


Municipality	L O C A L A G E N C Y	 Illinois Department of Transportation Preliminary Engineering Services Agreement For Motor Fuel Tax Funds	C O N S U L T A N T	Name Crawford, Murphy and Tilly, Inc.
Township				Address 550 N. Commons Drive, Suite 116
County Lake County				City Aurora
Section 08-00065-02-RS				State IL

THIS AGREEMENT is made and entered into this _____ day of _____, _____ between the above Local Agency (LA) and Consultant (ENGINEER) and covers certain professional engineering services in connection with the improvement of the above SECTION. Motor Fuel Tax Funds, allotted to the LA by the State of Illinois under the general supervision of the State Department of Transportation, hereinafter called the "DEPARTMENT", will be used entirely or in part to finance ENGINEERING services as described under AGREEMENT PROVISIONS.

Section Description

Name Cedar Lake Road

Route _____ Length .53 Mi. +/- 2800 FT (Structure No. _____)

Termini Nippersink Road to Hart Road

Description:

Phase I Project to study the existing two-lane section of Cedar Lake Road for safety and capacity. A determination will be made to widen the existing road as well as whether or not a complete reconstruction is required.

Agreement Provisions

The Engineer Agrees,

1. To perform or be responsible for the performance of the following engineering services for the LA, in connection with the proposed improvements herein before described, and checked below:
 - a. Make such detailed surveys as are necessary for the preparation of detailed roadway plans
 - b. Make stream and flood plain hydraulic surveys and gather high water data, and flood histories for the preparation of detailed bridge plans.
 - c. Make or cause to be made such soil surveys or subsurface investigations including borings and soil profiles and analyses thereof as may be required to furnish sufficient data for the design of the proposed improvement. Such investigations are to be made in accordance with the current requirements of the DEPARTMENT.
 - d. Make or cause to be made such traffic studies and counts and special intersection studies as may be required to furnish sufficient data for the design of the proposed improvement.
 - e. Prepare Army Corps of Engineers Permit, Department of Natural Resources-Office of Water Resources Permit, Bridge waterway sketch, and/or Channel Change sketch, Utility plan and locations, and Railroad Crossing work agreements.
 - f. Prepare Preliminary Bridge design and Hydraulic Report, (including economic analysis of bridge or culvert types) and high water effects on roadway overflows and bridge approaches.
 - g. Make complete general and detailed plans, special provisions, proposals and estimates of cost and furnish the LA with five (5) copies of the plans, special provisions, proposals and estimates. Additional copies of any or all documents, if required, shall be furnished to the LA by the ENGINEER at his actual cost for reproduction.
 - h. Furnish the LA with survey and drafts in **duplicate quadruplicate** of all necessary right-of-way dedications, construction easement and borrow pit and channel change agreements including prints of the corresponding plats and staking as required.

Note: ~~Four copies to be submitted to the Regional Engineer~~

DRAFT

- i. Assist the LA in the tabulation and interpretation of the contractors' proposals
- j. Prepare the necessary environmental documents in accordance with the procedures adopted by the DEPARTMENT's Bureau of Local Roads & Streets.
- k. Prepare the Project-Development Feasibility Report as when required by the LA DEPARTMENT.
- l. **Additional services as included and/or defined in the attached Scope of Services (Exhibit "A").**

- (2) That all reports, plans, plats and special provisions to be furnished by the ENGINEER pursuant to the AGREEMENT, will be in accordance with current standard specifications and policies of the LA DEPARTMENT. It is being understood that all such reports, plats, plans and drafts shall, before being finally accepted, be subject to approval by the LA and the DEPARTMENT.
- (3) To attend conferences at any reasonable time when requested to do so by representatives of the LA or the Department.
- (4) In the event plans or surveys are found to be in error during construction of the SECTION and revisions of the plans or survey corrections are necessary, the ENGINEER agrees that he will perform such work without expense to the LA, even though final payment has been received by him. He shall give immediate attention to these changes so there will be a minimum delay to the Contractor.
- (5) That basic survey notes and sketches, charts, computations and other data prepared or obtained by the Engineer pursuant to this AGREEMENT will be made available, upon request, to the LA or the DEPARTMENT without cost and without restriction or limitations as to their use.
- (6) That all plans and other documents furnished by the ENGINEER pursuant to this AGREEMENT will be endorsed by him and will show his professional seal where such is required by law.

The LA Agrees,

1. To pay the ENGINEER as compensation for all services performed as stipulated in paragraphs 1a, 1g, 1i, 2, 3, 5 and 6 in accordance with one of the following methods indicated by a check mark:

- a. A sum of money equal to _____ percent of the awarded contract cost of the proposed improvement as approved by the DEPARTMENT.
- b. A sum of money equal to the percent of the awarded contract cost for the proposed improvement as approved by the DEPARTMENT based on the following schedule:

Schedule for Percentages Based on Awarded Contract Cost

Awarded Cost	Percentage Fees	
Under \$50,000	_____	(see note)
	_____	%
	_____	%
	_____	%
	_____	%
	_____	%

Note: Not necessarily a percentage. Could use per diem, cost-plus or lump sum.

2. To pay for services rendered in accordance with this AGREEMENT at actual cost of performing such work plus 140 percent to cover profit, overhead and readiness to serve - "actual cost" being defined as material cost plus payrolls, insurance, social security and retirement deductions. Traveling and other out-of-pocket expenses will be reimbursed to the ENGINEER at his actual cost. Subject to the approval of the LA, the ENGINEER may sublet all or part of the services provided under the paragraph 1b, 1c, 1d, 1e, 1f, 1h, 1j & 1k. If the ENGINEER sublets all or part of this work, the LA will pay the cost to the ENGINEER plus a five (5) percent service charge.

"Cost to Engineer" to be verified by furnishing the LA and the DEPARTMENT copies of invoices from the party doing the work. The classifications of the employees used in the work should be consistent with the employee classifications for the services performed. If the personnel of the firm, including the Principal Engineer, perform routine services that should normally be performed by lesser-salaried personnel, the wage rate billed for such services shall be commensurate with the work performed.

The Total Not-to-Exceed Contract Amount shall be \$348,148.16. A copy of CECS is included as Exhibit "B".

3. That payments due the ENGINEER for services rendered in accordance with this AGREEMENT will be made as soon as practicable after the services have been performed in accordance with the following schedule:
 - a. Upon completion of detailed plans, special provisions, proposals and estimate of cost - being the work required by paragraphs 1a through 1g under THE ENGINEER AGREES - to the satisfaction of the LA and their approval by the DEPARTMENT, 90 percent of the total fee due under this AGREEMENT based on the approved estimate of cost.
 - b. Upon award of the contract for the improvement by the LA and its approval by the DEPARTMENT, 100 percent of the total fee due under the AGREEMENT based on the awarded contract cost, less any amounts paid under "a" above.

By Mutual agreement, partial payments, not to exceed 90 percent of the amount earned, may be made from time to time as the work progresses.

