# Chapter 1
# ORGANIZATION

## *Introduction*

This manual has been prepared by the Bureau of Highway Design as a guide to designers and others engaged in highway improvements for the New Hampshire Department of Transportation (NHDOT). This chapter deals with the organization of the NHDOT and the Bureau of Highway Design.

## New Hampshire Department of Transportation

The Department of Public Works and Highways was established by State Statute, Chapter 228 of the *New Hampshire Revised Statutes Annotated* (1); however, its functions, powers, duties, personnel, records, equipment, etc. were transferred to the Department of Transportation created by RSA 21-L in 1985. The joint committee on implementation of reorganization and the Governor determined the effective date the NHDOT became operational to be February 28, 1986.

## Vision Statement

Committed to Excellence, Safety, Innovation and the Future

## Mission Statement

The New Hampshire Department of Transportation's mission is to plan, construct, and maintain the best possible transportation system and State facilities in the most efficient and economical manner utilizing quality management techniques consistent with available resources and mandated controls.

To fulfill this mission, we anticipate and adapt to change through technology and innovation while supporting the following values:

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| DEDICATION | We are committed to doing everything in our power to carry out this mission in a conscientious, efficient, and economical manner. |
| RESPONSIBILITY | We are accountable for our actions. We perform our job duties and respond to the people we serve in a timely manner. |
| INTEGRITY | We adhere to the highest ethical standards. We uphold, both in spirit and in deed, all laws, rules, policies, and commitments. |

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| PROFESSIONALISM | We provide quality services and products in a courteous, appropriate, and informed manner. |
| RESPECT | We respect all customers of the Department which include our employees, other organizations and most importantly, the users of the transportation system. We accomplish this with consideration and compassion. |
| TEAMWORK | We communicate and work with others to achieve a common goal while encouraging diversity in points of view. |
| INNOVATION | We strive to lead in the development of new management practices and technologies. |

## *Organization*

The NHDOT is under the executive direction of the Commissioner who manages the functions of the Department through an Assistant Commissioner who also serves as Chief Engineer.

The organization is composed of five (5) Divisions as follows, each headed by a Director:

- Project Development,
- Operations,
- Administration,
- Public Works and Transportation, and
- Aeronautics

Each Division is comprised of Bureaus, each headed by an Administrator. The Bureau of Highway Design, based in Concord, is one of eight (8) Bureaus under the Division of Project Development.

Working closely with the Division of Project Development is the Division of Operations responsible for, in part, highway maintenance. The State is geographically divided into six (6) Maintenance Districts which manage the field operations necessary to maintain the highway system. (See Appendix 1-1 for the NHDOT Organization Chart and Appendix 1-2 for the Maintenance District layout map.)

### Laws Regulating Functions

The powers of the Commissioner are delegated by statutes and regulated to provide equal service to all citizens of New Hampshire. As an example, the powers of "eminent domain" are necessary to appropriate private property for public use, but they are restricted by law to procedures which ensure fair consideration for land owners of the State. Most laws related to transportation are contained within the Title 20 - Transportation, which includes Chapters 228 through 239 of the *New Hampshire Revised Statutes Annotated* (1).

# *Bureau of Highway Design*

The Bureau of Highway Design is part of a public service organization and, as such, its major objective is to deliver service economically and effectively. The services provided by the Bureau in line with its objective are:

- Field surveys,
- Highway design including preparation of Right-of-Way Plans, Contruction Plans and (Bid) Proposals, and,
- Engineering services to the NHDOT and other State agencies, as requested.

## Regulations

The same laws which created and which govern the activities of the NHDOT apply to each bureau. The Commissioner of the NHDOT delegates legal authority to the Assistant Commissioner (and Chief Engineer) who, in turn, relies upon the Director of Project Development to oversee the activities of eight (8) bureaus including the Bureau of Highway Design, through the Bureau Administrator.

Policy and procedure memoranda, manuals, design directives, and other communications provide the regulations for operation of the Bureau of Highway Design.

## Organization

The Bureau Organization Chart (Appendix 1-3) shows the Bureau of Highway Design functional groups, subdivided into sections and team units.

