

Edgar pro
prairie over
farmland
Opens the way
to wider Illinois 29

Widening of
1 killed, Illinois 29
3 injured hits impasse
in crash

PRAY FOR ME
I DRIVE ROUTE

Rt. 29 Accident
Police investigating
cause of head-on
wreck on Illinois 29



Economic group in
Edinburg plans for
hearing on Route 29
on December 10th



A GRASSROOTS DRIVE for SAFETY

Illinois Route 29 Expressway

Owner: Illinois Department of Transportation

ACEC
Illinois
American Council of Engineering
Companies of Illinois

CMT
Crawford, Murphy & Tilly, Inc.
2750 West Washington • Springfield, IL 62702 • (217) 787-8050



Project Highlights

What started with a grassroots movement to make a dangerous rural highway safer for commuters developed into a project whose design provides benefits to farmers, environmentalists, and fitness enthusiasts.

Crawford, Murphy & Tilly, Inc. (CMT) was retained by the Illinois Department of Transportation (IDOT) to provide Phase II design services for the expansion of a 5.2-mile section of Illinois Route 29. CMT had previously completed prior project phases including the feasibility study, Phase I design, and environmental assessment.

The transformation of a treacherous stretch of IL-29 from a two-lane highway to a four-lane expressway was met triumphantly by a group of citizens that had fervently advocated a safer route. Detention ponds, an uncommon feature on rural highways, are used as part of a unique drainage system that provides flood control in an agricultural area with little natural relief. The highway's shifting alignment carefully avoids areas of endangered Illinois native prairie grass. And an abandoned railroad that runs along the roadway will find new life as a bike trail.

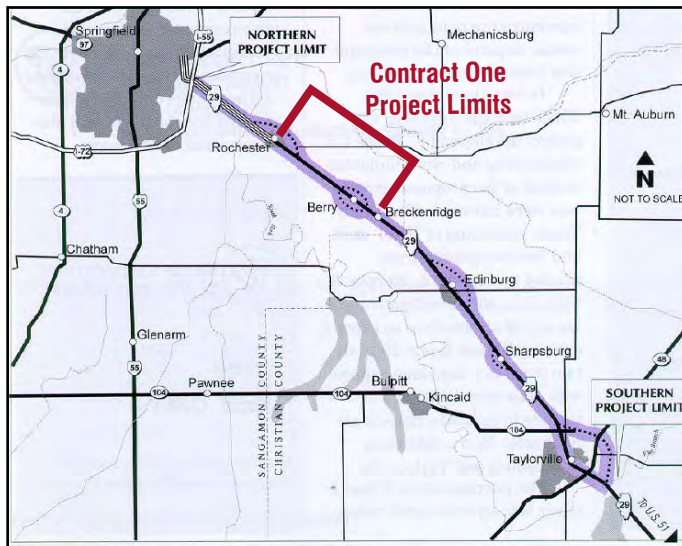
Project Description

CMT's successful public involvement efforts on the high-profile project led IDOT to retain the firm throughout all phases of the project development.

■ Role of CMT in the Project

The public's call to improve Illinois Route 29 (IL-29) was loud and determined in the early 1990's in response to the many traffic fatalities that had occurred along the rural highway. CMT played a unique role in the development of the IL-29 Expressway project in that the firm was selected to provide consulting services for all phases of the project development. These included a feasibility study, location design study, environmental assessment, and final design. It is common industry practice to select different consulting firms for various phases of a single project to provide a form of checks and balances on design recommendations and other assessments. Because of high public visibility, CMT was retained for each subsequent phase of the project in order to provide consistency in public involvement efforts and meet critical schedules. The quality of CMT's work and the strong professional relationship with IDOT District 6 staff were also pivotal in the decision.

CMT completed Phase II design of the first construction contract (Contract One) including construction and right-of-way (ROW) documents in time for the IDOT bid letting in November of 2002. Construction of the 5.2-mile section of the IL-29 expressway between Rochester and Berry (Contract One) was completed and celebrated with a ribbon cutting ceremony on August 26, 2004.