4. That, should the improvement be abandoned at any time after the ENGINEER has performed any part of the services provided for in paragraphs 1a, through 1h and prior to the completion of such services, the LA shall reimburse the ENGINEER for his actual costs plus 140 percent incurred up to the time he is notified in writing of such abandonment - "actual cost" being defined as in paragraph 2 of THE LA AGREES.
5. That, should the LA require changes in any of the detailed plans, specifications or estimates except for those required pursuant to paragraph 4 of THE ENGINEER AGREES, after they have been approved by the DEPARTMENT, the LA will pay the ENGINEER for such changes on the basis of actual cost plus 140 percent to cover profit, overhead and readiness to serve - "actual cost" being defined as in paragraph 2 of THE LA AGREES. It is understood that "changes" as used in this paragraph shall in no way relieve the ENGINEER of his responsibility to prepare a complete and adequate set of plans and specifications.

It is Mutually Agreed,

1. That any difference between the ENGINEER and the LA concerning their interpretation of the provisions of this Agreement shall be referred to a committee of disinterested parties consisting of one member appointed by the ENGINEER, one member appointed by the LA and a third member appointed by the two other members for disposition and that the committee's decision shall be final.
2. This AGREEMENT may be terminated by the LA upon giving notice in writing to the ENGINEER at his last known post office address. Upon such termination, the ENGINEER shall cause to be delivered to the LA all surveys, permits, agreements, preliminary bridge design & hydraulic report, drawings, specifications, partial and completed estimates and data, if any from traffic studies and soil survey and subsurface investigations with the understanding that all such material becomes the property of the LA. The ENGINEER shall be paid for any services completed and any services partially completed in accordance with Section 4 of THE LA AGREES.
3. That if the contract for construction has not been awarded one year after the acceptance of the plans by the LA and their approval by the DEPARTMENT, the LA will pay the ENGINEER the balance of the engineering fee due to make 100 percent of the total fees due under this AGREEMENT, based on the estimate of cost as prepared by the ENGINEER and approved by the LA and the DEPARTMENT.
4. That the ENGINEER warrants that he/she has not employed or retained any company or person, other than a bona fide employee working solely for the ENGINEER, to solicit or secure this contract, and that he/she has not paid or agreed to pay any company or person, other than a bona fide employee working solely for the ENGINEER, any fee, commission, percentage, brokerage fee, gifts or any other consideration, contingent upon or resulting from the award or making of this contract. For Breach or violation of this warranty the LA shall have the right to annul this contract without liability.

IN WITNESS WHEREOF, the parties have caused the AGREEMENT to be executed in quadruplicate counterparts, each of which shall be considered as an original by their duly authorized officers.

Executed by the LA:

County of Lake _____ of the
(Municipality/Township/County)

ATTEST:

State of Illinois, acting by and through its

By _____

County Board

Lake County

Clerk

(Seal)

By _____

Title _____

Board Chairman

RECOMMENDED FOR EXECUTION

Martin G. Buehler, P.E.
Director of Transportation/County Engineer
Lake County

Crawford, Murphy and Tilly, Inc.

550 North Commons Drive, Suite 116

Aurora, IL 60504

ATTEST:

By _____

By _____

Title _____

Title _____

NOTE: Three (3) Original Executed Contracts - (2) LCDOT, (1) Consultant

EXHIBIT "A"

CMT Phase I Scope

EXHIBIT "A"

**Lake County Division of Transportation
Project Scope Description to Provide
Feasibility Study Services for
Cedar Lake Road Relocation – Nippersink Road to Hart Road**

General Project Information

1. This project is anticipated to begin in April 2012 and be completed by March 2013.
2. Roadway limits: Nippersink Road to Hart Road along with multiple side street relocations and reconfiguration.
 - a. Scope assumes that the south limits of the project will match into existing Cedar Lake Road at Nippersink Road.
 - b. Scope assumes that our north limits will match into existing Cedar Lake Road south of Hart Road.
 - c. Scope includes the closure of existing Cedar Lake Road at existing railroad crossing.
3. The Feasibility Study Scope of Services generally include: Alignment Alternative Analysis, Geometric Analysis, Traffic Analysis (Safety and Capacity), Non-Motorized Travel Analysis, Environmental Screening and Coordination with Multiple Agencies.
4. Plat of Highways is included in scope of work.
5. Detailed surveys are not included in scope of work.
6. Detailed Environmental Studies are not included in scope.
7. Geotechnical soil investigations are not included in scope.
8. Location Drainage Study is not included in scope.
9. Hydraulic Report is not included in scope.
10. Public involvement is not included in scope of services

Feasibility Study - Detailed Scope of Services

A. Data Collection

1. Obtain, Review, and Inventory the following:
 - a. Existing utility information (electric, natural gas, gas pipelines, transmission lines, telecommunication, cable TV, water, sewer).
 - b. Available roadway plans / record drawings (to be obtained from Lake County and Village of Round Lake)

- c. Establish survey datum and ground control
- d. Obtain/Review 2 years of recent/available accident data (to be provided by the Lake County Sheriff's Department and LCDOT/TARS)
- e. Existing ADT traffic data provided by LCDOT, CMAP Traffic projections will be obtained by CMT
- f. Property ownership / Tax Maps
- g. Soil Conservation Service Maps
- h. U.S.G.S. Maps
- i. NWI maps
- j. Current development plans
- k. Obtain School Bus Route Information
- l. Railroad/Metra crossing information (as-built, number of trains per day, etc.)

2. Project Site Visit by Project Manager and Project Engineer

B. Field Surveys: Detailed surveys are not included in scope of services. CMT will use Lake County GIS aerial mapping for developing conceptual alignments.

- 1. GIS file conversion into Microstation
- 2. Creation of DTM model from GIS information

C. Alternative Alignment Analysis

1. Develop an Opportunity and Constraints Map based on the following criteria:

- a. Topography, streams/physical features
- b. Environmental constraints
- c. Economic development potential/special traffic generators
- d. Service to land use scenarios
- e. Use of existing roads/R.O.W.
- f. Impact on existing and future development
- g. Traffic control/staging at tie-in points
- h. Cost

2. Develop Alignment Alternatives: This task will include the development of two (2) horizontal alignment alternatives (Exhibit C and Exhibit D that were provided by LCDOT) for Cedar Lake Road between Nippersink Road and Hart Road. The CMT Team will work with Lake County, the Village of Round Lake, Metra and IDOT to establish a recommended alignment that will be conducive to the area.

D. Traffic Analysis

1. Peak hour traffic counts at the following intersections
(6:30 AM – 9:30 AM and 3:30 PM to 6:30 PM)

- a. Cedar Lake Road at Nippersink Road (2) locations

- b. West alley at Nippersink Road
 - c. West alley at Avilon Road
 - d. West alley at IL 134
 - e. Goodnow Road at Nippersink Road
 - f. Goodnow Road at Avilon Road
 - g. Goodnow Road at IL 134
 - h. East alley at Nippersink Road
 - i. East alley at Avilon Road
 - j. East alley at IL 134
 - k. Cedar Lake Road at Avilon Road
 - l. Cedar Lake Road at IL 134
 - m. Cedar Lake Road at Lake Wood Terrace
 - n. Cedar Lake Road at Hart Road
2. Tabulation of traffic data collected during peak hour counts
 3. Traffic Projections and Assignment to the Roadway Network for the two Alignment Alternatives
 4. Crash Analysis for Existing and Proposed Roadway Networks (including intersections and segments)
 - a. Existing Crash Map
 - b. Existing Collision Diagrams
 - c. Existing Crash Frequency for Existing Network
 - d. Expected Crash Frequency for Existing and Proposed Roadway Network
 - e. Summary Table of Expected Crashes for both alternatives/scenarios
 5. Capacity Analysis for Existing and Proposed Roadway Networks (including intersections and segments)
 - a. Intersection and Segment Level of Service
 - b. Evaluation of various intersection controls (signal vs. roundabout)
 - c. Recommendations for number of thru lanes on each segments and the lane configuration at each intersection.
 - d. Summary Table to evaluate all alternatives
 6. Coordination with CMAP
- E. Preliminary Intersection Design Studies
1. Realigned Cedar Lake Road at Hart Road (incorporate study provided by Village of Round Lake)
 2. Realigned Cedar Lake Road at Lakewood Terrace
 3. Realigned Cedar Lake Road at Illinois Route 134
 4. Realigned Cedar Lake Road at Avilon Avenue

