



CARDINAL

ENGINEERING ASSOCIATES

Excellence in engineering since 1962





Since 1962 Cardinal Engineering Associates Inc. has provided comprehensive, innovative, and cost effective solutions for an array of multidisciplined projects.

Our process begins with personal involvement on every project: with sensitivity to the challenges, environment and budget; and the planning that draws from over fifty years of experience in private, municipal, and state civil engineering projects.

Our seasoned team of professional licensed engineers have diverse backgrounds and complementary areas of specialization. We have a support staff of experienced technicians, surveyors, draftsmen, and inspectors. Our extensive portfolio, technical expertise and strong leadership combine to yield successful results for our clients. Our team not only meets our clients' expectations, they go above and beyond. From the inception of a project, continual communication with our clients helps to address concerns, implement their ideas and provide the services needed, within deadline, all while holding the bottom line.

At Cardinal, our track record is one of delivering results. From planning and design to overseeing the construction phase, our unique mix of public works experience, civil engineering expertise, state of the art technology, in-house support, and a management team that personally follows a project through to completion, ensures our clients success. Whether short term or on-going, this partnership, above all, makes Cardinal the firm of choice for civil engineering solutions.





GENERAL SERVICES

TRANSPORTATION ENGINEERING

Highway and Roadway Design
Pavement Design
Traffic Engineering
Bikeway Design
Bridge Evaluation
Bridge Design

STORMWATER ENGINEERING

Storm Water Management
Hydrologic and Hydraulic Analysis
Storm Drainage Design
Flood Control Studies and Design

WASTEWATER ENGINEERING

Facility Planning
Inflow and Infiltration Studies
Sewer System Evaluation Surveys
Collection System Design
Pump Station Evaluation and Design
Combined Sewer Separation (CSO)
Sanitary Sewer Rehabilitation
On-Site Disposal

CIVIL ENGINEERING/ SITE DEVELOPMENT

Site Planning & Design
Drainage Design
Sanitary and Septic Design
Structural Engineering
Subdivision Infrastructure Design
Environmental Approvals

SURVEYING AND MAPPING

Boundary/Topographic Surveying
ALTA/ALSM Certifications
GPS Surveying
Construction Layout
Infrastructure Mapping
Wetland Boundary Survey

CONSTRUCTION ENGINEERING SERVICES

Cost Estimating
Bidding Assistance
Contract Documents and Specifications
Construction Contract Administration
Resident Engineering



TRANSPORTATION ENGINEERING SERVICES

As traffic seems to increase exponentially on a daily basis, many state and municipal transportation systems are put to the test. Today, the design and engineering experience required to allow traffic to move safely demands unprecedented foresight.

Cardinal Engineering understands the depth and complexities of delivering successful traffic, roadway, and bridge projects to their clients. From environmental factors to the impact on local communities, our team of professionals works with in-house resources to offer cost-effective solutions while providing the most durable transportation systems possible.

With over a half century of experience and miles of roadway engineering projects completed for state-wide municipalities and the Connecticut Department of Transportation, Cardinal is driven to deliver its clients' road, highway, and bridge systems that will transport people for years to come.



- Highway and Roadway Design
- Traffic Engineering
- Pavement Design
- Streetscape Design
- Bikeway Design
- Bridge Evaluation
- Bridge Design



ROADWAYS

Cardinal is prequalified with the Connecticut DOT for the design and inspection of roadway projects. We have completed design and inspection of over 100 municipal roadways. Over the past 10 years, we have designed and inspected over 40 miles of roadway reconstruction including STP-Urban roadway projects, 20 state and federal local bridge projects, several enhancement projects, and several LOTCIP-funded projects.

Cardinal has a proven track record of developing accurate and complete plans resulting in minimal change orders and claims. We pride ourselves in completing projects on time and within budget.



BRIDGES

Cardinal has performed numerous bridge inspection and design services for several municipalities throughout Connecticut. We have extensive experience in the design of replacement and rehabilitation structures under the state, local, and federal programs

Our work ranges from evaluations of existing structures and field investigations to preparation of construction documents for repair, replacement, and rehabilitation.

The key members of our firm have worked together on the design of bridges throughout the northeast, and for the past 14 years, on the design of many local bridges here in Connecticut. Our staff has an average of more than 25 years' experience.



