

October 1, 2014

Mr. Jerry Hughes  
Tennessee Department of Transportation  
Suite 1200  
James K. Polk Building  
Nashville, TN 37243-1402

RE: STP-HPP-397(10), 94092-3226-14  
SR-397 (Mack Hatcher Parkway)  
From West of SR-96 to East of SR-106  
Williamson County

Dear Mr. Hughes:

We are pleased to submit this scope and estimate for work on the above referenced project. This additional work results from a request by TDOT to revise the project design from a four-lane divided roadway to a two-lane facility. The proposal was developed, after preliminary meetings and discussions were held with both the City and TDOT staff.

This proposal includes all required work to update the project plans to TDOT standards for a future construction letting for the newly proposed reduction of the original four-lane design to a two-lane roadway. The roadway design plans will be updated to display Mack Hatcher Parkway (SR 397) as a two-lane facility with the appropriate modifications to the roadway grading, drainage, intersection layout and transitioning to the existing two-lane roadway layout, striping and signage, as well as other modifications necessary for a complete layout design. The north/east bound lanes will be designed to be constructed and striped for two-way traffic as the initial constructed two lanes for this segment of Mack Hatcher Parkway from SR-96 West to Hillsboro Road (Hwy 431/SR 106). The currently designed greenway will also be included in the design set as an additive feature which was previously designed for the full roadway build-out. As Mack Hatcher Parkway approaches each intersecting roadway, a transition will be developed to construct the full roadway template, including turn lanes at the signals and all modifications on the cross streets for transition to the new roadway. This will include all associated coordination and modifications to the layout at Hillsboro Road (Hwy 431/SR 106) based on the upcoming road improvements along the roadway that is being completed by the City under a separate contract. The structural design plans will be updated to construct only the future eastbound bridge over the Harpeth River, as well as the necessary haul road and temporary river crossing for constructability. The bridge will be striped to carry two-way traffic (one lane in each direction), and a transition will be developed at the east end of the bridge to tie to a full template layout at Hillsboro Road (Hwy 431/SR 106).

The proposal also includes the work to develop two (2) preliminary alternate designs for each of three (3) intersections: the intersections of SR-397 with SR-96, Del Rio Pike and SR-106. The first alternate design will depict the minimum-width template at each intersection and the second alternate design will depict a full roadway template at each intersection. An estimate of construction quantities will be developed to determine the additional quantities required for the full roadway template as compared to the minimum roadway template and this estimate of quantities shall be submitted to TDOT for their use in generating a cost estimate. The scope of work and estimate are further explained in the attachments.



The total work order request is for **\$355,055.54**. In summary, the requested estimate is distributed as follows:

<b>Tasks</b>	<b>Fees</b>
Survey Update	\$ 18,597.07
Roadway Design Construction Plans	\$ 170,448.77
Structural Design Construction Plans	\$ 158,977.90
Structural Lighting Revisions	\$ 7,031.80
<b>Total</b>	<b>\$ 355,055.54</b>

This estimate includes our contracted overhead rate of 176.14% for Federally Funded projects with a fee of 12.5% calculated on a multiplier of 2.35. If you have any questions or comments please let us know.

Sincerely,



Zack Daniel, PE  
Principal Engineer/Client Service Leader  
CDM Smith Inc.

cc: Paul Holzen, P.E. – City of Franklin  
Jonathan Marston, P.E. – City of Franklin  
Patrick Murray, P.E. – CDM Smith  
Jeff Mize, P.E. – CDM Smith

Attachments: Exhibit A – Project Scope  
Exhibit B – Roadway Design Estimate  
Exhibit C – Survey Estimate  
Exhibit D – Structural Engineering Scope and Estimate  
Exhibit E – Structural Lighting Design Estimate

**Exhibit A  
Project Scope**

Exhibit A  
COF 2013-0034  
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STP-HPP-397(10), 94092-3226-14  
SR-397 (Mack Hatcher Parkway)  
From West of SR-96 to East of SR-106  
Williamson County

**October 1, 2014**

CDM Smith is pleased to submit this scope of services for additional work on the above referenced project. This additional work results from a request by TDOT to revise the project design from a four-lane divided roadway to a two-lane facility as shown on the attached typical section.

This proposal includes all required work to update the project plans to TDOT standards for a future construction letting for the newly proposed reduction of the original four-lane design to a two-lane roadway including:

- The roadway design plans will be updated to display Mack Hatcher Parkway (SR 397) as a two-lane facility with the appropriate modifications to the roadway grading, drainage, intersection layout and transitioning to the existing two-lane roadway layout, painting, stripping and signage, as well as other modifications necessary for a complete layout design.
- The north/east bound lanes will be designed to be constructed and striped for two-way traffic as the initial constructed two lanes for this segment of Mack Hatcher Parkway from Hillsboro Road (Hwy 431/SR 106) to SR-96 West.
- The currently designed greenway will be included in the design set as an additive feature which was previously designed for the full roadway build-out.
- As Mack Hatcher Parkway approaches each intersecting roadway, a transition will be developed to construct the full roadway template, including turn lanes at the signals and all modifications on the cross streets for transition to the new roadway. This will include all associated coordination and modifications to the layout at Hillsboro Road (Hwy 431/SR 106) based on the upcoming road improvements along the roadway that is being completed by the City under a separate contract.
- The structural design plans will be updated to construct only the future eastbound bridge over the Harpeth River, as well as the necessary haul road and temporary river crossing for constructability. The bridge will be striped to carry two-way traffic (one lane in each direction), and a transition will be developed at the east end of the bridge to tie to a full template layout at Hillsboro Road (Hwy 431/SR 106). The sidewalk, across the bridge, will be omitted from this plan set and the decorative parapet will be modified to provide storm drainage. **See Exhibit D for the Structural Engineering Scope of Services.**
- The topographic survey work included within the scope is for the update to the utility and corridor surveys along the major cross streets along the proposed layout that may have changed over the course of the multi-year design process. Since the actual roadway layout will not be adjusted or the ROW adjusted for the design changes, no additional survey is included along the ROW corridor for the Mack Hatcher Parkway design.
- Two (2) alternate preliminary designs for each of three (3) intersections will be developed: at the intersections of SR-397 with SR-96, Del Rio Pike and SR-106. The first alternate design will depict the minimum-width template at each intersection and the second alternate design will depict a full roadway template at each intersection. An estimate of construction quantities will be developed to determine the additional quantities required for the full roadway template as compared to the minimum roadway template and this estimate of quantities shall be submitted to TDOT for their use in generating a cost estimate.
- All bridge lighting plan sheets will be revised to reflect single eastbound bridge only. All fixtures will be re-labeled and all fixture schedules will be revised. All quantity and service detail sheets will be updated and revised.

