Rotation Descriptions:

1. Asset Management & Planning, Traffic Engineering, Local Programs, and Economic Development

   The GEDP rotates through four divisions during the time with this department. The bulk of time is assigned to the Traffic Engineering Division, including its four offices of Traffic Safety, Traffic Administration, Traffic Design & Review, and Corridor Development. Asset Management & Planning is charged with INDOT's strategic transportation planning, plays a pivotal role in asset and capital program management, and maintains road inventory data. Local Programs administers local federal-aid projects and coordinates with the state's Metropolitan Planning Organizations (MPOs). Economic Development serves as INDOT's lead in transportation matters relative to business expansion initiatives.

2. Bridge Design/Bridge Rehabilitation

   The Bridge rotation is split up between Bridge Design and Bridge Rehabilitation. These departments are responsible for developing designs, reviewing consultant plans, creating cost estimates, determining load ratings, and maintaining bridge standards. During this rotation the Graduate Engineer will have the opportunity to develop plans for replacing/rehabilitating existing structures, review plans, determine quantities, become familiar with the process for load rating a bridge, review bridge inspection reports, and go out to the field to inspect bridges.

3. Bridge Inspection

   The period spent in Bridge Inspection will involve conducting inspections of Indiana's bridges and large culverts in an assigned district in order to maintain public safety and confidence, and to protect public investment. The Graduate Engineer will learn what to look for when conducting an inspection such as spalling, efflorescence, and different types of cracking. The participant will also assist in creating a report to document the bridge's/culvert's deficiencies and become familiar with the software used to inventory them.

4. Construction

   While in Construction engineers will receive training on an active field construction project supplemented with District Office training. The field training typically includes layout, excavation, embankment, small drainage structures, pavement, and bridge structures. The Graduate Engineer will also receive training on how to perform material test on site. Engineers may be assigned to different projects in order to gain experience in several of these areas. In the District Office a period of training, time is spent on preparation and checking of final construction records.

5. Construction Management

Construction Management is responsible for providing support to the district construction departments, contractors, cities, utility companies, etc. to complete a construction project. This rotation will demonstrate how a project comes together from beginning to end. The participant will work with a Construction Field Engineer who will explain change orders, etc.

6. Design Engineering

The period in Design Engineering at the district office includes; field checks, roadway assessments, assessing ADA compliance, bridge inspections (bridge rehab), creating bridge reports, plan reviews, plan creation, creating contract documents for letting. The engineer will shadow the design engineers at field checks, project specific meetings, and possibly public hearings. The graduate engineers will assist in the development of solutions/recommendations regarding project plan development, and plan preparation for upcoming construction projects.

7. Environmental Services

Environmental services is responsible for the production of documents needed to obtain environmental clearance (e.g. permits) for transportation projects, showing adherence to the guidelines set forth in the National Environmental Policy Act (NEPA) and other federal, state, and local requirements. This involves researching various databases, conducting site visits, analysing data and writing various reports of findings (e.g. RFI, Waters Reports, CEs). During this rotation the Graduate Engineer will have the opportunity to learn how to use GIS software, the fundamentals of scoping, the fundamentals of a Red Flag Investigation (RFI) and more to gain an in depth understanding of how the department functions. The rotation will also include a visit to Central Office Environmental Services.

8. Geotechnical Engineering

The Office of Geotechnical Engineering performs geotechnical investigations (including field drilling, laboratory testing, and design engineering) to determine the properties of the soil and rock and then provides recommendations for the foundation of various INDOT projects such as roads, bridges, culverts, pipes, retaining structures and landslide corrections. In addition, this office provides construction and technical support to district construction and testing personnel on geotechnical activities such as construction monitoring, reviewing mix design for chemical modification, approving pile driving systems, and performing pile load tests. The GEDP will work hand in hand with engineers to help determine the various techniques of foundation design. The GEDP participant will also get hands on experience in the soils testing lab as well as going out to the field and collecting soil samples.

