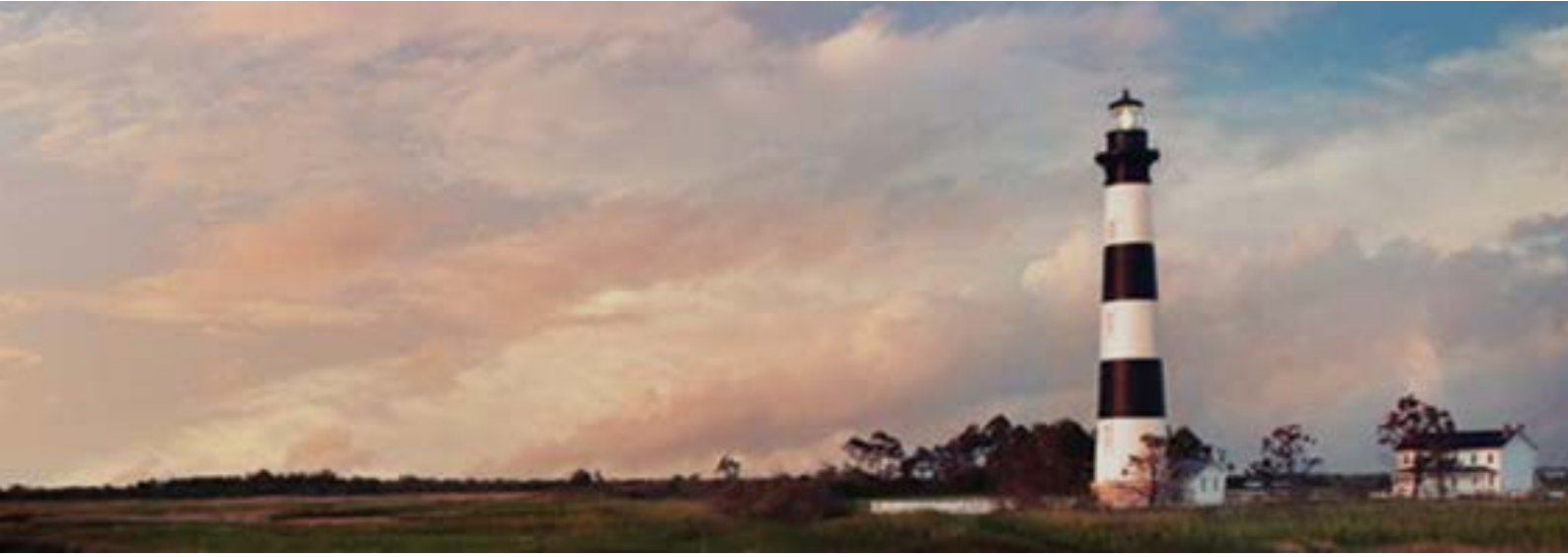
NCDOT RESTRUCTURE STUDY AND PLAN

A Report to the Joint Legislative Oversight Committee



Chapter 1

Review of the Current State of the Department

I. Review of the Current State of the Department

Operations, staffing levels, and employee performance management efforts

1.1 Background and Objectives of the Study

The North Carolina Department of Transportation (Department) is committed to advancing an organization that meets current transportation needs while remaining flexible and responsive to future needs. As a continuous improvement organization, and in accordance with Session Law 2015-241 Section 29.14(d), the Department initiated a review of its operations and organizational structure. The intent of this review was to identify processes and organizational structure that yield a better business model for the delivery of highway projects. To meet this intent the Department identified the following objectives:

- Enhance authority for project decision making at the Division level
- Individualize accountability for the delivery of highway projects
- Right size the organization and align staffing levels with strategic goals

This review resulted in the development of a plan that will expedite project development and delivery, and allow the Department to meet operational goals with a strong focus on accountability across the organization. Details of the plan are laid out in Chapter 2 of this report.

It is important to note that an assessment of the current state of the Department must include a review of past changes. Between 2011 and 2016, a series of incremental process improvements, multiple Reductions in Force (RIF), and the strategic abolishment of various vacancies led to a total position reduction of six percent (6%) or reduction from 13,411 to 12,581 positions. Currently, fifteen percent (15%) of the total positions in the Department are vacant. To achieve the goal outlined in Session Law 2015-241 Section 29.14(d) the plan included in this report will reduce staff by 17% over the next nine months in centrally and regionally based offices related to highway project delivery that perform administrative, managerial, supervisory or oversight functions.

The plan outlined in Chapter 2 is in significant contrast to past efforts. Previous improvement efforts have focused on incremental changes and minor system adjustments, while this plan contains several unprecedented and dramatic shifts in responsibility and organization that transform the entire project delivery process. In this plan, accountability in the delivery of all projects shifts to the fourteen (14) Division Offices, where Division Engineers will own each project in their geographic region. The Department's central office business units will focus their responsibilities on policies and standards, and provide unique expertise in supporting Division Engineers in developing their most complex projects.

1.2 Review of Current Operations

For the purpose of this report, centrally and regionally based business units that play integral roles in the delivery of highway projects will be referred to as Central Business Units and are identified in Figure 1.1. Central Business Units include the Division of Planning and Programming, Division of Technical Services, and Division of Highways.

Figure 1.1 – Summary of Central Business Units Reviewed

Planning and Programming	Technical Services	Division of Highways[1]
■ Transportation Planning Branch ■ State Transportation Improvement Program and Feasibility Studies ■ Project Management ■ Strategic Prioritization ■ Performance Metrics	■ Roadway Design ■ Hydraulics ■ Project Development and Environmental Analysis ■ Geotechnical Engineering ■ Contracts Standards and Development ■ Design Build ■ Location and Surveys ■ Photogrammetry ■ Priority Projects ■ Professional Services Management ■ Transportation Program Management	■ Maintenance Operations & Fleet Management ■ Right of Way ■ Roadside Environmental ■ Utilities ■ Structures Management ■ Construction ■ Materials & Tests ■ Operations Program Management ■ Facilities Management ■ ITS & Signals ■ Oversize/Overweight Permit ■ Traffic Safety ■ Signing & Delineation ■ Traffic Management ■ Traffic Systems Operations

[1] Transportation Engineering Associates Program (under DOH) is not included as part of the review

1.3 Review of Centrally and Regionally Based Staffing

The business units throughout the Department that support highway projects currently include a total of 9,321 staff positions, of which 7,491 are allocated to the fourteen (14) Divisions. In regard to centrally and regionally based positions, Figure 1.2 provides a summary of staffing levels for Central Business Units, as of April 1, 2016. See Appendix B for detailed Central Business Unit staffing levels.

Figure 1.2 – Summary of Central Business Unit Positions (as of April 1, 2016)

Centrally and Regionally Based Positions[2]				
	Program and Planning	Technical Services	DOH - Central	Total
Vacant Positions	15	65	121	201
Filled Positions	131	457	929	1,517
Total Positions	146	522	1,050	1,718

[2]The number of positions does not include Transportation Engineering Associates (under DOH), and Location and Survey positions (under TS) that are located in each highway division.

1.4 Review of Employee Performance Management Efforts

The Department's progress toward a results-based, performance-driven organization began in the early 2000's. The Department's system of goal-based employee accountability (formerly called the "Performance Dashboard and Appraisal") became the model for the state-wide employee management system. The new performance management system, titled N.C. Valuing Individual Performance (NCVIP), establishes a state-wide process that standardizes the way of doing business through consistent employee performance management practices and processes. This enables the North Carolina government to develop, evaluate, and leverage its talent to better and more efficiently meet the needs of North Carolina citizens.

Most importantly, annually adopted employee goals must align with the strategic mission of the agency. The goals and mission that drive the business should translate into the work that the individual performs on a daily basis. The Department's strategic goals are clearly defined and communicated through divisions and Central Business Units so that expectations are clearly communicated to managers, supervisors, and individual contributors. Throughout the year, and at the conclusion of the performance management cycle, employees are evaluated on the achievement of their individual and team goals utilizing metrics designed to measure whether performance expectations were objectively met. In addition to these goals and performance metrics, all employees are expected to adhere to the same organizational values.

Chapter 2
Strategic Goals and Organization Alignment

2. Strategic Goals and Organization Alignment

2.1 Overview of Strategic Goals

Based on the Department's study and review of its operations and organizational structure, and in accordance with items (3) and (4) of Session Law 2015-241Section 29.14(d), the Department has successfully developed a plan to achieve at least a ten percent (10%) staffing reduction for centrally and regionally based positions. This plan further improves efficiency and effectiveness throughout the organization specific to project development and delivery, and allows the Department to better align the organization with strategic goals. The strategic goals specific to project development and delivery, and operations are shown in Figure 2.1.

The plan was developed over the course of seven months, as an Executive Leadership team conducted surveys and interviews with every unit and Division, focusing primarily on the Division of Highways (DOH). This effort yielded a comprehensive listing of the unique challenges and needs related to advancing the Department's highway project development and delivery program. In addition, the Department evaluated other operational functions that support project development and delivery including Planning and Programming and Technical Services. During this effort, several other state transportation departments were consulted to understand their experiences with project delivery and organizational alignment.

Figure 2.1 – Summary of Strategic Goals

Summary of Project Delivery Goals and Operational Goals

The specific Department goals targeted for this plan focus on two main areas, highway project development and delivery, and operational maintenance. Goals for project delivery encompass both the project development phase (i.e., planning, design and contract development) and the construction phase (i.e., contract administration). Operational goals focus on efforts to increase system health and lessen the burden of unplanned or reactionary maintenance activities. Below is a summary of the goals and example targets:

Project Development and Delivery Goals (as consistent with NCVIP metrics)

- Planning document completion
- Contract letting dates
- Construction completion dates

Operational Goals

- Lane-miles resurfaced (as consistent with the highway maintenance improvement program)
- Bridges replaced (as required by the bridge program)
- Lane-miles of pavement preservation (as consistent with the highway maintenance improvement program)
- Adherence to baseline unit cost within a ten percent (10%) variance for contract resurfacing, pavement preservation, bridge replacements, commodities, ten (10) critical maintenance activities meeting requirements of DOT Report legislation
- Meeting the requirements of the NCDOT "Responsiveness" legislation: fix potholes within two (2) business days, address safety items within ten (10) business days and non-safety items in fifteen (15) business days
- Response to emergency and storm events – Snow removal on bare pavement routes within 48 hours of storm conclusion

This chapter of the report describes the Department's plan for implementing a new organization structure, adjusting staffing levels, and clarifying roles of staff and work groups in restructured Central Business Units and Division Offices. This plan also includes details on meeting required staff reductions.

