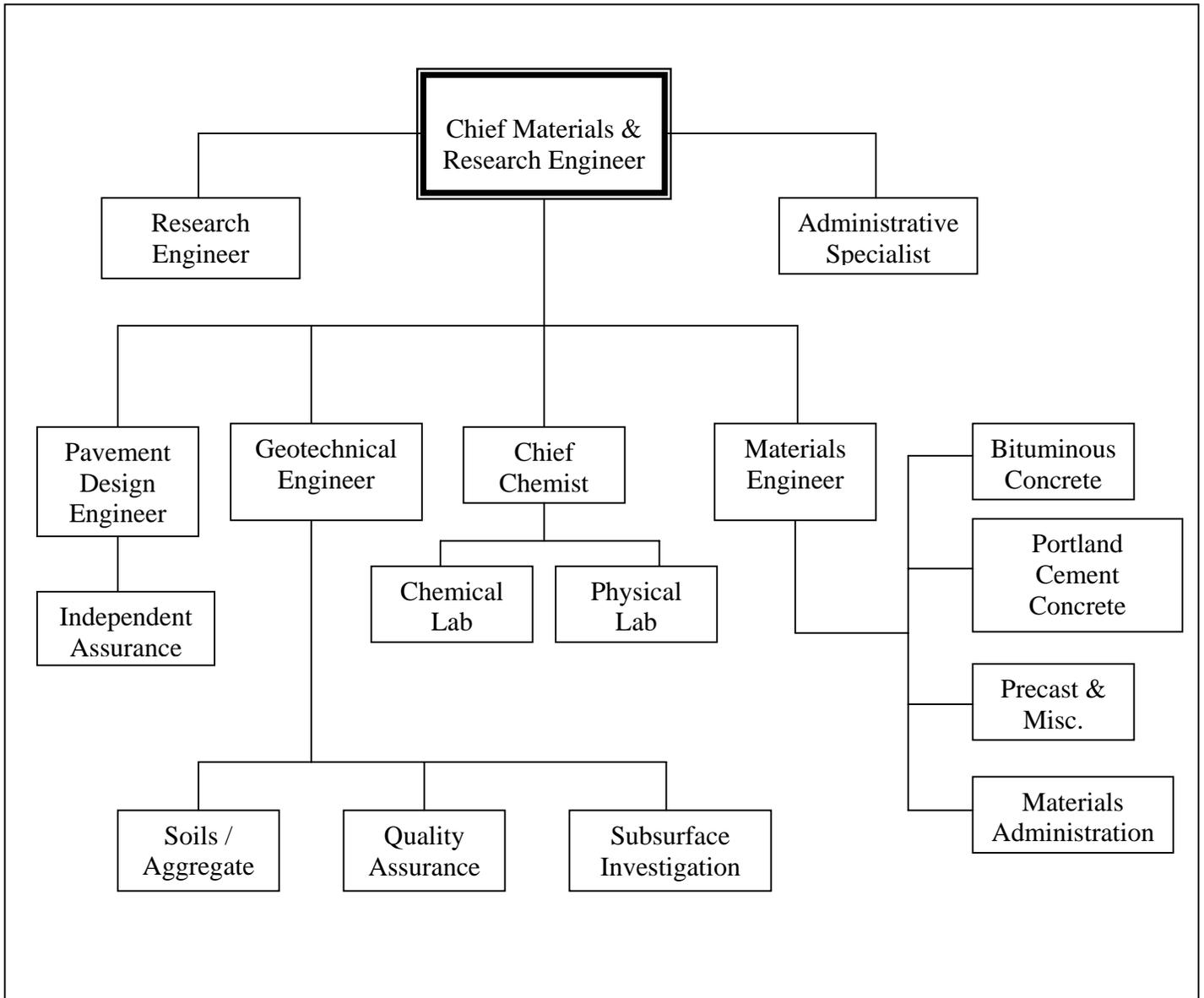


## PART A - ORGANIZATION AND ADMINISTRATION

**A1.00 Organization.** The Materials & Research Laboratory is part of the Division of Transportation Solutions (DOTS), a section of DelDOT. Materials & Research operations are divided into five units. Individual units have primary responsibilities unique to each group; however, all units work together to accomplish testing goals. All units within the Materials & Research Laboratory operate under supervision of the Chief Materials & Research Engineer. Figure A-1 shows the basic organization of laboratory personnel.



**Figure A-1: Materials & Research Organizational Chart**

A brief description of the various units and their responsibilities is in the following section.

- (a) *Administrative Staff*  
Administrative Staff report to the Administrative Specialist. This unit is responsible for project report distribution, maintenance of contract files, formatting and distribution of source letters, payroll, accounts payable, and other financial and human resource responsibilities within the Materials & Research Section.
  
- (b) *Pavement Design and Materials Assurance*  
This unit is responsible for Independent Assurance testing, rideability testing, and pavement design. Independent Assurance and rideability testing staff report to the Pavement Design Engineer.
  - (1) *Independent Assurance (IA) Testing.* This unit is responsible for the evaluation of the Materials & Research Section's Quality Assurance Testing Unit. Specifically, the IA unit evaluates the Quality Assurance testing personnel, their sampling and testing procedures, and equipment. IA personnel are not responsible for verification of materials or their conformance to the Specifications. IA testing is used to verify results obtained by the Quality Assurance Testing Unit.
  
