

## Colorado Procedure 16-21

### *Standard Practice for*

## Management of CDOT & Consultant Materials Testing

### 1. SCOPE

This procedure contains a summary of the responsibilities and the process for developing the consultant materials testing contract and administering task orders. Also contained in this procedure are examples of the forms for management and evaluation of consultant materials testing on CDOT projects.

### 2. SUMMARY OF RESPONSIBILITIES AND PROCESSES

The Region Materials Engineer develops the non-project specific (NPS) materials testing consulting contract that is then reviewed for approval by the Program Engineer and Region Transportation Director. The contract is distributed to interested consultants as a part of a request for proposals. Proposals are reviewed by Region Engineers and then the Consultants are selected. Resident Engineers write task orders to provide consultant materials testing for specific projects. The business office tracks expenditures and assists in the paperwork involved in administering the NPS contracts and the task orders written under each contract. The Region Materials Engineer reviews and retains copies of consultant evaluations and coordinates solving of problems with consultant testing.

### 3. MANAGEMENT AND EVALUATION OF CDOT & CONSULTANT MATERIALS TESTING

#### 3.1 CP 16, Pre-Testing Meeting Agenda – CDOT & Consultant Materials Testing (CDOT Form 1322)

This form is used to guide discussion and document results of a pre-testing meeting. This meeting allows the key people involved in the testing to discuss and define each of the issues involved in consultant testing. Each item should be discussed and the results of that discussion written on the form. Pre-testing meetings have been a valuable tool to avoid problems by promoting communication on important issues before testing begins.

#### 3.2 CP 16, Weekly Meeting Agenda – CDOT & Consultant Materials Testing (CDOT Form 1323)

This form is used to guide discussion and document results of a meeting held each week, if needed, to determine if the consultant testing is going smoothly. These meetings allow early identification and resolution of problems. Key issues addressed at the weekly meetings are distribution of test results, documentation of testing, proper test procedures, and how failing tests are handled. If the consultant testing is going well, then brief and informal meetings between the CDOT head tester and the consultant tester, or skipping some of these meetings, may be appropriate. If there are substantial problems then a formal meeting including the Project Engineer and the supervisor of the consultant materials tester may be needed. Use the form to document all meetings, however brief.

#### 3.3 CP 16, Evaluation of Materials Testing – Consultant Materials Testing (CDOT Form 1324)

- 3.3.1 This form is used to evaluate the Consultant Project Tester and Consultant Management / Support (CM/S) after consultant testing on the project is completed. This evaluation is normally conducted by the Project Engineer. The contractor, consultant, and head tester should be interviewed prior to completing this form. A final meeting with the consultant to discuss strengths and weaknesses is also recommended. A copy of the completed evaluation form is part of the Finals packet and must be sent to the Region Materials Engineer and the Documentation Unit of the Central Materials Laboratory. This central record of evaluations will support statewide review of consultant performance.
- 3.3.2 The Project Tester [A] section is an evaluation of the individual materials tester only.
- 3.3.3 The Consultant Management / Support (CMS) [B] section is an evaluation of the consultant company beyond the project tester. Description of the evaluation factors is discussed below.
- 3.3.3.1 Quality: Achieved desired outcomes with a minimum of avoidable errors and problems. The work was accurate and complete. The work was done in an efficient and effective manner.
- 3.3.3.2 Timeliness: Performs work within the time frames identified. Responds / replies to requests for information or assistance in a reasonable period of time.
- 3.3.3.3 Price / Budget: Effectively manages costs and adheres to the budget as specified in the contract / scope of work.
- 3.3.3.4 Business Relations / Customer Service: The degree to which the consultant is professional and respectful in its business approach and interactions with the agency.
- 3.3.3.5 Deliverables / Requirements: The degree to which the consultant is compliant in meeting the standards of contract requirements and deliverables (i.e. documentation).

#### **4. CONSULTANT PERFORMANCE EVALUATION**

- 4.1 The CDOT Consultant Performance Evaluation, CDOT Form 313, is a general evaluation of consultants performing any services for the Department.

Senate Bill 07 228 requires that all state contracts greater than \$100,000 that were signed, or changed, after July 1, 2009 must have Contractor evaluations and ratings performed. The final evaluation rating will be posted to the Contract Management Systems (CMS) public website at <http://contractsweb.state.co.us>. All CDOT guidance documents, which include instructions, procedures, forms, email language, memorandums and other information related to contractor performance evaluation, are posted on the Purchasing web page located at [//internal/Purchasing/PurchasingDocuments.cfm](http://internal/Purchasing/PurchasingDocuments.cfm).

