



SYSTRA CONSULTING

**SYS
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Integrated, Intelligent
Transportation Solutions

- Planning
- Engineering
- Design
- Construction Management



SYSTRA Consulting, Inc.

SYSTRA Consulting, also operating as SYSTRA Engineering in the U.S., is a planning, engineering, design, and construction management firm that specializes in transportation systems and their associated facilities.

We bring to each transportation project an integrated approach, applying state-of-the-art technology, creativity, and intelligence to meet each client's unique needs. Our technical expertise, breadth of experience, energy, and teamwork have become the hallmarks of our work, and this has earned us a reputation as one of the nation's premier public transportation consulting firms.

SYSTRA Consulting (SYSTRA) is part of the SYSTRA Group, a global enterprise with a 50-year history of developing and improving transportation systems worldwide. SYSTRA serves clients from a network of offices from coast to coast.

energy, experience, commitment



AT SYSTRA, OUR PEOPLE ARE OUR STRENGTH.

We have built a team of dedicated professionals—comprised of one of the largest groups of transportation specialists and systems engineers in the United States. We regard each project as an opportunity to advance transportation by finding better ways to provide quality service to more people ...and we deliver!

- Our **systems specialists** lead the industry in the application and design of advanced train control, traction power and communications. SYSTRA systems professionals create cutting-edge designs.
- Our **industrial engineers** are recognized for their state-of-the-art application of the latest equipment technologies for vehicle maintenance functions.
- Our **track engineers** have been actively involved in industry development efforts to implement new track standards for special track work and low-vibration track.
- Our **planners** have helped clients evaluate options and identify improvements to public transportation networks.
- Our **construction/program managers and inspectors** are engineers experienced with the specification and functionality of equipment for rail and transportation facilities and systems.



engineering and design

SYSTRA is a specialist in transit systems engineering and incorporating passenger needs—including mobility, cost-effectiveness and value into our deliverables. Our capabilities include preliminary engineering, final design, cost estimates, industrial design, equipment selection, specifications writing, project scheduling, value engineering, constructability review, and shop drawings. Areas of expertise include:

Train Control/Communications. As a recognized leader in signal engineering and communications services, SYSTRA applies the newest technologies as well as our extensive experience to areas including:

- Operations analysis/simulation
- Software development
- CBTC and conventional signaling
- Electromagnetic interference, compatibility, and testing
- Safety and reliability assurance
- Radio propagation studies
- Wireless data applications
- Fiber-optic management and design

Systems Integration. Critical to successfully developing or revitalizing a transportation system, systems integration assures our clients of a lasting, cost-effective transportation solution that is operator- and user-friendly. Our approach—which is to plan and design each element of a project in relationship to every other element—results in systems that function as a whole.

Electric Trolley Bus Expansion Program,
Seattle, WA (Seattle Metro)



Lower Manhattan Access Alternatives Study, New York, NY (Metropolitan Transportation Authority)



Planning, design, construction phase services for the Market-Frankford Subway Elevated 69th Street Rail Shop and Yard, Philadelphia, PA (SEPTA)



Line Extensions Project,
San Francisco, CA (BART)



Signal improvements for a new Conrail-CSX connection, Sidney Junction, OH (Conrail)



Automatic train control signal design, Market-Frankford Subway Elevated, Philadelphia, PA (SEPTA)



Systems engineering for a high-density interlocking system at Frank R. Lautenberg Rail Station, Secaucus Junction, NJ (NJ TRANSIT)

Rail Right-of-Way/Track. SYSTRA's significant track experience encompasses all aspects of track design. We use open ballasted, direct fixation, and paved (embedded) track. In addition to using state-of-the-art, civil/track engineering design tools including Bentley® InRoads® and InRail® software applications, our track engineers analyze the alignment not just for conformance, but also to ensure development of the least-restrictive alignment. SYSTRA also has experience in applying the design standards for many of the large agencies around the country.

Traction Power/Catenary. With years of experience and a number of industry-changing innovations, SYSTRA excels in the design, analysis and construction management of traction power, distribution, and catenary systems. Our traction power and distribution professionals often provide support services for major capital investment studies, and therefore this enables SYSTRA to successfully handle the many systems elements for each project.

Passenger Facilities. At SYSTRA, we understand that an optimal facility provides a pleasant, efficient, convenient, and safe passenger experience. Our detailed understanding of facilities operations coupled with our breadth of experience makes us exceptionally well-qualified to address all of the issues associated with developing new and rehabilitated passenger facilities, including operating components, passenger amenities, and site development.

Maintenance Facilities. Many of our staff have worked as facility operators or builders—so we understand how to design a facility for maximum productivity and long-term operating efficiency. As managers, we have often faced challenges in providing services. As planners and engineers, we have translated those operational challenges into needs and developed innovative, cost-effective solutions for the optimal layout of a facility. As builders, our professionals have successfully implemented these plans, in the construction of these facilities.