2.2 Overview of Organizational Alignment

When fully implemented, this plan will restructure existing preconstruction units into multidisciplinary teams and provide additional resources to the Divisions as they take increased ownership of project delivery. This realignment of resources will occur in phases, and include transition of designated vacancies from Central Business Units to the Divisions, Reductions through Reorganization and, ultimately, Reductions in Force.

Specifically, the Department has identified 256 positions among the Division of Planning and Programming, Division of Technical Services, and Division of Highways that can be eliminated over the next 9 months. The remaining sections of this chapter detail the methods that will be used to implement this reorganization and reduction plan.

2.3 Program Delivery – Project Screening

In a dramatic departure from current practice the Department has developed a formal screening process for early identification of project development responsibilities as shown in Figure 2.2. This process is designed to recognize project complexities and identify the most efficient plan for delivering each project. Projects are assessed according to key project features that impact schedule such as environmental and technical complexity, procurement approach and other similar factors. The screening process will be conducted each time projects are added to the STIP. This process results in all but the most complex of projects being assigned to the Divisions for development, expediting project delivery. The first round of this screening process will be applied to STIP projects and will be complete by August 1, 2016. Upon completion of screening and approval by the Project Delivery Committee (refer to Figure 2.3), ownership for these projects will be transferred to the Division Offices.

To further support the implementation of the screening process, staff in the Central Business Units that are currently assigned isolated project development responsibilities will be redistributed into multidisciplinary, co-located project delivery teams. The purpose of this reorganization of staff is to ensure that as the Central Business Units focus on only the most complex of projects, each project will be fully supported by a team of experts and allow tasks that previously occurred in a step-wise fashion to be completed in parallel wherever practicable.

Figure 2.2 – Key Considerations: New Screening Process

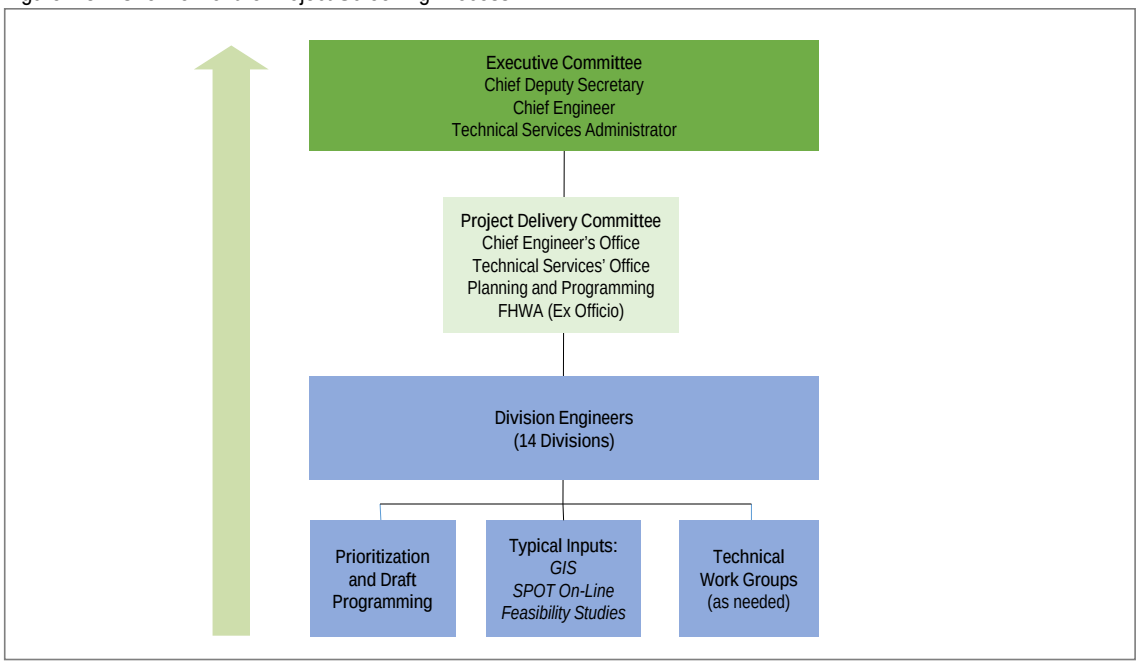
New Screening Process –Delivery Program

The project screening process will be used to determine the most efficient manner in which to deliver highway projects. Generally, less complex projects will be transferred to the Highway Divisions for project development while the Department's most complex projects will be assigned to central project delivery teams. This process will be conducted when projects are added to the STIP. The summary below provides detailed considerations for each criterion:

- Environmental document type – Environmental Impact Statement (EIS), Environmental Assessment (EA), and Categorical Exclusion (CE) – There are generally three categories that reflect the type of NEPA/SEPA process and permitting required by environmental regulatory and permitting agencies. Projects developed under a CE are considered less complex while projects under EA and EIS are considered more complex. EA and EIS projects, and other projects as requested by Division Engineers, will be developed with central project teams.
- State vs. Federal Funding – Other states have seen an improvement in project delivery schedule for those projects that are not funded with federal dollars. Due to the use of federal funding, adherence to FHWA guidelines for satisfying NEPA can be more stringent than NEPA itself. For this reason, the Department intends to focus federal dollars on fewer projects, while not foregoing any eligible federal allocation.
- Procurement method – Projects using innovative contracting methods, such as Public-Private Partnerships and Design-Build will be determined during the screening process. These projects will generally be developed by the central project delivery teams and procured by Design-Build and Priority Projects Units.
- Merger vs. Non-Merger – While a formal merger project selection process exists through multi-agency coordination, much of the data that informs such a decision will be reviewed as part of this screening process. Therefore, a preliminary indication of whether a project will go through the merger process can be made at this time to ensure the appropriate application of Merger.
- Development Status – Projects with substantially advanced planning and environmental efforts may not be included in the screening process in order to avoid delays.

A Project Delivery Committee (PDC), with representatives from the Chief Engineer's Office, Technical Services, and non-voting members from the Planning and Program office will be established to evaluate and screen projects and set the delivery program. In addition, a representative from the Federal Highway Administration will serve in an ex-officio capacity to this committee. Involving the Chief Engineer's Office, Division Engineers (DEs), and Technical Services at an early stage ensures that both technical and local expertise is reflected in the process. The PDC will screen and agree upon a delivery program that describes the projects to be developed by the Division Offices as well as those that will be developed by central project delivery teams. It is likely that technical work groups will gather various data inputs for the PDC's consideration in the decision-making process.

Figure 2.3 – Overview of the Project Screening Process



Preliminary screening efforts following the protocol described above indicate that the percentage of projects transferred to the Division Offices would likely climb from approximately 50% to 70% (representing approximately 50% of the overall STIP budget). The remaining 30% of the program, will be delivered by multidisciplinary teams, and consists of the Department's most complex projects.

To provide oversight for and consistency within the screening process, the PDC will provide their recommendations to an Executive Committee, comprised of the Chief Deputy Secretary, Chief Engineer and Technical Services Administrator. The Executive Committee will adjust and approve the delivery program as appropriate. Once the program is established, any changes to a project's schedule and scope will require approval by the DE, and either the Technical Services Administrator or, Chief Engineer.

2.4 Project Delivery – New Organizational Structure

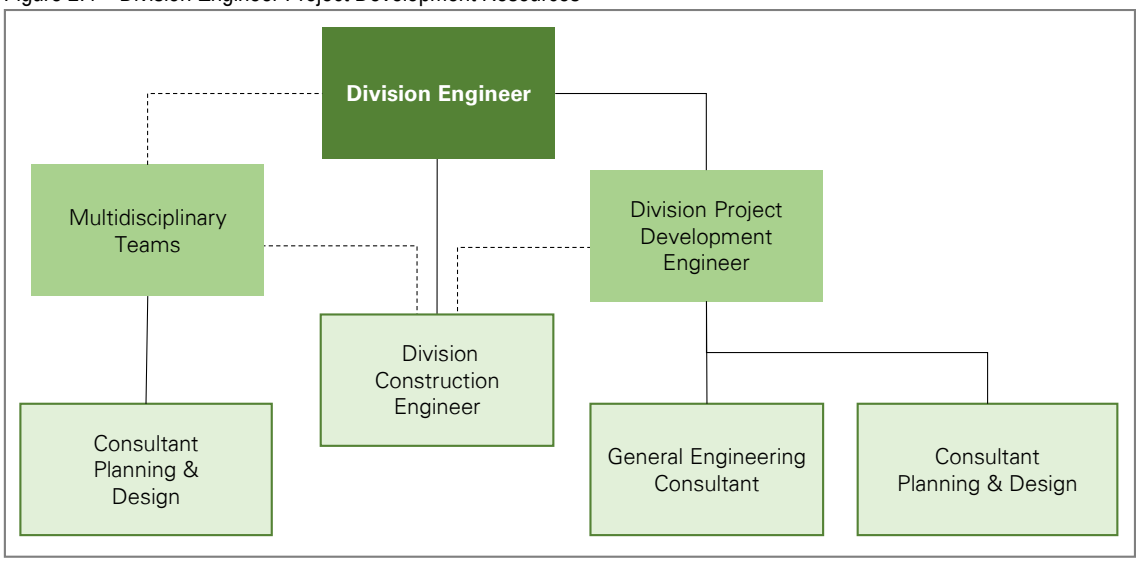
This section describes the shift of project ownership to the fourteen (14) Divisions, project development resources available to the Division Offices and project development resources available to multidisciplinary teams. This new paradigm contains several unprecedented and dramatic shifts in responsibility and organization. The Department believes enhanced accountability and responsibility will support efficiencies and drive successful project delivery. In this regard, each Division's project delivery progress will be briefed monthly to the Secretary and Executive Committee on a project-by-project basis. In addition, a quarterly organizational metrics briefing will be provided to the Board of Transportation covering a variety of performance metrics including project delivery rates, infrastructure health index, etc.

