City of Milwaukee

Department of Public Works
Infrastructure Services Division

Ghassan Korban
Commissioner of Public Works

Preston Cole
Director of Operations

Jeffrey S. Polenske
City Engineer

February 28, 2014

To the Capital Improvements Committee

Subject: Questions to DPW Staff from the February 12, 2014 Capital Improvement Committee Meeting

Dear Committee Members:

During the course of the Condition Reports presented relative to the Traffic Control and Street Lighting Capital Improvement Program, several questions were asked of Department of Public Works staff requiring additional research and data compilation. The responses below will address the questions raised:

- **Alderman Bauman suggested having a communication file at Public Works on the subject of alternate energy sources for street lighting.**

  A communication file on the potential to produce or purchase electrical energy from sources other than WE Energies for traffic signals, street lights and other Municipal facilities was introduced and subsequently heard at the February 19, 2014 meeting of the Public Works Committee

- **The Committee requested a breakdown of labor and material costs for the $545,000 cost for failed double harp street light arms on Wisconsin Avenue.**

  The actual cost breakdown for this work is as follows:

Labor	$50,176.34
Materials	$493,818.89
Total Cost	$543,995.23

- **A request was made by the Committee to provide the cost of uncollectable Street Lighting and Traffic Sign and Signal knock downs in 2013 and the collectable portion of these equipment knockdowns including the amount collected. This question was raised during the discussion of alternate funding sources for knockdown costs.**

  These costs are summarized as follows for 2013.

  Street Lighting

Total Knockdowns Determined to be Uncollectable (as of February 28, 2014)	$ 435,663.06
Pending Costs	$ 175,595.02
Revenue Received /Cost Reimbursed	$1,058,947.96
Total Knockdown Costs	$1,670, 206.04

Traffic Control	
Total Knockdowns Determined to be Uncollectable (as of February 28, 2014)	$203,609.93
Pending Costs	$ 92,809.03
Total Knockdown Costs	$296,418.96

We will include this cost summary in future presentations to the Committee.

- **A complete inventory of left turn signs for both off and on to Wisconsin Avenue and the legislative history for each installment was requested.**

  A summary of left turn restrictions on Wisconsin Avenue from Water Street to 12th Street, including the location, orientation, time in effect, and legislative file authorizing installation are provided in Attachment 1. Included is a drawing summarizing these locations and restrictions.

- **A breakdown of the costs for the traffic responsive traffic signal control system in South 27th, Forest Home Ave and Oklahoma Ave triangle for 22 intersections currently in the design stage was requested.**

  A cost estimate prepared in August, 2012 for the installation of the Traffic Responsive Signal System as part of a traffic signal system control improvement alternative analysis is attached and included as Attachment 2. The total estimated cost for the construction of this signal system was estimated to be $626,000, and is funded through the federal Congestion Mitigation/Air Quality (CMAQ) Program. More detailed cost estimates will be available as design work progresses.

We hope this information will be of assistance to you. If there are any questions, or if additional information is needed, please do not hesitate to contact us.

Very truly yours,

Jeffrey S. Polenske, P.E.
City Engineer

Ghassan Korban
Commissioner of Public Works

c: Mr. Patrick Hartmann, Finance and Planning Manager

JSP:WB: ns

Attachments

WATER & WIS -- EB & WB NLT, NUT 6AM-9AM & 3PM-6PM EX SAT & SUN **File #070475 Sept 2007**

NB & SB NLT & NUT **File #900445 Sept 1990**

PLANK & WIS - EB NLT 6AM-6PM (MISSING) **File #85-1255 May 1985**

WB NLT 6AM-6PM **File #980405 Aug 1998**

SB NLT & NUT **File #980405 Aug 1998**

2ND & WIS - EB NLT (Due to SB One-way - 2nd St)

WB NLT 6AM-9AM & 3PM-6PM EX SAT & SUN (WB MISSING) **File #85-1255 May 1985**

3RD & WIS - EB NLT, NUT 6AM-9AM & 3PM-6PM EX SAT & SUN **File #85-1255 May 1985**

4TH & WIS – EB NLT, NUT 6AM-9AM & 3PM-6PM EX SAT & SUN (MISSING) **File #85-1255 May 1985**

WB NLT, NUT 6AM-9AM & 3PM-6PM EX SAT & SUN **File #941088 Nov 1994**

5TH & WIS - WB NLT 6AM-9AM & 3PM-6PM EX SAT & SUN (MISSING) **File #891520 Jan 1990**

6TH & WIS - EB & WB NLT, NUT 6AM-9AM & 3PM-6PM EX SAT & SUN **File #85-1255 May 1985**

NB & SB NLT & NUT **File #85-1255 May 1985**

LOVELL & WIS - EB NLT 6AM-9AM & 3PM-6PM EX SAT & SUN

WB NLT, NUT

SB NLT (MISSING) **File #941645 Feb 1995**

8TH & WIS - EB & WB NLT, NUT 6AM-9AM & 3PM-6PM EX SAT & SUN

10TH & WIS WB NLT, NUT (Due to NB One-way -- 10th St)

11TH & WIS – EB NLT, NUT (Due to SB One-way – 11th St)

WB NRT (Due to SB One-way – 11th St)

12TH & WIS – EB & WB NUT

(NLT – NO LEFT TURN), (NRT – NO RIGHT TURN), (NUT – NO U-TURN)

N. 3 ST.

E. MASON

NLT
6-9am, 3-6pm
Ex S+S (Missing)

NLT NUT
6-9am, 3-6pm
Ex S+S
(ER Missing)

