CALIBRATING EFFECTS

CALIBRATING EFFECTS

Calibration and its effects on testing and the world of acceptance is everything. Well, almost everything. Let me explain. Procedural tests are run and materials are subjected to various testing requirements that will either pass or fail a defined specification of what is considered to be satisfactory for a given material. These test results are utilized in acceptance or rejection of materials and represent a large portion of the project. The decision to accept or fail a test will carry a great deal of weight and risk that represents a large amount of funds for all parties on the project. It could be said that the acceptance of the test really stands for nothing without the confidence in the equipment first. Calibration and Verification of the equipment is the foundation of good test results and ultimately accepting and incorporating materials on a project. Without the confidence in the equipment the test results would be negated and ultimately disputed in any resolution or legal environment.

Not all standards are equal

The rule of thumb is a calibration standard must be NIST traceable. If you do not have NIST traceable standards then you have an uncertainty of error that is not quantifiable and would negate any confidence in the standard. For example, the Calibrator (see photo) is intended to calibrate the air meter. However, being it is not NIST traceable, it should only be used as a verification device in the field to verify it is working properly but not for actual calibration. To use it for calibration would require determining and knowing the volume of the device.

The exception would be when a primary standard is available. This is a standard based on known laws of physics. The mercury manometer is a primary standard because it only depends on the density of mercury, which doesn’t change; where as a digital manometer has manifolds and pressure sensitive equipment that can be subjected to fault and produce erroneous results. In this case, the digital manometer would need to be verified against either a NIST traceable standard digital manometer or a primary standard mercury manometer.

Fortunately, there are governing documents that require and define calibration requirements and intervals for the equipment. However, this in itself does not ensure or guarantee the testing equipment is operating as intended. A few things that could influence or skew the results could be wear and tear, movement, or the environment the testing equipment is in.
Moving Forward
The sheer size of TxDOT's calibration needs requires a four-man team and reliance on the districts to logistically carry out the program and keep the state in compliance; all the while documenting and ensuring the confidence in the final acceptance results, which ultimately represents TxDOT and the agency's reputation for producing high quality roads.

What can our laboratory do to cover the calibration requirements of our district?
- Maintaining an up-to-date list of equipment that includes newly purchased equipment.
- Communicating with CST-CAL on equipment prior to purchasing, already purchased, or moving equipment to another location.
- Communicating with CST-CAL “any” changes that may affect scheduling and testing procedures.
- Communicating the Calibration schedule with the AO, Maintenance Yards, Hot-Mix/Asphalt Plants, or anyone included on equipment list to ensure they are prepared for the visit.
- Asking questions and being involved and aware of your lab’s equipment requirements.
- Being accessible to help locate equipment not easily located.
- Properly maintaining all equipment.
- Working areas encompassing equipment shall have easy access and be kept clean.
- Placing equipment not being used as out of service (OOS) until ready to be used; then verifying by the District Lab using calibrated equipment, and adding back into service.

Changes:
- Seeking ISO 17025 accreditation for the central laboratory.
- Current training and certification in NCSLI for the CST-CAL staff and from authorized vendors.
- State of the art equipment and reference to comply with standards of calibration.
- Purchased calibration software “Gagetrak” used to document and track calibration requirements.
- Training and implementation for statewide use on the new software.
- Procedural revisions to the 900 series and IHCP
- Template restructure and updating to reflect current calibration standards.
- Equipment maintenance log (EML) worksheets are available upon request from CST.
- CST has begun utilizing contract services to supplement some of the districts calibration needs. If your district is selected you will be notified for scheduling.

Helpful Hyperlinks
Quality System Program
900-K, Calibration Series
In-House Calibration Procedures (IHCP)

Support Contact Information:
Jerry Peterson (Branch Manager)
Jerry.Peterson@txdot.gov

Jim Barton (Metrologist)
Jim.Barton@txdot.gov

David Gallegos (Metrologist)
David.Gallegos@txdot.gov

Kevin Kloesel (Metrologist)
Kevin.Kloesel@txdot.gov

Thomas L. Smith (Quality System Support)
Thomas.Smith2@txdot.gov