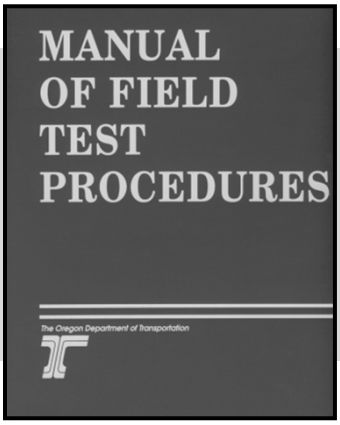
Unit 17

Manual of Field Test Procedures



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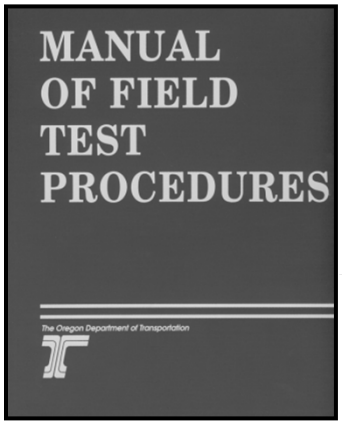
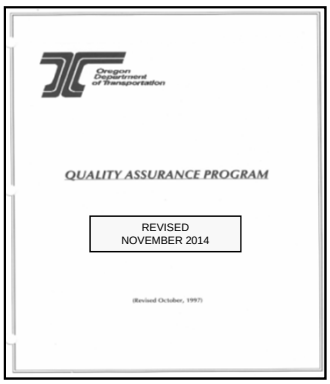


Updated yearly
by ODOT Construction Section

Current Version in affect at time of advertisement



The MFTP also contains the Quality Assurance Program guidelines

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2

Unit 17 Topics:

- Quality Assurance Program
- Field tested materials quality acceptance (Section 4D)
- Product compliance requirements
- Small quantity acceptance guidelines (Section 4B)

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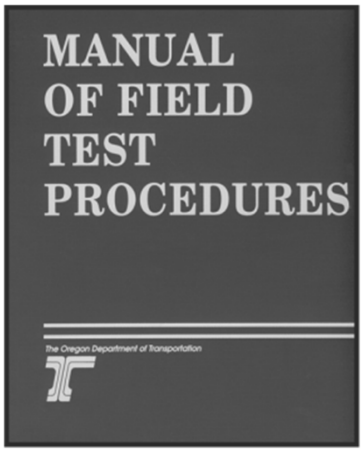
3

Manual of Field Test Procedures

- **Section 1:** Test Procedures
- **Section 2:** Quality Assurance Program (in Resource Manual, Tab 3)
- **Section 3:** Report Forms
- **Section 4(D):** Field Tested Materials Acceptance Guide (in Resource Manual, Tab 3)



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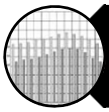
4

What is Quality Assurance?

Actions necessary to provide confidence that a product or service will satisfy given requirements for quality



Based on statistical acceptance and random sampling

Places responsibility on the Contractor for quality control in contracted work.

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5

Purpose of ODOT's Quality Assurance Program for Materials

- Ensure that quality materials are used in the construction of transportation facilities.
- Define the responsibilities of both the Agency and the Contractor in order to satisfy program requirements.

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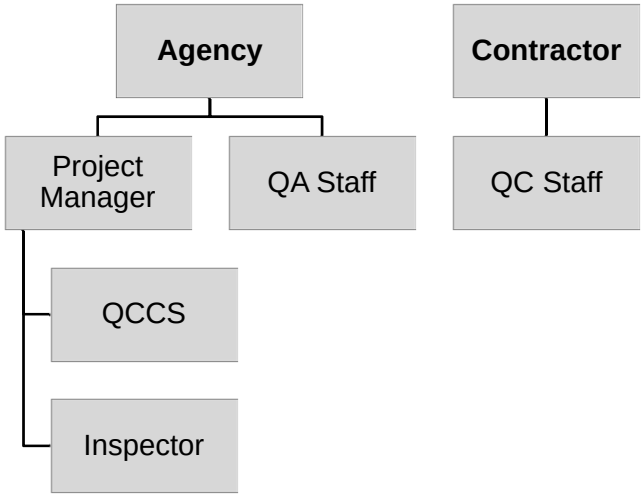
6

Separation of Roles



7

Roles & Responsibilities

Construction Contractor must:

- Follow ODOT's QA Program
- Provide written QC Plan to PM
- Furnish Materials/Products meeting specifications
- Provide certified labs and technicians

8

Roles & Responsibilities

PM / Consultant Ensures that:

- Verify contractor QC personnel are properly certified.
- Contractor performs, submits and documents all required testing.
- ODOT QCCS coordinates verification (QA) testing with ODOT Region Quality Assurance.