**Exhibit A**  
**Project Scope**

Exhibit A  
COF 2013-0034  
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STP-HPP-397(10), 94092-3226-14  
SR-397 (Mack Hatcher Parkway)  
From West of SR-96 to East of SR-106  
Williamson County

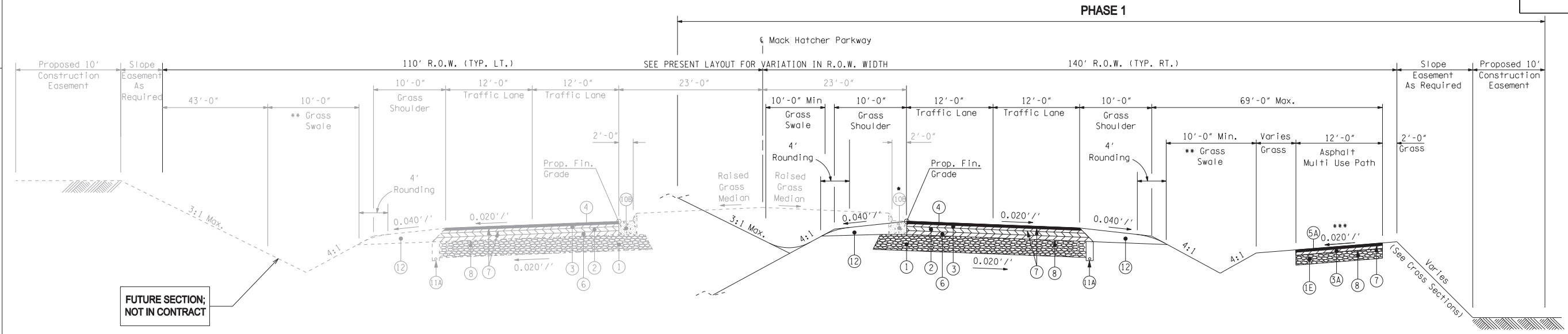
This proposal does not include work for the following:

- Updates or revisions to the geotechnical plan sheets.
- Updates or revisions to the landscape plan sheets or inclusion of those sheets in the revised plan set.
- Updates or revisions regarding right-of-way (ROW) since no additional ROW is anticipated for the modifications.
- A hydraulic analysis of the revised bridge design to account for only one bridge being built as part of this project.

CDM Smith appreciates the opportunity to continue to support the design and future construction of the Mack Hatcher extension and provide these design services to TDOT and the City of Franklin. If you have any questions about this proposal, please do not hesitate to contact us. We are ready to initiate this work upon your notice to proceed.

TYPE	YEAR	PROJECT NO.	SHEET NO.
R.O.W.	2009	STP/HPP-397(10)	2-A
CONST.	2014	STP/HPP-397(10)	2-D

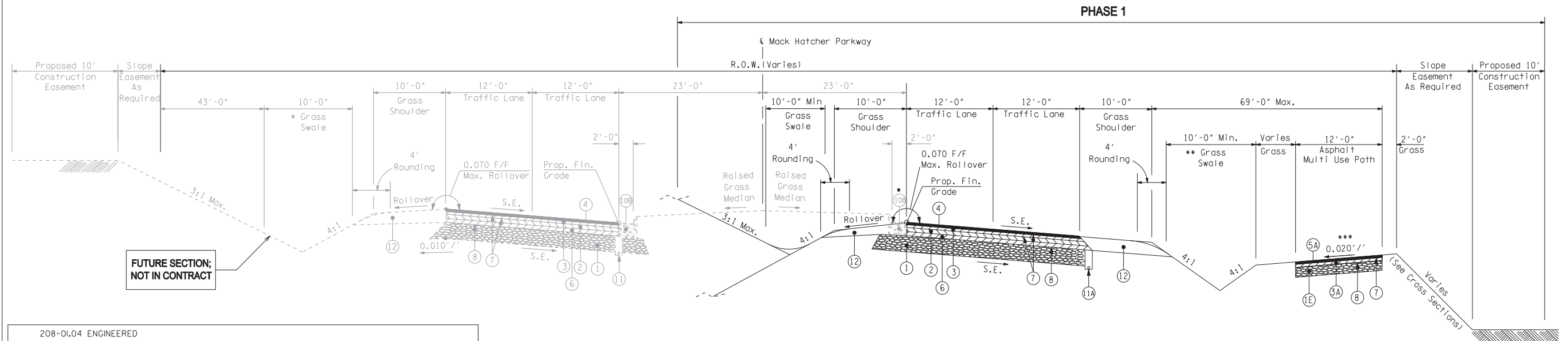
94092-1224-14



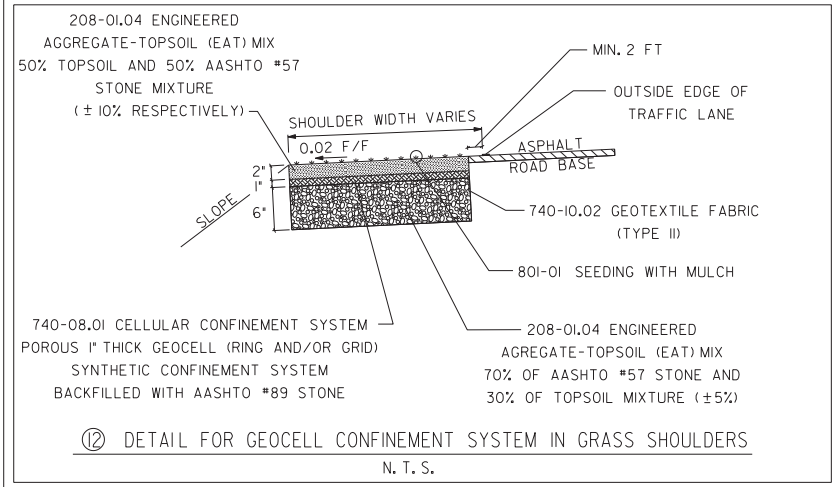
PAVEMENT DESIGN ALTERNATE 'A'  
TYPICAL TANGENT SECTION  
S.R. 397 (MACK HATCHER PARKWAY)  
STD. DWG. RD01-TS-6, RD01-TS-3A, & RD-TS-8  
(N.T.S.)

\* NOTE: PHASE 1 CURB AND GUTTER AS NEEDED AT INTERSECTIONS AND BRIDGES

- \*\* CONSTRUCT GRASS SWALE LEFT AND RIGHT IN CUT SECTIONS AND/OR BETWEEN ROADWAY AND MULTI-USE PATH AS SHOWN IN PLANS.
- \*\*\* GREENWAY CROSS SLOPE IS REVERSED (0.02'/' TO THE OUTSIDE) THROUGH THE FOLLOWING STATION RANGES (SEE CROSS SECTIONS):  
888+50 TO 894+00  
901+50 TO 904+00



PAVEMENT DESIGN ALTERNATE 'A'  
TYPICAL SUPERELEVATED SECTION  
S.R. 397 (MACK HATCHER PARKWAY)  
STD. DWG. RD01-TS-6, RD01-TS-3A, & RD-TS-8  
(N.T.S.)