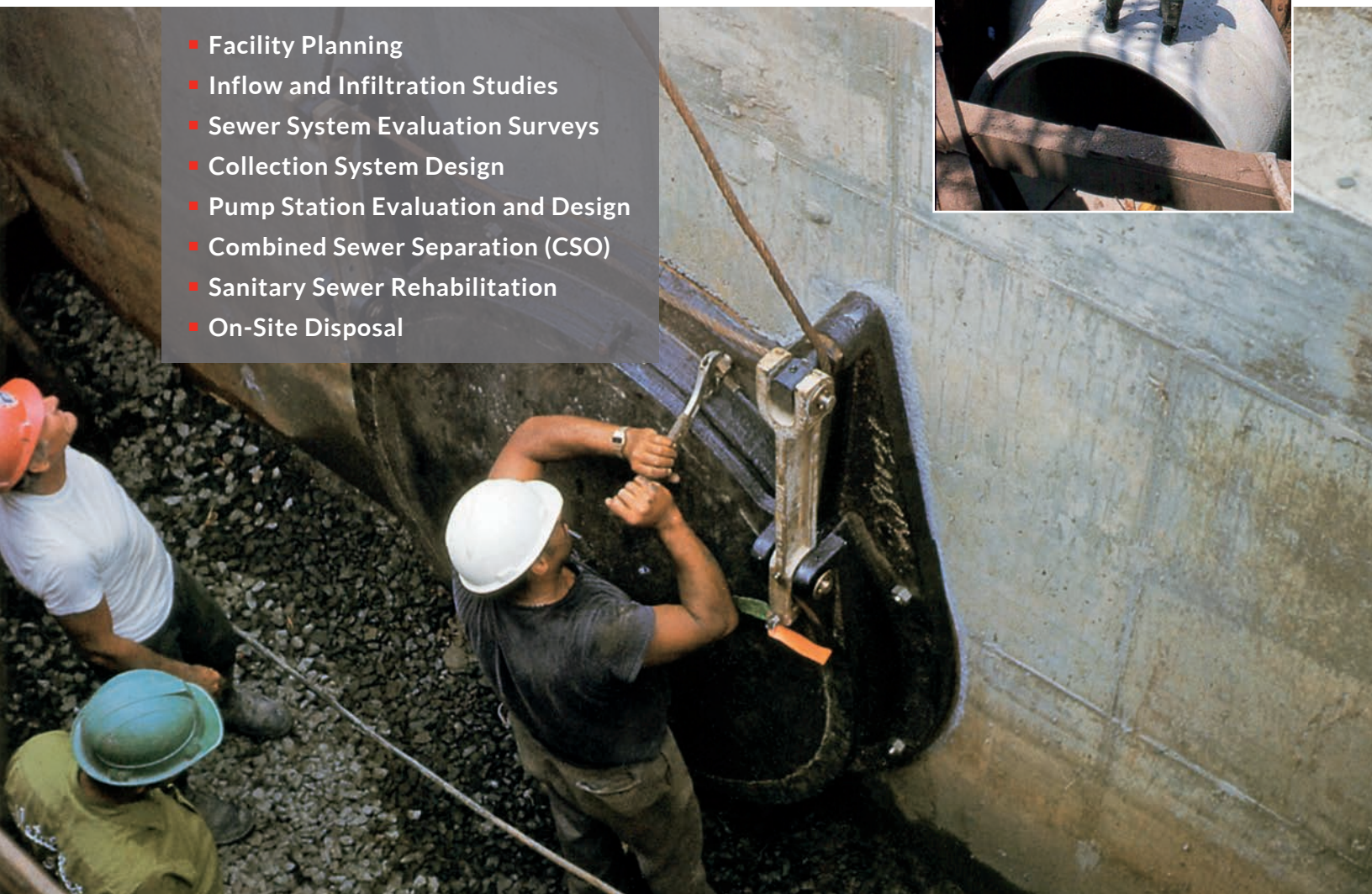
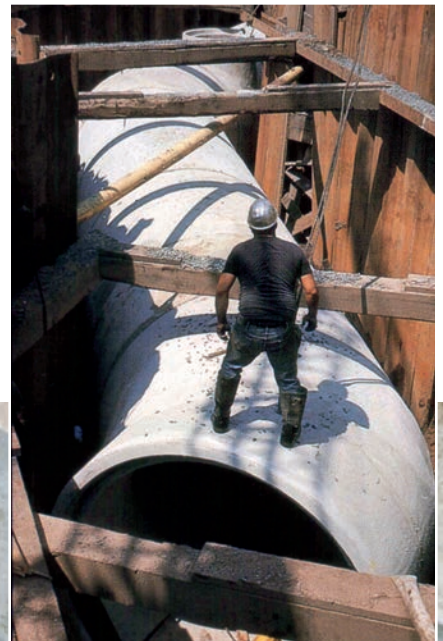
WASTEWATER ENGINEERING

Wastewater management requires vision beyond the general planning and construction of a project. Economics, operation, maintenance, public awareness, and environmental law all play major roles in the development of wastewater systems.