As in most closely coordinated organizations, there is an informal exchange of information at all levels and Highway Design benefits from this type of informal relationship. There is an internal exchange of duties and personnel from time to time as needed, but the organizational structure remains as shown.

## Functions and Responsibilities

Each functional group (Section) is headed by a registered Professional Engineer. The Section Chiefs are responsible to the Bureau Administrator who oversees all design and support activities within the Bureau. Design teams are usually headed by a supervisory level engineer or technician with other support technicians and/or engineers. Survey teams are usually comprised of four (4) individuals headed by a technician.

There are two stages of plan development, pre-hearing (Preliminary Design) and post-hearing (Final Design). Preliminary Design and/or Final Design of a project may be performed within the bureau, i.e., "in house" or by Consultant. (Projects designed by Consultant go through the Consultant selection process.) If the Preliminary Design is done "in house" or by Consultant, it is administered by the Chief of Preliminary Design. If the Final Design is done "in house" or, in some instances done for smaller projects by Consultant under a Special Statewide Agreement, it is administered by the Chief of Final Design. Most Consultant Final Design projects are administered by the Chief of Consultant Design.

Certain Consultant projects may be described as Part A/Part B. For these projects, the NHDOT negotiates an Agreement with the Consultant to perform the Preliminary Design (Part A) and the Final Design (Part B) separately. For example, the Preliminary Design may be done "in house" and the Final Design is done by the Consultant, or vice versa.

***Chief of Preliminary Design***

The Chief of Preliminary Design heads a functional group which prepares the preliminary engineering layout including line and grade along with preliminary cost estimates and correlates field and office information necessary to process projects through the Public Hearing.

The Preliminary Design Section develops road geometry and serves as advisors on geometric details throughout plan development. Preliminary Design done by Consultant is reviewed by staff from Preliminary Design. They also review geometric designs for access-drive permit applications upon request by the Bureau of Maintenance.

Within Preliminary Design is a group called Plan Preparation (Plan Prep) whose responsibility is to provide plotted survey information based on Survey Data Recorder (SDR) "dumps". The result is a plan and ground model (from which cross sections and profiles can be developed) for all Highway Design projects as well as projects in Bridge Design and Municipal Highways and also survey information required for Maintenance and Turnpike activities. This base information for Highway Design projects is used by the engineers in Preliminary Design (or by a consultant) to develop conceptual alternatives for review by the Director of Project Development and other members of the Commissioner's Office.

After an alternative is approved, a Public Hearing Plan is developed by the Presentation Graphics Section of Preliminary Design for those projects that require the purchase of right-of-way. Coordination with Federal Highway Administration (FHWA) for Federal Aid projects and with other bureaus within the NHDOT begins at the Preliminary Design stage, especially with the Bureau of Right-of-Way, the Bureau of Environment and the Bureau of Bridge Design (for those projects that have bridge involvement). Existing utility location is also defined at the Preliminary Design stage through the Utilities Section of Highway Design.

***Chief of Final Design***

The Chief of Final Design heads a functional group that completes the design of the project following the Public Hearing including the development of right-of-way plans, construction plans, specifications and estimates (PS&E).

Close coordination with all other bureaus involved continues throughout Final Design including, in addition, the Bureau of Materials and Research, the Bureau of Traffic, and the Bureau of Construction. Formal submissions are made to FHWA on Federal Aid projects at different stages to ensure compliance with Federal requirements. This Section also reviews the final design for access-drive permit applications when requested by the Bureau of Maintenance and reviews some final design done by Consultant.

Within Final Design is a group called Roadside Development. Their responsibility is to provide landscaping design for contract work as well as Rest Area plantings and maintenance

pruning, removal and clean up; wildflower establishment; plant stock inspection; and, herbicide and pesticide application.

***Chief of Consultant Design***

The Chief of Consultant Design performs the same function as the Chief of Final Design, however, the work is performed by consultant engineering firms and reviewed by the Consultant Design Section staff. Part of the Consultant Design Section staff is dedicated to reviewing Turnpike projects.