Figure 2.4 provides a high level overview of the DE working relationship with central project delivery teams and Division Office staff during project development. DEs will assume an ownership role with decision making authority that ranges from determining project scope and budget, to setting schedules, and tasking engineering firms and/or General Engineering Consultants (GEC) with planning and design work. Division Project Development Engineers (DPDE) assigns project development responsibilities and will be afforded the flexibility to engage a combination of resource options. Specifically, engineering consultants will be used to supplement Division staff in performing planning and design activities or perform turnkey planning and design functions. Depending on resource needs, GECs will be used to

manage projects and/or perform quality control functions for work done by other engineering consultants.

Staff in the Central Business Units that are assigned project development responsibilities will be redistributed into central project delivery teams or "multidisciplinary teams." Multidisciplinary Teams will eliminate the current silo approach to project delivery, and transition the Department to an integrated organizational structure that increases accountability for project delivery. Accountability for project delivery will now reside with an individual (team lead) rather than a unit (PDEA, Roadway Design, etc.) While the Division Offices will own projects, the Department's Central Office will continue to drive policy, standards, and provide unique expertise for the Department's most complex projects.

Figure 2.4 – Division Engineer Project Development Resources



It should be noted that whether the work is delivered by the Division Offices or through the assistance of Central project delivery teams, the trend to outsource a vast majority of planning and design work to consultants will continue.

In conjunction with the NCVIP performance management system, the new organizational structure will require new performance measures and revised Business Unit action plans. Performance measures reflecting the transition to a single point of accountability will be developed based on complete project delivery, rather than components of project delivery. Business Unit action plans will be reshaped to reflect the new organizational structure and include measures based on individual accountability and project delivery.

2.5 Project Development – Role of Central Office Staff

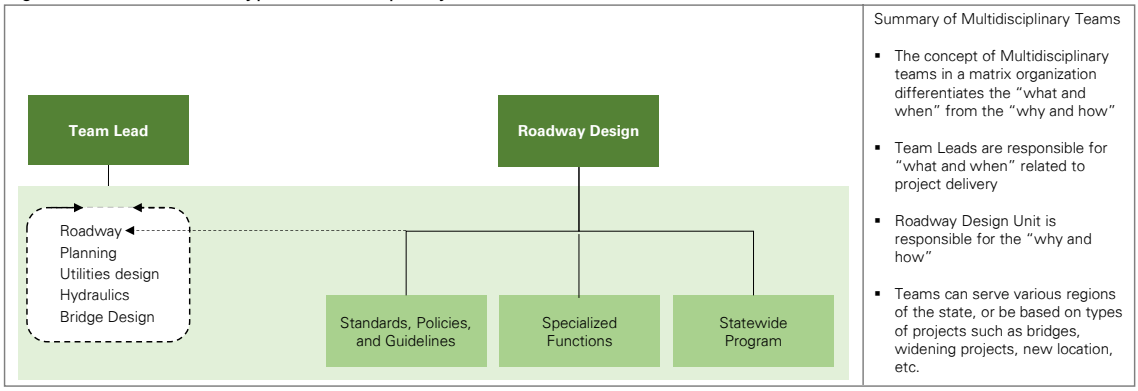
Many of the roles and responsibilities of the Central Business Units of Technical Services and the Division of Highways (shown in Chapter 1, Figure 1.1) are significantly affected by the new project delivery process changes. Careful analysis was performed in March 2015, and again during the course of recent unit interviews, to determine right-sizing of business units and staffing levels. While most units will be affected by the transfer of project development responsibilities to the highway divisions, other units were deemed critical in their central role. For broader descriptions of the current functions of each unit and the resulting disposition of central and regional staff, see Appendix A and B.

Core organizational units whose staff have been primarily involved in project development, will be redistributed into multidisciplinary teams. These teams, similar to those found in the private sector, bring people from across functional areas to work on a group of projects, and allow the project delivery teams to focus solely on project delivery. Initially, seven (7) multidisciplinary teams will be formed and staffed with technical personnel including Roadway Design, Planning, Bridge Design, Hydraulics and

Utilities Design discipline expertise. The seven (7) multidisciplinary teams will serve project owners in the delivery of projects, but will report directly to the project delivery team leads and a Deputy Technical Services Administrator for Project Delivery. The Roadway Design, Hydraulics and Utilities Units will still exist but only to the size and extent needed to maintain standards and specifications, policies, specialized services and statewide programs. Right of Way, Traffic Control, Geotechnical, and Signing will still exist but only to support both multidisciplinary and Division project delivery teams. The Project Development and Environmental Analysis Unit will be disbanded.

Some Central Business Unit functions are important for maintaining consistent policy, standards, and guidelines, and managing several critical statewide delegated authority programs (e.g. National Pollutant Discharge Elimination System, Federal Emergency Management Agency compliance, Land Quality Delegated authority for sedimentation and erosion control).

Figure 2.5 – Overview of Typical Multidisciplinary Team



Unit managers will be responsible for the programs and policies related to their functional area and will include hiring, training and managing of employees in their discipline whether the employees reside in the unit or in one of the seven (7) multidisciplinary teams. As the shift of responsibility and projects further transitions to the highway divisions, the number of central project delivery teams will be evaluated and reduced in accordance with future project delivery workloads. In the interim, these teams will also be available to assist highway divisions with their work until the transition is complete. The policy and standards groups in these units are important to ensure consistent project and contract plan development across the fourteen (14) Division Offices. This will remain an important central function that will support the Divisions in delivering the program, providing consistency for contractors and minimizing potential contract administration problems during construction.

While the Central Business Units of Technical Services and the DOH are primarily involved in project development and will be responsible for the Department's most complex projects, there will be far fewer projects delivered through the Central Business Units. As indicated in Appendix A and B, positions from these units will therefore be transferred to the highway divisions, shifted to multidisciplinary project delivery teams or eliminated.

2.6 Project Development – Role of the Division Office Staff

In order to support the DEs in delivering their expanded program, Central Business Units will make available identified vacant positions which can be transferred to the Division Offices. These transfers will occur as indicated by monthly resource assessments completed by the Chief Engineer's Office and each Division. These positions will be used by DEs to build their project development teams with professionals possessing technical skills (e.g. bridge design, hydraulics, planning documents, and roadway design) not already present in their Division and/or in limited supply compared to what is needed to support projects in their Division. In addition, Divisions will continue to outsource planning

and design work needed to deliver their projects and, for the first time, utilize GECs to perform the work necessary to review other consultants' plans and work products.

2.7 Project Delivery/Construction Completion & Operational Goals – Role of the Division Office Staff

Due to recent increased program funding levels and decentralization of project development responsibilities to the fourteen (14) Divisions, Division staffing levels have been evaluated to ensure that attainment of operational goals for system performance and project delivery goals are not compromised. In addition, the recent Session Law 2015-241 requirements for "efficiency" and "responsiveness" of division operations have been factored into staffing considerations. Specifically, maintenance workforce and construction inspection workforce complements have been evaluated quantitatively while planning and design staffing levels have been evaluated qualitatively.

In the following sections, maintenance, contract administration and project delivery staffing levels within the Division Offices are discussed in further detail. As a reference, an organizational chart for a typical Division is shown in Appendix C. As illustrated in the organization chart, the Divisions' primary responsibilities fall into three categories:

Maintenance

Currently, there are approximately 4,250 Full Time Equivalent maintenance worker positions statewide of which approximately 750 are vacant. These maintenance workers are tasked with various highway, bridge and roadside responsibilities. In addition, the recent Session Law 2015-241 requires that crews respond to public action requests to: fill pot holes within 2 business days, address safety items within ten (10) business days and address non-safety items within fifteen (15) business days. Also, as part of the Session Law 2015-241, Divisions are to stay within a ten percent (10%) variance from the baseline unit costs set on their major maintenance activities. These accomplishments and efficiencies can only be achieved through appropriate staffing levels along with outsourcing of certain planned activities (e.g., mowing). Therefore, the draft staffing analysis originally presented to the House Committee on Transportation Appropriations in March 2015 was updated and results evaluated. Among the factors included in the analysis are:

- Number of lane miles on Interstate, Primary and Secondary systems and their corresponding conditions
- Number of bridges and pipe culverts and their corresponding conditions
- Number of citizen action requests received related to the "responsiveness" legislation

On an aggregate statewide basis there is a potential shortfall of 240 filled positions to handle maintenance responsibilities within established time frames. Further, there are an adequate number of vacant positions to address this need providing that budgetary constraints do not prevent these positions from being filled.

Construction Contract Administration

As part of a draft staffing plan presented to House Committee on Transportation Appropriations in March of 2015, the Department self-imposed an outsourcing target of fifteen percent (50%) for construction inspection activities that support administration of contracts during construction. This outsourcing target will help maintain a robust private consulting inspection staff while allowing the Department to retain institutional knowledge and a qualified staff to oversee critical projects during less active construction periods. Based on additional project funding provided through 2015 legislation, contract administration inspection needs have increased. On an aggregate statewide basis, approximately 700 contract inspectors are needed to effectively handle contract administration responsibilities.

Going forward a work load analysis will continue to be performed twice a year to ensure that the 50% outsourcing target is met and that the Department is able to retain sufficient qualified staff.

Planning and Design

To drive accelerated project delivery, while maintaining superior quality control, and effectively partner with contractors it is imperative that Divisions have adequate staffing resources. To this end, as shown on the included organizational chart, the former Division Operations Engineer positions have been repurposed as DPDE. In addition, a Division Planning Engineer and Division Project Manager will be staffed to the DPDE. Staff currently involved with planning and design efforts such as the Division Bridge Program Managers will be aligned with the DPDEs. As indicated in Figure 2.6, sixty (60) vacant Technical Services positions and eight (8) vacant positions from DOH will be available for transfer to the Divisions for these purposes.

