

DBE 11%



TOWN OF
ADDISON

*Return to
John B*

JOHN BAUMGARTNER, P. E.
Director of
Public Works

Bid. Now!
16801 W. ... Dr. 3:00
Ext. Box 144
Addison, Texas 75001
(214) 450-2886
FAX (214) 931-6643
9402
Bid

**PROJECT MANUAL FOR
INTERSECTION IMPROVEMENTS
ADDISON ROAD AT BELT LINE ROAD
FOR
TOWN OF ADDISON, TEXAS**



**ESPEY,
HUSTON &
ASSOCIATES, INC.**
Engineering & Environmental Consultants



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HUSTON &
ASSOCIATES, INC.
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Document No. 920712
EH&A Job No. 13921

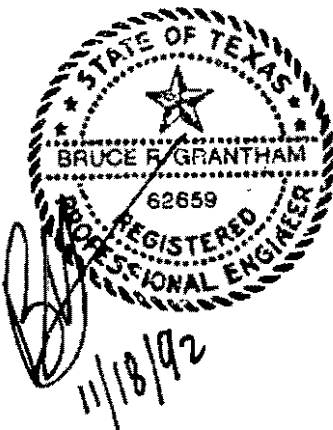
PROJECT MANUAL FOR
INTERSECTION IMPROVEMENTS
ADDISON ROAD AT BELT LINE ROAD
FOR
TOWN OF ADDISON, TEXAS

Prepared for:

Town of Addison
P. O. Box 144
Addison, Texas 75001

Prepared by:

Espey, Huston & Associated, Inc.
13800 Montfort, Suite 230
Dallas, Texas 75240



October 1992

TABLE OF CONTENTS

Section AB	Advertisement for Bids
Section IB	Instructions to Bidders
Section PF	Proposal Form
Section CA	Contract Agreement
Section PrB	Performance Bond
Section PyB	Payment Bond
Section MB	Maintenance Bond
Section BP	Contractor's Affidavit of Bills Paid
Section GP	General Provisions Standard Specifications for Public Works Construction, North Central Texas (separate document not furnished)
Section SP	Special Provisions
Section T	Technical Specifications
Section CTB	Cement Treated Base
Section VDL	Vehicle Detector Wire Sealant
Section SD	Sod and Lawn Preparation
Appendix	Sample of Texas Sales Tax Exemption Certificate

SECTION AB
ADVERTISEMENT FOR BIDS

SECTION AB
ADVERTISEMENT FOR BIDS

1. Sealed bids addressed to the Town of Addison, Texas, for Intersection Improvements, Addison Road at Belt Line Road, for the Town of Addison, Texas, hereinafter called "City" in accordance with plans, specifications and contract documents prepared by Espey, Huston & Associates, Inc., will be received at the office of Clyde Johnson, Purchasing Manager, Finance Building, 5350 Belt Line Road, Addison, Texas until 2:00 p.m. on the 15th day of December, 1992. Bids received by the appointed time will be opened and read aloud. Any bids received after closing time will be returned unopened.
2. The Contractor shall identify his bid on the outside of the envelope by writing the words **TOWN OF ADDISON INTERSECTION IMPROVEMENTS, ADDISON ROAD AT BELT LINE ROAD.**
3. Bids shall be accompanied by a cashier's check or certified check upon a national or state bank in an amount not less than five percent (5%) of the total maximum bid price payable without recourse to the Town of Addison, or a bid bond in the same amount from a reliable surety company licensed by the State of Texas to act as a Surety, or a Binder of Insurance executed by a surety company licensed by the State of Texas to act as a surety or its authorized agent as a guarantee that the bidder will enter into a contract and execute a Performance Bond within ten (10) days after notice of award of contract to him.
4. Plans, specifications and bidding documents may be secured from Clyde Johnson, Purchasing Manager, Finance Building, 5350 Belt Line Road, Addison, Texas.
5. The right is reserved by the Mayor and the City Council as the interest of the City may require to reject any or all bids and to waive any informality in bids received.
6. The Bidder (Proposer) must supply all the information required by the Proposal Form.
7. A Performance Bond, Labor and Material Payment Bond, and Maintenance Bond will be required by the Owner; each Bond shall be in the amount of 100% of the total contract amount. Bonds shall be issued by a surety company licensed by the State of Texas to act as a Surety.
8. For information on bidding or to secure bid documents, call Clyde Johnson (214) 450-7090. For information on the work to be performed, call John Baumgartner, City Engineer, (214) 450-2886.
9. This project consists of providing paving, sidewalk, traffic signal and other miscellaneous improvements as shown on the plans and in accordance with the specifications.

TOWN OF ADDISON, TEXAS

SECTION IB
INSTRUCTIONS TO BIDDERS

SECTION IB
INSTRUCTIONS TO BIDDERS

- A. **PROJECT:** Intersection Improvements, Addison Road at Belt Line Road, in the Town of Addison.
- B. **PROJECT DESCRIPTION:** This project consists of providing paving, sidewalk, traffic signal and other miscellaneous improvements as shown on the plans and in accordance with the specifications.
- C. **PROPOSALS:** Proposals must be in accordance with these instructions in order to receive consideration.
- D. **DOCUMENTS:** Documents include the Bidding Requirements, General Provisions, Special Provisions, Technical Specifications, Drawings plus Addenda which may be issued by the Consultant during the bidding period. Bidding Documents may be viewed and/or obtained under the terms and conditions set forth in the Advertisement for Bids, Section AB of this Project Manual.
- E. **EXAMINATION OF DOCUMENTS AND SITE:** Bidders shall carefully examine the Bidding Documents and the construction site to obtain first-hand knowledge of the scope and the conditions of the Work. Each Contractor, Subcontractor and Sub-subcontractor, by submitting a proposal to perform any portion of the Work, represents and warrants that he has examined the Drawings, Specifications (Project Manual) and the site of the Work, and from his own investigation has satisfied himself as to the scope, accessibility, nature and location of the Work; the character of the equipment and other facilities needed for the performance of the Work; the character and extent of other work to be performed; the local conditions; labor availability, practices and jurisdictions and other circumstances that may affect the performance of the Work. No additional compensation will be allowed by the Owner for the failure of such Contractor, Subcontractor or Sub-subcontractor to inform himself as to conditions affecting the Work.
- F. **INTERPRETATION OF DOCUMENTS:** If any person contemplating submitting a bid for the proposed Contract is in doubt as to the meaning of any part of the Drawings, Specifications (Project Manual) or other proposed Contract Documents, he may submit to the Consultant, not later than seven (7) calendar days prior to the date set for opening bids, a written request for an interpretation or clarification. Bidders should act promptly and allow sufficient time for a reply to reach them before preparing their bids. Any interpretation or clarification will be in the form of an Addendum duly issued. No alleged verbal interpretation or ruling will be held binding upon the Owner.

- G. **SUBSTITUTIONS:** Conditions governing the submission of substitutions for specific materials, products, equipment and processes are in the Special Provisions. Requests for substitutions must be received by the Consultant seven (7) calendar days prior to the established bid date.
- H. **ADDENDA:** Interpretations, clarifications, additions, deletions and modifications to the Documents during the bidding period will be issued in the form of Addenda and a copy of such Addenda will be mailed or delivered to each person who has been issued a set of the Bidding Documents. Addenda will be a part of the Bidding Documents and the Contract Documents, and receipt of them shall be acknowledged in the Bid Form. All such interpretations and supplemental instructions will be in the form of written addenda to the contract documents which, if issued, will be sent by telegram, certified or registered mail, or hand delivered to all prospective bidders (at the respective addresses furnished for such purposes) not later than three (3) calendar days prior to the date fixed for the opening of bids. If any bidder fails to acknowledge the receipt of such addenda in the space provided in the bid form, his bid will nevertheless be construed as though the receipt of such addenda had been acknowledged.
- I. **COMPLETION TIME:** A reasonable completion time has been established by the Owner and is indicated in the Proposal Form.
- J. **PREPARATION OF BIDS:** Prices quoted shall include all items of cost, expense, taxes, fees and charges incurred, or arising out of, the performance of the work to be performed under the Contract. Bids shall be submitted in duplicate and shall be signed in ink. Any bid on other than the required form will be considered informal and may be rejected. Erasures or other changes in a bid must be explained or noted over the initials of the bidder. Bids containing any conditions, omissions, unexplained erasures and alterations, or irregularities of any kind may be rejected as informal. The prices should be expressed in words and figures or they may be deemed informal and may be rejected. In case of discrepancy between the prices written in the bid and those given in the figures, the price in writing will be considered as the bid. Failure to submit all requested information will make a bid irregular and subject to rejection. Bids shall be signed with name typed or printed below signature, and, if a partnership, give full name of all partners. Where bidder is a corporation, bids must be signed with the legal name of the corporation followed by the name of the state of incorporation and the legal signature of an officer authorized to bind the corporation to a contract.
- K. **SUBMITTAL OF BIDS:** Sealed proposals will be received at the time, date and place stated in the Advertisement for Bids. Proposals shall be made on unaltered Proposal Forms furnished by the Consultant. Submit proposal in an opaque, sealed envelope addressed to the Owner and plainly mark on the outside of the envelope the project name, and the name and address of the bidder. The Bid Bond must be completed and signed by each bidder and submitted with the bid. Submit Bids by mail or in person prior to the time for receiving bids set forth in the Advertisement for Bids issued by the City.

- L. MODIFICATION AND WITHDRAWAL OF BIDS:** Prior to the time set for bid opening, bids may be withdrawn or modified. Bids may be modified only on the official bid form and must be signed by a person legally empowered to bind the bidder. No bidder shall modify, withdraw or cancel his bid or any part thereof for thirty (30) calendar days after the time agreed upon for the receipt of bids.
- M. DISQUALIFICATION:** The Owner reserves the right to disqualify proposals, before or after the opening, upon evidence of collusion with intent to defraud or other illegal practices relating to this proposal upon the part of the bidder.
- N. SUBMISSION OF POST-BID INFORMATION:** Upon notification of acceptance, the selected bidder shall, within five (5) calendar days, submit the following:
1. A designation of the portions of the Work proposed to be performed by the bidder with his own force.
 2. A list of names of the subcontractors or other persons or organizations, including those who are to furnish materials and equipment fabricated to a special design proposed for such portions of the Work as may be designated in the Bidding Documents or as may be requested by the Consultant. The bidder will be required to establish to the satisfaction of the Owner and the Consultant the reliability and responsibility of the proposed Subcontractors and suppliers to furnish and perform the Work.
- O. AWARD:** The Owner reserves the right to accept any or to reject any bids without compensation to bidders and to waive irregularities and informalities.

