


Municipality Antioch & Lake Villa	<b>L O C A L  A G E N C Y</b>	 <b>Illinois Department of Transportation</b>	<b>C O N S U L T A N T</b>	Name Jorgensen & Associates, Inc.
Township Antioch & Lake Villa				Address 120 Park Avenue
County Lake County – Division of Transportation				City Lake Villa
Section 19-00999-66-RS				State Illinois

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 Deep Lake Road (County Highway 36)

Route 36 Length 2.69 Mi. 14,200 FT (Structure No. \_\_\_\_\_ )

Termini 150 feet North of Grass Lake Road to 750 feet North of Depot Street

Description:  
Topographic design survey and R.O.W. determination

**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, **Lake County Stormwater Management Commission 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 **one (1) copy of each document in both hardcopy and electronic format**. Additional copies of any or all documents, if required, shall be furnished to the LA by the ENGINEER at the ENGINEER's actual cost for reproduction.
  - h.  Furnish the LA with survey and drafts in **duplicate** 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.
  - 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 Report when required by the DEPARTMENT.
  - l.  **Services as included and/or defined in the attached Scope of Services.**
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 and** of the 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 the ENGINEER will perform such work without expense to the LA, even though final payment has been received by the ENGINEER. The ENGINEER 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 the ENGINEER and will show the ENGINEER's professional seal where such is required by law.

**The LA Agrees,**

1. ~~To pay the ENGINEER as compensation for all services rendered in accordance with this AGREEMENT according to the following method 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:

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 all services rendered in accordance with this AGREEMENT at the actual cost of performing such work plus **\*\*** 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 the ENGINEER's actual cost. Subject to the approval of the LA, the ENGINEER may sublet all or part of the services provided in section 1 of the ENGINEER AGREES. If the ENGINEER sublets all or part of this work, the LA will pay the cost to the ENGINEER plus an additional service charge of up to five (5) percent.

"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. **\*\*See the CECs**

**The Total Not-to-Exceed Contract Amount shall be \$52,814.00**

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 section 1 of 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 sections 1 and 3 of the ENGINEER AGREES and prior to the completion of such services, the LA shall reimburse the ENGINEER for the ENGINEER's actual costs plus \*\* percent incurred up to the time the ENGINEER 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 \*\* 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 the ENGINEER's responsibility to prepare a complete and adequate set of plans and specifications.

**\*\*See the CECS**

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#### **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 the ENGINEER's 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 the ENGINEER 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 the ENGINEER 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 quintuplicate 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

By \_\_\_\_\_

(Seal)

Title Chair, Lake County Board

RECOMMENDED FOR EXECUTION

Shane E. Schneider, P.E.  
Director of Transportation/County Engineer  
Lake County

Executed by the ENGINEER:

Jorgensen & Associates, Inc.

Engineering Firm  
120 Park Avenue

Street Address  
Lake Villa, Illinois

City, State

ATTEST:

By Christina H. Jorgensen

By Christina H. Jorgensen

Title Secretary

Title President

Approved

Date

Department of Transportation

Regional Engineer

County Engineer  
On behalf of IDOT pursuant to Agreement  
of Understanding dated May 3, 2018

**Note: Five (5) Original Executed Contracts – (2) LCDOT; (2) IDOT District 1, Local Roads; (1) Consultant**



# VENDOR DISCLOSURE STATEMENT

Vendor Name:	Jorgensen & Associates, Inc.		
Address:	120 Park Avenue, Lake Villa, Illinois 60046		
Contact Person:	Christian H. Jorgensen	Contact Phone #:	(847)356-3371
Bid/RFP/SOI/Contract/Renewal:	Deep Lake Road – North Section Survey Contract (19-00999-66-RS)		

Vendors wishing to contract with Lake County for goods and services in an amount greater than \$30,000 shall submit this form in advance of award. Vendors shall disclose:

- A familial relationship between a Lake County elected official, department director, deputy director and manager and owners, principals, or officers of the vendor’s company. Familial relationship is defined as a spouse (including civil partner), child, stepchild, parent, stepparent, grandparent, in-laws (including parent, grandparent, sibling, or child), relatives and non-relatives living in the same residence, and offspring born to any aforementioned person.
- All political campaign contributions made by the vendor or an owner, principal, officer, manager, lobbyist, agent, consultant, counsel, subcontractor or corporate entity under the control of the vendor to any county board member, county board chair, or countywide elected official as well as contributions to any political action committees within the last five years.

