

CHAPTER 4

Test Summary

The purpose of the test summary is twofold. It records the quality documentation for all field tested and non-field tested materials in a manner that readily shows whether the documentation for a given item is complete. And it is a tool for organizing the quality supporting documentation so that is easy to find and to review. When building the test summary from scratch it's good to keep these purposes in mind.

How to Construct the Test Summary

Start with the bid schedule in the contract and a Test Summary "A" sheet. Fill in the contract number in the upper right hand corner. On the "A" sheet there is space for 6 items. List the bid item numbers, the bid item description, and the documentation required in the three spaces provided (see the example following this guideline). Use the NFTMAG (Non-Field Materials Acceptance Guide) for the standard documentation requirements for non-field tested items. Remember to check the project special provisions for changes or additions to the standard requirements. Next fill in the unit and original (estimated) quantity for each item. Continue item by item, using new "A" sheet as necessary, until you get to a field tested item.

Now you need to fill out a "B" or "B-QA" sheet. Nearly all ODOT projects are QA (quality assurance), so use the "B-QA" sheet for field-tested items. The "B-QA" sheets allow for only one bid item per page. Fill out the item number and description, as before, and the other heading information. In the section called "Test Method and Frequency" fill in the tests (by name or number) and their frequency. This information is found in the MFTP, Section 4D. Again, modifications to the tests and frequencies may be found in the contract special provisions. Continue with new "B" sheets for subsequent field-tested items until the next non-field tested item in the bid schedule. (Oils for HMAC, EAC, tack, etc, should be put on "B" sheets).

Now begin a **new** "A" sheet (even if only one item is on the last "A" sheet). The reason is to keep the bid items in the test summary in numerical order. The alternative is a test summary that jumps around; making for a confusing format that is difficult to follow.

Now you will find that some field tested items, particularly HMAC (but also Concrete items), have so much testing associated with them that it is desirable to break down the reports so that groups of tests are on different pages. Note the "work phase" box on the far right. All the aggregate production tests for an HMAC item may be put on one page, while all the mix production tests may be put on a second page, etc. In fact, when the quantity of HMAC is large, having a single "B" sheet for each separated size of aggregate is a helpful way to organize the tests. Similarly for mix production, you may choose to have individual pages for each Lot or type of test (MDV or Compaction tests, for example).

Some bid items have both field tested and non-field tested components. Use an "A" sheet and a "B" sheet for these. For example with culvert pipe we need an "A" sheet for the pipe, and a "B" sheet to record the testing of the pipe backfill. Hint: if there are multiple pipe items and the pipe quantities are small, don't make a "B" sheet for each pipe, make a single "B"

sheet to record all the backfill testing for all the pipe items, and note which item each test is for in the “explanation” column.

All Contract Change Orders need to be listed in the Test Summary, too. Follow the same guidelines as for other bid items. Copies of all change orders need to be included to help the reviewer check for quality requirements.

Filling In the Test Summary

The following is a general rule of thumb for the organizational relationship between the test summary and the supporting quality documentation. Each line on the test summary is a document or group of documents, and that the next line down in the test summary will correspond to the next document, or group of documents, in the supporting documentation. So, as you turn the pages of the supporting documents you can follow line by line down the page (within a bid item) the documents marked in the test summary. This is the key to a test summary that is easy to follow and to review.

In contrast, you can make the reviewers job more difficult by using the test summary and supporting documentation compilation as a filing place for all the certifications and other documentation related to a bid item but which isn't required for final documentation.

In practice, the inspector should turn in a FIR (Field Inspection Report) accepting a quantity of material with the other acceptance documents attached, for example a “Q” and an “O” (a Quality Compliance Certification and a Certificate of Material Origin, a.k.a. CMO). Going left to right on the “A” sheet, enter the date from the FIR, the FIR number (you may have to assign the number to the FIR as the inspector may not remember the last one and left it blank), check the “Q” box, check the “O” box, fill in the quantity accepted from the FIR, and if needed, make a note in the explanation column to clarify what the material is, or other pertinent information. All the information is on one line, and all the documents are stapled together. If the inspector at a later date accepts more of the same material on another FIR, then that is another line. If a lab report was also required, but came in later, just add the lab report number to the line previously made, and attach the lab report to those supporting documents. For lab reports that have an FIR on the bottom, it isn't necessary to fill it out if the inspector has already accepted that material on another FIR.