The Consultant, in making his recommendation, will consider the following elements:

1. Whether the bidder is a contractor with experience in the type of work involved.
 2. Whether the bidder has adequate plant, equipment and personnel to perform the work properly and expeditiously.
 3. Whether the bidder has a suitable financial status and reputation for meeting obligations incident to work of the kind specified.
- P. EXECUTION OF THE CONTRACT:** The successful bidder will be required to enter into a contract with the Owner within ten (10) calendar days of notice by the Owner that his bid has been accepted. Failure to enter into contract within the established time limit without proper justification shall be considered grounds for forfeiture of the bid bond.

- Q. CONSTRUCTION SCHEDULE:** It is the Owner's desire to have the project completed and operational in as short a time as possible. The number of calendar days for completion of the project will begin with the date specified in the Notice to Proceed. The Notice to Proceed will be issued in a manner to facilitate a smooth construction of the project.

In no instance shall the number of calendar days for completion of the work measured from the proposed date of beginning exceed 60 calendar days.

- R. LIQUIDATED DAMAGES:** The time of completion is the essence of this contract. For each calendar day that any work shall remain uncompleted after the time specified in the proposal and the contract, or the increased time granted by the Owner, or as equitably increased by additional work or materials ordered after the contract is signed, the sum per day given in the following schedule shall be deducted from the monies due the Contractor:

\$100 per Calendar Day

The sum of money thus deducted for such delay, failure or non-completion is not to be considered as a penalty, but shall be deemed, taken and treated as reasonable liquidated damages, per calendar day that the Contractor shall be in default after the time stipulated in the contract for completing the work. The said amounts are fixed and agreed upon by and between Owner and Contractor because of the impracticability and extreme difficulty of fixing and ascertaining the actual damages the Owner in such event would sustain; and said amounts are agreed to be the amounts of damages which the Owner would sustain and which shall be retained from the monies due, or that may become due, the Contractor under this contract; and if said monies be insufficient to cover the amount owing, then the Contractor or his surety shall immediately pay any additional amounts due. If the Contractor finds it impossible, for reasons beyond his control, to complete the work within the contract time as specified, the Contractor may make a written request for an extension of time in accordance with the General Provisions.

- S. FORM OF CONTRACT:** The contract for the construction of the project will be drawn up by the Owner. A sample form of agreement is included in the Contract Agreement Section.
- T. BONDS:** A Performance Bond, a Labor and Material Payment Bond and a Maintenance Bond will be required by the Owner. Sample forms have been included in the Performance Bond, Payment Bond and Maintenance Bond sections.
- U. BID SECURITY:** Bids shall be accompanied by a cashier's check or certified check upon a national or state bank in an amount not less than five percent (5%) of the total maximum bid price payable without recourse to the Town of Addison, or a bid bond in the same amount from a reliable surety company as a guarantee that the bidder will enter into a contract and execute Performance Bond within ten (10) calendar days after notice of award of contract to him. Such checks or bid bonds will be returned to all except the three lowest bidders within three (3) days after the opening of bids, and the remaining checks

or bid bonds will be returned promptly after the Owner has made an award of contract, or, if no award has been made within thirty (30) calendar days after the date of the opening of bids, upon demand of the bidder at any time thereafter, so long as he has not been notified of the acceptance of his bid.

- V. **RESOLUTIONS:** If the bidder is a corporation, a copy of the resolution empowering the person submitting the bid to bind the bidder must be included with the bid.
- W. **CONSTRUCTION STAKING:** Construction staking will not be provided by the Owner. A benchmark is shown on the plans.
- X. **FINAL PAYMENT:** The general provisions for Final Payment shall be as stated in Item 1.51.4 of the North Central Texas Standard Specifications for Public Works Construction (1983 Edition) including all Amendments and Additions. Prior to final payment the Contractor shall provide the Owner with the following items:
 - 1. A Contractor's Affidavit of Bills Paid in accordance with Section BP.
 - 2. A Consent of Surety Company to Final Payment.
 - 3. A complete set of as-built plans which indicate all construction variations from the original construction documents in accordance with Item 5 of the Special Provisions.
 - 4. A one (1) year Maintenance Bond in accordance with Section MB.

END OF SECTION IB

SECTION PF
PROPOSAL FORM

BID FORM

_____, 19__

**TO: The Honorable Mayor and City Council
Town of Addison, Texas**

Gentlemen:

The undersigned bidder, having examined the plans, specifications and contract documents, and the location of the proposed work, and being fully advised as to the extent and character of the work, proposes to furnish all equipment and to perform labor and work necessary for completion of the work described by and in accordance with the Plans, Specifications and Contract for the following prices, to wit:

Signed by: _____

ACKNOWLEDGEMENT OF ADDENDA:

The Bidder acknowledges receipt of the following addenda:

Addendum No. 1 _____

Addendum No. 2 _____

Addendum No. 3 _____

BID SCHEDULE A
TOWN OF ADDISON, TEXAS
INTERSECTION IMPROVEMENTS FOR
ADDISON ROAD AT BELT LINE ROAD

<u>Item No.</u>	<u>Est. Quan.</u>	<u>Unit</u>	<u>Description</u>	<u>Unit Price</u>	<u>Amount</u>
1	1	L.S.	Mobilization, bonds and insurance, complete in place, per lump sum		
1a			For materials,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		
1b			For services,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		
2	820	L.F.	Remove and dispose of existing concrete curb and/or curb and gutter, complete in place, per linear foot		
2a			For materials,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		
2b			For services,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		

BID SCHEDULE A
TOWN OF ADDISON, TEXAS
INTERSECTION IMPROVEMENTS FOR
ADDISON ROAD AT BELT LINE ROAD

<u>Item No.</u>	<u>Est. Quan.</u>	<u>Unit</u>	<u>Description</u>	<u>Unit Price</u>	<u>Amount</u>
3	150	S.Y.	Remove and dispose of existing concrete sidewalk, complete in place, per square yard		
3a			For materials,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		
3b			For services,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		
4	800	S.Y.	Furnish, place and compact cement treated base (6"), complete in place, per square yard		
4a			For materials,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		
4b			For services,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		

BID SCHEDULE A
TOWN OF ADDISON, TEXAS
INTERSECTION IMPROVEMENTS FOR
ADDISON ROAD AT BELT LINE ROAD

<u>Item No.</u>	<u>Est. Quan.</u>	<u>Unit</u>	<u>Description</u>	<u>Unit Price</u>	<u>Amount</u>
5	710	S.Y.	Furnish and place 8"-3000 psi reinforced concrete pavement, complete in place, per square yard		
5a			For materials,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		
5b			For services,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		
6	1,450	S.F.	Furnish and place 4"-3000 psi reinforced concrete sidewalk, complete in place, per square foot		
6a			For materials,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		
6b			For services,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		

BID SCHEDULE A
TOWN OF ADDISON, TEXAS
INTERSECTION IMPROVEMENTS FOR
ADDISON ROAD AT BELT LINE ROAD

<u>Item No.</u>	<u>Est. Quan.</u>	<u>Unit</u>	<u>Description</u>	<u>Unit Price</u>	<u>Amount</u>
7	1	L.S.	Furnish and place barricading, signing and traffic handling, complete in place, per lum sum		
7a			For materials,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		
7b			For services,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		
8	420	L.F.	Furnish and place 6"-3000 psi concrete integral curb, complete in place, per linear foot		
8a			For materials,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		
8b			For services,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		

BID SCHEDULE A
TOWN OF ADDISON, TEXAS
INTERSECTION IMPROVEMENTS FOR
ADDISON ROAD AT BELT LINE ROAD

<u>Item No.</u>	<u>Est. Quan.</u>	<u>Unit</u>	<u>Description</u>	<u>Unit Price</u>	<u>Amount</u>
9	370	L.F.	Furnish and place 6"-3000 psi reinforced concrete curb and gutter, complete in place, per linear foot		
9a			For materials,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		
9b			For services,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		
10	375	C.Y.	Unclassified street excavation, including hauling and disposal, complete in place, per cubic yard		
10a			For materials,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		
10b			For services,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		

BID SCHEDULE A
TOWN OF ADDISON, TEXAS
INTERSECTION IMPROVEMENTS FOR
ADDISON ROAD AT BELT LINE ROAD

<u>Item No.</u>	<u>Est. Quan.</u>	<u>Unit</u>	<u>Description</u>	<u>Unit Price</u>	<u>Amount</u>
11	572	L.F.	Furnish sawed breakout groove, complete in place, per linear foot		
11a			For materials,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		
11b			For services,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		
12	1	EA.	Remove and dispose of existing curb inlet, complete in place, per each		
12a			For materials,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		
12b			For services,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		

BID SCHEDULE A
TOWN OF ADDISON, TEXAS
INTERSECTION IMPROVEMENTS FOR
ADDISON ROAD AT BELT LINE ROAD

<u>Item No.</u>	<u>Est. Quan.</u>	<u>Unit</u>	<u>Description</u>	<u>Unit Price</u>	<u>Amount</u>
13	1	EA.	Furnish and install 6' recessed concrete curb inlet, complete in place, per each		
13a			For materials,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		
13b			For services,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		
14	25	L.F.	Furnish and install 18" reinforced concrete pipe (RCP), including concrete collar, complete in place, per linear foot		
14a			For materials,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		
14b			For services,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		

BID SCHEDULE A
TOWN OF ADDISON, TEXAS
INTERSECTION IMPROVEMENTS FOR
ADDISON ROAD AT BELT LINE ROAD

<u>Item No.</u>	<u>Est. Quan.</u>	<u>Unit</u>	<u>Description</u>	<u>Unit Price</u>	<u>Amount</u>
15	37	EA.	Furnish and place 4" yellow double reflective buttons (P117Y), complete in place, per each		
15a			For materials,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		
15b			For services,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		
16	30	EA.	Furnish and place 4" white non-reflective buttons (P-7W), complete in place, per each		
16a			For materials,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		
16b			For services,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		