NOTE: SEE LANDSCAPE PLANS FOR LOCATION OF GROUNDCOVER TYPE

NOTE: SEE INSET ON SHEET 2C FOR PAVEMENT DESIGN ALTERNATE 'B'

**EXHIBIT B  
DESIGN FEE ESTIMATE**

**REGION 3  
WILLIAMSON COUNTY  
PIN: 101454.01  
SR-397 (MACK HATCHER PKY)**

9/30/2014

**Exhibit A  
COF 2013-0034  
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CONSTRUCTION PLANS (PROJECT REDESIGN)	HOURS PER PERSONNEL CLASS				
	PM	Proj Eng	Engineer	CAD Tech	CAD Drafter
Mainline Redesign with Side Road Tie-In (Two Lane Typical Section, 2.67 Mi. Length)	96	180	324	300	300
New Proposed Contours		2	4	8	16
Traffic Signal Design Modification (Three Intersections)	6	11	19	18	18
Roadway Lighting Design Modification (Three Intersections)					
Hydraulic/Environmental Coordination	3	6	11	10	10
Median Crossover Alignments (Four Alignments, 0.61 Mi. Total Length)		4	40	40	40
Alternate Intersection Designs Quantity Estimate	3	6	11	10	10
Minimum Intersection Alternate Design	6	12	22	20	20
<b>HOURS PER CLASSIFICATION</b>	<b>114</b>	<b>221</b>	<b>431</b>	<b>406</b>	<b>414</b>
<b>MANDAYS</b>	<b>14.3</b>	<b>27.6</b>	<b>53.9</b>	<b>50.8</b>	<b>51.8</b>
<b>TOTAL HOURS</b>	<b>1586</b>				
<b>TOTAL DAYS</b>	<b>198.3</b>				

DIRECT (LABOR)	RATE		HOURS	=	LABOR
Project Manager	\$ 57.50	x	114	=	\$ 6,555.00
Project Engineer	\$ 47.00	x	221	=	\$ 10,387.00
Engineer	\$ 40.00	x	431	=	\$ 17,240.00
CAD Tech	\$ 30.00	x	406	=	\$ 12,180.00
CAD Drafter	\$ 22.00	x	414	=	\$ 9,108.00
<b>LABOR =</b>					<b>\$ 55,470.00</b>

OVERHEAD (DL x 1.7614)					
	\$ 55,470.00		X	176.14%	\$ 97,704.86

FEE (DL x 2.35 x 12.5%)						
\$	55,470.00	X	2.35	X	12.5%	\$ 16,294.31

DIRECT EXPENSES					
Local Mileage (10 Trips X 46 Miles Per Trip)	460		X	0.47	\$ 216.20
Non-Local Mileage (2 Trips X 360 Miles Per Trip)	720		X	0.47	\$ 338.40
Printing/Reproduction (Half Size Bond Plots)	1500		X	0.25	\$ 375.00
Printing/Reproduction (Photo-copies)	500		X	0.10	\$ 50.00
<b>DIRECT EXPENSES =</b>					<b>\$ 979.60</b>

**PROJECT DESIGN = \$ 170,448.77**

**TENNESSEE DEPARTMENT OF TRANSPORTATION**  
**MANDAY ESTIMATE AND FEE PROPOSAL**

**For Survey Only**

**State Route 397**

**Mack Hatch Parkway**

**Franklin, Williamson County County**

**Project Identification Number (PIN): 101454.01**

**General Comments:**  
For this proposal, the 0.49 mile of mainline is along SR-96. Supplemental survey is required along a section of SR-96 where city road construction projects have been completed subsequent to the original survey. A turn lane, sidewalk, greenway, and detention pond project has been built at the intersection of Front Street and SR-96 for the Westhaven Development. In addition, a complete intersection realignment has been constructed for Boyd Mill/Carlisle at SR-96. This supplemental survey will include all roadway features, side slopes, and utilities for these recently completed construction projects. Utility updates are required elsewhere within the included survey limits.

**CDM Smith**  
**Patrick Murray, PE**  
210 25th Avenue North, Suite 1102  
615-340-6540  
615-320-6560  
[murrayrp@cdmsmith.com](mailto:murrayrp@cdmsmith.com)

**Prepared By:**  
**Patrick Murray**

**Date prepared:**  
**9/9/2014**

**Project No.:**  
**94092-3226-14**

Version 2.21

SURVEY SUMMARY

Exhibit A  
COF 2013-0034  
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Survey Summary

Route: State Route 397      9/9/2014  
Description: Mack Hatch Parkway  
County: Franklin, Williamson County  
Consultant: CDM Smith  
Prepared By: Patrick Murray  
Project No.: 94092-3226-14

Mainline Project Length: **0.49** (miles)  
Number of Sideroads: **5**      Length: **5350** (feet)  
Office Travel Time per day (hrs): **0.00**  
Crew Travel Time per day (hrs): **1.50**  
Crew Work per day (hrs): **10**

Number of Existing Lanes: **3**      Proposed: **4**  
Number of Driveways/Ramps: **6**

Location:  
Existing Road: **100%**      Rural: **50%**  
New Alignment: **0%**      Urban: **50%**  
Business: **0%**

Rural Land Character:    Woods: **0%**      Terrain: Flat: **0%**  
Pasture: **0%**      Rolling: **100%**  
Cultivated: **100%**      Hilly: **0%**  
Mountains: **0%**

Distance to Nearest Benchmark: **0.5** miles  
Number of Survey Updates: **0**      R.O.W. Staking:  
Iron Pins: **0**  
Aerial Mapping Available:      1 Stake Points: **0**  
2 Stake Points: **0**

Approximate Obscured Area: **100%** Use 100% if no mapping is available.  
Proposed DTM Width: **100** (ft)

Drainage:       YES      Technical Staking:      Points: **0**  
Approx. Number of Culvert Sites: **0**       NO

Number of Bridges: Small: **0**      Medium: **0**      Large: **0**

Approx. Number of Property Tracts: **0**      Number of Railroad Crossings: **0**

Indicate Utilities Present:    Elect.:      Telephone:      Cable TV:  
Water:      Sewer:      Gas:  
Fiber Optic:      Petroleum Pipeline:

Comments on Difficulty, Conditions or Other Considerations:

INPUT SIDEROADS LT & RT OF CENTERLINE	
Sideroad Name	Length (feet)
Front Street	100
Carlisle Lane	150
Boyd Mill Ave	150
Del Rio Pike	1850
SR-106	3100
Total Length	5350