5. Realigned Cedar Lake Road at Nippersink Road
6. Existing Cedar Lake Road at Illinois Route 134 (convert to "T" intersection)

Perform the following tasks:

- Prepare IDS base sheets
- Perform Optimum Phasing Analysis
- Perform Capacity Analysis (Highway Capacity Software)
- Determine effective intersection geometry (standard vs. round-a-bout)
- Determine storage length for required turn lanes
- Develop preliminary traffic signal layout plan (if required)
- Develop preliminary pavement marking plans
- Prepare and submit Modified IDS drawings for submittal
- Address County/Village review comments (IDOT where applicable)

F. Conceptual Roadway Design

1. Establish project design criteria and standards
2. Perform roadway capacity to determine roadway geometrics (Tech Memo)
3. Review accident reports and conduct safety analysis to establish roadway geometrics (Tech Memo)
4. Develop and finalize roadway typical sections.
5. Determine geometric and location requirements/need for bike path/pedestrian facilities (Tech Memo)
6. Establish preferred preliminary horizontal and vertical alignment
7. Develop conceptual Maintenance of Traffic/Construction Staging Plan for preferred alignment.

G. Preliminary Design Studies

1. Refine horizontal and vertical geometry based on concept review comments
2. Prepare preliminary opinion of construction costs

H. Environmental Studies: Environmental Screening will be the only environmental work completed as part of the Feasibility Study. Screening results will be incorporated into opportunities and constraints map. Detailed environmental studies will be completed during Phase I.

Environmental Screening Services Scope is submitted as Attachment "A" and will be performed by Huff & Huff, Inc.

1. Subconsultant coordination and meetings (assume 1 meeting)
2. Review environmental screening results.

- I. Draft Feasibility Report
 - 1. Prepare Report Outline
 - 2. List environmental and engineering commitments
 - 3. Develop text portion of report
 - 4. Assemble exhibits, text and submit report

- J. Final Feasibility Report
 - 1. Incorporate review comments from Draft Report
 - 2. Revisions to text and exhibits
 - 3. Update preliminary opinion of construction costs
 - 4. Address final report review comments (if necessary)

- K. Right of Way Services
 - 1. Establish existing ROW conditions
 - a. Research and review existing plats (Approx 40 parcels)
 - b. Search and locate existing property/section monumentation
 - c. Download monumentation (fieldwork), calculate section, subdivision, highway, railroad and R.O.W. lines
 - d. Calculate and complete property parcel mapping
 - 2. Right-of-Way Impact Analysis
 - a. Identify Right-of-way impacts based on proposed improvements.
 - b. Identify property ownership, parcel number and information
 - 3. Plat of Highways
 - a. Preparing Plat of Highways (Scope/manhours assumes 40 parcels)
 - b. Preparation of legal descriptions (Assumes 40 Parcels)

- L. Meetings and Coordination (2 people per meeting @ 3 hours per meeting)
 - 1. Kick-off meeting with LCDOT (1 Meeting)
 - 2. Draft Report review meeting with LCDOT (1 Meeting)
 - 3. Progress meetings LCDOT (assume 3 Meetings)
 - 4. Meet with IDOT Bureau of Programming (assume 2 meetings)
 - 5. Meet with Village of Round Lake (assume 5 Meetings)
 - 6. Meet with METRA regarding rail crossing (assume 2 meetings)
 - 7. Preparation time prior to meetings (Total of 14 meetings)
 - 8. Prepare Meeting Minutes (Total of 14 meetings)
 - 9. Coordination with IDOT Bureau of Programming, LCDOT, Village of Round Lake and METRA.

M. Project Administration

1. Project Setup
 - a. Project Manual for team members
 - b. File Management (electronic and design binders)
 - c. Accounting and Billings
 - d. Project close-out
2. Project Management
 - a. Scope of Work reviews
 - b. Create and maintain progress schedule
 - c. Budget control
 - d. Resource planning
 - e. Project team meetings
 - f. Prepare progress reports
3. Quality Assurance
 - a. Prepare and maintain Quality Assurance Plan
 - b. Quality Assurance Reviews
 - c. Constructability Reviews

EXHIBIT "B"

CMT Cost Estimate of Consultant Services (CECS)

"Exhibit B"

Route: Cedar Lake Road Relocation - Feasibility Project
 Local Agency: Lake County

Method of Compensation:

- 14.5%[DL + R(DL) + OH(DL) + IHDC]
 14.5%[DL + R(DL) + 1.4(DL) + IHDC]
 14.5%[(2.3 + R)/DL + IHDC]

*Firm's approved rates on file with DOT'S
 Bureau of Accounting and Auditing:
 Overhead Rate (OH) 157.80%
 Complexity Factor @ 0.00
 Calendar Days 580

Cost Estimate of Consultant's Services in Dollars

Element of Work	Man-Hours	Payroll Rate	Payroll Costs (DL)	Overhead*	Services by others (+5%)	In-House Direct Costs (IHDC)	Profit	Total	% of Grand Total
A Data Collection	64.0	\$32.16	\$2,057.98	\$3,247.49	\$0.00	\$204.00	\$798.87	\$6,308.35	1.81%
B Field Surveys	46.0	\$36.73	\$1,689.36	\$2,665.81	\$0.00	\$0.00	\$631.50	\$4,986.67	1.43%
C Alternative Alignment Analysis	160.0	\$34.24	\$5,477.88	\$8,644.09	\$0.00	\$0.00	\$2,047.69	\$16,169.66	4.64%
D Traffic Analysis	280.0	\$29.85	\$8,358.43	\$13,189.60	\$0.00	\$0.00	\$3,124.46	\$24,672.50	7.09%
E Preliminary Intersection Design Studies	744.0	\$33.36	\$24,821.38	\$39,168.14	\$0.00	\$0.00	\$9,278.48	\$73,268.00	21.05%
F Conceptual Roadway Design	154.0	\$34.23	\$5,270.72	\$8,317.20	\$0.00	\$0.00	\$1,970.25	\$15,558.16	4.47%
G Preliminary Design Studies	48.0	\$36.17	\$1,736.09	\$2,739.55	\$0.00	\$0.00	\$648.97	\$5,124.61	1.47%
H Environmental Studies	12.0	\$35.71	\$428.51	\$676.19	\$7,693.73	\$0.00	\$160.18	\$8,958.61	2.57%
I Draft Feasibility Report	132.0	\$36.01	\$4,753.37	\$7,500.82	\$0.00	\$150.00	\$1,798.61	\$14,202.80	4.08%
J Final Feasibility Report	80.0	\$34.20	\$2,736.27	\$4,317.83	\$0.00	\$150.00	\$1,044.60	\$8,248.70	2.37%
K Right of Way Services	1055.0	\$33.88	\$35,745.55	\$56,406.48	\$0.00	\$16,660.00	\$15,777.74	\$124,589.77	35.79%
L Meetings and Coordination	220.0	\$39.23	\$8,629.85	\$13,617.90	\$0.00	\$717.20	\$3,329.92	\$26,294.87	7.55%
M Project Administration	170.0	\$39.39	\$6,696.05	\$10,566.37	\$0.00	\$0.00	\$2,503.05	\$19,765.47	5.68%
Totals			\$108,401.44	\$171,057.47	\$7,693.73	\$17,881.20	\$43,114.32	\$348,148.16	100.00%

