

**SPECIAL PROVISIONS
MODIFYING
SECTION 906: MINIMUM TESTING REQUIREMENT'S (MTR'S)**

The 2019 Edition of the New Mexico Department of Transportation Standard Specifications for Highway and Bridge Construction shall apply in addition to the following:

Delete **Section 906: MINIMUM TESTING REQUIREMENT'S (MTR'S)** in its entirety and replace with the following:

906.1 DESCRIPTION

906.1.1 General

This work consists of Minimum Testing Requirement's (MTR's) for the T/LPA and Contractor which includes construction sampling, tests, and testing frequencies of materials incorporated into the Work for acceptance and quality control.

906.1.2 T/LPA Minimum Testing Requirements

Table 906.1.2:1 - EARTHWORK					
Item	Test Required	Sampling/ Testing Location	Agency Testing	Contractor Testing	Independent Assurance*
					Project Approach
Embankment, Unclassified Excavation (Section 203)	In-Place Density and Moisture	Roadway	1 per 2,000 C.Y.	N/A	1 per 50,000 C.Y. or minimum 1 per project
	Moisture/Density Tests (Proctor), Soils Classification	Stockpile / Roadway	1 per material type per 20,000 C.Y.		1 per 50,000 C.Y. or minimum 1 per project if less than 50,000 C.Y.
Borrow (Section 203.2.1.3)	AASHTO T-190 R-Value, Soils Classification	Borrow Pit	N/A	1 per 10,000 C.Y.	N/A

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Table 906.1.2:1 - EARTHWORK					
Item	Test Required	Sampling/ Testing Location	Agency Testing	Contractor Testing	Independent Assurance*
					Project Approach
Road Bed Embankment (Section 203.3.5.1)	In-Place Density and Moisture	Roadway	1 per 2,500 S.Y.	N/A	Minimum 1 per project
	Moisture/ Density Tests (Proctor), Soils Classification		1 per material type		
Foundations / Backfill for Culverts and Minor Structures (Section 206)	In-Place Density and Moisture	Structure	See Table A	N/A	Minimum 1 per project
	Moisture/ Density Tests (Proctor), Soils Classification	Stockpile	1 per material type		
	Gradation		1 per 500 C.Y.	1 per material type	N/A
	Electrochemical, where specified.	N/A			
Subgrade Preparation (Section 207)	In-Place Density and Moisture	Roadway	1 per 3,000 S.Y.	N/A	1 per 30,000 S.Y. or minimum 1 per project if less than 30,000 S.Y.
	Moisture/ Density Tests (Proctor), Soils Classification		1 per material type		
Linear Grading and Blading and Re-shaping (Sections 208, 209)	In-Place Density and Moisture	Roadway	1 per half mile	N/A	1 per 5 miles
	Moisture/ Density Tests (Proctor), Soils Classification		1 per material type		

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Table 906.1.2:1 - EARTHWORK					
Item	Test Required	Sampling/ Testing Location	Agency Testing	Contractor Testing	Independent Assurance*
					Project Approach
Backfill for Major Structures (Section 210)	In-Place Density and Moisture	Structure	See Table A	N/A	1 per 5,000 C.Y.
	Moisture/ Density Tests (Proctor), Soils Classification	Stockpile	1 per material type		Minimum 1 per project
	Gradation				
Treated Subgrade (Section 306)	In-Place Density and Moisture	Roadway	1 per 3,000 S.Y.	N/A	1 per 30,000 S.Y. or minimum 1 per project if less than 30,000 S.Y.
	Gradation				
	Moisture/ Density Tests (Proctor), Soils Classification		1 per material type		
	AASHTO T-290 Sulfate Testing	Borrow Pit	N/A	1 per 10,000 C.Y.	N/A
Backfill for Mechanical Stabilized Earth (MSE) Retaining Structures (Section 506)	In-Place Density and Moisture	Structure	See Table A	N/A	Minimum 1 per project
	Moisture/ Density Tests (Proctor)	Stockpile	1 per material type	1 per material type	
	Gradation, PI		1 per 500 C.Y.		
	Soils Classification Direct Shear, Electro Chemical		N/A		N/A
Foundations for Slope and Erosion Protection Structures (Section 602)	In-Place Density and Moisture	Structure	1 per structure	N/A	N/A
	Moisture / Density Tests (Proctor), Soils Classification	Foundation material location	1 per material type		