     Version 2.21



SURVEY MANDAY ESTIMATE

Exhibit A  
COF 2013-0034  
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ESTIMATE FOR FIELD SURVEYS

PROJECT DESCRIPTION:

Version 2.21

Route: State Route 397  
Description: Mack Hatch Parkway

County: Franklin, Williamson County Prepared By: Patrick Murray  
Consultant: CDM Smith Date Prepared: 9/9/2014

Project No.: 94092-3226-14

TOTAL LENGTH(miles): 1.46  
OFFICE TRAVEL TIME PER DAY(hrs): 0.00  
CREW TRAVEL TIME PER DAY(hrs): 1.50

ACTIVITY	PROJECT MANAGER	OFFICE CADD TECH.	PARTY CHIEF	INSTRUMENT MAN	RODMAN	RODMAN	FLAGGER	FLAGGER	Total
	PM	O	P	I	R	R	F	F	
1. Establish & Stake Alignments									
2. Update Survey									
3. Control Traverses	0.4	0.1	0.5	0.5	0.5	0.5			2.5
4. Set Aerial Control									
5. Bench Levels									
6. Develop Digital Terrain Model	0.8	1.4	1.4	1.4	1.4	1.4			7.8
7. R.O.W., Deed & Utility Research									
8. Property Owner Contact									
9. Locate Property & Pres. R.O.W. Lines									
10. Obtain Topo/Verify Aerial	0.5	1.5	1.4	1.4	1.4	1.4			7.6
11. Drainage Surveys (Culverts)									
12. Bridge Surveys (bridge details, stream alignment, topo, profile, flood plain sections, high water, etc.)									
13. Railroad Surveys									
14. Utilities	0.2	0.6	1.6	1.6	1.6	1.6			7.2
15. Stake R.O.W. & Easements									
16. Stake Sounding Holes									
17. Note Reduction & other Calculations	1.2								1.2
18. Plot Plan, Profiles, Property Map, Drainage Map, Bridge Survey, Control Point Table, etc.									
19. Supervision	0.9								0.9
20. Travel Time (8 HOUR MAN-DAYS)			1.1	1.1	1.1	1.1			4.4
<b>TOTALS (8 HOUR MAN-DAYS)</b>	<b>4.0</b>	<b>3.6</b>	<b>6.0</b>	<b>6.0</b>	<b>6.0</b>	<b>6.0</b>			<b>31.6</b>
21. Travel Time (10 HOUR MAN-DAYS)			0.9	0.9	0.9	0.9			3.6
<b>TOTALS (ADJ. TO 10 HR MAN-DAYS)</b>			<b>4.6</b>	<b>4.6</b>	<b>4.6</b>	<b>4.6</b>			<b>26.0</b>
<b>TOTAL CALENDAR DAYS SAVED</b>			<b>1.4</b>	<b>1.4</b>	<b>1.4</b>	<b>1.4</b>			

SURVEY MANDAY ESTIMATE

Exhibit A  
COF 2013-0034  
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PROJECT DESCRIPTION:

Version 2.21

Route: State Route 397  
Description: Mack Hatch Parkway  
County: Franklin, Williamson County  
Consultant: CDM Smith  
Project No.: 94092-3226-14  
TOTAL LENGTH(miles): 1.46  
Date Prepared: 9/9/2014 Prepared By: Patrick Murray

	OFFICE DIFFICULTY	FIELD DIFFICULTY	REMARKS
Align.	0.0	0.0	
Update	0.0	0.0	0 Survey Updates
Control	0.5	0.5	
Aerial	0.0	0.0	0 0 NUMBER HORIZONTAL & NUMBER VERTICAL POINTS
Levels	0.0	0.0	ZERO IF NOT REQUIRED
DTM	1.0	0.5	100% PERCENT SKIPS 100 DTM WIDTH(feet)
Research	0.0	0.0	0 NUMBER OF TRACTS
Contacts	0.0	0.0	
Property	0.0	0.0	DO NOT EDIT THESE CELLS
Topo	1.0	0.2	
Culverts	0.0	0.0	
Bridges	0.0	0.0	0 0 0 NUMBER OF SMALL, MEDIUM, LARGE BRIDGES
RR	0.0	0.0	0 NUMBER OF RR CROSSINGS
Utilities	1.0	0.4	6 Number of Different Utilities Involved
R.O.W.	0.0	0.0	DO NOT EDIT THESE CELLS
Geotech.	0.0	0.0	
	0.5		0 0 0 Number of IP's, 1-stake, 2-stakes
Plotting	0.0		0 Number of Geotechnical Staking Points
	0.2		<b>45.7</b> 10 - Hr MD/MILE not including travel
			<b>53.1</b> 10 - Hr MD/MILE
			55.5 8 - Hr MD/MILE not including travel
			64.5 8 - Hr MD/MILE

**SURVEY DIRECT LABOR COST**

PROJECT DESCRIPTION:  
 ROUTE: State Route 397  
 DESCRIPTION: Mack Hatch Parkway  
 COUNTY: Franklin, Williamson County  
 CONSULTANT: CDM Smith  
 TOTAL LENGTH(miles): 1.50

Prepared By: Patrick Murray  
 Date Prepared: 9/9/2014

	Abbrev.	Personnel Classification	8 - Hr Man-Days	10 - Hr Man-Days	Approved Hours	Rate Per Hr	Direct Labor	Premium
1	PM	PROJECT MANAGER	4.0		8.0	\$ 41.50	\$ 1,328.00	
2	O	OFFICE CADD TECH.	3.6		8.0	\$ 30.00	\$ 864.00	
3	P	PARTY CHIEF	6.0	4.6	10.0	\$ 20.00	\$ 920.00	\$ 92.00
4	I	INSTR. MAN	6.0	4.6	10.0	\$ 17.00	\$ 782.00	\$ 78.20
5	R	RODMAN	6.0	4.6	10.0	\$ 14.00	\$ 644.00	\$ 64.40
6	R	RODMAN	6.0	4.6	10.0	\$ 14.00	\$ 644.00	\$ 64.40
7	F	FLAGGER	0.0	0.0	10.0	\$ -	\$ -	\$ -
8	F	FLAGGER	0.0	0.0	10.0	\$ -	\$ -	\$ -
TOTALS			31.6	18.4			\$ 5,182.00	\$ 299.00

Average Direct Labor Cost Per (Combined 8 - Hour & 10 - Hour) Man-Day	\$ 199.31
Modified 8 - Hour Labor Cost Per Man-Day	\$ 169.35

