PARTNERING WITH Addison!

MCIP No. 10305

SPECIFICATIONS AND CONTRACT DOCUMENTS
FOR THE CONSTRUCTION OF

PAVING AND DRAINAGE IMPROVEMENTS TO ADDISON ROAD

FROM BELTLINE ROAD TO ARAPAHO ROAD

PREPARED BY

BIRKHOFF, HENDRICKS & CONWAY, L.L.P.
CONSULTING ENGINEERS
DALLAS, TEXAS

NOVEMBER 2006

TOWN OF ADDISON, TEXAS

COUNCIL MEMBERS

Joe Chow, Mayor

Gregory S. Hirsch, Mayor Pro-Tem

Tom Braun, Deputy Mayor Pro-Tem

Roger S. Mellow

Jimmy Niemann

Diane Mallory

Dennis Kraft

CITY MANAGER

Ron Whitehead

DIRECTOR OF PUBLIC WORKS

Nancy S. Cline, P.E.

CITY SECRETARY

Mario Canizares

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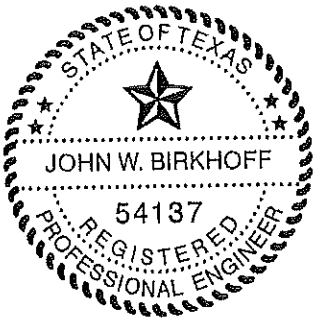


THESE DOCUMENTS ARE FOR BIDDING, CONSTRUCTION AND PERMIT PURPOSES.

John W Birkhoff

Date: 9/28/06

TRANSMITTAL OF ADDENDUM

****

INSTRUCTIONS:

Acknowledge receipt of Addenda with the form below, please **FAX** to **(972) 450-7096** upon receipt and Acknowledgement of Addenda on outer envelope of bid.

****

Addendum Acknowledgment **Should be faxed to (972) 450-7096**

I Acknowledge the receipt of Addendum No.: **1** Total # Pages: **2**

Town of: **ADDISON, TEXAS**

Project Name: **Bid 07-01 Addison Road Widening**

By Facsimile or Email Transmission on this date: **November 14, 2006**

The undersigned bidder hereby certifies that Addendum No. 1 has been incorporated into the proposal and if accepted becomes part of the contract.

Company Name:	
Signed By (print name):	
Signature:	
Date:	
Phone No:	

PLEASE SIGN & FAX THIS PAGE BACK TO TOWN OF ADDISON

(As verification that you received this update)

972-450-7096

Bid 07-01 Addison Road Widening

Addendum 1

November 14, 2006

The pre-bid meeting scheduled for Thursday, November 16, 2006 at 2:00 p.m. **HAS BEEN RESCHEDULED**. The pre-bid meeting has been rescheduled for Tuesday, November 28, 2006 at 2:00 p.m.

Pre-Bid Meeting:
November 28, 2006
2:00 p.m.
Addison Service Center
16801 Westgrove
Addison, TX 75001

All Bid information including Plan Holders List and Bid Tab is located on www.demandstar.com or www.ci.addison.tx.us under Purchasing Department.

You may also obtain a copy of the Bid document and addendums by contacting Shanna Sims at 972-450-7089, the Town of Addison Finance Building located at 5350 Belt Line Rd., or request a copy by email: ssims@ci.addison.tx.us.

End of Addendum 1

TRANSMITTAL OF ADDENDUM

****

INSTRUCTIONS:

Acknowledge receipt of Addenda with the form below, please **FAX** to **(972) 450-7096** upon receipt and Acknowledgement of Addenda on outer envelope of bid.

****

Addendum Acknowledgment **Should be faxed to (972) 450-7096**

I Acknowledge the receipt of Addendum No.: **2** Total # Pages: **33**

Town of: **ADDISON, TEXAS**

Project Name: **Bid 07-01 Addison Road Widening**

By Facsimile or Email Transmission on this date: **December 6, 2006**

The undersigned bidder hereby certifies that Addendum No. 2 has been incorporated into the proposal and if accepted becomes part of the contract.

Company Name:	
Signed By (print name):	
Signature:	
Date:	
Phone No:	

PLEASE SIGN & FAX THIS PAGE BACK TO TOWN OF ADDISON

(As verification that you received this update)

972-450-7096

Bid 07-01 Addison Road Widening

Addendum 2

December 6, 2006

1. An electronic spreadsheet is approved for bidding purposes and does not require the amount to be written out.
2. Insurance Certificates are required to be received by Shanna Sims within 48 hours of bid opening.
3. As far as the Town of Addison knows, there are no franchise utility locations necessary in addition to the TXU power poles located on the west side of Addison Rd.
4. As far as the Town of Addison knows, there is not a live gas riser near the car wash and will not have to be relocated. For bidding purposes, bidders should assume that relocation is not necessary and the item will not negatively impact their schedule.
5. The saw cut quantities in the bid schedule are for proposed completed work only. Saw cutting for phasing of construction not part of bid item. Revised quantities for Bid Items 14 and 15 are shown in the attached revised bid schedule.
6. Refer to sheet 4 of the plans under notes, revise the last sentence of note four to read "the concrete shall be dyed to full depth.
7. The left turn lane with the stamped concrete shall be 13 feet in width. A separate pour to fill in the north bound lane is required.
8. A bid item for pavers in existing driveways that will need to be replaced is added by this addendum. Please refer to the attached revised bid schedule.
9. The limits of stamped concrete are shown on the new sheet 13 and 15. It ends at the beginning of each left turn lane at the two ends of the project. Revised quantities of Item 22 and item 21 are shown in the attached revised bid schedule.
10. Crushed concrete that meets TxDOT Item 247 Type A Grade 2 will be allowed in lieu of flex base.
11. Two-way traffic on existing pavement can be reduced to two 11' wide lanes provided that temporary double yellow tape or paint is applied to provide a sufficient buffer. If paint is used, then the slab will need to be sufficiently blasted to remove the paint at a width of 3 feet.
12. A dummy joint at the edge of each driving lane will be required.
13. There will not be a connection fee for new irrigation meters.
14. With respect to all underground work, all temporary pavement patching is subsidiary to the contract.
15. The sidewalk was not included in retaining wall quantity. Revised quantities for Bid Items 25 and 30 are shown in the attached revised bid schedule.
16. Colored concrete or form liners are <u>not</u> required for the retaining wall.
17. A permit from DART is not required.
18. The unit for Bid item 2 is changed to months and the quantity to 10. No more than plan quantity for this bid item will be paid for the entire project.
19. Vertical panels may <u>not</u> be used in lieu of temporary striping for traffic control.