***Chief of Design Services***

The Chief of Design Services is responsible primarily for Survey and Utility coordination; however, also provides support with hydraulics and lighting design along with coordination with work involving railroads.

Survey responsibilities include locating "detail" and contour information by SDR; establishing construction line(s) on the ground during design for Geotechnical work performed by Materials of Research and at times verifying that control points are met or, establishing the construction lines(s) just prior to beginning construction; establishing new right-of-way bound and easement location; and, assisting in construction staking. Survey also coordinates their activities with geodetic work and cadastral surveying.

Utility coordination ensures that existing utility locations are known and that efforts are made to eliminate or minimize their relocation. If unavoidable, provisions are made to relocate the utility and, in some instances, extensive upgrades or new installations are performed. Arrangements are also frequently made with electric companies for new street lighting under a Force Account Agreement with the State.

The Hydraulics Engineer is available to review the more complex drainage designs, develop unique drainage solutions, coordinate related work with Bridge Design, and maintains hydrologic records and the *Manual on Drainage Design for Highways (8).* Wetlands Permits, US Army Corps of Engineers Permits, Storm Water Discharge Permits and other permits are processed or coordinated by the Hydraulics Engineer.

The Railroad/Highway Crossing Coordinator deals with issues in connection with NHDOT projects affecting all railroads operating within the State including the State owned rail lines. Responsibility also includes implementing the Railroad/Highway Crossing Program.

***Contracts and Specifications***

The Contracts & Specifications Section is responsible for preparing, processing and amending consultant agreements for preliminary engineering and technical services as well as developing, administering and maintaining specifications and special provisions for construction materials and assembling bid proposals for construction projects. Furthermore, the Section provides executive support and maintains file documents for both the Consultant Selection Committee and the Specifications Committee.

### *Chief of Records Section*

The Chief of Records Section is responsible for maintaining project files, Standard Plans, forms, and office equipment and supply inventory for Highway Design as well as providing the public, upon request, with such information as record plans and the Specifications Book.

### *Administrative Section*

The Administrative Section is reponsible for the day-to-day Bureau administrative duties of word processing, filing, clerical, transcribing and similar administrative duties along with time-keeping, processing invoices for the supply inventory and keeping administrative records.

## *Related Bureaus and Organizations*

There are a number of bureaus and organizations who contribute to the development of highway projects. They are engaged in activities which are affected by highway design, but each has major responsibilities in other areas of public service. They provide the benefit of special expertise and, in turn, the Bureau of Highway Design reciprocates when these groups require assistance. Coordination with other bureaus and organizations is essential to efficiently and systematically produce designs for highway improvements.

## *Other NHDOT Bureaus*

The Bureau of Bridge Design is responsible for bridge structure design, large drainage structure design/evaluation, i.e., those greater than 3.048m (10 ft.) in span, and assistance in the design of miscellaneous highway structures, e.g., retaining wall design, and foundation design for overhead sign structures or long mast arm traffic signals.

The Bureau of Materials and Research obtains and supplies information about sources, quality, and other information on soils; aggregates; pavement; and, other construction materials which are used as a basis for design. All tests for quality and recommendations for earthwork, pavement structure, foundations, frost effects, retaining walls or embankment stability are supplied by this bureau as part of a Geotechnical Report including locations for subsurface drainage (underdrain). A pavement recommendation describing the surface courses is also furnished as a separate report.

The Bureau of Right-of-Way provides land title abstracts and acquires the project right-of-way and easements which involves appraisals, negotiations, settlements and arrangements for legal activities. Property management and relocation assistance are also responsibilities of this bureau.

The Bureau of Environment assesses the environmental effects our projects will have on socio-economic resources such as recreation, public lands, air quality, noise, contaminated materials, business, farmlands, community services and energy needs, along with, natural/cultural resources such as water quality, surface water, wetlands, groundwater, floodplains, wildlife and fisheries, forest lands, coastal zones, historical and archeological

features including stonewalls. The bureau staff provides "coordinators" for different aspects of the work to document impacts and assist with permit applications in compliance with State and Federal regulations.