BID SCHEDULE A
TOWN OF ADDISON, TEXAS
INTERSECTION IMPROVEMENTS FOR
ADDISON ROAD AT BELT LINE ROAD

<u>Item No.</u>	<u>Est. Quan.</u>	<u>Unit</u>	<u>Description</u>	<u>Unit Price</u>	<u>Amount</u>
17	75	EA.	Furnish and place 4" white reflective buttons (P-15W), complete in place, per each		
17a			For materials,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		
17b			For services,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		
18	20	EA.	Furnish and place 4" yellow reflective buttons (P-15Y), complete in place, per each		
18a			For materials,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		
18b			For services,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		

BID SCHEDULE A
TOWN OF ADDISON, TEXAS
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ADDISON ROAD AT BELT LINE ROAD

<u>Item No.</u>	<u>Est. Quan.</u>	<u>Unit</u>	<u>Description</u>	<u>Unit Price</u>	<u>Amount</u>
19	64	EA.	Furnish and place 6"x6" reflective jiggle bars, complete in place, per each		
19a			For materials,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		
19b			For services,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		
20	107	L.F.	Furnish and place 24" white reflective thermoplastic stripe, complete in place, per linear foot		
20a			For materials,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		
20b			For services,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		

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ADDISON ROAD AT BELT LINE ROAD

<u>Item No.</u>	<u>Est. Quan.</u>	<u>Unit</u>	<u>Description</u>	<u>Unit Price</u>	<u>Amount</u>
21	119	L.F.	Furnish and place 4" white reflective thermoplastic stripe, complete in place, per linear foot		
21a			For materials,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		
21b			For services,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		
22			Reserved		

BID SCHEDULE A
TOWN OF ADDISON, TEXAS
INTERSECTION IMPROVEMENTS FOR
ADDISON ROAD AT BELT LINE ROAD

<u>Item No.</u>	<u>Est. Quan.</u>	<u>Unit</u>	<u>Description</u>	<u>Unit Price</u>	<u>Amount</u>
23	210	S.Y.	Furnish and place 3" HMAc pavement (Type D) surface course, complete in place, per square yard		
23a			For materials,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		
23b			For services,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		
24	1	L.S.	Provide all traffic signal relocation/ installation work including lights, loops, boxes and all appurtenances, complete in place, per lump sum		
24a			For materials,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		
24b			For services,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		

BID SCHEDULE A
TOWN OF ADDISON, TEXAS
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<u>Item No.</u>	<u>Est. Quan.</u>	<u>Unit</u>	<u>Description</u>	<u>Unit Price</u>	<u>Amount</u>
25	3	EA.	Relocate existing signs, complete in place, per each		
25a			For materials,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		
25b			For services,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		
26	2	EA.	Relocate existing water meters, complete in place, per each		
26a			For materials,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		
26b			For services,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		

BID SCHEDULE A
TOWN OF ADDISON, TEXAS
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ADDISON ROAD AT BELT LINE ROAD

<u>Item No.</u>	<u>Est. Quan.</u>	<u>Unit</u>	<u>Description</u>	<u>Unit Price</u>	<u>Amount</u>
27	1	EA.	Relocate existing fire hydrant, complete in place, per each		
27a			For materials,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		
27b			For services,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		
28	18	EA.	Furnish and place traffic movement pavement markings, complete in place, per each		
28a			For materials,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		
28b			For services,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		

BID SCHEDULE A
TOWN OF ADDISON, TEXAS
INTERSECTION IMPROVEMENTS FOR
ADDISON ROAD AT BELT LINE ROAD

<u>Item No.</u>	<u>Est. Quan.</u>	<u>Unit</u>	<u>Description</u>	<u>Unit Price</u>	<u>Amount</u>
29	2	EA.	Furnish and place railroad advance warning pavement markings, complete in place, per each		
29a			For materials,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		
29b			For services,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		
30	3	EA.	Furnish and place concrete sidewalk barrier-free ramp, complete in place, per each		
30a			For materials,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		
30b			For services,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		

BID SCHEDULE A
TOWN OF ADDISON, TEXAS
INTERSECTION IMPROVEMENTS FOR
ADDISON ROAD AT BELT LINE ROAD

<u>Item</u> <u>No.</u>	<u>Est.</u> <u>Quan.</u>	<u>Unit</u>	<u>Description</u>	<u>Unit</u> <u>Price</u>	<u>Amount</u>
31	200	S.Y.	Furnish and place Bermuda block-sodding, complete in place, per square yard		
31a			For materials,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		
31b			For services,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		
32	1	L.S.	All irrigation removal, replacement, and relocation work, complete in place, per lump sum		
32a			For materials,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		
32b			For services,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		

BID SCHEDULE A
TOWN OF ADDISON, TEXAS
INTERSECTION IMPROVEMENTS FOR
ADDISON ROAD AT BELT LINE ROAD

<u>Item No.</u>	<u>Est. Quan.</u>	<u>Unit</u>	<u>Description</u>	<u>Unit Price</u>	<u>Amount</u>
33	1	L.S.	Furnish and install Bilco Double Leaf Aluminum Door, complete in place, per lump sum		
33a			For materials,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		
33b			For services,	\$ _____	\$ _____
			_____ Dollars		
			_____ Cents		

TOTAL AMOUNT BID FOR MATERIALS, BID SCHEDULE, ITEMS 1a THROUGH 33a, INCLUSIVE \$ _____

TOTAL AMOUNT BID FOR SERVICES, BID SCHEDULE, ITEMS 1b THROUGH 33b, INCLUSIVE \$ _____

TOTAL AMOUNT BID FOR MATERIALS, AND SERVICES, BID SCHEDULE, ITEMS 1a AND 1b THROUGH 33a AND 33b, INCLUSIVE \$ _____

The completion time for this Contract is 60 calendar days.

- NOTES:
1. All items, labor, materials, equipment, facilities, incidentals and work required for construction of the project are to be provided and installed by the Contractor as part of the project and payment for the cost of such shall be included in the price bid for the construction of the project.
 2. Prices must be shown in words and figures for each item listed in this proposal. In the event of discrepancy, the words shall control.
 3. Materials, which are "tax exempt," are those items which are physically incorporated into the facilities constructed for the OWNER, as set forth in the Special Provisions. Materials include, but are not limited to purchased items such as concrete, and roadbase, etc.

Services, which are "not tax exempt," are those items which are used by the Contractor but are not physically incorporated into the OWNER's facility and/or items which are consumed by construction, as set forth in the Special Provisions. Services include, but are not limited to, items such as supplies, tools, skill and labor, the purchase, rental or lease of equipment, etc.

If BIDDER is:

An Individual

By _____ (Seal)
(Individual's Name)

doing business as _____

Business address: _____

Phone No. _____

A Partnership

By _____ (Seal)
(Firm Name)

_____ (General Partner)

doing business as _____

Business address: _____

Phone No. _____

A Corporation

By _____
(Corporation Name)

(State of Incorporation)

By _____
(Name of Person Authorized to Sign)

(Title)

(Corporate Seal)

Attest _____
(Secretary)

Business address: _____

Phone No. _____

A Joint Venture

By _____
(Name)

(Address)

By _____
(Name)

(Address)

(Each joint venturer must sign. The manner of signing for each individual, partnership and corporation that is a party to the joint venture should be in the manner indicated above.)

SECTION CA
CONTRACT AGREEMENT

13921/920712

CA-1

**SECTION CA
AGREEMENT**

STATE OF TEXAS

COUNTY OF DALLAS

THIS AGREEMENT is made and entered into this _____ day of _____, 19____, by and between the Town of Addison, of the County of Dallas and State of Texas, acting through its Mayor, thereunto duly authorized so to do, Party of the First Part, hereinafter termed the OWNER, and _____, of the City of _____, County of _____, State of _____, Party of the Second Part, hereinafter termed CONTRACTOR.

WITNESSETH: That for and in consideration of the payment and agreement hereinafter mentioned, to be made and performed by the OWNER, the said CONTRACTOR hereby agrees with the said OWNER to commence and complete construction of certain improvements as follows:

Intersection Improvements
Addison Road at Belt Line Road

and all extra work in connection therewith, under the terms as stated in the General and Specific Conditions of the AGREEMENT; and at his own proper cost and expense to furnish all the materials, supplies, machinery, equipment, tools, superintendence, labor, insurance and other accessories and services necessary to complete the said construction, in accordance with the conditions and prices stated in the Proposal attached hereto and in accordance with the Advertisement for Bids, Instructions to Bidders, General Provisions, Special Provisions, Plans, and other drawings and printed or written explanatory matter thereof, and the Technical Specifications and Addenda thereto, as prepared by the OWNER, each of which has been identified by the endorsement of the CONTRACTOR and the OWNER thereon, together with the CONTRACTOR's written Proposal and the General Provisions, all of which are made a part hereof and collectively evidence and constitute the entire AGREEMENT.

The CONTRACTOR hereby agrees to commence work within five (5) calendar days after the date of written notice to do so shall have been given to him, and to substantially complete the work within 60 calendar days after he commences work, subject to such extensions of time as are provided by the General Provisions.

The OWNER agrees to pay the CONTRACTOR \$ _____ in current funds for the performance of the Contract in accordance with the Proposal submitted thereof, subject to additions and deductions, as provided in the General Provisions, and to make payments of account thereof as provided therein.

IN WITNESS WHEREOF, the parties of these presents have executed this AGREEMENT in the year and day first above written.

TOWN OF ADDISON
(OWNER)

ATTEST:

By: _____

City Secretary

Party of the Second Part
(CONTRACTOR)

ATTEST:

By: _____

The following to be executed if the CONTRACTOR is a corporation:

I, _____, certify that I am the secretary of the corporation named as CONTRACTOR herein; that _____, who signed this Contract on behalf of the CONTRACTOR is the _____ of said corporation; that said
(official title)

Contract was duly signed for and in behalf of said corporation by authority of its governing body; and is within the scope of its corporate powers.