### FAMILIAL RELATIONSHIPS

List below the names and departments/agencies of Lake County employees or public officials with whom owners, principals, or officers of the vendor’s company have a familial relationship and the nature of the relationship. Please attach additional pages as necessary.

Name and Department/Agency of Lake County Employee/Public Official	Familial Relationship

### CAMPAIGN CONTRIBUTIONS

List below the campaign contributions that have been made within the last five years. Please attach additional pages as necessary.

Recipient	Donor	Description (e.g., cash, type of item, in-kind service, etc.)	Amount/Value	Date Made

Continuing disclosure is required if information changes. This Vendor Disclosure Statement form is available at [www.lakecountyil.gov](http://www.lakecountyil.gov).

The full text of the County’s Ethics and Procurement policies and ordinances are available at [www.lakecountyil.gov](http://www.lakecountyil.gov).

I hereby acknowledge that the information above is accurate and complete, that I am an authorized signer on behalf of the vendor, that I have read and understand these disclosure requirements, and that I agree to update this information if there are any related changes by submitting a new Vendor Disclosure Statement.

Authorized Signature:		Title:	President
Printed Name:	Christian H. Jorgensen	Date:	October 9, 2019

*Failure to complete and return this Disclosure may result in delay or cancellation of the County’s Contractual Obligation.*



**JORGENSEN & ASSOCIATES, INC.**  
**LAND SURVEYORS**  
Est. 1990

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October 9, 2019

Mr. Benjamin A. Russo, P.E.  
Lake County Division of Transportation  
600 West Winchester Road  
Libertyville, Illinois 60048

Re: Deep Lake Road-North Section Survey Proposal

Dear Mr. Russo:

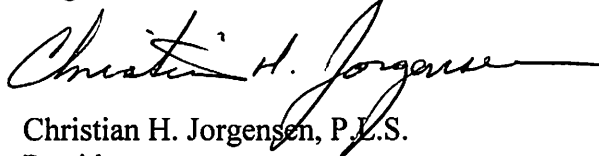
Enclosed, please find our revised proposal to prepare a topographic survey for the referenced project. Our proposal is based on your email of September 29<sup>th</sup> and our telephone conversation.

The topographic survey will be limited to the 4 locations contained in your email. The topographic survey will extend 10 feet beyond the existing R.O.W. line and will include the location of trees 6" in diameter and larger within the 4 locations. The survey will extend 30 feet beyond the existing R.O.W. at entrances and 150 feet beyond the existing R.O.W. at the side roads. We will establish the existing R.O.W. at the 4 locations and the center line alignment will be established for Grass Lake Road to 750' north of Depot Street. All work will be completed according to the current Lake County Design Survey Procedures.

We will begin this project upon receiving your notice to proceed and complete the topographic survey within 10 weeks of your notice to proceed.

I would like to thank you for considering Jorgensen & Associates for this project. We look forward to continuing our working relationship with the Lake County Division of Transportation. Should you have any questions, comments or require any further information concerning our proposal, please feel free to call me at (847)356-3371.

Respectfully submitted,  
Jorgensen & Associates, Inc.



Christian H. Jorgensen, P.L.S.  
President

CHJ/pt

Enclosures

E:\Lake County\Deep Lake Rd\North Section\Letter

Route: Deep Lake Road  
Section: 19-00999-66-RS  
County: Lake  
Job No.:

**Exhibit "A"**

Payroll Burden & Fringe Costs

	<u>% of Direct Productive Payroll</u>
Federal Insurance Contributions Act _____	11.81%
State Unemployment Compensation _____	0.47%
Federal Unemployment Compensation _____	0.11%
Workmen's Compensation Insurance _____	0.95%
Paid Holidays, Vacation, Sick Leave, Personal Leave _____	9.83%
Bonus _____	11.78%
Pension _____	0.98%
Group Insurance _____	<b>37.83%</b>
Total Payroll Burden & Fringe Costs	73.76%

Route: Deep Lake Road  
Section: 19-00999-66-RS  
County: Lake  
Job No.:

