

Overview of QC/QA Acceptance Program

Presented by

Robert Rea



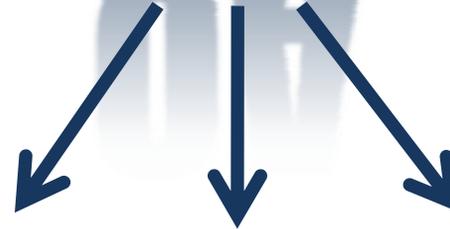


Quality Control

/

Verification
Testing

QA



Independent
Assurance
Testing

Certification
Program for Testing
and Sampling



Quality Control

QC



1. QC test results are used for the material's acceptance criteria, as specified in the contract

2. QC test results are not used for acceptance

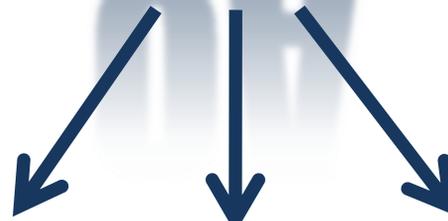
QC



Quality Control

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QA



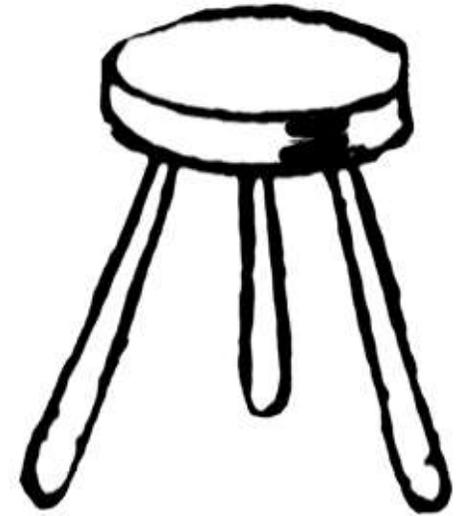
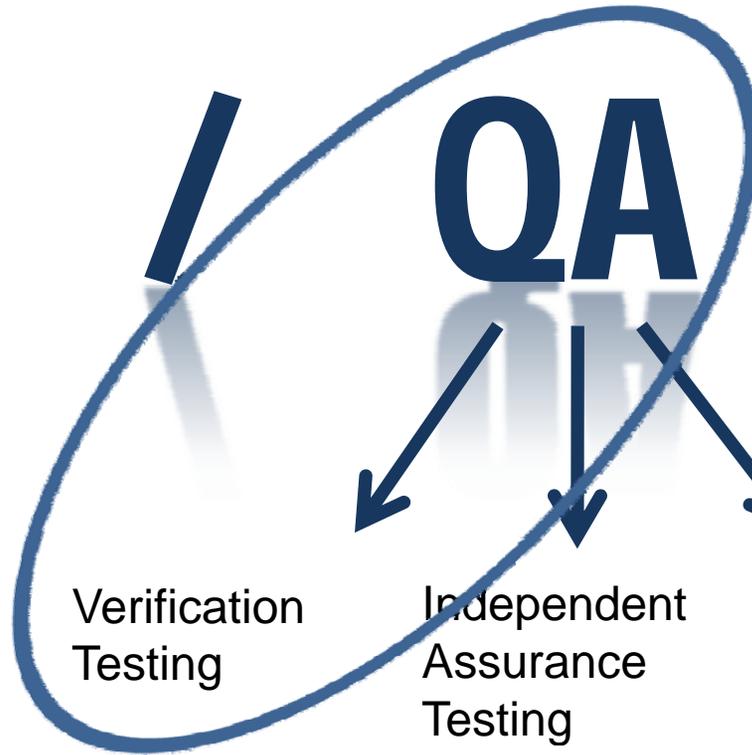
Verification Testing

