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SECTION 100.00 – LABORATORY OPERATIONS

The Idaho Transportation Department (ITD), with approval from FHWA, is responsible for verifying that laboratory operations are performed in accordance with federal and state regulations for the testing of materials incorporated into highway construction projects.

In the event there appears to be a conflict between statements contained in the Laboratory Operations Manual and the current Idaho Standard Specifications for Highway Construction, the standard specifications will prevail.

SECTION 110.00 LABORATORY FACILITIES

ITD specifications require every laboratory to be qualified according to the ITD Laboratory Qualification Program (see Section 200.00) to perform testing for an ITD project. The Federal Code requires the ITD Central Laboratory be accredited by AASHTO.

110.01 Testing Performed by an ITD Laboratory for Government Agencies. Laboratory testing, field testing, or inspection service is occasionally performed for another government agency. A government agency is defined as a federal, county, city, school district, or state agency.

Testing fees are sometimes waived; however, ITD will determine on an individual basis whether testing fees will be collected.

110.02 Testing and Inspection Performed by ITD Personnel for the Public. The ITD testing facilities are not public service laboratories. ITD cannot perform any testing or inspection services for the general public or for a commercial firm or contractor unless the material is related to a highway project or research project.

110.03 ITD Laboratory Facilities. The ITD Laboratory Facilities consist of ITD Central laboratory and the District Laboratories.

110.03.01 ITD Central Laboratory. The purpose of the Central Laboratory is to provide testing and technical support to the ITD Division of Highways. This is accomplished through materials research and testing of products and specialized testing of construction materials for highway projects that cannot be performed in the district laboratory facilities. The Central Laboratory also performs dispute resolution testing. Each laboratory unit of the Central Laboratory is AASHTO (American Association of State Highway and Transportation Officials) accredited.

The mailing address for the Central Laboratory is:

Materials Section
Idaho Transportation Department
3293 Jordan Street
Boise ID 83702-2151

See Section 300.00 for further description of each laboratory's function and details of the tests performed.

110.03.02 ITD District Laboratories and Field Test Facilities. Testing laboratories are located in each of ITD's districts, namely:

District 1 – Coeur d'Alene

District 2 – Lewiston

District 3 – Boise

District 4 – Shoshone

District 5 – Pocatello

District 6 – Rigby

These district laboratories may perform:

- Acceptance laboratory tests, such as concrete compressive strength
- Preliminary investigation tests
- Independent Assurance tests

Contractual requirements will specify the test methods to be performed by ITD laboratories.

Each district has portable field test trailers where on-site project acceptance field tests are performed for materials such as, aggregate, asphalt, and concrete.

110.04 Independent Laboratories or Qualified Laboratories. ITD specifications require a qualified and/or independent laboratory when the contractor is responsible for the sampling and testing of project materials. The non-ITD laboratories may be permanent facilities or a trailer or a building temporarily located at a project site.

110.05 Qualification of Test Laboratories. All test facilities must be qualified through the ITD Laboratory Qualification Program to test materials for ITD projects. See Section 200.00.

SECTION 120.00 MATERIALS SAMPLES

All laboratories must have policies and procedures in place to ensure that its personnel and technical staff have the ability to select, identify, handle, condition, store, and retain test samples; to ensure facilitation of timely and accurate recording of data and test reports; and to ensure the timely delivery of test reports in an acceptable format to ITD.

All samples received at ITD Central Laboratory or an ITD District Laboratory for testing must be accompanied by a completed Sample Data form. The ITD-1044 is used for all materials except liquid asphalt as follows:

Performance graded binder, use form ITD-859

Used lube oil samples, use form ITD-945

All other asphalts, use form ITD-1045

It is important to complete the Sample Data form as thoroughly as possible. Many delays can be avoided when complete information is included on the form.

All of the required portion of the form must be completed.

At the time of receiving, the laboratory section supervisor checks the information on the Sample Data form for accuracy and makes necessary corrections or obtains additional information to complete the form by contacting the section submitting the material. In the unit, the sample is given a laboratory number and recorded in the log book.

At the completion of the testing, a test report will be published and distributed as explained herein. If the test report indicates the material is subject to rejection, there must be action taken to remedy the situation. The Standard Specifications, Subsection 105.03, specifies the material may be:

Accepted and allowed to remain with a price adjustment

Removed and replaced by the contractor

Corrected at the expense of the contractor

120.01 Sample Identification. ITD samples are identified by numbers followed by a letter to indicate the scope and use of the test results. The identification numbers signify specific materials and the letter signifies the type of test results.