The Bureau of Construction is our link to the Contractor performing the work. The NHDOT Contract Administrator provides supervision, inspects the work, authorizes payment for elements of completed work, and, negotiates dispute settlements for work not in conformance with the contract for highway, bridges and other transportation improvement projects. Highway Design often consults with the Bureau of Construction during the design of a project for their input regarding constructability, maintenance of traffic issues and anticipated construction time frames.

The Bureau of Traffic provides the design and special provisions for plan elements involving traffic signals, signs and pavements markings as well as providing construction inspection. They also *perform* this work by installing and maintaining traffic signals and signs and reapplying pavement markings throughout the State.

As the construction plans progress, the Bureau of Traffic reviews the Traffic Control Plan (TCP) and develops the Construction Signs and Warning Devices "package" including a cost estimate. Projects designed by Consultant are coordinated through Traffic as a review function.

The Bureau of Highway Maintenance administers the road maintenance through six (6) geographical Districts located statewide. This bureau assists the Bureau of Highway Design by providing local information about project sites and identifying existing problem conditions. Highway Design closely coordinates our designs with Maintenance to ensure that the roadway improvements are reasonable to maintain after construction is completed. All driveway permits are processed by the Bureau of Highway Maintenance.

The Bureau of Transportation Planning performs the many activities necessary to initiate a transportation improvement project including point of contact with Regional Planning Commissions (RPC's) and Metropolitan Planning Organizations (MPO's).

Transportation Planning monitors traffic volumes at certain locations throughout the year to provide information for system planning. Existing and projected traffic volumes and other traffic related information is provided to Highway Design for capacity analysis and specific project design as well as for traffic control during construction.

Transportation Planning is the repository for the State's accident data which is provided to Highway Design upon request. This information is used to produce accident rate maps.

Project Programming Section within Transportation Planning is responsible for requesting federal funds for all federal aid projects based on estimates received from other bureaus. This section also tracks all project and financial information for all Project Development projects . This information is used to produce the Ten Year Plan, the Statewide Transportation Improvement Program (STIP), Advertising Schedule and other reports.

Transportation Planning collects pavement condition data for the State's highway system. The condition data is used to help determine where pavement rehabilitation treatments may be required and is used to produce pavement condition maps. They also maintain the road

inventory through their Highway Physical Records Section which is updated periodically to show completed construction, as well as, maintain the Statewide Geographical Information System (GIS).

Aerial photographs, photogrammetry, CAD/D mapping and cartographic services are available through Transportation Planning.

The Bureau of Information Technology Services (ITS) primarily is a support bureau for services regarding personal computers (PC's) and computer aided drafting and design (CAD/D) equipment. Their programmers and technicians assist in administering this function and support all the bureaus within the NHDOT. Their "Help Desk" (tel. 271-6996) is a valuable resource to answer questions and resolve computer related issues.

One of the more common tasks that ITS performs for Highway Design is to produce final versions of project estimates based on cost information that Highway Design provides. This process, in turn, generates other documents for the Bid Proposal.

The Bureau of Municipal Highways functions as the NHDOT liaison with municipalities in providing aid and assistance for highways. Specifically, Municipal Highways administers the following State Aid Programs:

- *State Aid for Class I, II, or III Highways* -Funding available for improving a portion of State Highway that is an issue of local concern and the community wishes to advance priority of construction by providing the requisite one-third funding of project costs. Project implementation is coordinated with the individual Maintenance District Office.

- *Highway Block Grant Aid* - Yearly disbursement of funds to a community to assist in the maintenance, construction, or reconstruction of Class IV and V highways, and,

- *State Aid Bridge* -Provides 80% of qualifying project costs to rehabilitate or replace existing deficient Town owned bridges on Class IV and V highways.

The Bureau administers the apportionment of Federal funds to cities and towns for highway purposes and the collection of requisite matching funds from participating communities. The Bureau also coordinates the review and compliance with Maintenance and Encroachment Agreements established with municipalities as a result of using Federal funds.