Cedar Lake Road Relocation - Feasibility Project
 Lake County Division of Transportation
Man Hour Estimate for Consulting Services (Total Project)
 Crawford, Murphy, and Tilly, Inc.
 Summary of Man Hours

Item	CMT Total Hours
Feasibility Tasks	
A Data Collection	64.0
B Field Surveys	46.0
C Alternative Alignment Analysis	160.0
D Traffic Analysis	280.0
E Preliminary Intersection Design Studies	744.0
F Conceptual Roadway Design	154.0
G Preliminary Design Studies	48.0
H Environmental Studies	12.0
I Draft Feasibility Report	132.0
J Final Feasibility Report	80.0
K Right of Way Services	1,055.0
L Meetings and Coordination	220.0
M Project Administration	170.0
Total Project Hours:	3,165.0

A Data Collection	<u>Hours</u>	
A-1 Data Collection	50	
A-2 Project Site Visit	14	
Sub - total		64
B Field Surveys		
B-1 GIS File Conversion	16	
B-2 Create DTM Model	30	
Sub - total		46
C Alternative Alignment Analysis		
C-1 Develop Opportunity/Constraints Map	60	
C-2 Develop Alignment Alternatives	100	
Sub - total		160
D Traffic Analysis		
D-1 Traffic Counts	144	
D-2 Tabulation of Traffic Count Data	12	
D-3 Traffic Projections	40	
D-4 Crash Analysis	40	
D-5 Capacity Analysis	40	
D-6 CMAP Coordination	4	
Sub - total		280

Cedar Lake Road Relocation - Feasibility Project
 Lake County Division of Transportation
Man Hour Estimate for Consulting Services (Total Project)
 Crawford, Murphy, and Tilly, Inc.

E	Preliminary Intersection Design Studies		
E-1	Prepare IDS for Cedar Lake Road/Hart Road (Incorporate Round Lake Study)	24	
E-2	Prepare IDS for Cedar Lake Road/Lakewood Terrace	120	
E-3	Prepare IDS for Cedar Lake Road/Illinois Rt 134	180	
E-4	Prepare IDS for Cedar Lake Road/Avilon Avenue	120	
E-5	Prepare IDS for Cedar Lake Road/Nippersink	120	
E-6	Prepare IDS for Cedar Lake Road(existing)/IL 134 (convert to "T" Intersection)	180	
	Sub - total		744
F	Conceptual Roadway Design		
F-1	Establish Design Criteria	8	
F-2	Perform Roadway Capacity	10	
F-3	Review Accident Reports and conduct safety analysis	12	
F-4	Develop Typical Sections	20	
F-5	Determine Bicycle/Pedestrian Facility Requirements	12	
F-6	Establish Preliminary Horizontal and Vertical Alignment	60	
F-7	Develop Concept MOT/Staging for Preferred Alignment	32	
	Sub - total		154
G	Preliminary Design Studies		
G-1	Refine Horizontal and Vertical Alignments per Review Comments	24	
G-2	Preliminary Opinion of Construction Costs	24	
	Sub - total		48
H	Environmental Studies		
H-1	Coordination and Meetings with Subconsultant	6	
H-2	Review Environmental Reports and Permits	6	
	Sub - total		12
I	Draft Feasibility Report		
I-1	Prepare Report Outline	24	
I-2	List of Environmental and Engineering Commitments	4	
I-3	Develop Text Portion of Report	60	
I-4	Assemble Exhibits and Text	44	
	Sub - total		132
J	Final Feasibility Report		
J-1	Incorporate Review Comments from Draft Report	24	
J-2	Revisions to Text and Exhibits	16	
J-3	Update Preliminary Opinion of Construction Costs	20	
J-4	Address Final Report Review Comments	20	
	Sub - total		80
K	Right of Way Services		
K-1	Existing ROW Conditions	400	
K-2	Right-of-Way Impact Analysis	30	
K-3	Plat of Highways	625	
	Sub - total		1055

Cedar Lake Road Relocation - Feasibility Project
 Lake County Division of Transportation
Man Hour Estimate for Consulting Services (Total Project)
 Crawford, Murphy, and Tilly, Inc.

L	Meetings and Coordination		
L-1	Kick-off meeting w/ Lake County (1 Meeting)		
L-2	Draft Report Review Meeting (1 Meeting)		6
L-3	Progress Meetings (Assume 3)		6
L-4	Meeting w/ IDOT Bureau of Programming (2 Meetings)		18
L-5	Meeting w/ Village of Round Lake (5 Meetings)		12
L-6	Meeting w/ METRA regarding rail crossing (2 meetings)		30
L-7	Preparation Time for Meetings (14 Meetings)		12
L-8	Prepare Meeting Minutes (Total of 14 Meetings)		28
L-9	Coordination w/ IDOT Programming, LCDOT, Round Lake and METRA		28
			80
	Sub - total		
			220
M	Project Administration		
M-1	Project Setup		
M-2	Project Management		30
M-3	Quality Assurance		60
			80
	Sub - total		
			170

AVERAGE HOURLY PROJECT RATES

FIRM Crawford, Murphy & Tilly, Inc.
PSB N/A
PRIME/SUPPLEMENT

DATE 02/14/12

SHEET 1 OF 3

PAYROLL CLASSIFICATION	AVG HOURLY RATES	TOTAL PROJECT RATES										Data Collection			Field Surveys			Alternative Alignment Analysis			Traffic Analysis			Preliminary Intersection Design Stud		
		Hours	% Part.	Wgtd Avg	Hours	% Part.	Wgtd Avg	Hours	% Part.	Wgtd Avg	Hours	% Part.	Wgtd Avg	Hours	% Part.	Wgtd Avg	Hours	% Part.	Wgtd Avg	Hours	% Part.	Wgtd Avg	Hours	% Part.	Wgtd Avg	
Principal	71.94	0	0.00%	0.00																						
Senior Project Engineer	53.10	76	2.40%	1.27																						
Project Engineer	41.88	452	14.28%	5.98	6	9.38%	3.93	10	21.74%	9.10	40	25.00%	10.47	20	7.14%	2.99										
Senior Engineer	32.62	876	27.68%	9.03	42	65.63%	21.41	16	34.78%	11.35	80	50.00%	16.31	80	28.57%	9.32										
Senior Technical Manager	37.43	419	13.24%	4.96																						
Engineer	27.28	514	16.24%	4.43	16	25.00%	6.82	20	43.48%	16.27	10	6.25%	2.34	180	64.23%	17.54										
Planner	25.53	0	0.00%	0.00																						
Registered Land Surveyor	37.48	400	12.64%	4.74																						
Senior Technician	32.50	230	7.27%	2.36																						
Technician	24.19	180	5.89%	1.38																						
Technical Assistant	18.50	0	0.00%	0.00																						
Clerical	18.37	18	0.57%	0.10																						
TOTALS		3165	100%	\$34.25	64	100.00%	\$32.16	46	100%	\$36.73	160	100%	\$34.24	280	100%	\$29.85										

