



MEMORANDUM

TO: Barbara Vinton
Finance Division

DATE: June 28, 2005

FROM: Ron Bailey
Austin District

SUBJECT: Advanced Funding Agreement,
CSJ: 0914-33-036, Etc.
Project No: 0914-33-036, Etc.

Please find attached a copy of the fully executed Advanced Funding Agreement for the above Project. Also attached is an email within which this copy was requested by your office.

The funding for the above Project is contained within two CSJ's. They are 0914-33-036 for all On-system work and 0914-33-037 for all off-system work. The attached Agreement contains an estimate for work to be performed within each.

Our office worked with the Contract Services Section, OGC, in creating and executing this agreement. Therefore, I will be happy to try to answer any questions you may have. I can be contacted either by phone at 832-7156 or by email at rbailey@dot.state.tx.us.

Ron Bailey

cc: Pat Crews-Weight, P.E. District Design

From: Pat Crews-Weight
To: Ron Bailey
Date: 6/28/2005 4:36:43 PM
Subject: Fwd: July Letting

Please send a copy of your agreement for Hays County 0914-33-037 to Barbara Vinton.of FIN. Thanks.

>>> Barbara Vinton 6/28/2005 4:28 PM >>>

Hello Pat,

Could you please have someone in your office send the AFAs for the projects below?

CSJ 0114-04-048
Project No. NH 2005(660)

CSJ 0914-33-037
Project No. CC 917-33-37

We appreciate any help your staff can give us on this matter.

Barbara Vinton
Accounting Management
Finance Division
150 E. Riverside Drive
Austin, TX 78704
Office: (512) 486-5398
Fax: (512) 486-5390
E-mail: bvinton@dot.state.tx.us



MEMORANDUM

TO: Pat Crews-Weight, P.E.
District Design

FROM: Ron Bailey
Transportation Operations Office

SUBJECT: San Marcos Agreement,
San Marcos Signal Upgrade Project

DATE: May 23, 2005

CSJ: 0914-33-036, Etc.
Roadway: Various
County: Hays

Please find attached a copy of the fully executed agreement, with City Resolution, as entered into between TxDOT and the City of San Marcos on May 20, 2005. One original set of documents were retained by the Contract Services Section, with the second original set of documents being provided to the City of San Marcos.

This agreement requires the City to provide funds to reimburse the State for those costs associated with the construction of the City's portion of this project. Therefore, on May 19, the City presented a check to TxDOT for the amount of \$1,114,649.46. This check was handed over to your office on Friday, May 20, 2005, so that it would be deposited into the two CSJ's found within this project.

During the construction phase of this project, forty-five (45) traffic signals will be upgraded into an interconnected traffic control system. Of these forty-five (45) traffic signals, five (5) are located off-system and belong to the City of San Marcos. Per this agreement, maintenance and operational control of the forty (40) TxDOT traffic signals will be turned over to the City of San Marcos once construction has been completed.

This Project is currently set up for a July letting. Our office will be charged with overseeing and inspecting the day to day activities of this project. It has been set up with a five calendar day format. Thus, work is anticipated to last approximately eighteen (18) months, with work beginning around the later part of September.

Ms. Pat Crews-Weight, P.E.

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May 23, 2005

If you, or any of the other recipients of this memo, have any questions regarding this agreement or the Traffic Signal Upgrade project itself, please contact me either by phone (832-7156) or by GroupWise. I will be happy to respond to any questions that you may have.

Thank you!
Row Dailor

CC: Terri Wilhelm, Office of the District Engineer
James Bartsch, District Accounting
Danny Stabeno, District Construction
Lowell Choate, District Maintenance
Chris Hatla, Planning and Development
Robert Guydosh, P.E., District Traffic Signal Shop
Don Nyland, P.E., South Travis Area Office
Jody Shaw, Transportation Planning and Programming Division



MEMORANDUM

May 23, 2005

TO: Ron Bailey
Transportation Operations Office
Austin District

FROM: Melissa Saucedo
Office of General Counsel - Contract Services Section

SUBJECT: Local Transportation Project Advance Funding Agreement
CSS05 1203 – CSJ – 0914-33-036

Attached is:

- One fully executed original ~~or amendment~~ contract.
- Fully executed copy of original or amendment contract(s) []
- Other:

Please keep a copy of the fully executed counterpart in your district/division file of record. Return at least one original counterpart to each of the outside entities.

If you have any questions, please contact Melissa Saucedo at (512) 936-1976.

Thank You

STATE OF TEXAS §

COUNTY OF TRAVIS §

**LOCAL PROJECT ADVANCE FUNDING AGREEMENT
FOR THE UPGRADING OF TRAFFIC SIGNALS
WITHIN A MUNICIPALITY**

THIS Local Project Advance Funding Agreement (LPAFA) is made by and between the State of Texas, acting by and through the Texas Department of Transportation, hereinafter called the "State", and the City of San Marcos, Hays County, acting by and through its duly authorized officials, hereinafter called the "City."

WITNESSETH

WHEREAS, a Master Advance Funding Agreement (MAFA) between the City and the State has been adopted and states the general terms and conditions for transportation projects developed through this LPAFA; and,

WHEREAS, the Governing Body of the City has approved entering into this LPAFA by Resolution or Ordinance - Attachment A, which is attached hereto and made a part hereof, for development of the specific project (the Project) the project funding of which is identified in the Project Budget Estimate and Source of Funds - Attachment B which is attached hereto and made a part hereof; and,

WHEREAS, the Texas Transportation Commission passed Minute Order 108812 that provides for the development of, and funding for, the Project described herein.

NOW, THEREFORE, in consideration of the premises and of the mutual covenants and agreements of the parties hereto, to be by them respectively kept and performed as hereinafter set forth, it is agreed as follows:

AGREEMENT

1. The period of this LPAFA is as stated in the MAFA, without exception.
2. Prior to the completion of construction and the assumption of maintenance and operations by the City of the traffic signals and traffic signal control system installed within this project, termination of this LPAFA shall be under the conditions as stated in the MAFA. Upon assumption of said maintenance and operations by the City, this agreement may be terminated by one of the following conditions:
 - ◆ By mutual agreement and consent of both parties.
 - ◆ By the State, upon thirty (30) days written notice to the City for failure of the City to provided adequate maintenance and operation services for those traffic signals which the City has agreed to maintain and operate.
 - ◆ By the State, upon sixty (60) days written notice to the City that the State will assume operation and maintenance at the end of the one (1) year period upon completion of the Project.
 - ◆ By the City, upon one hundred twenty (120) days written notice to the State.