When the same certifications cover material in more than one bid item, it isn't necessary to make copies for each bid item for which it pertains. Just reference those documents by saying “see B.I. (such and such) for quality documents”, and put checks in the appropriate boxes.

A principle common to both “A” and “B” sheets is the need to show that the quantity accepted is at least as great as the quantity paid for. When your RAS reviews your test summary they will note each item that doesn't have complete acceptance documents to cover the quantity already paid for. For non-field tested items the FIR needs to show the quantity accepted in the same units as the bid item. “All” is not acceptable unless the FIR is for material incidental to the bid item (hardware, for example). For field tested items the number of **passing** tests must equal or exceed the number required for the quantity paid to date.

Another principle common to both field tested and non-field tested items is the situation where out-of-spec material is found suitable for incorporation in the project. It's important to note the quantity of non-compliance material incorporated on the test summary "A" and "B" sheets, as this will be used to calculate the quality price adjustment that must be generated.

When filling in "B" sheets we don't always need to list every test separately. When Statspec is used for aggregate production, mix production, or just to summarize the testing, then list "Statspec" on one line, and show the number of each test performed under each test method listed.

On the other hand, for some items each test report is listed. Earthwork and aggregate base compaction testing is usually listed by the test report. Clearly indicate when tests are failing. Subsequent test reports showing that those failing tests have been corrected should be shown in the test summary in a manner easily followed by the reviewer.

In the case of Portland Cement Concrete (PCC) mixture, each concrete pour is listed. The reason is to track the quantity of mix placed so that adherence to the test frequency can readily be tracked. Since the test frequency varies depending on the quantity placed per day it's vital to record the quantity of each pour (see the example). In addition, we track concrete testing by mix design. So, if you have multiple concrete items that use the same mixture, you can list all the concrete pours of that mix under one bid item "B" sheet and just cross reference with a note in the explanation column what B.I.'(s) that particular pour was used for (and note under the other bid item "B" sheets that tests may be found under such and such bid item). Any failing concrete tests should be clearly marked, along with the amount represented by that test. Commercial Grade Concrete (used to be called Minor Structural Concrete), you may have more than one CGC mix being used on the job, but on the same Bid Item, machine placement combined with hand placement. In this case it is much easier to track each PCC mix on its own "B" sheet (see example of CGC "B" sheet).

Always list ODOT lab reports individually and note if they passed or failed. Failing lab reports must be addressed. Options are:

- Rejection of the material.
- Quality price adjustment.
- Change of specification by contract change order.

Verification/Independent Assurance tests should be listed on one line and note if **both** verification and I.A. tests passed or failed. If either one or both failed, clearly show in the test summary that they were resolved. This is important because you can't accept the contractor's quality control tests until validated by passing I.A. and Verification tests. How the failing test was resolved needs to be addressed in the supporting documentation, preferably attached to the failing test in question. Until you have acquired experience resolving failed I.A. & Verification tests; you should run the tests by the PM along with your **proposed** resolution

An example of an I.A./Verification test report is included following this section. Though a formal report isn't required, this is an easily readable summary of the test results showing passing and failing outcomes.

Again, the test summary needs to show that all the required documentation for each item has been collected, is acceptable, and represents the quantity paid for. Keep in mind that the reviewer knows little about the project. Notes and explanations in the test summary are very helpful.

Hopefully the above guidelines will get you started right. Look at test summaries done by others before you. Talk to other QCCSs or your RAS for ideas on how to build a test summary. Constructing quality test summaries comes with understanding their purpose, and experience in working with them.

Examples of the various types of quality documents, as well as examples of test summary sheets follow. (See Exhibits C.)