(Missing)
NLT
6am to 9am,
3pm to 6pm
Ex S+S

NLT,
NUT

NLT
6am to 6pm

NLT, NUT
6-9am, 3-6pm
Ex S+S

E. WISCONSIN

NLT, NUT

N. 4 ST.

NLT

NLT, NUT
6am-9am, 3-6pm
Ex S+S

NLT
6am to 6pm
(eastbound
missing)

N. PLANKINGTON

NLT, NUT
6-9am, 3-6pm
Ex S+S

E. MICHIGAN ST.

N. 5

W. EVERETT ST.

N. 2 ST.

N. WATER ST. (N.)

Attachment 1 (cont)

N. 12 ST.

W. WELLS

W. WISCONSIN

NLT

NRT

NLT+ NUT

NLT (Missing)

NLT+ NUT

NLT, NUT 6-9am, 3-6pm E+S+S

NLT, NUT 6-9am, 3-6pm E+S+S

NLT+NUT

NLT+ NUT

N. 10 HILL

W. MICHIGAN

N. JAMES LOVELL

N. 9

W. N. 8

N. 7

N. 6

N. 5

W. TORY

MCAULEY

W. CLYBOURN

Attachment 1 (cont)

August 2012

ESTIMATED PROJECT CONSTRUCTION COST ESTIMATE

Traffic Responsive Installation

This spreadsheet provides a summary of the construction costs to implement a traffic responsive system. Costs have been approximated based on previous traffic responsive deployments or City construction project. Unit Costs or Approximate Quantities.

ITEM	QUANTITY	UNIT	Cost Per Unit	AMOUNT
Project Administration				
Administrative costs	150	HOUR	$100.00	$15,000.00
Total Project Administration				**$15,000.00**
Right-Of-Way (ROW)	**1**	**LS**	**$0.00**	$0.00
Total ROW				**$0.00**
Construction/Materials				
Vehicle Detection (See Page 2)	LOOP DETECTOR			$139,800.00
334 Cabinet modification/installation	256	HOUR	$100.00	$25,600.00
2070 Controllers/170E Card Replacement	16	EA	$2,500.00	$40,000.00
Conflict Monitor for 2070 controllers	16	EA	$700.00	$11,200.00
Communication (See Page 3)				$179,900.00
43rd, Forest Home, Oklahoma Signal Work (See Page 4)				$33,200.00
Total Construction				$429,700.00
Other (Software, service contract, training)				
Responsive Software License and Installation	1	LS	$100,000.00	$100,000.00
Staff Training	128	HOUR	100	$ 12,800.00
Total Misc./Other				$112,800.00
CONSTRUCTION/MATERIAL/MISC. SUB TOTAL				**$542,500.00**
Project Contingency (10%)				**$54,250.00**
Construction Engineering (2.5%)				**$13,562.50**
ESTIMATED PROJECT TOTAL				**$626,000.00**

	Video Detection Costs				Inductive Loop Costs			
ITEM	QUANTITY	UNIT COST	AMOUNT		QUANTITY	UNIT COST	AMOUNT	
Video Unit/Loop	4	$ 7,000	$ 28,000		32	$ 400	$ 12,800	
Processor	4	$ 1,000	$ 4,000					
Cabeling	500	$ 3	$ 1,500	#	500	$ 3	$ 1,500	#
Detector Rack	1	$ 500	$ 500		4	$ 250	$ 1,000	
Bore conduit (Material and Install)	300	$ 20	$ 6,000	#	300	$ 20	$ 6,000	#
Loop conduit (Material and Install)					200	$ 10	$ 2,000	#
Total Cost (per intersectior			**$ 40,000**		**Total Cost (per intersectior**		**$ 23,300**	

Number of Intersections 6 times the lesser of the two installation methods

Value to be inserted into Total Cost Tab **$ 139,800.00** *

Anticipated that 1/3 the loops would be installed compared to Adaptive

* This value can be over written if one technology is deemed to be more reliable than the other.

Eliminated if wireless system is utilized.

The communcications estimate is divided into two elements; networking and local connection. The networking element includes all work associated with the communications element of the project to connect a server at the Municipal Building to the Police Station at 27th and KK Parkway (or other designated building) then connecting to existing twisted pair cables. The costs for the local connection are for the work associated with connecting from a communications access point near the intersection to the signal controller.

System Network Costs

ITEM	QUANTITY	UNIT	UNIT COST	AMOUNT	Information
Cable Testing	80	HOUR	100	$ 8,000	
Central Communications Server	1	L. SUM		$ 2,500	
Integration	1	L. SUM		$ 2,500	
Electronics/Cabinet at Police Hub	1	L. SUM		$ 8,000	
				$ 21,000	

Local Connection Costs (PER INTERSECTION)

ITEM	QUANTITY	UNIT	UNIT COST	AMOUNT	Information
Modems/Ethernet Switches	1	EACH	$600	$ 600	
Wireless Radio	1	EACH	$600	$ 600	
Radio Installation	4	HOUR	$100	$ 400	
Conduit/Cable to antenna (materials)	150	FOOT	$6	$ 900	
Conduit installation	16	HOUR	$100	$ 1,600	Signal Shop to provide an estimated per intersection estimate for connecting to Communications System
Cable installation	8	HOUR	$100	$ 800	
				$ -	
				$ 4,900	per intersection X 16 intersectons

Communciations Total	**$ 99,400**

Attachment 2 (cont)

Aug-12

Convert to a single controller

	Unit Cost	Quantity	
Controller/Cabinet Removal	$ 1,500	3	$ 4,500
Conduit Install	$ 10	1000	$ 10,000
Cabeling	$ 3	2400	$ 7,200
334 Cabinet Installation	$3,500.00	1	$ 3,500
Programming	$ 1,000	1	$ 1,000
Repair and Restore	$ 7,000		$ 7,000
			$ 33,200

Note: Controller and detector racks paid for separately

Attachment 2 (cont)