2.8 Implementation and Next Steps

Once fully implemented the Department's restructure and staffing plan targets an aggregate decrease of approximately seventeen percent (17%) of Central Business Unit positions that are directly related to project delivery. Figures 2.6 and 2.7 illustrate the ultimate staffing levels and associated reductions to support the proposed project delivery organizational structure. The implementation will occur in three phases and commence immediately. The implementation plan is carefully developed to minimize any threats to project delivery success rates, balance the cultural shift that results from restructuring, and enhance the ability to retain qualified expertise to perform project delivery functions.

Figure 2.6 Central Business Unit Staffing Plan and Reductions

DOH (Central) and Technical Services - Planned Staffing Levels						
Central Business Unit[3]	Current Filled Positions	Filled Position Reduction	% Change	Transfers of Vacant Positions	% Change (including transfers)	Ultimate Planned Filled Positions
Technical Services	457	49	-11%	60	-24%	348
Division of Highways	929	186	-20%	8	-21%	735
Total	1,386	235	-17%	68	-22%	1,083

[3]Transportation Engineering Associates (under DOH), and Location and Survey Unit positions (under TS) that are located in each highway division are not included.

Figure 2.7 Planning and Program Staffing Plan and Reductions

Planning and Programming - Planned Staffing Levels						
Central Business Unit	Current Filled Positions	Filled Position Reduction	% Change	Transfers of Vacant Positions	% Change (including transfers)	Ultimate Planned Filled Positions
Planning and Programming	131	21	-16%	-	-16%	110

The Department anticipates that the implementation of this restructuring plan will have a significant impact on project delivery. However, absent confidence in the metrics and reporting mechanisms used to gauge progress, it will be difficult to validate the Department's success and establish future performance targets. Given the complexities and number of federal, state and local influencers that impact project delivery; the Department will engage an independent third party to benchmark similar states' methods for tracking progress and reporting delivery rates. The results of this exercise will be used to enhance the Department's project delivery tracking and reporting metrics. This benchmark data will be used to establish preliminary targets by July 1, 2016.

In keeping with the North Carolina General Assembly's commitment to improved operations, the Department will extend the process utilized for this effort to review and study other business units not included in the scope of this report. The Department will have the results of the next round of organizational review and study on January 15, 2017.

Implementation Timeline and Transition

Figure 2.8 provides the status of activities related to the development and implementation of this plan. Figure 2.9 provides a timeline for the three (3) phases of staff realignment and reductions.

Figure 2.8 – Improvement Task and Status

Progress		Improvement Task	Results /Status
✓	Complete	▪ Develop initial project screening process	
✓	Complete	▪ Estimates, negotiations, purchase order and notice to proceed authority divested to Divisions	▪ Training continues for Division personnel
✓	Complete	▪ Scheduling initiative to accelerate project delivery for widening and new location projects by 25%	
	In Progress	▪ Execute screening process for projects recently added to the STIP	▪ Complete by August 2016; receive approval from Executive Committee by September 2016
✓	Complete	▪ Grant authority to Division Engineers to approve or reject all project schedule changes	▪ Recent change to afford more accountability and authority to Division Engineers
✓	Complete	▪ Implement Environmental Tracking and Coordination System (Phase I)	▪ Phase includes first set of environmental analyses (e.g.,historic/archeological)
	In Progress	▪ Implement Environmental Tracking and Coordination System (Phase II – IV)	▪ Future phases to include all environmental analyses areas including threatened and endangered species, community studies, permitting, noise studies, air quality ▪ Expect completion by February 2017
	In Progress	▪ Identify current and future vacancies available for transfer to Divisions	▪ 30% of vacancies already identified
	In Progress	▪ Procure General Engineering Consultants for Divisions	▪ Draft solicitation documents developed

Progress		Improvement Task	Results /Status
	In Progress	▪ Develop and execute a series of Reduction Through Reorganization (RTR) Plans	▪
	Not Started	▪ Develop and execute a series of Reduction in Force (RIF) Plans	▪ To be initiated after a series of RTR are developed and executed
	Not Started	▪ Assemble central project delivery teams	▪ Completion following satisfaction of Division needs
	In Progress	▪ Restructure analysis of other business units	▪ Expected completion January 15, 2017

Figure 2.9 – Overview of Staffing Level Transition

Phase 1	May to July 2016 (0-90 days) ▪ Transfer first round of vacant positions from the Central Business Units to the Divisions on a rolling basis ▪ Divisions advertise and fill vacant positions on a rolling basis ▪ Advertise solicitation for Division GECs ▪ Issue first round of Reduction through Reorganization (RTR) plans
Phase 2	August to October 2016 (90-180 days) ▪ Transfer second round of vacant positions from the Central Business Units to the Divisions on a rolling basis ▪ Divisions advertise and fill vacant positions on a rolling basis ▪ Issue subsequent rounds of RTRs on a rolling basis ▪ Negotiate and award GECs ▪ Complete RTRs
Phase 3	November to January 2017 (>180 days) ▪ Evaluate status of vacant positions as a result of completed RTR process ▪ Develop Reduction in Force (RIF) plans and initiate RIF implementation

Chapter 3

Review of Current Laws, Rules and Policies, and Recommendation for Performance or Incentive-based Programs

3.1 Review of Current Laws, Rules and Policies

Legislation	Recommendation
Letting of contracts to bidders after advertisement; exceptions G.S. 136-28.1 (a), (b)	■ Increase the Department's construction contract letting limit from $2,500,000 to $7,500,000
Bridge Program Funds SL 2015-241Section 29.6	■ Allow Divisions to self-perform work related to culverts
Small Construction and Contingency Funds SL 2007-323 Section 27.5	■ Increase flexibility to use Small Construction and Contingency Funds for borderline safety projects and smaller municipality projects including drainage, curb, or gutter, among others
Utilities relocation	■ Provide incentives to encourage early delivery, and penalties (e.g. liquidated damages) for delays due to utility relocation
Encroachment fees	■ Authorize the Department to charge a one-time fee to defray the Department's administrative cost of reviewing encroachment submittals
Outsourcing of Preconstruction Activity SL 2015-241 29.13 (a), (b)	■ Restructure reporting requirements to align with the divestment of planning and design staff to Divisions and multidisciplinary teams

Administrative Code	Recommendation
Remnant property sale and disposition processes – Administrative Code 19A NCAC 02B.0143	■ Change the requirement to advertise in local county newspapers to reflect more current technologies i.e. digital format ■ Increase the Department's sale approval threshold ■ Extend the Department's ability to market and sell through the use of third party real estate professionals

Policy	Recommendation
Division Staff Supplemental Agreement Limit	■ Increase supplemental agreement approval limits for Resident Engineer from $50,000 to $100,000
General Engineering Consultant (GEC)	■ Permit use of GECs to enhance and supplement division capabilities including project management and reviewing submittals
Commodities purchase cap	■ Increase commodities purchase cap from $25,000 to $150,000
Free-on-board (FOB) contracting	■ Broaden the use of purchase order contracts and streamline the contract process to enable Divisions to advertise and award
Use of Fully Operated Rental Equipment (FORE)	■ Expand use of FORE and include stump grinders, and chippers, among other equipment
Use of local contractors	■ Permit Divisions to contract with local vendors/ contractors rather than relying on regionally based contractors e.g. regional contractors for hazmat cleanup have been found to be more costly than local contractors
Facilities management	■ Decentralize facilities management responsibilities to Divisions for construction project administration functions.
Division budget allocation and use	■ Stabilize year-to-year funding fluctuations, especially maintenance funding at the Division level (improve balance between performance and needs based budgeting) ■ Provide flexibility to reallocate funding between counties ■ Allow flexibility between use of primary and secondary funds throughout the year
Revise existing policies and practices to satisfy the increasing number of state funded projects	■ The Department is conducting a broad analysis of policies and practices used to develop state funded projects. A preliminary analysis identified applications of federal laws being applied to state funded projects, in lieu of state policies. The Department is establishing state policies and practices to support consistent state funded projects ■ Establish and implement state-level environmental documentation processes, in lieu of following FHWA processes for state funded projects
Delegation of NEPA responsibilities	■ Through MAP-21 and the FAST Act, USDOT/FHWA encouraged states to assume NEPA responsibilities. The Department is investigating potential to join California, Texas and Ohio in assuming FHWA NEPA responsibilities. This decision making authority enables the Department to review and approve its own documentation pursuant to an MOU between the Department and USDOT/FHWA to formally assume responsibilities

3.2 Recommendations to Modify Performance or Incentive Based Programs

Recommendations
■ Establish safety bonus to encourage safe practices in the workplace ■ Establish team based project delivery bonus, based on letting dates ■ Establish project team bonus for early completion and construction projects ■ Establish incentives that encourage maintenance teams to exceed DOT Report deadlines ■ Establish incentives that encourage maintenance teams to exceed performance targets for planned maintenance activities (i.e., long-line pavement marking)