Signed: _____

Corporate Seal

SECTION PrB
PERFORMANCE BOND

**SECTION PrB
PERFORMANCE BOND**

STATE OF TEXAS

COUNTY OF DALLAS

Date Bond Executed: _____

PRINCIPAL: _____

SURETY: _____

PENAL SUM OF BOND (express in words and figures): _____

DATE OF CONTRACT: _____

KNOW ALL MEN BY THESE PRESENTS, that we, the PRINCIPAL and SURETY above named, are held firmly bound unto the Town of Addison, Texas, hereinafter called the OWNER, in the penal sum of the amount stated above, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITIONS OF THIS OBLIGATION ARE SUCH that, whereas the PRINCIPAL entered into a certain Contract with the OWNER, numbered and dated as shown above and attached hereto;

NOW THEREFORE, if the PRINCIPAL shall well and truly perform and fulfill all the undertakings, covenants, terms, conditions and agreements of said Contract during the original term of said Contract and any extension thereof that may be granted by the OWNER, with or without notice to the SURETY, and during the life of any guaranty required under the Contract, and shall also well and truly perform and fulfill all the undertakings, covenants, terms, conditions and agreements of any and all duly authorized modifications of said Contract that may hereafter be made, notice of which modifications of said SURETY being hereby waived, then this obligation to be void, otherwise in full force and virtue.

IN WITNESS WHEREOF, the above-bounden parties have executed this instrument under their several seals on the date indicated above, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

SEAL

CONTRACTOR

By: _____

Address: _____

WITNESS _____

SEAL

ATTEST:

Title: _____

SURETY

By: _____

Address: _____

(Surety to Attach Power of Attorney)

CERTIFICATE AS TO CORPORATE PRINCIPAL

I, _____, certify that I am the secretary of the corporation named as PRINCIPAL in the within bond that _____, who signed the said bond on behalf of the PRINCIPAL, is the _____ of said corporation; that I know his signature, and his signature thereto is genuine; and that said bond was duly signed, sealed and attested for and in behalf of said corporation by authority of its governing body.

(Corporate Seal)

SECTION PyB
PAYMENT BOND

13921/920712

PyB-1

**SECTION PyB
PAYMENT BOND**

STATE OF TEXAS

COUNTY OF DALLAS

Date Bond Executed: _____

PRINCIPAL: _____

SURETY: _____

PENAL SUM OF BOND (express in words and figures): _____

DATE OF CONTRACT: _____

KNOW ALL MEN BY THESE PRESENTS, that we, the PRINCIPAL and SURETY above named, are held firmly bound unto the Town of Addison, Texas, hereinafter called the OWNER, in the penal sum of the amount stated above, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITIONS OF THIS OBLIGATION ARE SUCH that, whereas the PRINCIPAL entered into a certain Contract with the OWNER, numbered and dated as shown above and attached hereto;

NOW THEREFORE, if the PRINCIPAL shall promptly make payment to all persons supplying labor and materials in the prosecution of the work provided for in said Contract, and any and all duly authorized modifications of said Contract that may hereafter be made, notice of which modifications to the SURETY being hereby waived, then this obligation to be void, otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above-bounden parties have executed this instrument under their several seals on the date indicated above, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

SEAL

CONTRACTOR

By: _____

Address: _____

WITNESS _____

SEAL

ATTEST:

SURETY

By: _____

Address: _____

Title: _____

(Surety to Attach Power of Attorney)

CERTIFICATE AS TO CORPORATE PRINCIPAL

I, _____, certify that I am the secretary of the corporation named as PRINCIPAL in the within bond that _____, who signed the said bond on behalf of the PRINCIPAL, is the _____ of said corporation; that I know his signature, and his signature thereto is genuine; and that said bond was duly signed, sealed and attested for and in behalf of said corporation by authority of its governing body.

(Corporate Seal)

SECTION MB
MAINTENANCE BOND

13921/920712

MB-1

SECTION MB
MAINTENANCE BOND

STATE OF TEXAS

COUNTY OF DALLAS

That _____ as principal and _____
_____, a corporation organized under the laws of _____
and _____ as sureties, said sureties being authorized to do
business in the State of Texas, do hereby expressly acknowledge themselves to be held and bound
to pay unto the Town of Addison, a municipal corporation, chartered by virtue of a Special Act
of Legislature of the State of Texas, as Addison, Dallas County, Texas, the sum of

(\$ _____) for the payment of which sum will and truly to be made unto said Town
of Addison and its successors, said principal and sureties do hereby bind themselves, their assigns
and successors, jointly and severally.

This obligation is conditioned, however, that whereas said

has this day entered into a written contract with the said Town of Addison to build and construct
the

which contract and the Plans and Specifications therein mentioned adopted by the Town of Addison, are hereby expressly made a part hereof as though the same were written and embodied herein.

WHEREAS, under the Plans, Specifications and Contract it is provided that the Contractor will maintain and keep in good repair the work herein contracted to be done and performed for a period of one (1) year from the date of acceptance, and to do all necessary backfilling that may arise on account of sunken conditions in ditches, or otherwise, and to do and perform all necessary work and repair any defective condition growing out of or arising from the improper joining of the same, or on account of any breaking of the same caused by the said Contractor in laying or building the same, or on account of any defect arising in any of said part of said work laid or constructed by the said Contractor, or on account of improper excavation or backfilling; it being understood that the purpose of this section is to cover all defective conditions arising by reason of defective materials, work or labor performed by the said Contractor; and in case the said Contractor shall fail to do, it is agreed that the City may do said work and supply such materials, and charge the same against the said Contractor and sureties on this obligation, and the said Contractor and sureties hereon shall be subject to the liquidated damages mentioned in said contract for each day's failure on its part to comply with the terms of the said provisions of said contract;

NOW THEREFORE, if the said Contractor shall keep and perform its said agreement to maintain said work and keep the same in repair for the said maintenance period of one (1) year, as provided, then these presents shall be null and void and have no further effect; but if default shall be made by the said Contractor in the performance of its contract to so maintain and repair said work, then these presents shall have full force and effect, and said Town of Addison shall have and recover from the Contractor and its sureties damages in the premises, as provided, and it is further understood and agreed that this obligation shall be a continuing one against the principal and sureties hereon and that successive recoveries may be had hereon for successive branches until the full amount shall have been exhausted; and it is further understood that the obligation herein to maintain said work shall continue throughout said maintenance period, and the same shall not be changed, diminished, or in any manner affected from any cause during said time.

IN WITNESS WHEREOF, the said _____ has caused these presents to be executed by _____ and the said _____ has hereunto set his hand this the ____ day of _____, 19__.

SURETY

PRINCIPAL

By: _____

By: _____
Attorney in Fact

ATTEST

By: _____
Surety

Secretary

Agency and Address

NOTE: Date of Maintenance Bond must not be prior to date of Contract.

SECTION BP
CONTRACTOR'S AFFIDAVIT OF BILLS PAID

13921/920712

BP-1

SECTION BP
CONTRACTOR'S AFFIDAVIT OF BILLS PAID

STATE OF TEXAS

COUNTY OF DALLAS

Personally, before me the undersigned authority, on this day appeared _____
_____, who, being duly sworn, on oath, says that he is a legal representative of

(full name of Contractor as in contract)

and that the contract for the construction of the project, designated as

(Project No.)

has been satisfactorily completed and that all bills for materials, apparatus, fixtures, machinery and labor used in connection with the construction of this project have, to the best of my knowledge and belief, been fully paid.

Signature

Title

Sworn to and subscribed before me this ____ day of _____, 19____.

Notary Public in and for

County, Texas

Instructions:

If the contractor is an individual, he shall sign the affidavit. If the contractor is a partnership, any partner may sign the affidavit. If the contractor is a corporation, a person authorized by the by-laws or by the Board of Directors shall sign the affidavit. If the Contractor is a joint-venture of individuals, any of the individuals may sign the affidavit. If the Contractor is a joint-venture of partnerships, or of individuals and partnerships, the affidavit may be signed by the individual or any partner of any partnership. If the contractor is a joint-venture in which a corporation is a party, separate affidavits must be executed in the name of the joint-venture: one by each corporation and one by each individual or partnership. Signatures for corporations should be by a duly authorized officer. If signature is by another, a showing of authority to sign must accompany the affidavit.

SECTION GP
GENERAL PROVISIONS

GENERAL PROVISIONS

1. The General Provisions of the Contract shall be as stated in the Standard Specifications for Public Works Construction, North Central Texas Council of Governments (1983), under Part I, "General Provisions," Items 1.0 through 1.63 inclusive, as amended or supplemented and except as modified by the Special Provisions.

SECTION SP
SPECIAL PROVISIONS

SECTION SP
SPECIAL PROVISIONS

1. **OWNER**

The Town of Addison, herein referred to as Owner, party of the First Part of these Contract Documents.

2. **ENGINEER**

Espey, Huston & Associates, Inc., Engineer of the Owner, or other representative as may be authorized by said Owner to act in any particular position.

3. **FORMS, PLANS AND SPECIFICATIONS**

Forms of Proposal, Contract, Bonds and Plans may be obtained from the office of Mr. Clyde Johnson, Purchasing Agent, Finance Building, 5350 Beltline Road, Addison, Texas.

4. **COPIES OF PLANS FURNISHED**

Three (3) sets of Plans shall be furnished to the Contractor, at no charge, for construction purposes. Additional copies may be obtained at cost of reproduction upon request.

5. **PRODUCT RECORD DOCUMENTS**

Maintenance of Documents. The Contractor shall maintain at the job site one record copy of the Contract Drawings, Specifications, Shop Drawings, Change Orders, other modification to the Contract, field test records and other documents submitted by Contractor in compliance with specification requirements. These documents shall be maintained at the job site apart from documents used for construction. These documents are not be used for construction purposes. The documents shall be maintained in clean, legible condition. The documents shall be made available at all times for inspection by the Owner.

Recording. Each document shall be labeled Project Record Copy in 2-inch high printed letters. The record documents shall be kept current. No work shall be covered until required information has been recorded.

Contract Drawings. The appropriate drawing shall be legibly marked to record, where applicable:

Horizontal and vertical location of underground utilities and appurtenances referenced to permanent surface improvements.

Field changes of dimension and detail made during construction process.

Changes made by Change Order or Supplemental Agreement.

Details not on original Contract Drawings.

Manufacturer, trade name, catalog number and supplier of each product and item of equipment actually installed.

