COUNCIL WORKSHOP ITEM

ITEM:	CONSTRUCTION ENGINEERING SERVICES FOR FAIRVIEW AVENUE SIGNAL INTERCONNECT – PROJECT # 12-00		
DATE:	March 18, 2002		
PREPARED BY:	Brian Parks, Senior Engineer Public Works John J. Bajor, Jr., Director of Public Works		
PURPOSE:	To place approval of Change Order #1 for Phase III Construction Engineering Services to Civiltech Engineering, Inc. on the April 2, 2002 Active Agenda.		
BID AMOUNT:	**$85,079.00**	**ACCOUNT:**	220.527.0000.5807
BUDGET AMOUNT:	**$125,000.00**		

DISCUSSION:
Fairview Avenue Signal Interconnect Project #12-00 is a partially federally funded project with TCM funds through the DuPage Mayors and Managers Conference. The proposed improvements consist of upgrading six (6) existing traffic signal installations and interconnecting the operations of those signals via a fiber optic system between 59th Street and Lincoln Avenue.

Bids were opened at the Illinois Department of Transportation on March 8, 2002 with a total of eight (8) bids submitted. The low bid was $661,655.00. This bid amount was approximately fourteen (14) percent below the engineer's estimate.

Per the engineering agreement entered into on July 19, 2000 with Civiltech Engineering, Inc., the fee for design engineering work was a not-to-exceed amount of $87,002. The proposal for Phase III construction engineering services was proposed in the original agreement with Civiltech Engineering if the Village so desired to use the services. Exhibit "A" shows the cost estimate for these construction-engineering services.

ATTACHMENT:
Exhibit A1 – Cost Estimate of Consultant Services for year 2001
Exhibit B – Change Order #1 for Project 12-00
Exhibit C – Copy of Original Agreement for Project 12-00

RECOMMENDATION:
Staff recommends that Change Order #1 for Construction Engineering Services for Fairview Avenue Signal Interconnect, Project 12-00 be approved for Civiltech Engineering, Inc. in the amount of $85,079.00. Funding for this project is in the Capital Improvement Plan and accounted for in fund 220.527.0000.5807.

Village of Downers Grove
Traffic Signal Interconnect Improvement

COST ESTIMATE OF CONSULTANT SERVICES
Construction Engineering & Timing Implementation

Consultant: Civiltech Engineering, Inc. **Date: November 16, 2001**

WORK ITEM DESCRIPTION	Sr. Proj. Manager $50.00	Resident Engineer $27.00	Phase II Proj. Mgr. $33.50	Phase II Proj. Eng $24.00	Survey Chief $26.00	Tech. $16.50	Total Hours	Payroll	Overhead & Fringe Ben. Cost*	Direct Costs [a]	Fixed Fee**	Total Cost
Construction Engineering												
Precon. & Documentation	2	40	2	12	8	8	72	$ 1,875	$ 2,436	$ 128	$ 628	$ 5,067
Month 1	12	235	2	2	16	16	283	7,740	10,055	640	2,593	21,028
Month 2	4	192	2	2	16	16	232	6,179	8,027	512	2,070	16,788
Month 3	4	180	2	2	-	-	188	5,175	6,723	512	1,734	14,143
Final Doc. & As-Builts	4	100	2	8	-	12	126	3,357	4,361	384	1,125	9,227
Subtotal	**26**	**747**	**10**	**26**	**40**	**52**	**901**	**$ 24,326**	**$ 31,602**	**$ 2,176**	**$ 8,149**	**$ 66,253**
Timing Implementation												
Implement System Timings	2	-	24	40	-	-	66	1,864	2,422	96	624	5,006
Dev. & Impl. Traffic Resp.Op.	1	-	24	24	-	-	49	1,430	1,858	-	479	3,767
Monitor/Fine-Tune System Oper	2	-	24	60	-	-	86	2,344	3,045	128	785	6,302
Prepare Summary Report	1	-	12	24	-	24	61	1,424	1,850	-	477	3,751
Subtotal	**6**	**-**	**84**	**148**	**-**	**24**	**262**	**$ 7,062**	**$ 9,174**	**$ 224**	**$ 2,366**	**$ 18,826**
TOTALS	**32**	**747**	**94**	**174**	**40**	**76**	**1,163**	**$31,388**	**$40,776**	**$ 2,400**	**$10,515**	**$85,079**
% TOTAL	2.8	64.2	8.1	15.0	3.4	6.5	100.0					

[a] Vehicle Expense ($32/day)

*** 129.91% Payroll**

**** Fixed Fee = (Payroll x 2.3) x 0.145**

Date: March 26, 2002 Project: Fairview Avenue Signal Interconnect

Change Order: 1 Project #: 12-00

CONTRACTOR: Civiltech Engineering, Inc.

