



CITY OF PHOENIX

STREET TRANSPORTATION DEPARTMENT
DESIGN & CONSTRUCTION MANAGEMENT DIVISION
MATERIALS LAB

EXHIBIT B - EQUIPMENT REQUIREMENTS

**TABLE 1
TESTING EQUIPMENT REQUIREMENTS**

At all times, technician must have the following:
Calibrated sand cone equipment (sand and cone, jar, plate, calibrated sand)
Calibrated Speedy moisture gauge equipment (Speedy scale and reagent)
Calibrated scale(s)
Equipment to dig sand cone hole (spoon, screw driver, brush, hammer)
Screens (with acceptable opening tolerances): #10, #4, ¾", 3" for rock corrections
Calibrated concrete equipment (slump cone, slump plate, 5/8" diameter rod, 3/8" diameter rod, measuring device, small and large scoop)
Calibrated one-point Proctor equipment: 4" diameter mold, 5-lb Proctor hammer, metal straight edge, family of curves (For Aviation projects only include: 6" diameter mold, 10-lb Proctor hammer)
Calibrated nuclear density gauge (calibrated against sand cone and asphalt cores as required)
Shovels (square and spade)
Calibrated thermometers (asphalt and concrete)
Wheelbarrow
Sample containers (metal buckets for asphalt, plastic buckets/sample bags for soils, cylinder molds)
Sample plate for asphalt
Technician Expectations Packet
Laptop or Tablet Computer (with Internet Connection)
Current City of Phoenix card
Personal Protective Equipment: hard hat (ANSI/ISEA Z89.1), steel-toed boots (OSHA 1910.136), safety vest (ANSI/ISEA Z107-2004, Class 2 or 3), safety glasses (ANSI/ISEA Z87.1), gloves



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EXHIBIT B - FIELD TESTING & REPORTING REQUIREMENTS

**TABLE 2
TESTING REQUIREMENTS**

Test per City of Phoenix procedures/ frequencies and all applicable ASTM, AASHTO, MAG, FAA, ADOT test methods.

It is each technician's responsibility to ensure all equipment is calibrated and running properly.

A nuclear density gauge correlated with a sand cone test at least one per day.

A new 1-Point proctor per material type is **required** until a full proctor is completed. Speedy moisture tests required for monitoring moisture content.

Establish a new rock correction values each day per material type.

A correlated nuclear gauge shall be used for acceptance testing. Any nuclear density tests disputed by the contractor or City inspector shall be verified by a sand cone test.

When a nuclear density gauge is operated within 24 inches of a vertical projection such as a trench wall, a trench correction is necessary.

When sampling Soils/ABC, Asphalt, etc. provide enough sample for appropriate lab testing. (Verify source product code is approved by City of Phoenix Materials Lab).

When sampling concrete, a minimum of 6 cylinders are required. If early breaks are requested, cast the appropriate amount in addition to the standard 6 cylinders. (Verify source product code is approved by City of Phoenix Materials Lab & verify slump spec from approved supplier list).

Inform the contractor, in the event of a concrete failure, that concrete will be placed at their own risk.

The technician's responsibility is to test the material being placed. Technicians will never provide recommendations for construction methods. If Inspection team is not available, contact the City of Phoenix Materials Lab for further construction recommendations.

It is the technician's responsibility to inform the inspector, the contractor, or the City of Phoenix Materials Lab immediately of any non-compliance item(s) during testing and all testing results each day.

REPORTING REQUIREMENTS

The daily inspection report is to include the number of hours on site and the type of tests performed and shall be reviewed by private lab staff and turned into the City of Phoenix Materials Lab within 48 hours. Paperwork shall be filled out completely & correctly, (including sample cards). Revised paperwork shall be returned to the private lab and revisions shall be resubmitted within 48 hours

Daily inspection report is to include what was observed, means and methods used by the contractor to perform the work. (Example: what type of equipment, how many passes, moisture processing, concrete consolidation and placement methods,

Handwritten and/or incomplete paperwork submissions will not be accepted and shall be returned.

At all times keep City of Phoenix Materials Lab staff informed and involved as to what is happening on your projects either by phone, face to face communications, or on your daily reports.

Any changes made to specifications by the City of Phoenix inspection team shall be noted on your daily report. Provide the name of City Inspector and the directive that was given.

The same technician shall be maintained on a project. The City of Phoenix Materials Lab shall be notified of any substitutions prior to reassignments.