AVERAGE HOURLY PROJECT RATES

FIRM Crawford, Murphy & Tilly, Inc.
PSB N/A
PRIME/SUPPLEMENT

DATE 02/14/12

SHEET 3 OF 3

PAYROLL CLASSIFICATION	AVG HOURLY RATES	Meetings and Coordination			Project Administration			Hours	% Part.	Wgtd Avg	Hours	% Part.	Wgtd Avg	Hours	% Part.	Wgtd Avg	
		Hours	% Part.	Wgtd Avg	Hours	% Part.	Wgtd Avg										
Principal	71.94																
Senior Project Engineer	53.10	40	18.18%	9.65	20	11.76%	6.25										
Project Engineer	41.88	80	36.36%	15.23	80	47.06%	19.71										
Senior Engineer	32.62	80	36.36%	11.86	70	41.18%	13.43										
Senior Technical Manager	37.43																
Engineer	27.28	20	9.09%	2.48													
Planner	25.53																
Registered Land Surveyor	37.48																
Senior Technician	32.50																
Technician	24.19																
Technical Assistant	18.50																
Clerical	18.37																
TOTALS		220	100%	\$39.23	170	100%	\$39.39	0	0%	\$0.00	0	0%	\$0.00	0	0%	\$0.00	\$0.00

**Cedar Lake Road Relocation - Feasibility Project
Lake County Division of Transportation**

Development of Project Hourly Rates (IDOT Method)

Crawford, Murphy, and Tilly, Inc.

Item	2012 Actual Rate	2013 Projected @ 3.0% Increase	2014 Projected @ 3.0% Increase	2015 Projected @ 3.0% Increase	2016 Projected @ 3.0% Increase	2017 Projected @ 3.0% Increase	
Average Hourly Rate as a Percent of 2012 Rate	100.0%	103.0%	106.1%	109.3%	112.6%	115.9%	
Estimated Months of Contract in Given Year	9	3	0	0	0	0	
% of Project Duration	75.00%	25.00%	0.00%	0.00%	0.00%	0.00%	
Extension	0.750	0.258	0.000	0.000	0.000	0.000	
Weighted Project Hourly Rate Multiplier	Note: Salary Adjustments are Given on January 1 of Each Year						1.0075

Project Duration: April 2012 to March 2013 = 12 months

**Cedar Lake Road Relocation - Feasibility Project
Lake County Division of Transportation**

**Computation of Prorated
Project Hourly Rates**

Crawford, Murphy, and Tilly, Inc.

Classification	Actual 2012 Average Hourly Rate	Weighted Hourly Rate Multiplier	Project Hourly Rates *
Principal	\$71.40	1.0075	\$71.94
Senior Project Engineer	\$52.70	1.0075	\$53.10
Project Engineer	\$41.57	1.0075	\$41.88
Senior Engineer	\$32.38	1.0075	\$32.62
Senior Technical Manager	\$37.15	1.0075	\$37.43
Engineer	\$27.08	1.0075	\$27.28
Planner	\$25.34	1.0075	\$25.53
Registered Land Surveyor	\$37.20	1.0075	\$37.48
Senior Technician	\$32.26	1.0075	\$32.50
Technician	\$24.01	1.0075	\$24.19
Technical Assistant	\$18.36	1.0075	\$18.50
Clerical	\$18.23	1.0075	\$18.37

* Rates to be applied to all project work tasks

**Cedar Lake Road Relocation - Feasibility Project
Lake County Division of Transportation**

Estimate of Direct Costs

Crawford, Murphy, and Tilly, Inc.

A	Data Collection		
1	Travel: 2 trips x 100 miles x \$.55/mile	\$204.00	
	Sub - total		\$204.00
B	Field Surveys		
1	No Direct Costs	\$0.00	
	Sub - total		\$0.00
C	Alternative Alignment Analysis		
1	No Direct Costs	\$0.00	
	Sub - total		\$0.00
D	Traffic Analysis		
1	No Direct Costs	\$0.00	
	Sub - total		\$0.00
E	Preliminary Intersection Design Studies		
1	No Direct Costs	\$0.00	
	Sub - total		\$0.00
F	Conceptual Roadway Design		
1	No Direct Costs		
	Sub - total		\$0.00
G	Preliminary Design Studies		
1	No Direct Costs		
	Sub - total		\$0.00

**Cedar Lake Road Relocation - Feasibility Project
Lake County Division of Transportation**

Estimate of Direct Costs

H	Environmental Studies		
1	No Direct Costs		
	Sub - total		\$0.00
I	Draft Feasibility Report		
1	Draft Project Development Report 6 sets * \$25 / set	\$150.00	
	Sub - total		\$150.00
J	Final Feasibility Report		
1	Final Project Development Report 6 sets * \$25 / set	\$150.00	
	Sub - total		\$150.00
K	Right of Way Services		
1	Travel: 12 trips x 100 miles x \$.55/mile	\$660.00	
2	Title Commitments 40 Parcels @\$400/Parcel	\$16,000.00	
	Sub - total		\$16,660.00
L	Meetings and Coordination		
1	Travel: 10 trips x 108 miles x \$.55/mile	\$594.00	
	Travel: 4 trips x 56 miles x \$.55/mile	\$123.20	
	Sub - total		\$717.20
M	Project Administration		
1	No Direct Costs	\$0.00	
	Sub - total		\$0.00

ATTACHMENT "A"

Huff & Huff, Inc.

Sub-Consultant Agreement

**Scope and Man-hours for
Environmental Screening**



environmental engineers
and consultants

915 Harger Road, Suite 330
Oak Brook, IL 60523
Phone (630) 684-9100
Fax (630) 684-9120
Website: <http://huffnhuff.com>

February 14, 2012

Mr. Kelly Farley, P.E.
Crawford, Murphy, and Tilly
550 Commons Drive
Aurora, Illinois 60504-8198

**Re: Environmental Services for Cedar Lake Road Extension
Nippersink Road to Hart Road
Round Lake, Lake County, Illinois
Proposal No.: T12-001 (Revised)**

Dear Mr. Farley:

Huff & Huff, Inc. (Consultant) is pleased to submit this revised proposal to perform environmental services associated with the proposed roadway extension of Cedar Lake Road in Round Lake, Lake County, Illinois. This proposal presents our project approach, the scope of services, cost, and schedule for completing the project.