9. Highway Design and Technical Support

Roadway In-House Design includes the design of major new projects and assists structural services with designing approach work for bridge replacement projects. Roadway Review administers consultant contracts, conducts in-house reviews and provides quality checks with consultants and district work. The engineer will be exposed to these processes for an understanding of this department's relationship to all others.

10. Hydraulics

The Hydraulics Office has ideal projects for a new engineer. The GEDP participant will be working on preliminary and final culvert designs giving the engineer hands-on-training and an opportunity to practice engineering judgment. The participant will also go out in the field 1-2 days per week to collect data and survey project sites. In addition, the Graduate Engineer may be responsible for creating cost estimates and providing the project scope for the Engineer's report. The completed work is part of an actual project and assists INDOT in the project design process.

11. Materials Management

This division provides managerial and technical leadership to ensure state wide uniformity in the inspection and testing of highway materials. It is responsible for the evaluation of new products and failed material investigations. Engineers will have laboratory activities including steel, chemistry, aggregates, asphalt, concrete and misc. material testing. The Engineer will see Hot Mix plants, tour an underground mine and conduct audits of materials venders.

12. Multi-Modal

Graduate Engineers will spend time in the Aviation, Transit and Rail areas with an emphasis on the incumbent getting a high level overview of what each Department does. This will involve partnering with individuals in each area to get the experts education on what is performed. In addition, the incumbent will be taken outside the Central Office complex to experience hands on approaches to what is done on a regular basis. There will be site rail exams, flying over and to airports and visits with transit authorities in the state. The schedule of rotation in the Division will be finalized based on the dates of the rotation and predicted weather. The Graduate Engineer will also be exposed to grant funding, safety reviews, airport exams, rail standards and reviews as well as a review of the 60+ transit systems throughout the state.

13. Pavement Design

The pavement design group is focused on creating the best pavement for the expected loads on a road surface and also determining the most efficient choice when multiple options are available. During the time spent in this rotation the Graduate Engineer will go on field

inspections to check rutting, types of cracking, and other signs of pavement distress. The engineer will also be introduced to the software used to create pavement designs and learn how to determine the life cycle cost for alternative designs.

14. Real Estate

The main responsibilities of this department are managing and overseeing the following: appraising, acquisition, relocation assistance, property management, real estate closings, contracts and instruments, training and quality assurance reviews, and condemnation. The engineer will get an overview of these processes and how the department activity is critical to all engineering projects.

15. Research and Development

The Research and Development (R&D) Division manages the INDOT Research Program, performs specialized testing and forensic investigations for INDOT's roads and bridges, and provides technical training, and technology transfer. R&D contributes in keeping INDOT a leader in the construction, maintenance, and rehabilitation of roads and bridges. R&D also helps keep INDOT efficient by eliminating ideas that may not be useful for a particular application while providing ideas in other scenarios. During the time spent with Research and Development the Graduate Engineer may become familiar with the INDOT/JTRP Research Program, specialized testing of roads and bridges, forensic investigations, and technology transfer activities.

16. Traffic Engineering/Maintenance and Operations

The period in Traffic Engineering/Maintenance and Operations at the district office includes: traffic investigations, traffic plans review, roadside drainage, pavement preservation and operational aspects of roadway painting and signs repair/installation. The engineer will shadow the investigations engineer, roadway engineer, signal shop supervisor, traffic operations manager and traffic/construction liaison. The participant will also assist in the development of solutions/recommendations regarding traffic control devices, drainage failure and plan preparation for upcoming construction projects and observe the installation/repair of pavement markings, traffic signals and signs.

17. Traffic Management

Also known as Intelligent Transportation Systems, the engineer will be exposed to today's high tech side of traffic management. In this rotation the participant will learn how traffic signals are timed, how to inspect work zones and ensure safety measures are in place, how the Hoosier Helper program operates, and more. With this exposure to various ways INDOT manages traffic the engineer will receive an in-depth look at the future of transportation.