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Table 906.1.2:1 - EARTHWORK					
Item	Test Required	Sampling/ Testing Location	Agency Testing	Contractor Testing	Independent Assurance*
					Project Approach
Backfill for Soil and Drainage Geotextiles (Section 604)	In-Place Density and Moisture	Roadway	1 per lift	N/A	N/A
	Moisture/ Density Tests (Proctor), Soils Classification	Stockpile	1 per material type		
Backfill for Drains (Section 605.3.4)	In-Place Density and Moisture	Roadway	1 per 1,000 L.F.	N/A	N/A
	Moisture/ Density Tests (Proctor), Soils Classification	Stockpile	1 per material type		
Foundations for Sidewalks, Drive Pads and Concrete Median Paving (Section 608)	In-Place Density and Moisture	Roadway	1 per 150 S.Y.	N/A	N/A
	Moisture/ Density Tests (Proctor), Soils Classification	Foundation material location	1 per material type		
Bed Course Material for Sidewalks, Drive Pads and Concrete Median Paving (Section 608)	In-Place Density and Moisture	Roadway	1 per 150 S.Y.	N/A	N/A
	Moisture/ Density Tests (Proctor), Soils Classification	Stockpile	1 per material type		
Foundations for Curb and Gutter (Section 609)	In-Place Density and Moisture	Roadway	1 per 500 L.F. or as site locations require	N/A	N/A
	Moisture/ Density Tests (Proctor), Soils Classification	Foundation material location	1 per material type		

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Table 906.1.2:1 - EARTHWORK					
Item	Test Required	Sampling/ Testing Location	Agency Testing	Contractor Testing	Independent Assurance*
					Project Approach
Bed Course Material for Curb and Gutter (Section 609)	In-Place Density and Moisture	Roadway	1 per 500 L.F. or as site locations require	N/A	N/A
	Moisture/ Density Tests (Proctor), Soils Classification	Stockpile	1 per material type		
Foundations / Backfill for Cattle Guards (Section 610)	In-Place Density and Moisture	Structure	See Table A	N/A	N/A
	Moisture/ Density Tests (Proctor), Soils Classification	Stockpile	1 per material type		
Bedding Material for Cattle Guards (Section 610)	In-Place Density and Moisture	Structure	1 per structure	N/A	N/A
	Moisture/ Density Tests (Proctor), Soils Classification	Stockpile	1 per material type		
Foundations / Backfill for Drop Inlets and Junction Boxes (Section 623)	In-Place Density and Moisture	Structure	See Table A	N/A	N/A
	Moisture/ Density Tests (Proctor), Soils Classification	Foundation material location	1 per material type		
Foundations / Backfill for Utilities (Section 660)	In-Place Density and Moisture	Structure	See Table A	N/A	N/A
	Moisture/ Density Tests (Proctor), Soils Classification	Foundation material location	1 per material type		

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Table 906.1.2:2 - TABLE A

STRUCTURE DEFINITIONS, FOUNDATION AND BACKFILL REQUIREMENTS FOR ACCEPTANCE

1. Transverse or skewed culvert or concrete box culvert (CBC), not connected to an underground drainage network, including end sections, wing walls if backfilled simultaneously, structural plate pipe, storm drains, and sewer lines (Note 1):

Foundation: One density per 100 linear feet. For pipe in a battery, up to 4 pipes may be considered as a unit for purposes of foundation density.

Backfill Density: 1 per 2 foot of fill per side* and to top of trench per 100 linear feet (Note 2).

* For a battery of pipes, the number of backfill densities required will be as follows:

One-Half (1/2) of the required densities for up to 4 pipes.

One-Third (1/3) of the required densities for more than 4 pipes.

2. End section or CBC wing wall if backfilled separately from culvert pipe or CBC (Note 2):

Backfill Density: 1 per 2 foot of fill per side.

3. Drop inlet (D.I.), junction box, cattle guard, light and signal base, manhole, etc.:

Foundation: 1 per structure.