Version 2.21

SURVEY DIRECT EXPENSES																																																																																																																																												
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<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;"></th> <th style="width: 15%;">Item Subtotal</th> <th style="width: 25%;">Item Total Cost</th> </tr> </thead> <tbody> <tr> <td colspan="3"><b>Reproduction Costs</b></td> </tr> <tr> <td style="text-align: center;">Item Description</td> <td style="text-align: center;">Number / Unit</td> <td style="text-align: center;">Unit Price</td> </tr> <tr> <td>Xerographic Bond</td> <td style="text-align: center;">0</td> <td style="text-align: right;">\$ 0.25</td> </tr> <tr> <td>Blueline Fullsize</td> <td style="text-align: center;">0</td> <td style="text-align: right;">\$ 0</td> </tr> <tr> <td>Photo-Copies</td> <td style="text-align: center;">0</td> <td style="text-align: right;">\$ 0</td> </tr> <tr> <td>Deeds</td> <td style="text-align: center;">0</td> <td style="text-align: right;">\$ 0</td> </tr> <tr> <td colspan="2"></td> <td style="text-align: right;"><b>Subtotal</b></td> </tr> <tr> <td colspan="2"></td> <td style="text-align: right;">\$ -</td> </tr> <tr> <td colspan="3"><b>Travel</b></td> </tr> <tr> <td colspan="3" style="text-align: center;"><b>Survey Crew Travel Calculations</b></td> </tr> <tr> <td colspan="3">From: Knoxville, TN</td> </tr> <tr> <td colspan="3">To: Franklin, TN (Williamson County)</td> </tr> <tr> <td style="text-align: center;">Number of Trips</td> <td style="text-align: center;">No. of Miles/No. of People</td> <td style="text-align: center;">RATE</td> </tr> <tr> <td>2.00 Man-Days</td> <td style="text-align: center;">X 4.00 People X</td> <td style="text-align: right;">\$ 42.00 Per Day</td> </tr> <tr> <td>3.00 Man-Days</td> <td style="text-align: center;">X 4.00 People X</td> <td style="text-align: right;">\$ 56.00 Per Day</td> </tr> <tr> <td>5.00 Man-Days</td> <td style="text-align: center;">X 90.00 Miles X</td> <td style="text-align: right;">\$ 0.47 Per Mile</td> </tr> <tr> <td>3.00 Nights</td> <td style="text-align: center;">X 4.00 People X</td> <td style="text-align: right;">\$ 102.00 Per Person</td> </tr> <tr> <td colspan="2"></td> <td style="text-align: right;"><b>Subtotal</b></td> </tr> <tr> <td colspan="2"></td> <td style="text-align: right;">= \$ 2,443.50</td> </tr> <tr> <td colspan="3"><b>Office Personnel Travel Calculations</b></td> </tr> <tr> <td colspan="3">From: Knoxville, TN</td> </tr> <tr> <td colspan="3">To: Franklin, TN</td> </tr> <tr> <td style="text-align: center;">Number of Trips</td> <td style="text-align: center;">No. of Miles/No. of People</td> <td style="text-align: center;">RATE</td> </tr> <tr> <td>0.00 Man-Days</td> <td style="text-align: center;">X 0.00 People X</td> <td style="text-align: right;">\$ 29.25 Per Day</td> </tr> <tr> <td>0.00 Man-Days</td> <td style="text-align: center;">X 0.00 People X</td> <td style="text-align: right;">\$ 39.00 Per Day</td> </tr> <tr> <td>0.00 Round Trips</td> <td style="text-align: center;">X 0.00 Miles X</td> <td style="text-align: right;">\$ 0.47 Per Mile</td> </tr> <tr> <td>0.00 Nights</td> <td style="text-align: center;">X 0.00 People X</td> <td style="text-align: right;">\$ 65.00 Per Person</td> </tr> <tr> <td colspan="2"></td> <td style="text-align: right;"><b>Subtotal</b></td> </tr> <tr> <td colspan="2"></td> <td style="text-align: right;">\$ -</td> </tr> <tr> <td colspan="3"><b>Other Expenses</b></td> </tr> <tr> <td style="text-align: center;">Item Description</td> <td style="text-align: center;">Number / Unit</td> <td style="text-align: center;">Unit Price</td> </tr> <tr> <td>PK Nails, Paint, Flagging</td> <td style="text-align: center;">1</td> <td style="text-align: right;">\$ 25.00</td> </tr> <tr> <td></td> <td style="text-align: center;">0</td> <td style="text-align: right;">\$ -</td> </tr> <tr> <td></td> <td style="text-align: center;">0</td> <td style="text-align: right;">\$ -</td> </tr> <tr> <td></td> <td style="text-align: center;">0</td> <td style="text-align: right;">\$ -</td> </tr> <tr> <td></td> <td style="text-align: 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Man-Days	X 4.00 People X	\$ 42.00 Per Day	3.00 Man-Days	X 4.00 People X	\$ 56.00 Per Day	5.00 Man-Days	X 90.00 Miles X	\$ 0.47 Per Mile	3.00 Nights	X 4.00 People X	\$ 102.00 Per Person			<b>Subtotal</b>			= \$ 2,443.50	<b>Office Personnel Travel Calculations</b>			From: Knoxville, TN			To: Franklin, TN			Number of Trips	No. of Miles/No. of People	RATE	0.00 Man-Days	X 0.00 People X	\$ 29.25 Per Day	0.00 Man-Days	X 0.00 People X	\$ 39.00 Per Day	0.00 Round Trips	X 0.00 Miles X	\$ 0.47 Per Mile	0.00 Nights	X 0.00 People X	\$ 65.00 Per Person			<b>Subtotal</b>			\$ -	<b>Other Expenses</b>			Item Description	Number / Unit	Unit Price	PK Nails, Paint, Flagging	1	\$ 25.00		0	\$ -		0	\$ -		0	\$ -		0	\$ -		0	\$ -		0	\$ -			<b>Subtotal</b>			\$ 25.00	<b>TOTAL DIRECT EXPENSES</b>						<b>\$ 2,468.50</b>					
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FEE PROPOSAL