  - (2) *Rideability Testing.* This unit is responsible for the evaluation of new and rehabilitated pavement surfaces to ensure Specification conformance. The Rideability unit verifies contractor testing and performs evaluations to determine adequate ride performance of projects. In addition to the evaluation of current projects, this unit also performs testing for research purposes and pre-construction analysis of rideability.
  
- (c) *Soils Engineering and Quality Assurance*  
This unit reports directly to the Geotechnical Engineer. Responsibilities of the Soils Engineering and Quality Assurance unit includes soil and aggregate testing, quality assurance, and subsurface investigations.
  - (1) *Soils and Aggregate Unit.* This unit performs analyses of soil and aggregate samples obtained in the field. The analyses consist of conducting various tests and classifying the materials for design purposes.
  
  - (2) *Quality Assurance.* This unit, also referred to as "Field Control", tests all materials on any given project. Some common examples of quality assurance testing include: soil testing to assure proper compaction of the material and Portland cement concrete testing to assure proper characteristics of the plastic concrete before it is placed.

- (d) *Chemical and Physical Material Properties*  
Personnel in the Chemical and Physical Material Properties unit report directly to the Chief Chemist. This unit consists of chemical and physical lab personnel.
- (1) *Chemical Laboratory Unit.* This unit performs chemical tests on various materials used on DelDOT projects. Examples include the chemical analysis of asphalt, cement, water, or the determination of chloride content of bridge decks. This section is also responsible for testing traffic paint products.
  - (2) *Physical Laboratory Unit.* This unit performs analysis of liquid asphalt samples from various hot-mix asphalt production facilities throughout the State to ensure material Specification conformance. In addition to testing of asphalt binder, cutbacks / emulsions and Portland cement are tested for properties to ensure Specification conformance.
- (e) *Materials Engineering*  
Personnel in the Materials Engineering Unit report directly to the Materials Engineer. This unit is responsible for bituminous concrete, Portland cement concrete, materials administration, and precast and miscellaneous materials.
- (1) *Bituminous Concrete Unit.* The bituminous concrete unit is responsible for testing and analysis of materials used in State projects and daily operations of hot-mix asphalt production facilities throughout the State. This unit inspects plants, verifies all proportions of materials that are used in hot-mix asphalt, and performs plant testing of hot-mix asphalt to verify conformance to the Specifications. This unit is also responsible for analysis of pavement cores for compaction that are obtained for hot mix paving QA / QC.
  - (2) *Portland Cement Concrete Unit.* The Portland cement concrete unit is responsible for coring analysis and daily operations of concrete production facilities in the State.
    - (a) This unit cores new concrete structures (pavements, bridges, ramps) for verification of quantity and thickness and also core existing structures (pavements, bridges, ramps) to determine in-place material thickness.
    - (b) This unit inspects the plants, verifies all proportions of materials that are to be used in the concrete, and performs plant testing of the concrete to verify conformance to the Specifications.
  - (3) *Materials Administration.* This unit is responsible for the source of supply administration, materials consultant administration, and for management of materials related information for the Department. To fulfill needs of source of supply administration, this unit documents and replies to all contractor-submitted sources of material for Department contracts.

As the consultant administrator, this unit administers the contracts of materials consultants retained by the Materials & Research Section. The consultants are employed on an on-call basis for either distant inspection locations, specialty inspection, or to supplement Department forces.

(4) *Precast and Miscellaneous Materials Unit.* This unit is involved in testing miscellaneous materials used on State projects, including: aggregate, concrete pipe, metal pipe, brick, timber, wire mesh, seed, bridge deck materials, and precast concrete items.

(f) *Research Engineer*

The research engineer is responsible for the coordination of all materials related research. In addition to this, the research engineer is also responsible for all new product evaluations.

Additional information regarding the organizational structure of DeIDOT and the Materials & Research Section is available on the DeIDOT website, <http://www.deldot.gov>.

**A2.00 Functions and Responsibilities.** The primary functions of the Materials & Research Section are to inspect, test, document, and make recommendations concerning the suitability of all materials used in the construction and maintenance of highways and bridges in the State. The Materials & Research Section also performs research related to the practical application of new materials or construction methods.

The Section also acts as an advisory and investigative unit for other Sections within the Department. Examples of such work include soil surveys and borings, pavement coring, and pavement design. The Section may also be requested to investigate problems experienced with materials or construction procedures.

Materials and construction methods are subject to frequent changes as advances in technology are made. In order to provide the maximum benefit to the State, the Materials & Research Section keeps informed of such developments and improvements and makes appropriate recommendations for necessary changes.

**A3.00 Laboratory Certification.** The DeIDOT central laboratory performs all testing of materials necessary for DeIDOT. The central laboratory is AASHTO R-18 certified and accredited by the Concrete Cement Reference Laboratory (CCRL) and the AASHTO Materials Reference Laboratory (AMRL). To obtain this accreditation, the central lab subscribes to proficiency samples and must attain a lab score minimum of “3”. In addition to testing proficiency samples, the laboratory must also have a quality program satisfying AASHTO R-18 requirements. The laboratory facilities are inspected annually by AMRL (asphalt, soils, and aggregates) and CCRL (Portland cement concrete and Portland cement). During this inspection equipment, operations, and the quality programs are reviewed. The central laboratory is also required to meet the specifications of 23 CFR Part 637.209. A copy of this specification is available on the internet at <http://www.access.gpo.gov/nara/cfr>.

**A4.00 Contact Information.** For more information or questions regarding the contents of this Manual, contact the Materials & Research Section at (302) 760-2400.