Independent Assurance Testing

Certification Program for Testing and Sampling



QC
Quality Control



QA

Verification Testing

1. Verifies Quality of the Material/Product
and/or
2. Validates the Test Results Used for Acceptance

QC



Quality Control

/

QA



Verification Testing

Independent Assurance Testing

Certification Program for Testing and Sampling



QA

Independent Assurance Testing

1. Annual Review – Each Tester and Equipment is Reviewed and Calibrated for each Discipline they are Certified for (Asphalt, Concrete, Soils, Aggregate)
and
2. Test Validation ‘out of tolerance’ – The tester and the equipment for the specific test is reviewed

QC



Quality Control

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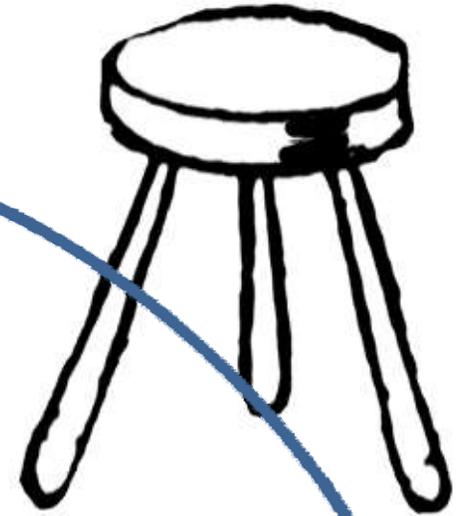
QA



Verification Testing

Independent Assurance Testing

Certification Program for Testing and Sampling



QA

Certification Program for Testing and Sampling

1. Technicians Trained and Certified to perform tests
2. Technicians Trained and Certified to sample properly and provide chain of custody
3. Laboratories Accredited and/or Qualified to perform tests

Lets Compare

- Asphalt Testing with QC Acceptance
- Concrete Aggregate Gradation with NDOR Field Testing for Acceptance
- Concrete Aggregates Quality with NDOR Central Lab Testing for Acceptance