In the event this Agreement is terminated by any of the above conditions, the maintenance and operation of the traffic signals and traffic signal control system shall become the responsibility of the State. Any State owned equipment being held by the City shall be promptly returned within 30 days to the State upon termination of the Agreement.

3. Amendments to this LPAFA shall be made as described in the MAFA, without exception.

4. Scope of Work

The scope of work for this LPAFA is described as the upgrading of forty-five (45) independently operating traffic signals and interconnecting them into a single, fully integrated traffic control system. Upon completion of construction, the City will assume maintenance and operational control over the traffic signals and the traffic control system installed within this Project.

- a. Intersection Locations: **(1)** All State-approved on-system intersections in the Project are identified in Attachments "C" and "D" - On State Highway System Intersections, which are attached hereto and made a part hereof; **(2)** All State-approved off-system intersections in the Project are identified in Attachment "E" - Off State Highway System Intersections, which is attached hereto and made a part hereof.
- b. Construction and Maintenance responsibilities for both the State and the City are delineated within this LPAFA.
- c. Directives in regards to reimbursement for tasks performed by the State and the City are delineated within this LPAFA.

5. Right of Way and Real Property shall be the responsibility of the City, as stated in the MAFA, without exception.

6. Adjustment of utilities will be provided by the City, as required and as stated in the MAFA without exception.

7. Environmental Assessment and Mitigation will be carried out as stated in the MAFA, without exception.

8. Compliance with Texas Accessibility Standards and ADA will be as stated in the MAFA, without exception.

9. Architectural and Engineering Services will be provided by the State, as stated in the MAFA, without exception. The State is responsible for performance of any required architectural or preliminary engineering work. The City may review and comment on the work, as required to accomplish the public purposes of the City. The State will cooperate with the City in accomplishing these local public purposes to the degree permitted by State and Federal law.

10. Construction Responsibilities

- a. The construction of the modification of the traffic signals will be performed under State Project 0914-33-036, Etc.

- b. The State shall supervise and inspect all work performed by the Contractor and provide the necessary engineering, inspection, and testing services required to ensure that the construction of the project is accomplished in accordance with the approved plans, specifications, and estimates (PS&E).
 - c. For those traffic signals off of the State Highway System, as indicated on Exhibit E, the City shall be responsible for providing an inspector who shall provide supervised access to the City's traffic signal controllers and perform any needed modifications to bring the signal back up to full and normal operation.
 - d. During construction, the State will retain the responsibility of maintaining and operating those signals indicated on Exhibits C and D. The City will retain the responsibility of maintaining and operating those traffic signals located off of the State Highway System, as indicated on Exhibit E.
 - e. The City will make provisions for the State and Contractor personnel to have supervised access to City facilities into which traffic signal components are installed so that installation, inspection, and maintenance of said work/equipment may be accomplished.
11. Maintenance Responsibilities
- a. Upon completion of the project, the City will provide trained staff to take over the maintenance and operations of those traffic signals upgraded within this Project, as well as the integrated traffic control system created by this Project. All repairs should be prioritized based upon public safety and made as soon as possible.
 - b. The City shall be the responsible authority to make changes in the design and operation of the highway traffic signal(s) as it may deem necessary and advisable to promote the safe, convenient, and orderly movement of traffic.
 - c. Those traffic signals, indicated in Attachment C, will be maintained on a reimbursed basis at a flat rate shown on Attachment C for parts and labor. Attachment C also indicates the means by which the City may request reimbursement for maintenance of these signals.
 - d. Those traffic signals indicated on Attachments D and E will be maintained on a non-reimbursed basis.
 - e. The State will provide assistance with maintenance of the traffic signals indicated in Attachments C and D for a period of six (6) months upon completion of the Project. Such assistance will consist of technical advice, parts, and labor with the goal of getting the City forces to a state of being able to perform said maintenance apart from State assistance. The City will not be responsible for reimbursing the State for those costs associated with the State performing such assistance. During this six (6) month time period, the City will make provisions for providing supervised access of needed City facilities by State personnel so that the required assistance may be provided. It should be noted that such access may be needed during those hours that the facility is not normally operated.
 - f. The City shall maintain and operate the traffic signals in accordance with the minimum requirements specified in Attachment G. The City shall maintain at least one log of all emergency calls and all routine maintenance. Routine maintenance will be performed by the City, as specified in Attachment G.
 - g. The City shall not sublet or transfer any portion of the work under this Agreement, unless specifically approved in writing by the State. All subcontracts shall include the provisions required within this Agreement and shall be approved in writing by the State.

- h. The State shall be responsible for those power costs associated with those signals indicated on Attachment C. The City shall be responsible for those power costs associated with those traffic signals indicated on Attachments D and E.
- i. Knockdowns or damage resulting from an accident or an act of God and which require emergency replacement of major equipment shall not be included in the (monthly/quarterly/annual) payments. For eligibility of payment for emergency replacement of major equipment, the actual cost shall be submitted to the State for review and determination of reimbursement eligibility.
- j. The State will continue to own the traffic signal equipment at those traffic signals indicated on Attachments C and D. If any traffic signal equipment needs to be upgraded or otherwise modified by the State, the State shall give notice of such actions to the City in a timely fashion so as not to unnecessarily disrupt the operations and maintenance activities of the City.
- k. All costs of reconstruction or upgrading of equipment under Article 11(j) above will be paid for by the State. Any other upgrades or modifications performed by the City shall not be reimbursed, unless such reimbursement is approved by the State prior to the upgrades or modifications being performed.
- l. The addition and deletion of traffic signals shall be made by mutual written amendment executed by both the City and the State
- m. If additional signals are added on the State Highway System and are not to become a part of the integrated traffic control system created by this Project, the State shall construct such equipment. All costs associated with the installation of these signals shall be paid for by the State.
- n. If additional signals are added on the State Highway System and are to become a part of the integrated traffic control system created by this Project, the State shall construct such equipment with these additional traffic signals added to this Agreement by a written amendment. The costs associated with the installation of these traffic signals shall be paid for by the State, with the exception of those costs for the signal components necessary to interconnect the signal with the integrated traffic control system created by this Project. These additional costs shall be paid for by the City.
- o. If additional signals are added off of the State Highway System, but within the City, and are to become a part of this same integrated traffic control system created by this Project, the City will be responsible for the construction of such equipment with these signals added to the Agreement by amendment. Costs associated with the installation of these additional signals shall be paid for by the City.
- p. Unless otherwise directed by the State, the City will return any and all parts of said highway traffic signal installations indicated on Attachments C and D to the State should these parts be removed by the City for any reason other than for installation on a State or Federal numbered highway route at a location approved by the State.