Technical assistance through the $T^2$ Center at UNH or direct communication to a community is provided. Consultation and advice includes addressing roadway or structural problems, guidance on design standards for rural roads and overview of the general application of highway laws as they might affect a community.

There are other cooperating NHDOT bureaus, but the foregoing are those that the highway designer is most likely to coordinate with.

## *Organizations Outside the NHDOT*

There are many organizations, groups and individuals who are interested in highway improvements; however, not all interested parties become actively involved in the process. It is difficult to identify all those who will eventually contribute their views.

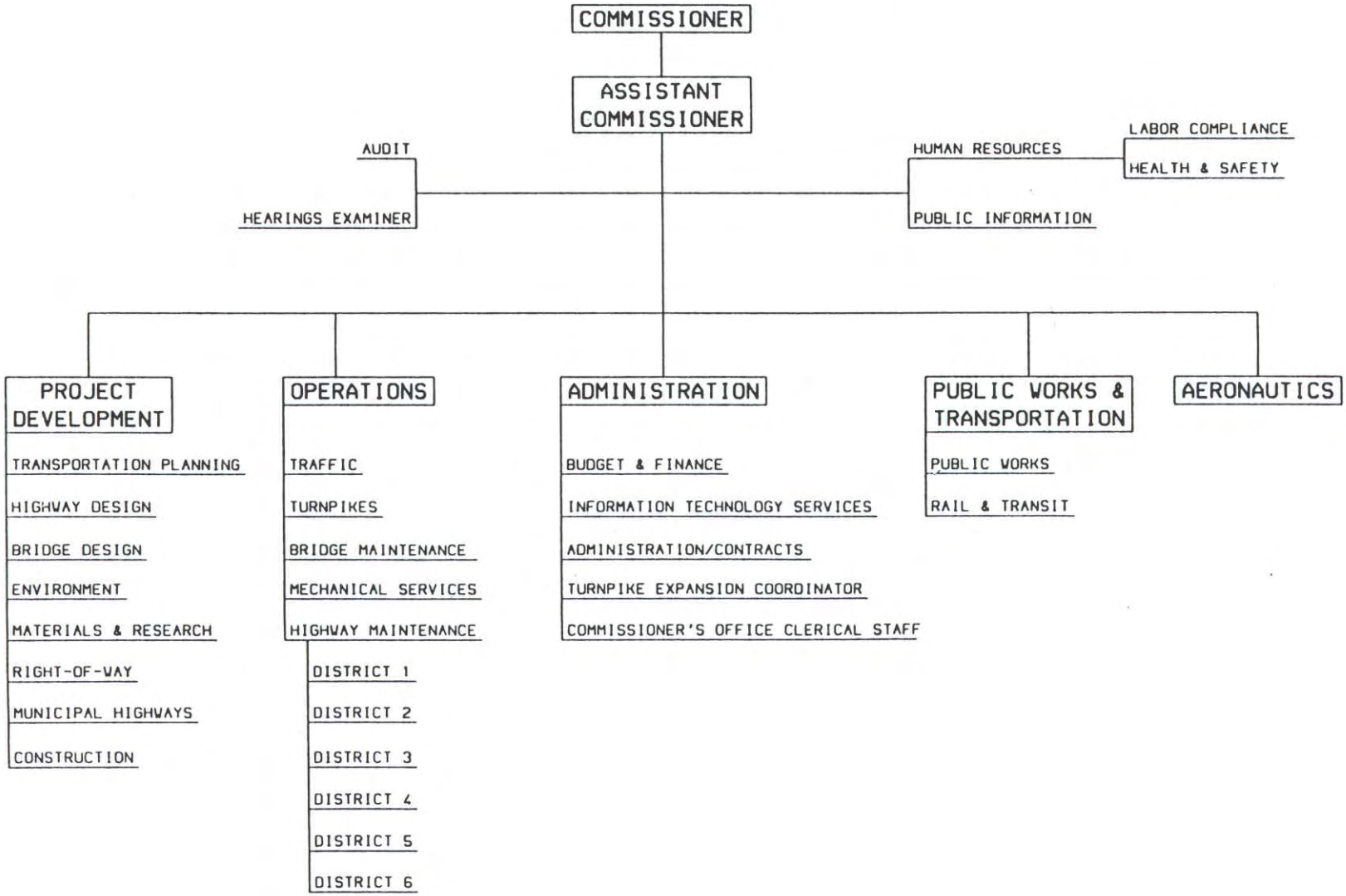
There are State, Federal, regional, city and local planning groups, highway users and special interest groups, environmentalists, and individuals who become involved in the planning and design of highway projects. As the design of a project is developed from concept through final plans, the designer must coordinate with those involved and, as a result, will become aware of the many organizations who contribute to the development of the project. Chapter 2, "Project Development", deals with the process and the diverse organization involvement.