Lets Compare

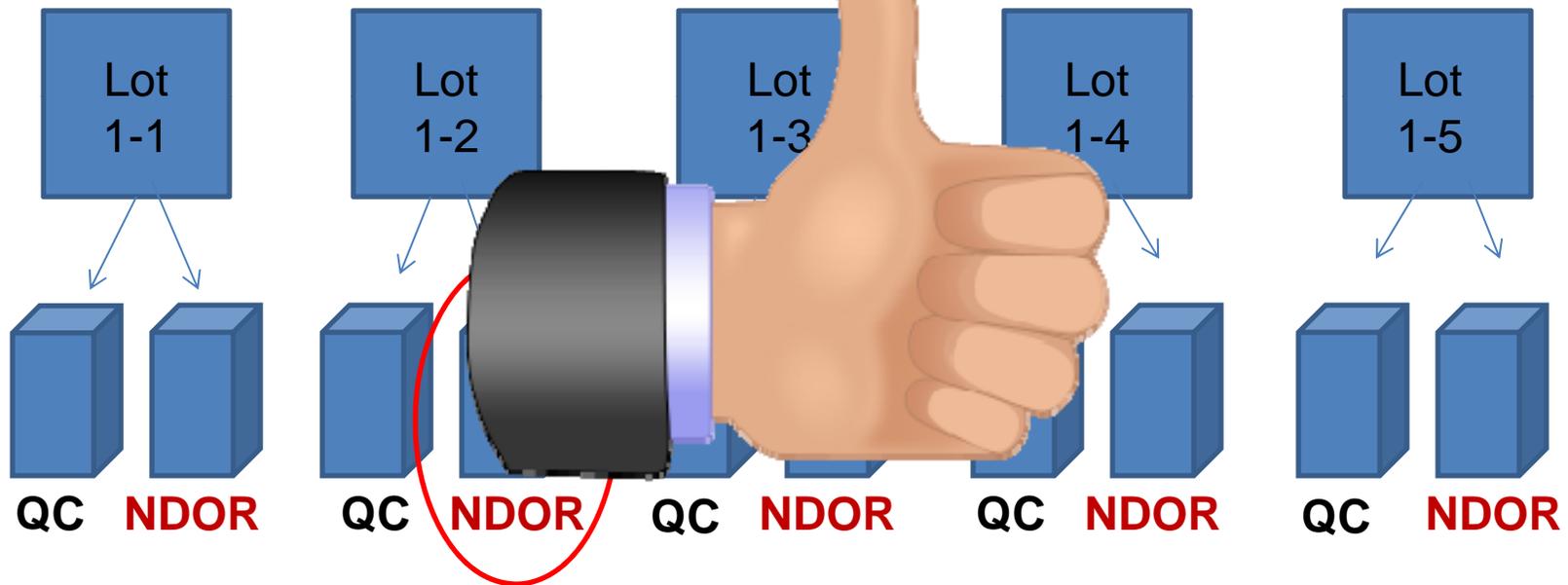
- Asphalt Testing with QC Acceptance



Asphalt

QC Tests are Accepted

1 Lot = 5 Sublots → 750 Tons Each

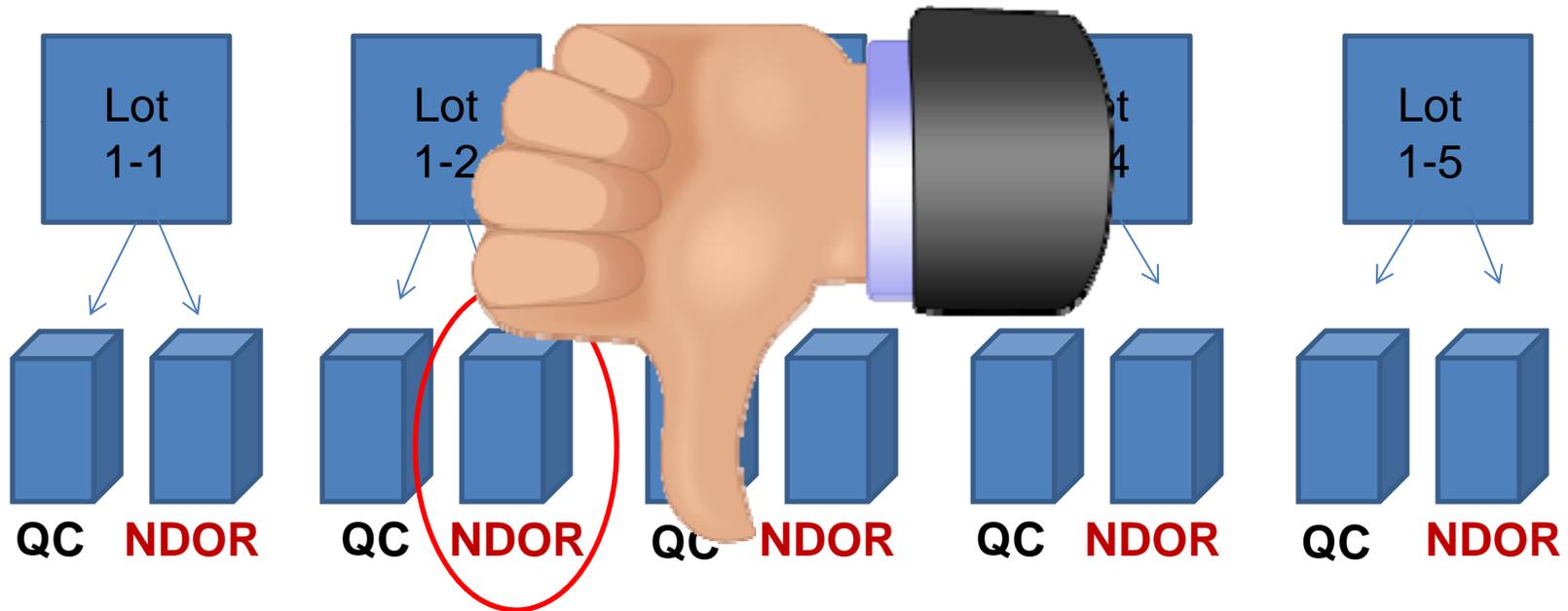


If Sublot 1-2 **Passes** Testing Tolerances for Air Voids and Angularity.....