**Exhibit "B"**

Overhead and Indirect Costs

	<u>% of Direct Productive Payroll</u>
Business Insurance _____	4.72%
Depreciation _____	11.00%
Indirect wages and salaries _____	42.74%
Reproductive and printing costs _____	0.23%
Office Supplies _____	2.99%
Computer Costs _____	2.19%
Professional Fees _____	1.94%
Telephone _____	1.89%
Fees, license & dues _____	0.88%
Repairs and maintenance _____	1.77%
Business space rent _____	4.94%
Facilities - capital _____	0.72%
Travel - Meals _____	0.26%
Survey Supplies _____	2.60%
Automobile/travel expense _____	0.41%
Miscellaneous Expense _____	0.76%
State Income Tax _____	1.67%
Postage _____	0.20%
Educational & Professional Registrations _____	0.23%
Gain on Sale of Asset _____	<u>(1.33%)</u>
 Total Overhead	 80.81%



## PAYROLL ESCALATION TABLE ANNIVERSARY RAISES

FIRM NAME  
PRIME/SUPPLEMENT  
Prepared By

Jorgensen & Associates, Inc.  
PRIME

DATE 10/09/19  
PTB-ITEM # 0

CONTRACT TERM 12 MONTHS  
START DATE 11/1/2019  
RAISE DATE ANNIVERSARY

OVERHEAD RATE 154.57%  
COMPLEXITY FACTOR 0  
% OF RAISE 3.00%

### ESCALATION PER YEAR

DETERMINE THE MID POINT OF THE AGREEMENT

6

CACULATE THE ESCALATION FACTOR TO THE MIDPOINT OF THE CONTRACT

1.50%

The total escalation for this project would be: 1.50%

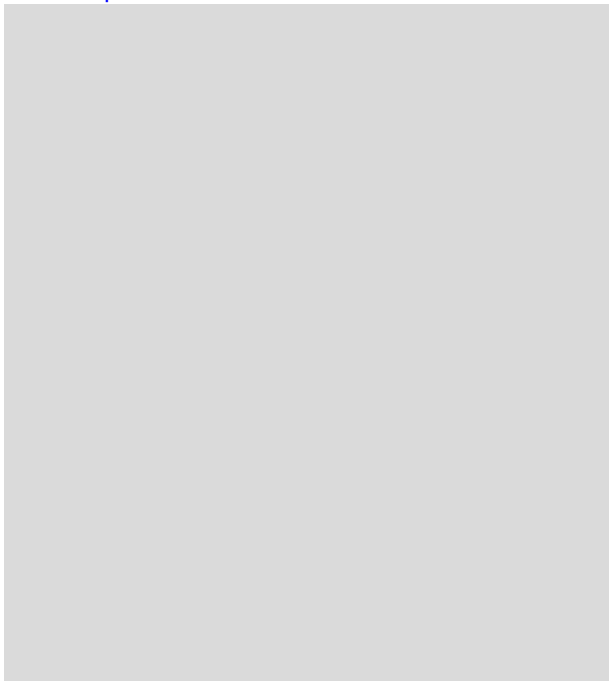
# PAYROLL RATES

FIRM NAME Jorgensen & Associates DATE 10/09/19  
PRIME/SUPPLEMENT PRIME  
PTB-ITEM # 0

ESCALATION FACTOR 1.50%

*Note: Rates should be capped on the AVG 1 tab as necessary*

CLASSIFICATION	IDOT PAYROLL RATES ON FILE	CALCULATED RATE
Principal/Officer	\$46.00	\$46.69
Supervisor, P.L.S.	\$43.00	\$43.65
Survey Party Chief, P.L.S.	\$29.50	\$29.94
Instrument Operator	\$22.25	\$22.58
Cadd Supervisor	\$32.25	\$32.73