These evaluations are separate from the CP 16, Evaluation of Materials Testing (CDOT Form 1324). All forms are required to be completed.

<b>COLORADO DEPARTMENT OF TRANSPORTATION</b> <b>CP 16, PRETESTING MEETING</b> <b>AGENDA</b> The purpose of this meeting is to clarify the expectations of CDOT for the consultant materials tester and to review some of the common issues that arise during typical projects. This form shall be used for consultants and may be used when CDOT is performing the testing.	Region:	Residency:
	Contract ID:	Date
	Project No.:	
	Proj. location:	

**Attendance:** It is recommended that the following people be in attendance:

CDOT Project Engineer:	Consultant materials tester's supervisor:
CDOT head tester:	Contractor quality control tester:
Region Laboratory representative (if available):	Contractor representative(s):
Consultant materials tester:	Supplier representative(s):
It is recommended this meeting occur <b>one week prior</b> to the need for testing. If some of the issues brought up at the meeting are not initially resolved, then there will be time to address them.	

**1) Test result distribution:**

Payment to the contractor is dependent on test results of materials. Therefore, it is critical that test results are distributed <b>before the next day of production</b> . Computer printout of the Moving Quality Level (MQLs) needs to be sent as well.			
Have all forms for reporting test results been provided to the consultant materials tester and contractor? <input type="checkbox"/> yes <input type="checkbox"/> no		Test results will be distributed by:	
Test results will be distributed to:	FAX:	CDOT Form #626* yes no	QLs** yes no
1)		<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>
2)		<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>
3)		<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>
4)		<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>
5)		<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>
*When test results fail, a CDOT Form #626 (Field Laboratory Test Results) shall be sent to the above people that request it. **When QLs (Quality Levels) and pay factors are calculated, they shall be sent to the above people that request it.			
What mix designs have been submitted and approved?			
Who is authorized to sign the Form #626?		Who will calculate the QLs and pay factors?	
Who will distribute the QLs and pay factors?		How often will the QLs and pay factors be distributed?	
Which versions of software will be used to calculate pay factors?			
Does the consultant have this software installed? <input type="checkbox"/> yes <input type="checkbox"/> no		Does the contractor have copies of this software? <input type="checkbox"/> yes <input type="checkbox"/> no	
Who from the contractor will be responsible for maintaining the MQLs?			

Previous editions are obsolete and may not be used.

**2) Special reports**

In some instances that involve a long testing procedure (volumetrics, cylinders, etc.), the results need to be distributed no later than the day after the test is completed. The following protocol should be used for the distribution of these tests.		
	Distributed by	Distributed when
Concrete cylinder breaks:		
Asphalt volumetrics:		
Rice:		

**3) Procedural review**

These are common areas of concern for testing materials on CDOT projects. It is recommended to review these during this meeting.				
Forms:	Does the consultant materials tester have the Form #250? <input type="checkbox"/>	Does the consultant materials tester have the Form #379? <input type="checkbox"/>	Does the consultant materials tester have the Confidential Random Sampling Schedule? <input type="checkbox"/>	
Concrete: Time constraints and procedures for making cylinders and beams (AASHTO T 141, 23, and 97)				
Acceptance cylinders and/or beams:		Field cured cylinders:		
Sampling location within load:		Special requirements:		
Sampling method (divert entire stream): (i.e. wheelbarrow preferred)				
Location of water tank for initial cure (first 24 hours):		Bridge Deck Curing Measures (thermocouples etc.):		
Weekend pours (sampling and handling after 24 hours):		Maturity meter calibrations for fast track paving, completed by?		
Location of cure (after 24 hours):				
Transportation (how and when):				
Asphalt:	Gradation	AC/Rice	Binder	Density
Sample location:				
Sample taken by:				
Sample witnessed by:				
Sample method:				
Sample split by:				
Sample delivered by:				
Test location:				
Tested by:				
Review sample size:	Aggregate:	Binder:	HBP:	
Special sampling requirements:				

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**4) Protocol for failing tests**