Appendices

Appendix A
Central Business Units

Appendix B
Current and Proposed
Staffing Levels

Appendix C
Typical Division Structure

Appendix A – Central Business Units

Unit	Description, Outsource, Reduction & Regional Staff Information
Location and Surveys Unit	**Description**: Provides all ground survey operations for the collection and preparation of mapping for transportation-related design and right of way acquisition. This Unit provides critical location data for right of way, utilities, environmental features, existing assets and ground control for projects, construction layout and staking, and other activities such as coastal bridge monitoring. The staff also works with NCDOT attorneys on condemnation surveys. This Unit manages specialized services such as LiDAR (Light Detection and Ranging) and sonar scans for critical bridges, ferry basins and channels, etc. **Outsourcing**: Currently, this Unit outsources nearly 75% of its total expenses and roughly 75% of its staff is located within each Division. Already outsourcing most Transportation Improvement Program (TIP) projects, in-house forces set primary project controls, merge data from in-house and consultant sources, and scope, negotiate and review consultant work (both CADD, reports, and field work). While conventional survey work will continue to be outsourced at current or higher levels, the remainder of this Unit performs highly specialized, rapid response work, as well as review of consultant work to ensure accuracy and quality. The quality control functions must remain with the Department to ensure accuracy and compliance with surveying standards, licensure, and regulations. **Reduction**: The central staff will be reduced. **Regional Staff**: N/A. Most of the staff are already located in the 14 Divisions.
Roadway Design Unit	**Description**: Provides multi-disciplinary project coordination to (1) generate preliminary designs to support the project development and environmental analysis process; (2) generate or review contract roadway design plans for contract letting; (3) generate or review materials, quantities, and cost estimates for contract lettings; and (4) maintain roadway design standards, policies and guidelines to support in-house, outsourced, and municipal design work. The Roadway Design Unit is comprised of the most knowledgeable Department staff in terms of both roadway design technical expertise and the design coordination process across all engineering disciplines. This coordination knowledge is critical to project delivery, enabling the Department to provide assistance to consultants producing contract plans, as well as communication with local municipalities, developers, and other interested stakeholders during project planning and design. **Outsourcing**: The latest consultant utilization report reflects that this Unit now outsources more than half of its total expenses, with all new project design work being outsourced. The outsourcing trend for roadway design has experienced the sharpest increase of all the preconstruction disciplines. The development, maintenance, and enforcement of design standard details, drawings, and plan preparation guidelines must reside within the Department to ensure consistent contract plan content and compliance with national design codes. The Department is responsible for

Unit	Description, Outsource, Reduction & Regional Staff Information
	ensuring that federal funds are used in accordance with applicable federal codes and guidelines and therefore these functions, as well as municipal project review functions, need to remain a Department performed activity. **Reduction**: This Unit will be transformed into one that develops and maintains policy, standards, and design guidelines, as well as specialized statewide work to include municipal project plan review, lighting design, and CADD technical support. The resulting unit will be roughly 25% of the size that it was five years ago. Positions will be eliminated, shifted to Highway Divisions, and divested to multi-disciplinary project delivery teams. **Regional Staff**: N/A
Geotechnical Engineering Unit	**Description**: Provides geotechnical, geo-environmental and geo-pavement resources for the planning, design, construction and maintenance of the Department's projects. This includes performing geotechnical investigations, analysis and design. This Unit provides highly specialized design and analysis services to determine bridge foundation types and depths, roadway subgrade structure and stabilization treatments, investigation and remediation of hazardous materials and underground storage tanks in the path of projects, as well as the investigation and engineering for rock slides, sink holes, underground springs, and slope failures. **Outsourcing**: This Unit currently outsources roughly 70% of its total expenses but retains the functions of consultant oversight and specialized work such as emergency remediation and pavement-support grouting operations. Almost all geotechnical investigations (drillers) and most design work for transportation projects are already outsourced. However, the development and maintenance of design standards, guidelines, standard drawings, etc. must remain a Department activity to ensure consistency across the state and to ensure designs meet applicable federal design codes. The work necessary to repair settling roadways (grouting operations) is not widely addressed by the private sector and therefore remains a function of in-house staff. **Reduction**: This Unit will be transformed into one that develops and maintains policy, standards, and design guidelines, as well as specialized statewide work. Positions will be eliminated, shifted to Highway Divisions, and divested to project delivery teams. **Regional Staff:** Some of these staff are located regionally so that they can more rapidly respond to geotechnical field conditions and failures in all of the Divisions. However, rapid response teams and specialized services are not warranted for each Division. Positions shifted to the Divisions, as noted above, will primarily serve as each Division/s geotechnical expert needed for project delivery.
Hydraulics Unit	**Description:** This Unit (1) generates and reviews hydraulic design contract plans; (2) ensures that roadway design plans mitigate hydroplaning concerns; (3) investigates drainage concerns statewide; (4) provides hydrologic modelling for tidal and coastal roadways and structures; (5)

Unit	Description, Outsource, Reduction & Regional Staff Information
	reviews drainage plans associated with private encroachments into Department right-of-way; and (6) manages two department-wide federal regulatory programs, namely the State Stormwater Program and the FEMA compliance program. **Outsourcing:** In recent years, this Unit has broadened the pool of hydraulic design firms to which it can outsource work and currently outsources nearly 50% of its total expenses. While more hydraulic design work will continue to be outsourced, the development and maintenance of hydraulic design standards, practices, and plan preparation guidelines must remain a Department function to ensure compliance with permits, FEMA floodplain requirements, and the state stormwater program. The Department's authority over the latter two statewide programs has been delegated by other regulatory agencies. This has resulted in significant time savings in the production of hydraulic and bridge design efforts as well as permitting processes. The preservation of this delegated authority is critical to enable faster project delivery and therefore these programs must be managed centrally and by Department staff. **Reduction:** This Unit will be transformed into one that develops and maintains policy, standards, and design guidelines, as well as specialized statewide programs such as the Statewide Stormwater Permit and FEMA regulated floodplain delegation programs. Positions will be eliminated, shifted to Highway Divisions, and divested to multi-disciplinary project delivery teams. **Regional Staff:** N/A
Project Development & Environmental Analysis (PDEA)	**Description**: PDEA can be segregated into two major groups, one that manages consultants that develop the NEPA/SEPA planning documents and another that manages consultants that perform all the human and natural environment data gathering and analysis that contributes to the development of the planning documents. This unit is responsible for developing the planning documents in accordance with the National and State Environmental Policy Acts, performing numerous environmental analysis functions in support of these documents, and obtaining construction permits from numerous state and federal agencies. These decision-making procedures require a study of a range of reasonable alternatives for a project, based on a project's defined purpose and need; analysis of social, environmental, and economic impacts; mitigation for impacts; interagency participation and public involvement in the decision-making; and documentation in the form of planning documents. PDEA is also charged with planning projects to comply with the Clean Water Act, under which the Department must obtain permits from the U.S. Army Corps of Engineers and the N.C. Division of Water Quality, as well as the United States Coast Guard, Tennessee Valley Authority, and Federal Energy Regulatory Commission. PDEA must also ensure that projects comply with a variety of laws governing resources such as historic buildings, archaeological sites, threatened and endangered species, coastal lands, parks, minority populations, noise levels, air quality, and aquatic species. PDEA works closely with other state and federal regulatory and environmental resource

Unit	Description, Outsource, Reduction & Regional Staff Information
	agencies as well as local governments to ensure compliance with their requirements and ensures that all agency, municipality, and local stakeholders concerns are addressed. **Outsourcing**: The latest consultant utilization report reflects that this Unit now outsources more than 70% of its total expenses, with all new planning document development work outsourced. In regards to the human and natural environment data gathering and analysis, much of this work is outsourced. The staff responsible for these services will continue to serve all projects statewide and will be centrally located to ensure consistency, adherence to all applicable federal and state laws and regulations and to strengthen the critical relationships with environmental resource agency staff, most of which are located in Raleigh. A handful of Department staff are needed in each specialized area (e.g. historic buildings, archaeological sites, threatened and endangered species, coastal lands, parks, minority populations, noise levels, air quality, and aquatic species) to manage and direct consultants, ensure compliance with the various federal laws and regulations, maintain key relationships with other regulatory agency personnel, which are mostly located in Raleigh, and ensure that Department staff are available to communicate with municipalities, local stakeholders, and the public regarding the projects' environmental analyses. **Reduction**: This Unit will be disbanded. Positions will be eliminated, shifted to Highway Divisions, and divested to multi-disciplinary project delivery teams. A handful of staff may be re-assigned to the Roadway Unit to develop and maintain policy, standardization, guidelines and efficiency improvements as relates to the development of planning documents. The staff that perform environmental analyses, including permitting functions will be re-formed as a new Unit, reduced in size, tentatively entitled Environmental Analysis and Permitting and will serve as small group of technical experts in each of the many specialized environmental analysis areas detailed above. **Regional Staff**: N/A
Photogrammetry Unit	**Description**: This Unit acquires aerial imagery and derives geospatial information necessary for transportation planning, design, construction, and maintenance as well as natural disaster response. These efforts include developing a flight and control plan, coordinating ground control point surveys, coordinating with Division of Aviation, image acquisition, image GPS-IMU post processing, image data management, and image plotting. This Unit also uses their technology to calculate earthwork volumes which are used to determine payment due to contractors for construction projects. While this Unit will eliminate a few positions, it will continue to provide its highly specialized services statewide and will be located centrally. **Outsourcing**: Currently, there is not a robust market for these services in North Carolina private industry due to the high capital expenditures required to perform these services (aircraft and expensive cameras). Efforts will continue to be made to attract firms to perform this work in North Carolina.