### AVERAGE HOURLY PROJECT RATES

FIRM Jorgensen & Associates, Inc.  
 PTB-ITEM# 0  
 PRIME/SUPPLEMENT PRIME

DATE 10/09/19

SHEET 1 OF 5

PAYROLL CLASSIFICATION	AVG HOURLY RATES	TOTAL PROJ. RATES			(1) Field - Topographic Survey			(2) Office - Compile Field Data			(3) Office - Create Existing Topography Base File			(4) Office - Create T.I.N. & Contours			(5) QC/QA		
		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/Officer	46.69	2.0	0.33%	0.15															
Supervisor, P.L.S.	43.65	81.0	13.26%	5.79				73	82.95%	36.21							8	100.00%	43.65
Survey Party Chief, P.L.S.	29.94	232.0	37.97%	11.37	232	50.00%	14.97												
Instrument Operator	22.58	232.0	37.97%	8.58	232	50.00%	11.29												
Cadd Supervisor	32.73	64.0	10.47%	3.43				15	17.05%	5.58	44	100.00%	32.73	5	100.00%	32.73			
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<b>TOTALS</b>		611.0	100%	\$29.31	464.0	100.00%	\$26.26	88.0	100%	\$41.79	44.0	100%	\$32.73	5.0	100%	\$32.73	8.0	100%	\$43.65

### AVERAGE HOURLY PROJECT RATES

**FIRM** Jorgensen & Associates, Inc.  
**PTB-ITEM #** 0  
**PRIME/SUPPLEMENT** PRIME

**DATE** 10/09/19  
**SHEET** 2 OF 5

PAYROLL CLASSIFICATION	AVG HOURLY RATES	(6) Coordination Meetings																	
		Hours	% Part.	Wgt'd Avg	Hours	% Part.	Wgt'd Avg	Hours	% Part.	Wgt'd Avg	Hours	% Part.	Wgt'd Avg	Hours	% Part.	Wgt'd Avg			
Principal/Officer	46.69	2	100.00%	46.69															
Supervisor, P.L.S.	43.65																		
Survey Party Chief, P.L.S.	29.94																		
Instrument Operator	22.58																		
Cadd Supervisor	32.73																		
<b>TOTALS</b>		2.0	100%	\$46.69	0.0	0%	\$0.00	0.0	0%	\$0.00	0.0	0%	\$0.00	0.0	0%	\$0.00	0.0	0%	\$0.00

Route: Deep Lake Road  
Section: 19-00999-66-RS  
County: Lake  
Job No.:

**Manhour Breakdown  
Topographic Survey Estimate**

Side Roads	$\pm$	300'	=	$\pm$ 0.057 mile
Deep Lake Road	$\pm$	<u>14,200'</u>	=	<u><math>\pm</math> 2.689 miles</u>
Total Length	$\pm$	14,500'	=	$\pm$ 2.746 miles

1. Field – Topographic Survey

a. Measure traverse, level circuit & G.P.S. survey 38 hours x 2 men =	76 MH
b. Search & locate existing R.O.W. & section lines 80 hours x 2 men =	160 MH
c. Locate existing topography & measure inverts 90 hours x 2 men =	180 MH
d. Monument center line alignment 16 hours x 2 men =	32 MH
e. Monument/tie section & quarter corners 8 hours x 2 men =	<u>16 MH</u>
Sub-total Item #1	464 MH

2. Office - Compile Field Data		
a. Compute traverse, level circuit & G.P.S. survey 10 hours x 1 man =		10 MH
b. Edit & compile topographic survey 12 hours x 1 man =		12 MH
c. Research records at Lake County Recorder's office 3 hours x 1 man =		3 MH
d. Compute existing center line & R.O.W. lines 63 hours x 1 man =		<u>63 MH</u>
	Sub-total Item #2	88 MH
3. Office - Create Existing Topography Base File		
a. Layout and drafting 38 hours x 1 man =		38 MH
b. Prepare and Record Monument Records 3 Monument Records @ 2 hours each =		<u>6 MH</u>
	Sub-total Item #3	44 MH
4. Office - Create T.I.N. & Contours		
a. Compute contours 5 hours x 1 man =		5 MH
5. QC/QA		
a. Check topographic survey 7 hours x 1 man =		7 MH
b. Check contours 1 hour x 1 man =		<u>1 MH</u>
	Sub-total Item #5	8 MH
6. Coordination Meetings 1 meeting @ 2 hours =		<u>2 MH</u>
	Total All Items	611 MH

(2)

Route: Deep Lake Road  
Section: 19-00999-66-RS  
County: Lake  
Job No.:

**Breakdown of  
In House Direct Costs**

Item

1. Field - Topographic Survey

a. Trips to project site - 29 each  
± 12 miles/trip x 29 trips = ± 348 miles  
± 348 miles @ \$0.58/mile = \$ 201.84