1. PROJECT UNDERSTANDING

The Lake County Division of Transportation (LCDOT) is studying the potential extension of Cedar Lake Road around the downtown business district from Nippersink Road to south of the Hart Road/Cedar Lake Road intersection in Round Lake, Illinois. This proposal includes the following scope of services:

- Task 1 – Wetland Screening
- Task 2 – Special Waste Screening
- Task 3 – Clean Construction Demolition Debris Assistance (CCDD)
- Task 4 – Project Management

2. SCOPE OF SERVICES

Task 1: Wetland Screening

Consultant will perform an investigation within the project limits to determine if any areas within the project limits will be considered wetlands. A site visit will be conducted to determine if wetlands are present. If no wetlands are located within the project limits, a summary letter report will be prepared and submitted to the County. If wetlands are present, H&H will notify both the County and CMT prior to conducting formal delineations. Formal delineations are not included in this scope. If wetlands are present and will be impacted, permitting with the Chicago District, Corps of Engineers

and Lake County will be required. Wetland permitting is not expected to be required for this project and is not included in this scope of services.

Off-site Record/Document Review

The following records/documents will be reviewed prior to conducting the field investigation. Soils information will be reviewed to determine the soil types encountered during the delineation procedures. The maps reviewed and to be used include:

- U.S. Geological Survey Topographic Maps
- National Wetlands Inventory Maps
- Lake County ADID Map
- Lake County Soil Survey
- Lake County Flood Insurance Rate Maps

On-Site Screening (Field Inventory)

The on-site screening will be conducted by our environmental staff experienced in Federal methods for conducting wetland delineations. Our staff will conduct cursory investigations to determine if wetlands are present. This will include an assessment of vegetation, shallow soil probes, and evidence of persistent high water table or ponding.

Wetland Screening Letter Report

A wetland screening summary will be prepared in letter format summarizing the findings of the fieldwork including mitigation recommendations and options. At this time, formal delineation and mitigation design will not be included in the scope of services.

The letter report will summarize conditions in the field, noting vegetation conditions, general soil type and evidence of hydrology. If wetlands are identified in the field, the letter will document this condition and recommend completion of formal delineations. If no wetlands are present, the letter will summarize this condition which will be used in further coordination with the regulatory agencies.

A formal delineation of wetlands is required in accordance with Lake County regulations, prior to permitting any wetland impacts. In Lake County, the wetland delineation report must include a floristic quality assessment. Any impacts to wetlands will require permits. If delineations are required, then a separate scope of services will be prepared at that time.

Task 2. Special Waste Screening

Consultant will screen the study area within the existing and proposed right-of-way for potential areas of environmental contamination. The Special Waste Screening procedure includes reviewing environmental resource agency databases. Based on the Illinois Department of Transportation Bureau of Local Roads and Streets (BLRS) Section 20.12 Special Waste and BDE Memo 10-07,

Special Waste Procedures, which was incorporated into Section 27-2 of the IDOT BDE Manual, site analysis is required for sites within defined distances from the corridor. The specific databases to be reviewed and the screening distances for each are outlined in Figure 27-2.B of Section 27-2.12 of the IDOT BDE Manual.

Based on the review of the databases identified above, a Special Waste Screening memorandum will be prepared presenting the results. One site visit will be conducted to confirm the location of identified sites. The memorandum will follow the flow chart required by IDOT.

The proposed scope is limited to the review of the above-referenced databases. *No soil or groundwater sampling is proposed as part of this scope of services. No meetings have been proposed as part of this scope of services*

Task 3. Clean Construction Demolition Debris (CCDD)

On July 30, 2010, Public Act 96-1416 became law and modified the requirements for the handling and disposal of Clean Construction or Demolition Debris (CCDD). Based on current industry trends, analytical testing and the completion of Form 663 is typically required before taking clean fill to any offsite CCDD facility.

Based on the agricultural land use of the adjacent property, no contamination is expected to be found in excavated material. If the potential for contamination is discovered during the special waste screening task, sampling may be needed. Consultant will assess the conditions of the site and consult with the Client to determine whether further analysis is needed to meet the CCDD requirements. No sampling is including in this scope of services. If sampling is required, a separate cost estimate and proposal will be prepared to conduct this work.

Task 4. Project Management

Consultant will provide progress updates and attend up to one meeting with LCDOT in addition to coordination with Client.

3. COST ESTIMATE

Costs for these services are presented in the Cost Estimate for Consultant Services. Costs will be invoiced as a cost plus fixed fee.

4. SCHEDULE

The project will be initiated after the receipt of Notice to Proceed.

5. CONTRACT CONDITIONS

1. **CONSULTANT'S SERVICES:** The Consultant's (Huff & Huff, Inc.) services shall consist of those tasks described in Section 2.

2. **SCHEDULE:** The Consultant's work under this Agreement shall begin within two weeks of receipt of written notice to proceed or a signed copy of this Agreement and staking of the sewer alignment.
3. **COMPENSATION:** The fee basis for the scope of work, as outlined in Section 2, pertains to the specific scope work.
4. **DIRECTION:** For work performed under this Agreement, Consultant shall take direction from the CLIENT.
5. **CHANGES:** This Agreement may only be changed by written amendment which specifies the terms being revised and which has been signed by both parties hereto.
6. **PROJECT DATA:** The Consultant, in coordination with the CLIENT, shall obtain from the appropriate sources all data and information necessary for the proper and complete execution of the Consultant's services.
7. **INDEPENDENT CONSULTANT:** The Consultant shall be deemed to be an independent contractor in all its operations and activities hereunder. The employees furnished by Consultant to perform the work shall be deemed to be Consultant employees exclusively, and said employees shall be paid by Consultant for all services in this connection. The Consultant shall be responsible for all obligations and reports covering Social Security, Unemployment Insurance, Workmen's Compensation, Income Tax, and other reports and deductions required by an applicable state or Federal law.
8. **RIGHTS OF WORK PRODUCT:** CLIENT shall have unlimited rights in all drawings, designs, specifications, notes, and other work developed in the performance of this contract, including the right to use same on any other work without additional cost to the CLIENT. The Consultant shall not be liable for any use or reuse of the drawings, designs, specifications, notes and other work for use other than intended under the terms of this Agreement.
9. **INDEMNIFICATION:** The Consultant hereby agrees to indemnify and hold harmless the CLIENT and any proper owners whose property it is necessary to access in the performance of this work, against any and all liability, loss, damages, demands, or actions or causes of action, which may result from any damages or injuries sustained by a person or entity in connection with or on account of any negligent act or omission of the Consultant or its employees relating to its obligations pursuant to this Agreement.
10. **TERMINATION:** CLIENT may terminate this Agreement at any time upon ten (10) days written notice for whatsoever reason, provided CLIENT shall pay the Consultant a reasonable fee for work satisfactorily performed prior to the effective date of termination. In no case, however, shall the total amount paid to Consultant exceed the amount set out above.
11. **INSURANCE:** The Consultant shall maintain insurance as set forth in the prime contract, if attached, or as set forth below.

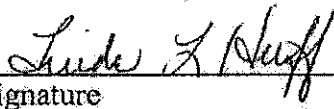
- a. Worker's Compensation and Employer's Liability Insurance: Worker's Compensation in compliance with applicable State and Federal laws.
 - b. Comprehensive General Liability Insurance for Bodily Injury and Property Damage to a combined single limit of \$2,000,000 per occurrence/claim or an umbrella of \$3,000,000.
 - c. Comprehensive Automobile Liability Insurance, including owned, hired, and non-owned automobiles, for Bodily Injury and Property Damage to a combined single limit of \$1,000,000 per occurrence/\$2,000,000 aggregate.
 - d. Professional liability insurance \$2,000,000 on a claims made basis.
12. STANDARD OF CARE: Services performed by the Consultant under this Agreement will be conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions.
13. RETENTION OF RECORDS: Consultant shall maintain complete records of all hours billed and direct costs incurred under this Agreement so as to accurately reflect the services performed and basis for compensation and reimbursement under this Agreement.
14. LEGAL: This Agreement shall be construed and interpreted solely in accordance with the laws of the State of Illinois.