Backfill Density: 1 per 2 foot of fill.

4. Underground drainage network including interruptions such as D.I., manhole, junction box, plug, service connection, slotted drain, etc., if backfilled simultaneously:

Foundation: One per 100 linear feet.

Backfill Density: 1 per 2 foot of fill per side and to top of trench per 100 linear feet (Note 2).

5. Retaining wall / MSE wall:

Foundation: One foundations density per 100 linear feet.

Backfill Density: 1 per 2 foot of fill per 100 linear feet.

6. Bridge abutment back wall, wing wall or approach slab:

Backfill Density: 1 per 6 inches of fill.

7. Pier footing:

Foundation: 1 per footing.

Backfill Density: 1 per 6 inches of fill.

8. Waterlines, electrical conduit, telephone cable or gas line, etc., within roadway prism (traveled area and shoulder) if trench width sufficient for density testing:

Foundation: One per 100 linear feet.

Backfill Density: 1 per 2 foot of fill per 100 linear feet.

9. Waterline, electrical conduit, telephone cable or gas line, ect. outside the roadway prism (traveled area and shoulders) *if trench width sufficient for density testing:*

Foundation: 1 per 300 linear feet.

Backfill Density: 1 per 2 foot of fill per 300 linear foot.

Notes:

1. All extensions will be considered increments and as such structure units.
2. Determination of Backfill Depths Governing Minimum Testing Criteria Requirements:
 - a. When backfill construction is performed in trench conditions, the depth of compacted backfill to be tested shall be measured from the foundation to the top of the trench.
 - b. When backfill construction is performed in non-trench conditions, the depth of compacted backfill to be tested shall be determined through the use of the appropriate NMDOT standard drawings.
 - c. When one type of material is used for multiple items, only one proctor will be required per material type.

Table 906.1.2:3 - BASE COURSE					
Item	Test Required	Sampling/ Testing Location	Agency Testing	Contractor Testing	Independent Assurance*
					Project Approach
Base Course (Section 303)	In-Place Density and Moisture	Roadway after compaction	1 per 2,000 tons	N/A	1 per 20,000 tons with Agency or minimum 1 per project
	Moisture/Density Tests (Proctor)	Stockpile	1 per material type		
	Gradations	Processed material from windrow or stockpile	1 per project		
	FF, LL, PI		1 per 4,000 tons		
	Thickness	Roadway after compaction	1 per 1,000 tons		

Table 906.1.2:4 - AGGREGATES					
Item	Test Required	Sampling/ Testing Location	Agency Testing	Contractor Testing	Independent Assurance*
					Project Approach
Processing, Placing and Compacting Existing Pavement (Section 302)	In-Place Density	Roadway	1 per 1,000 S.Y.	N/A	1 per 50,000 S.Y. or minimum 1 per project
	Gradation (Dry field sieve verification per TTCP)		1 per 5,000 S.Y.		
Rip Rap Material (Section 602)	LA Wear & Soundness (AASHTO T-96 AASHTO T-104)	Source	N/A	1 per year per pit	N/A

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Table 906.1.2:5 - MINOR PAVING HOT MIX ASPHALT (HMA)/Warm Mix Asphalt (WMA)					
Item	Test Required	Sampling/ Testing Location	Agency Testing	Contractor Testing	Independent Assurance*
					Project Approach
HMA/WMA Minor Paving (Section 416)	Asphalt Content (Strap Method)	Asphalt Plant	N/A	1 per day	N/A
	Air Voids	Roadway	3 per lot	N/A	Minimum of 1 per project over 5,000 tons
	Roadway Compaction Nuclear Densometer *		10 per lot	Contractor to provide three (3) cores for Correlation of Densometer	N/A
	Thickness		1 per lot	Obtain Cores	
Open Graded Friction Course (Section 403)	Gradation, FF	Cold Feed	1 per 3,000 tons with a minimum of 1 per day	1 per 250 tons 1st 2,000 tons then 1 per 500 tons after 2,000 tons	Minimum 1 per project
		Crushing	N/A	1 per 1,000 tons	
	Performance Graded Asphalt Binder	From storage tank or Delivery Truck	1 sample consisting of three separate 1-quart increments per Project	Samples will be obtained by contractor personnel and observed by Department personnel	N/A