2. Office – Compile Field Data

a. Trips to Lake County Recorder’s office  
± 30 miles/trip x 1 trip = ± 30 miles  
± 30 miles @ \$0.58/mile = \$ 17.40

b. Subdivisions & deeds from Recorder office = \$ 165.00

Sub-total Item #2 \$ 182.40

3. Office – Create Existing Topography Base File

a. Trips to Lake County Recorder’s office  
± 30 miles/trip x 1 trip = ± 30 miles  
± 30 miles @ \$0.58/mile = \$ 17.40

b. Record Monument Records  
3 Monument Records @ \$60 each = \$ 180.00

Sub-total Item #3 \$ 197.40

6. Coordination Meetings

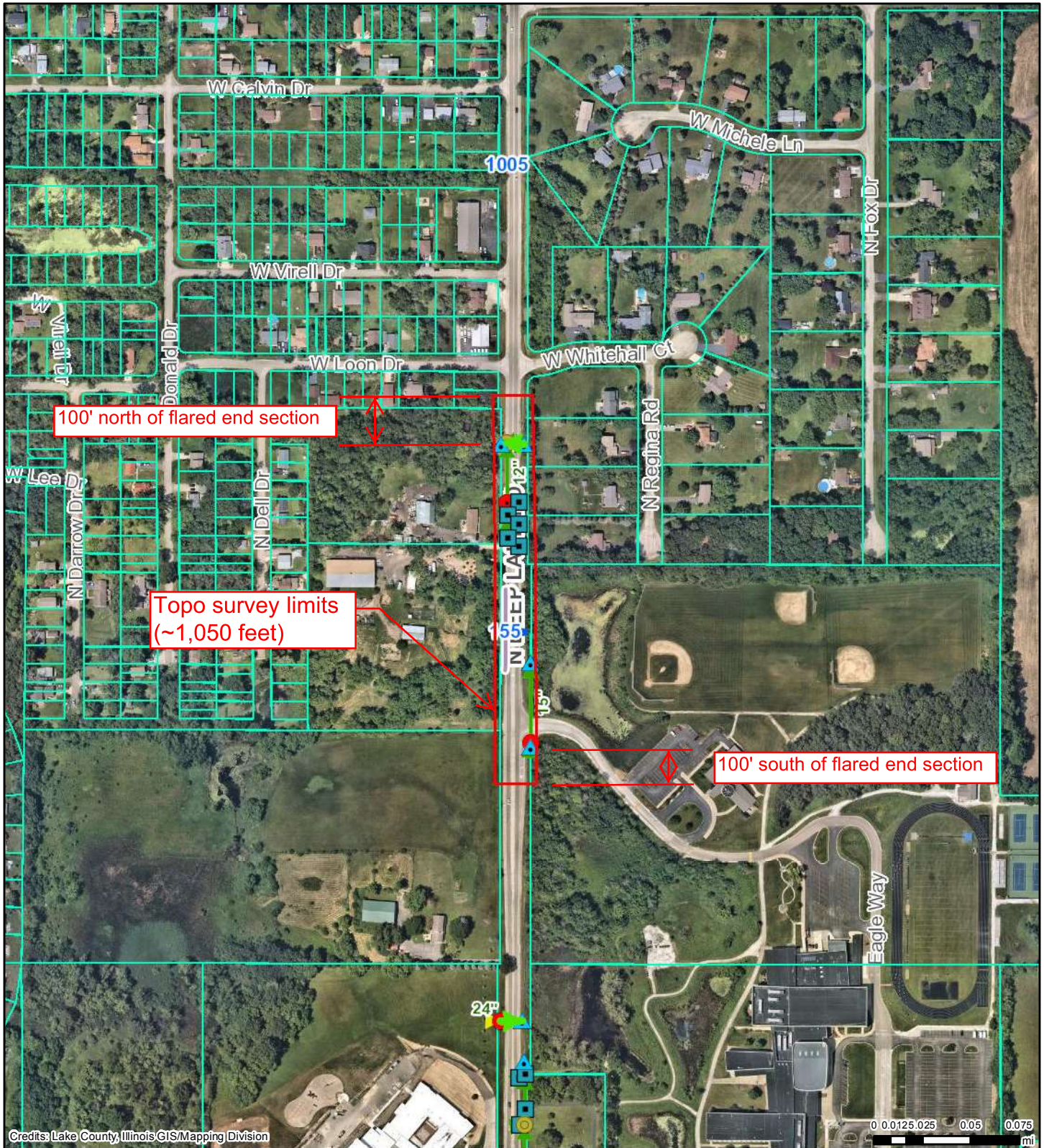
a. Meetings at Lake County office - 1 each  
± 22 miles/trip x 1 trip = ± 22 miles  
± 22 miles @ \$0.58/mile = \$ 12.76