Exhibit A  
COF 2013-0034  
PG 13 of 23

FEE PROPOSAL									
ROUTE:	State Route 397			Project No.:	94092-3226-14				
DESCRIPTION:	Mack Hatch Parkway			PIN No.:	101454.01				
COUNTY:	Franklin, Williamson County								
CONSULTANT:	CDM Smith								
Prepared By:	Patrick Murray								
Date Prepared:	9/9/2014								
Version 2.21									
<b>Data For Fee Calculations</b>									
Overhead Rate = <b>1.7614</b> **									
** (State Project Maximum overhead rate = 1.45)									
** (Federal Project Maximum overhead rate per External Audit Report)									
Design Direct Labor Labor =	\$ -								
Survey Direct Labor =	\$ 5,182.00								
Total Direct Labor =	\$ 5,182.00								
Cost for net fee basis =	\$ 14,309.57 *								
Net Fee = (Rounded to Nearest Tenth)	<b>12.5%</b> *								
* Net fee is based on cost of contract not including direct cost and net fee as follows:									
Survey & Design / Design Only Rates									
\$ 0 - \$ 100,000 =	13.0%			Survey Only Rates					
\$ 100,000 - \$ 500,000 =	12.5%			\$ 0 - \$ 50,000 =		13.0%			
> \$ 500,000 =	12.0%			\$ 50,000 - \$ 200,000 =		12.5%			
				> \$200,000 =		12.0%			
<input checked="" type="checkbox"/>	Remove X to display instructions.								
<b>SURVEYS</b>									
					COST FOR	COST FOR	SAVINGS FOR		
					10 - Hr Days	8-HR DAY	10 - Hr Days		
1	Direct Labor		=	\$	5,182.00	\$ 5,312.00	\$ 130.00		
2	Overhead	(Overhead Rate = 1.7614 )	=	\$	9,127.57	\$ 9,356.56	\$ 228.99		
	(Overhead rate X direct labor)								
3	<b>Subtotal 1 + 2</b>		=	\$	14,309.57	\$ 14,668.56	\$ 358.99		
4	Net Fee =	12.5%	(Rounded to nearest \$10.) =	\$	1,520.00	\$ 1,560.40	\$ 40.40		
	(Direct labor X 2.35 X 0.NF)								
5	<b>Subtotal 3 + 4</b>		=	\$	15,829.57	\$ 16,228.96	\$ 399.39		
6	Direct Expense		=	\$	2,468.50	\$ 3,774.80	\$ 1,306.30		
7	Premium Labor		=	\$	299.00	\$ -	\$ (299.00)		
8	<b>Total Survey</b>		=	\$	18,597.07	\$ 20,003.76	\$ 1,406.69		
	(Total 5 + 6 + 7)								

						Version 2.21
<b>Preliminary Design</b>						
1	Direct Labor			=	\$	-
2	Overhead	(Overhead Rate = 1.7614 )		=	\$	-
	(Overhead rate X direct labor)					
3	<b>Subtotal 1 + 2</b>			=	\$	-
4	Net Fee =	12.5%	(Rounded to nearest \$10.)	=	\$	-
	(Direct labor X 2.35 X 0.NF)					
5	<b>Subtotal 3 + 4</b>			=	\$	-
6	Direct Expense			=	\$	-
7	Premium Labor			=	\$	-
8	<b>Total Preliminary Plans</b>			=	\$	-
	(Total 5 + 6 + 7)					
<b>Right-of-Way Design</b>						
1	Direct Labor			=	\$	-
2	Overhead	(Overhead Rate = 1.7614 )		=	\$	-
	(Overhead rate X direct labor)					
3	<b>Subtotal 1 + 2</b>			=	\$	-
4	Net Fee =	12.5%	(Rounded to nearest \$10.)	=	\$	-
	(Direct labor X 2.35 X 0.NF)					
5	<b>Subtotal 3 + 4</b>			=	\$	-
6	Direct Expense			=	\$	-
7	Premium Labor			=	\$	-
8	<b>Total Right-of-Way Plans</b>			=	\$	-
	(Total 5 + 6 + 7)					

						Version 2.21
<b>Construction Design</b>						
1	Direct Labor			=	\$	-
2	Overhead	(Overhead Rate = 1.7614 )		=	\$	-
	(Overhead rate X direct labor)					
3	<b>Subtotal 1 + 2</b>			=	\$	-
4	Net Fee =	12.5%	(Rounded to nearest \$10.)	=	\$	-
	(Direct labor X 2.35 X 0.NF)					
5	<b>Subtotal 3 + 4</b>			=	\$	-
6	Direct Expense			=	\$	-
7	Premium Labor			=	\$	-
8	<b>Total Construction Plans</b>			=	\$	-
	(Total 5 + 6 + 7)					
<b>Total Project</b>						
1	Direct Labor			=	\$	5,182.00
	(Sum of Survey, Prel., R.O.W., & Const. Direct Labor)					
2	Overhead	(Overhead Rate = 1.7614 )		=	\$	9,127.57
	(Overhead rate X direct labor)					
3	<b>Subtotal 1 + 2</b>			=	\$	14,309.57
4	Net Fee =	12.5%	(Rounded to nearest \$10.)	=	\$	1,520.00
	(Sum of Survey, Prel., R.O.W., & Const. Net Fee)					
5	<b>Subtotal 3 + 4</b>			=	\$	15,829.57
6	Direct Expense	( Itemize and attach )		=	\$	2,468.50
	(Sum of Survey, Prel., R.O.W., & Const. Direct Expenses)					
7	Premium Labor			=	\$	299.00
	(Sum of Survey, Prel., R.O.W., & Const. Premium Labor)					
8	<b>Total Project</b>			=	\$	18,597.07
	(Total 5 + 6 + 7)					
<b>Total Contract</b>					<b>\$</b>	<b>18,597.07</b>
DESIGN COST PER MILE						#DIV/0!
SURVEY COST PER MILE						\$ 37,953.20
TOTAL COST PER MILE						#DIV/0!

Version 2.21

FEE PROPOSAL SUMMARY

FEE PROPOSAL SUMMARY

Project No.: 94092-3226-14  
PIN No.: 101454.01

State Route 397  
Mack Hatch Parkway  
Franklin, Williamson County  
CDM Smith  
Patrick Murray  
9/9/2014

Date Prepared:

Survey Fee Proposal Summary							
Direct Labor	Overhead	Subtotal Direct Labor & Overhead	Net Fee	Subtotal Direct Labor, Overhead, & Net Fee	Direct Expense	Premium Labor	Total Phase
\$ 5,182.00	\$ 9,127.57	\$ 14,309.57	\$ 1,520.00	\$ 15,829.57	\$ 2,468.50	\$ 299.00	\$ 18,597.07
<b>SURVEY</b>							

Design Fee Proposal Summary							
Direct Labor	Overhead	Subtotal Direct Labor & Overhead	Net Fee	Subtotal Direct Labor, Overhead, & Net Fee	Direct Expense	Premium Labor	Total Phase
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>PRELIMINARY PLANS</b>							
<b>RIGHT-OF-WAY PLANS</b>							
<b>Subtotal Preliminary &amp; Right-of-Way Plans</b>							
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>CONSTRUCTION PLANS</b>							
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Subtotal Preliminary, R.O.W., &amp; Construction Plans</b>							
\$ 5,182.00	\$ 9,127.57	\$ 14,309.57	\$ 1,520.00	\$ 15,829.57	\$ 2,468.50	\$ 299.00	\$ 18,597.07
<b>Total Survey &amp; Design</b>							

- Survey
- Survey thru Prel. Plans
- Survey thru R.O.W. Plans
- Survey thru Const. Plans
- Prel. Plans
- Prel. & R.O.W. Plans
- Prel. Thru Const. Plans

INITIAL CONTRACT CEILING							
Direct Labor	Overhead	Subtotal Direct Labor & Overhead	Net Fee	Subtotal Direct Labor, Overhead, & Net Fee	Direct Expense	Premium Labor	Total Ceiling
\$ 5,182.00	\$ 9,127.57	\$ 14,309.57	\$ 1,520.00	\$ 15,829.57	\$ 2,468.50	\$ 299.00	\$ 18,597.07
<b>SURVEY</b>							

Contract will initially be authorized for:

(Remove X to display instructions.)