# APPENDIX LIST

1-1 NHDOT Organization Chart
1-2 Maintenance District Layout Map
1-3 Highway Design Organization Chart

APPENDIX 1-1

# NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION ORGANIZATION CHART



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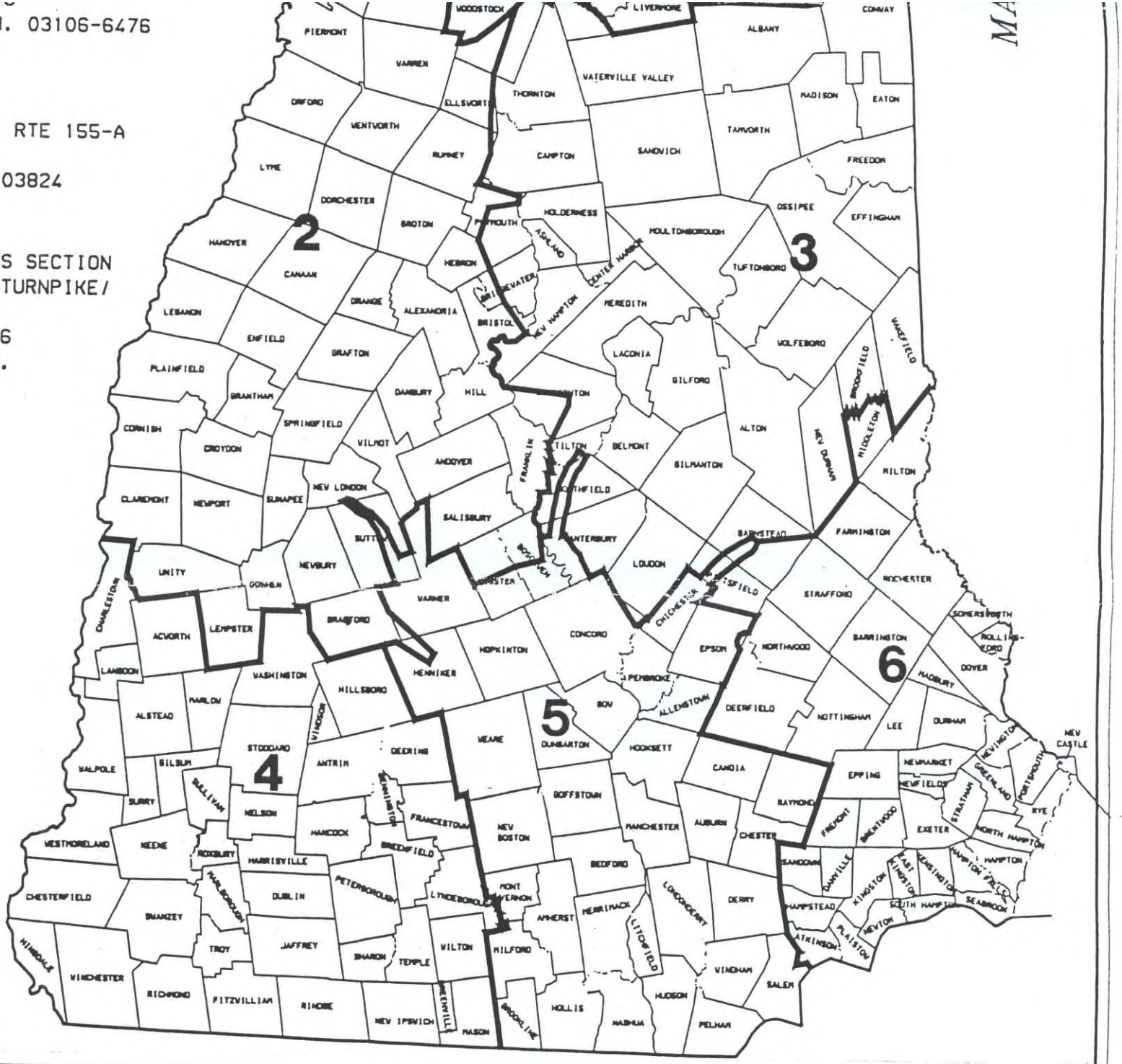