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9

Field Tested Materials Small Quantity Guide
Section 4B

- Written request required
- Quality documentation still required
- Small quantity table

Section	Type of Material	Approximate Quantity
00330	Earthwork (Embankment)	500 yd^3
00330	Earthwork (Excavation)	500 yd^3
00345 & 00346	Lime & Cement Treated Subgrade	2000 yd^2
00390 & 00395	RipRap & Rock Gabions	100 yd^3
00405	Ditch & Trench Excavation, Bedding and Backfill	50 yd^3
00440	Commercial Grade Concrete (Non-Structural Items)	50 yd^3
00495	Trench Resurfacing	500 Ton
00510	Structure Excavation and Backfill	500 Ton
0A596, 0B596 & 0C596	Retaining Walls	500 Ton
00641 & 00642	Aggregate Sub-base, Base & Shoulders	2000 Ton
00680	Stockpiled Aggregate	2000 yd^3
00730	Asphalt Tack Coat	50 Ton
00735	Emulsified Asphalt Concrete Pavement (includes asphalt cement)	2500 Ton
00744	Minor Hot Mix Asphalt Concrete (HMAC-each Level) (includes asphalt cement)	2500 Ton
00745	Hot Mix Asphalt Concrete (HMAC-each Level) (includes asphalt cement).	2500 Ton

Resource Manual, Tab 3

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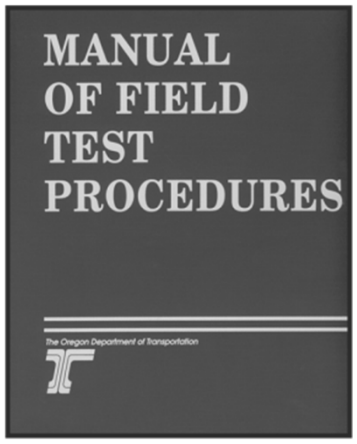
10

Manual of Field Test Procedures
Primary Resource for Field Tested Materials

Section 4(D)
Field Tested Materials
Acceptance Guide



Resource Manual, Tab 3

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11

Field Tested Materials Acceptance Guide

- **How to Use** – First Page
- **Definitions** – First and Second Page
- **Types of Tests** – Third Page

  6. Visual…when stated in the contract, is a method generally used by the Project Inspector in lieu of normal sampling and testing of field tested materials as defined in section 00165.00 of the Standard Specifications to document quality. Supporting documentation for visual acceptance is, at a minimum, a field inspection report (FIR). Example: Stone Embankment Gradation

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12

How to Use
Field Tested Materials Acceptance Guide

- Organized by Specification Number
- Lists material type within the specification
- Lists description of test
- Lists test method and number – ODOT, AASHTO, etc.

FIELD TESTED MATERIALS ACCEPTANCE GUIDE (Revised Octobe				
MATERIAL AND OPERATION	DESCRIPTION OF TEST	TEST METHOD		
		ODOT	WAQTC	AASHTO
SECTION 00641 - AGGREGATE SUBBASE, BASE, AND SHOULDERS				
Aggregate Production	*Abrasion*			*T 96*
Aggregate Subbase				
Grading	*Sampling*			*T 2*
(See 00641.10)	*Reducing*			*T 248*
	Sieve Analysis			*T 27*
	Sand Equivalent			*T 176*

ODOT MATERIALS & INSPECTION

13

How To Use
Field Tested Materials Acceptance Guide

- Lists report form number
- Identifies who tests: Quality Control, PM, QA or Materials Lab
- Identifies Sublot size
- Identifies frequency of testing

r 2011)	Same Frequency for all Tests (Minimums)			
FORM 734-	QUALITY ASSURANCE			
	Contractor Quality Control	Independent Assurance/Verification		
		Project Manager	Region Quality Assurance	Materials Laboratory
4000	*See Sec. 4A*	*Submit To Central Lab*		*See Section 4(A)*
1792	*1/Project or 1/Source*	*Visual*		
4000	*See Section 4A*	*Submit to Lab*		*See Section 4A*
A Sublot equals 2000 Mg or 2000 Tons				
1792	*1/Sublot & Start of Production*		*10 % of Required QC*	
1792	*1/5 Sublots*			

ODOT MATERIALS & INSPECTION

14

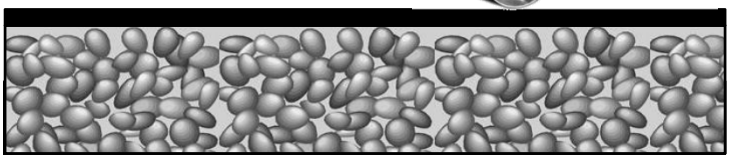
Field Tested Materials Acceptance Guide: 00641, Page 34