Total All Items \$ 594.40






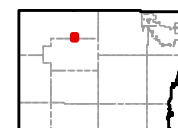


# Topo Survey Locations



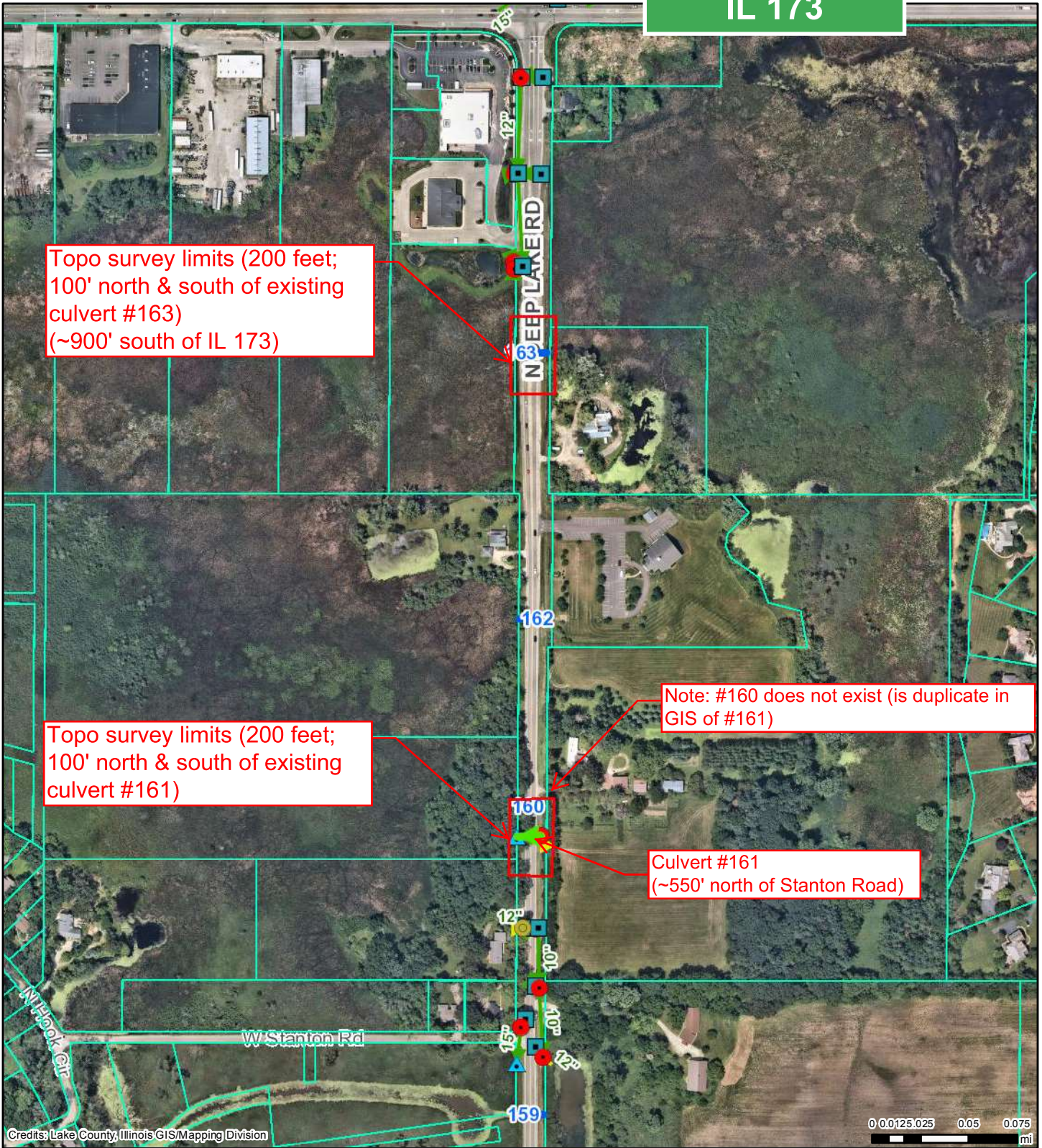
## Culverts

-  Culvert
-  Culvert Part of Storm Sewer System
-  Bike Tunnel