CMT provide Phase II design services for the construction of the 5.2-mile section of the IL-29 Expressway between Rochester and Berry that was completed in August of 2004.

■ Role of Other Consultants

Lin Engineering, Ltd. (Chatham, IL)

- Preparation of land acquisition documents.

Prairie State Architecture (Springfield, IL) Charles Gouveia - Landscape Architect

- Sediment and erosion control plan.
- NPDES permitting documents.



Detention ponds, unusual for rural highways, were built along the expressway to reduce flooding of farmland and drain natural depressional areas without increasing the flow downstream.

■ Original or Innovative Application of New or Existing Techniques

Stormwater Management - The creation of stormwater detention facilities is unique on rural highway construction, but it provided an ideal solution for the conditions within Contract One of the IL-29 expressway corridor.

To mitigate existing conditions and those anticipated from the proposed roadway improvements, offsite drainage improvements were required. The proposed roadway alignment passed through existing depressional areas. Long, grass-lined ditches with flattened and traversable side slopes were used to provide an adequate roadway drainage system with suitable outlets. The ditches were made suitable for detention not only by altering the grade, but also by restricting the outlet conditions.

An underdrain system was used to drain the ditches with flat grades during low flow conditions. Equalizer pipe culverts were used to direct water through the road embankments during higher intensity events to maintain existing drainage patterns. Additional right-of-way (ROW) and easements were obtained to accommodate long, off-site drainage outlet improvements.

The issue of drainage is often taken for granted on rural highway design. CMT and IDOT were sensitive to the effects storm water runoff has on the adjacent farmland and the importance of agriculture to the local economy. Coordination with affected farmland owners when developing plans not only helped to mitigate conditions created by the expressway, but to also improve the conditions that were present before construction. CMT also had the unique opportunity to consult with IDOT's deputy chief legal counsel during the development of drainage plans in order to assure that the project drainage system complied with applicable highway drainage laws.

“CMT designed several unique and innovative solutions in providing highway drainage.”

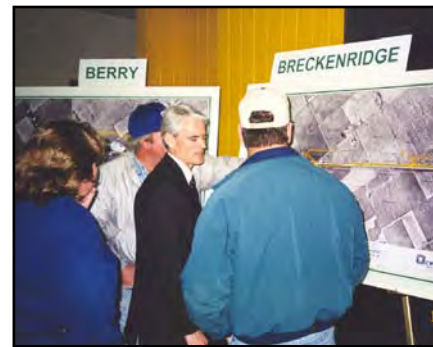
IDOT District 6

“Displays provided for state agency coordination were detailed and very useful in determining a preliminary rural alignment.”

IDOT District 6

GIS - ArcGIS was used to estimate impacts the proposed expressway facility would have on prime farmland by classifying and quantifying soil types. Data from digital soil maps obtained from the Illinois Department of Natural Resources (IDNR) were brought into the GIS application and analyzed against alternatives to provide a quick and quantifiable comparison of impacts. The use of this technology greatly streamlined the environmental assessment by automating what was at the time a more manual process.

Aerial Photo Mosaics - CMT created aerial photo mosaics for use as exhibits at public meetings during both the preliminary and design phase to illustrate the numerous expressway alternatives and related impacts within Contract One. At the time of the meetings this was an innovative approach for facilitating stakeholder involvement. Digital aerial photographs were integrated with CAD drawings of the proposed expressway to create a fully realized depiction of the areas that would be affected. This technique provided a better visual representation than the traditional method of manually overlaying design elements over photographs and allowed residents to better orient themselves to the project. CMT received high marks from IDOT for the creation and use of the mosaics.



Public meetings where area residents could familiarize themselves with proposed alternatives and provide input were an integral part of the project.

■ Future Value to the Engineering Profession and Public Perception

Engineering Profession - The IL-29 project is a prime example of the effective application of *context sensitive solutions*. Throughout the Phase II design, CMT and IDOT were proactive in identifying and responding to the societal impacts that the roadway improvements would have by collaborating with the various stakeholders.