12. Local Project Sources and Uses of Funds

- a. Project Cost Estimate: A Project Cost Estimate is provided in Attachment F.
- b. A Source of Funds estimate is also provided in Attachment B. Attachment B shows the dollar amount to be contributed to the Project by federal, state, and local sources.
- c. The City is responsible for all non-federal and non-state funding, including all project cost overruns relative to the percentages listed within Attachment B, unless provided for through amendment of this agreement.

- d. After execution of this LPAFA, the City will remit a check or warrant made payable to the "Texas Department of Transportation", in the amount specified in Attachment B as the local contribution for Administrative Costs.
 - e. Sixty (60) days prior to the date set for receipt of the construction bids, the City shall remit its remaining financial share of the State's estimated cost of this project.
 - f. In the event the State determines that additional funding is required by the City at any time during the development of the Project, the State will notify the City in writing. The City will make payment to the State within thirty (30) days from receipt of the State's written notification.
 - g. Upon completion of the Project, the State will perform an audit of the Project costs. Any funds due to the City, the State, or the Federal Government will be promptly paid by the owing party.
 - h. In the event that the Project is not completed, the State may seek reimbursement from the City of its share of the expended funds. The City will remit the required funds to the State within sixty (60) days from receipt of the State's notification.
 - i. The City will not be responsible for any indirect costs incurred by the State in administering the Project, unless this agreement is terminated at the request of the City prior to the completion of the Project.
 - j. If any existing or future local ordinances, including, but not limited to, outdoor advertising billboards or storm water drainage facility requirements, are more restrictive than State or Federal Regulations, or any other locally proposed changes, including, but not limited to plats or replats, result in increased costs, then, any increased costs associated with the ordinances or changes will be paid by the City. The cost of providing such right of way acquired by the State shall mean the total expenses in acquiring the property interests either through negotiations or eminent domain proceedings, including expenses related to relocation, removal, or adjustment of eligible utilities.
 - k. The state auditor may conduct an audit or investigation of any entity receiving funds from the state directly under the contract or indirectly through a subcontract under the contract. Acceptance of funds directly under the contract or indirectly through a subcontract under this contract acts as acceptance of the authority of the state auditor, under the direction of the legislative audit committee, to conduct an audit or investigation in connection with those funds.
13. Document and Information Exchange. The City agrees to electronically deliver to the State all general notes, specifications, contract provision requirements, and related documentation in a Microsoft® Word or similar document. If requested by the State, the City will use the State's document template. The City shall also provide a detailed construction time estimate including types of activities and month in the format required by the State. This requirement applies whether the City creates the documents with its own forces or by hiring a consultant or professional provider.
14. Incorporation of MAFA Provisions. This LPAFA incorporates all of the governing provisions of the MAFA in effect on the date of final execution of this LPAFA, unless such MAFA provision is specifically excepted herein.

15. As a modification to the MAFA, all notices to either party by the other required under this agreement shall be delivered personally or sent by certified or U.S. mail, postage prepaid or sent by electronic mail, (electronic mail being permitted to the extent permitted by law but only after written consent of the parties), addressed to such party at the following addresses:

State:

District Engineer
Texas Department of Transportation
Austin District
P.O. Box 15426
Austin, Texas 78761-5426

City of San Marcos:

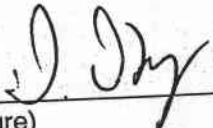
Mayor, City of San Marcos
630 E. Hopkins St.
San Marcos, Texas 78666

All notices shall be deemed given on the date so delivered or so deposited in the mail, unless otherwise provided herein. Either party hereto may change the above address by sending written notice of such change to the other party. Either party may request in writing that such notices shall be delivered personally or by certified U.S. Mail and such request shall be honored and carried out by the other party.

16. Signatory Warranty. The signatories to this LPAFA warrant that each has the authority to enter into this LPAFA on behalf of the party represented.

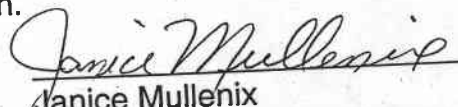
IN TESTIMONY HEREOF, the parties hereto have caused these presents to be executed in duplicate counterparts.

THE CITY

By: 
(Signature)
Name: DAN O'LEARY
(Print/Type)
Title: CITY MANAGER
(Print/Type)
Date: 5/12/05

THE STATE OF TEXAS

Executed for the Executive Director and approved for the Texas Transportation Commission for the purpose and effect of activating and/or carrying out the orders, established policies or work programs heretofore approved and authorized by the Texas Transportation Commission.

By: 
Janice Mullenix
Director of Contract Services Section
Office of General Counsel
Texas Department of Transportation
Date: May 20, 2005

CSJ: 0914-33-036, Etc.
Traffic Signal Upgrade
City of San Marcos, Hays Co.

ATTACHMENT A

**Resolution/Ordinance of The City
Approving This LPAFA**

RESOLUTION 2005- _____ R

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF SAN MARCOS, TEXAS, APPROVING AN ADVANCE FUNDING AGREEMENT BETWEEN THE CITY AND THE STATE OF TEXAS ACTING THROUGH THE TEXAS DEPARTMENT OF TRANSPORTATION FOR THE TRAFFIC SIGNALS UPGRADE PROJECT; AUTHORIZING THE CITY MANAGER TO EXECUTE THIS AGREEMENT ON BEHALF OF THE CITY; AND DECLARING AN EFFECTIVE DATE.

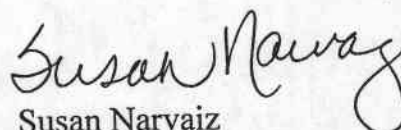
BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF SAN MARCOS, TEXAS:

PART 1. The attached Advance Funding Agreement for the Traffic Signals Upgrade Project between the City of San Marcos and the State of Texas acting through the Texas Department of Transportation (TxDOT) is approved.


PART 2. The City Manager, Dan O'Leary, is authorized to execute the agreement on behalf of the City.

PART 3. This Resolution shall be in full force and effect immediately from and after its passage.

ADOPTED on May 17, 2005.


