Civil Engineer (GS-9)

Major Duties

A Forest Service Civil Engineer (GS-9) does many different things including

- Using aerial photos and topographic maps to investigate different routes for possible roads and trails
- Going into the area to investigate existing conditions
- Writing reports about possible locations for roads, trails, campgrounds, and structures
- Using survey information to design roads, including drain systems, road base, and road surface design (designs are done using computers)
- Estimating construction costs
- Monitoring contracted construction crews to make sure plans are being followed, and solving problems that arise
- Making sure construction safety regulations are being followed
- Putting road contract packages together

Being a civil Engineer requires working in an office and in the field. An engineer may work outside in cold or hot weather, walking long distances over rough and uneven land. The job may include long periods of standing or working at a desk.

A person at this level may also supervise other employees (e.g., monitor employee performance, conduct performance appraisals, develop training plans, formulate budgets, coordinate staff efforts, etc.).

A Typical Day

Last week, Julie was given four new projects for her design team. Her task was to design a road into one forest's recreation areas. Julie plans to spend the next three days collecting information about the area. She'll spend the first day reviewing aerial photographs, topographic maps of the area and looking into its geology. The next day or two she will hike into the area and determine exactly where the road should go. She'll take pictures and write notes while she hikes, and use this information to help design the road. Large road projects (longer roads) take longer to investigate and design. Also, if a bridge or other structure is needed, Julie will need to spend more time in the field investigating the situation. It the area has not been surveyed for a project, Julie will have to wait for that information before she can start her design. If she has the survey data, her notes, photos, and talks with the people in recreation, to guide her in designing the road, then Julie will develop the road construction contract and present it to her team for reviewing. Later in the year Julie may be involved in the construction of the road.

Knowledge and Education

A college degree is required for those interested in becoming a Civil Engineer in the Forest Service. Typical college engineering courses include:

- Advance Mathematics (calculus, statistics)
- Engineering (mechanics, road design, structural analysis)
- Physical Science (earth science)
- Economics
- Thermodynamics
- Computer Programming
- Geology

Career Path

Here are the jobs that lead to becoming a Civil Engineer (Series 810 GS-9):

- **Civil Engineer Technician (Series 810- GS-5) –** This person works in a Forest Service unit helping with technical support for engineering work. Types of things this person does include
    - Conducting surveys using levels, compasses, transit, electronic equipment, etc.
    - Measuring the slope of the land using special instruments
    - Getting rough estimates on the quality of earth to be excavated
    - Recording and presenting measurement data
- **Civil Engineering (Series 810 GS-7) –** Job duties include
    - Designing road projects from field notes
    - Making road construction cost estimates
    - Preparing sketches and creating layouts and installation drawings
    - Supervising lower grade employees on a survey crew
    - Inspecting projects under construction stakes for clearing and drainage projects
    - Acting as an inspector on timber sale contracts