through the day.

QMP Field Correlations

- ▣ Needs to be done prior to paving or on the first day of paving.
- ▣ QC and QV need to perform testing at the same time.
- ▣ Need to have a representative section of pavement.
- ▣ IA personal should assist in process and have Nuclear Program specialist involved if needed.
- ▣ Regional and Central Office Blocks should be used for troubleshooting.