Unit	Description, Outsource, Reduction & Regional Staff Information
	Reduction: The number of positions in this Unit will be reduced. **Regional Staff**: N/A
Contract Standards and Development Unit	**Description**: This Unit provides the Department with technical and legally binding contract specifications; reviews and approve applications for contractor and consultant pre-qualification; examines and approves plans for contract letting; determines construction contract times; establishes cost estimates for construction of highway projects; drafts and assembles all centrally-let construction contracts; advertises construction contracts and evaluates bids from qualified bidders; and executes contracts for the construction of highway projects over $2.5 million. **Outsourcing:** These functions must be centrally located and cannot be outsourced. Most notably, the development of estimates confidential bid estimates and the management of contractor prequalification confidential data must not be accessible to consultants or other third parties. The procurement functions of this Unit require Department staff and the development of standard specifications and other contract provisions must be centrally managed to ensure consistency in contract language and application across the state **Reduction**: While the size of this staff will be reduced, to ensure adherence to all federal and state procurement laws and regulations, consistency statewide, and to maintain the confidential nature of these roles, these functions must be centrally located and cannot be outsourced. **Regional Staff**: N/A
Professional Services Management Unit	**Description:** This Unit provides procurement services for consultants across all Divisions and modes of the Department.. These functions include (1) preparing the intent of the consultant contract; (2) developing documents that instruct prospective consultants to submit their letters of interest and qualifications to the Department for consideration of selection; (3) facilitation of a multitude of selection committees that make quality-based consultant selections; (4) debriefing all prospective consultants on the relative merits of their letters of interest or qualifications; and (5) drafting and execution of contracts and supplements thereto; and (6) preparing the Board of Transportation agenda items and obtaining Secretary of Transportation concurrence in the award of all consultant contracts. **Outsourcing**: To ensure adherence to all federal and state procurement laws and regulations, provide consistency statewide, and protect the confidential nature of these roles, these roles must be centrally located and cannot be outsourced. Recently, the authority to negotiate, develop purchase orders, and issue Notices to Proceed for consultant work under executed limited services agreements has been divested to the 14 Highway Divisions. **Reduction**: This unit currently has only 6 filled positions and will not be reduced, especially as the Department continues to increase the number of consultant contracts. **Regional Staff**: N/A

Unit	Description, Outsource, Reduction & Regional Staff Information
Transportation Program Management Unit	**Description**: This unit has five discrete functions including (1) the Local Programs Management Office which administers and provides required oversight for FHWA-funded Local Projects, oversight and the development of municipal agreements for Local Projects, and provides training for local municipalities in this regard; (2) the Schedule Management Office which maintains project schedule development, oversight and reporting/metrics and the Department's SAP scheduling tool (STaRS) for all projects; (3) the Bid Monitoring section which monitors and analyzes results of both Central Let and Division Let contracts for bidding trends, cost trends, and bidding irregularities; (4) the Value Management Office which administers value engineering studies, risk assessments, new product evaluations, resource conservation efforts and constructability reviews; and (5) the Research and Development Office which administers applied research projects and programs in conjunction with universities and national research agencies. **Outsourcing**: All of these areas are small but either federally mandated or required to ensure consistency in scheduling and municipal agreements. While some aspects of this work is already outsourced, these functions must be performed by department staff and be centrally located. **Reduction**: This group will be reduced in size by several positions. **Regional Staff**: N/A
Priority Projects and Design-Build Units	**Description**: These Units provide specialized procurement and management services specific to sponsorship agreements, Public-Private Partnerships, Design-Build projects and Express Design-Build projects, as well as other alternative contracting methods and specialized project management services. **Outsourcing**: Both groups are small and for the first time, their staff will be supplemented by General Engineering Consultants beginning next month. These specialized procurement services are provided statewide and due to the irregular nature of these contracts, these services must remain discrete, and centralized. **Reduction**: These units will not be reduced. **Regional Staff**: N/A
Maintenance Operations and Fleet Management Unit	**Description**: The Maintenance Operations and Fleet Management Unit's core functions are to develop and formulate uniform maintenance policies and procedures for implementation throughout the Division of Highways field operations. It is a field support unit for the 14 Highway Divisions and oversees Federal Programs and Statewide Programs. Federal Programs include Disaster Recovery and Outdoor Advertising. Statewide Programs include; Technical Training, Pavement Preservation, Motor Fleet Management, Inmate Labor, Statewide Salt and Asphalt Storage and various internal and external reporting requirements. In addition, this Unit provides vehicles, equipment, and inventoried materials in support of the 14 Highway Divisions and Central Units for the Division of Highways. This is accomplished through the acquisition, maintenance, and disposal of vehicles and equipment and the acquisition, warehousing, and distribution of materials and supplies to the field units. This Unit also manages and

Unit	Description, Outsource, Reduction & Regional Staff Information
	maintains fuelling sites, shop facilities, weigh station scales, and a statewide radio system. **Outsourcing**: An area that can be outsourced is the central inventory warehouse operations. Other Unit functions are unique in nature and will more effectively support the 14 Highway Divisions if managed internally. **Reduction**: This Unit will be reduced. **Regional Staff**: Having regional fleet support specialists allows consistent application and oversight of fleet management principals and programs with the ability to cross Division lines. They are still able to work with industry, manufactures and developers on behalf of the Divisions. They also perform independent investigations on equipment. They fully support the disposal of surplus equipment through a centralized process that cannot be devolved to the Divisions. There is, however, one regional area equipment superintendent that can be devolved to the Division.
Right of Way	**Description:** The Right of Way Unit is responsible for the fee simple acquisition of all necessary lands and rights of way for the construction of new or highway improvement projects in the STIP. Primary accountability is the compliance with federal regulations under 23 CFR and 49 CFR as related to the appraisal of market valuation and providing relocation services to effected business or residential properties. Right of way acquisition and relocation services are the final preconstruction activities to occur prior to the letting of a construction project. This Unit is also responsible for assisting Division staff with negotiations, developing and disseminating policy, managing consultant operations for the Turnpike Authority, Design Build and P3 projects and overseeing property management programs. **Outsourcing:** Currently, this unit outsources a considerable portion of appraisal activities. There are additional opportunities to increase the outsourcing of appraisal work. However, in order to comply with federal regulations, a qualified and knowledgeable appraisal staff needs to be retained to review and approved appraisals performed by contractors and to perform time sensitive appraisal work with in-house staff. **Reduction:** This unit will be reduced. **Regional Staff:** Appraisal staff are regionally based in five locations across the state. This provides efficiencies, as the regional staff works across Division lines and is able to respond to varying project demands in the different geographic areas. Other program or activities such as developing and disseminating policy, managing consultant operations, overseeing property management programs and providing Division staff with negotiation assistance on more complex claims is more effective and consistent with centrally managed staff.
Roadside Environmental Unit	**Description**: This Unit provides technical and program support to the Chief Engineer's Office and the Division of Highways for maintenance and construction activities. Primary responsibilities are administration of the Department's Sedimentation and Erosion Control Delegation, National

Unit	Description, Outsource, Reduction & Regional Staff Information
	Pollution Discharge Elimination System (NPDES), Stormwater permit implementation, vegetation management along the statewide highway system, highway landscape design and development, maintenance and capital improvements of 60 statewide rest areas, and management of special programs to preserve and enhance highway aesthetics. Other responsibilities also include overseeing the Adopt-a-Highway Program, Sponsor-a-Highway Program, the Scenic Byways Program, and Hazardous Materials Management Program and the Department's Remediation Program for Soil and Groundwater Clean-up at former Asphalt Testing Laboratories. In session law 2015, HB 97 consolidated all vegetation management and litter removal policy efforts under this Unit. In addition to these added responsibilities, this Unit was also tasked with managing the Department's Underground Storage Tank (UST) program for soil and groundwater remediation activities at former leaking UST's located at Department facilities. This Unit drives program delivery by ensuring that requirements of the Sedimentation and Erosion Control Delegation are met by overseeing sedimentation and erosion control plan preparation and construction compliance for all Department land disturbing activities. Without this delegated program, the Department would have to acquire sedimentation and erosion control plan approvals for each construction (land disturbing) project. This Unit works closely with Division forces for the field implementation of Department's NPDES Storm water Permit on construction projects, 100 maintenance yards statewide, rail and ferry facilities, and other operations related activities. **Outsourcing**: Erosion control plan development, rest area maintenance and renovation, hazardous materials sampling and testing, mowing, and litter removal have been outsourced. There are opportunities to expand outsourcing of these and other production oriented functions. There are a number of key job functions that need to be retained internally to ensure these critical programs operate efficiently and consistently on a statewide level. **Reduction**: This Unit will be reduced **Regional Staff**: The regional staff is charged with program delivery by ensuring all projects are built in compliance with directives set forth in various environmental delegations from DEQ. The positions need to remain centrally staffed and not devolved to the Divisions in order to continue independent third party reviews as required by the delegated authority agreement.
Utilities	**Description**: The mission of this Unit is to facilitate and manage the relocation, adjustment, removal and addition of utilities along highways and rights-of-way while maintaining and preserving the integrity of the highway system and ensuring the safety of its users. This Unit provides the expertise to resolve utility conflicts, design and review proposed utility installations on roads and structures owned, operated and maintained by the Department. This Unit is made up of three separate Sections: the

Unit	Description, Outsource, Reduction & Regional Staff Information
	Utilities Engineering Section, the Utilities Coordination Section and the Utilities Encroachment Section. **Outsourcing**: Utility design and relocation coordination is currently outsourced through the respective sections, and by utilizing the Division Utility Coordinators a portion of this work has been devolved to the Divisions. Additional outsourcing opportunities and consolidation of functions exist within all of the Utility Sections but maintaining a core group of utility subject matter experts dealing with issues such as encroachments, design-build projects, agreements and CADD workspace development is critical to provide program oversight and to establish uniform operating policies and procedures. **Reduction**: This Unit will be reduced **Regional Staff**: N/A
Structures Management	**Description**: This Unit is responsible for: administering the bridge program- developing and overseeing the statewide plan for preserving, rehabilitating and replacing the State's 18,000+ bridges and culverts; designing and developing contract plans for bridges and culverts; administering North Carolina's federally mandated National Bridge Inspection Standards (NBIS) program- which requires all state and municipal bridges to be inspected and load-rated every 24 months; developing, maintaining, and disseminating the Bridge Management System (BMS) – software that assists Divisions and central management in the fiscal management of the State's bridge assets; and developing, maintaining and disseminating policies, procedures, standards and specifications to ensure consistent design, inspection and contract administration practices. This Unit also works to support Highway Division activities by providing specialized expertise with moveable bridges and other unusual structures, and reviewing contractor means and methods submissions during construction. Qualified in-house design staff should be retained to scope and negotiate work for private engineering firm, assist in complex project development that involves extensive interaction with environmental agencies and/or railroad companies and performing structure design and plan preparation. Smaller and less complex projects like bridge and culvert replacements with lesser risk can be done at the Division level. Similarly, qualified inspection staff should be retained to perform structural inspections and oversee private firm work in accordance with federal standards. These federally mandated standards contain specific condition assessment protocol, recording requirement, and quality control and quality assurance procedures. Supervisory staff is required to comply with the federal standards. NBIS, BMS, Bridge Program and maintaining policy, are more effectively managed centrally. These activities require developing and/or maintaining a consistency on a statewide basis and are effectively handled by a small central working group.

