NAVAL FACILITIES ENGINEERING SERVICE CENTER
WATERFRONT STRUCTURES DIVISION

SOUTHERN CALIFORNIA LOCATION

Our place of business is a pristine location in Southern California half way between Santa Monica and Santa Barbara. The region offers extensive commercial, cultural, sports, and outdoors activities.

The Naval Facilities Engineering Service Center (NFESC) is on the Naval Construction Battalion Center campus at Port Hueneme, a component of Naval Base Ventura County, which includes quality of life features: gymnasium, golf course, swimming pool, bowling alley, parks, theater, restaurants. Near by are beaches, recreational boating harbor, and shopping centers.

NFESC WATERFRONT STRUCTURES DIVISION

The Waterfront Structures Division is a component of the Shore Facilities Department, which includes three other divisions: Waterfront Materials, Facility Systems, and Physical Security. NFESC also includes the Energy and Utilities, Environmental, Ocean Facilities, and the Amphibious Expeditionary Departments. NFESC is the Navy's Center for specialized facilities engineering and technology providing solutions to problems through engineering, design, construction, test and evaluation, technology demonstration/implementation, and program management. We leverage technology to enhance our clients' effectiveness and efficiency. The staff uses existing technology where we can, identifies and adapts breakthrough technology when appropriate, and performs technology development when required. The Center is subordinate to the Naval Facilities Engineering Command (NAVFAC), the Navy’s facilities, installation, and contingency engineers. NAVFAC is a facilities planning, construction, and sustainment provider and enabler to the Navy War Fighting Enterprise (Surface Warfare, Undersea Warfare, Aviation Warfare, and Expeditionary Warfare). The Waterfront Structures Division, including its subject matter experts and specialized services, supports NAVFAC by developing structural engineering criteria, standards, and tools.

Our products and services are utilized at Navy and Marine Corps installations and operating locations throughout the world. Our activities take us to locations throughout the continental United States, Hawaii, Europe, and Asia.

We collaborate with other structural engineering organizations: Department of Defense, Government agencies, recognized engineering companies, universities, national professional structural engineering organizations (ACI, ASCE, ASTM), and NATO and SEATO allied countries.

WATERFRONT STRUCTURAL ASSESSMENT AND RELIABILITY

The objective is to meet Naval mission load carrying requirements through innovative waterfront structural research, development, test, and evaluation (RDT&E) solutions.

The environmental and service load carrying requirement of the Naval mission includes environmental loads associated with the waterfront, and littoral zone and offshore metocean conditions; and service loads
associated with ships, aircraft, vehicles, materiel and weight handling equipment, and freight. These loads translate into a full spectrum of static or dynamic systematic or random loading conditions.

The waterfront structures of interest include typical infrastructure but the focus is on Naval mission dependent structures such as piers, wharves, graving dry-docks, aircraft engine test cells, and tower systems. These uncommon systems are composed of beams, columns, plates, shells, and thick solids. The materials used in these structures include reinforced concrete, pre- and post-tensioned concrete, steel, timber and recently polymer composites.

Structural response to the loading conditions is determined through laboratory and in situ testing and numerical modeling and simulation. These techniques are used to determine the static and dynamic nonlinear behavior of the structure including its component materials. Structural deterioration complicates determination of existing load carrying capacity. Included are the evaluation of qualitative and quantitative risk and the probability of failure.

Life-cycle systems methodologies and technology are used to maximize structural utilization and reduce life-cycle costs.

EXPLOSION EFFECTS UPON FACILITIES AND PEOPLE

The objective is to protect people, assets and mission capability from the effects of accidental or intentional explosions through innovative explosion consequences risk based mitigation RDT&E solutions.

The effects of explosions include air, water, and ground shock, fragments, and thermal hazards. The consequences of these effects upon people, assets (including facilities), and mission capability are determined through event history, testing, and physics-based modeling and simulation. The Division has been and continues to be an active participant in expanding the knowledge base for structural response to explosions.