Table 906.1.2:6 - Asphalt Recycling					
Item	Test Required	Sampling/ Testing Location	Agency Testing	Contractor Testing	Independent Assurance*
					Project Approach
Hot In-Place Recycling (Remixing Method) (Section 412)	Roadway Density (Nuclear Densometer)	Roadway	1 per 3,000 S.Y.	N/A	N/A
Single-Machine Hot In-Place Surface Repaving (Section 413)	Roadway Density (Nuclear Densometer)	Roadway	1 per 3,000 S.Y.	N/A	N/A
	HMA/WMA	Windrow / Hopper	See Section 416 Minor Paving		

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Table 906.1.2:6 - Asphalt Recycling					
Item	Test Required	Sampling/ Testing Location	Agency Testing	Contractor Testing	Independent Assurance*
					Project Approach
Pavement Surface Restoration (In- Situ) (Section 415)	Roadway Density	Roadway	1 per 3,000 S.Y.	N/A	N/A
	Bulk Specific Gravity		2 sets per day		
Performance Graded Asphalt Binder (Section 402)	If required in the Contract Documents	N/A	N/A	N/A	N/A

Table 906.1.2:7 - Asphalt Mineral Admixture Materials					
Item	Test Required	Sampling/ Testing Location	Agency Testing	Contractor Testing	Independent Assurance*
					Project Approach
Asphalt Emulsion (Section 402)	The manufacture's certificate of compliance will suffice for testing credits	N/A	N/A	N/A	N/A
Mineral Admixtures (Section 402)	The manufacture's certificate of compliance will suffice for testing credits	N/A	N/A	N/A	N/A

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Table 906.1.2:8 - MAJOR PAVING (Sections 423/424 / 900's) HOT MIX ASPHALT (HMA), WARM MIX ASPHALT (WMA)					
Item	Test Required	Sampling/ Testing Location	Agency Testing	Contractor Testing	Independent Assurance*
					Project Approach
HMA/WMA Superpave (Section 423/424)	Asphalt Content, Gradation, Gmm, Gmb, Air Voids, VMA, VFA, DP	Roadway	1 per 5,000 tons. Gmm will be determined at least once per day.	1 per 2,000 tons. Gmm will be determined at least twice per day.	Minimum 1 per project
	Roadway Compaction (Cores)				
	Roadway Compaction (nuclear/non- destructive)	Cold Feed before addition of Mineral Admixtures	N/A	As needed	N/A
	FF, , SE, F&E, FAA, Moisture				
Performance Graded Asphalt Binder (Section 402)	If required in the Contract Documents	N/A	N/a	N/A	N/A
Asphalt Emulsion (Section 402)	The manufacturer's certificate of compliance will suffice for testing credits	N/A	N/A	N/A	N/A
Mineral Admixtures (Section 402)	The manufacturer's certificate of compliance will suffice for testing credits	N/A	N/A	N/A	N/A

Table 906.1.2:9 - Non QLA PORTLAND CEMENT CONCRETE					
Minor Structures, Curb & Gutter, Side Walks, etc. (509, 510, 511, 521)					
Item	Test Required	Sampling/ Testing Location	Agency Testing	Contractor Testing	Independent Assurance*
					Project Approach
Fine Aggregates	Gradation	Stockpile	1 per 2 weeks during concrete production	1 per week during concrete production	1 per project

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Table 906.1.2:9 - Non QLA PORTLAND CEMENT CONCRETE					
Minor Structures, Curb & Gutter, Side Walks, etc. (509, 510, 511, 521)					
Item	Test Required	Sampling/ Testing Location	Agency Testing	Contractor Testing	Independent Assurance*
					Project Approach
Coarse Aggregates	Gradation	Stockpile	1 per 2 weeks during concrete production	1 per week during concrete production	1 per project
	FF, F&E		N/A	Minimum 1 per project per course aggregate type	N/A
Non-Shrink Mortar Aggregate	Manufacture's certificate of compliance will suffice for testing credits	N/A	N/A	NA	N/A
Project Acceptance Test	Compressive Strength Cylinders and Plastic Properties (Slump, Unit Weight, Calculated Air Content, Temperature)	See Table B	Each mix design per day of placement. Test the first three loads, with one randomly sampled for one set of cylinders. Sample for testing and cylinders, one random load from each subsequent 6 load subplot.	N/A	1 per project

