

December 14, 2007

MoDOT Design Division
1320 Creek Trail Drive
Jefferson City, Missouri 65109

ATTN: Jay Bestgen

RE: Practical Design
2008 Awards for Excellence
Route 72, Madison County
Job No. J0P0884
S/O Route 165 to the Arkansas Border

EFK♦Moen, LLC is pleased to have the opportunity to submit this project for the 2008 Awards for Excellence in Practical Design. This project constructs a new roundabout and grading for the ultimate relocation of Route 72 around the City of Fredericktown. Phase 2 will be constructed when funding is available from Madison County, who has entered a cost share agreement with MoDOT.

District 10 first contracted with EFK♦Moen in 2005 to begin conceptual through final design plans for this 1 mile section of Route 72. Phase 1 was awarded in 2007, and will be completed in 2008.

A “Radical Cost Reduction” meeting was held in Jefferson City with District personnel, Jefferson City personnel, and EFK Moen personnel. A number of change were applies to Phase 2 of the design, which may be submitted for future consideration.

A traffic seminar was held in Columbia Missouri in 2007, which introduced a left offset design for roundabouts. To date, this type of design has not been introduced into the MoDOT Engineering Policy Guide, but has many advantages as discussed at the Columbia traffic seminar. Applying this concept to our design saved over \$100,000, a 10% savings. It is also a safer design, considering entry and exit speeds desirable for roundabouts.

By applying Practical Design strategies, shoulder and pavement thicknesses were reduced, the ditches were reduced to a three-foot minimum depth, shoulders were narrowed, and other minor adjustments were made to cross sections to minimize cuts. Earthwork waste for the project was almost completely eliminated. Constructing a roundabout saved the introduction of another intersection onto Relocated Route 72, and other minor changes help reduce the cost and make this a lean project.

The result of all these applications, with EFK♦Moen working together with MoDOT design, maintenance and construction personnel, provides a roadway which will serve the needs of traffic for many years to come, at the most efficient cost possible while meeting drivers’ expectations and without compromising safety.

2008 Practical Design Awards

December 14, 2007

Page 2

Thank you for your time and consideration of this application for the 2008 Practical Design Awards of Excellence. Please contact us if you need additional information.

Sincerely,

PJ Kronlage, P.E.

Vice President, EFK♦Moen, LLC

Practical Design and Cost Savings Summary for
MoDOT Project Number J0P0884

Project Submittal

A. EXISTING CONDITIONS

Route 72 is the main state highway running through the heart of the City of Fredericktown. Traffic runs through the main square in town, with numerous pedestrian conflicts, stops, and right turns. This is very difficult for truck traffic to properly maneuver, and is a bottleneck for all through traffic. Near the Route 67/Route 72 interchange, an existing industrial park is served by an entrance with poor turning radii and poor sight distance, which has discouraged potential tenants into the park.

B. FUNDING & PUBLIC INVOLVEMENT

The Madison County Commissioners began to discuss the viability of a bypass around the City of Fredericktown for through traffic, while providing more sufficient access for the industrial park. The project became a reality through a tax initiative and cost sharing agreement between Madison County and MoDOT. Several public meetings were held, including stakeholder meetings with property owners, the City of Fredericktown, and the County Commission, with little opposition, even from most of the potentially affected land owners. Since all of the tax money was not immediately available for the entire project, the job will be built in phases. This first phase, which is being submitted for a 2008 Practical Design Award, is to construct a roundabout and new entrance into the industrial park near the Route 67 interchange. One stubbed off leg of the roundabout will be the tie in point for relocated Route 72, which will be constructed as Phase 2. The attached **Exhibit A** shows the entire project and the limits of Phase 1 and 2.

C. PRE-PRACTICAL DESIGN vs. CURRENT PRACTICAL DESIGN

From the beginning, the question was continually asked: "Why do we need to build this aspect, and have we gone too far with the design?" This entire project went through an all day meeting with Jefferson City personnel to make this project as lean as possible, looking at everything from minimizing grading to realignment to shorten bridges. A number of changes were made in order to save right of way as well as construction costs, mostly on Phase 2.