FIELD TESTED MATERIALS ACCEPTANCE GUIDE (Revised October 2011)						Same Frequency for all Tests (Minimums)			
MATERIAL AND OPERATION	DESCRIPTION OF TEST	TEST METHOD			FORM 734-	QUALITY ASSURANCE			
						Contractor Quality Control	Independent Assurance/Verification		
		ODOT	WAQTC	AASHTO			Project Manager	Region Quality Assurance	Materials Laboratory
SECTION 00641 - AGGREGATE SUBBASE, BASE, AND SHOULDERS									
Aggregate Production	Abrasion			T 96	4000	See Sec. 4A	Submit To Central Lab		See Section 4(A)
Aggregate Subbase Grading (See 00641.10)	Sampling Reducing Sieve Analysis Sand Equivalent			T 2 T 248 T 27 T 176	1792	1/Project or 1/Source	Visual		
Aggregate Base and Shoulders	Abrasion Degradation	TM 208		T96	4000	See Section 4A	Submit to Lab		See Section 4A
Grading					A Sublot equals 2000 Mg or 2000 Tons				
Aggregate Base (See 02630) Aggregate Shoulder (See 02640) Open Graded Aggregate Base (See 02630.11) (1) Perform at least 3 tests (2) May be waived by QAE	Sampling Reducing (1) Sieve Analysis (2) Sand Equivalent			T 2 T 248 T 27 T 176	1792	1/Sublot & Start of Production		10 % of Required QC	
	Fracture (Method 1)			T 335	1792	1/5 Sublots			
Placement									
Aggregate Base Plant Mix Applications Only Aggregate (Mixture)					A Sublot equals 2000 Mg or 2000 Tons				
	Sampling Reducing Moisture			T 2 T 248 T 255 & T 265	1792	1/Sublot or minimum 1/Day		10 % of Required QC	
Establishing Maximum Density & Optimum Moisture (Mix Design) (3) Method A	Density Curve Coarse Particle Correction Bulk Specific Gravity	TM 223		(3) T 99 T 85	3468 B 3468 B	Each Size per Source		1/Project	
Compaction									
	Deflection Testing	TM 158			1793B	1 per Sublot			
	Nuclear Gauge			T310	1793B	(D) 5 Tests Per Sublot		10 % of Required QC	
(D) (Individual tests must meet Specification)									

MFTP – Section 4(D)
Example 1

Building a road:

- 3,000 square yards of subgrade stabilization
- Place 10,000 tons aggregate base
- Place 3,000 tons HMAC



ODOT MATERIALS & INSPECTION

16

MFTP – Section 4(D)
Example 1

Building a road:

- 3,000 square yards of subgrade stabilization
- Place 10,000 tons aggregate base
- Place 3,000 tons ACP

A	B	C	D	E	F	G	H	I
				CONTRACTOR	CONTRACTOR	CONTRACTOR	ODOT	ODOT
Material and Quantity	Activity	Specification Section and MFTP Sect. 4D	Sublot Size	Quality Control, tests per sublot	Required Quality Control Sublots	Required Quality Control Tests	Independent Assurance, Verification (10% of QC)	Required Quality Assurance tests
3000 sqyds Subgrade Stabilization	Compaction of Subgrade Stabilization	00331 Pg 2 of MFTP						

ODOT MATERIALS & INSPECTION

17

MFTP – Section 4(D)
Example 1

Building a road:

- 3,000 square yards of subgrade stabilization
- Place 10,000 tons aggregate base
- Place 3,000 tons ACP

A	B	C	D	E	F	G	H	I
				CONTRACTOR	CONTRACTOR	CONTRACTOR	ODOT	ODOT
Material and Quantity	Activity	Specification Section and MFTP Sect. 4D	Sublot Size	Quality Control, tests per sublot	Required Quality Control Sublots	Required Quality Control Tests	Independent Assurance, Verification (10% of QC)	Required Quality Assurance tests
10,000 tons Aggregate Base	Compaction of Aggregate Base (T310)	00641 Pg 34 of MFTP						

ODOT MATERIALS & INSPECTION

18

MFTP – Section 4(D)
Example 1

Building a road:

- 3,000 square yards of subgrade stabilization
- Place 10,000 tons aggregate base
- Place 3,000 tons ACP

A	B	C	D	E	F	G	H	I
				CONTRACTOR	CONTRACTOR	CONTRACTOR	ODOT	ODOT
Material and Quantity	Activity	Specification Section and MFTP Sect. 4D	Sublot Size	Quality Control, tests per sublot	Required Quality Control Sublots	Required Quality Control Tests	Independent Assurance, Verification (10% of QC)	Required Quality Assurance tests
3000 tons ACP without RAP (Dense Graded)	Compaction of ACP (TM8)	00745 Pg 55 of MFTP						