20. With respect to Bid items 94 and 95, the contractor shall coordinate with TXU for electric meter installation. The meter account will then be transferred to the Town of Addison upon acceptance of the project.
21. Refer to Geotechnical Report included within the project specifications for existing pavement thickness.
22. The maximum for Bid item #1 will be increased to 5%. Revised quantities are shown in the attached revised bid schedule.
23. A bid allowance of $5,000.00 for irrigation repairs will be added to the bid schedule. This item shall include irrigation system repairs or replacement damaged by construction activities. Items include pipe, fittings, valves, wiring and any irrigation appurtenances. Payment will be made from the bid allowance set up on the basis of invoice cost without mark up from an irrigator licensed in the State of Texas. Actual invoices shall be submitted for payment along with location and description of repair or replacement. The unit cost per lump sum shall include all labor, equipment and materials necessary to complete the work.
24. Securing an area for staging is the responsibility of the contractor.
25. Delete Note #19 on Plan Sheet 1 and replace with "The contractor shall notify franchise utilities of schedule for contractor to adjust franchise manholes.
26. There will not be a bid item for the Reinforced Concrete Bridge shown on Plan Sheet #5 and detailed on Plan Sheet #23. Bidders should include the cost for the bridge in the unit cost for the sidewalk.
27. Payment for removal of cable fence as mentioned in Note A on plan sheet 5 is subsidiary to the contract.
28. A revision to Detail Section A-A on plan sheet 23 is attached herein.
29. All pavement shall be 4,000 psi compressive strength concrete and all sidewalk concrete shall be 3,600 psi compressive strength concrete.
30. There is not separate pay item for sod outside the limits of the landscaping. All disturbed areas outside the landscaping will be at the contractor's cost. Revised quantities for Bid Item 76 are shown in the attached revised bid schedule.
31. Delete the connection to Existing Pavement Detail on sheet 24 and utilize the Longitudinal Butt Joint Detail for all connections to existing and proposed pavement.
32.
33. Reinforcement for all sidewalk pavement shall consist of #3 rebar on 18" centers.
34. Temporary sidewalks will not be required.
35. Bid quantities in bid item 16 include all manholes, including Storm Sewer, Sanitary Sewer, Telephone, and Electric.
36. All curb and gutter will be 24 inch as shown in curb and gutter detail on sheet 24.
37. A revised detail concerning flex base underneath the sidewalk to reflect this as an additive alternate is included herein.
38. The Town of Addison will video the sanitary sewer line prior to construction. Sewer lateral locations will be provided to the contractor.
39. The removal of existing shrubs and stack wall in front of Café Capri on Plan Sheet 53 will be considered incidental to the contract.
40. The final note on Plan Sheet 56 should read "Prior to planting the new lawn, apply a two inch layer of finished compost to the soil surface and then till the material into the top 4-6 inches of topsoil."

41. The contractor will be required to attend a meeting with the affected business owners explaining the project and addressing concerns. This will be considered incidental to the contract.
42. The Town of Addison will accept Millerbernd as an acceptable street light pole and fixture manufacture.
43. A photo cell on each electric light circuit shall be included in the cost of the lighting items. Photo cell shall be furnished and installed on top of light or on top of pole.
44. Lane closure will not be allowed on the following dates due to special events

    Taste Addison – Friday, May 11 – Sunday, May 13
    Kaboom Town – Tuesday, July 3
    Oktoberfest – Thursday, September 20 – Sunday, September 23

45. Bids will be received until 2:00 p.m. on Tuesday, December 12, 2006 at the office of Shanna Sims, Budget and Procurement Manager, Finance Building, 5350 Belt Line Road, Addison, Texas.

TOWN OF ADDISON, TEXAS
Paving & Drainage Improvements to Addison Road - Phase I
(From Beltline Road to Arapaho Road)

BID SCHEDULE
BASE BID

Item No.	Estimated Quantity	Unit	Description and Price in Words	Price in Figures	Extended Amount
1	1	L.S.	For Mobilization (not to exceed 5% of bid amount) complete in place, the sum of _____ _____ Dollars and _____ Cents per Lump Sum		
2	10	Mo.	For Barricades, Signs, and Traffic Handling complete in place, the sum of _____ _____ Dollars and _____ Cents per Month		
3	15.4	Sta.	For Preparation Right-of-Way complete in place, the sum of _____ _____ Dollars and _____ Cents per Station		
4	5,400	C.Y.	For Unclassified Street Excavation complete in place, the sum of _____ _____ Dollars and _____ Cents per Cubic Yard		
5	3	Ea.	For Relocating Existing Fire Hydrant complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		

BASE BID

Item No.	Estimated Quantity	Unit	Description and Price in Words	Price in Figures	Extended Amount
6	5	Ea.	For Relocating Existing Mailbox, Including Temporary Mailbox complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
7	8	Ea.	For Relocating Existing Sign complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
8	370	L.F.	For Removal and Disposal of Existing Storm Sewer Pipe complete in place, the sum of _____ _____ Dollars and _____ Cents per Linear Foot		
9	52	L.F.	For Removal and Disposal of Existing 6-Inch Sanitary Sewer Pipe complete in place, the sum of _____ _____ Dollars and _____ Cents per Linear Foot		
10	16	Ea.	For Removal and Disposal of Existing Trees (3-Inch Thru 12-Inch in Diameter), including Root Structure complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		

BASE BID

Item No.	Estimated Quantity	Unit	Description and Price in Words	Price in Figures	Extended Amount
11	5	Ea.	For Removal and Disposal of Existing Trees (Greater Than 12-Inch in Diameter), including Root Structure complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
12	2	Ea.	For Removal and Disposal of Drop Inlet complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
13	4	Ea.	For Removal and Disposal of Standard and Recessed Inlets complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
14	200	L.F.	For Full Depth Asphalt Sawcut complete in place, the sum of _____ _____ Dollars and _____ Cents per Linear Foot		
15	985	L.F.	For Full Depth Concrete Sawcut complete in place, the sum of _____ _____ Dollars and _____ Cents per Linear Foot		
16	10	Ea.	For Adjusting Existing Manhole, Ring, and Cover complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		

BASE BID

Item No.	Estimated Quantity	Unit	Description and Price in Words	Price in Figures	Extended Amount
17	2	Ea.	For Adjusting Existing Sanitary Sewer Cleanout complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
18	20	Ea.	For Furnishing and Installing Water Service Lines from Water Main to Meter, complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
19	20	Ea.	For Adjusting Existing Water Meter, including New Meter Box , Lid and All Appurtenances complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
20	3	Ea.	For Adjusting Existing Water Vault Top (Approximately 5-feet x 8-feet) complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
21	9,460	S.Y.	For Furnishing and Placing 10-Inch Reinforced Concrete Pavement (4,000 psi) complete in place, the sum of _____ _____ Dollars and _____ Cents per Square Yard		
22	1,150	S.Y.	For Furnishing and Placing 10-Inch Reinforced Stamped/Dyed Concrete Pavement (4,000 psi) complete in place, the sum of _____ _____ Dollars and _____ Cents per Square Yard		

BASE BID

Item No.	Estimated Quantity	Unit	Description and Price in Words	Price in Figures	Extended Amount
23	1,300	S.Y.	For Furnishing and Placing 8-Inch Reinforced Concrete Drive and Approach (4,000 psi) complete in place, the sum of _____ _____ Dollars and _____ Cents per Square Yard		
24	30	S.Y.	For Furnishing and Placing 5-Inch Reinforced Concrete Rip-Rap (3,000 psi) complete in place, the sum of _____ _____ Dollars and _____ Cents per Square Yard		
25	1,050	S.Y.	For Furnishing and Placing 4-Inch Reinforced Concrete Sidewalk, including Compacted Subgrade Base (3,600 psi) complete in place, the sum of _____ _____ Dollars and _____ Cents per Square Yard		
26	70	Ton	Furnish, Laying and Compacting Hot Mix (Type D) Asphaltic Concrete Pavement, including Prime Coat complete in place, the sum of _____ _____ Dollars and _____ Cents per Ton		
27	2,450	C.Y.	For Furnishing, Placing and Compacting Flexible Base Material complete in place, the sum of _____ _____ Dollars and _____ Cents per Cubic Yard		

BASE BID

Item No.	Estimated Quantity	Unit	Description and Price in Words	Price in Figures	Extended Amount
28	3,155	L.F.	For Furnishing and Placing 6-Inch Reinforced Monolithic Concrete Curb complete in place, the sum of _____ _____ Dollars and _____ Cents per Linear Foot		
29	60	L.F.	For Furnishing and Constructing 18-Inch Reinforced Concrete Curb and Gutter complete in place, the sum of _____ _____ Dollars and _____ Cents per Linear Foot		
30	195	S.Y.	For Furnishing and Constructing Reinforced Concrete Barrier-Free Ramps complete in place, the sum of _____ _____ Dollars and _____ Cents per Square Yard		
31	58	L.F.	For Furnishing and Placing Reinforced Concrete Street Header complete in place, the sum of _____ _____ Dollars and _____ Cents per Linear Foot		
32	4	C.Y.	For Furnishing and Constructing Reinforced Concrete Headwall TxDOT CH-11A (33-Inch Pipe) complete in place, the sum of _____ _____ Dollars and _____ Cents per Cubic Yard		
33	2	Ea.	For Constructing 3-Foot by 3-Foot Drop Inlet complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		