Again, Phase 1 is to construct a roundabout and new entrance into the industrial park near the Route 67 interchange, with one leg stubbed off for the future relocated Route 72. The attached **Exhibit B** shows the roundabout design as we went to the final field check. This design was based on a "Radial" roundabout design, which is where the approaching roadway centerlines run to the center of the roundabout. A "Left-Offset" design was suggested at the *Final Field Check* as a possible way to cut costs by shortening the length of the reconstructed approach legs, and improve safety by reducing the entry speed into the roundabout. This concept was applied and did cut costs and improve safety. This design is shown on **Exhibit C**. Left-Offset designs are not found or discussed in MoDOT's Engineering Policy Guide.

During the pre-practical design era, we would have stopped looking for such significant changes to make, especially during the final field check, but this new philosophy challenges us to keep looking until the project is built.

Project Purpose and Need

This roundabout allows for a five leg intersection, which would not be allowed with a convention signalized intersection. If a roundabout was not designed here, the industrial drive would have to be relocated into Phase two of this project, and would require a significant more amount of roadway to enter the relocated Route 72 at least 1200 feet from the intersection shown on Exhibit B.

Exhibits B and C indicate that 800 feet of roadway reconstruction could be saved employing a Left-Offset roundabout design. Several additional lighting poles could remain in place due to the shortened reconstruction, along with less bypass construction and removal, and overall less disruption to existing traffic.

The original design did not meet 233.3.2.3 of the Engineering Policy Guide for roundabouts which does not allow a movement over 25 MPH though the roundabout between any two legs. The Left-Offset design corrected this issue as well.

The traveling public will not notice this change at all, because from the ground it will drive like any other roundabout. This roundabout will also accommodate WB-67 truck design, and

Cost Savings

A. COST

The costs with milestones are listed below:

Final Field Check Estimate	\$1,229,502
As submitted to Jeff City	\$1,073,439
Bid as Read	\$1,114,329
(does Not Include City work)	

It should be noted that this cost savings is strictly for the roundabout change from a radial design to a left-offset design, and does not truly reflect other standard practical design savings for items such as thinner pavements, Type A2 shoulders, shallower ditches, narrowing the shoulder width, or the savings from two conventional intersections and a roundabout.

B. MISCELLANEOUS IMPACTS

This design change did not adversely impact right of way or utilities. With the original design, an additional 400 feet of stream work and rock blanket were to be constructed, which is more environmentally friendly.

Other than striping, maintenance is less than with a convention signalized intersection, and with a roundabout, less possible impact points are available, making this safer than a signalled intersection.

C. COST COMPARISONS

The cost comparisons are appropriate between Exhibit B and Exhibit C. In fact, several items were added after the final field check, including widening of the Industrial Park leg from 24 feet to 36 feet, upstream and downstream rock blanket for the box culvert, and entrance work along relocated Route 72 for temporary access, until Phase 2 could be constructed.