Extensive coordination with area farmers, business owners, and adjacent land owners through public involvement efforts greatly facilitated the design process and served to defuse some of the inevitable ill-feelings brought about when a road project disrupts existing conditions. During the design phase, individual meetings with property owners were held to address issues of significant importance. These meetings and further coordination efforts served to dissipate initial skepticism about whether the land owners' concerns would be taken into account in the project design.

A drainage and access meeting was held with affected property owners on March 15, 2001 at the Rochester Village Hall. Considerable voice was given to concerns about the impact the roadway improvements would have on farmland downstream from the project area. CMT conducted extensive follow-up efforts with stakeholders to address the issue of drainage. Project engineers were later told that neighboring farmers had not collaborated that extensively on an issue of mutual importance since before the introduction of the railroad through the area in the early 1900's.



The presence of a parallel abandoned railroad compounded drainage issues by limiting the number of suitable drainage outlets.

The results of this collaboration combined with CMT's expertise resulted in drainage solutions that serve as a valuable illustration for future highway construction in flat areas with little relief and where natural runoff and suitable outlets are limited. The use of storm water detention facilities in a rural setting are an effective solution under such conditions.

Another benefit from the construction of detention ponds was the excess earth that was excavated could be used in the new expressway embankment. Since the proposed expressway is elevated an average of 3 ft. above the existing ground, this excavation reduced the cost of furnishing borrow excavation.

The collaborative efforts involved in the preservation and restoration of native Illinois prairie grass also provide a model for the conservation of environmental resources, a key component of context sensitive solutions. The inclusion of a bike path in the project design demonstrates how such solutions can go beyond maintaining existing conditions and can create value beyond what the project initially calls for.

Public Perception - The spotlight was on the IL-29 expressway project from the beginning. High levels of public interest elevated the role of the consultant on this project and required that CMT and IDOT place added emphasis on public involvement activities.

Extensive collaboration with affected, and sometimes competing, stakeholders and the complementary benefits derived on this project provide a valuable illustration of engineering's contribution to the public and the built environment.

"I am sure that the task has been difficult for (Project 29), but the progress that has been made has been tremendous."

Richard J. Durbin
United States Senator



CMT published a newsletter to satisfy the demand for information on this high profile project.

“The decision to preserve precious prairie land while improving this transportation route will allow us to move forward immediately with needed engineering work.”

Governor Jim Edgar

A grassroots organization called Project 29, Inc. arose out of public concern over a heavily traveled stretch of the highway where an inordinate number of traffic fatalities and other serious accidents had occurred. The group reached a membership of over 3,000 and successfully petitioned then Governor Jim Edgar with more than 12,000 signatures to commission a feasibility study for a four-lane expressway to replace the two-lane rural highway. Project 29’s efforts were also instrumental in securing funding for the subsequent phases of the project.

CMT participated in many of Project 29’s monthly meetings and formed professional relationships with its members. In addition, CMT developed and distributed six issues of a project newsletter (*29 Grapevine*) to update concerned parties on project progress and key issues. An open mailing list was maintained that included residents, property owners, public officials, government and private agencies, and organizations.

The success of CMT’s public involvement efforts and the responsiveness of the project team to the concerns of stakeholders led Project 29 members to encourage IDOT to retain CMT as the Phase II design consultant for Contract One after the feasibility study and Phase I design were complete.

■ Social, Economic and Sustainable Design Considerations

Prairie Grass Restoration - As explained in the Complexity section of this submittal, the need to preserve prairie grass and prime farmland was a contentious issue on this project. As part of the compromise solution which generally favored the preservation of native Illinois prairie grass, the right-of-way was aligned through areas of lower grade grass



Preserving and restoring native Illinois prairie reduced the impact the expressway had on an important environmental element in a manner that was acceptable to the many stakeholders who had an interest in the matter.

in order to limit the amount of farmland that would be acquired. At these impacted areas, the soil which contained the prairie grass seeds and bulbs was excavated and stockpiled. When the new embankment for the bike path was completed, the soil and seed mixture was respread at this location where it will be regenerated at a higher quality.