BASE BID

Item No.	Estimated Quantity	Unit	Description and Price in Words	Price in Figures	Extended Amount
34	4	Ea.	For Constructing 6-Foot Recessed Inlet complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
35	7	Ea.	For Constructing 8-Foot Recessed Inlet complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
36	1	Ea.	For Constructing 10-Foot Recessed Inlet complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
37	1	Ea.	For Constructing Reinforced Concrete Storm Sewer Junction Box A-1 complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
38	446	L.F.	For Furnishing and Installing Reinforced Concrete Pipe Class III-18-Inch complete in place, the sum of _____ _____ Dollars and _____ Cents per Linear Foot		
39	105	L.F.	For Furnishing and Installing Reinforced Concrete Pipe Class III-21-Inch complete in place, the sum of _____ _____ Dollars and _____ Cents per Linear Foot		

BASE BID

Item No.	Estimated Quantity	Unit	Description and Price in Words	Price in Figures	Extended Amount
40	160	L.F.	For Furnishing and Installing Reinforced Concrete Pipe Class III-24-Inch complete in place, the sum of _____ _____ Dollars and _____ Cents per Linear Foot		
41	0	L.F.	For Furnishing and Installing Reinforced Concrete Pipe Class III-30-Inch complete in place, the sum of _____ _____ Dollars and _____ Cents per Linear Foot		
42	300	L.F.	For Furnishing and Installing Reinforced Concrete Pipe Class III-33-Inch complete in place, the sum of _____ _____ Dollars and _____ Cents per Linear Foot		
43	203	L.F.	For Furnishing and Installing Reinforced Concrete Pipe Class III-36-Inch complete in place, the sum of _____ _____ Dollars and _____ Cents per Linear Foot		
44	55	L.F.	For Furnishing and Installing Reinforced Concrete Pipe Class III-48-Inch complete in place, the sum of _____ _____ Dollars and _____ Cents per Linear Foot		
45	95	L.F.	For Furnishing and Installing Reinforced Concrete Pipe Class III-51-Inch complete in place, the sum of _____ _____ Dollars and _____ Cents per Linear Foot		

BASE BID

Item No.	Estimated Quantity	Unit	Description and Price in Words	Price in Figures	Extended Amount
46	2	Ea.	For Furnishing and Installing Reinforced Concrete Pipe Tee Connection complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
47	9	Ea.	For Furnishing and Installing Reinforced Concrete Pipe Wye Connection complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
48	1	Ea.	For Connecting Proposed 24-Inch Pipe to Existing Storm Sewer Manhole complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
49	3	Ea.	For Connecting Proposed Pipe to Existing 18-Inch Storm Sewer Pipe complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
50	2	Ea.	For Connecting Proposed Pipe to Existing 30-Inch Storm Sewer Pipe complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
51	2	Ea.	For Connecting Proposed Pipe to Existing 42-Inch Storm Sewer Pipe complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		

BASE BID

Item No.	Estimated Quantity	Unit	Description and Price in Words	Price in Figures	Extended Amount
52	4	Ea.	For Connecting Proposed Pipe to Existing 48-Inch Storm Sewer Pipe complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
53	1	Ea.	For Connecting Proposed Pipe to Existing 60-Inch Storm Sewer Pipe complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
54	1	Ea.	For Connecting Existing 60-Inch Storm Sewer Pipe to Proposed Storm Sewer Manhole complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
55	4	Ea.	For Plugging Existing 18-Inch Storm Sewer Pipe complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
56	1	Ea.	For Plugging Existing 30-Inch Storm Sewer Pipe complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
57	28	L.F.	For Furnishing and Installing 8-Inch PVC Sanitary Sewer by Open Cut with Embedment (Station 8+15) complete in place, the sum of _____ _____ Dollars and _____ Cents per Linear Foot		

BASE BID

Item No.	Estimated Quantity	Unit	Description and Price in Words	Price in Figures	Extended Amount
58	20	L.F.	For Furnishing and Installing 6-Inch PVC Sanitary Sewer by Open Cut with Embedment (Station 9+03) complete in place, the sum of _____ _____ Dollars and _____ Cents per Linear Foot		
59	6	Ea.	For Furnishing, Installing and Connecting Sanitary Sewer Service Line, including 2-Way Cleanouts complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
60	46	L.F.	Furnish and Install 4-Inch SDR35 PVC Pipe with Two-Way Cleanout (Station 1+93) complete in place, the sum of _____ _____ Dollars and _____ Cents per Linear Foot		
61	2	Ea.	For Constructing 4-Foot Diameter Standard Sanitary Sewer Manhole complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
62	2	Ea.	For Connecting Existing 6-Inch Sanitary Sewer Pipe to Proposed Sanitary Sewer Manhole complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		

BASE BID

Item No.	Estimated Quantity	Unit	Description and Price in Words	Price in Figures	Extended Amount
63	2	Ea.	For Cutting and Plugging Existing 6-Inch Sanitary Sewer Pipe complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
64	215	Ea.	For Furnishing and Installing 4-Inch Square Acrylic Yellow Double Reflective Button complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
65	330	Ea.	For Furnishing and Installing 4-Inch Square Acrylic White Non-Reflective Button complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
66	620	Ea.	For Furnishing and Installing 4-Inch Circular Yellow Non-Reflective Button complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
67	203	Ea.	For Furnishing and Installing 4-Inch Square White Single Reflective Button complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		

BASE BID

Item No.	Estimated Quantity	Unit	Description and Price in Words	Price in Figures	Extended Amount
68	5	Ea.	For Furnishing and Installing 4-Inch Square Acrylic Reflective Blue Buttons Center of Outside Lane at Fire Hydrant complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
69	122	L.F.	For Furnishing and Installing 18-Inch Solid White Thermoplastic Stripe complete in place, the sum of _____ _____ Dollars and _____ Cents per Linear Foot		
70	66	L.F.	For Furnishing and Installing 24-Inch Solid White Thermoplastic Stripe complete in place, the sum of _____ _____ Dollars and _____ Cents per Linear Foot		
71	29	Ea.	For Furnishing and Installing 8-Inch Wide x 2-Foot Long Solid White Thermoplastic Stripe complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
72	4	Ea.	For Furnishing and Installing White Thermoplastic Marking - "ONLY" complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		

BASE BID

Item No.	Estimated Quantity	Unit	Description and Price in Words	Price in Figures	Extended Amount
73	2	Ea.	For Furnishing and Installing White Thermoplastic Marking - "RR Xing" complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
74	4	Ea.	For Furnishing and Installing White Thermoplastic Marking - Straight Arrow complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
75	16	Ea.	Furnish and Install White Thermoplastic - Turn Arrow complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
76	480	S.Y.	For Furnishing and Placing Solid Sod, including Fertilizer and Watering complete in place, the sum of _____ _____ Dollars and _____ Cents per Square Yard		
77	4,600	Ea.	For Furnishing and Planting Asian Jasmine (1-Gallon), including Watering complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
78	42	Ea.	For Furnishing and Planting Crepe Myrtles (65 Gallon), including Watering complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		

