

## **COUNTY OF MIDDLESEX**

### **JOB DESCRIPTION**

Title: **ENGINEERING TECHNICAL II**

Reports to: Engineering Supervisor

Department: **ROADS**

Effective Date: \_\_\_\_\_

### **JOB SUMMARY**

Under the direction of the County Engineer and/or Engineering Supervisor, prepares plans for road reconstruction, carries out/assists with engineering surveys and construction layout, and provides bridge, culvert and contract construction inspection along with miscellaneous office duties.

### **PRINCIPAL RESPONSIBILITIES**

#### **1. Prepares construction plans and related documents.**

- a) Interprets field data, land plans, municipal drain files, utility locates and other available information to draw base plans, profiles, and cross-sections.
- b) With the assistance of the County Engineer and/or Engineering Supervisor uses County standards, O.P.S.S. standards, common construction practices, and general engineering principals to prepare preliminary designs for roads and bridges.
- c) Performs mathematical calculations for horizontal curves, spiral curves, vertical curves, etc.
- d) Brings to the attention of the Engineer and/or Engineering Supervisor design or construction problems.
- e) Prepares design profiles, cross-sections, and details in support of detailed drawings.
- f) Prepares detailed drawings for in-house and contract projects.
- g) Prepares quantity estimates from plans, cross-sections, details and standards.
- h) Completes as-built drawings and calculates final earth quantities from cross-sections.

#### **2. Supervises survey crew by:**

- a) Ensuring that survey crew employees observe commonly accepted rules of personal conduct, appearance and punctuality while on duty.
- b) Instructing crew members including Summer Students as to the proper methods for carrying out pre-engineering survey and construction layout operations.
- c) Instructing survey crew employees as to proper safety precautions and equipment, and ensuring that these instructions are followed.
- d) Bringing to the attention of County Engineer or Engineering Supervisor any survey crew employee who fails to observe any of the above standards of performance and conduct.
- e) Advising Engineering Supervisor of disciplinary problems.

**3. Executing pre-engineering survey operations by:**

- a) Obtaining through the office legal plans and "as built" construction drawings to set up the pre-engineering survey.
- b) Ascertaining limits of right-of-way and establishing survey base line.
- c) Picking up cross-sections and topography as directed.
- d) Establishing vertical and horizontal controls.
- e) Conducting volume surveys for granular materials.
- f) Providing neat, clear, checked survey notes and accurate digital plans for all work.
- g) Conducting other surveys as directed.

**4. Executing construction layout operations by:**

- h) Obtaining up-to-date plans from the office.
- i) Establishing: right-of-way, road alignment, limits of sub-ex, grades for sub-ex, grades for granular, limits of paving, location of structures, grades for pipes and ditch work.
- j) Providing other layout as directed.

**5. Survey equipment shall be properly operated by:**

- a) Ensuring that County equipment and rented equipment are working effectively and properly maintained.
- b) Advising the Engineering Supervisor when major repairs are required

**6. Provides contract inspection on a variety of road construction/repair contracts as assigned by:**

- a) Interprets plans, specifications, files, locates and other available information to ensure that contracts are carried in accordance with County standards, O.P.S.S. standards, common construction practices, and general engineering principals.
- b) Brings to the attention of the Engineer, and/or Engineering Supervisor unusual design or construction problems.
- c) Maintains detailed daily log notes regarding contract progress and/or issues.
- d) Maintains detailed records for contract pay items and provides quantities to Engineering Supervisor to support payments to the contractors.
- e) Provides as-built information for file drawings and calculates final earth quantities from cross-sections.
- f) Provides asphalt and granular testing services.

**7. Provides services in the role of Instrument Person for obtaining pre-engineering data and for construction layout.**

**8. Maintains engineering files and performs general engineering office and drafting room duties.**

**9. Registers deeds, checks property ownership, and searches titles at the Land Registry Offices.**

- 10. Carries out bridge and culvert inspections on all structures per O.S.I.M. manual, including:**
- a) Visually inspecting all bridges and culverts in accordance with an established procedure and schedule.
  - b) Preparation/Updating reports as result of field inspections.
  - c) Advising the Engineering Supervisor of unusual situations or problems on bridges and culverts.
- 11. Conducts other related duties as assigned.**

**MINIMUM JOB QUALIFICATIONS:**

- 1. Thorough knowledge of County Specifications and Standards, O.P.S.S. specifications and O.P.S.D. standard drawings for road and bridge construction, repair and inspection.
- 2. A thorough knowledge of surveying methods, procedures and mathematics required to complete complicated pre-engineering surveys and construction layouts with minimal supervision along with an ability to supervise survey crew personnel.
- 3. A thorough knowledge of Computerized Auto-Cad drafting procedures along with the ability to complete design projects with a minimum of direction.
- 4. Knowledge of the Land Titles Act and Registry Office procedures.
- 5. A valid driver's licence.
- 6. Successful completion of a Civil Technology program at a recognized Community College and a minimum of five years' experience in drafting, surveying and inspection, or an equivalent combination of education and experience.