Table 906.1.2:10 - Non QLA PORTLAND CEMENT CONCRETE					
Major Structures, Substructures, Drilled Shafts (502, 509, 510, 511, 521)					
Item	Test Required	Sampling/ Testing Location	Agency Testing	Contractor Testing	Independent Assurance*
					Project Approach
Fine Aggregates	Gradation	Stockpile	1 per 2 weeks during concrete production	1 per week during concrete production	1 per project

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Table 906.1.2:10 - Non QLA PORTLAND CEMENT CONCRETE					
Major Structures, Substructures, Drilled Shafts (502, 509, 510, 511, 521)					
Item	Test Required	Sampling/ Testing Location	Agency Testing	Contractor Testing	Independent Assurance*
					Project Approach
Coarse Aggregates	Gradation	Stockpile	1 per 2 weeks during concrete production	1 per week during concrete production	1 per project
	F.F, F&E		N/A	Minimum 1 per project per coarse aggregate type	N/A
Non-Shrink Grout Aggregate	Manufacture's certificate of compliance will suffice for testing credits	N/A	N/A	N/A	N/A
Project Acceptance Test	Compressive Strength Cylinders, and Plastic Properties (Slump, Unit Weight, Calculated Air Content, Temperature)	See Table B	Each mix design per day of placement. Test the first three loads, with one randomly sampled for one set of cylinders. Sample for testing and cylinders, one random load from each subsequent 6 load subplot.	Each mix design per day of placement. Test the first three loads and one load from each 6 load subplot for plastic properties.	1 per project

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Table 906.1.2:11 - Non QLA PORTLAND CEMENT CONCRETE PAVEMENT (509,451)						
Item	Test Required	Sampling/ Testing Location	Agency Testing	Contractor Testing	Independent Assurance*	State Materials Bureau
					Project Approach	
Fine Aggregates	Gradation	Stockpile	1 per 2 weeks during concrete placement	1 per week during concrete production	1 per project	N/A
	F.F., F&E		N/A	Minimum 1 per project per coarse aggregate type	N/A	
Coarse Aggregates	Gradation	Stockpile	1 per 2 weeks during concrete placement	1 per week during concrete production	1 per project	N/A
	F.F., F&E		N/A	Minimum 1 per project per coarse aggregate type	N/A	
Project Acceptance Test	Compressive Strength Cylinders, and Plastic Properties (Slump, Unit Weight, Air Content, Temperature)	See Table B	Each mix design per day of placement. Test the first three loads, with one randomly sampled for one set of cylinders. Sample for testing and cylinders, one random load from each subsequent 6 load subplot.	Each mix design per day of placement. Test the first three loads and one load from each 6 load subplot for plastic properties.	1 per 10,000 S.Y.	N/A
	Thickness	Roadway	1 per 300 cy	N/A	N/A	
Environmental Conditions	Evaporation Rate	Placement Site	N/A	Evaporation Potential determined at intervals not greater than 5 minutes until final curing system in place	N/A	N/A

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Table 906.1.2:12 - Non QLA Superstructure Concrete (509, 510, 512)						
Item	Test Required	Sampling/ Testing Location	Agency Testing	Contractor Testing	Independent Assurance*	State Materials Bureau
					Project Approach	
Fine Aggregates	Gradation	Stockpile	1 per 2 weeks during concrete placement	1 per week during concrete production	1 per project	N/A
	F.F., F&E		N/A	Minimum 1 per project per coarse aggregate type	N/A	
Coarse Aggregates	Gradation	Stockpile	1 per 2 weeks during concrete placement	1 per week during concrete production	1 per project	N/A
	F.F., F&E		N/A	Minimum 1 per project per coarse aggregate type	N/A	
Project Acceptance Test	Compressive Strength Cylinders, and Plastic Properties (Slump, Unit Weight, Air Content, Temperature)	See Table B	Each mix design per day of placement. Test the first three loads, with one randomly sampled for one set of cylinders. Sample for testing and cylinders, one random load from each subsequent 3 load subplot.	Each mix design per day of placement. Test the first three loads and one load from each 3 load subplot for plastic properties.	1 per 300 cy	N/A
Environmental Conditions	Evaporation Rate	Placement Site	N/A	Evaporation Potential determined at intervals not greater than 5 minutes until final curing system in place	N/A	N/A