Susan Narvaiz
Mayor

Attest:


Janis K. Womack
City Clerk

ATTACHMENT B

PROJECT BUDGET ESTIMATE AND SOURCE OF FUNDS

ON AND OFF SYSTEM PROJECT COSTS

CSJ 0914-33-036

The Local Government's participation is 50% of those costs involving work performed along On-System Roadways. (See Sheets 1 and 2 of Attachment F for breakdown of Total.) The State will be responsible for the remaining 50%.

50% of Estimated Bid Items and State Provided Materials	\$ 607,022.95
Engineering and Contingencies (11.5%)	\$ 69,807.64
Subtotal	\$ 676,830.59
Administration Costs (10%)	\$ 67,683.06
Estimated Cost of On-System Work	\$ 744,513.65

CSJ 0914-33-037

The Local Government's participation is 100% of those costs involving work performed on Off-System Locations. (See Sheets 3 and 4 of Attachment F for breakdown of Total.)

100% of Estimated Bid Items and State Provided Materials	\$ 301,782.15
Engineering and Contingencies (11.5%)	\$ 34,704.95
Subtotal	\$ 336,487.10
Administration Costs (10%)	\$ 33,648.71
Estimated Cost of Off-System Work	\$ 370,135.81

Local Government's Participation \$1,114,649.46

Engineering and Contingencies charges will be based on actual charges

Total Amount Due from Local Government upon execution of this Agreement shall be \$101,331.77. The remainder (\$1,013,317.69) will be due a minimum of sixty (60) days prior to the date set for receipt of the construction bids.

There are no Federal Funds contained within the Funding to be provided within this Project.

ATTACHMENT C

"On State Highway System Intersections"

Traffic Signal Maintenance With Reimbursement

The City shall be responsible for maintenance and operation of the following signals on a reimbursed basis:

IH 35 at LP 82/Guadalupe
IH 35 at LP 82/Aquarena Springs
IH 35 at RM 12/SH 80
IH 35 at Centerpoint Rd

The City shall be reimbursed at the following rate:

Interchange Signals shall be reimbursed at \$1,729.08 per intersection per year.

Calculations: 4 Locations x \$1,729.08 = \$6,916.32

(Billed as \$144.09 per location, per month.)

Upon completion of the project and assumption of maintenance by the City, the State agrees to reimburse the City at the flat rate shown above.

The maximum amount payable under this Agreement is \$6,916.32:

The City shall submit the State's Form 132, Billing Statement, or other type of invoice acceptable to the State on a (monthly/quarterly/annual) basis. An original Form 132 or acceptable invoice and four copies shall be submitted to the following address:
Texas Department of Transportation P.O. Box 15426 Austin, TX 78761-15426

The City shall maintain a system of records necessary to support and establish the eligibility of all claims of payment under the terms of this agreement. These records may be reviewed at any time to substantiate the payment by the State and/or determine the need for an adjustment in the amount paid by the State.

The State shall make payment to the City within 30 days from receipt of the City's request for payment, provided that the request is properly prepared.

The City and the State may renegotiate the rates established by this Agreement provided the City provides documentation that substantiates the increased costs. Such renegotiation may be accomplished through written and signed letter of acceptance.

ATTACHMENT D

“On State Highway System Intersections”

Traffic Signal Maintenance Without Reimbursement

Upon completion of construction, the City shall be responsible for maintenance and operation of the following traffic signals without reimbursement from the State: (36 Total)

LP 82 (University Dr) at Guadalupe
LP 82 (University Dr) at LBJ
LP 82 (University Dr) at Edward Gary
LP 82 (University Dr) at CM Allen Pkwy
LP 82 (Guadalupe) at Hutchison
LP 82 (LBJ) at Hutchison
LP 82 (Guadalupe) at Hopkins St
LP 82 (LBJ) at E Hopkins St
LP 82 (Guadalupe) at San Antonio
LP 82 (LBJ) at San Antonio
LP 82 (Guadalupe) at MLK Blvd
LP 82 (LBJ) at Cheatham St
LP 82 (Guadalupe) at Roosevelt St
LP 82 (University) at Pedestrian Crosswalk
LP 82 (University) at Sessom Dr
LP 82 (Aquarena Springs) at Bobcat Dr
LP 82 (Aquarena Springs) at Post Rd
LP 82 (Aquarena Springs) at Thorpe Ln
SH 80 at Clarewood Dr
SH 80 at River Rd
SH 123 at Broadway
SH 123 at Leah/De Zavala
SH 123 at Staples Rd
RM 12 at FM 2439
RM 12 (Moore St) at Hutchison
RM 12 (E Hopkins) at Bobcat Dr
RM 12 (Hopkins) at Cheatham
RM 12 (W Hopkins) at Comanche St
RM 12 (E Hopkins) at CM Allen Parkway
RM 12 (E Hopkins) at Edward Gary
RM 12 (E Hopkins) at Thorpe Ln
RM 12 (Moore) at Craddock
RM 12 (Moore) at Holland
FM 2439 (Hopkins) at Bishop
FM 2439 (Hunter) at Wonderworld
FM 2439 (Hunter) at Stagecoach

ATTACHMENT E

“Off State Highway System Intersections”

The following signals, also upgraded within this project, are off of the State Highway System and are therefore to be maintained by the City both during and after construction with no reimbursement being provided by the State for said maintenance.

Sessom at Peques
Sessom at LBJ
Sessom at Tomas Rivera
Thorpe at Robbie
Post at Uhland*

*The upgrade of the Post and Uhland signal will be performed only if railroad preemption is existing at this signal during the construction phase of this project within which the remaining forty-four (44) signals are to be upgraded.

Attachment F

CSJ: 0914-33-036, Etc.
Traffic Signal Upgrade
City of San Marcos, Hays Co.