BASE BID

Item No.	Estimated Quantity	Unit	Description and Price in Words	Price in Figures	Extended Amount
79	103	Ea.	For Furnishing and Planting Loropetalum Bush (5-Gallon), including Watering complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
80	1	L.S.	For Furnishing and Installing a Fully Operational Irrigation System complete in place, the sum of _____ _____ Dollars and _____ Cents per Lump Sum		
81	1	L.S.	Furnish and Prepare a Trench Safety Plan complete in place, the sum of _____ _____ Dollars and _____ Cents per Lump Sum		
82	1,350	L.F.	For Furnishing, Installing and Maintaining Trench Safety System complete in place, the sum of _____ _____ Dollars and _____ Cents per Linear Foot		
83	1	L.S.	For Furnishing, Installing, Maintaining and Removing Erosion Control Devices complete in place, the sum of _____ _____ Dollars and _____ Cents per Lump Sum		
84	60	Days	For Furnishing and Maintaining Two Light Boards for Notifying Traffic of Construction complete in place, the sum of _____ _____ Dollars and _____ Cents per Day		

BASE BID

Item No.	Estimated Quantity	Unit	Description and Price in Words	Price in Figures	Extended Amount
85	1	L.S.	For Dust Control, Including Water Truck, as Directed by the City and at a Minimum Twice a Day complete in place, the sum of _____ _____ Dollars and _____ Cents per Lump Sum		
86	27	Ea.	For Furnishing and Installing Roadway/Pedestrian Lights SA complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
87	3	Ea.	For Furnishing and Installing Roadway/ Pedestrian Light SAA complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
88	26	Ea.	For Furnishing and Installing Pedestrian Fixture SB complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
89	2	Ea.	For Furnishing and Installing Parking Lot Fixture SC complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		

BASE BID

Item No.	Estimated Quantity	Unit	Description and Price in Words	Price in Figures	Extended Amount
90	56	Ea.	For Furnishing, Installing and Constructing Light Foundation, including Pull Box and Grounding Rod complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
91	5,400	L.F.	For Furnishing and Installing 2-Inch Schedule 40 PVC Conduit, including Trenching, Backfilling and Restoration complete in place, the sum of _____ _____ Dollars and _____ Cents per Linear Foot		
92	15,600	L.F.	For Furnishing and Installing No. 10 THHN/THWN Conductors (2#10, #10G) in 2-Inch Conduit complete in place, the sum of _____ _____ Dollars and _____ Cents per Linear Foot		
93	1	L.S.	For Making All Connections and Making Lighting and Electrical System Operational complete in place, the sum of _____ _____ Dollars and _____ Cents per Lump Sum		
94	2	Ea.	For Arranging with TXU, and Furnishing and Installing All Equipment for Electric Service for Irrigation Service from Pedestrian Light complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		

BASE BID

Item No.	Estimated Quantity	Unit	Description and Price in Words	Price in Figures	Extended Amount
95	4	Ea.	For Arranging with TXU, and Furnishing and Installing All Equipment for Electrical Service (2-Street Lights and 2 for Pedestrian Lights) complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
96	16	Ea.	For Furnishing and Installing Traffic Control Signs in Accordance with Sign Plan complete in place, the sum of _____ _____ Dollars and _____ Cents per Each		
97	35	C.Y.	For Furnishing and Installing Reinforced Concrete Retaining Wall complete in place, the sum of _____ _____ Dollars and _____ Cents per Cubic Yard		
98	1	Unit	Bid Allowance for Irrigation Repairs, complete in place, the Bid Allowance of $5,000.00 per One Unit the sum of _____ Five Thousand _____ Dollars and No Cents per Unit	$ 5,000.00 *Bid Allowance*	$ 5,000.00
99	245	S.Y.	For Furnishing and Placing Crosswalk Pavers complete in place, the sum of _____ _____ Dollars and _____ Cents per Square Yard		
100	55	S.Y.	For Furnishing and Placing Driveway Pavers complete in place, the sum of _____ _____ Dollars and _____ Cents per Square Yard		
TOTAL AMOUNT OF BASE BID (Items 1 Through 100)					

ADDITIVE ALTERNATES

The following Additive Alternates will be added to the bid at the option of the Town of Addison.

ADDITIVE ALTERNATE 1

Item No.	Estimated Quantity	Unit	Description and Price in Words	Price in Figures	Extended Amount
101A	1,000	L.F.	For Furnishing and Installing 4-Inch PVC Conduit with 4-inch Caps, Meeting the requirements of TXU at Four Crossing complete in place, the sum of _____ _____ Dollars and _____ Cents per Linear Foot		
AMOUNT OF ADDITIVE ALTERNATE 1 (Item 101A)					

ADDITIVE ALTERNATE 2

Item No.	Estimated Quantity	Unit	Description and Price in Words	Price in Figures	Extended Amount
201A	140	C.Y.	For Furnishing and Placing 4-Inch Flex-Base Under Sidewalks complete in place, the sum of _____ _____ Dollars and _____ Cents per Cubic Yard		
AMOUNT OF ADDITIVE ALTERNATE 2 (Item 201A)					

ADDISON ROAD - PHASE I
BID SCHEDULE SUMMARY

Bid Schedule & Description	Total Amount Materials & Services

BASE BID:

= TOTAL AMOUNT OF BASE BID (Items 1 Through 100) (A): $ -

Written In Words: _____

_____

TOTAL OF TIME BID: _____ (Calendar Days)

TOTAL OF CALENDAR DAYS x $3,000 (B): $ -

BASIS FOR COMPARISON OF BIDS:

(A) + (B) = TOTAL BID: $ -

Written In Words: _____

_____

AMOUNT OF ADDITIVE ALTERNATE 1 (Item 101A) $ -

TOTAL OF TIME BID: _____ (Calendar Days)

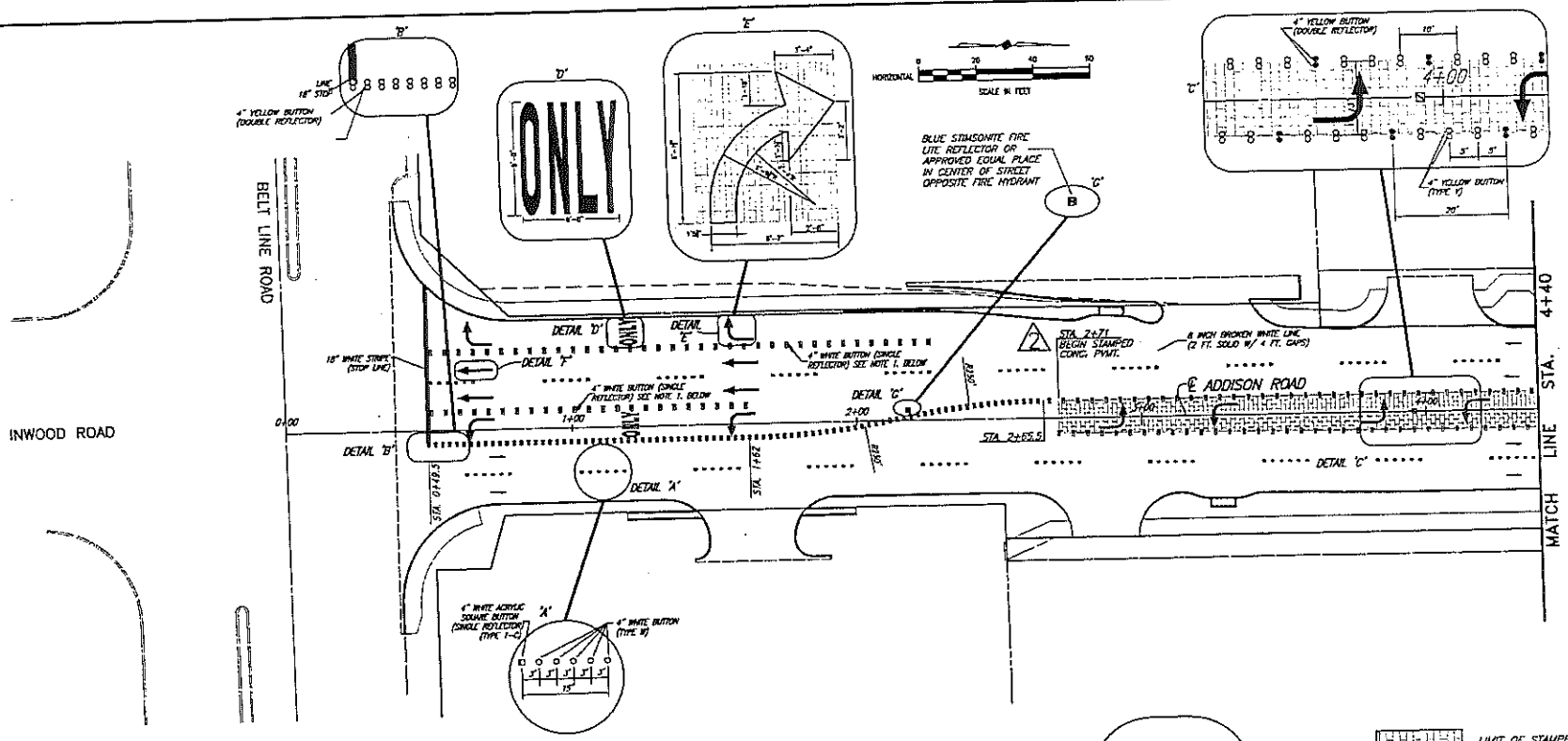
AMOUNT OF ADDITIVE ALTERNATE 2 (Item 201A) $ -