ADDRESS: 450 E. Devon Avenue
Suite 300
Itasca, Illinois 60143

CHANGE #1

As mentioned in the Council Workshop Consent Agenda dated July 18, 2000, the proposal for Phase 3 construction engineering services was proposed if desired. Civiltech Engineering had submitted proposed prices at that time for Phase 3 services, however because of the two-year lapse between the time the proposal was submitted and the actual construction scheduled for the summer of 2002, the hourly rates for some of the personnel have increased as well as vehicle expense costs and Civiltech's overhead rate.

It is therefore recommended that approval be given to the proposal with the not-to-exceed total cost of services being $85,079.00.

CIVILTECH ENGINEERING PHASE 3 SERVICES
$85,079.00 per Exhibit A

Total Additions:		$ 85,079.00
Deletions:	None	
TOTAL ADDITIONAL COST:		**$ 85,079.00**

Approval Recommended: Funds Available:

_____ _____

The work covered by this order shall be performed under the same terms and conditions as that included in the original contract.

Changes Authorized and Approved:

_____
OWNER by Village Manager Date

_____
CONTRACTOR Date

Original Contract Amount	$ 87,002.00
Net Change from Previous Change Orders:	$ 0.00
Amount of this Order: (increase / decrease)	$ 85,079.00
Revised Contract	**$172,081.00**

CIVILTECH
ENGINEERING, INC.

June 9, 2000

Ms. Jane Gerdes, P.E.
Village of Downers Grove
Public Works Department
5101 Walnut Avenue
Downers Grove, Illinois 60515

Reference: **MFT Agreements**
Fairview Avenue Traffic Signal Interconnect
Project 12-00

Dear Ms. Gerdes:

Enclosed are three (3) executed copies of the Preliminary Engineering Services Agreement for MFT Funds for the referenced project. We have included the Cost Estimate of Consultant Services table and the Scope of Services from the cost proposal as attachments to this document. Please call if you need anything further from us.

We again thank you for selecting Civiltech Engineering for this project and look forward to working with the Village of Downers Grove.

Very truly yours,

CIVILTECH ENGINEERING, INC.

Kathleen M. Meyerkord, P.E., P.T.O.E.

500 PARK BOULEVARD • SUITE 250 • ITASCA, IL 60143 • (630) 773-3900 • FAX (630) 773-3975
30 N. LaSALLE STREET • SUITE 1402 • CHICAGO, ILLINOIS 60602 • (312) 726-5910 • FAX (312) 726-5911

Bill 12-0

icipality wners Grove	LOCAL AGENCY	Illinois Department of Transportation **Preliminary Engineering Services Agreement For Motor Fuel Tax Funds**	CONSULTANT	Name Civiltech Engineering, Inc.
nship wners Grove				Address 500 Park Blvd., Suite 250
nty Page				City Itasca
ion				State IL 60143

S AGREEMENT is made and entered into this 19 day of July, 2000 between the above Local ency (LA) and Consultant (ENGINEER) and covers certain professional engineering services in connection with the rovement of the above SECTION. Motor Fuel Tax Funds, allotted to the LA by the State of Illinois under the general ervision of the State Department of Transportation, hereinafter called the "DEPARTMENT", will be used entirely or in part nance ENGINEERING services as described under AGREEMENT PROVISIONS.

Section Description

ne Fairview Avenue Route _____ Length 1.6 Mi. 2.6 KM (Structure No. _____)

mini Lincoln Avenue to 59th Street

scription: Traffic Signal Interconnect with modernization of five traffic signals. Development of signal system timings.

Agreement Provisions

e Engineer Agrees,

To perform or be responsible for the performance of the following engineering services for the LA, in connection with the proposed improvements hereinbefore described, and checked below:

a. ☒ Make such detailed surveys as are necessary for the preparation of detailed ~~roadway~~ signal 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 an 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. (Traffic counts by Village).

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.

e: Four copies to be submitted to District Engineer

h. ☐ Furnish the LA with survey and drafts in 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.