During production of materials, it is possible that test results of materials could fail. It is desirable to understand the protocol that will be followed when this happens. Typical actions could include: meeting, coring, retest, third party testing, check testing program, price reduction, test saved splits, etc.	
<b>Concrete:</b>	
Slump:	Air:
Compressive Strength (CP 65):	Yield:
Flexural Strength:	How will the QLS and pay factor be handled?
<b>Asphalt:</b>	
Density:	Gradation:
Asphalt Content:	Stability:
Volumetrics:	Binder:
How will the QLS and pay factor be handled?	
<b>Soils:</b>	
Density:	Moisture:
Soil Bearing Value:	Soil type:
Soil Profile:	

**5) Head tester commitments**

<p>The CDOT head tester will assist the consultant materials tester with a limited amount of help. This assistance will be scheduled between the two testers. This will include: review of the Field Materials Manual, setting up the book for project documentation, reviewing the book throughout the project, new CDOT tests and protocols, and one copy of the project plans and specifications.</p> <p>The CDOT head tester will not assist in training the consultant materials tester in test procedures or protocol. Consultants will provide cylinder molds (Jatco), asphalt binder cans, and 3 ring binders (all shall be new). Current copies of the specification book, Field Materials Manual, and other publications/materials needed for the project will also be provided by the consultant.</p>			
Head tester:	Phone:	Cell:	FAX:

**6) Protocol for switching consultant materials testers**

<p>It is desirable for the consultant materials tester to be the same throughout the entire project. However, it is understood that situations arise that create the need for the consultant to switch the tester. <b>This should be minimized.</b> When a switch does occur, the following protocol is required for a smooth transition.</p> <p>If known in advance - A reduced check testing program (at least 3 samples) needs to be performed. The replacement tester needs to spend at least one day on the project with the original tester.</p> <p>If not known in advance - A reduced check testing program (at least 3 samples) needs to be performed within one week. Additionally, the replacement tester's supervisor needs to be present for at least one full day or night of testing with the replacement tester and until the replacement tester is familiar with the project.</p> <p><b>Short term (only 1 or 2 days)</b> - The replacement tester's supervisor needs to be present for the days or nights of testing with the replacement tester until the original tester returns.</p> <p>Any additional supervision costs incurred as a result of switching consultant materials testers will not be charged to the project.</p>		
Materials consultant tester's immediate supervisor is:	Supervisor's phone number:	Cell:

**7) Equipment changes**

<p>The same equipment (nuclear moisture/density gauge, air meter, etc.) needs to be used throughout the project. When a tester is switched, the new tester needs to use equipment that was used previously on the project. If the equipment breaks down or is replaced, it has to be calibrated or correlated appropriately before use.</p>
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**8) Check testing program**

The check testing program needs to be completed before production begins.	
Check testing started on:	Check testing completed on:
What was the average of the differences in each of the tests?	
Gradation:	Rice:
Asphalt content:	Density:
Did it correlate?	If not, then what is the next step?

**9) Independent Assurance Tests**

The Form #379 indicates the number of Independent Assurance Tests (IAT) that are required. It is the responsibility of the materials consultant to schedule these tests. It is necessary to schedule the tests a minimum of 24 hours in advance. To schedule the test contact:		
Contact:	Phone:	Cell:
Additionally, the tests should be scheduled (when possible) during a large or typical production operation - not the end of a job or small quantity. If there are problems with the test results, it is better to schedule the IAT sooner rather than later.		

**10) Qualified laboratory**

The consultant laboratory needs to be qualified in order to perform verification testing. The equipment serial numbers to be used on the project will also be documented and given to the head tester. In order to get the laboratory inspected, so that it may become qualified, contact:		
Contact:	Phone:	Cell:
Date laboratory was qualified:	By:	
AASHTO accredited laboratories will be considered qualified.		

**11) Certified personnel**

Do the testers have the appropriate certifications for concrete testing (ACI Lab Tech I, Lab Tech II or Field Tech I), asphalt testing (LabCAT Level A, Level B or Level C), and soils (WAQTC, Embankment and Base)?	
Tester:	Certifications:
Tester:	Certifications:

**12) Resolution of testing issues**

Issues may develop on the project between the contractor, consultant, and/or CDOT as a result of test results or test procedures. It is recommended that the issues be dealt with appropriately. The CDOT Head Tester or Project Engineer should deal with all issues that arise from the testers. The consultant tester should not try to resolve issues with the contractor. If the problem is not resolved, then the two supervisors should meet. Every effort should be made to resolve the issue at the lowest possible level.
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**13) Materials consultant supervisor**

The materials consultant tester project supervisor is:	Supervisor's phone number:	Cell or Mobile:
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**14) Weekly meetings**