Changes made by Change Order or Supplemental Agreement.

Other matters not originally specified.

Shop Drawings. The Contractor shall maintain the Shop Drawings as record drawings and legibly annotate shop drawings to record changes made after review. A red felt-tip marking pen shall be used for all recording.

Submittal. At the completion of the project, the Contractor shall deliver record drawings to the Owner. The transmittal letter shall be accompanied, in duplicate, with:

Date, project title and number.

Contractor's name and address.

Title and number of each record document.

Certification that each document as submitted is complete and accurate.

Signature of Contractor or his authorized representative.

6. HORIZONTAL AND VERTICAL SURVEY CONTROL

The Contractor shall provide horizontal and vertical survey control for this project.

7. PERMITS, LICENSES, AND REGULATIONS

Permits and licenses of a temporary nature necessary for the prosecution of the Work shall be secured and paid for by the Contractor. Permits, licenses and easements for permanent structures or permanent changes in existing facilities shall be secured and paid for by the Owner, unless otherwise specified. If the Contractor observes that the Drawings and Specifications are at variance therewith, he shall promptly notify the Engineer in writing, and any necessary changes shall be adjusted as provided in the Contract for changes in Work. The Contractor shall comply with all federal, state and local laws, rules and regulations of every kind and nature applicable to the performance of its Work hereunder, and shall hold the Owner harmless therefrom.

8. REFERENCE SPECIFICATIONS

Where reference is made to specifications compiled by others, such are hereby made a part of these Specifications.

9. REVIEW OF WORK

The Owner shall have the right to review the Work while such Work is in progress to ascertain that the Work is being accomplished in compliance with the standards and requirements set forth in the Contract Documents. It is also contemplated that similar review will be conducted by governmental inspectors. Notwithstanding such review, the Contractor will be held responsible for the finished Work, and any acceptance of the Work by the Owner or governmental agencies will not relieve the Contractor from responsibility for the Work. The Owner reserves the right to place full-time construction observers at the site of the Work.

The Owner and his representatives shall at all times have access to the Work whenever it is in preparation or progress, and the Contractor shall provide proper facilities for such access, and for review.

If the Specifications, the Owner's instructions, laws, ordinances, or any public authority require any Work to be specially tested, the Contractor shall give the Owner timely notice of its readiness for testing, and if the testing is by an authority other than the Owner, of the date fixed for such testing. Tests by the Owner shall be made promptly, and where practicable at the source of supply.

Re-examination of any Work may be ordered by the Owner, and, if so ordered, the Work must be uncovered by the Contractor. If such Work is found to be in accordance with the Contract Documents, the Owner shall pay the cost of re-examination and replacement. If such Work is not in accordance with the Contract Documents, the Contractor shall pay such cost.

10. SCOPE OF WORK

The Work for this Project consists of furnishing all materials, labor, equipment, tools and incidentals necessary to construct, in accordance with the Plans and Specifications, the proposed intersection improvements for Addison Road at Belt Line Road.

11. PROPERTY LINES AND MONUMENTS

All property corners, control monumentations, construction and survey stakes and marks shall be carefully preserved by the Contractor, and in case of careless destruction or removal by Contractor or his employees, such stakes or marks shall be replaced at the Contractor's expense as required by the Owner.

12. DISCREPANCIES

If the Contractor, in the course of the Work, finds any discrepancy between the Contract Documents and the physical conditions of the locality, or any errors or omissions in drawings or in the layout as given by survey points and instructions, or if it appears that any Plan, Specification or other Contract Document is or may be not in compliance with any building code or other requirement of any governmental body, he shall immediately inform the Owner in writing, and the Owner shall promptly verify the same. Any Work done after such discovery, until authorized, will be done at the Contractor's risk.

13. TIME ALLOTTED FOR COMPLETION

All items of Work included under these contracts shall be completed within the time stipulated in the Proposal. The time shall commence on the date specified in the Notice to Proceed. The Notice to Proceed shall consist of a written request by the Owner for the Contractor to proceed with construction of the Project.

14. EXISTING STRUCTURES

The Plans show the location of all known surface and subsurface structures. However, the Owner assumes no responsibility for failure to show any or all of these structures on the Plans, or to show them in their exact location. It is mutually agreed that such failure shall not be considered sufficient basis for claims for additional compensation or extra work or for increasing the pay quantities in any manner whatsoever, unless the obstruction encountered is such as to necessitate changes in the lines or grades, or require the building of special work, provisions for which are not made in the Plans and Proposal, in which case the provisions in these Specifications for extra work shall apply.

15. EXISTING UTILITIES AND SERVICE LINES

The Contractor shall contact all the utility companies which have facilities in the vicinity of the proposed improvements to confirm the horizontal and vertical locations of their respective facilities prior to commencing work. Where a conflict with the proposed improvements is encountered, the Contractor shall notify the Engineer immediately prior to proceeding with the work.

The Contractor shall be responsible for the protection of all existing utilities or service lines crossed or exposed by his construction operation. Where existing utilities or service lines are cut, broken or damaged, the Contractor shall replace the utilities or service lines with the same type of original construction, or better, at his own cost and expense. All replacement, backfill and compaction shall be accomplished in strict accordance with the requirements of the owner of the utility or service line.

16. PUBLIC UTILITIES AND OTHER PROPERTY TO BE CHANGED

In case it is necessary to change or move the property of any owner or of a public utility, such property shall not be moved or interfered with until authorized by the utility company and approved by the Owner. The right is reserved to the owner of public utilities to enter upon the limits of the Project for the purpose of making such changes or repairs of this contract.

17. LIGHTS AND POWER

The Contractor shall provide, at his own expense, temporary lighting and power facilities required for the proper execution of the Work.

18. PERMITS AND RIGHTS-OF-WAY

The Owner will provide rights-of-way for the purpose of construction without cost to the Contractor by securing permits in areas of public dedication or by obtaining easements across privately-owned property. It shall be the responsibility of the Contractor, prior to the initiation of construction on easements through private property, to inform the property owner of his intent to begin construction. Before beginning construction in areas of public dedication, the Contractor shall inform the agency having jurisdiction in the area forty-eight (48) hours prior to initiation of the Work. The Contractor shall obtain a right-of-way permit from the Town of Addison.

19. PRECONSTRUCTION CONFERENCE

The successful Contractor(s) and Owner shall meet at the call of the Owner on this Project. Prior to the meeting, the Contractor(s) shall prepare schedules showing the sequencing and progress of their work and its effect on others. These schedules shall be delivered to the Owner in advance of the meeting for his review. The general nature of the work, materials used, and methods of construction as well as the schedules will be discussed at the meeting. A final composite schedule will be prepared during this conference to allow an orderly sequence of project construction.

20. ADDENDA

Bidders desiring further information, or interpretation of the Plans and Specifications, must make written request for such information to the Engineer (prior to forty-eight (48) hours before the Bid opening). Answers to all such requests will be given in writing to all Bidders in addendum form and all addenda will be bound with and made a part of the Contract Documents. No other explanation or interpretation will be considered official or binding. Should a Bidder find discrepancies in, or omissions from, the Plans, Specifications or Contract Documents, or should he be in doubt as to their meaning, he shall at once notify the Engineer in writing in order that a written addendum may be sent to all Bidders.

21. WATER FOR CONSTRUCTION

The Contractor shall make the necessary arrangements with the Town of Addison for securing and transporting all water required in the construction, including water required for mixing of concrete, sprinkling, testing or flushing. Water required for construction shall be paid for by the Contractor at the Town of Addison prevailing rates. There will be no separate pay item for connection into the existing water system and quantity of water required for construction purposes.

22. EXCAVATION

The Contractor shall exercise precautions to insure that drainage from adjacent properties is not blocked by his excavations.

23. CONTRACTOR'S BID

The Contractor's Bid shall be on a Unit Price basis for construction of the Project as shown on the Plans and described in the Specifications.

24. OWNER'S STATUS

The Owner shall perform technical review of the Work. He shall also have authority to reject all Work and materials which do not conform to the Contract and to decide questions which arise in the execution of the Work.

25. OWNER'S DECISIONS

The Owner shall, within a reasonable time after their presentation to him, make decisions in writing on all claims of the Contractor and on all other matters relating to the execution and progress of the Work or the interpretation of the Contract Documents.

26. LANDS FOR WORK

The Owner shall provide as indicated on the Plans for this Project, the lands upon which the Work under this Contract is to be done, right-of-way for access to same, and such other lands which are designated on the Plans or in the Specifications for the use of the Contractor. Such lands and rights-of-way shall be adequate for the performance of the Contract. Should the Contractor be delayed as the result of lack of access, this shall be cause for an extension of time but not for additional cost.

The Contractor shall provide at his own expense and without liability to the Owner any additional land and access thereto that may be required for temporary construction facilities.

27. CLEANING UP

The Contractor shall remove at his own expense all temporary structures, rubbish and waste materials resulting from his operations. These requirements shall not apply to property used for permanent disposal of rubbish or waste materials in accordance with permission of such disposal granted to the Contractor by the Owner thereof.

28. LIQUIDATED DAMAGES FOR DELAY BY CONTRACTOR

The time of completion is of the essence in this contract. For each calendar day that any Work shall remain incompleated after the time specified in paragraph 38, liquidated damages shall be deducted from the monies due the Contractor in the amount of \$100.00 per day.

29. USE OF EXPLOSIVES

Use of explosives will not be allowed.

30. PROJECT MAINTENANCE

The Contractor shall maintain, and keep in good repair, the improvements covered by these Plans and Specifications during the life of his contract.

31. DISPOSAL OF WASTE AND SURPLUS EXCAVATION

All asphalt, concrete, rock or excavated material, or other debris removed from the site as a preliminary to the construction shall be removed from the property. Any required disposal permits shall be the sole responsibility of the Contractor.

32. REMOVALS, ADJUSTMENTS AND REPLACEMENTS

Existing pavements, driveways, curbs, gutters, sidewalks, etc., to be removed to facilitate the construction of the improvements shall be broken up and disposed of. Care shall be exercised to leave a neat, uniform edge or joint at the excavation limits or sections removed where only portions are to be removed. The Owner will designate the limits to be removed. Where pavements, driveways, curbs, gutters, sidewalks, etc., shall be replaced, then said replacements shall be to the standard of the previously removed portion or better.