Sample Identification Numbers

Soils	1 – 099
Quarry, Pit Run, and Crushed Gravel	101 – 199
Concrete Aggregates	201 – 299
Cement	301 – 399
Steel	401 – 499
Culvert Pipe	501 – 599
Road Mix and Plant Mix (from hot plant, roadway, etc.)	601 – 699
Joint Filler	701 – 799
Filler	801 – 899
Miscellaneous	901 – 950
Fly Ash	0951 – 99^
Concrete Cylinders (see below)	10001–19099
*Asphalt, Performance Graded Binders and Emulsions	2001 – 2999

*Use ITD-1045 for emulsified asphalts and ITD-859 for Performance Graded Binder.

Concrete cylinders, other than 28-day breaks, are to be marked CX, Information Only, unless otherwise specified.

Class (in MPa)	Class (in 100 psi)	ID Number
20.5 or lower	30 or lower	10001-10099
24.0	35	11001-11099
27.5	40	12001-12099
27.5A	40A	13001-13099
27.5B	40B	14001-14099
27.5C	40C	15001-15099
31.0	45	16001-16999
34.5	50	17001-17050
38.0	55	17051-17099
41.5	60	18001-18050
SEAL	SEAL	18051-18099
SP*	SP*	19001-19050
SP*	SP*	19051-19099

*Use this class for concrete over 40 MPa (6,000 psi) or any class other than those listed.

Concrete cylinders will be marked as follows:

28-day tests	A, B & C
7-day tests	D & E
Any additional tests	F, G, H, I, etc.

Do not use numbers past 20000.

120.01.01 Control Samples (C)

Control samples are indicated by the letter "C." Test results for control samples are either acceptable or subject to rejection. The test results will be published on white-, buff-, or pink-colored paper. White indicates "in specification" material, whereas buff signifies near-border (NB), and pink signifies the material is outside the allowable tolerances and is "Subject to Rejection."

120.01.02 Information Only Samples (CX)

Samples indicated by the letters "CX" are tested for information only. The material may be project related or product related. The test results will always be published on white paper, whether the test results indicate the material meets or fails specifications. The near-border arrow (NB→) will indicate out-of-specification test results and the test report will be stamped "Information Only."

120.01.03 Check Samples (CK)

If the control samples' test results indicate out-of-specification material, it is possible, with the unit supervisor's concurrence, to have another sample tested for verification or retest. The check sample must be from the same lot or batch as the original sample. The check samples are treated the same as control samples for publication.

120.01.04 Preliminary Engineering Samples (PE)

Some samples are taken for investigative reasons during project development. These samples are known as "PE" samples, for preliminary engineering. The test results are for information only and are always printed on white paper.

120.01.05 Qualification Samples (QUAL)

These samples are submitted for qualification testing to be placed on an ITD-approved products list.

120.02 Samples Received That Are Improperly Taken.

1. Receiving laboratory will log sample as usual and note “Improperly Sampled”
2. Receiving laboratory will send notification email to Sampler and Resident Engineer
    a. cc: QA Engineer, IAC for HQ samples
        i. IAC will forward to District IA Inspector
    b. cc: District IA Inspector for District samples
    c. The email will include:

“The sample of _____ was received and noted as improperly taken because _____ _____. This sample will not be tested. Another sample must be taken as soon as possible, using the correct sampling method, and immediately sent to the lab to replace this sample. Failure to meet the minimum sampling frequency and failure to follow the correct sampling method are

deficiencies that can result in actions against the individual sampler and may affect the project funding."

3. The laboratory will complete a test report for the improper sample without any test results shown, but remarks will show the sample was not tested because it was improperly sampled.
4. Post (HQ pdf file) or distribute the test report as usual.
5. The IAC, or District IA Inspector, will complete a buff IA evaluation form, obtain resolution and distribute according to the usual procedures, including a copy submitted to the ITD Sampler / Tester Qualification Committee (STQC) for action.

SECTION 130.00 – LABORATORY TEST REPORTS

Test results must be published in a format that will provide all the necessary information to satisfy project contractual requirements. When a sample is tested for a specific ITD project, the project identification, sample identification, and quantity of material represented must appear with the test results on each test report. It is important that every sample tested have the test results published and made available to ITD for acceptance of the material.

130.01 Checking Mathematical Computation on Laboratory Reports.

All original computations are initialed by the person who performed them.

The Supervisor (ITD or independent laboratory) will be responsible for thoroughly checking the calculations before submitting the laboratory reports. Reports will be initialed by the "checker." If errors are found prior to publishing the test report, the test report will be returned to the originator for correcting and then rechecked. If the error is found after the test report has been published and distributed, then the procedure for correcting test reports must be followed.

The Quality Assurance Engineer or the District Materials Engineer will periodically review the calculations for ITD laboratory test reports.