Asphalt

QC Tests are Rejected and NDOR Test Results Take Over

1 Lot = 5 Sublots → 750 Tons Each



If Sublot 1-2 **Fails** Testing Tolerances for Air Voids and Angularity.....

Lets Compare

- Asphalt Testing with QC Acceptance
- Concrete Aggregate Gradation with NDOR Field Testing for Acceptance
- Concrete Aggregates Quality with NDOR Central Lab Testing for Acceptance



Lets Compare

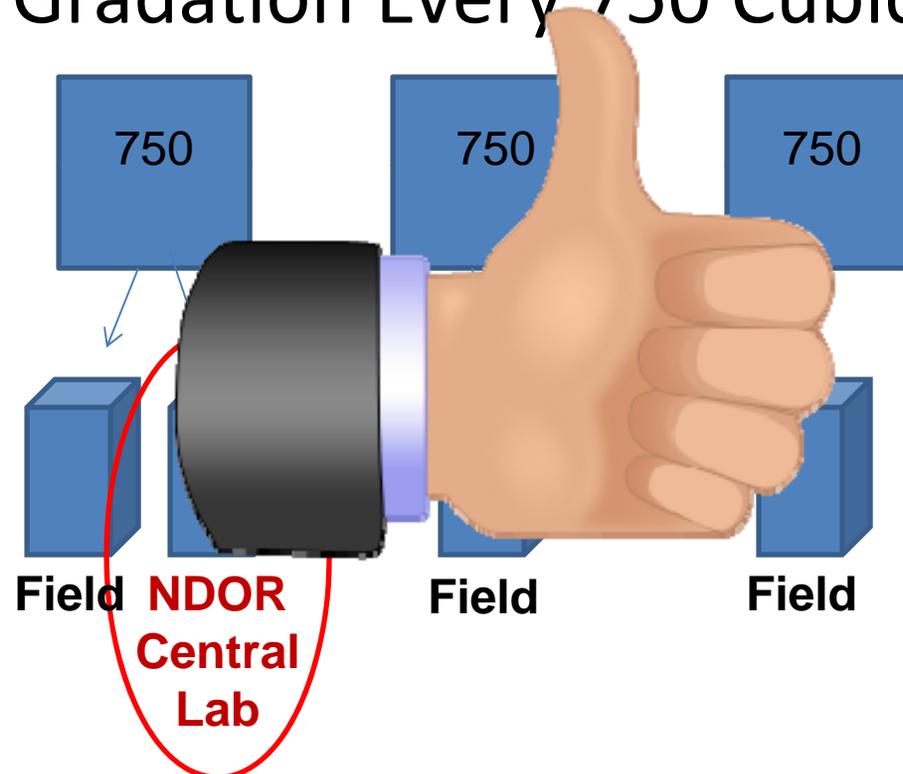
- Concrete Aggregate Gradation with **NDOR Field Testing for Acceptance**