**CDM Smith**  
**S.R. 397 (MACK HATCHER PARKWAY)**  
**WILLIAMSON COUNTY**

## **STRUCTURAL ENGINEERING SCOPE OF SERVICES**

### **PROJECT DESCRIPTION**

This scope of services consists of engineering and drawing revisions related to finalization of the construction documents for the East Bound Structure over the Harpeth River for the S.R. 397 (Mack Hatcher Parkway) Project.

### **PROJECT SPECIFICS**

The project includes the following:

- Deleting all elements on the proposed drawings of the West Bound Bridge over the Harpeth River
- Deletion of the raised sidewalk on the East Bound Bridge
- Deletion of the curb mounted rail on the East Bound Bridge

### **SCOPE OF WORK**

The proposed construction documents were developed for this project and finalized earlier this year. Since that time it was decided that the East Bound Bridge over the Harpeth River would be let to construction this year and the West Bound Bridge over the Harpeth River would be constructed at some point in the future. This requires the typical section for the East Bound Structure to be reconfigured to allow two-way traffic. The reconfigured typical section shall accommodate 2 - 11'0" travel lanes, 1 - 10'-0" combined shoulder and bicycle lane and a 4'-9" pedestrian way. See the attached sketch depicting the reconfigured typical section. At some point in the future, the East Bound Bridge shall be reconfigured to reflect its ultimate condition conveying 2 lanes of traffic in a single direction when the West Bound Bridge is constructed. The proposed work activities to accomplish this effort include:

- Deleting all elements of the West Bound Bridge on the proposed Bridge Layout drawings
- Relabeling all one-way traffic lanes and shoulders for the reconfigured typical section on the Bridge Layout drawings
- Abutment fill and grading for West Bound Bridge shall remain on the drawings
- Rip rap for the West Bound Bridge shall remain on the drawings
- Deleting all West Bound Bridge superstructure drawings
- Deleting all West Bound Bridge abutment drawings
- Deleting all West Bound Bridge bent drawings
- Rearranging all East Bound Bridge typical sections to reflect the Phase I condition in the attached sketch
- The 3" diameter conduit for future use shall be placed on the East Bound Bridge
- A Bridge Mounted Interconnected Portable Barrier Rail shall be placed on the East Bound Bridge to separate vehicular and pedestrian traffic

- The girder cambers and dead load corrections for superstructure units 1 and 3 shall be checked to verify they accurately reflect the phased construction and future configuration of the East Bound Bridge
- The girder cambers and dead load corrections for superstructure unit 2 shall be checked to verify they accurately reflect the phased construction and future configuration of the East Bound Bridge
- The girder cambers and dead load corrections for superstructure unit 4 shall be checked to verify they accurately reflect the phased construction and future configuration of the East Bound Bridge
- Deleting all drawings and notes associated with the raised sidewalk
- Deleting all drawings and notes associated with the curb mounted barrier rail
- Ensure that the Type 2 Grate Inlet Deck Drains will be able to be placed in their future location with no adverse impact to the 2 lanes of one-way vehicular and bicycle traffic
- Modifying the Pedestrian Rail to incorporate slots for drainage purposes
- Revise Index of Sheets
- Revise all lump sum quantities to reflect East Bound Bridge only
- Revise quantities to reflect elimination of raised sidewalk concrete and reinforcing
- Ensure that all notes on the proposed drawings adequately reflect the appropriately referenced drawings
- Ensure that all details on the eliminated drawings are transferred and properly referenced on the drawings for the East Bound Bridge
- Re-label drawing that includes all structural steel notes to properly reference East Bound Bridge
- Revise details for expansion joint cover plate on sidewalk to reflect sliding plate on bridge deck
- Revise all Bill of Steel drawings to reflect deletion of West Bound Bridge and elimination of raised sidewalk
- Coordinate with architectural subcontractor to ensure all drawings reflect East Bound Bridge only, elimination of raised sidewalk and slotted pedestrian rail
- Revise all lighting drawings
- Revise all Special Provisions as appropriate
- Revise construction cost estimate
- One additional combined review by the City of Franklin and TDOT Structures Division

**Not Included in this Scope:**

- Shop drawing review
- Construction assistance

The following items have been deemed “Not Needed” by TDOT Division of Structures staff:

- The slab design for superstructure units 1 and 3 on the East Bound Bridge shall be checked to verify it has adequate capacity with the reconfigured dead loads and future dead loads
- The slab design for superstructure unit 2 on the East Bound Bridge shall be checked to verify it has adequate capacity with the reconfigured dead loads and future dead loads

- The slab design for superstructure unit 4 on the East Bound Bridge shall be checked to verify it has adequate capacity with the reconfigured dead loads and future dead loads
- The girder design for superstructure units 1 and 3 shall be checked to verify they have adequate capacity with the change in dead load configuration and future dead loads
- The girder design for superstructure unit 2 shall be checked to verify they have adequate capacity with the change in dead load configuration and future dead loads
- The girder design for superstructure unit 4 shall be checked to verify they have adequate capacity with the change in dead load configuration and future dead loads
- Revise hydraulic data information as necessary to reflect East Bound Bridge only

**CDM Smith**  
STRUCTURES DESIGN  
STANDARD COST/FEE ESTIMATION

Exhibit A  
COF 2013-0034  
PG 20 of 23

Tennessee Department of Transportation  
Mack Hatcher Parkway  
Fee Proposal for Engineering and Drawing Revision Services

<b><u>Project Component</u></b>	<b><u>Fee</u></b>	Total <b><u>MD's</u></b>
Engineering and Drawing Revisions	\$158,977.90	162.0
<b>Total Final Fee=</b>	<u><u>\$158,977.90</u></u>	<u><u>162</u></u>