130.02 Correcting Test Reports.

When correcting laboratory test reports, do not make any changes on the original test report. First, make a legible copy of the original and then make the changes on the copy. A new “Date Mailed” will be used on the corrected report. The new date will be placed below or to the right of the old date. Also indicate what was corrected by placing an arrow pointing to the correction. When a laboratory number is changed, note in the remarks on the test report the number that was changed.

> These same directions apply to making corrections to previously published test reports. Do not make any changes on the original laboratory report. The corrections must be made on a copy of the original report and the corrected copy is published as a separate test report.

130.03 Recommendations for Price Adjustments. The Materials Engineer will provide a letter of recommendation for price adjustment that will accompany any laboratory test results that are out of specification and subject to rejection. The only exception is for items where a price adjustment is not appropriate and the material must be rejected.

The Materials Engineer or the Quality Assurance Engineer is available for any additional recommendations or information pertaining to out of specification material.

The Materials Engineer must receive written notification from the district when the recommended price adjustment is not applied. The notification must include justification for not applying the price adjustment.

130.04 Distribution of Laboratory Test Reports.

In all cases, the original laboratory test report will be retained at the laboratory that performed the testing.

The ITD Central Laboratory and each District Laboratory will maintain the test reports in a numerical file for each year and also in the project files.

Independent laboratories or contractor's laboratories must provide copies of all test results when performing testing of materials that will be used or may be used for ITD projects. These laboratories may

not provide only selected test results and will be required to verify quality control procedures that guarantee accurate testing.

- ITD District Laboratory Test Reports

District Laboratory reports will be distributed in the district only, unless Central Materials specifically requests a copy. The exception to this policy is the Independent Assurance Reports; the distribution as shown on the forms will be followed.

- ITD Central Laboratory Test Reports

Timely distribution of the Central Laboratory reports to the districts is critical. Each Central laboratory will notify the district person shown on the ITD-1044 Sample Data form of the results of the tests by email. The test report will be posted in the district folder on the ITD intranet for the district to view and print.

SECTION 140.00 – TESTING REQUIREMENTS FOR AGGREGATE MATERIAL SOURCES

The aggregate material in a source is evaluated for quality according to Standard Specifications, Subsection 703. The specifications for contractor-furnished sources provide that all costs will be borne by the contractor. Independent laboratories performing the testing will perform the same tests as would be conducted for ITD's own evaluation. The District Materials Engineer will determine if any specified testing may be unnecessary for specific aggregate items.

Refer to the Materials Manual, Section 270.13 – Aggregate Material Sources, and the Contract Administration Manual, Section 106.09 – Material Sources, for additional information about material sources.

SECTION 150.00 – TEST METHODS AND TEST MANUALS

The ITD Standard Specifications designate the test methods, such as AASHTO, ASTM, WAQTC, IDAHO, etc. These test methods, some of which are copyrighted, are published by the respective agencies. Testing laboratories are required to have the current versions of the test methods when performing sampling and testing.

The ITD HQ Materials Section maintains an AASHTO test method website for Department personnel. See the following link: http://intranet/apps/ihs/ihs.aspx.

ASTM reference standards are available on the ITD network.

ITD HQ Materials Section is responsible for publishing and distributing the current versions of test methods unique to ITD, which are designated in the Standard Specifications as Idaho Test Methods. The publication or revision date month/year is indicated in the bottom margin of the test method.

150.01 ITD Manuals. The ITD Materials Section maintains the following manuals that can be found on the internet at http://www.itd.idaho.gov/manuals/ManualsOnline.htm:

Materials Manual: Contains directions for preparing and submitting project Materials Phase reports.

Laboratory Operations Manual: Contains the ITD Laboratory Qualification Program, Central Materials Laboratory operations and all current Idaho Test Methods – see Section 500.00.

Quality Assurance Manual: Contains the ITD Quality Assurance Program, the ITD Independent Assurance Program and only Idaho Test Methods used to test materials at the project site. See Section 500.00

SECTION 160.00 AMRL & CCRL PROFICIENCY SAMPLES

The ITD Central Laboratory participates in the American Materials Reference Laboratories (AMRL) and Cement & Concrete Reference Laboratories (CCRL) proficiency sample program. Each of the ITD District Laboratories also participates in the AMRL program as part of the laboratory qualification requirements.

The schedule of proficiency samples is based on the testing performed by the individual District Laboratory and the schedule is available on the ITD intranet/Materials page.

The District Materials Engineer will monitor the proficiency sample reports for the ITD District Laboratory to ensure reliability of laboratory testing and will maintain the report records. A copy of the district test reports and any corrective action resolutions will be sent to the ITD Quality Assurance Engineer.

FHWA receives notification from ARML and CCRL of deficiencies of the ITD Central Laboratory. The ITD Quality Assurance Engineer will forward a copy of the corrective action to FHWA to show resolution was attained.