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. ☒ The attached "Scope of Services" dated June 9, 2000 and designated as Exhibit B shall amend and supplement the services designated and outlined above.

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 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.

To attend conferences at any reasonable time when requested to do so by representatives of the LA or the Department.

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.

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.

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,

To pay for services in paragraphs 1 through 6 inclusive at actual cost of performing such work plus 149.4 percent to cover profit, overhead and readiness to serve – "actual cost" being defined as actual payrolls. 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 paragraphs cited above The maximum "not-to-exceed" fee for this work shall be **$87,002.**

"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.

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 1l under THE ENGINEER AGREES - to the satisfaction of the LA and their approval by the DEPARTMENT, 100 percent of the total fee due under this AGREEMENT based on the approved estimate of cost.

b. By Mutual agreement, partial payments, not to exceed 100 percent of the amount earned, may be made from time to time as the work progresses. The frequency of partial payments shall not exceed one per month.

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 149.4 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.

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 149.4 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.

Mutually Agreed,

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.

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 3 of THE LA AGREES.

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.

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.

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

cuted by the LA:

Village of Downers Grove of the
(Municipality/Township/County)

EST:

State of Illinois, acting by and through its

Mayor and Village Council

ge Clerk

By

Title ~~Mayor~~ Dir. of Eng.

(Seal)

cuted by the ENGINEER:

Civiltech Engineering, Inc.

500 Park Boulevard, Suite 250

Itasca, IL 60143

EST:

By

Treasurer

Title President

EXHIBIT A

COST ESTIMATE OF CONSULTANT SERVICES

Fairview Avenue Traffic Signal Interconnect

Village of Downers Grove
Traffic Signal Interconnect Impr ment

COST ESTIMATE OF CONSULTANT SERVICES
Contract Plans & Documents

Consultant: Civiltech Engineering, Inc. **Date: June 9, 2000**

WORK ITEM DESCRIPTION	Total Hours	Payroll	Overhead & Fringe Benefit Cost*	Direct Costs (a)	Fixed Fee**	Total Cost
1. PROJECT COORDINATION						
a. IDOT/DMMC/FHWA/DCDOT mtgs	28	$ 848	$ 984	$ 30	$ 283	$ 2,145
b. Project Notice/Phase I documentation	22	598	694	-	199	1,492
SUBTOTAL ITEM 1	**50**	**$ 1,446**	**$ 1,679**	**$ 30**	**$ 482**	**$ 3,637**
2. FIELD RECON. & DATA COLLECTION						
a. Field Reconnaissance						
Obtain exist.plans	2	48	56	-	16	120
Verify exist. plans & field conditions/photo log	36	808	938	30	269	2,045
Photo log preparation	6	124	144	30	41	339
b. Data Collection						
Review historic counts/Develop count program	9	266	309	10	89	673
Summarize count data	10	200	232	-	67	499
SUBTOTAL ITEM 2	**63**	**$ 1,446**	**$ 1,679**	**$ 70**	**$ 482**	**$ 3,677**
3. TECHNOLOGY RESEARCH						
a. Research technology issues	29	750	871	-	250	1,871
b. Prepare tech. memo	19	520	604	-	173	1,297
c. Meet w/Village staff	8	216	251	10	72	549
SUBTOTAL ITEM 3	**56**	**$ 1,486**	**$ 1,725**	**$ 10**	**$ 496**	**$ 3,717**
4. EVALUATE OPER. OF BNSFRR CROSSING						
a. Evaluate preemption reqmt./Communication	29	794	922	-	265	1,980
b. Prepare recommendation	13	386	448	-	129	963
c. Meet w/Village staff & RR	8	216	251	10	72	549
SUBTOTAL ITEM 4	**50**	**$ 1,396**	**$ 1,620**	**$ 10**	**$ 466**	**$ 3,492**
5. PRE-FINAL PLANS, SPECS. & ESTIMATE						
a. 50% Plans						
Title sheet/index of sheets	8	137	159	-	46	342
General Notes/Summary of Quantities	12	229	266	-	76	571
Temporary Signal Plans (5)	80	1,690	1,962	-	564	4,215
Traffic Signal Modernization Plan (5)	200	4,254	4,938	-	1,419	10,611
Cable Plans/Sequence of Operations (7)	112	2,382	2,765	-	794	5,941
System Interconnect Plan (6)	120	2,494	2,895	-	832	6,221
System Interconnect Schematic	24	522	605	-	174	1,301
Detail Sheets	13	278	323	-	93	693
b. 50% Plan Review & Revisions	60	1,392	323	75	464	2,314
c. Specifications/Quantities/Cost Estimate	48	1,038	1,616	-	346	3,048
SUBTOTAL ITEM 5	**677**	**$ 14,416**	**$ 16,734**	**$ 75**	**$ 4,808**	**$ 36,709**
6. SIGNAL SYSTEM PLAN REVIEW & REVISIONS						
a. Submit plans to IDOT, Village, Utilities, etc.	16	344	399	270	115	1,144
b. Review meetings	16	432	501	-	144	1,094
c. Revise plans	100	2,132	2,475	-	711	5,418
d. Prepare final contract documents	85	2,070	2,403	-	690	5,248
e. Resubmit plans	8	192	223	570	64	1,057
SUBTOTAL ITEM 6	**225**	**$ 5,170**	**$ 6,001**	**$ 840**	**$ 1,724**	**$ 13,736**
7. DEVELOPMENT OF SYSTEM TIMING PLANS						
a. SIGNAL97 Analyses	84	1816	2,108	-	606	4,530
b. PASSER II-90 Analyses	64	1636	1,899	-	546	4,081
c. TRANSYT7F Analyses	64	1636	1,899	-	546	4,081
d. TS/PPDraft Analyses	32	844	980	-	281	2,105
e. Develop Time-of-Day Programs	11	302	351	-	101	753
f. Develop Actuated Timing Parameters	50	1220	1,416	-	407	3,043
g. Prepare Master Controller Database	66	1652	1,918	-	551	4,121
SUBTOTAL ITEM 7	**371**	**$ 9,106**	**$ 10,570**	**$ -**	**$ 3,037**	**$ 22,713**
TOTALS	**1,492**	**$ 34,466**	**$ 40,008**	**$ 1,035**	**$ 11,494**	**$ 87,002**