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Table 906.1.2:13 - QLA PORTLAND CEMENT CONCRETE PAVEMENT (450)						
Item	Test Required	Sampling/ Testing Location	Agency Testing	Contractor Testing	Independent Assurance*	State Materials Bureau
					Project Approach	
Fine Aggregates	Gradation	Stockpile	1 per week during concrete production	1 per day per day of production	Minimum 1 per project	Referee Testing
Coarse Aggregates	Gradation, F.F., F&E	Stockpile	1 per week during concrete production	1 per day per day of production	Minimum 1 per project	Referee Testing
Project Acceptance Test	Compressive Strength Cylinders, and Plastic Properties (Slump, Unit Weight, Calculated Air Content, Temperature)	See Table B	1 per 500 C.Y.	One set of cylinders from one of the first three trucks. 1 set per 125 C.Y. thereafter	1 per 2,500 cy	Referee Testing
			1 per 500 C.Y.	For each of the first three trucks. 1 set per 125 C.Y. from the trucks selected for compressive strength testing thereafter.		
	Thickness	Roadway	1 per 5,000 S.Y.	1 per 2,500 S.Y.	N/A	
Environmental Conditions	Evaporation Rate	Placement Site	N/A	Evaporation Potential determined at intervals not greater than 5 minutes until final curing system in place	N/A	N/A

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Table 906.1.2:14 - TABLE B

<u>Method of Placement</u>	<u>Sample Location</u>
Pumped	Point of discharge from pump into structure
Direct Discharge from Truck	At end of discharge chute of truck
Crane and Bucket	From discharge chute of bucket
Conveyor belt	From material on roadway after being discharged from conveyor
Slip Form (Curb and Gutter/Barrier Walls)	Point of discharge into extrusion machine
Slip Form Paver (PCCP)	From grade in front of paving machine
Drill Shafts	At end of discharge chute of truck

Table 906.1.2:15 - Tolerances for Comparison of Independent Assurance Sample Tests to Acceptance and Process Control Tests

<u>CHARACTERISTICS</u>	<u>TOLERANCES</u>
Moisture/Density Test (Proctor)	± 3.0 PCF*, ± 2 Units for Moisture
In Place Moisture/Density (Roadway)	± 3.0 PCF, ± 2 Units for Moisture
Plasticity Index (P.I.)	± 3 Units
*Only if proctors are run by both District and Project. If proctors are not run by both District and Project ± 5.0 PCF	
<u>GRADATION</u>	<u>TOLERANCES</u>
1 1/2" to 3/4"	± 6 Units
1/2" to No. 4	± 5 Units
No. 8 through No. 200	± 4 Units
Fractured Faces	± 5 Units
Flat & Elongated	± 5 Units
Fine Aggregate Angularity	± 3 Units
Sand Equivalent	± 4 Units
Aggregate Specific Gravity	± 0.020
<u>CONCRETE</u>	<u>TOLERANCES</u>
Slump	± 0.5 Inch
Unit Weight	± 2.0 PCF
Compressive Strength	Within-test coefficient of variation less than 5 %

<u>HOT MIX ASPHALT (HMA)/ WARM MIX ASPHALT (WMA)</u>	<u>TOLERANCES</u>
Roadway Density (Cores from project, retained by Agency and Contractor Personnel)	± 0.025 Units

Density (Nuclear)	± 4 Units
VMA	± 1.0 Units
Asphalt Content (Ignition Burn Oven)	± 0.50
Bulk Specific Gravity at Ndes	± 0.025 Units
Maximum Specific Gravity	± 0.020 Units
Air Voids	± 1.5 Units