Cost Estimate On-System Traffic Signals CSJ: 0914-33-036

ITEM NO.	DESCRIPTION	UNIT	UNIT COST	ESTIMATED QUANTITIES	SUBTOTAL COSTS
0104-0509	REMOV CONC (SDWLK)	SY	\$ 10.00	166.20	\$ 1,662.00
0500-0501	MOBILIZATION	LS	\$ 108,000.00	0.78	\$ 84,240.00
0420-0503	CL A CONC (MISC)	CY	\$ 400.00	5.00	\$ 2,000.00
0502-0501	BARRICADES, SIGNS AND TRAF HANDLE	MO	\$ 3,000.00	12.00	\$ 36,000.00
0529-0511	CONC CURB AND GUTTER (6")	LF	\$ 15.00	165.00	\$ 2,475.00
0531-0507	CONCRETE SIDEWALK (4")	SY	\$ 28.00	9.13	\$ 255.64
0618-0505	CONDUIT (RM) (2")	LF	\$ 13.00	275.00	\$ 3,575.00
0618-0511	CONDUIT (PVC) (SCHD 40) (2")	LF	\$ 4.00	1,176.00	\$ 4,704.00
0618-0513	CONDUIT (PVC) (SCHD 40) (3")	LF	\$ 5.00	412.00	\$ 2,060.00
0618-0532	CONDUIT (PVC) (SCHD 40) (2") BORE	LF	\$ 18.00	1,480.00	\$ 26,640.00
0618-0534	CONDUIT (PVC) (SCHD 40) (3") BORE	LF	\$ 17.00	3,485.00	\$ 59,245.00
0618-0542	CONDUIT (PVC) (SCHD 40) (4") BORE	LF	\$ 18.00	225.00	\$ 4,050.00
0620-0503	ELEC CONDUCTOR (NO 8) BARE	LF	\$ 0.50	6,731.00	\$ 3,365.50
0620-0504	ELEC CONDUCTOR (NO 6) BARE	LF	\$ 0.70	1,573.00	\$ 1,101.10
0620-0509	ELEC CONDUCTOR (NO 8) INSULATED	LF	\$ 0.70	1,762.00	\$ 1,233.40
0620-0510	ELEC CONDUCTOR (NO 6) INSULATED	LF	\$ 1.00	3,364.00	\$ 3,364.00
0624-0501	GROUND BOX TY A (122311) W/ APRON	EA	\$ 500.00	28.00	\$ 14,000.00
0624-0503	GROUND BOX TY C (162911) W/ APRON	EA	\$ 600.00	24.00	\$ 14,400.00
0625-0501	ZINC-COAT STL WIRE STRAND (1/4 IN)	LF	\$ 1.15	2,587.00	\$ 2,975.05
0625-0502	ZINC-COAT STL WIRE STRAND (3/8 IN)	LF	\$ 1.45	3,177.00	\$ 4,606.65
0628-0698	ELEC SERV TY D (120/240) 060 (NS) GS (N) TP (O)	EA	\$ 2,400.00	1.00	\$ 2,400.00
0628-0715	ELEC SERV TY D (120/240) 060 (NS) GS (N) EX (O)	EA	\$ 1,800.00	9.00	\$ 16,200.00
0628-0910	ELEC SERV TY D (120/240) 100 (NS) AL (E) EX (O)	EA	\$ 2,700.00	5.00	\$ 13,500.00
0656-0510	FND FOR TRAF SIG (24 IN DRIL SHFT)	LF	\$ 120.00	45.60	\$ 5,472.00
0656-0511	FND FOR TRAF SIG (30 IN DRIL SHFT)	LF	\$ 130.00	79.10	\$ 10,283.00
0656-0512	FND FOR TRAF SIG (36 IN DRIL SHFT)	LF	\$ 165.00	92.40	\$ 15,246.00
0656-0532	TRAF SIG CNTRL FND	EA	\$ 1,284.00	4.00	\$ 5,136.00
0668-0567	PREFAB PAV MARK TY C (W) (12") (SLD)	LF	\$ 4.00	1,323.00	\$ 5,292.00
0668-0570	PREFAB PAV MARK TY C (W) (24") (SLD)	LF	\$ 7.00	657.00	\$ 4,599.00
0678-0518	PAV SURF PREP FOR MRKS (BLAST CLN) (12")	LF	\$ 0.50	1,323.00	\$ 661.50
0678-0520	PAV SURF PREP FOR MRKS (BLAST CLN) (24")	LF	\$ 0.75	657.00	\$ 492.75
0680-0502	INSTAL OF HWY TRAF SIG SYSTEM	EA	\$ 2,100.00	39.00	\$ 81,900.00
0682-0509	BACK PLATE (3 SEC) (12 IN)	EA	\$ 70.00	107.00	\$ 7,490.00
0682-0510	BACK PLATE (4 SEC) (12 IN)	EA	\$ 80.00	6.00	\$ 480.00
0682-0511	BACK PLATE (5 SEC) (12 IN)	EA	\$ 90.00	20.00	\$ 1,800.00
0682-0524	VEH SIG SEC (2 IND/1 SEC) (W/O LENS & REFL)	EA	\$ 140.00	433.00	\$ 60,620.00
0682-0525	PED SIG SEC (2 IND/1 SEC) W/O LENS & REFL	EA	\$ 220.00	80.00	\$ 17,600.00
0684-0505	TRAF SIG CBL (TY A) (5 CONDR) (12 AWG)	LF	\$ 1.70	5,586.00	\$ 9,496.20
0684-0507	TRAF SIG CBL (TY A) (5 CONDR) (12 AWG)	LF	\$ 2.00	2,754.00	\$ 5,508.00
0684-0520	TRAF SIG CBL (TY A) (5 CONDR) (12 AWG)	LF	\$ 3.00	4,206.00	\$ 12,618.00
0686-0508	TRAF SIG POLE ASM (STL) 1 ARM (20 FT)	EA	\$ 2,300.00	3.00	\$ 6,900.00
0686-0509	TRAF SIG POLE ASM (STL) 1 ARM (24 FT)	EA	\$ 2,500.00	2.00	\$ 5,000.00
0686-0510	TRAF SIG POLE ASM (STL) 1 ARM (28 FT)	EA	\$ 2,700.00	1.00	\$ 2,700.00
0686-0512	TRAF SIG POLE ASM (STL) 1 ARM (36 FT)	EA	\$ 3,500.00	3.00	\$ 10,500.00
0686-0513	TRAF SIG POLE ASM (STL) 1 ARM (40 FT)	EA	\$ 3,600.00	1.00	\$ 3,600.00
0686-0529	TRAF SIG POLE ASM (STL) 2 ARM (36-32 FT)	EA	\$ 5,000.00	1.00	\$ 5,000.00
0686-0530	TRAF SIG POLE ASM (STL) 2 ARM (36-36 FT)	EA	\$ 5,300.00	1.00	\$ 5,300.00
0686-0554	TRAF SIG POLE ASM (STL) 2 ARM 36-32 LUM	EA	\$ 5,300.00	1.00	\$ 5,300.00
0686-0566	TRAF SIG POLE ASM (STL) 1 ARM (20 FT) LUM	EA	\$ 3,110.00	1.00	\$ 3,110.00

Attachment F

CSJ: 0914-33-036, Etc.
Traffic Signal Upgrade
City of San Marcos, Hays Co.