**CDM Smith**  
STRUCTURES DESIGN  
STANDARD COST/FEE ESTIMATION

**Exhibit A**  
**COF 2013-0034**  
**PG 21 of 23**

**Project: Mack Hatcher Parkway Engineering and Drawing Revisions**

**I. DIRECT PAYROLL COSTS**

		<u>2014 rates</u>		
<b>PHASE A - FIELD INSPECTION, IMPROV'T RECOMMENDATIONS</b>				
Associate Engineer	0.0	Man Days @	523.28 =	\$0.00
Design Engineer	0.0	Man Days @	0.00 =	\$0.00
Senior Technician	0.0	Man Days @	172.48 =	\$0.00
Technical Typist	0.0	Man Days @	0.00 =	\$0.00
Subtotal	=	0.0		\$0.00

<b>PHASE B - PRELIMINARY PLANS DEVELOPMENT, SUBMITTALS</b>				
Project Director	0.0	Man Days @	0.00 =	\$0.00
Associate Engineer	0.0	Man Days @	523.28 =	\$0.00
Senior Engineer	0.0	Man Days @	0.00 =	\$0.00
Design Engineer	0.0	Man Days @	302.72 =	\$0.00
Designer	0.0	Man Days @	0.00 =	\$0.00
Senior Technician	0.0	Man Days @	172.48 =	\$0.00
Technician	0.0	Man Days @	0.00 =	\$0.00
Technical Typist	0.0	Man Days @	0.00 =	\$0.00
Subtotal =		0.0		\$0.00

<b>PHASE C - FINAL CONSTRUCTION PLANS</b>				
Project Director	0.0	Man Days @	0.00 =	\$0.00
Associate Engineer	39.0	Man Days @	523.28 =	\$20,407.92
Senior Engineer	0.0	Man Days @	0.00 =	\$0.00
Design Engineer	77.0	Man Days @	302.72 =	\$23,309.44
Designer	0.0	Man Days @	0.00 =	\$0.00
Senior Technician	46.0	Man Days @	172.48 =	\$7,934.08
Technician	0.0	Man Days @	0.00 =	\$0.00
Technical Typist	0.0	Man Days @	0.00 =	\$0.00
Subtotal =		162.0		\$51,651.44

<b>PHASE D - CHECKING SHOP PLANS</b>				
Associate Engineer	0.0	Man Days @	523.28 =	\$0.00
Senior Engineer	0.0	Man Days @	0.00 =	\$0.00
Design Engineer	0.0	Man Days @	302.72 =	\$0.00
Technical Typist	0.0	Man Days @	0.00 =	\$0.00
Subtotal =		0.0		\$0.00

<b>PHASE E - LOAD RATINGS</b>				
Associate Engineer	0.0	Man Days @	523.28 =	\$0.00
Senior Engineer	0.0	Man Days @	0.00 =	\$0.00
Design Engineer	0.0	Man Days @	302.72 =	\$0.00
Technical Typist	0.0	Man Days @	0.00 =	\$0.00
Subtotal =		0.0		\$0.00

Total Direct Payroll Costs = \$51,651.44

- II. DIRECT COSTS: COMPUTER, PRINTING, TRAVEL & ETC. = \$1,175.00
- III. OVERHEAD COST - 176.14% OF DIRECT PAYROLL COSTS = \$90,978.85
- IV. NET FEE - 235.00% OF DIRECT PAYROLL COSTS X 12.5% = \$15,172.61

**TOTAL FEE = \$158,977.90**

**CDM Smith**  
STRUCTURES DESIGN  
ESTIMATED DIRECT COSTS

<b>Exhibit A</b> <b>COF 2013-0034</b> <b>PG 22 of 23</b>
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**Project: Mack Hatcher Parkway Engineering and Drawing Revisions**

**A: Travel & Subsistence**

Ground travel at \$0.47 per mile	0 miles	\$0.00
Air travel at \$.50 per mile for	0 miles	\$0.00
Daily subsistence @ \$150.	0 days	\$0.00
Inspection boat rental	0 days	\$0.00

**B: Computer and Plotter**

CADD - \$15 per hour for	0 hours	\$0.00
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**C: Prints/Reproductions, 96 sheets assumed**

10 Plan sets	960 sheets at	\$0.50 per sheet	\$480.00
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**D: Materials & Supplies**

1 Plan set(s):	0 sheets at	\$4.50 (Mylar)	\$0.00
Estimated project supplies at			\$445.00

**E: Communication, Telephone & Postage**

Estimated at	\$250.00
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**F: Outside Data Services**

Data service, concrete girder design	0 spans BDS runs at	\$35.00	\$0.00
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**G: Outside Sub-Contractor Services**

Access, rigging and/or traffic control (see Proposal)	\$0.00
Equipment rental, hazardous materials (see Proposal)	\$0.00
Geotechnical Engineering (see Proposal)	\$0.00

**TOTAL OF ESTIMATED DIRECT COSTS -  
(ITEM II PRECEDING SHEET)**

\$1,175.00
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**EXHIBIT E  
STRUCTURAL LIGHTING DESIGN**

**REGION 3  
WILLIAMSON COUNTY  
STP-HPP-397(10), 94092-3226-14  
SR-397 (Mack Hatcher Parkway)  
From SR-96 to SR-106**

8/27/2014

**Exhibit A  
COF 2013-0034  
PG 23 of 23**

STRUCTURAL PLANS	HOURS PER PERSONNEL CLASS				
	Proj. Mgr.	Struct Eng	EE	Admin	
Revise all bridge lighting plan sheets to reflect single EB bridge only. Relabel all fixtures and revise all fixture schedules. Also, update and revise all quantity, and service detail sheets.			40		
<b>HOURS PER CLASSIFICATION</b>			<b>40</b>		
<b>MANDAYS</b>			<b>5</b>		
<b>TOTAL HOURS</b>	<b>40</b>				
<b>TOTAL DAYS</b>	<b>5</b>				

DIRECT (LABOR)	RATE		HOURS		LABOR
Project Manager	\$ -	x		=	\$ -
Structural Engineer/Designer	\$ -	x		=	\$ -
EE	\$ 56.62	x	40	=	\$ 2,264.80
Admin	\$ -	x		=	\$ -
	\$ -	x		=	\$ -
<b>LABOR =</b>					<b>\$ 2,264.80</b>

OVERHEAD (DL x 1.7614)					
	\$ 2,264.80		X	176.14%	\$ 3,989.22

FEE (DL x 2.35 x 12.5%)						
\$	2,264.80	X	2.35	X	12.5%	\$ 665.29

DIRECT EXPENSES					
Mileage			X	0.470	\$ -
Printing (Half-size Bond)	250		X	0.25	\$ 62.50
Lodging			X	142.61	\$ -
Per Diem			X	49.5	\$ -
Postage/Shipping					\$ 50.00
<b>DIRECT EXPENSES =</b>					<b>\$ 112.50</b>

**FINAL DESIGN = \$ 7,031.80**