TOTAL OF TIME BID: _____ (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.
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. It is understood that the Bid Security shall be collected and retained by the Owner as liquidated damages in the event a contract is made by the Owner based on this proposal within ninety (90) calendar days after receiving bids and the undersigned fails to execute the contract
4. One contract will be awarded based on the total value of Item 1 in section, (A) plus (B).

Bidder's Tax I.D. No. or Employer No. _____



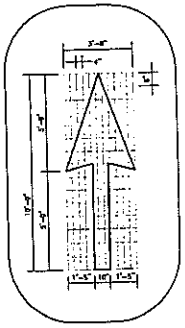
LIMIT OF STAMPED CONCRETE AT EACH END OF PROJECT

TRAFFIC MARKINGS, BUTTONS & JIGGLE BARS QUANTITIES

18" WIDE SOLID WHITE THERMOPLASTIC STRIPE	24" WIDE SOLID WHITE THERMOPLASTIC STRIPE	4" WHITE SINGLE REFLECT. BUTTON (TY. 1-C) LT. TURN	4" WHITE SINGLE REFLECT. BUTTON (TYP.) 1-C) MAIN LANES	4" WHITE BUTTON TYPE W	4" YELLOW BUTTON TYPE Y	4" YELLOW DOUBLE REFLECT. BUTTON	WHITE THERMOPLASTIC LEFT TURN ARROW	COMBINATION RIGHT TURN & STRAIGHT AHEAD WHITE THERMOPLASTIC ARROW	STRAIGHT AHEAD WHITE THERMOPLASTIC TURN ARROW	RAIL ROAD SOLID WHITE THERMOPLASTIC CROSSING AHEAD	BLUE FIRE LITE REFLECTOR	6" WIDE BY 8' HIGH SOLID WHITE THERMOPLASTIC WORD "ONLY"
132 L.F.	66 L.F.	234 EA.	65 EA.	322 EA.	820 EA.	338 EA.	12 EA.	2 EA.	2 EA.	2 EA.	5 EA.	4 EA.

NOTES:

1. LEFT TURN LANE CHANNELIZING BUTTONS SHALL CONSIST OF A DOUBLE ROW OF 4 INCH WHITE REFLECTIVE BUTTONS ON 5 FOOT CENTERS. (TYPE 1-C) REFLECTIVE FACING ONCOMING TRAFFIC.
2. TRAFFIC BUTTONS & JIGGLE BARS SHALL BE FROM A SINGLE MANUFACTURER.
3. TRAFFIC BUTTONS & JIGGLE BARS SHALL SIT ON EPOXY "CUSHION". BUTTONS SHALL NOT BE IN DIRECT CONTACT WITH THE PAVEMENT.
4. EPOXY SHALL BE IN ACCORDANCE WITH TxDOT ITEM 575 TYPE S & T-M.
5. CENTER TWO WAY LEFT TURN LANE CHANNELIZING BUTTONS SHALL CONSIST OF A DOUBLE ROW OF YELLOW BUTTONS WITH COMBINATION OF TYPE Y & DOUBLE REFLECTIVE BUTTONS. SEE DETAIL C
6. DOUBLE REFLECTIVE BLU HYDRANT BUTTONS AS NEEDED.



THESE DOCUMENTS ARE FOR BIDDING, CONSTRUCTION, AND PERMIT PURPOSES.

DATE: 12/1/06

STATE OF TEXAS — JOHN W. BIRKHOFF — 54137 — REGISTERED PROFESSIONAL ENGINEER

Those plans and related specifications were prepared for construction of this specific project only. Reuse of these documents is not permitted without written authorization of Birkhoff, Hendricks, & Conway, L.L.P.