Final design, systems integration, construction phase services,
Newark Liberty International Airport Station and Northeast Corridor
Rail Connection, Newark, NJ (NJ TRANSIT)



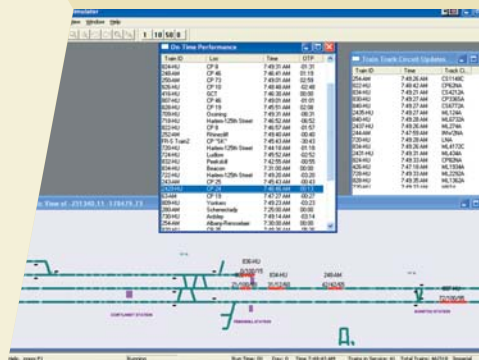
operations analysis— putting it all together

Owners, operators, and contractors who develop passenger and freight transportation systems share a common goal: to build systems that can be operated and maintained efficiently and cost effectively for decades—systems that truly stand the test of *time!*

SYSTRA is a transportation specialist. We are focused on “the big picture.” We apply our comprehensive capabilities to develop—from concept through operations, and from rehabilitations to New Starts—integrated, intelligent solutions for all transportation modes throughout the United States. SYSTRA brings to each project the technical expertise, innovation, energy, and teamwork that have earned us a reputation as one of the nation's premier transportation engineering firms.

SYSTRA provides operations analysis for passenger and commuter rail agencies, freight railroads, consulting firms, and systems suppliers and integrators. Our operations analysts perform a wide range of operational feasibility, capacity, travel time improvement, and passenger flow analyses using our proprietary RAILSIM® Simulation Software Suite. RAILSIM's unique capabilities in passenger modeling, delay analysis, fleet requirements, and operating sensitivity to randomized operations make it an ideal tool for ranking and evaluating numerous alternatives.

Perhaps unique in the field of operations analysis, SYSTRA and its analytical tools have the capability to move seamlessly from planning to final design and biddable documents using the same software tools.



RAILSIM Network Simulator, part of SYSTRA's RAILSIM Simulation Software Suite, supports dynamic run-time monitoring of the analysis through graphical and text displays.



Design engineering and construction support for installation of the light rail catenary system, Dallas, TX (DART)



Analysis and planning for line and terminal capacities improvements, San Francisco Terminal, San Francisco, CA (Caltrain)

planning



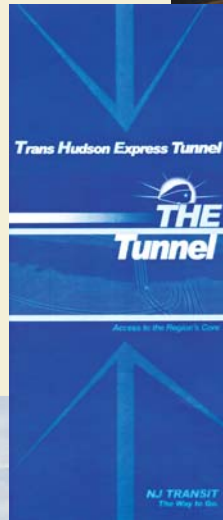
SYSTRA is an expert in developing and evaluating transportation options. With a large planning practice dedicated solely to transportation solutions, we have the resources necessary to develop a vision for future projects. Through a proven process that integrates public involvement, planning, operations, engineering, and environmental perspectives—we quickly identify the right range of alternatives for each project.

SYSTRA PLANNING SERVICES INCLUDE:

- Feasibility studies
- Service planning
- Alternatives analyses
- Public involvement
- Financial analyses
- Ridership forecasts
- Strategic planning
- Management consulting
- Environmental reviews
- Operations analysis
- Simulation



Georgia Passenger Rail Project, Atlanta, GA
(Georgia DOT)



Trans-Hudson Express ("THE") Tunnel –
Access to the Region's Core Environmental
Impact Statement (NJ TRANSIT)



Capital project and operations
planning services,
Millbrae Station, Millbrae, CA
(Caltrain)

Design and construction management,
Anchor Bridge substations replacement,
Westchester County, NY (Metro-North Railroad)