(a) Vehicle Expense - 1a, 2a, 2b, 3c, 4c, 2b
Film & Developing - 2a
Printing - 5b, 6a, 6e

* Overhead Factor = 116.08% of Payroll
** Fixed Fee - (Payroll x 2.3) x 0.145 = Payroll x 33.4%

Village of Downers Grove
Traffic Signal Interconnect Impl ement

MANHOURS AND PAYROLL COSTS
Contract Plans and Documents

Consultant: Civiltech Engineering, Inc. **Date: June 9, 2000**

WORK ITEM DESCRIPTION	Assoc.-in-Charge $50.00	Project Manager $30.00	Project Engineer $24.00	Engineer $19.00	Technician $16.50	Clerical $14.00	Total Hours	Payroll
1. PROJECT COORDINATION								
a. IDOT/DMMC/FHWA/DCDOT mtgs	4	12	12	-	-	-	28	$ 848
b. Project Notice/Phase I documentation	2	8	8	-	4	-	22	$ 598
SUBTOTAL ITEM 1	**6**	**20**	**20**	**-**	**4**	**-**	**50**	**$ 1,446**
2. FIELD RECON. & DATA COLLECTION								
a. Field Reconnaissance								
Obtain exist.plans	-	-	2	-	-	-	2	48
Verify exist. plans & field conditions/photo log	-	4	16	16	-	-	36	808
Photo log preparation	-	-	2	4	-	-	6	124
b. Data Collection								
Review historic counts/Develop count program	1	4	4	-	-	-	9	266
Summarize count data	-	-	2	8	-	-	10	200
SUBTOTAL ITEM 2	**1**	**8**	**26**	**28**	**-**	**-**	**63**	**$ 1,446**
3. TECHNOLOGY RESEARCH								
a. Research technology issues	1	8	16	4	-	-	29	750
b. Prepare tech. memo	1	8	8	2	-	-	19	520
c. Meet w/Village staff	-	4	4	-	-	-	8	216
SUBTOTAL ITEM 3	**2**	**20**	**28**	**6**	**-**	**-**	**56**	**$ 1,486**
4. EVALUATE OPER. OF BNSFRR CROSSING								
a. Evaluate preemption reqmt./Communication	1	12	16	-	-	-	29	794
b. Prepare recommendation	1	8	4	-	-	-	13	386
c. Meet w/Village staff & RR	-	4	4	-	-	-	8	216
SUBTOTAL ITEM 4	**2**	**24**	**24**	**-**	**-**	**-**	**50**	**$ 1,396**
5. PRE-FINAL PLANS, SPECS. & ESTIMATE								
a. 50% Plans								
Title sheet/index of sheets	-	-	-	2	6	-	8	137
General Notes/Summary of Quantities	-	1	1	4	6	-	12	229
Temporary Signal Plans (5)	2	8	16	30	24	-	80	1,690
Traffic Signal Modernization Plan (5)	4	20	40	100	36	-	200	4,254
Cable Plans/Sequence of Operations (7)	2	12	24	50	24	-	112	2,382
System Interconnect Plan (6)	2	12	24	42	40	-	120	2,494
System Interconnect Schematic	1	2	4	14	3	-	24	522
Detail Sheets	-	1	4	8	-	-	13	278
b. 50% Plan Review & Revisions	4	8	16	16	16	-	60	1,392
c. Specifications/Quantities/Cost Estimate	2	4	12	22	-	8	48	1,038
SUBTOTAL ITEM 5	**17**	**68**	**141**	**288**	**155**	**8**	**677**	**$ 14,416**
6. SIGNAL SYSTEM PLAN REVIEW & REVISIONS								
a. Submit plans to IDOT, Village, Utilities, etc.	-	-	8	8	-	-	16	344
b. Review meetings	-	8	8	-	-	-	16	432
c. Revise plans	4	8	24	24	40	-	100	2,132
d. Prepare final contract documents	-	5	80	-	-	-	85	2,070
e. Resubmit plans	-	-	8	-	-	-	8	192