Existing structures such as manholes, inlets, cleanouts, valve boxes, etc. which are not the property of a private firm or company, or an individual required to move their own property, shall be adjusted, altered or reset to the requirement elevation and alignment. New materials and workmanship necessary shall conform to the requirements of these Specifications covering the particular Work. Salvaged materials in good condition may be used in rebuilding such structures, provided the materials are thoroughly cleaned before their use.

All private obstruction which are indicated on the Plans to be moved, will be removed and replaced, or moved to new permanent locations by the Contractor, without additional payment to the Contractor. Any such additional item which the Contractor moves or causes to be moved for his own convenience shall be at his own expense.

33. TOWN OF ADDISON APPROVAL

This project is subject to final approval and acceptance by Town of Addison.

34. TRAFFIC CONTROL

The Contractor shall be responsible for providing traffic control during the construction of this Project consistent with the provisions set forth in the "1980 Texas Manual on Uniform Traffic Control Devices for Streets and Highways" issued under the authority of the "State of Texas Uniform Act Regulating Traffic on Highways", codified as Article 6701d Vernon's Civil Statutes, pertinent sections being Section Nos. 27, 29, 30 and 31. The Contractor will not remove any regulatory sign, instructional sign, street name sign, or other sign which has been erected by the City. If it is determined that a sign must be removed to permit required construction, the Contractor shall contact the Town of Addison to remove the sign. In the case of regulatory signs, the Contractor must replace the permanent sign with a temporary sign meeting the requirements of the above-referenced manual, and such a temporary sign must be installed prior to the removal of the existing sign.

35. CERTIFICATION

The Contractor shall submit a manufacturer's certification that the material was manufactured and tested in accordance with the referenced Specifications and a report of test results. The certification shall be submitted prior to material shipment.

36. FINAL ACCEPTANCE OF WORK

Final acceptance of the Work is subject to final testing and approval of the Work by the Town of Addison.

37. WORK AREA

Contractor shall restrict his construction activity to the project site.

38. CONTRACT TIME

It is the Owner's desire to have the project completed and operational in as short a time as possible. The number of calendar days for completion of the project will begin with the date specified in the Notice to Proceed. In no instance shall the number of calendar days for the completion of the Work measured from the proposed date of beginning exceed 60 calendar days.

39. CONTRACTOR'S AFFIDAVIT OF BILLS PAID

The Contractor shall be required to execute the form provided in Section BP prior to the acceptance of the project.

40. PAY ITEMS

Pay items provided are intended to be all-inclusive of the work required on this project. Work required by the plans or specifications but not provided with a specific pay item shall be considered incidental to other items of work.

41. SAMPLES AND TESTS OF MATERIALS

Modify the General Provisions, Section GP 5.16, Samples and Tests of Materials.

"The Contractor shall designate and pay a recognized testing laboratory to perform all testing and concrete design for this project. Such designation shall be subject to the approval of the Engineer. All testing services that the Contractor is required to provide will not be paid for separately, but shall be considered subsidiary to other items of work.

"All samples and tests shall be performed in accordance with the Standard Specifications for Public Works Construction, North Central Texas Council of Governments (1983) as amended or supplemented."

42. CONSTRUCTION STAKING

Construction staking will not be provided by the Owner.

SECTION T
TECHNICAL SPECIFICATIONS

SECTION T
TECHNICAL SPECIFICATIONS

I. GENERAL

- A. All materials and construction methods for this project shall be in conformance with Town of Addison standards and specifications and the North Central Texas Council of Governments "Standard Specifications for Public Works Construction" (1983), as amended or supplemented. Where conflicts exist, Town of Addison standards and specifications shall govern.**

II. SUPPLEMENTAL STANDARDS

- A. All materials and construction methods for the traffic signal installation and relocation work shall be in conformance with Town of Addison standards and specifications and the Texas Department of Transportation - 1982 Standard Specifications for Construction of Highways, Streets and Bridges. Where conflict exists, Town of Addison standards and specifications shall govern.**

SECTION CTB
CEMENT TREATED BASE

SECTION CTB
CEMENT TREATED BASE

1.0 GENERAL

1.1 Description

Cement Treated Base (CTB) shall consist of aggregate, cement and water uniformly mixed in a central plant, transported to the project, spread, compacted, shaped, finished, and cured in accordance with these specifications. It shall conform to the lines, grades, thicknesses and typical cross-section shown on the plans.

2.0 MATERIALS

2.1 Cement

Cement shall comply with the latest specifications for Portland cement-ASTM C 150 (Type I) or Portland-ASTM C 595 (Type IP).

2.2 Water

Water shall be free from substances deleterious to the hardening of the Cement Treated Base.

2.3 Aggregate

The aggregate may be any granular material or combinations of aggregates that will, when mixed with adequate amounts of cement and water, produce laboratory mix design Unconfined Compression Test strengths as specified in paragraph 2.5 in accordance with ASTM D 1633 Method "A". The preceding tests will utilize the Moisture-Density Relation as determined by ASTM D-558; AASHTO T-134. The aggregate size shall meet the requirements of Texas State Department of Highways and Public Transportation - 1982 Standard Specifications of Highways, Streets and Bridges, "Item 274.2(3) Cement Stabilized Base - Base Materials."

2.4 Laboratory Mix Design

Test results shall be submitted by the supplier of the CTB material to the Engineer/Architect for approval.

2.5 Strength Requirements

The unconfined compressive strengths required for the CTB material will be as follows:

2.5.1 Class A CTB; 400 psi - seven days

3.0 EQUIPMENT

3.1 Description

Cement Treated Base may be constructed with any combination of machines or equipment that will produce the results meeting these specifications.

4.0 CONSTRUCTION METHODS

4.1 Preparation

Before other construction operations are begun, the area to be paved shall be graded and shaped as required to receive the Cement Treated Base in conformance with the grades, lines, thicknesses and typical cross-section shown on the plans. Unsuitable subgrade soil or material shall be removed and replaced with acceptable soil.

The subgrade shall be firm and able to support without displacement of the construction equipment and the compaction hereinafter specified. Soft or yielding subgrade shall be corrected and made stable before construction proceeds.

4.2 Central Mixing Plant

The aggregate, cement and water shall be mixed in a pug mill as approved by the Engineer/Architect. The plant shall be equipped with feed and metering devices that will add the aggregate, cement and water into the mixer in the specified quantities to produce a mixture that will meet or exceed the mix design criteria as stated above. The aggregate and cement shall be mixed sufficiently to prevent cement balls from forming when the mix water is added. The mixing time shall be sufficient to assure an intimate, uniform mixture of aggregate, cement and water.

The percentage of moisture in the aggregate, at the time of cement application shall be the amount that assures a uniform and intimate mixture of aggregate and cement during mixing operations. It shall not exceed the specified moisture content required for adequate compaction.

Free access to the plant shall be provided to the Engineer/Architect, his inspector and his designated Commercial Testing Laboratory for construction quality control. The mixture shall be hauled to the paving area in trucks having beds cleaned of deleterious material.

4.3 Placement and Compaction

The mixture shall be placed on a moistened subgrade in a uniform layer by any approved method of spreading that will deposit the required quantity per lineal foot, without segregation, to produce a uniformly compacted base conforming to the grade and cross-section. Not more than 30 minutes shall elapse between placement of CTB in adjacent lanes at any location except at longitudinal and transverse construction joints.

No CTB mixture shall be placed when the subgrade is frozen or when the air temperature is less than 40° F in the shade. The Engineer/Architect may allow placement when the temperature is 35° F and clearly rising.

Compaction shall start as soon as possible after spreading. The elapsed time between the addition of water to the CTB mixture and the start of compaction shall not exceed 60 minutes under normal conditions. The Engineer/Architect may alter this time if environmental conditions, such as temperature, humidity or wind conditions would justify such a change. Laboratory tests may be required to verify changes in compaction time limits.

At the start of compaction, the percentage of moisture in the mixture shall not be more than one percentage point below or two percentage points above the specified optimum moisture content, and shall be less than that quantity which will cause the Cement Treated Base mixture to become unstable during compaction and finishing. The specified optimum moisture content and density shall be determined in the field by a Moisture-Density Test, AASHTO T 134 or ASTM D 558, on representative samples of Cement Treated Base mixture obtained from the area prior to compaction. Prior to compaction, the mixture shall be in a loose condition for its full depth. The loose mixture shall then be compacted uniformly to the specified density. During compaction operations, initial shaping may be required to obtain uniform compaction and required grade and cross-section.

4.4 Finishing

When initial compaction is completed, the surface of the Cement Treated Base shall be shaped to the required lines, grades and cross-section. The moisture content of the surface material shall be maintained at not less than its specified optimum moisture content during finishing operations.

If any reshaping of the surface is necessary, it shall be lightly scarified to remove any compaction planes, scales or smooth surfaces left by equipment. Final compaction shall then be continued until uniform and adequate density is obtained.

The CTB shall be uniformly compacted to a minimum of 96% of maximum density.

Compaction and finishing shall be done in such a manner as to produce, in not longer than two hours, a smooth, dense surface free of compaction planes, cracks, ridges, or loose material.

4.5 Cutting

After the CTB has been finished as specified herein, it shall be protected against drying for seven days by the application of a bituminous prime coat, or other acceptable methods. The finished CTB shall be kept continually moist until the curing material has been placed. The curing material shall be applied as soon as possible, but not later than at the end of each day's construction.

If the bituminous cure is used:

4.5.1 Curing, Bituminous Prime Coat

At the time the bituminous prime coat is applied, the Cement Treated Base surface shall be dense, shall be free of all loose and extraneous material and shall contain sufficient moisture to prevent excessive penetration of the bituminous material. The bituminous prime coat specified shall be uniformly applied to the surface of the completed Cement Treated Base at the rate of approximately 0.1 gallons per square yard with approved heating and distributing equipment. The exact rate and temperature of application for complete coverage without excessive runoff will be approved by the Engineer/Architect.