construction/program management



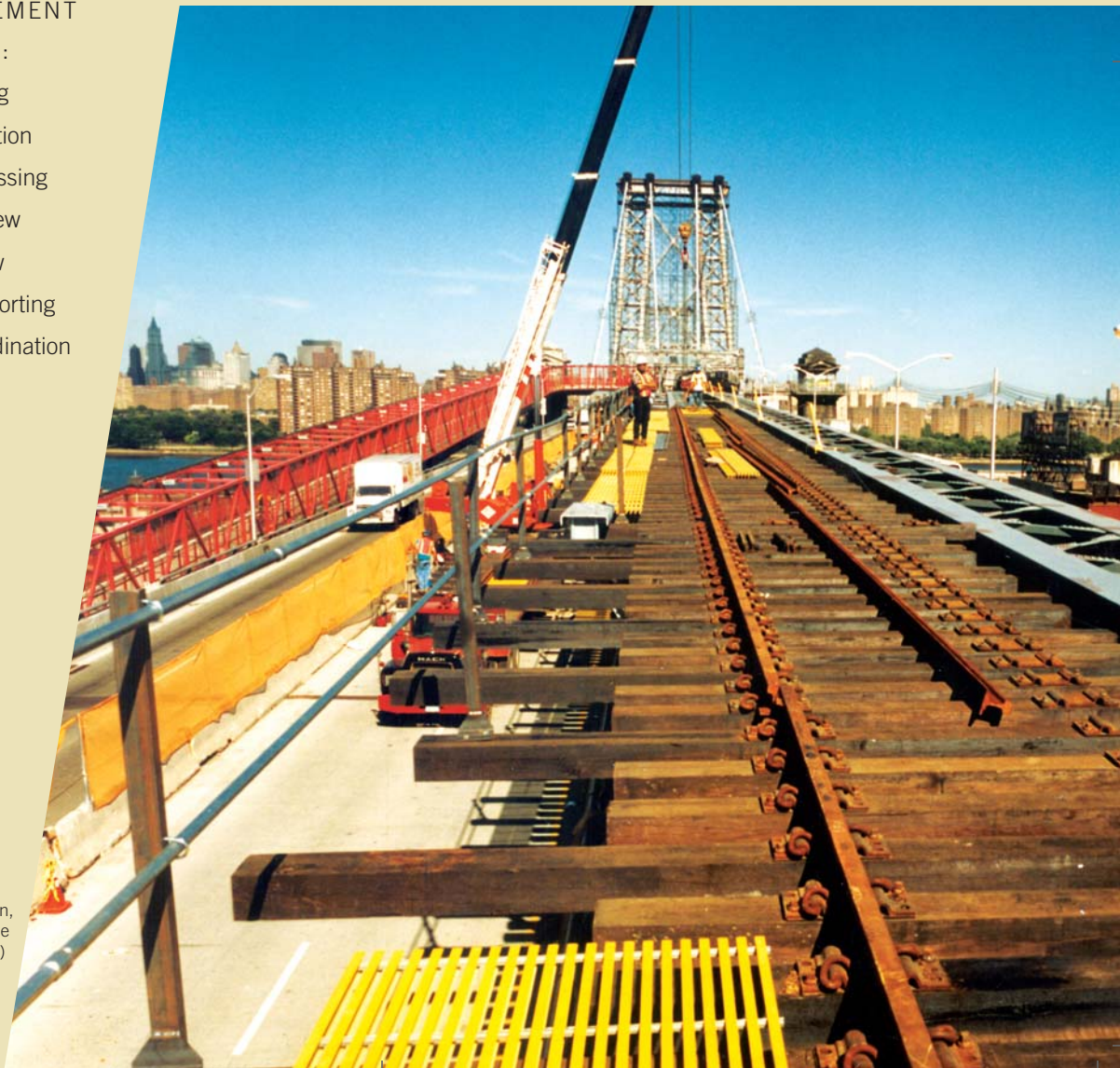
From major facility construction and rehabilitation to New Starts rail lines and system modernizations, SYSTRA offers extensive construction/program management capabilities. What sets us apart is the experience and expertise of our construction/program managers and inspectors. They are engineers familiar with the specifications and functions of equipment required for the full range of transit operations and maintenance facilities, signaling, traction power, and communications systems. Our construction/program managers and inspectors are also uniquely qualified in the inspection, testing, and equipment start-up requirements necessary for construction management.



Construction management, College Point Bus Maintenance Facility, College Point, NY (NYCDOT)

OUR COMPREHENSIVE CONSTRUCTION/ PROGRAM MANAGEMENT SERVICES INCLUDE:

- Resident engineering
- Construction inspection
- Change order processing
- Constructability review
- Shop drawing review
- Project progress reporting
- Force account coordination
- Field testing
- Data management
- Partnering
- Project closeout



Resident engineering, construction inspection,
system start-up and cut-in for the BMT Line
across the Williamsburg Bridge (NYCDOT/NYCT)

SYSTRA

CAPABILITIES

- Conceptual planning
- Operations analysis
- Preliminary engineering
- Final design
- Cost estimating
- Industrial design
- Equipment selection
- Systems engineering
- Specifications writing
- Project scheduling
- Value engineering
- Constructability review
- Inspection
- Implementation/construction

MODES

- Automated people movers
- Bus rapid transit
- Bus/trolley bus
- Commuter rail
- Freight rail
- Heavy rail
- High speed rail
- Intercity rail
- Light rail





our core values

AT SYSTRA, WE FOCUS ON THE PROJECT AT HAND, NOT ON THE NEXT JOB. TO THAT END, WE TAKE A CLIENT-CENTERED APPROACH TO EACH PROJECT AND INTEGRATE THE FOLLOWING PRINCIPLES INTO OUR WORK:

Communication. Our clients communicate directly with our project managers, thus eliminating layers of hierarchy and ensuring accuracy and responsiveness.

Leadership. Individual initiative drives our company, and, at the corporate level, we are active participants in organizations that promote the future of public transportation.

Integrity. We honor our commitment to all clients and meet their expectations. For every project, we provide sound and complete analyses that give our clients the tools they need to make the right decisions.

Excellence. We demand—and attain—excellence from every staff member, day by day, project by project. Adhering to all ISO certifications, we meet or exceed industry standards.

Needs driven. SYSTRA listens to clients and develops practical, “right-sized” solutions to maximize productivity and improve cost-effectiveness.

Teamwork. Our integrated project solutions are the result of a collaborative effort between the client and members of the SYSTRA team.



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