Structural systems that either contain or resist explosion effects are developed. These efforts often produced criteria and standards used by architect and engineer firms to design explosion resistant structures. The Division maintains the technical basis for these criteria and standards. Often the basis of previous and current criteria and standards is required to resolve current explosion effects issues.

Physics based deterministic or probabilistic numerical modeling and simulation methods have been and continue to be developed and utilized. Explosion effects are characterized as dynamic loading conditions upon facilities. Facility systems are characterized as single or multiple degree of freedom systems to determine their response to these dynamic loads. Nonlinear mechanics of materials, primarily reinforced concrete and steel, are employed to characterize the resistance to these dynamic loads. Various technologies to either reduce the load or increase resistance are employed. Geographic information systems are developed and used to address separation requirements.

EMPLOYEE BENEFITS

- Work schedule
  - Regular: 5 8-hour days Mon to Fri
  - Flexible work hours option:
    • 0600 to 1800 hrs
    • 0830 to 1100 hrs core time
    • 1330 to 1500 hrs core time
  - Compressed schedule option
    • Work 80 hours in 9 working days
    • One Fri or Mon off
- 26 3-day weekends
- Half-hour lunch period
- Compensatory time off for overtime work
- Overtime hours earned
- Redeemed earned hours
- Holiday Leave
  - 10 days per year
- Annual Leave
  - 13 to 26 days per year
- 4 hours accrued per pay period
- 6 hours/period after 3 years
- 8 hours/period after 15 years
- Carry hours into next year

- Sick Leave
  - 4 hours accrued per pay period
  - Family-friendly leave flexibilities

- Insurance programs
  - Life insurance
  - Health insurance

- Long-term care insurance

- Retirement programs
  - Federal Employees Retirement System
  - Self-directed retirement savings
  - Social Security benefit credits

- Employee development programs
  - Continuous learning opportunities
  - Tuition assistance

- Student loan repayment
- Incentive awards

FEDERAL SALARY INCREASE AND CAREER PATH

Federal salaries are stable and competitive. Initial salary depends upon resume and academic transcript content. Salary increase is rapid, relative to performance and technical development, during the engineer in training period.

The career path begins at the engineer in training level, progressing to professional engineer, then a specialist (GS-12) prior to the fourth year. Competitive selections to expert (GS-13), subject matter expert (GS-14) and finally technical authority (GS-15) occur thereafter.

Federal economic stability equates to better housing buying power. Ventura County housing values appreciate to a larger net value in a relatively short time. The typical county resident moves every 3 to 4 years, thus a junior engineer should plan to move at least once following the engineer in training period. A typical apartment rental ranges from $13,000 per year for a single bedroom to $24000 per year for a three bedroom.

ENGINEER QUALIFICATIONS

- Static and Dynamic Loading Conditions and Patterns
  - Dead load
  - Environmental loads – wind, earthquake, waves
  - Service loads – vehicles, vessels, containers
  - Blast loads – shock (air, ground, water), debris

- Linear and Nonlinear Static and Dynamic Analysis
  - Classical methods – beams, columns, plates, shells
  - Finite element method

- Computational fluid dynamics
- Discrete element method
- Material point method
- Time domain methods
- Frequency domain methods

- Structural Material Resistance
  - Concrete – reinforced, pre- or post-tensioned
  - Steel – rolled, cold formed, wire rope
  - Composites

- Test Planning, Execution, and Data Reduction
- MS or PhD in Structural Engineering
- EIT Registration
- US Citizen

SEND RESUME AND TRANSCRIPT TO:

Frank R. Johnson, MSCE, PE
Waterfront Structures Division
Naval Facilities Engineering Service Center
1100 23rd Avenue
Port Hueneme, CA 93043-4370

Email: frank.r.johnson@navy.mil
Phone: 805.982.1244