SUBTOTAL ITEM 6	**4**	**21**	**128**	**32**	**40**	**-**	**225**	**$ 5,170**
7. DEVELOPMENT OF SYSTEM TIMING PLANS								
a. SIGNAL97 Analyses	2	8	14	60	-	-	84	1816
b. PASSER II-90 Analyses	2	8	54	-	-	-	64	1636
c. TRANSYT7F Analyses	2	8	54	-	-	-	64	1636
d. TS/PPDraft Analyses	2	4	26	-	-	-	32	844
e. Develop Time-of-Day Programs	1	2	8	-	-	-	11	302
f. Develop Actuated Timing Parameters	2	8	24	16	-	-	50	1220
g. Prepare Master Controller Database	2	16	32	16	-	-	66	1652
SUBTOTAL ITEM 7	**13**	**54**	**212**	**92**	**-**	**-**	**371**	**$ 9,106**
TOTALS	**45**	**215**	**579**	**446**	**199**	**8**	**1,492**	**$ 34,466**
% TOTAL	3.0	14.4	38.8	29.9	13.3	0.5	100	

EXHIBIT B

SCOPE OF SERVICES

Fairview Avenue Traffic Signal Interconnect

SCOPE OF SERVICES
Fairview Avenue Traffic Signal Interconnect
Phase I/Phase II Engineering
June 9, 2000

1. **Project Coordination** - This work item includes preparation and submittal of all documents required by the Illinois Department of Transportation (IDOT) and the DuPage Mayors and Managers Conference (DMMC) on behalf of the Village of Downers Grove for an IDOT construction letting in Fall 2002. Attendance at all appropriate IDOT and FHWA coordination meetings with Village staff will be included. Coordination with the BNSF Railroad regarding any necessary connection to their control equipment will also be included in this item. Finally, coordination with IDOT on the Naperville Road improvement and with DuPage County Division of Transportation on the 55th Street improvement will occur throughout this project.

2. **Field Reconnaissance/Data Collection** - Existing roadway and signal plans will be obtained from the Village in addition to utility atlases from companies having facilities located along the corridor. A "design-stage" JULIE locate will be requested, then a wheel survey will be performed to locate utilities and field verify existing plans. A photo log will also be taken at each of the signalized intersections and at any other critical locations along the interconnect route.

   Historic traffic counts will be reviewed, then a counting program will be developed. We would recommend that the Village consider developing four timing programs for the signal system: AM Peak, Mid-Day, PM Peak and Weekend. Automatic weekly corridor machine counts will be taken for seven days, 24 hours per day at a minimum of two locations (one counter per direction). Machine counts will also be taken on at least some of the intersection cross street approaches for a 24-hour period. Manual turning movement counts will be taken at each of the seven intersections to be included in the system during each of the time periods for which a timing program will be developed.