Cost Estimate On-System Traffic Signals CSJ: 0914-33-036

ITEM NO.	DESCRIPTION	UNIT	UNIT COST	ESTIMATED QUANTITIES	SUBTOTAL COSTS
0686-0576	TRAF SIG POLE ASM (8' LUM ARM)	EA	\$ 325.00	5.00	\$ 1,625.00
0688-0501	PED DETECT (PUSH BTN)	EA	\$ 100.00	28.00	\$ 2,800.00
1201-0501	12 IN LED TRF SIGNAL LAMP (RED BALL)	EA	\$ 80.00	328.00	\$ 26,240.00
1201-0502	12 IN LED TRF SIGNAL LAMP (YELLOW BALL)	EA	\$ 90.00	328.00	\$ 29,520.00
1201-0503	12 IN LED TRF SIGNAL LAMP (GREEN BALL)	EA	\$ 150.00	328.00	\$ 49,200.00
1201-0504	12 IN LED TRF SIGNAL LAMP (YEL ARW)	EA	\$ 90.00	42.00	\$ 3,780.00
1201-0504	12 IN LED TRF SIGNAL LAMP (YEL ARW)	EA	\$ 130.00	54.00	\$ 7,020.00
1201-0505	12 IN LED TRF SIGNAL LAMP (GRN ARW)	EA	\$ 25.00	10.00	\$ 250.00
5012-0501	BKHOE WORK (EROSN CONT) (CL 1)	HR	\$ 25.00	10.00	\$ 250.00
5145-0504	SANDBAG BERMS/DAMS (6 IN)	LF	\$ 5.00	85.00	\$ 425.00
5249-0501	TEMP SEDMT CONT FENCE	LF	\$ 1.50	100.00	\$ 150.00
5249-0503	TEMP SEDMT CONT FENCE (REMOV)	LF	\$ 0.75	100.00	\$ 75.00
5866-0501	CURB RAMP AND LANDING (TY 1)	EA	\$ 930.00	8.00	\$ 7,440.00
5866-0506	CURB RAMP AND LANDING (TY 7)	EA	\$ 1,200.00	8.00	\$ 9,600.00
5866-0507	CURB RAMP AND LANDING (TY 8)	EA	\$ 1,200.00	2.00	\$ 2,400.00
5866-0520	CURB RAMP AND LANDING (TY 1) (MOD)	EA	\$ 1,250.00	2.00	\$ 2,500.00
5866-0501	CURB RAMP AND LANDING (TY 21)	EA	\$ 1,200.00	1.00	\$ 1,200.00
5788-0501	LANDSCAPE PAVERS	SF	\$ 4.20	78.00	\$ 327.60
6007-0501	RDWY LIGHT ON TRAF SGN POLE (250 WATT)	EA	\$ 500.00	7.00	\$ 3,500.00
6010-0501	SALVAGE TRAFFIC SIGNALS	EA	\$ 1,500.00	36.00	\$ 54,000.00
8230-0501	LED PED SIG LAMP (SYMB) (2 IND/1 SEC)	EA	\$ 290.00	151.00	\$ 43,790.00
8288-0502	ANTENNA (UNIDIRECTIONAL)	EA	\$ 200.00	42.00	\$ 8,400.00
8288-0503	ANTENNA (OMNIDIRECTIONAL)	EA	\$ 400.00	4.00	\$ 1,600.00
8288-0504	COAXIAL CABLE	LF	\$ 4.00	5,105.00	\$ 20,420.00
8524-0501	PEDESTAL POLE ASSEMBY	EA	\$ 350.00	8.00	\$ 2,800.00
8970-0505	VIVDS COMMUNICATION CABLE (COAXIAL)	LF	\$ 6.00	5,472.00	\$ 32,832.00
	PREP EXISTING CONDUIT	LF	\$ 1.50	5,683.00	\$ 8,494.50
	PREP EXISTING GROUND BOX	EA	\$ 60.00	100.00	\$ 6,000.00
	REPLACE EXISTING GROUND BOX LID	EA	\$ 80.00	25.00	\$ 2,000.00
TOTAL BID ITEMS					\$ 924,545.89

STATE PROVIDED EQUIPMENT		UNIT	UNIT COST	ESTIMATED QUANTITIES	SUBTOTAL COSTS
	TRAFFIC SIGNAL CONTROLLERS (GROUND MOUNT)	EA	\$ 6,100.00	18.00	\$ 109,800.00
	TRAFFIC SIGNAL CONTROLLERS (POLE MOUNT)	EA	\$ 5,500.00	9.00	\$ 49,500.00
	VIVDS CAMERA SYSTEMS	EA	\$ 6,400.00	11.00	\$ 70,400.00
	SPREAD SPECTRUM RADIOS	EA	\$ 1,300.00	46.00	\$ 59,800.00
TOTAL STATE PROVIDED MATERIALS					289,500.00

TOTAL BID ITEMS AND STATE PROVIDED MATERIALS (ON-SYSTEM)				1,214,045.89
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Attachment F

CSJ: 0914-33-036, Etc.
Traffic Signal Upgrade
City of San Marcos, Hays Co.