# Topo Survey Locations

IL 173



## Culverts

- Culvert
- ▶ Culvert Part of Storm Sewer System
- Bike Tunnel

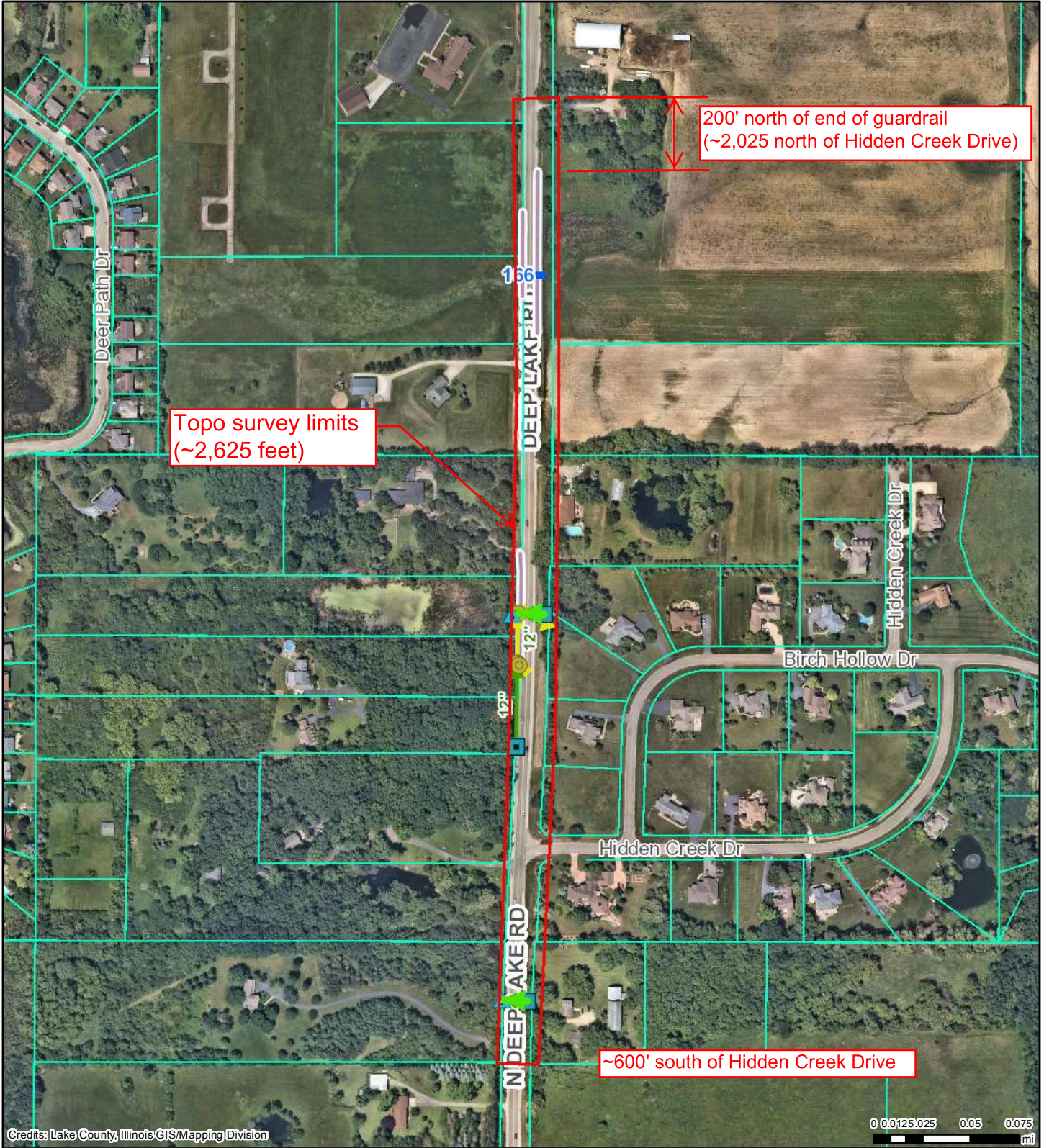
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LCDOT GIS  
9/19/2019