CMT and IDOT worked together to provide significant information and alternative impact analysis to the Illinois Department of Natural Resources and the Illinois Department of Agriculture to reach the compromise solution.

Bike Path - A bike path that currently runs between Springfield and Rochester was extended along the 5.2 mile length of Contract One from Rochester to Berry. As part of the expressway project, pre-grading and drainage improvements were incorporated in the project's design. The path is expected to enhance the quality of life for residents in the area by transforming the land for recreational use. It will also serve to protect the native prairie grass that grows along the abandoned railroad corridor where the bike path is aligned.

Economic Development - Throughout the project, the local governments and economic development groups in the affected communities supported the expressway as a valuable economic enhancement. The Berry bypass route did not displace any existing businesses. Safer truck access to and from the expressway will also positively effect existing businesses. It is expected that the highway improvements will result in generating numerous jobs and the retention of existing employments.

Safety - Safety was the driving force behind the public movement to improve IL-29. The recommendation to construct a four-lane rural expressway was based largely on the safety benefits that this solution offered. The 50 ft.-wide median and partial access control will eliminate many of the traffic conditions that led to serious and fatal accidents on the two-lane facility. The expressway's ten-foot shoulders are wide enough for slow-moving agricultural equipment to travel on without disrupting the general motoring public.

Special design consideration was given to sideroad intersections within Contract One due to IL-29's diagonal orientation in relation to north-south and east-west roads. Side roads were relocated and site distances were improved at intersections.

The elimination of direct commercial access at Rochester has improved safety conditions. The recommendation for the Berry bypass will also provide an increased safety benefit. Vehicles traveling along the expressway will be able to maintain a constant speed and enjoy an uninterrupted flow of traffic.



above: Bike trail near Rochester.
below: Bike trail near Berry.



“CMT did an excellent job including the earthwork and drainage for this future trail.”

IDOT District 6

“For too long, this narrow stretch of Route 29 has been infamous because of its high number of traffic accidents and fatalities.”

Governor George H. Ryan

“(CMT’s) cooperation is very much appreciated as coordination with other state agencies has caused delays in the project.”

IDOT District 6

■ Complexity

Existing Drainage - The topography of the adjoining agricultural land included extremely flat areas where frequent ponding occurred. At several locations there was no discernible drainage pattern. Drainage in adjacent farm fields was facilitated almost exclusively by drain tiles. The presence of a parallel abandoned railroad bed further compounded the problem by limiting the number of suitable drainage outlets through the corridor.

Land Acquisition: Farmland vs. Native Prairie - As the consultant, CMT played an important role on a sensitive issue concerning the right-of-way impact the proposed expressway would have on native Illinois prairie grass and adjoining prime farmland within Contract One. IDOT had originally planned to align the roadway along the 100 ft. wide abandoned railroad ROW. IDNR indicated their preference to incorporate a bike path into the abandoned railroad bed and preserve the native prairie grass. The Department of Agriculture opposed the plan on the grounds that it would require the acquisition of substantial prime farmland. Property owners, county farm bureaus, and other concerned parties were also active in voicing their preference for how the railroad ROW should be used. The dispute delayed progress on the project for nearly 18-months before a decision in favor of a compromise plan was issued by Illinois Governor Jim Edgar. CMT provided a detailed analysis of potential impacts on each of the proposed alternatives being considered.

Construction Staging - The compromise solution for preserving prairie grass while limiting the amount of acquired prime farmland required a number of shifts in the expressway alignment. The expressway is located east of the existing highway in areas where prairie grass is to be preserved and aligns west of the existing highway where lower quality prairie exists so as to limit the impact on farmland.



The IL-29 expressway alignment shifts to the east near Berry to avoid Illinois prairie grass.

The resultant shifting alignment together with the need to keep the existing roadway open to traffic during construction added to the complexity of construction staging of the project.