2 ADDENDUM NO. 2

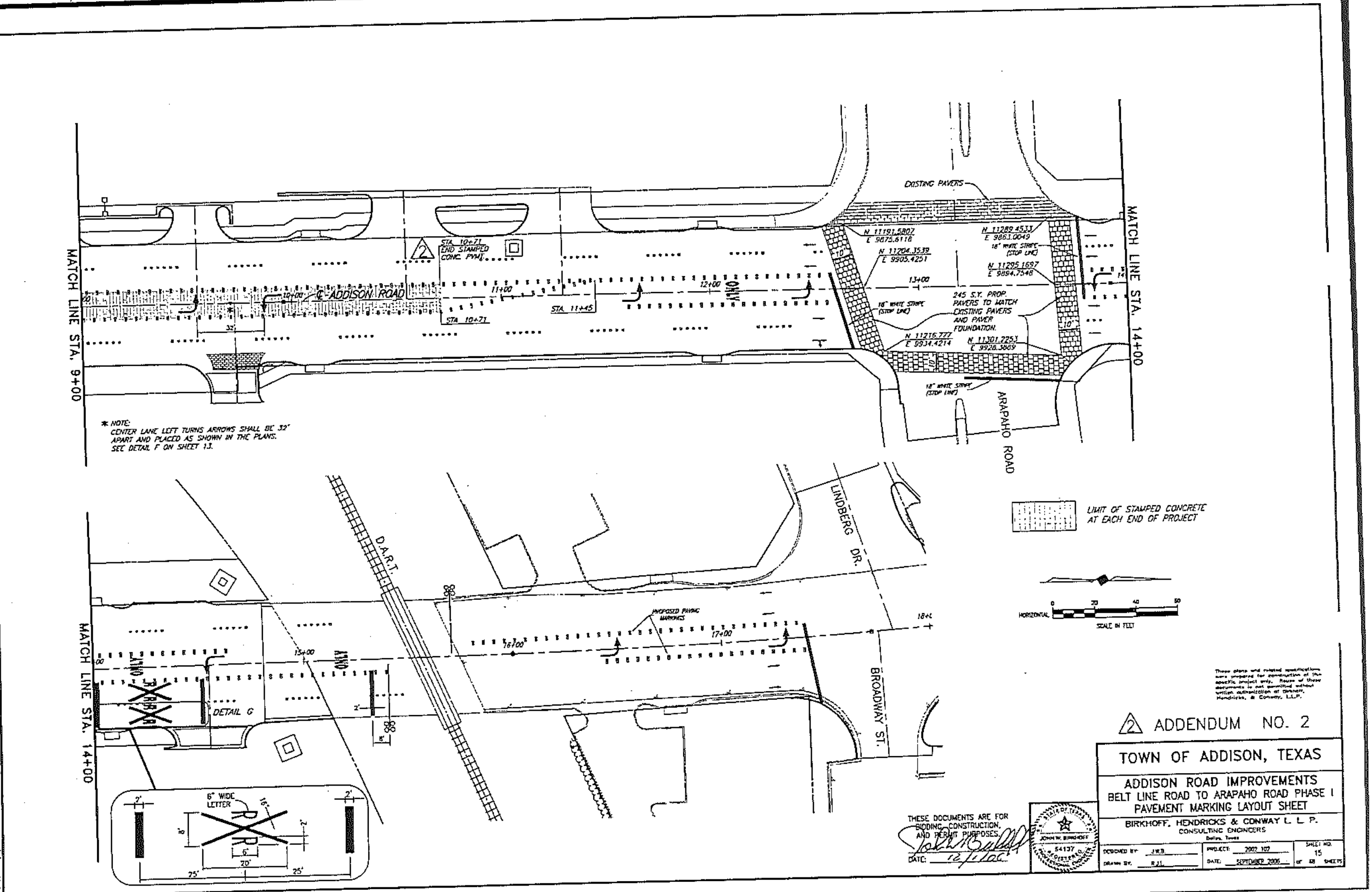
TOWN OF ADDISON, TEXAS

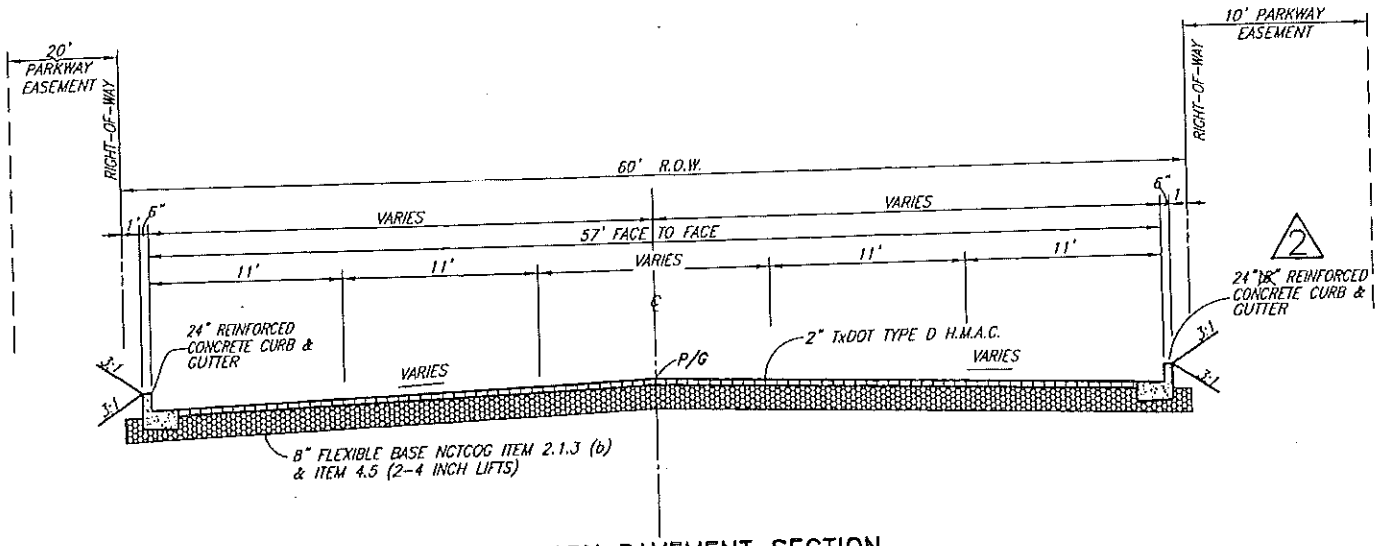
ADDISON ROAD IMPROVEMENTS
BELT LINE ROAD TO ARAPAHO ROAD PHASE I
PAVEMENT MARKING DETAILS

BIRKHOFF, HENDRICKS & CONWAY L. L. P.
CONSULTING ENGINEERS
Dallas, Texas

DESIGNED BY: J.W.B.	PROJECT: 7002.107	SHEET NO. 13
DRAWN BY: R.J.L.	DATE: SEPTEMBER 2006	OF 88 SHEETS

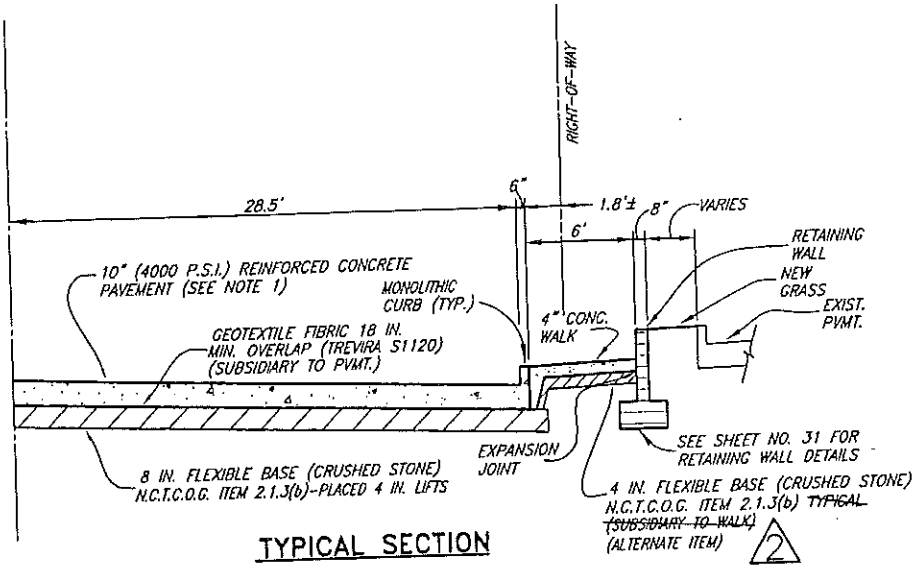
PLOTTED BY: RLONG ON 12/1/2006
PLOT STYLE: 11x17.ctb
PLOT SCALE: 1:1
K:\Projects\Addison\2001101\PHASE1\plans\2001102C1D_working.dgn
REVISED: 12/1/06 - RLONG


MATCH LINE STA. 9+00
MATCH LINE STA. 14+00
℄ ADDISON ROAD
STA. 10+71 END STAMPED CONC. PVMT.
STA. 10+71
STA. 11+45
11+00
12+00
13+00
ONLY
EXISTING PAVERS
N 11191.5807 E 9875.6116
N 11204.3539 E 9905.4251
N 11289.4533 E 9863.0049
N 11295.1697 E 9894.7546
N 11216.777 E 9934.4214
N 11301.7253 E 9926.3869
18" WHITE STRIPE (STOP LINE)
245 S.Y. PROP. PAVERS TO MATCH EXISTING PAVERS AND PAVER FOUNDATION.
ARAPAHO ROAD
* NOTE: CENTER LANE LEFT TURNS ARROWS SHALL BE 32' APART AND PLACED AS SHOWN IN THE PLANS. SEE DETAIL F ON SHEET 13.
LIMIT OF STAMPED CONCRETE AT EACH END OF PROJECT
D.A.R.T.
LINDBERG DR.
BROADWAY ST.
PROPOSED PAVING MARKINGS
15+00
16+00
17+00
18+00
DETAIL G
6" WIDE LETTER
HORIZONTAL
SCALE IN FEET
0 20 40 80
THESE DOCUMENTS ARE FOR BIDDING, CONSTRUCTION, AND PERMIT PURPOSES.
DATE: 12/1/06
ADDENDUM NO. 2
TOWN OF ADDISON, TEXAS
ADDISON ROAD IMPROVEMENTS
BELT LINE ROAD TO ARAPAHO ROAD PHASE I
PAVEMENT MARKING LAYOUT SHEET
BIRKHOFF, HENDRICKS & CONWAY L.L.P.
CONSULTING ENGINEERS
Dallas, Texas
DESIGNED BY: J.W.B.
DRAWN BY: R.J.I.
PROJECT: 2002.102
DATE: SEPTEMBER 2006
SHEET NO. 15
JOHN W. BIRKHOFF
54137