BOTH PARTIES HERETO WARRANT AND REPRESENT that they have full right, power, and authority to execute this Contract.

IN WITNESS THEREOF, the parties hereto have executed this Agreement as of the day and year first specified above.

CONSULTANT

HUFF & HUFF, INC.



Signature

By: Linda L. Huff, P.E.

Typed Name

President

Officer's Title

February 14, 2012

Date

CLIENT

CRAWFORD, MURPHY AND TILLY

Signature

Typed Name

Typed Name

Officer's Title

Officer's Title

Date

Date



**Payroll Escalation Table
Fixed Raises**

FIRM NAME Huff & Huff, Inc.
PRIME/SUPPLEMENT CMT

DATE 02/14/12
PTB NO. _____

CONTRACT TERM
START DATE
RAISE DATE

12 MONTHS
04/01/12
01/01/13

OVERHEAD RATE 155.87%
COMPLEXITY FACTOR 0
% OF RAISE 3.00%

ESCALATION PER YEAR

04/01/12 - 01/01/13
9 / 12

= 75.00%
= 1.0075

01/02/13 - 04/01/13
3 / 12

= 25.75%

[Empty box]

[Empty box]

[Empty box]

The total escalation for this project would be:

0.75%



Illinois Department of Transportation

Cost Estimate of Consultant Services (CPFF)

Firm Huff & Huff, Inc.
 Route Cedar Lake Road Extension
 Section _____
 County Lake
 Job No. _____
 PTB & Item _____

Date 02/14/12
 Overhead Rate 155.87%
 Complexity Factor 0

Item	Manhours	Payroll	Overhead & Fringe Benefits	In-House Direct Costs	Fixed Fee	Outside Direct Costs	Services By Others	Total	% of Grand Total
Wetland Screening	22	619.77	966.04	54.05	237.78	85.50	0.00	1,963.15	26.79%
Special Waste Screening	36	1,218.81	1,899.76	66.85	461.89	331.00	0.00	3,978.31	54.29%
CCDD Consulting	8	319.96	498.72	0.00	118.71	0.00	0.00	937.40	12.79%
Project Admin	3	153.09	238.62	0.00	56.80	0.00	0.00	448.51	6.12%
TOTALS	69	2,311.64	3,603.15	120.90	875.17	416.50	0.00	7,327.36	100.00%



Illinois Department
of Transportation

Average Hourly Project Rates

Route Cedar Lake Road Extension Consultant Huff & Huff, Inc. Date 02/14/12
 Section _____
 County Lake
 Job No. _____
 PTB/Item _____

Sheet 1 OF 1

Payroll Classification	Total Project Rates			Wetland Screening			Special Waste Screening			CCDD Consulting			Project Admin			Wgtd Avg	% Part.	Hours	Wgtd Avg	% Part.	Wgtd Avg
	Hours	% Part.	Wgtd Avg	Hours	% Part.	Wgtd Avg	Hours	% Part.	Wgtd Avg	Hours	% Part.	Wgtd Avg	Hours	% Part.	Wgtd Avg						
Principal	5	7.25%	4.68				2	5.56%	3.59	2	25.00%	16.15	1	33.33%	21.53						
Senior Geologist I	36	52.17%	16.59				30	83.33%	26.50	6	75.00%	23.85									
Senior Scientist IV	4	5.80%	2.57	2	9.09%	4.02							2	66.67%	29.50						
Senior Scientist I	14	20.29%	5.13	14	63.64%	16.08															
Senior CADD I	8	11.59%	3.93	4	18.18%	6.17	4	11.11%	3.77												
Administrative IV	2	2.90%	0.61	2	9.09%	1.90															
	0																				
	0																				
	0																				
	0																				
TOTALS	69	100%	\$33.50	22	100%	\$28.17	36	100%	\$33.86	8	100%	\$40.00	3	100%	\$51.03	0	0%	\$0.00			

SUMMARY OF INHOUSE DIRECT COSTS

Project: Cedar Lake Road Extension

DIRECT

Task 1 - Wetland Screening

Trips - Company	95 miles	x	1	x	\$	0.51	=	\$	48.45
Reproduction	4 sets	x	20	x	\$	0.03	=	\$	2.40
Color copies	4 sets	x	6	x	\$	0.10	=	\$	2.40
Photo sheets	4 sets	x	2	x	\$	0.10	=	\$	0.80
Task Total									\$ 54.05

Task 2 - Special Waste Screening

Trips - Company	95 miles	x	1	x	\$	0.51	=	\$	48.45
Tolls			0	x	\$	1.00	=	\$	-
Reproduction	4 sets	x	100	x	\$	0.03	=	\$	12.00
Color copies	4 sets	x	12	x	\$	0.10	=	\$	4.80
Photo sheets	4 sets	x	4	x	\$	0.10	=	\$	1.60
Task Total									\$ 66.85

Task 3 - CCDD

Task Total \$ -

Task 4 - Project Mgmt

Task Total \$ -

GRAND TOTAL \$ 120.90

SUMMARY OF OUTSIDE DIRECT COSTS

Project: Cedar Lake Road Extension

				<u>OUTSIDE</u>
Task 1 - Wetland Screening				
Maps/Aerials	7 x	\$ 10.00	= \$	70.00
Federal Express	1 x	\$ 15.50	= \$	15.50
		Task Total	\$	85.50
Task 2 - Special Waste Screening				
EDR Search	1 x	\$ 300.00	= \$	300.00
Federal Express	2 x	\$ 15.50	= \$	31.00
		Task Total	\$	331.00
Task 3 - CCDD				
		Task Total	\$	-
Task 4 - Project Mgmt				
		Task Total	\$	-
<hr/>				
		GRAND TOTAL	\$	416.50

EXHIBIT "C"

LCDOT Survey Procedures

SURVEY PROCEDURES (Revised 4/21/08)

UNITS-COORDINATES

The CONSULTANT will conduct all surveying, stationing, and preparation of required plans using English units of measure and the U.S. Survey Foot. State Plane Coordinates – Illinois East Zone, NAD 83 shall be obtained for all alignment and survey control points.

HORIZONTAL ALIGNMENT

Unless otherwise specified in the services contract, the CONSULTANT is to provide the horizontal alignment. The CONSULTANT'S SURVEYOR will try to re-establish the original horizontal alignment as shown on the recorded R.O.W. plats. The CONSULTANT shall contact LCDOT's Land Surveyor to obtain R.O.W. plats and field notes and benchmarks before establishing the horizontal alignment and stationing. Notify LCDOT's Surveyor immediately if the alignment cannot be reproduced or if in the CONSULTANT'S opinion the existing alignment information is in error.

The CONSULTANT'S SURVEYOR, prior to construction, shall stake the PCs, Pls, PTs, and POTs so that LCDOT's Surveyor can locate them later for construction staking. The CONSULTANT'S SURVEYOR will provide four reference ties to all U.S. Public Land Survey Monuments located within the construction limits. The reference points should be located outside of the anticipated construction limits if practical, so that they can be used after construction to replace the monuments. The CONSULTANT shall record Monument Records for all Section and Quarter Section corners set or found within the construction limits.