Property Ownership - Ownership of the abandoned railroad property between Rochester and Berry was disputed in court where reversionary rights were granted to adjacent property owners. Some parcels reverted back to the original owners resulting in a complex situation where the rights to six parcels were in the hands of over 200 heirs.

During the land acquisition process, CMT and their subconsultant developed property acquisition documents and exhibits, participated in meetings with land owners, and provided depositions during eminent domain proceedings in the summer and fall of 2002.

Intersections - The diagonal orientation of IL-29 to north-south and east-west roads required additional study and design considerations to enhance traffic safety at intersections while avoiding excessive right-of-way acquisition. A 75° angle was designated for those intersections with relatively low volumes of traffic to reduce the amount of land that would need to be acquired. Those intersections with higher volumes of truck traffic were designed at 90° for increased safety. Intersections were also designed with improved site distances.

■ Exceeding Client/Owner Needs

All of IDOT's objectives as outlined in the project's Purpose and Need Statement were achieved. These included improving existing highway conditions, correcting roadway deficiencies, increasing roadway capacity, improving safety, and enhancing economic development for the region.

The success of grassroot efforts by Project 29 in securing project funding as well as the Illinois First legislation accelerated the project schedule compared to a typical highway project. The IL-29 project from Rochester to Berry (Contract One) went from Feasibility to the completion of construction in nine years. This includes a significant delay that was brought about as the result of the dispute over the preservation of prairie grass and prime farmland. Despite the accelerated schedule, CMT was able to meet all schedule milestones throughout the project.

IDOT commended CMT's work throughout the project:

“CMT continues to work well with the District. Their work is very thorough in the evaluation of the various alternatives along the corridor.”

“CMT has maintained timely submittals to keep the project on schedule. CMT demonstrated full knowledge of IDOT's policies and procedures. Plans developed are of high quality that are complete and accurate.”



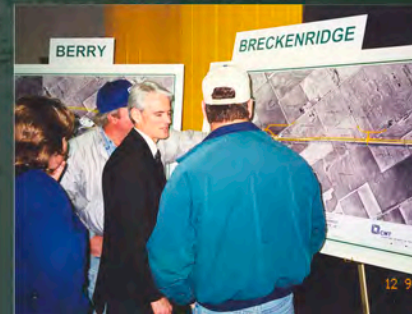
This relocated side road intersection near Berry was constructed at 90° to IL-29 to improve site distances.

A Grassroots Drive *for Safety*

Illinois Route 29 Expressway

ACEC
Illinois

Special Achievement Award
American Council of
Engineering Companies of Illinois



A grassroots demand for a safer highway resulted in a high-profile project that answered not only that call, but also those concerned with the preservation of native prairie grass and the flooding of nearby farmland in an area with little natural runoff.

Challenge

Expand a two-lane rural highway into a four-lane highway under the following conditions:

- Public pressure to complete the project quickly
- Extremely flat topography with little natural runoff.
- Conflicting goals of two government agencies over land use.

Solution

A context sensitive solution was derived to address serious issues involving flooding, land use and public safety to the satisfaction of the public and affected stakeholders.

Features & Benefits

Stormwater detention facilities, rare on rural highways, mitigated flooding conditions that existed before highway expansion.

Highway alignment shifts to avoid areas of high-quality native prairie grass.

Pregrading provided for a bike path that extends along highway.

Successful public involvement efforts led IDOT to retain CMT for all phases of public development.

Produced newsletter to provide the public project updates.

Photographs

Top Left: Section of the completed project.

Middle Top: Preserving and restoring native Illinois prairie reduced the impact the expressway had on an important environmental element in a manner that was acceptable to the many stakeholders who had an interest in the matter.

Middle Bottom: CMT's project manager listens to an area resident's concerns about the proposed expressway's impact. High public interest and concern made public outreach efforts a critical component to the project's success.

Right Top: The newly constructed Black Branch Creek Bridge connects the existing Lost Bridge Trail bike path with the path that will extend along the IL 29 expressway to Taylorville.

Right Bottom: This detention pond north of Berry is representative of the drainage facilities built along the IL 29 expressway.