Cost Estimate Off-System Traffic Signals CSJ:0914-33-037

ITEM NO.	DESCRIPTION	UNIT	UNIT COST	ESTIMATED QUANTITIES	SUBTOTAL COSTS
0104-0509	REMOV CONC (SDWLK)	SY	\$ 10.00	21.00	\$ 210.00
0500-0501	MOBILIZATION	LS	\$ 108,000.00	0.22	\$ 23,760.00
0502-0501	BARRICADES, SIGNS AND TRAF HANDLE	MO	\$ 3,000.00	4.00	\$ 12,000.00
0618-0505	CONDUIT (RM) (2")	LF	\$ 13.00	30.00	\$ 390.00
0618-0511	CONDUIT (PVC) (SCHD 40) (2")	LF	\$ 4.00	55.00	\$ 220.00
0618-0513	CONDUIT (PVC) (SCHD 40) (3")	LF	\$ 5.00	405.00	\$ 2,025.00
0618-0532	CONDUIT (PVC) (SCHD 40) (2") BORE	LF	\$ 18.00	240.00	\$ 4,320.00
0618-0534	CONDUIT (PVC) (SCHD 40) (3") BORE	LF	\$ 17.00	945.00	\$ 16,065.00
0620-0503	ELEC CONDUCTOR (NO 8) BARE	LF	\$ 0.50	778.00	\$ 389.00
0620-0504	ELEC CONDUCTOR (NO 6) BARE	LF	\$ 0.70	290.00	\$ 203.00
0620-0509	ELEC CONDUCTOR (NO 8) INSULATED	LF	\$ 0.70	1,070.00	\$ 749.00
0620-0510	ELEC CONDUCTOR (NO 6) INSULATED	LF	\$ 1.00	580.00	\$ 580.00
0624-0501	GROUND BOX TY A (122311) W/ APRON	EA	\$ 500.00	7.00	\$ 3,500.00
0624-0503	GROUND BOX TY C (162911) W/ APRON	EA	\$ 600.00	10.00	\$ 6,000.00
0628-0715	ELEC SERV TY D (120/240) 060 (NS) GS (N) EX (O)	EA	\$ 1,800.00	1.00	\$ 1,800.00
0628-0910	ELEC SERV TY D (120/240) 100 (NS) AL (E) EX (O)	EA	\$ 2,700.00	2.00	\$ 5,400.00
0656-0510	FND FOR TRAF SIG (24 IN DRIL SHFT)	LF	\$ 120.00	11.40	\$ 1,368.00
0656-0511	FND FOR TRAF SIG (30 IN DRIL SHFT)	LF	\$ 130.00	57.20	\$ 7,436.00
0656-0512	FND FOR TRAF SIG (36 IN DRIL SHFT)	LF	\$ 165.00	26.40	\$ 4,356.00
0656-0532	TRAF SIG CNTRL FND	EA	\$ 1,284.00	2.00	\$ 2,568.00
0668-0567	PREFAB PAV MARK TY C (W) (12") (SLD)	LF	\$ 4.00	453.00	\$ 1,812.00
0668-0570	PREFAB PAV MARK TY C (W) (24") (SLD)	LF	\$ 7.00	159.00	\$ 1,113.00
0678-0518	PAV SURF PREP FOR MRKS (BLAST CLN) (12")	LF	\$ 0.50	453.00	\$ 226.50
0678-0520	PAV SURF PREP FOR MRKS (BLAST CLN) (24")	LF	\$ 0.75	159.00	\$ 119.25
0680-0502	INSTAL OF HWY TRAF SIG SYSTEM	EA	\$ 2,100.00	5.00	\$ 10,500.00
0682-0509	BACK PLATE (3 SEC) (12 IN)	EA	\$ 70.00	17.00	\$ 1,190.00
0682-0511	BACK PLATE (5 SEC) (12 IN)	EA	\$ 90.00	4.00	\$ 360.00
0682-0524	VEH SIG SEC (2 IND/1 SEC) (W/O LENS & REFL)	EA	\$ 140.00	71.00	\$ 9,940.00
0682-0525	PED SIG SEC (2 IND/1 SEC) W/O LENS & REFL	EA	\$ 220.00	10.00	\$ 2,200.00
0684-0505	TRAF SIG CBL (TY A) (5 CONDR) (12 AWG)	LF	\$ 1.70	667.00	\$ 1,133.90
0684-0507	TRAF SIG CBL (TY A) (5 CONDR) (12 AWG)	LF	\$ 2.00	406.00	\$ 812.00
0684-0520	TRAF SIG CBL (TY A) (5 CONDR) (12 AWG)	LF	\$ 3.00	730.00	\$ 2,190.00
0686-0508	TRAF SIG POLE ASM (STL) 1 ARM (20 FT)	EA	\$ 2,300.00	1.00	\$ 2,300.00
0686-0509	TRAF SIG POLE ASM (STL) 1 ARM (24 FT)	EA	\$ 2,500.00	1.00	\$ 2,500.00
0686-0512	TRAF SIG POLE ASM (STL) 1 ARM (36 FT)	EA	\$ 3,500.00	1.00	\$ 3,500.00
0686-0569	TRAF SIG POLE ASM (STL) 1 ARM (32 FT) LUM	EA	\$ 3,650.00	2.00	\$ 7,300.00
0686-0570	TRAF SIG POLE ASM (STL) 1 ARM (36 FT) LUM	EA	\$ 3,800.00	1.00	\$ 3,800.00
0688-0501	PED DETECT (PUSH BTN)	EA	\$ 100.00	4.00	\$ 400.00
1201-0501	12 IN LED TRF SIGNAL LAMP (RED BALL)	EA	\$ 80.00	40.00	\$ 3,200.00
1201-0502	12 IN LED TRF SIGNAL LAMP (YELLOW BALL)	EA	\$ 90.00	40.00	\$ 3,600.00
1201-0503	12 IN LED TRF SIGNAL LAMP (GREEN BALL)	EA	\$ 150.00	40.00	\$ 6,000.00
1201-0504	12 IN LED TRF SIGNAL LAMP (YEL ARW)	EA	\$ 90.00	8.00	\$ 720.00
1201-0505	12 IN LED TRF SIGNAL LAMP (GRN ARW)	EA	\$ 130.00	8.00	\$ 1,040.00
5012-0501	BKHOE WORK (EROSN CONT) (CL 1)	HR	\$ 25.00	10.00	\$ 250.00
5145-0504	SANDBAG BERMS/DAMS (6 IN)	LF	\$ 5.00	20.00	\$ 100.00
5249-0501	TEMP SEDMT CONT FENCE	LF	\$ 1.50	100.00	\$ 150.00
5249-0503	TEMP SEDMT CONT FENCE (REMOV)	LF	\$ 0.75	100.00	\$ 75.00
5866-0501	CURB RAMP AND LANDING (TY 1)	EA	\$ 930.00	1.00	\$ 930.00
5866-0504	CURB RAMP AND LANDING (TY 4)	EA	\$ 1,350.00	1.00	\$ 1,350.00
5866-0506	CURB RAMP AND LANDING (TY 7)	EA	\$ 1,200.00	1.00	\$ 1,200.00
5866-0507	CURB RAMP AND LANDING (TY 8)	EA	\$ 1,200.00	1.00	\$ 1,200.00

Attachment F

CSJ: 0914-33-036, Etc.
Traffic Signal Upgrade
City of San Marcos, Hays Co.