Concrete Aggregates Gradation

Material is Accepted and Field Test Passes Validation

1 Gradation Every 750 Cubic Yards



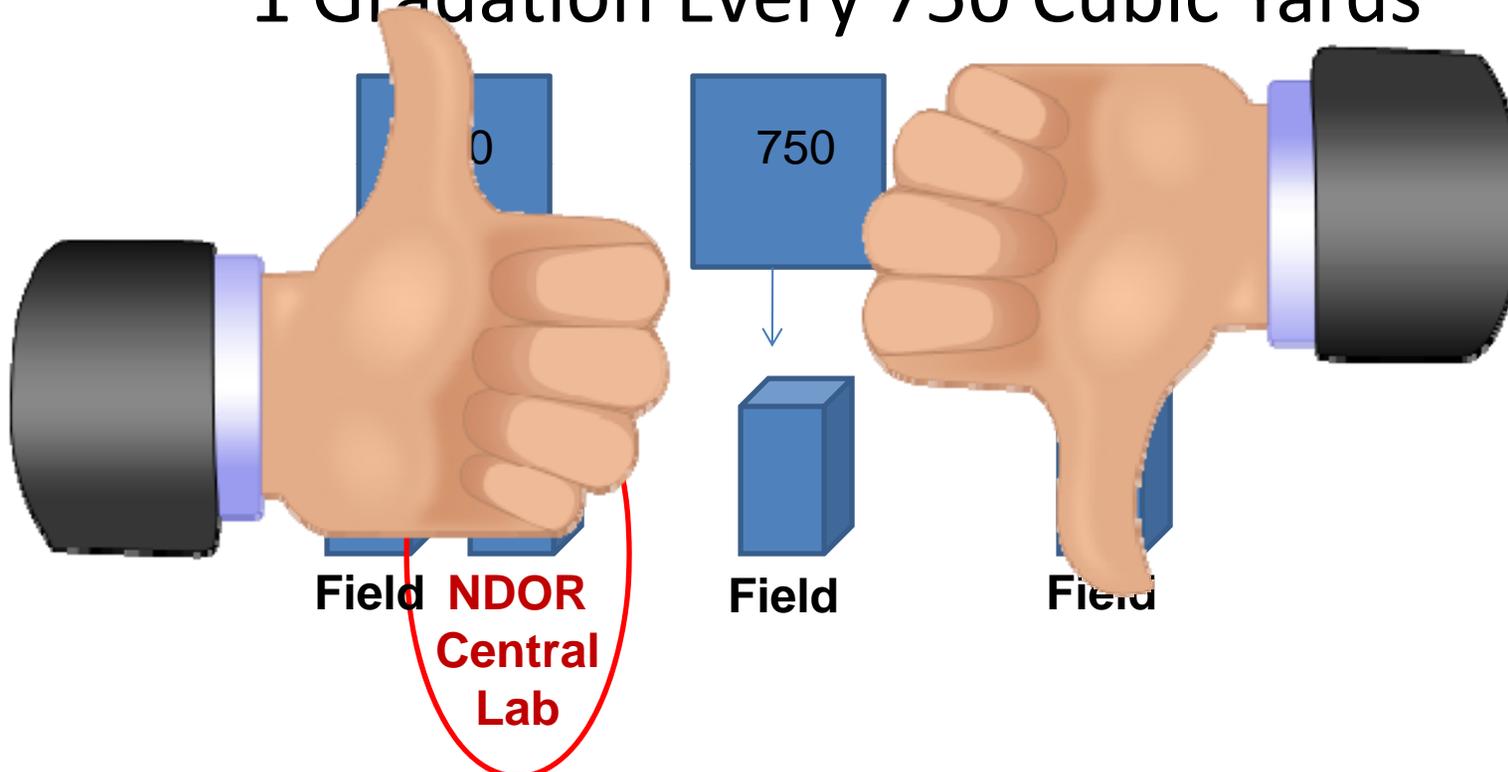
One Split Sample every 2250 Cubic Yards, if it **Passes** multi-laboratory precision for the gradation.....

Concrete Aggregates Gradation

Material is Accepted

Field Test Fails Validation and IA conducted on Tester and Equipment

1 Gradation Every 750 Cubic Yards



One Split Sample every 2250 Cubic Yards, if it **Fails** multi-laboratory precision for the gradation.....