TEMPORARY PAVEMENT SECTION

1" = 1' HORIZ.
1" = 2' VERT.
STA. 14+80.83 TO STA. 15+37



TYPICAL SECTION

1" = 1' HORIZ.
1" = 2' VERT.
STA. 9+98 TO STA. 12+66

2 ADDENDUM NO. 2

TOWN OF ADDISON, TEXAS

ADDISON ROAD IMPROVEMENTS
BELT LINE ROAD TO ARAPAHO ROAD PHASE I
ADDENDUM NO. 2

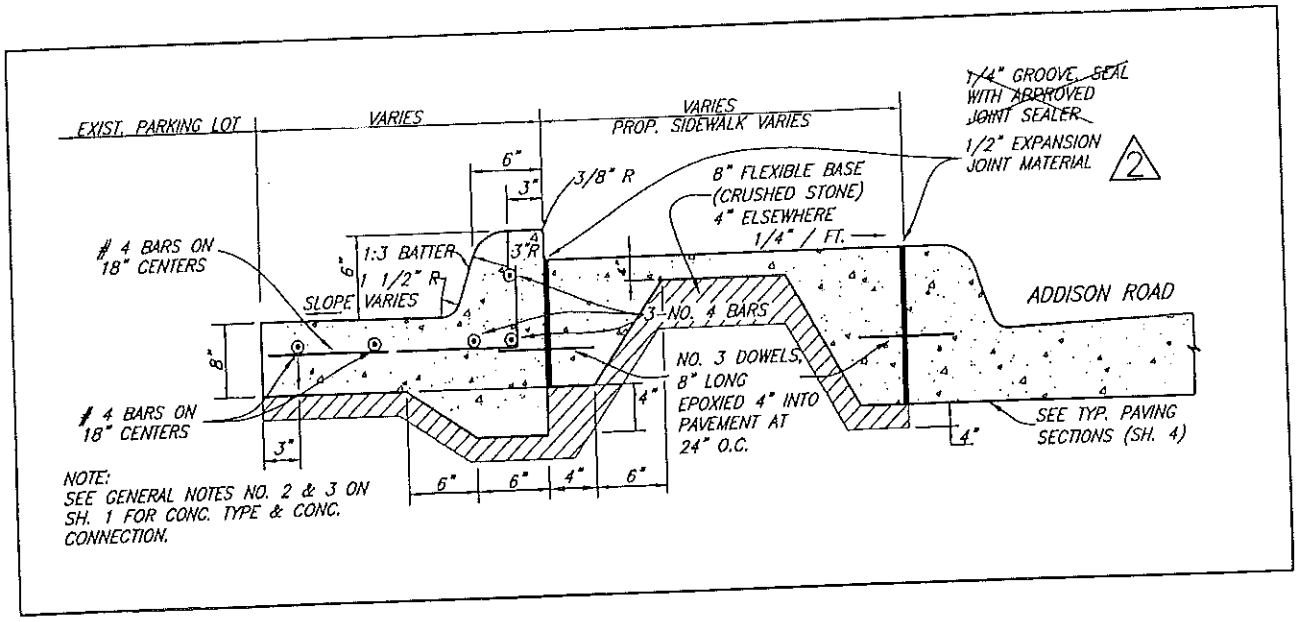
BIRKHOFF, HENDRICKS & CONWAY, L.L.P.
CONSULTING ENGINEERS
Dallas, Texas

THESE DOCUMENTS ARE FOR BIDDING, CONSTRUCTION, AND PERMIT PURPOSES
DATE: 12/1/06

STATE OF TEXAS
JOHN W. BIRKHOFF
54137
REGISTERED PROFESSIONAL ENGINEER

DESIGNED BY: J.W.B.	PROJECT: 2002102	SHEET NO. 4
DRAWN BY: R.J.L.	DATE: DEC 2006	OF 68 SHEETS

12/01/06 RJL H:\PROJECTS\ADDISON\2002102\PHASE1\SHEET\2002102C04_TypSec.DWG SCALE: 1=5



SECTION A – A
STA. 2+68 TO STA 3+08

2 ADDENDUM NO. 2

TOWN OF ADDISON, TEXAS

ADDISON ROAD IMPROVEMENTS
BELT LINE ROAD TO ARAPAHO ROAD PHASE I
ADDENDUM NO. 2

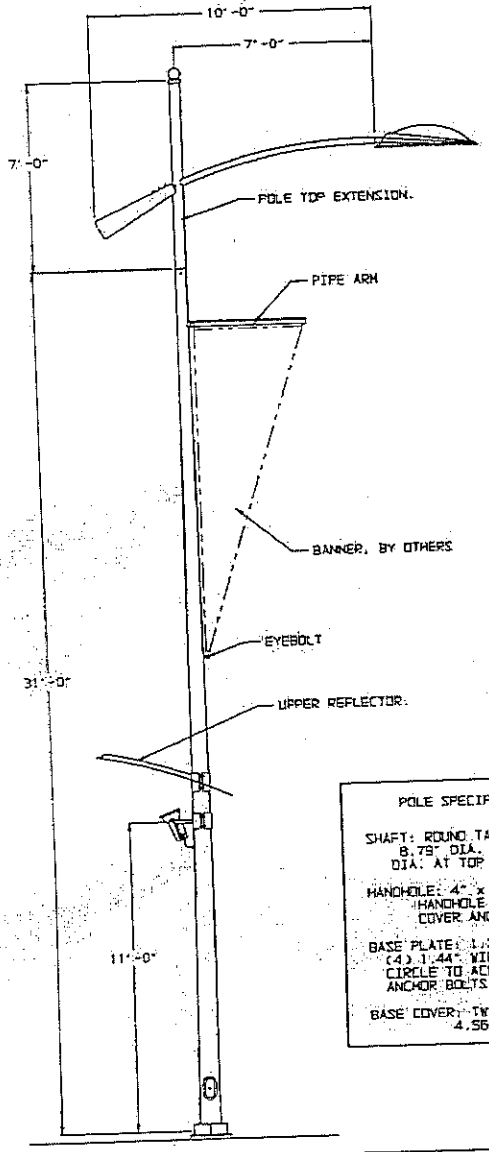
BIRKHOFF, HENDRICKS & CONWAY, L.L.P.
CONSULTING ENGINEERS
Dallas, Texas

DESIGNED BY: J.W.B.	PROJECT: 2002102	SHEET NO. 5
DRAWN BY: R.J.L.	DATE: DEC 2006	OF 68 SHEETS

THESE DOCUMENTS ARE FOR BIDDING, CONSTRUCTION, AND PERMIT PURPOSES.
DATE: 12/11/06

STATE OF TEXAS
JOHN W. BIRKHOFF
54137
REGISTERED PROFESSIONAL ENGINEER

12/01/06 RJL H:\PROJECTS\ADDISON\2002102\PHASE1\SHEET\2002102C05_PP.DWG SCALE: 1=30



FLOODLIGHT SPECIFICATIONS

HOUSING: DIE-CAST ALUMINUM.

DOOR FRAME: DIE-CAST ALUMINUM.

LENS: FLAT, CLEAR, TEMPERED GLASS.

REFLECTOR: FORMED ALUMINUM WITH A POLISHED FINISH.

LAMPHOLDER: PORCELAIN, G-12 BASE.

LAMP: 70 WATT (T-6) METAL HALIDE. (LAMP, BY OTHERS).