Should it be necessary for construction equipment or other traffic to use the bituminous-covered surface before the bituminous prime coat has cured sufficiently to prevent "pick-ups", sufficient granular cover shall be applied before such use. The curing material shall be maintained by the contractor during the seven day protection period so that all of the Cement Treated Base will be covered effectively during this period. Finished portions of Cement Treated Base that are traveled on by equipment used in constructing an adjoining section shall be protected in such a manner as to prevent equipment from marring or damaging completed work.

Cement Treated Base shall be protected for three days after its construction and until it has hardened.

4.5.2 Curing, Other Methods

If curing is achieved by methods other than Bituminous Prime Coat, the Engineer/Architect must approve and curing must be performed in accordance with manufacturer's recommendations.

4.6 Construction Joints

At the end of each day's construction a transverse construction joint shall be formed by cutting back into the completed work to form a full depth vertical face.

Cement Treated Base for large, wide areas shall be built in a series of parallel lanes of convenient length and width meeting the approval of the Engineer/Architect. Longitudinal joints shall be formed at the edge of each day's construction by cutting back into the completed work to form a full depth vertical face free of loose or shattered materials.

4.7 Traffic

Completed portions of Cement Treated Base may be opened immediately to light traffic and to construction equipment provided the curing material or surface is not impaired as specified in 4.5. The section may be opened to all traffic after the three day curing period provided the Cement Treated Base has hardened sufficiently to prevent marring or distorting of the surface by equipment or traffic.

4.8 Maintenance

The contractor shall be required within the limits of his contract to maintain the Cement Treated Base in good condition until all work has been completed and accepted. Maintenance shall include immediate repairs of any defects that may occur. This work shall be done by the contractor at his own expense and repeated as often as may be necessary to keep the area continuously intact.

Faulty work shall be corrected.

Any low areas shall be remedied by replacing the material for the full depth of treatment rather than by adding a thin layer of Cement Treated Base to the completed work.

5.0 CONSTRUCTION QUALITY CONTROL PROGRAM

To insure that the construction phase of the Cement Treated Base is in accordance with the provisions of these specifications, the following quality control testing program will be performed by a testing laboratory retained by the Contractor and approved by the Engineer/Architect.

5.1 Establish the field moisture density curve in accordance with ASTM D 558 or AASHTO T 134 (Standard Compactive Effort). The results of this test performed on representative samples of CTB obtained from the area being processed at a time of about midway through the initial compaction phase will establish the optimum moisture content to be incorporated at the central mixing plant and the maximum density will serve as a basis for establishing the density for acceptance.

5.2 The Field-Density of the compacted CTB mixture shall be determined by any of the following: (1) Nuclear Method ASTM D 2922, (2) Sand Cone Method ASTM D 1556, (3) Water Balloon Method ASTM D 2167.

5.3 Where strength of Cement Treated Base material is specified, compliance shall be determined by testing a set of three unconfined cylinders molded from a representative sample of uncompacted Cement Treated Base material taken within one hour from the addition of mixing water to the Cement Treated Base material. Strengths of Cement Treated Base material shall be determined by compressive tests at seven (7) days in accordance with ASTM D 1833, Paragraph 5, "Test Specimens." Paragraph 5.1.1, Method A specifies mold size. Specimens will be molded in accordance with ASTM D 558 Method B.

5.4 Visual inspection of loose and compacted thickness of the CTB layer will be included in the report as well as observations on surface scaling, construction joints and curing.

6.0 MEASUREMENTS AND BASIS OF PAYMENT

6.1 Measurements

This work will be measured in square yards of completed and accepted Cement Treated Base course.

6.2 Basis of Payment

This work will be paid for at the contract unit price per square yard of completed and accepted Cement Treated Base course.

Contract unit prices will be full payment for furnishing all materials, equipment, tools, labor, and incidentals necessary to complete the work and to carry out the maintenance provisions in these specifications.

No allowances will be made for any materials used or work done outside the lines established by the Engineer/Architect unless approved in writing prior to the work.

END OF SECTION

PROPOSED SPECIFICATION
VEHICLE DETECTOR LOOP WIRE SEALANT

1.0 SCOPE

- 1.1 This specification describes the minimum design, installation and functional performance requirements of a flexible traffic loop wire encapsulant intended for sealing and protecting vehicle detector loop wires installed in sawcuts 1/4" to 3/8" wide and 1 1/2" to 2 1/2" deep.
- 1.2 The encapsulant is intended to provide compressive yield strength to withstand normal vehicular traffic as well as sufficient flexibility to withstand normal movement in asphaltic and concrete pavements, while protecting the loop wire from moisture penetration, fracture and shear.

2.0 GENERAL

- 2.1 The encapsulant shall be a one-part elastomeric compound requiring no mixing, measuring or application of heat prior to or during its installation.
- 2.2 The encapsulant shall, within its stated shelf life in original undamaged packaging, cure only in the presence of moisture. The rate of cure will, therefore, depend upon temperature and relative humidity at the time of installation. Cool, dry weather will slow curing whereas warm, humid weather will accelerate curing.
- 2.3 The encapsulant shall be designed to enable vehicular traffic to pass over the properly filled sawcut immediately after installation without tracking or stringing of the material. The encapsulant shall form a surface skin allowing exposure to vehicular traffic within 30 minutes at 75°F and completely cure to a tough, rubber-like consistency in two (2) to seven (7) days after installation.

- 2.4 Properly installed and cured encapsulant shall exhibit resistance to effects of weather, vehicular abrasion, motor oils, gasoline, antifreeze solution, brake fluid, deicing chemicals and salt normally encountered, in such a manner that the performance of the vehicle detector loop wire is not adversely affected.
- 2.5 The cured encapsulant shall be temperature stable and exhibit no degradation in performance throughout the ambient temperature ranges experienced within the continental United States, Alaska, Hawaii and Puerto Rico.
- 2.6 The encapsulant shall exhibit minimal shrinkage during or after its installation, and in no manner affect the performance characteristics of the material.
- 2.7 The encapsulant shall be designed to permit clean-up of material and application equipment with non-flammable solvents such as 1,1,1 trichloroethane or Scotch-Grip Brand Solvent No. 4 (prior to curing of encapsulant). Should any encapsulant material be allowed to cure in the application nozzle, it shall be able to be pulled out as a solid plug.
- 2.8 The encapsulant shall have a minimum shelf-life in undamaged original containers when stored in a cool, dry environment as follows: 9 months after receipt when packaged in one quart cartridges. 12 months after receipt when packaged in 5-U.S. gallon pails. The 5-U.S. gallon pails shall contain 4.5 U.S. gallons of encapsulant in order to permit application by commercially available pumps.
- 2.9 The encapsulant shall be designed for roadway installation when the surface temperature is between 40 degrees F and 140 degrees F.

3.0 PHYSICAL PROPERTIES

- 3.1 The encapsulant shall have the following physical properties in its uncured and cured states.

3.1.1 Physical properties of the uncured (wet) encapsulant:

<u>Property</u>	<u>Requirement</u>	<u>Test Procedure</u>
A. Weight	10.1 lbs/gal +/- 0.3 lbs	A. Weight/Gallon
B. Total Solids by Weight	75 - 85%	B. Determination of Non-Volatile Content
C. Viscosity	10,000 - 85,000 CPS	C. Viscosity
D. Drying Time	Touch: 24 hrs. max. Complete: 30 hrs. max.	D. Tack-Free Time

3.1.2 Physical properties of the cured encapsulant:

<u>Property</u>	<u>Requirement</u>	<u>Test Procedure</u>
A. Hardness (Indentation)	65 - 85	E. Rex hardness
B. Tensile Strength	500 psi min.	F. Tensile and Elongation
C. Elongation	300% min.	F. Tensile and Elongation

4.0 CERTIFICATION

- 4.1 The supplier shall be prepared to provide a letter of certification from the manufacturer confirming the physical properties identified in paragraphs 3.1.1 and 3.1.2 of this specification.
- 4.2 Notification of this letter of certification, if required, shall be stated on this agency's purchase order and such certification shall accompany the material when shipped by the manufacturer.

6.0 PACKAGING

6.1 The encapsulant shall be available in the following packaging:

6.1.1 ONE-QUART CARTRIDGES: Such cartridges shall be equipped with threaded fitting to accommodate a screw-on nozzle designed for insertion in a pavement sawslot 1/4" to 3/8" in width and 1 1/2" to 2 1/2" in depth. The nozzle shall be designed to permit filling of sawslot with encapsulant from the bottom up, with minimal waste. The cartridge shall contain a puncture seal on its nozzle end. All cartridges shall be designed to permit application of encapsulant by appropriate size manual caulking gun or air-powered caulking gun. Cartridges shall be packaged twelve (12) per case with a minimum of three (3) applicator nozzles per case.

6.1.2 FIVE-GALLON PAILS: Such pails shall be DOT-37A80 open head pails and the covers shall be sealed with tubular neoprene gaskets. Such pails shall contain a minimum of 4.5 gallons of encapsulant material in order to permit pumping directly from the pail to the sawslot by commercially available pumps, requiring insertion of a follower-plate in the pail to form an appropriate seal. Encapsulant material shall be ordered in multiples of 4.5 gallons.

6.0 MEASUREMENT

6.1 Measurement for payment shall be made of each unit (cartridges or pails) of encapsulant delivered to the location(s) specified in the Invitation to Bid.

TEST METHODS
VEHICLE DETECTOR LOOP WIRE SEALANT

A. WEIGHT/GALLON:

1. Equipment: The apparatus shall consist of the following parts (Refer to Fisher Catalog No. 3-247).
 - a. A smoothly finished round aluminum cup with external threads on the top edge, approximately 1 1/2" in diameter 3/4" high and holding approximately 15 cc filled to the top edge.
 - b. A snug fitting, flanged plug type lid with a concave inner surface and a 1/8" hole in the top.
 - c. An open centered cap or retaining ring with inside threads to match the cup which can be used to pull the lid in place.
2. Preparation: Each Pycnometer must be calibrated when new and periodically during use as follows:
 - a. Weigh empty to the nearest 0.01 gram.
 - b. Fill with water and weigh again.
 - c. Compute the difference and determine the factor as follows:

$$\text{FACTOR} = \frac{8.33}{\text{Wt. with water} - \text{wt. empty}}$$

3. Procedure:

- a. Weigh the empty Pycnometer to the nearest 0.01 gram.
- b. Fill the Pycnometer almost to the top, using care to keep air at a minimum by:
 - (1) Using a small amount of encapsulant and working it into the corners to displace air.