Lets Compare

- Asphalt Testing with QC Acceptance
- Concrete Aggregate Gradation with NDOR Field Testing for Acceptance
- Concrete Aggregates Quality with NDOR Central Lab Testing for Acceptance



Lets Compare

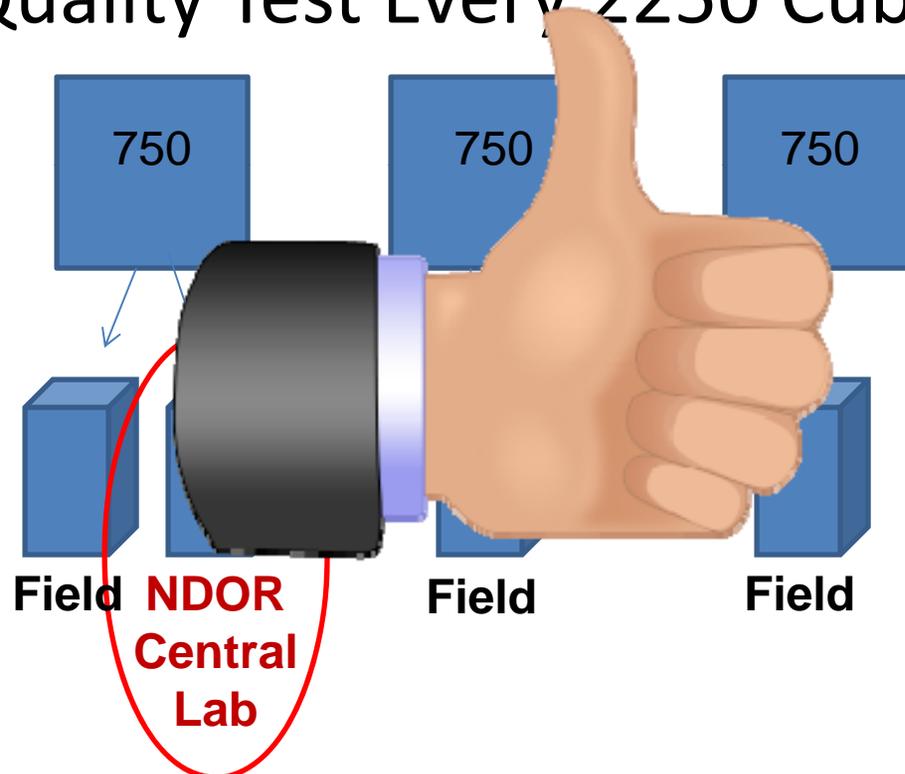
- Concrete Aggregates Quality with **NDOR Central Lab Testing for Acceptance**



Concrete Aggregates Quality (soundness, abrasion)