Unit	Description, Outsource, Reduction & Regional Staff Information
	Outsourcing: Currently, design and contract plan development as well as structural inspections have been successfully outsourced to private engineering firms. While a core staff with institutional knowledge in these areas should be retained, additional outsourcing opportunities for these specific activities exist. **Reduction:** This Unit will be reduced and positions divested to the Highway Divisions and central project delivery teams. **Regional Staff:** Efficiencies are realized by having Inspector and supervisory positions staffed regionally rather than Division based; this allows inspection teams to work across Division lines and respond immediately to emergency situations.
Construction	**Description**: This Unit is responsible for establishing policies and procedures and providing oversight to the contract construction program. The primary purpose of this Unit is the overall administration of all contract construction projects and to serve as a consultant to the other Units of the Department and industry partners on all matters pertaining to construction. The staff of this Unit provides support and technical assistance to the 14 Divisions to ensure the Department's construction program is administered appropriately and uniformly statewide. This Unit provides high level review of change orders and claims resulting in additional contract time or costs to ensure appropriate efforts are made to minimize project delays and cost overruns by using lessons learned and best practices from across the state. Administrative functions related to review of monthly payments to contractors, records retention, and initial contract authorization in the Department's contract administration system will be devolved out to Division staff. The Federal Highway Administration has delegated much of their project oversight to the Department based on activities completed by this Unit and those functions are best retained by this Unit. **Outsourcing:** Contractor claims review, training and other administrative activities could be considered for outsourcing but only on an as needed basis. **Reduction:** This Unit will be reduced. **Regional Staff:** While some administrative functions can be shifted to the divisions as previously state, the regional staff should remain centralized to continue project oversight activities that have been delegated to the Department by the FHWA.
Materials and Tests	**Description**: This Unit has the responsibility of establishing acceptance criteria for materials and manufactured products to be incorporated in the North Carolina highway system and ensuring that these materials and manufactured products meet appropriate criteria and function as intended. This Unit also provides pavement design and analysis, pavement data collection and pavement management system services. This is accomplished through inspection of materials and products, audits/reviews of producers/suppliers facilities and quality practices, certification and assessments of technicians and laboratories in sampling and testing of

Unit	Description, Outsource, Reduction & Regional Staff Information
	materials, and maintaining approved supplier and product lists. Additional functions include pavement performance data collection and pavement designs to support the Transportation Improvement Program (TIP). Pavement data is also entered into the Pavement Management System data base for the development of the Highway Maintenance Improvement Program (HMIP), and the federal Highway Performance Management System (HPMS). **Outsourcing:** Currently, some data collection, sampling and testing, and inspection functions are outsourced. There are opportunities for additional outsourcing of these areas. There is also an opportunity to use Divisions' project administration staff to evaluate the acceptance of certain manufactured materials when delivered to the project. Some examples include corrugated metal pipe, guardrail, stay in place metal forms, etc. In these cases the unit would focus on annual or semi-annual audits of the quality control programs at the facilities producing these items and leverage the Division staff already assigned to oversee projects to make final material acceptance. Certain functions performed by this Unit present outsourcing challenges because of potential conflict of interest detailed in the federal regulations. There are several different programs where a given firm would only be able to perform one of four various types of testing or inspection (Independent Assurance, Quality Control, Quality Assurance and Dispute Resolution). This limits firms to working only on one program or project at a time. It is typically more effective for the Department to handle Independent Assurance, Quality Assurance and Dispute Resolution functions as these functions require less staff but those with more institutional knowledge of the overall quality program. **Reduction:** This Unit will be reduced. **Regional Staff:** It is not recommended to devolve the regional staff to the Divisions because they handle independent QA assessments/training and need to remain third party assessors. (Outsourcing this function is difficult because it can prevent firms from working on multiple programs as it limits what functions they can perform.) This Unit's staff also travels in and out of state to producer facilities to perform plant and material approvals. (Approval at the plant site vs. project site prevents project delays due to unacceptable material being delivered to the project.) It is recommended to maintain a concentrated group with this expertise that provides training and guidance.
Operations Program Management	**Description**: This Unit provides administrative and technical support to the Board of Transportation through the Chief Engineer's Office in formulating statewide policies and procedures for administering appropriations of the highway fund, final review of road additions and abandonments for the State's secondary road system, ensures proper documentation for FEMA/FHWA disaster relief reimbursements, and provides analytics of highway assets required for performance based allocations and management. This Unit is responsible for verifying that projects and programs presented to the Board of Transportation comply with legislative laws, policies established by the Board of transportation as well as Department of Transportation guidelines, and ensures funds are available

Unit	Description, Outsource, Reduction & Regional Staff Information
	to support timely project delivery. Functions of this Unit include producing monthly agenda items for monthly board of transportation meetings, cash managements for Division of Highways programs, management of road and highway asset inventory, annual condition assessments for highway assets, operation of asset management analytical systems, and production of mapping products for public, internal and other state agency use. **Outsourcing**: Mapping resource services (state travel map, county maps, and various other mapping products) could become an outsourced activity or be consolidated with other GIS mapping section/units within the Department. Also, the final review of road addition/abandonment packages and production of Item-G agenda monthly Board approval could be consolidated with our road inventory functions. The remaining administrative and technical functions are directly engaged with core mission activity for the Department's project delivery initiatives are more effectively managed centrally. **Reduction**: This Unit will be reduced. **Regional Staff:** N/A
Facilities Management	**Description**: This Unit consists of the following groups: Facilities Design, Facilities Maintenance, Real Estate Management, and Energy Management. This Unit administers the Department's capital improvement program and maintains the Department's physical plant. The maintenance function includes facilities maintenance of 92 DMV/SHP facilities statewide and eight downtown Raleigh buildings. It also includes management of the Department's Energy and Water Conservation Program under the Utility Savings Initiative (USI). Real Estate Management is responsible for the Department's real property and leased space acquisitions and disposal, and insurance coverage. This Unit consistently operates under the §143 statute –different from §136, the statute that governs the Department's operations. **Outsourcing*:*** With the exception of the energy management function, all of the functions performed by this Unit can be outsourced and/or devolved to the Divisions. The specific expertise of the energy management program, USI reporting requirements, and management of performance contracts requires a Department-designated position to protect and represent the interests of the owner. The management of vertical construction is vastly different from horizontal construction management (§136 v. §143). While the Divisions within Highways have the technical skill set, they lack the specific experience and knowledge and may opt to outsource this function rather than perform it in-house. There would still need to be owner involvement in capital projects as the outside designers do not represent the owner in the capital improvement process. Some level of central management is warranted to coordinate workloads; manage consultants' deliverables, milestones, and performance; perform limited construction administration; oversee budget preparation and monitoring; and serve as the Capital Projects Coordinator. **Reduction**: This Unit will be reduced.

Unit	Description, Outsource, Reduction & Regional Staff Information
	Regional Staff: The small number of regional staff should remain centralized and not devolved to the Divisions as they cross division lines and serve the entire state.
ITS and Signals	**Description**: The mission of this Unit is to provide safe and efficient movement of people and goods at signalized intersections, congested corridors and freeways through the planning, analysis, design and implementation of traffic signals, computerized signal systems and intelligent transportation system (ITS) technologies statewide. This includes the development of project plans and specifications, traffic signal equipment bid documents, providing technical assistance to construction personnel, repairing traffic signal and ITS equipment, and establishing statewide standards and policies. General Statute 136-30 requires that all traffic control devices placed on the State Highway System conform to the Federal Manual of Uniform Traffic Control Devices. The ITS and Signals Unit ensures the requirements of the General Statutes are met and enforces the consistency and uniformity of traffic signals on the State Highway System. Traffic signals and ITS encompass a broad range of software, hardware, communications-based processing and electronics technologies in a highly dynamic and evolving field. This Unit is comprised of civil engineers, structural engineers, electrical engineers and electronics technicians who possess unique and specialized skills that are not readily available in the private sector. **Outsourcing:** A large portion of the traffic signal design function can be outsourced and the Department e is working to reduce the number of FTEs in this area. The other functions are not suitable to be shifted to the 14 Divisions due to increasing complexity of the equipment, changing national standards, and necessity of maintaining a critical mass of specialized expertise. There is a shortage of electrical engineers that work in the transportation field; the availability of these skill sets in the private sector is limited. The traffic electronic center could be outsourced completely; however, when considering: the increase in inventory to insure availability of components; the cost of delays to repair equipment, and the cost of troubleshooting the equipment, it is more cost effective to maintain a central electronic center. The last estimate, more than a decade ago, showed a three to one cost saving by maintaining this in house. **Reduction:** This Unit will be reduced. **Regional Staff:** N/A
Oversize/Overweight Permit	**Description**: The goals of this Unit are to protect the safety of the public, preserve the integrity of state roads and infrastructure and help the economy of the state by maintaining a cost effective and responsive permitting system. This Unit works with Division staff as well as other agencies including State Highway Patrol, NC Enforcement Section and NC Weigh Stations. This Unit brings in $6M a year in revenue; of which $1.1M