- (2) Slowly adding the remainder carefully displacing air as the volume is built up.
 - (3) When the cup is almost full, work the material in the cup with a spatula using an up and down motion.
 - (4) Then smooth the surface of the material in the cup leaving the edges high and the center low so that the concave shape of the lid and the encapsulant will force out surface air.
- c. Carefully position the lid in place centering the plug inside the rim of the cup.
 - d. Slide the retaining ring over the top and tighten down slowly by hand until the flange on the lid is seated on the top edge of the cup.
 - e. Remove the excess encapsulant that exudes from the hole, leaving the remaining material level with the top of the hole.
 - f. Weigh the filled Pycnometer to the nearest 0.01 gram.
 - g. Calculate the weight per gallon as follows:

$$\text{Factor X (Weight full - Weight empty) = lbs./gal.}$$

5. DETERMINATION OF NON-VOLATILE CONTENT:

1. Procedure:

- a. Accurately weigh three closed containers (2-ounce ointment cans or equivalent with covers) to the third decimal place (W1) and record the weight figures.
- b. Place approximately 3 to 5 grams of test material in one of the weighed containers, close the cover at once and weigh it immediately with accuracy to the third decimal place (W2). Repeat this procedure for the remaining two containers.

NOTE: With heavy materials, it is good practice to spread the sample over the entire bottom and sides of the container to give a large surface area.

- c. Remove the covers from each ointment can and place them on the bottom. Place the containers in an air circulating oven for 24 hours at 160 degrees F.

NOTE: Normally the air circulating oven is at the specified temperature before placing the samples in the oven.

- d. At the end of the specified time period, remove the containers from the oven, replace the covers and allow them to cool at room temperature.
- e. Weigh these containers to the third decimal place (W3) and record.
- f. Compute the percent non-volatile using the following formula:

$$\% \text{ Non-volatile} = \frac{\text{Final weight of sample}}{\text{Original weight of sample}} \times 100$$

Where:

Original weight of sample = W2 - W1

Final weight of sample = W3 - W1

- g. The percent non-volatile reported will be the average of the three samples run if the deviation between the samples is less than 0.50%. In case none of the samples fall within this deviation, new samples must be run.

2. VISCOSITY:

1. Sample Conditioning:

- a. One pint samples shall be stored as indicated on the product performance standard and in turn brought to a temperature of 77 degrees + or - 2 degrees F for testing. Stir the sample vigorously with a spatula for 1 minute immediately prior to testing and note any segregated material which cannot be dispersed.
- b. Determine the viscosity using a Brookfield RVF viscometer with a No. 6 or 7 spindle (as required) rotating at 20 rpm.

TACK-FREE TIME:

1. Procedure:

- a. Cast a film of undegassed encapsulant in a 1/16 inch deep open mold similar to that used for the tensile and elongation specimens referenced in test method section F. Fill the mold even with its top and place it at 77 degrees F and 50% RH. A small sheet of smooth polyethylene film (which shall be clear and colorless, with no signs of plasticizer, slip agents or other foreign substances on the surface) measuring 0.004 + or - 0.002 inch thick shall be pressed lightly with the thumb onto the encapsulant and then withdrawn. The time at which the film no longer adheres tightly to the encapsulant shall be considered the tack-free time.

REX HARDNESS:

1. Apparatus: Hardness shall be determined with a Rex durometer, Model 1700 Type A (with dial gauge). The durometer should be recalibrated at least once each month using the procedure in ASTM Test Method No. D-2240-64T, and the appropriate adjustments made in the readings.
2. Specimens: Specimens shall be at least 3/16 inch thick, and may be obtained by plying up portions of the tensile and elongation film (described in test method section F) after curing for 7 days at 77 + or - 2 degrees F and 50% R.H. plus 2 days at 120 degrees F. The hardness specimens shall be at least 1 inch in diameter and shall be tested with the mold side up. Specimens with bubbles or other voids, or with irregular thickness, shall be rejected.
3. Determining the Hardness: Place the plied hardness specimen on a heavy flat steel plate. The Durometer shall then be placed on the test specimen, while keeping the base of the instrument parallel to the surface of the specimen. The test pressure applied shall be just sufficient to insure firm contact of the pressure plate with the test specimen. The durometer indentation reading shall be taken as soon as the indicator hand on the dial comes to rest, or if this is not possible, at a moment when a definite change in needle speed is noted. Report the average of 5 such readings.

F. TENSILE AND ELONGATION:

1. Dilution and Degassing: Stir the encapsulant a minimum of 200 rapid strokes to insure uniformity and reduce the thixotropic gel. Weigh 100 grams of stirred sample into a one-quart can and add 30 grams of Analytical Reagent Grade Toluene. Mix until uniform. Place the can in a device suitable for subjecting it to a vacuum of 29 inches of mercury for 15 to 20 minutes. When degassing is complete, remove the sample container and immediately cast a film as described below.

NOTE: Refer to Figure #1 for a suggested degassing device.

2. Casting the Film:

- a. Prepare a mold for 6" x 8" x 40 mil alclad aluminum (or equivalent 6" x 8" metal panels) by covering one surface of the metal panel with 6" wide Teflon Tape. (e.g. 3M Brand TFE Plastic Tape No. 5491 or equivalent)
- b. Use 3M Brand EC-1202T tape or masking tape, 1/16" thick x 1/2" wide, as a "dam" around the perimeter of the mold.
- c. Pour sufficient encapsulant into the mold to fill the mold even with its top. Strike the encapsulant very carefully to level it with the top of the mold. Do not entrap air in the coating!

3. Curing the Encapsulant: Place the filled mold on a level surface at 77 degrees F and 50% R.H. After two days at these conditions, remove the encapsulant from the mold; invert the film, and continue the cure for five additional days at the same conditions. After 7 days at 77 degrees F and 50% R.H., place the film at 120 degrees F for 2 days.

4. Preparation of Dumbbells: Punch three dumbbells from the cured film using a micro die (Refer to Figure #2). The dumbbells must be free from air bubbles, craters, nicks, segregation, or any other defects. Measure and record the thickness of each dumbbell at the neck (narrow portion), using a micrometer or dial gauge accurate to + or - 1 mil. Take a total of three readings at various locations on the neck and record the median (T, inches). The maximum thickness variation along the neck should not exceed 2 mils. Place two bench marks, in ink, 1/2 inch apart on one side of each dumbbell, using care not to nick the surface of the dumbbell.

5. Determining the Tensile Strength and Ultimate Elongation: Place the dumbbells on an instron or tensile testing machine having a sensitivity of 1/10 pound, and a jaw separation rate of 2" per minute. The dumbbells should be clamped near their ends (wide portions) in the jaws of the machine. Start the machine and note continuously the distance between the center of the two bench marks taking care to avoid parallax. Record the stress (S, lbs.) and elongation (L, inches) at the time of rupture. The bench mark distance may be measured just before rupture with either a pocket scale calibrated in inches or with a pair of dividers. If the dumbbell breaks at a hidden bubble or other defect, reject that test and test another dumbbell.

6. Calculation:

Calculate the ultimate tensile strength of each specimen using the following formula:

$$* \quad \frac{8 \times 5 (S)}{T} = \text{PSI}$$

Calculate and report the mean value of three specimens as tensile strength in PSI. Calculate the elongation of each specimen from the following formula:

$$* \quad L - .5 \text{ inch} \times 200 = \% \text{ elongation}$$

Calculate and report the mean value of three specimens as % elongation.

* Note S = Stress in pounds
 T = Thickness in inches
 L = Length in inches

SECTION SD
SOD AND LAWN PREPARATION

SECTION SD
SOD AND LAWN PREPARATION

1.0 SOD

A. Quality

Provide strongly rooted sod; not less than 2 years old, free of weeds and undesirable native grasses and machine cut to pad thickness of 3/4" (+/- 1/4"), excluding top growth and thatch, provide only sod capable of vigorous growth and development when planted (viable, not dormant).

B. Pad Sizes

Provide sod; of uniform pad sizes with maximum 5% deviation in either length or width. Broken pads or pads with uneven ends will not be acceptable. Sod pads incapable of supporting their own weight when suspended vertically with a firm grasp on upper 10% of pad will be rejected.

C. Type

Provide sod composed principally of the following:

Common Bermuda Grass (Cynodon Dactylon)

2.0 PREPARATION FOR PLANTING LAWNS

A. Preparation

Remove existing grass and loosen subgrade of lawn areas to a minimum depth of 4". Remove stones over 1-1/2" in any dimension and sticks, roots, rubbish and other extraneous matter. Limit preparation to areas which will be planted promptly after preparation.

B. Grading

1. Rough grading shall be the responsibility of the Landscape Contractor to spread topsoil as required to eliminate all bumps and depressions to the satisfaction of the Landscape Architect. Apply specified commercial fertilizer at rates specified and thoroughly mix into upper 2" of topsoil. Delay application of fertilizer if lawn planting will not follow within a few days.

Refer to soil amendments, commercial fertilizer and preparation of planting soil for fertilizer application rates and soil mixture requirements. Allow for sod thickness in areas to be sodded. If supplemental topsoil is to be spread, no sod shall be laid until the depth of this soil has been approved. Contractor shall inspect site prior to bid to determine need.

2. Fine grading lawn areas shall be a smooth, even surface with a loose, uniformly fine texture. Roll, rake and drag lawn areas, remove ridges and fill depressions, as required to meet finish grades. Limit fine grading to areas which can be planted immediately after grading. Moisten prepared lawn areas before planting if soil is dry. Water thoroughly and allow surface moisture to dry before planting lawns. Do not create a muddy soil condition. Restore lawn areas to specified condition if eroded or otherwise.

3.0 SODDING NEW LAWNS

A. Schedule

Lay sod within 24 hours from time of stripping. Do not plant dormant sod or if ground is frozen.

B. Layout

Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod strips; do not overlap. Stagger strips to offset joints in adjacent courses. Work from boards to avoid damage to subgrade or sod. Tamp or roll lightly to ensure contact with subgrade. Work sifted soil into minor cracks between pieces of sod; remove excess to avoid smothering of adjacent grass.

END OF SECTION