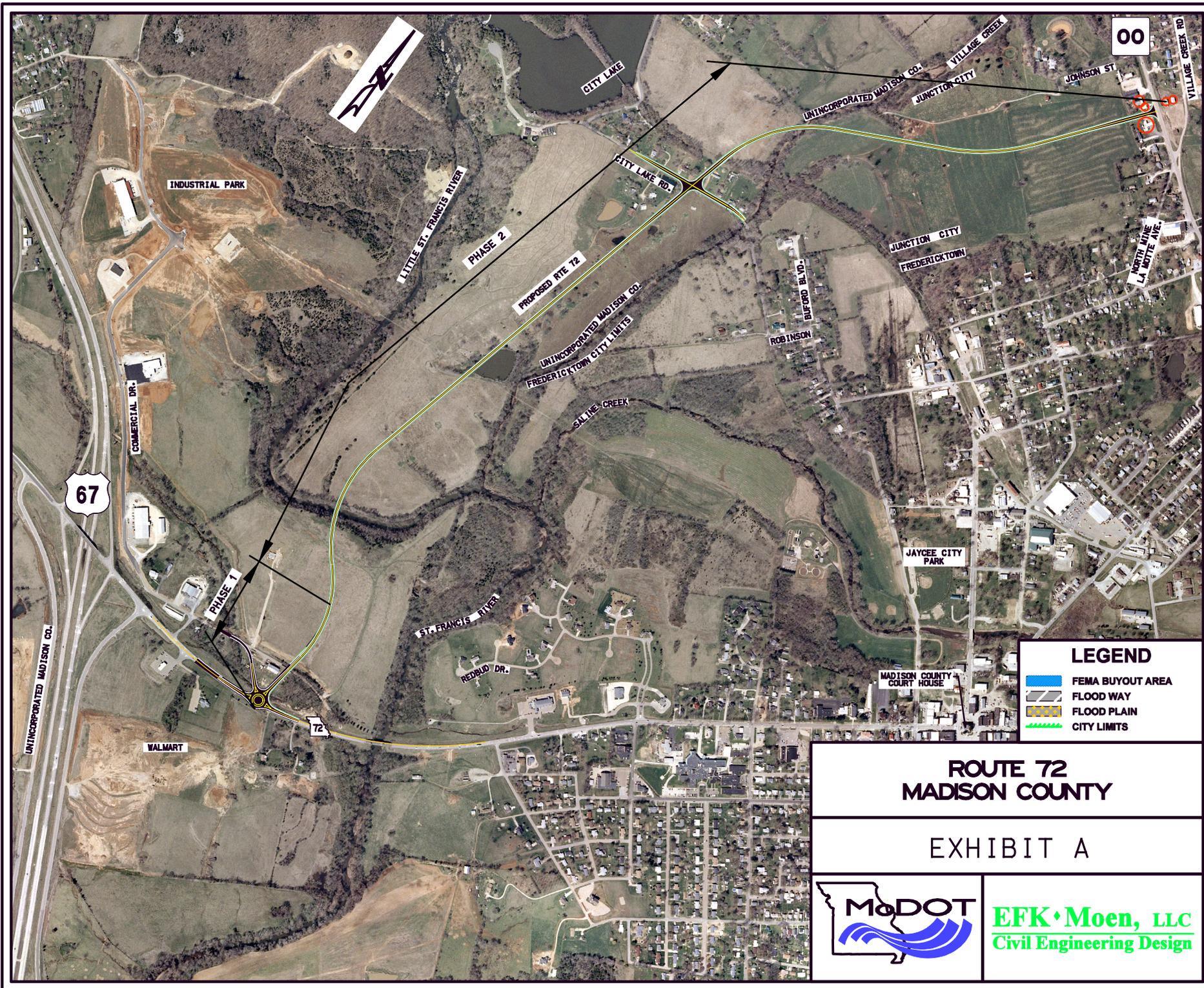
Road User Expectations

With 800 feet less pavement to construct along existing traffic, drivers will endure the bypass much less than they would to construct as shown on the original design, (Exhibit B). It is roughly estimated that 10% acceleration in construction time can be expected.

This roundabout is expected to drive like any other roundabout in Missouri. Only from the air will it look different.

Miscellaneous/Summary

This roundabout is expected to drive like any other roundabout in Missouri. Only from the air will it look different. The left-offset design is relatively new in Missouri, but is the standard in the State of New York. We attended a seminar in Columbia Missouri, where the New York State expert on roundabouts discussed the many incentives to use this left-offset design. The left-offset design helps meet the 25 MPH criteria outlined in the Engineering Policy Guide, and can help save on costs if designed starting with this concept.