The CONSULTANT will mark all 100-foot interval station locations on the survey base line for construction, when on paved surfaces with a P.K. or Mag nail and spray paint. The baseline for relocated alignments when off pavement will be marked at 100-foot intervals with iron rods. The rods shall be set one foot below the surface in farmed land. The CONSULTANT will advise the County of any pavement alignment variations. In cases where the proposed centerline of construction or survey baseline is different from the existing centerline of R.O.W., both shall be shown and the relationship between them will be indicated on the Alignment and Tie sheet.

An Alignment and Tie Sheet shall be provided as part of the final product. The Alignment and Tie sheet shall be signed and sealed by the CONSULTANT'S SURVEYOR. The station, offset and coordinates of the alignment points and survey control points shall be shown. It shall be noted whether the coordinates, stationing and distances are State Plane grid or ground surface. In the case that the information shown is ground surface distances, the State Plane Coordinates still must also be shown for all alignment points and survey control points in order that they can be located with GPS and so that the project can be referenced into our GIS maps. The coordinates may be

shown in a separate table. In either case the grid (combination) factor must also be shown.

VERTICAL ALIGNMENT

Vertical control for the project shall be based on NGVD 29 or NAVD 88 benchmarks. Indicate on the plans which Datum is used. NGVD 29 Lake County Mapping Benchmarks are preferred (<http://gis.lakeco.org/maps/>). LCDOT's Land Surveyor may also be contacted for benchmarks that may be in the area. The controlling benchmarks and the site benchmarks shall be described on the plans. Site benchmarks are to be located at less than 1000-foot intervals with a minimum of two (2) on each project.

All benchmarks will be located on stable objects. LCDOT prefers these objects to be outside the construction site. Some acceptable benchmark examples are, spikes in poles, bolts on fire hydrant rings, and concrete foundations. LCDOT's surveyor can be contacted for benchmarks that may be in the area.

TOPOGRAPHY

The CONSULTANT shall cut cross sections at 50-foot intervals in urban areas (100-foot intervals in rural areas) and at all points needing clarification. The cross section interval should be defined in the engineering services contract.

Full cross-section profiles will be taken at all cross streets, alleys, cross road culverts, and entrances (commercial, private and field). Half cross-sections will not be accepted because they skew the computer terrain model.

The CONSULTANT will locate and identify all trees (6 inches in diameter or greater) within the area either side of the centerline, defined by the proposed ROW or construction limits (whichever is greater) plus an additional 10 feet. The trees shall be identified by species and size. The trees shall be located by station/offset and have a ground elevation.

Streams, tributaries or major drainage ditches located within a lateral distance of 250 feet from centerline (upstream and downstream) shall be surveyed. Alignment, profiles and cross sections will be taken. The stream width shall be shown as the distance measured between the tops of the stream banks. Profile elevations along the bottom of the watercourse shall be taken at a minimum of 50-foot intervals.

The survey shall extend a minimum of 200 feet beyond the roadway construction limits. Cross sections shall be taken a minimum of 10 feet beyond the proposed ROW or construction limits (whichever is greater). Cross sections will extend 30 feet beyond the proposed R.O.W. at entrances 150 feet at minor side roads.

The collected survey data for the existing topography shall have a minimum of 3rd Order Accuracy horizontally with readings to the nearest 0.1 feet for vertical on gravel or ground and readings to the nearest 0.01 feet for vertical on all other surfaces.

RAILROAD INSURANCE

The CONSULTANT will comply with the railroad's requirements when conducting a survey on the railroad's ROW. Usually this includes obtaining a permit, paying a fee, obtaining Railroad Protective Liability Insurance, notification of a flagman to be present near the rails during the survey operations and any other requirements of the railroad. The CONSULTANT is responsible for all of the foregoing requirements.

DELIVERABLES

- I. Copies from the CONSULTANT'S field books, showing benchmarks, level circuits, & structure details, such as size and inverts etc.
- II. Base Drawing at 1:1. All the topographic information shall be plotted electronically. The data shall be recorded in a MICROSTATION .DGN format. All line work defining different elements shall be completed using LCDOT's CELL and LINE LIBRARIES (see attachment). ASCII files containing all point information as described below shall be included. Backup CD's or diskettes shall be provided.
- III. SUMMARY SHEETS showing:
 - (1) Point number
 - (2) Point identification by code and description
 - (3) Station
 - (4) Distance offset (right or left)
 - (5) Northing and Easting coordinate values
 - (6) "Z" elevations

* Four computer printouts shall be provided:

1. List of points referenced by stations.
2. List of points referenced by sequential point numbering.
3. List of points sorted by point identification.
4. "ID" acronym explanation sheets.

An example showing the different printouts is shown on the next page.

(LCDOT'S IDENTIFICATION CODES SHALL BE USED – see attachment)

TYPICAL PRINT-OUT FORM (EXAMPLE)								
BY POINT NUMBERS								
POINT NUMBER	STATION	OFFSET	NORTHING	EASTING	ELEVATION	DEFINITION CODE (1)	DESCRIPTION PD	MATERIAL CODE (1)
3331	104+23.306	-45.869	10313.993	20392.255	207.495	491.10	10 INCH TREE PINE	0
3332	104+50.475	-49.159	10323.810	20416.938	207.743	668	PAVEMENT EDGE	759
3333	104+69.987	-44.270	10261.604	20452.162	207.126	310	FL W/GRATE	774
3334	103+93.865	+40.590	10297.779	20365.781	207.378	304.15	6 INCH TILE	836
BY STATION								
STATION	POINT NUMBER	OFFSET	NORTHING	EASTING	ELEVATION	DEFINITION CODE (1)	DESCRIPTION PD	MATERIAL CODE (1)
103+93.865	3334	+40.590	10297.779	20365.781	207.378	304.15	6 INCH TILE	836
104+23.306	3331	-45.869	10313.993	20392.255	207.495	491.10	10 INCHTREE PINE	0
104+50.475	3332	-49.159	10323.810	20416.938	207.743	668	PAVEMENT EDGE	759
104+69.987	3333	-44.270	10261.604	20452.162	207.126	310	FL W/GRATE	774
BY POINT DESCRIPTION								
POINT NUMBER	STATION	OFFSET	NORTHING	EASTING	ELEVATION	DEFINITION CODE (1)	DESCRIPTION PD	MATERIAL CODE (1)
3331	104+23.306	+40.590	10297.779	20365.781	207.378	304.15	6 INCH TREE PINE	0
3336	104+50.475	-45.869	10313.993	20392.255	207.495	491.10	10 INCHTREE PINE	0
2323	104+69.987	-49.159	10323.810	20416.938	207.743	668	6 INCH TREE OAK	0
2565	103+93.865	-44.270	10261.604	20452.162	207.126	310	5 INCH TREE OAK	0

(1) LCDOT CODES

LCDOT's Land Surveyor:

Steve Heuer, PLS
600 West Winchester Road
Libertyville, IL 60048
(847) 377-7488

EXHIBIT "D"

Projected Survey/Project Limits

METRA
ENTRANCE

METRA
ENTRANCE

METRA
ENTRANCE

METRA
ENTRANCE

AVILON

JODNOW ROAD