Lake County  
Division of Transportation




Depot Street

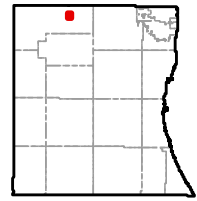
# Topo Survey Locations



Credits: Lake County, Illinois GIS/Mapping Division


## Culverts

-  Culvert
-  Culvert Part of Storm Sewer System
-  Bike Tunnel



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LCDOT GIS  
9/19/2019



# DESIGN SURVEY PROCEDURES



# **DESIGN SURVEY PROCEDURES** (Revised 10/19/18)

## **HORIZONTAL ALIGNMENT**

Unless otherwise specified in the services contract, the CONSULTANT is to provide the horizontal alignment. The CONSULTANT will conduct all surveying, stationing, and preparation of required plans using English units of measure and the U.S. Survey Foot. 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 before establishing the horizontal alignment and stationing. The CONSULTANT shall 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, PIs, PTs, and POTs so that the alignment location can be verified before construction staking is initiated. The CONSULTANT'S SURVEYOR will provide four reference ties to all U.S. Public Land Survey Monuments that are 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 the baseline for relocated alignments when off pavement at the PCs, PTs, and POTs 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 shall be indicated on an Alignment & Tie sheet.

## **ALIGNMENT & TIE SHEET**

An Alignment & Tie Sheet shall be provided as part of the final plans. The plans are to be prepared using English units of measure and the U.S. Survey Foot. The station, offset, and coordinates of the alignment points (PCs, PTs, PIs, and POTs) and survey control (traverse) points shall be shown. Coordinates for all projects shall be on the Illinois State Plane Coordinate System, - East zone, NAD83 (Adjustment). The grid (combination) factor for the project shall be shown. A list of traverse points with station, offset, and coordinates shall be provided.

## **VERTICAL ALIGNMENT**

The North American Vertical Datum of 1988 (NAVD 88) shall be used for vertical control. Lake County Mapping Benchmarks are available on-line (<http://gis.lakeco.org/maps/>). NAVD88 benchmarks are available on-line from the National Geodetic Survey. LCDOT's Land Surveyor may also be contacted for benchmarks that may be in the area. The primary benchmarks and site benchmarks shall be listed and described on the Alignment & Tie Sheet. The location of the site benchmarks shall also be shown on the plan sheets with a symbol. Site benchmarks are to be located at less than 1000-foot intervals with a minimum of two (2) on each project.

All benchmarks shall be located on stable objects. LCDOT prefers these objects to be outside the construction limits. Some acceptable benchmark examples are, spikes in poles, bolts on fire hydrant rings, and concrete foundations.

## **TOPOGRAPHY**

The CONSULTANT shall cut cross-sections at 50-foot intervals and at all points needing clarification. For areas of superelevation or requiring greater detail, cross-sections shall be cut at 25-foot intervals. 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 shall 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 R.O.W. or construction limits (whichever is greater). Cross-sections will extend 30 feet beyond the proposed R.O.W. at entrances and 150 feet at minor side roads.

All survey data shall be collected in Illinois State Plane Coordinates – East Zone. The collected survey data for the existing topography shall have a minimum of 3<sup>rd</sup> 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.

For ADA ramps: The Consultant shall not use GPS devices to collect vertical data or elevations for hard surfaces e.g. curb and gutter, sidewalk, bike paths etc.

### **RAILROAD INSURANCE**

The CONSULTANT will comply with the railroad's requirements when conducting a survey on the railroad's R.O.W. 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. The Base Drawing at 1:1 scale. All the topographic information shall be plotted electronically. The data shall be in Illinois State Plane Coordinates – East Zone and be recorded in a MICROSTATION (dgn) format. All CAD work shall be according to LCDOT CAD Standards. ASCII files, gpk files, and/or InRoads files containing all point information as described below shall be included. A filename “ID” acronym explanation sheet shall be provided. Backup CDs shall be provided.
- III. Point Information:
  - (1) Point number
  - (2) Northing and Easting coordinate values
  - (3) "Z" elevations
  - (4) Point identification by code
  - (5) Notes