City of Phoenix Materials Lab contact information:
Asphalt Lab: (602) 495-2074 Soils Lab: (602) 495-5318 Concrete Lab: (602) 534-7076
Rob Duvall, Materials Supervisor (Field): Cell: (602) 448-9191 robert.duvall@phoenix.gov
Andrea Lynch, Materials Supervisor (Lab): Desk: (602) 495-2070 Cell: (602) 819-3201 andrea.lynch@phoenix.gov



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EXHIBIT B - FIELD TESTING & REPORTING REQUIREMENTS

**TABLE 3A
MINIMUM TEST SCHEDULE & FINAL REPORT**

Minimum Testing Schedule:

A Minimum Testing Schedule is to be created and submitted electronically to the City of Phoenix Materials Lab within **5 business days** of project assignment. Testing frequencies are to be calculated using an approved set of plans in conjunction with the bid tab items to create an accurate representation of the minimum testing needed for the project. Any notes, comments, special circumstances and/or assumptions made for quantity calculations should be listed at the bottom of the page.

Final Report Should Include the Following:

All laboratories must submit a Final Report after the completion of each project. Laboratories will be notified by the City of Phoenix Materials Lab, via email, that the project is complete and all lab results for soils, concrete & asphalt will be attached. A USB drive containing the final report must be delivered to the City of Phoenix Materials Lab within **10 business days** from the date of the email notification (**20 business days** for large projects).

Final reports are to include all field and lab tests/results, daily reports and samples taken for the entire project. **All final reports must be stamped and signed by a registered professional engineer** and shall verify that all materials, sampled and tested, were found to be in compliance with the latest City of Phoenix Standards and Specifications. Construction materials that fail to meet specification requirements, but were incorporated in the project, must be summarized in the final report with a detailed explanation listing penalties, corrective actions, or justification for acceptance.

**TABLE 3B
PLANNING & DEVELOPMENT DEPARTMENT (PDD) PROJECTS ONLY
MINIMUM TEST SCHEDULE & FINAL REPORT**

Minimum Testing Schedule:

A Minimum Testing Schedule shall be created and submitted to the City of Phoenix PDD Inspector, during the pre-construction meeting. Testing frequencies are to be calculated using an approved set of plans, in conjunction with the bid tab items, to create an accurate representation of the minimum testing needed for the project. Any notes, comments, special circumstances and/or assumptions made for quantity calculations, should be listed at the bottom of the page.

Final Report Should Include the Following:

All laboratories must submit a Final Report at the completion of each project. A spiral bound copy of the Final Report must be delivered to the City of Phoenix PDD Inspector along with final record drawings of the project.

Final Reports shall include all field and lab tests/results (including any acceptance/deficiency test results from the City of Phoenix Materials Lab), daily reports and samples taken for the entire project. **All Final Reports must be stamped and signed by a registered professional engineer** and shall verify that all materials, sampled and tested, were found to be in compliance with the latest City of Phoenix Standards and Specifications. Construction materials that fail to meet specification requirements, but were incorporated in the project, must be summarized in the final report with a detailed explanation listing penalties, corrective actions, or justification for acceptance.



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MATERIALS LAB

Date: _____

Technician Name: _____

Private Lab Name: _____

EXHIBIT B - EQUIPMENT, FIELD TESTING & REPORTING REQUIREMENTS

TABLE 4

TESTING EQUIPMENT REQUIREMENTS CHECKLIST

At all times, technician must have the following:	Yes	No
Calibrated sand cone equipment (sand and cone, jar, plate, calibrated sand)		
Calibrated Speedy moisture gauge equipment (Speedy scale and reagent)		
Calibrated scale(s)		
Equipment to dig sand cone hole (spoon, screw driver, brush, hammer)		
Screens (with acceptable opening tolerances): #10, #4, ¾", 3" for rock corrections		
Calibrated concrete equipment (slump cone, slump plate, 5/8" diameter rod, 3/8" diameter rod, measuring device, small and large scoop)		
Calibrated one-point Proctor equipment: 4" diameter mold, 5-lb Proctor hammer, metal straight edge, family of curves (For Aviation projects only include: 6" diameter mold, 10-lb Proctor hammer)		
Calibrated nuclear density gauge (calibrated against sand cone and asphalt cores as required)		
Shovels (square and spade)		
Calibrated thermometers (asphalt and concrete)		
Wheelbarrow		
Sample containers (metal buckets for asphalt, plastic buckets/sample bags for soils, cylinder molds)		
Sample plate for asphalt		
Technician Expectations Packet		
Current City of Phoenix Card		
Laptop or Tablet Computer (with internet connection)		
Personal Protective Equipment: hard hat (ANSI/ISEA Z89.1), steel-toed boots (OSHA 1910.136), safety vest (ANSI/ISEA Z107-2004, Class 2 or 3), safety glasses (ANSI/ISEA Z87.1), gloves		

Technician Signature: _____

City of Phoenix Representative: _____

Notes: _____