Unit	Description, Outsource, Reduction & Regional Staff Information
	is the unit's operating budget with the excess going into the general maintenance fund. This Unit is a call center that issues over 170,000 single trip permits per year for oversize/overweight vehicles. In addition, there are nearly 6,000 super load permits issued each year. This Unit is also responsible for the escort driver certification program and licensing of house movers. Overall, nearly 200,000 permits are issued each year; and thousands of escort drivers' records are maintained. **Outsourcing**: Outsourcing has begun for the issuance of single trip permits. This will continue to expand in the next few years. It would not be prudent to outsource the super load permit function; it comprises less than five percent of the overall permits, but has the highest level of risk. Many of the permits cross multiple division boundaries and would create a significant customer service issues to force requestors to the various division offices. It would not be practical to staff this function in the division offices. **Reduction**: This Unit will be reduced. **Regional Staff**: N/A
Traffic Safety	**Description**: The primary purpose of this Unit is to administer the Federal Highway Safety Improvement Program; the State's Spot Safety Program; administer the Federal Surface Transportation Assistant Act concerning large truck routing; administer the various federal and state required traffic ordinances; provide technical and policy support to the 14 Division Offices; perform safety analyses for all TIP and safety projects; conduct independent investigations of traffic safety and traffic operations concerns; administer the statewide traffic data collection program; provide professional expertise to the Attorney General's Tort Claims section in the defense of the state; and establish statewide standards and policies for traffic safety analyses, investigations, and procedures. **Outsourcing**: This Unit has increased the availability of the safety analysis in the private sector. These analyses are complex and require maintaining scarce skill sets. The more complex analyses are completed by Universities; highly experienced Department staff; and firms who routinely work in national research areas. **Reduction**: This Unit will be reduced. **Regional Staff:** Transitioning the Regional Traffic Engineering positions to the divisions is not advised because we need to maintain the independent considerations. The Department is providing an appeal process to local decisions on many items and the regional engineer provides independent review as part of this process. Furthermore, outsourcing this function is not advised because the State can offer the greatest amount of flexibility in consideration of the various state and federal requirements and accept risk that many firms would not be willing to accept liability for.
Signing and Delineation	**Description**: This Unit administers engineering plans, specifications, and estimates for all traffic signs, pavement markings, and other traffic control devices. Further, the unit also investigates responses made by citizens,

Unit	Description, Outsource, Reduction & Regional Staff Information
	public officials, industry representatives, and state and federal agencies regarding these applications; and assists in statewide routing coordination. Statewide signing and responsibilities also include the operation and management of three Signing Programs (Logo Signing, Tourist Oriented Directional Signs, and Agricultural Tourism Signing) established by General Statutes and regulated by Administrative Code. These responsibilities include the establishment of policies, procedures and standards for these activities to ensure conformance with federal guidelines, the General Statutes of North Carolina and the Department's Fiscal Procedures. **Outsourcing**: Much of the signing plans are currently developed by contractors. There is an opportunity to reduce the number of FTE's in this area. However, the state needs to maintain these skills in order to continue to advance the statewide standards, policies and procedures. **Reduction**: This Unit will be reduced. **Regional Staff**: N/A
Traffic Management	**Description**: This Unit is comprised of the Congestion Management Section, Work Zone Traffic Control Section, and Municipal and School Transportation Assistance Section. This Unit develops standards; policies and procedures for analyses; develops designs; and administers consultant contracts. Plans and analyses for Congestion Management, Work Zone Traffic Control and Municipal and School Transportation Assistance are also developed by this Unit. This Unit administers work and expertise specifically required by the Federal Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991; Title 23 of the Code of Federal Regulations (CFR) part 630 sub-part j (23 CFR 630 j); and North Carolina General Statute 136-18(29 and 29a). **Outsourcing**: A large portion of the work this Unit does is outsourced and/or is the responsibility of the Divisions. There are opportunities to increase this further however, the complexity of the analyses makes it difficult to maintain the expertise in the small staff sizes that would be expected if these functions were completely shifted to the Division Offices. Further, outsourcing at 100 percent relinquishes the Department's ability to insure quality control of these engineering responsibilities. **Reduction**: This Unit will be reduced. **Regional Staff**: N/A
Traffic Systems Operations	**Description**: This Unit develops policies and procedures for incident management, emergency response, traveller information and signal systems timing. The core function of this Unit is to reduce the impacts of traffic delays due to incidents, and to improve traffic flow by developing and implementing strategies that improve travel times, reduce stop delays, and manage traveller information across the state. This Unit offers statewide support of traffic operations through Signal System Timing, Integrated Corridor Management (ICM), Emergency Response when the Statewide Emergency Response Team (SERT) is activated, the Incident Management Assistance Patrol (IMAP) Training Program, Transportation Management Center (TMC) Operator Training

Unit	Description, Outsource, Reduction & Regional Staff Information
	Program, Standard Operating Procedures (SOPs), Configuration Management System, and Traveller Information through the Traveller Information Management System (TIMS) program and NC511. The Statewide Transportation Operations Center (STOC) at the NC National Guard Joint Force Headquarters is operated daily by the TSOU staff. More than 75 percent of this Unit's functions/services are outsourced, either through consulting or contracting services. **Outsourcing*:*** More than 80 percent of this Unit's function is either outsourced or managed by the Division staff. The central staff develops standards, procedures, and administers statewide contracts that provide contractors to the traffic management centers. The Department currently outsources a large quantity of the traffic signal systems timing function. The small staff that is dedicated to this function maintains the standards and expectations, manages contracts and performs these functions to keep their skills sharpened. Completely transferring this function to the Divisions has not been successful in the past. The turnover and lack of availability of the scarce skill makes it extremely difficult to maintain this expertise in the Division Offices. **Reduction**: This Unit will be reduced. **Regional Staff**: N/A

Appendix B – Current and Planned Staffing Levels by Unit

1.1.1 Division of Highways Staffing Levels

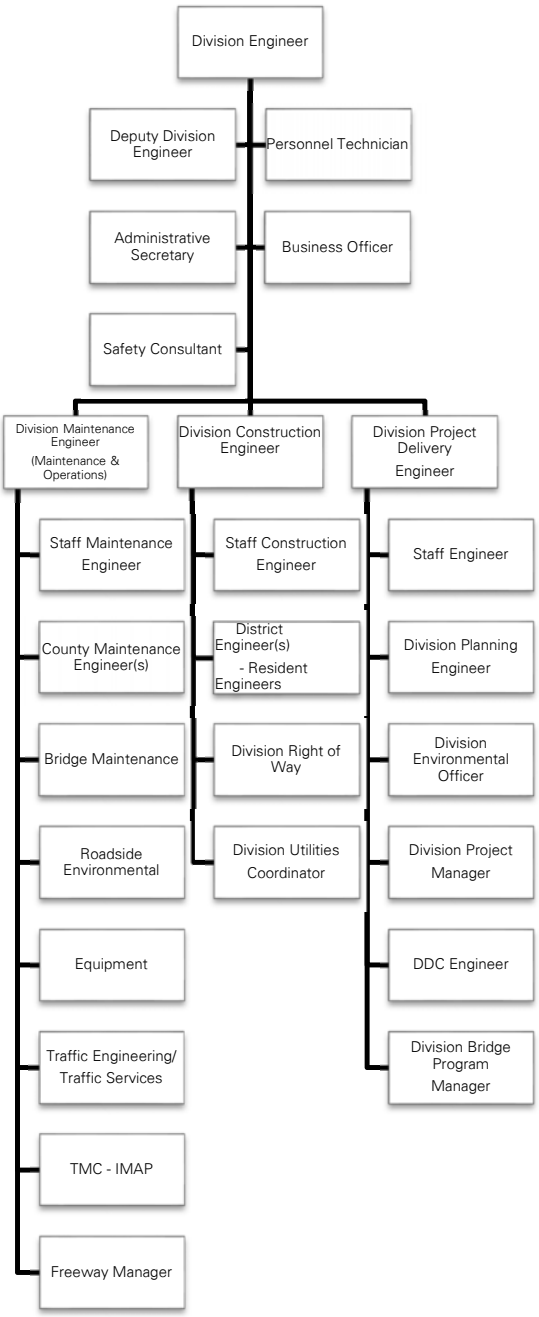
Organizational Units	Central and Regionall Based Positions			Central and Regional Based Positions (located outside of Raleigh)			Total Filled	Planned Staffing Reductions	
	Total Positions	Vacant	Filled	Total Positions	Vacant	Filled		Total Filled Reduction	Central Transfers to Divisions
Division of Highways									
Chief Engineer's Office	22	6	16	0	0	0	16	3	0
Facilities Management Unit	29	5	24	8	1	7	31	7	0
Operations & Fleet Management Unit	116	9	107	4	0	4	111	25	0
Operations Program Management	24	1	23	0	0	0	23	5	0
Construction Unit	14	1	13	14	1	13	26	4	0
Materials & Tests Unit	106	14	92	113	12	101	193	39	0
Right of Way Unit	35	3	32	53	8	45	77	16	0
Roadside Environmental Unit	45	5	40	15	1	14	54	9	0
Structures Management Unit	152	10	142	54	9	45	187	36	8
Utilities Unit	42	7	35	0	0	0	35	8	0
ITS & Signals Unit	60	6	54	0	0	0	54	11	0
Oversize Overweight Permits Unit	23	4	19	0	0	0	19	4	0
Signing & Delineation Unit	23	2	21	0	0	0	21	5	0
Systems Operations Unit	15	1	14	0	0	0	14	1	0
Trafic Management Unit	40	9	31	0	0	0	31	6	0
Traffic Safety Unit	30	4	26	13	2	11	37	7	0
Subtotal Divisions of Highways	**776**	**87**	**689**	**274**	**34**	**240**	**929**	**186**	**8**

1.1.2 Technical Services Staffing Levels

Organizational Units	Central and Regionall Based Positions			Central and Regional Based Positions (located outside of Raleigh)			Total Filled	Planned Staffing Reductions	
	Total Positions	Vacant	Filled	Total Positions	Vacant	Filled		Total Filled Reduction	Central Transfers to Divisions
Technical Services Division									
Technical Services Director's Office	5	1	4	0	0	0	4	0	0
Contract Standards & Administration	49	2	47	0	0	0	47	5	0
Design Build	13	1	12	0	0	0	12	0	0
Geotechnical Unit	48	5	43	35	9	26	69	8	14
Hydraulics Unit	53	8	45	0	0	0	45	4	14
Location & Surveys Unit	28	0	28	112	4	108	136	4	0
Photogrammetry Unit	47	1	46	0	0	0	46	6	0
Priority Projects	9	0	9	0	0	0	9	0	0
Professional Svcs Mgmt	9	3	6	0	0	0	6	0	0
Project Development & Environmental Analysis Unit	105	13	92	0	0	0	92	10	16
Roadway Design Unit	85	18	67	0	0	0	67	8	16
Transportation Program Management	36	4	32	0	0	0	32	4	0
Subtotal Technical Services	**487**	**56**	**431**	**147**	**13**	**134**	**565**	**49**	**60**

Appendix C

Typical Division Organizational Structure



Transportation