ODOT MATERIALS & INSPECTION

19

MFTP – Section 4(D)
Example 1 – Answers

A	B	C	D	E	F	G	H	I
				CONTRACTOR	CONTRACTOR	CONTRACTOR	ODOT	ODOT
Material and Quantity	Activity	Specification Section and MFTP Sect. 4D	Sublot Size	Quality Control, tests per sublot	Required Quality Control Sublots	Required Quality Control Tests	Independent Assurance, Verification (10% of QC)	Required Quality Assurance tests
3000 sqyds Subgrade Stabilization	Compaction of Subgrade Stabilization	00331 Pg 2 of MFTP	Visual				N/A	N/A
10,000 tons Aggregate Base	Compaction of Aggregate Base (T310)	00641 Pg 34 of MFTP	2000 tons	5 tests per sublot	5	25	1	5
3000 tons ACP without RAP (Dense Graded)	Compaction of ACP (TM8)	00745 Pg 55 of MFTP	1000 tons	5 tests per sublot (Report Average of 5 tests)	3	15	1	5
					A / D	E x F	F x .10	H x E

ODOT MATERIALS & INSPECTION

20

Manual of Field Tested Procedure Training Form
Compaction Frequency of Select Field Tested Materials

Scenario

Subgrade Stabilization **3000 square yards**
Aggregate Base **10,0000 tons**
HMAC without RAP (Dense Graded) **3000 tons**

Example 1

A	B	C	D	E	F	G	H	I
				CONTRACTOR	CONTRACTOR	CONTRACTOR	ODOT	ODOT
Material and Quantity	Activity	Specification Section and MFTP Sect. 4D	Sublot Size	Quality Control, tests per sublot	Required Quality Control Sublots	Required Quality Control Tests	Independent Assurance, Verification (10% of QC)	Required Quality Assurance tests
3000 sqyds Subgrade Stabilization	Compaction of Subgrade Stabilization	00331 Pg 2 of MFTP						
10,000 tons Aggregate Base	Compaction of Aggregate Base (T310)	00641 Pg 34 of MFTP						
3000 tons ACP without RAP (Dense Graded)	Compaction of ACP (TM8)	00745 Pg 55 of MFTP						
					A / D	**E x F**	**F x .10**	**H x E**

Manual of Field Tested Procedure Training Form
Compaction Frequency of Select Field Tested Materials

Scenario

Subgrade Stabilization **6000 square yards**
Aggregate Base **30,0000 tons**
HMAC without RAP (Dense Graded) **6000 tons**

Example 2

A	B	C	D	E	F	G	H	I
				CONTRACTOR	CONTRACTOR	CONTRACTOR	ODOT	ODOT
Material and Quantity	Activity	Specification Section and MFTP Sect. 4D	Sublot Size	Quality Control, tests per sublot	Required Quality Control Sublots	Required Quality Control Tests	Independent Assurance, Verification (10% of QC)	Required Quality Assurance tests
6000 sqyds Subgrade Stabilization	Compaction of Subgrade Stabilization	00331 Pg 2 of MFTP						
30,000 tons Aggregate Base	Compaction of Aggregate Base (T310)	00641 Pg 34 of MFTP						
6000 tons ACP without RAP (Dense Graded)	Compaction of ACP (TM8)	00745 Pg 55 of MFTP						
					A / D	**E x F**	**F x .10**	**H x E**

Key Inspection Points

- Small quantity acceptance still needs proper quality documentation
- Keep track of what type and quantity of field tested materials being delivered
- Communicate with QCCS or someone tracking testing
- Check in with technicians
- Understand scope and role of visual acceptance
- Do not accept failing tests

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21

Unit 17 Review:

✓Quality Assurance Program

✓Field tested materials quality acceptance (Section 4D)

✓Product Compliance requirements

✓Small quantity acceptance guidelines (Section 4B)

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22

Material Problems

The Contractor is placing backfill material around a Pipe Culvert that is 8 feet in diameter. The Bid Item is granular structural backfill with a quantity of 6,500 cubic yards.

17-1 What specification references the work?

17-2 What subsection provides the grading requirements?

17-3 What is the frequency for sieve analysis testing?

17-4 What is the frequency for the compaction testing?

17-5 What is the minimum percent compaction requirement?

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23

Material Problems

Answers

17-1 What specification references the work?

17-2 What subsection provides the grading requirements?

17-3 What is the frequency for sieve analysis testing?

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24

Material Problems

Answers (continued)

17-4 What is the frequency for the compaction testing?

17-5 What is the minimum percent compaction requirement?

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25