Material is Accepted

1 Quality Test Every 2250 Cubic Yards

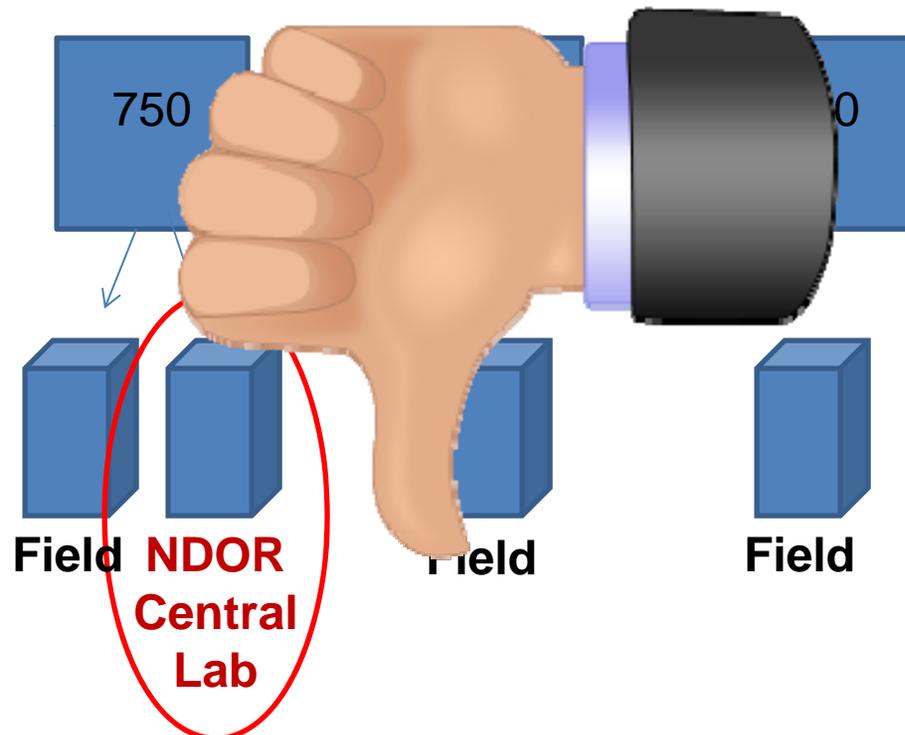


One Sample every 2250 Cubic Yards, if it **Passes** Quality Tests.....

Concrete Aggregates Quality (soundness, abrasion)

Material is Penalized or Rejected

1 Quality Test Every 2250 Cubic Yards



One Sample every 2250 Cubic Yards, if it **Fails** Quality Tests.....

Bob's Notes

BOB'S NOTES



QC/QA Program

QC		QA						
Industry/Contractor		NDOR Certified Field Technician	Qualified Branch Laboratory	NDOR Headquarters Materials Laboratory (AMRL Certified)		Independent Assurance Testing Program	Certification Program for Testing/Sampling	Qualified Laboratory Certification
Quality Control Testing		Verification Testing				Assurance/Certification Testing of Personnel, Labs, &		
<u>Required by Contract</u> and used for Acceptance of Product (Hot Mix Asphalt) <u>Submits Test Results</u>		Samples	Performs QC Validation Tests			Performed Annually for each Technician performing the tests	NDOR Asphalt Technician Certification	Performed Annually on all outside laboratories
<u>Required by Contract</u> and used for Acceptance of Product (Prestress) <u>Submits Test Results</u>		Samples	Performs QC Validation Tests			Performed Annually for each Technician performing the tests	PCI Certified for Prestress, NRMCA for Precast	Performed Annually on all outside laboratories
<u>Not Required by Contract</u> and <u>Not</u> used for Acceptance (PG Binders) <u>Does not Submit Results</u>		Samples		Performs Quality Acceptance Test		Performed Annually for each Technician performing the tests	Qualified Branch Lab Training	AMRL Certification
<u>Not Required by Contract</u> and <u>Not</u> used for Acceptance (Concrete) <u>Does not Submit Results</u>		Samples and Tests for Acceptance for		Performs Field Validation Tests (Gradation)		Performed Annually for each Technician	ACI Certification & NDOR Concrete Technician	Performed Annually on all outside
			Performs Acceptance Test (Strength)	Performs Quality Acceptance Tests (Final Cores)		Performed Annually for each Technician	ACI Certification & NDOR Concrete Technician	Performed Annually on all outside
<u>Not Required by Contract</u> and <u>Not</u> used for Acceptance (Aggregates) <u>Does not Submit Results</u>		Samples and Tests for Acceptance for		Performs Field Validation Tests (Gradation)		Performed Annually for each Technician	NDOR Concrete Technician Training	Performed Annually on all outside
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<u>Not Required by Contract</u> and <u>Not</u> used for Acceptance (Soil) <u>Does not Submit Results</u>		Samples and Tests for Acceptance for Field Tests	Performs Field Requirement Tests (Moist/Density Curve)			Performed Annually for each Technician performing the tests	NDOR Soils Technician Certification	Performed Annually on all outside laboratories

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Verification Testing and Sampling