00

67

72

LEGEND

-  FEMA BUYOUT AREA
-  FLOOD WAY
-  FLOOD PLAIN
-  CITY LIMITS

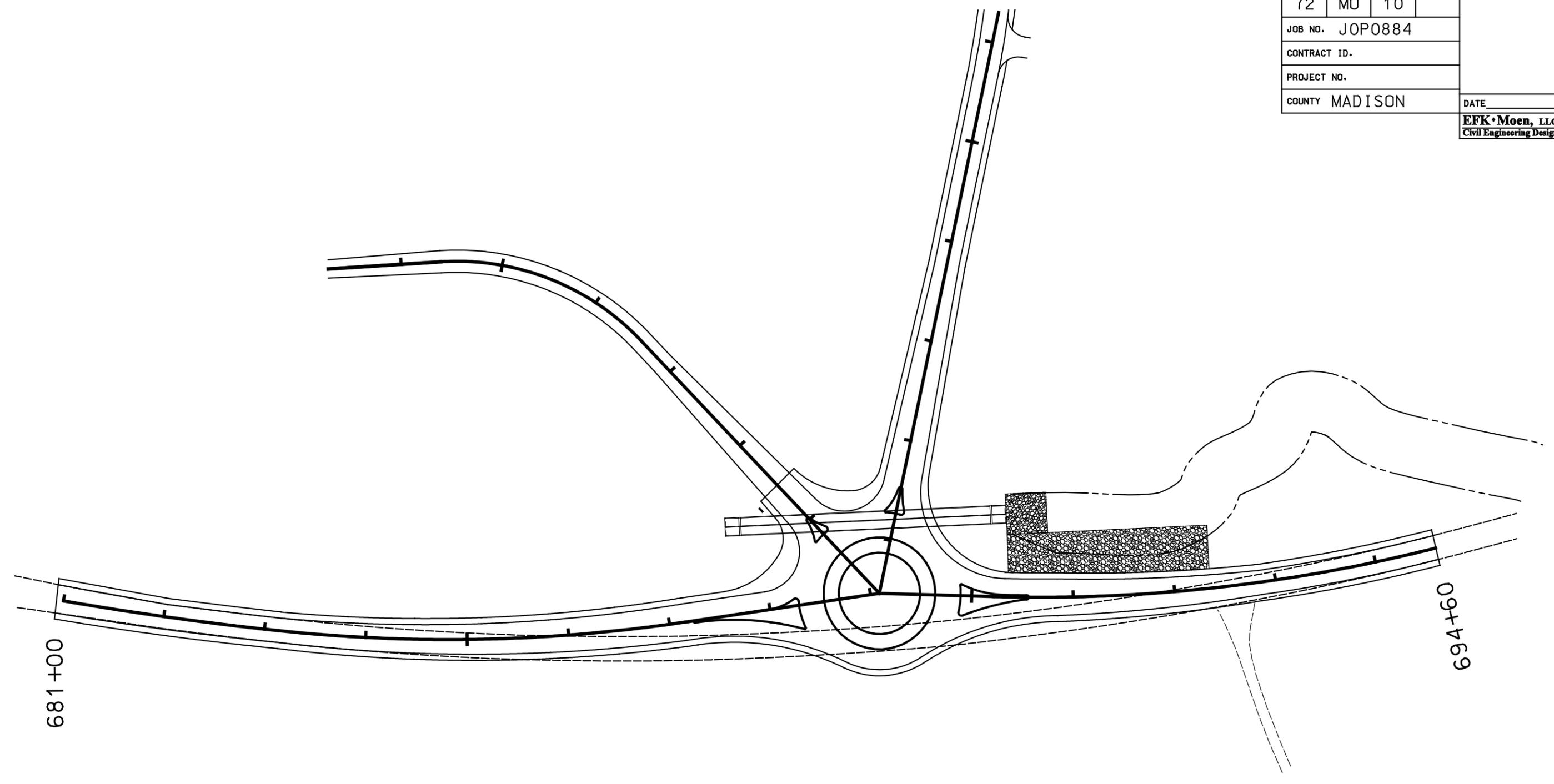
**ROUTE 72
MADISON COUNTY**

EXHIBIT A



EFK Moen, LLC
Civil Engineering Design

ROUTE 72	STATE MO	DISTRICT 10	SHEET NO.
JOB NO. JOP0884			
CONTRACT ID.			
PROJECT NO.			
COUNTY MADISON			DATE _____
EFK Moen, LLC Civil Engineering Design			