Utilizing the latest technological methods, we analyze every aspect of a project to determine its future impact on a community. Cardinal's team covers all the details to protect their clients now and into the future. Only after these steps are taken will we proceed to preliminary and final design. This added level of confidence is just one more reason why our clients return time and time again, project after project.

To ensure that our clients' long term goals are met, our team will take a project from the planning and design stages through contract administration and construction inspection. The job isn't complete until we are sure that our client has received every benefit that is available for their dollars spent—now and well into the future.

- Facility Planning
- Inflow and Infiltration Studies
- Sewer System Evaluation Surveys
- Collection System Design
- Pump Station Evaluation and Design
- Combined Sewer Separation (CSO)
- Sanitary Sewer Rehabilitation
- On-Site Disposal





- Storm Water Management
- Hydrologic and Hydraulic Analysis
- Storm Drainage Design
- Scour Analysis
- Flood Control Studies and Design

STORMWATER ENGINEERING

Controlling nature's whims is something that no engineering firm can do, however directing and redirecting her forces are key.

Cardinal offers extensive stormwater engineering services and can provide assistance with a multitude of diverse stormwater-related issues. We have over five decades of experience assisting municipalities, state agencies, and private entities in meeting their stormwater needs on small- and large-scale projects. This experience ranges from addressing individual residential needs to system-wide drainage studies and designs. We provide engineering services such as evaluation, design, and construction of drainage infrastructure. With the experience and expertise of our engineers, hydrologists, and other professionals, we provide a full range of in-house stormwater capabilities.

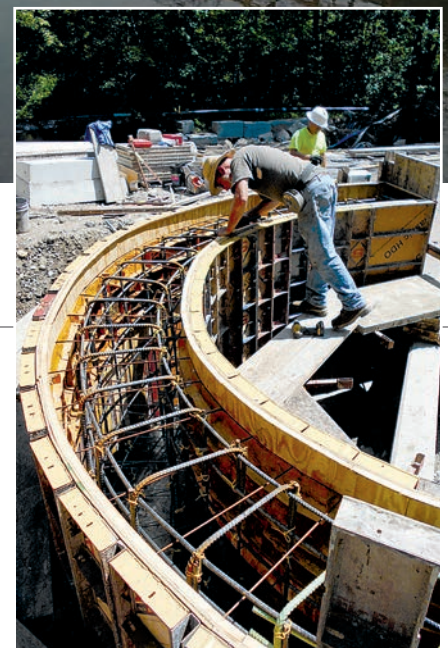




CONSTRUCTION ENGINEERING SERVICES

Cardinal's Construction Services Department offers advanced services in construction contract administration and resident representation. Our personnel provide effective cost control for all of our projects through their experience in overseeing contractors, reviewing construction documents before bid, and negotiating change orders.

Additionally, we strive to develop and achieve effective community and public relations through the use of our resident representatives. Minimizing the construction disruption to homes, businesses, and daily routines, and addressing management and public safety concerns are as important to our resident representatives' daily job performance as maintaining the quality of construction.



- Cost Estimating
- Bidding Assistance
- Contract Documents and Specifications
- Construction Contract Administration
- Resident Engineering

CIVIL ENGINEERING/SITE DEVELOPMENT

To meet our clients' diverse needs for site planning and development, Cardinal maintains a staff of qualified engineers, surveyors, and other professionals knowledgeable in site evaluation, roadway design, traffic analysis, potable water distribution, wastewater collection and septic system design, stormwater detention and design, environmental compliance, and permitting.



- Site Planning & Design
- Drainage Design
- Sanitary and Septic Design
- Structural Engineering
- Subdivision Infrastructure Design
- Environmental Approvals



- Boundary/Topographic Surveying
- ALTA/ALSM Certifications
- GPS Surveying
- Construction Layout
- Infrastructure Mapping
- Wetland Boundary Survey

SURVEYING AND MAPPING SERVICES

Cardinal's land surveying department provides the majority of the surveys for our design projects, this in-house capability stream lines the entire design process. Our staff of licensed surveyors, party chiefs, and survey technicians has the capability of meeting all survey requirements for the firm's design projects as well as providing direct services to individual clients. Cardinal utilizes state-of-the art surveying equipment including GPS and total stations.



STUDIES & EVALUATIONS

To complete our resume of experience, we offer the additional service of investigations, evaluations, and studies.

Over the years, we have successfully supplied critical data to cities and towns statewide to better allow them to budget and plan for public works projects.

Cardinal leaves "no stone unturned" to deliver the most comprehensive report concerning the commissioned project at hand. Working with our clients, we can advise on every aspect of a situation that might affect a community in the future. Our clients know that they can count on accurate, reliable, cost effective consultations from the professionals at Cardinal Engineering Associates.





CARDINAL ENGINEERING PRINCIPALS

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