Independent Assurance Testing

Certification

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Quality Control Testing	Verification Testing			Assurance/Certification Testing of Personnel, Labs, &			
<u>Required by Contract</u> and used for Acceptance of Product (Hot Mix Asphalt) <u>Submits Test Results</u>	Samples	Performs QC Validation Tests		Performed Annually for each Technician performing the tests	NDOR Asphalt Technician Certification	Performed Annually on all outside laboratories	
<u>Required by Contract</u> and used for Acceptance of Product (Prestress) <u>Submits Test Results</u>	Samples	Performs QC Validation Tests		Performed Annually for each Technician performing the tests	PCI Certified for Prestress, NRMCA for Precast	Performed Annually on all outside laboratories	
<u>Not Required by Contract</u> and <u>Not used</u> for Acceptance (PG Binders) <u>Does not Submit Results</u>	Samples		Performs Quality Acceptance Test	Performed Annually for each Technician performing the tests	Qualified Branch Lab Training	AMRL Certification	
<u>Not Required by Contract</u> and <u>Not used</u> for Acceptance (Concrete) <u>Does not Submit Results</u>	Samples and Tests for Acceptance for	Performs Acceptance Test (Strength)	Performs Field Validation Tests (Gradation) Performs Quality Acceptance Tests (Final Cores)	Performed Annually for each Technician Performed Annually for each Technician	ACI Certification & NDOR Concrete Technician & NDOR Concrete Technician	Performed Annually on all outside Performed Annually on all outside	
<u>Not Required by Contract</u> and <u>Not used</u> for Acceptance (Aggregates) <u>Does not Submit Results</u>	Samples and Tests for Acceptance for		Performs Field Validation Tests (Gradation) Performs Quality Acceptance Test (Soundness, etc)	Performed Annually for each Technician Performed Annually for each Technician	NDOR Concrete Technician Training NDOR Concrete Technician Training	Performed Annually on all outside Performed Annually on all outside	
<u>Not Required by Contract</u> and <u>Not used</u> for Acceptance (Soil) <u>Does not Submit Results</u>	Samples and Tests for Acceptance for Field Tests	Performs Field Requirement Tests (Moist/Density Curve)		Performed Annually for each Technician performing the tests	NDOR Soils Technician Certification	Performed Annually on all outside laboratories	

QC/QA Program

QC		QA					
Industry/Contractor	NDOR Certified Field Technician	Qualified Branch Laboratory	NDOR Headquarters Materials Laboratory (AMRL Certified)	Independent Assurance Testing Program	Certification Program for Testing/Sampling	Qualified Laboratory Certification	
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<u>Required by Contract</u> and used for Acceptance of Product (Hot Mix Asphalt) <u>Submits Test Results</u>	Samples	Performs QC Validation Tests		Performed Annually for each Technician performing the tests	NDOR Asphalt Technician Certification	Performed Annually on all outside laboratories	
<u>Required by Contract</u> and used for Acceptance of Product (Prestress) <u>Submits Test Results</u>	Samples	Performs QC Validation Tests		Performed Annually for each Technician performing the tests	PCI Certified for Prestress, NRMCA for Precast	Performed Annually on all outside laboratories	
<u>Not Required by Contract</u> and <u>Not used</u> for Acceptance (PG Binders) <u>Does not Submit Results</u>	Samples		Performs Quality Acceptance Test	Performed Annually for each Technician performing the tests	Qualified Branch Lab Training	AMRL Certification	
<u>Not Required by Contract</u> and <u>Not used</u> for Acceptance (Concrete) <u>Does not Submit Results</u>	Samples and Tests for Acceptance for		Performs Field Validation Tests (Gradation)	Performed Annually for each Technician	ACI Certification & NDOR Concrete Technician	Performed Annually on all outside	
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<u>Required by Contract</u> and used for Acceptance of Product (Hot Mix Asphalt) <u>Submits Test Results</u>	Samples	Performs QC Validation Tests		Performed Annually for each Technician performing the tests	NDOR Asphalt Technician Certification	Performed Annually on all outside laboratories		
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Referee Testing



Referee Testing



1. Only when QC Testing is used for Acceptance



- Precast/Prestress
- Hot Mix Asphalt



2. Only if specifically added to the contract



- PG Binders
- Emulsions

Referee Testing

1. Only on Originally Sampled and Tested Material
2. Need Adequate size sample as stated in the MSG or the Special Provisions



Questions Answers