The purpose of weekly meetings is to ensure that an adequate job is being performed. If there are any issues, they need to be addressed. This meeting can be a regularly scheduled meeting or can occur sporadically depending on the progress on the project and the consultant's expertise.			
Attendance: CDOT representative, consultant tester, and contractor representative.		Where:	
Day:		Time:	
Who will attend?	Name	Company	Phone
1)			
2)			
3)			
4)			

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<b>COLORADO DEPARTMENT OF TRANSPORTATION</b> <b>CP 16, WEEKLY MEETING AGENDA</b> The purpose of weekly meetings is to ensure that an adequate job is being performed. If there are any issues, they need to be addressed. This shall be used for Consultants and may be used when CDOT is performing the testing.	Region:	Residency:
	Contract ID:	Date:
	Project No.:	
	Proj. location:	

**Attendance:**

Name	Company	Phone
1)		
2)		
3)		
4)		
5)		

**1) Test result distribution**

Is everyone receiving their test results?

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Are there any issues?

**2) Special reports**

Are test results for tests that take over 1 day being distributed timely?

**3) Paperwork and documentation (Is the paperwork and documentation up to date for:)**

Acceptance testing:

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ITATS:

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COCs and CTRs (Obtained for the tires):

**4) Procedural review**

Are there any questions about the procedures being used?

**5) Protocol for failing tests**

Have there been any failing tests?
If so, what actions have been taken?

**6) Head tester commitments**

Has the head tester provided the necessary assistance?
Has the consultant requested assistance in areas not required?

**7) Protocol for switching consultant materials testers**

Has the consultant materials tester been switched?
If so, how was the switch handled?

**8) Equipment changes**

Has the same equipment been used throughout the project?
If equipment was changed, was it properly correlated or calibrated?

**9) Check testing**

Is the check testing program complete?
Is the check testing program up to date?

**10) Independent Assurance Tests**

Have the Independent Assurance tests been scheduled?
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**11) Miscellaneous**

Are other pre-testing meeting checklist items complete?
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<b>COLORADO DEPARTMENT OF TRANSPORTATION</b> <b>CP 16, EVALUATION OF</b> <b>MATERIALS TESTING</b> The contractor, consultant and head tester should be interviewed prior to completing this form. There should be a final meeting with the consultant to review strengths and weaknesses.	Region:	Residency:
	Contract ID:	Date:
	Project No.:	
	Proj. Location:	

Name of Consultant Company:	Name of Consultant Tester:	Quality of Work/Total Rating: <b>0.0</b>
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**PROJECT TESTER (A)**

<b>Evaluation Factors:</b>	<b>Ratings:</b> (5) very good, (4) good, (3) average, (2) below average, (1) poor
1. Knowledge of test procedures	▼
2. Following test procedures	▼
3. Knowledge of project specifications	▼
4. Following project specifications	▼
5. Test result distribution	▼
6. Following protocol for failing tests	▼
7. Following instructions / directions of CDOT management staff	▼
8. Paperwork / documentation (during construction)	▼
9. Final paperwork / documentation (after construction)	▼
10. Time management	▼
11. Scheduling I.A. testing	▼
12. Attendance at weekly / required meetings	▼
13. Housekeeping / field lab organization	▼
14. Test equipment maintenance	▼
15. Proficient in SiteManager LIMS software program (CDOT FMM SMM/LIMS Section 9.0 )	▼
Subtotal: <b>0.0</b>	Average A: <b>0.0</b>

**CONSULTANT MANAGEMENT SUPPORT (B)**

<b>Evaluation Factors:</b>	<b>Ratings:</b> (5) above standard, (3) standard, (1) below standard
Note: Description of the factors can be found in CP 16, Subsection 3.3.3.	
1. Quality	▼
2. Timeliness	▼
3. Price / Budget	▼
4. Business Relations / Customer Service	▼
5. Deliverables / Requirements	▼
Subtotal: <b>0.0</b>	Average B: <b>0.0</b>

**CUMULATIVE RATING**

Weighted average total score (sections A and B):	<b>0.0</b>
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Comments on referenced evaluation factors:	
Rater: (Project Engineer)	Date:
Reviewer: (Region Materials Engineer)	Date:

Copy distribution: Project Engineer (Original), Consultant, Region Materials Engineer, Central Laboratory (Documentation Unit)

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CDOT Form #1324 12/19

CDOT Form # 1324

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