

Transportation Engineering Services

Clough Harbour & Associates LLP



Clough Harbour & Associates' (CHA) successful growth has been centered on our Transportation Engineering Division. Since 1952, our engineers and planners have been at the forefront of the industry, working side-by-side with federal and state agencies as well as local municipalities to provide quality comprehensive engineering and planning services. Dealing with some of the most pressing issues facing today's communities, CHA engineers make it their priority to maintain the nation's transportation infrastructure. From highways, to bridges, to railroads, the Transportation Division strives to provide our clients with the most efficient and cost-effective solutions to their infrastructure needs.



Highway Engineering

Highway deterioration is a continuing problem faced by all levels of government. The nation's economy depends on maintenance of the transportation infrastructure that allows us to ship goods, provide services, and move from place to place. Without proper upkeep, the mobility of society would be severely restricted. In our Highway Group, the following services are provided:

Engineering and Design- CHA provides engineering and design services which include the following:

- Horizontal and Vertical Geometric Designs
- Open and Closed Storm System Hydraulic Analyses and Design
- Computer Applications for Design, Detailing, and Drafting
- Hydrological Analyses
- Project Cost Estimates

Constructibility Reviews- CHA provides expertise in comprehensive project review for 'build-ability' and 'bid-ability' so that our clients get "the most project for their dollar." Our services include:

- Construction Operation Scheduling, Coordination, and Feasibility
- Detour Sequencing and Signing
- Hazardous Waste and Contaminated Soil Remediation and Removal
- Contract Documentation and Specification Review

Pavement Management Programs- CHA provides designs utilizing both asphalt concrete and Portland cement concrete on pavement management programs and rehabilitation projects. Our services include:

- Field Surveys and Evaluations
- Flexible and Rigid Pavement Designs
- Material Evaluations and Recommendations
- Pavement Life Cycle Cost Analyses

Environmental Studies- At CHA, we have the ability to offer depth, diversification, and experience in evaluating all environmental issues associated with highway infrastructure projects. We are up-to-date with the latest industry advances in methodologies, policies, regulations, and standards, keeping us at the forefront of environmental compliance. Services that we provide include:

- Environmental Impact Study Preparation
- Air Quality Analyses
- Noise Impact Assessments
- Direct and Indirect Energy Consumption
- Freshwater and Tidal Wetland Delineation and Mitigation
- Surface Water and Floodplain Impact Analyses
- Geologic and Hydrogeological Studies
- Hazardous Material Assessment and Asbestos Abatement Expertise
- Hazardous Waste and Contaminated Soil Remediation and Removal
- Social, Economic, and Land Use Analyses and Assessments
- Visual Resource Assessments
- Archaeological and Cultural Resource Investigations
- Section 4 (f) Property Evaluations and Recommendations

Computer Capabilities and Applications- Using the latest in technologies, CHA designs solutions that provide our clients with the most comprehensive services in project engineering. We utilize the latest in engineering software, including Intergraph, MicroStation, In-Roads, AutoCAD, DCA, and SoftDesk. In addition, high-speed plotters and color ink-jet printers allow us to produce design drawings and presentation materials in an efficient and graphically effective manner.

Quality by design.

Transportation Division

Overview of Services



Bridge Design & Inspection Services

CHA is equipped with the resources to handle all types of bridge inspection projects. All of our engineers are specially trained to perform bridge inspection programs, which are required on interstate and expressway systems, state highway systems, and local route and rail corridor systems. Our inspection services include:

Bridge Inspection

- Program Design and Development
- Deployment of Multiple Field Teams
- Computer Databased Information Management
- Emergency Response and Networking for Critical Structural and Safety Problems
- Inventory and Load Rating Analysis

Overhead Sign Inspection

- System Inventories, Management and Planning
- Field Inspection with Full Traffic Control
- Structural and Fatigue Analysis
- Recommendations on Sign Loading Modifications
- Design of Maintenance and Repair Programs

Diving Inspection

- All crews are specially trained in underwater inspection techniques and safety methods.



Traffic Engineering and Transportation Planning Services

Every community strives for economic growth, but potential risks are inherent when it comes to the local transportation system. Congestion, back-ups, and unsafe conditions often worsen when the population increases. Transportation officials often turn to CHA for answers, such as highway widening, rapid transit, and new signalization for busy intersections. Other services we provide are:

- Area-wide Municipal Traffic Engineering
- Planning Studies
- Traffic Impact Statements
- Accident Studies and Analyses
- Intelligent Transportation Systems (ITS)



Rail Engineering Services

Another service provided by our Transportation Division involves the planning, design, construction, operation, and maintenance of railroad and public transit facilities. Our ability to coordinate and expedite all phases of a project is what puts us at the forefront of the transportation industry. We also provide maintenance and protection of traffic for railroads as well as for federal agencies, state departments of transportation, and local municipalities. We offer comprehensive rail planning and engineering services such as the following:

Railroad Engineering and Planning

- CHA has a highly qualified Federal Railroad Administration certified staff with years of experience in rail planning, design, construction, operations, and maintenance experience with Class 1 railroads, short lines, inter-city passenger railroads, and transit operators.

Bridge Inspection and Design

- Inspections to load ratings, evaluations to designs... CHA does it all. We are a recognized leader in bridge engineering and scour investigation, and we perform these services on many railroad bridges annually.

Railroad Grade Crossing Design

- Facilities that cross over railroads require special attention, and CHA can offer just that. We provide planning, design, and construction services for these facilities, such as highways, bridges, pipes, wires, fiber optic cables, and other types of infrastructure.



Aviation

We provide a detailed analysis of existing airport land use, traffic forecasts, demand capacity analysis, and projected long-term requirements. Based on these analyses, CHA recommends improvements and implementation procedures designed to minimize adverse effects on a facility's daily operations. CHA's aviation engineering services include:

- De-Icing Facilities
- Hangar Design
- Lighting and Safety Systems
- Taxiway Design & Rehabilitation
- Airport Terminal Design
- Airfield Signage Systems
- Runway Design & Rehabilitation
- Master Planning