Cost Estimate Off-System Traffic Signals CSJ:0914-33-037

ITEM NO.	DESCRIPTION	UNIT	UNIT COST	ESTIMATED QUANTITIES	SUBTOTAL COSTS
6007-0501	RDWY LIGHT ON TRAF SGN POLE (250 WATT)	EA	\$ 500.00	3.00	\$ 1,500.00
6010-0501	SALVAGE TRAFFIC SIGNALS	EA	\$ 1,500.00	5.00	\$ 7,500.00
8230-0501	LED PED SIG LAMP (SYMB) (2 IND/1 SEC)	EA	\$ 290.00	18.00	\$ 5,220.00
8288-0502	ANTENNA (UNIDIRECTIONAL)	EA	\$ 200.00	7.00	\$ 1,400.00
8288-0503	ANTENNA (OMNIDIRECTIONAL)	EA	\$ 400.00	2.00	\$ 800.00
8288-0504	COAXIAL CABLE	LF	\$ 4.00	789.00	\$ 3,156.00
8288-0505	HELIAX CABLE	LF	\$ 4.25	750.00	\$ 3,187.50
8524-0501	PEDESTAL POLE ASSEMBY	EA	\$ 350.00	2.00	\$ 700.00
8975-0505	VIVDS COMMUNICATION CABLE (COAXIAL)	LF	\$ 6.00	1,108.00	\$ 6,648.00
	PREP EXISTING CONDUIT	EA	\$ 1.50	600.00	\$ 900.00
	PREP EXISTING GROUNDBOX	EA	\$ 60.00	7.00	\$ 420.00
	SOLAR POWER ASSEMBLY	EA	\$ 1.00	3,000.00	\$ 3,000.00
	60 FT COMMUNICATIONS POLE STRUCTURE	EA	\$ 15,000.00	1.00	\$ 15,000.00
	TRAFFIC CONTROL SYSTEM	LS	\$ 45,000.00	1.00	\$ 45,000.00
TOTAL BID ITEMS					\$ 258,982.15

STATE PROVIDED EQUIPMENT	UNIT	UNIT COST	ESTIMATED QUANTITIES	SUBTOTAL COSTS
TRAFFIC SIGNAL CONTROLLERS (GROUND MOUNT)	EA	\$ 6,100.00	3.00	\$ 18,300.00
TRAFFIC SIGNAL CONTROLLERS (POLE MOUNT)	EA	\$ 5,500.00	0.00	\$ -
VIVDS CAMERA SYSTEMS	EA	\$ 6,400.00	2.00	\$ 12,800.00
SPREAD SPECTRUM RADIOS	EA	\$ 1,300.00	9.00	\$ 11,700.00
TOTAL STATE PROVIDED MATERIALS				42,800.00

TOTAL BID ITEMS AND STATE PROVIDED MATERIALS (OFF-SYSTEM)	301,782.15
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ATTACHMENT G

MAINTENANCE AND OPERATION PROVISIONS

1. The City shall be responsible for maintenance and operation of the traffic signals, and integrated traffic control system, upon the completion of construction operations.
2. All repairs shall be prioritized based upon public safety and made as soon as possible. Delays in response or repairs may be grounds for termination of this Agreement. The City shall maintain a complete log of all emergency calls and all routine maintenance.
3. In maintaining and operating the traffic signals within this Agreement, the City agrees to perform such maintenance and operations in accordance with the minimum requirements that follow:
 - A. Unless specifically noted elsewhere in this agreement, the signal timing and operational phasing shall be the responsibility of the City.
 - B. Inspect the highway traffic signal system a minimum of once every 12 months and replace burned out lamps or damaged sockets as may be required. Police, citizen, or other reports of burned out lamps or other damage, which could jeopardize safety, shall be repaired or replaced as soon as possible after the report, depending on the nature of the report. Otherwise, appropriate steps shall be taken to protect the public. The reflector and lens should be cleaned each time a lamp is replaced. All replacement lamps shall equal the wattage and type of the existing lamp.
 - C. Keep signal poles, controller pedestals, and foundations in alignment.
 - D. Keep signal poles and controller cabinets tight on their foundation(s) or pedestal(s).
 - E. Keep traffic and pedestrian signal heads aligned and properly adjusted. Repair back plates where needed.
 - F. Check the controllers, conflict monitors, detector units, relays, pedestrian push buttons, and detectors a minimum of once every 12 months to ascertain that they are functioning properly and make all necessary repairs and replacements.
 - G. Keep interior of controller cabinets in a neat and clean condition at all times.
 - H. Clean reflectors, lenses, and lamps a minimum of once every twelve months.
 - I. Repaint all corrosive susceptible highway traffic signal components exposed to weather with a non-lead based paint as needed in order to maintain a well kept appearance in the opinion of the Texas Department of Transportation's representative. Plastic signal heads and galvanized and aluminum components are excluded.
 - J. Either replace the lamps of all highway traffic signal heads as a group upon expiration of the average rated lamp life or replace the lamps on a burn out basis.

- K. Repair or replace any and all equipment that malfunctions or is damaged.
- L. Provide alternate traffic control during a period of failure or when the controller must be repaired. This may be accomplished through installation of a spare controller, placing the intersection on flash, manually operating the controller, or manually directing traffic through the use of proper authorities. In addition, barricades and warning signs shall be provided in accordance with the requirements of the latest edition of the *Texas Manual on Uniform Traffic Control Devices*.
- M. Provide maintenance personnel trained in the maintenance of traffic signal equipment who will be available to respond to emergency calls from authorized parties 24 hours a day, including Saturdays, Sundays, and holidays.
- N. Provide the State and local law enforcement agencies the location and respective names and telephone numbers of individuals responsible for emergency maintenance.
- O. Document routine observations during the year by trained City personnel of the traffic signal operation at each traffic signal during various times of the day to assure fair distribution of time and for all traffic movements (phases) during varying traffic conditions.
- P. Check cabinet filter a minimum of once every six months and clean if necessary cabinet filter shall be replaced every two years.
- Q. Document all checks and corrective actions in a separate logbook for each intersection.
- R. In metropolitan cities where Intelligent Transportation Systems and/or incident management systems are being implemented the signal timing will be the responsibility of the City in cooperation with the Texas Department of Transportation.

Traffic accidents, inclement weather, special events, maintenance, and construction activities are a few of the causes of nonrecurrent congestion. Nonrecurrent congestion often changes the normal traffic demand patterns. Effective and efficient movement of traffic through the transportation network during periods of nonrecurrent congestion must be considered in the design and operation of all traffic management systems, including traffic signal systems. Priority should be given to freeway or expressway frontage roads when nonrecurrent congestion occurs on freeway or expressway main lanes.