

SC Metrology Laboratory Relocation Estimate

January 19, 2012

Laboratory Facts

The SC Metrology Laboratory:

- Houses the official state standards for mass and volume.
 - Maintains, through weights and measures regulations, the accuracy of all standards of mass and volume used to install or service commercial scales and fuel pumps in the state.
 - Conducts the grain moisture meter testing program, which protects farmers and grain dealers from revenue loss due to inaccurate moisture meters.
 - Assists the State Transport Police with the calibration and testing of portable scales used in the enforcement of highway weight limit laws.
 - Part of a national system for measurement accuracy providing NIST traceable calibrations to public and private sector customers (State Laboratory Program).
 - Supports commerce within the state by providing NIST traceable calibrations to the states' high-tech industries such as automotive, medical, nuclear, aircraft and food product manufactures.
- **Laboratory is 25 years old (built 1987)**
 - **Original cost \$375,000 (estimate)**
 - **Laboratory is a steel sided two level building**
 - **3500 sf (50 x 70) first level (plus second level working and storage space)**
 - **2500 sf Air Conditioned space**
 - **6 bay truck garage with 500 sf storage area**

Current Laboratory Issues

The current Metrology Laboratory was built in 1987 using the laboratory design standards of that time period. Over the 25 year history of the laboratory, the workload, accuracy requirements and customer base has steadily grown. Improvements in technology, tighter manufacturing tolerances and international standards have placed greater demands on the laboratory calibration capabilities. The current laboratory marginally meets current requirements for laboratory design and environment stability.

Current Requirements

A new laboratory will be required, by the National Institute of Technology (NIST), to be built using modern design specifications for metrology laboratories. This well documented standard specifies design requirements, environment stability requirements and vibration limits. As these requirements drive the cost of a new laboratory, the new lab is the most cost effective way for us to meet the new laboratory standards.

Additional laboratory improvements possible with a new lab:

- Overhead crane system for handling large weights (addresses current safety issues, allowing for the safe handling of large weights and weight carts. Allows for weight cart calibrations in an inside controlled environment).
- Reverse osmoses water system with water storage located in an environmentally controlled laboratory (greatly improves volume calibration accuracy).
- Environmentally controlled laboratory for large volume calibrations (this is a current requirement. Also allows for the calibration of the new style dynamic provers).
- Precision mass lab located in interior part of building (no laboratory walls on outside of building, greatly improving temperature stability).
- Modern environmental control system for maintaining laboratory temperature and humidity.

Estimated Building Replacement Cost \$1.75 million

Based on a 4200 sf laboratory @\$350/sf

Estimated Equipment Cost \$350,000

Water filter and storage system, New balance and apparatus for weight carts calibrations, Updated small mass balances, Grain moisture equipment, Computer system.

Notes:

The State of Oklahoma opened a new metrology laboratory in 2010. This lab was as part of a multi-laboratory building. The cost for metrology was estimate to be \$350/sf.

I am waiting for the cost of new labs from the State of New York and State of Georgia. Both of these labs were built as part of a multi-laboratory building. There are no new standalone metrology laboratories.

The State of Tennessee is seeking to build a new standalone metrology laboratory.

South Carolina Department of Agriculture Metrology Laboratory

What is the Metrology Laboratory?

- The SC Metrology Laboratory is part of the State Laboratory Program, a program setup by The National Institute of Standards and Technology (NIST).
- In the early 1970's, NIST gave each State equipment, standards, training and support to establish a state calibration laboratory for mass and volume calibrations to ensure accurate measurements for the citizens and industry in each state.
- The SC Metrology Laboratory is the only in-state source for NIST traceable calibrations of mass and volume.
- The SC Metrology Laboratory is recognized by NIST as an Echelon I lab which is the highest precision level lab.

What is impacted by our calibrations?

The laboratory ensures that weight standards and volume standards used in the state are traceable to US National Standards, are suitable for use and are accurate. This affects all consumers in the state.

For Weight Calibrations

Grocery Store Sales (checkout scales, deli scales, meat department scales, produce scales)
Doctors Office and Hospital scales
Package Shipping Scales
Truck Scales
Livestock Market Scales
Manufacturing Scales

For Volume Calibrations

Gasoline Sales at each pump
Diesel Fuel Sales
LP Gas
Home Heating Oil
Aviation Fuel

Who uses the metrology laboratory services?

The laboratory serves 439 public and private sector customers who routinely submit equipment for calibration. For the manufacturing industry, this is an important part of their quality control process and is a valuable asset supporting commerce in this state.

Public Sector Calibrations Performed at No Charge

- Equipment used by our department is calibrated regularly to ensure that our inspectors can accurately test scales and gas pumps for the citizens of SC.
- Free calibration services are provided to state agencies. Users include:
 - DHEC
 - Dept of Transportation
 - Dept of Public Safety
 - Dept of Natural Resources
 - Dept of Corrections
 - SLED
 - Santee Cooper Electric
- Free calibration are provided for many city and county governments throughout SC
 - City Water Plants
 - City Waste Water Treatment Plants
 - City Police Department
 - County Sheriffs Departments

These free calibration services save taxpayer dollars while ensuring measurement accuracy.

Fee Based Calibrations Performed

- Equipment used by scale and pump service companies are required to be calibrated every two years to ensure that scales and gas pumps in the state are installed and maintained accurately.
- The laboratory supports the states largest to smallest manufactures and business owners
 - Automotive Industry
 - BMW
 - Michelin
 - Bridgestone
 - BorgWarner
 - Robert Bosch
 - Aviation Industry
 - Boeing Commercial Airplanes
 - Honeywell Aerospace
 - Medical Industry
 - GlaxoSmithKline
 - Becton Dickinson
 - Albemarle Corp
 - Roche Carolina
 - American Red Cross
 - Bausch & Lomb

- Nuclear Industry
 - Westinghouse Nuclear Fuels
 - SCE&G Nuclear Power Plants
 - Savannah River Site
- Food Industry
 - Carolina Pride
 - Amick Farms
 - Kraft Foods
 - Bi-Lo Foods
 - Piggly Wiggly
 - Publix Supermarkets
- Federal Government
 - FBI Crime Labs, Quantico, VA
 - US Bullion Depository, Fort Knox, KY
 - US Department of Agriculture
 - Parris Island Marine Base

These fee based calibrations help offset the cost of the metrology program.

What is planned for the future?

The metrology lab is currently seeking NVLAP accreditation (National Volunteer Laboratory Accreditation Program). This accreditation will increase our creditability and expand our fee based customer base.