   Any necessary training of Village personnel and all reduction of the data will be included in this work item.

3. **Technology Research** - This will include research into the following issues: loop detection vs. video detection; LED signals; and "pedestrian-friendly" crossing signals. A technical memorandum will be prepared which summarizes the results of the research, provides cost comparisons between new vs. old technology and lists the advantages and disadvantages of each. A meeting will be held with Village staff to discuss the memo and to aid the Village in reaching a decision on which technology should be utilized.

4. **Evaluate Operation of BNSF Railroad Crossing** - This work item will include evaluating the need for providing railroad preemption at the Maple Avenue and/or 2nd Street signals. Should preemption not be required, an investigation will be made into developing alternative

methods of communicating with each of the signal controllers to allow a special program to be called during long "gate-down" times in order to improve traffic flow through the area.

5. **Pre-Final Plans, Specifications and Estimate** - This will include the preparation of pre-final plans which will incorporate the technology and operational recommendations from Items 3 and 4. The pre-final plans will consist of the following sheets:

   - Title Sheet/Index of Sheets/State Standards
   - General Notes
   - Summary of Quantities
   - For Lincoln Avenue, Prairie Avenue, 2nd Street, Hill Street and 59th Street:
     - Geometric Plan and Signal Layout Sheet
     - Cable Plan, Sequence of Operation and Schedule of Quantities Sheet(s)
   - For Maple Avenue and 55th Street:
     - Cable Plan, Sequence of Operation and Schedule of Quantities Sheet(s)
   - System Interconnect Plan Sheets
   - System Interconnect Schematic
   - Special Detail Sheet(s) (if needed)
   - District 1 Standard Traffic Signal Design Details

   A submittal of plans to the Village only will be made at the 50% complete stage. We would propose to complete a "plan-in-hand" field check with Village staff as a plan review. Revisions to the plans will then be made based on comments received. Preparation of contract specifications and quantities along with an Engineer's Estimate of Cost will also be completed. Finally, these items will be consolidated into contract bid documents.

6. **Signal System Plan Review and Revisions** - This item consists of the submittal of pre-final plans to IDOT, the Village, the BNSF RR and utility companies for review. Review meetings will then be held, as necessary, and the plans, specifications, cost estimate and contract documents will be revised accordingly. Final plans and specifications will be submitted to IDOT and the Village for approval. Once approval is received, final copies of the documents will be transmitted to IDOT for a contract letting. The Village will also be provided with one original set of printed specifications and plans in addition to electronic copies of each in the format required by the Village.

7. **Development of System Timing Plans** - This task will include utilizing signal system analysis optimization software including SIGNAL 97, PASSER II-90, TRANSYT-7F and TS/PPDraft in order to develop recommended timing programs for the Fairview Avenue system. The goal of this optimization will be to promote traffic movement along Fairview Avenue while also minimizing cross street and turning movement delay.

   The observed traffic volumes, existing geometrics and lane usage will be entered into TED, a data editor that is a part of the TEAPAC traffic analysis package. PASSER II-90, a

progression optimization program, will be used to determine the optimal cycle length for minimum system delay during each of the periods considered. TRANSYT-7F will then be used to examine queue lengths and turning movement operation throughout the system. SIGNAL 97, a capacity analysis and timing optimization program, will also be used to ensure that intersection operation after system timing optimization provides an acceptable level of service at the intersection. TS/PPDraft, a time-space diagram generator, will be used to fine-tune the system offsets.

Time-of-day plans will be prepared for system start-up. Four plans will be developed to serve the traffic volumes observed during the peak periods for which manual counts were conducted. Other controller settings for each intersection will also be reviewed and adjusted. Actuated parameters will be optimized for periods when the traffic signal controllers are running free. These parameters consist of minimum and maximum green, max initial, seconds per actuation, time before reduction, time to reduce and other settings. Other parameters will be set according to Village, State or national standards or guidelines; these will include pedestrian WALK and clearance intervals and the yellow and all-red clearance intervals. The proposed traffic signal timings for the intersection of 55th Street with Fairview Avenue will be submitted to DuPage County Division of Transportation for review and concurrence.

ARIES software will be used by the Village of Downers Grove to manage the Fairview Avenue traffic signal system. Following construction of the system, Civiltech will assist the Village in setting up the program for proper monitoring of the system.

Please note that Timing Implementation will be included with the Phase III Engineering services since it will not occur until construction is completed.