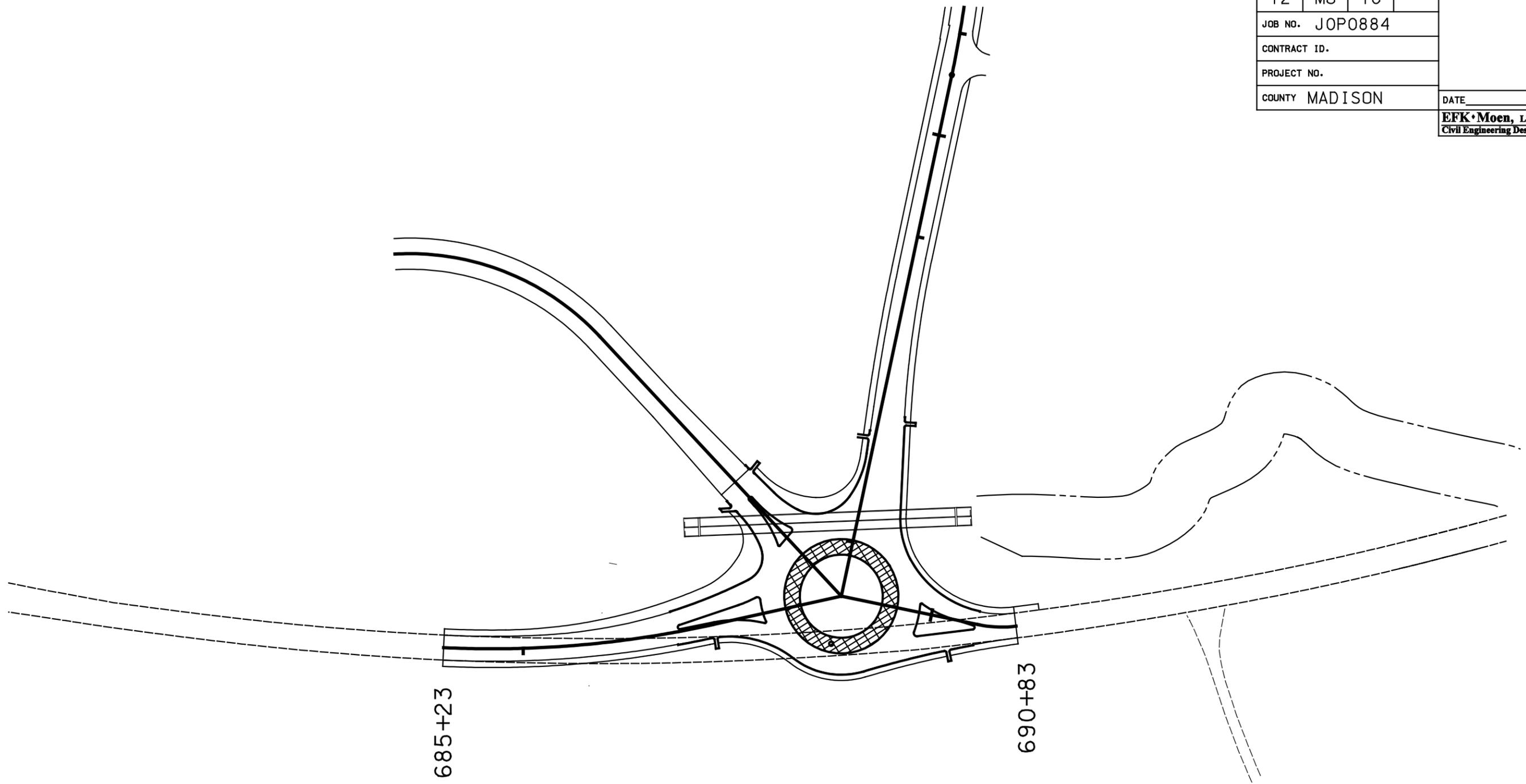


681+00

694+60

EXHIBIT B
DISTANCE 1360'

ROUTE 72	STATE MO	DISTRICT 10	SHEET NO.
JOB NO. JOP0884			
CONTRACT ID.			
PROJECT NO.			
COUNTY MADISON			DATE _____
EFK Moen, LLC Civil Engineering Design			



685+23

690+83

EXHIBIT C
DISTANCE 560'