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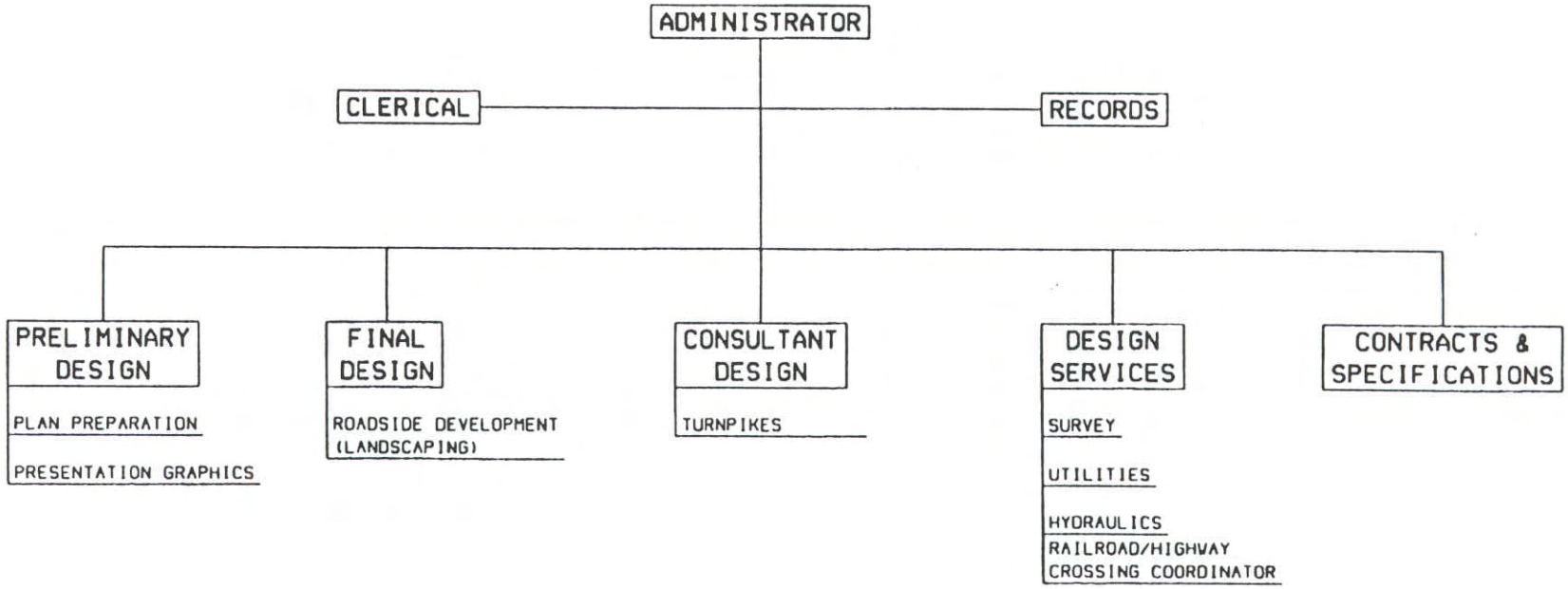
# BUREAU OF HIGHWAY DESIGN