BALLAST: 70 WATT, 120-277 VOLT ELECTRONIC BALLAST INTERNALLY MOUNTED IN FLOODLIGHT.

YOKE: FORMED STEEL, .188" THICK x 1.50" WIDE.

CORD: 16-3 BLACK, SO CORD.

CLAMP: 3/8" THICK FORMED ALUMINUM WITH STAINLESS STEEL HARDWARE.

UL LISTED FOR "WET LOCATIONS".

POLE TOP EXTENSION SPECIFICATIONS

POLE CAP: CAST ALUMINUM WITH 5" DIA. BALL.

VERTICAL EXTENSION: 4.82" DIA. x .250 WALL STEEL TUBE.

PIPE ARM: 2.50" (2.875" O.D.) SCH 40 STEEL PIPE.

DECORATIVE TAIL: CHANNEL SHAPED AND FORMED FROM 3/16" THICK ALUMINUM AND HELD ON WITH (3) STAINLESS STEEL U-BOLTS.

TENON: 12" LONG AND SLIP FITS INSIDE THE TOP OF THE POLE AND HELD BY MEANS OF (2) 1/2" STAINLESS STEEL BOLTS.

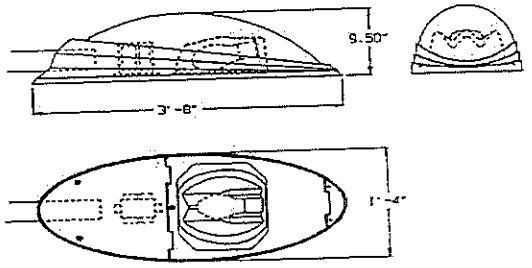
POLE SPECIFICATIONS

SHAFT: ROUND TAPERED STEEL, 8.79" DIA. AT BASE x .455" DIA. AT TOP x 7 GA. WALL.

HANDHOLE: 4" x 8" RE-INFORCED HANDHOLE WITH REMOVABLE COVER AND A 3/8" GROUND LUG.

BASE PLATE: 1.25" THICK x 14" SQ. WITH (4) 1.44" WIDE SLOTS ON A 14.50" BOLT CIRCLE TO ACCEPT (4) EXISTING 1.25" DIA. ANCHOR BOLTS ON A 14.50 BOLT CIRCLE.

BASE COVER: TWO-PIECE STEEL, 4.56" HIGH x 14.38" SQ.



LUMINAIRE SPECIFICATIONS

HOUSING: DIE-CAST ALUMINUM.

DOOR FRAME: DIE-CAST ALUMINUM.

LENS: FLAT, CLEAR, TEMPERED GLASS.

REFLECTOR: HYDRO-FORMED ALUMINUM WITH A POLISHED FINISH TO PROVIDE A TYPE II DISTRIBUTION.

LAMPHOLDER: PORCELAIN, MOGUL BASE.

LAMP: 400 WATT (ED-28) METAL HALIDE. (LAMP, BY OTHERS).

BALLAST: 400 WATT, 120-277 VOLT CORE AND COIL MOUNTED IN LUMINAIRE

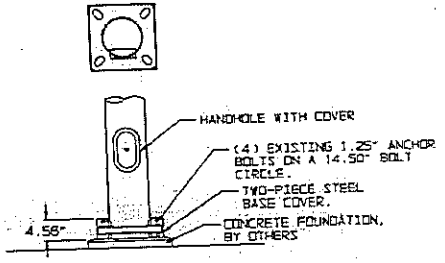
UL LISTED FOR "WET LOCATIONS".

UPPER REFLECTOR SPECIFICATIONS

REFLECTOR: .25" THICK FORMED ALUMINUM WITH RIBBED GUSSETS ON TOP SIDE.

CLAMP: 3/8" THICK FORMED ALUMINUM WITH STAINLESS STEEL HARDWARE.

FINISH: A ZINC RICH PRIMER IS APPLIED AT 3.5-4.0 MILS DFT AND A SMOOTH TOP COAT APPLIED AT 2.0-3.5 MILS DFT TO MATCH RAL 9006 NATURAL ALUMINUM.



DO NOT SCALE DRAWING

MILLERBERND LIGHTING

MILLERBERND LIGHTING 300 8TH STREET SOUTH P.O. BOX 37 WINSTED, MN. 55395 PHONE: 320.485.2585 FAX:320.485.3900

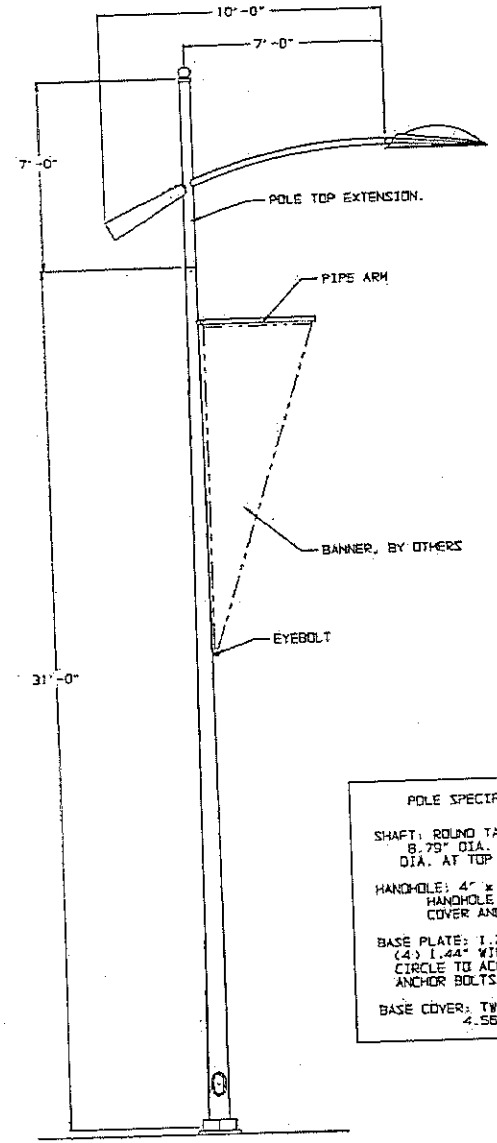
REV.	CHANGE MADE	DR:	DATE

DR: LANGKI | DATE: 10/10/2005

SHEET OF | JOB NAME: CITY OF ADDISON

TITLE: POLE FOR THE CITY OF ADDISON

RATIO: FULL | # LPD-00020-00 | REV.



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DOOR FRAME: DIE-CAST ALUMINUM.

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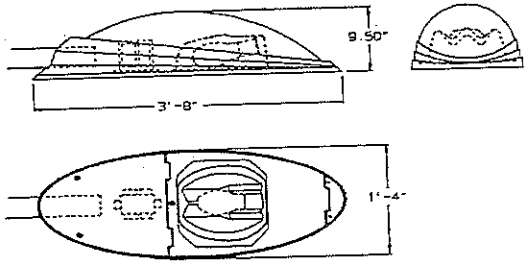
LAMPHOLDER: PORCELAIN, MOGUL BASE.

LAMP: 400 WATT (ED-28) METAL HALIDE. (LAMP, BY OTHERS).

BALLAST: 400 WATT, 120-277 VOLT CORE AND COIL MOUNTED IN LUMINAIRE

UL LISTED FOR "WET LOCATIONS".



POLE TOP EXTENSION SPECIFICATIONS

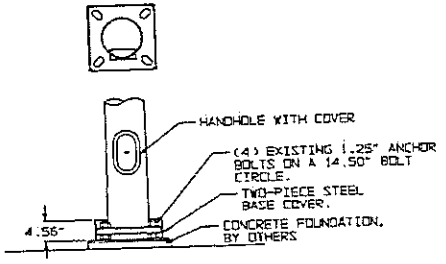
POLE CAP: CAST ALUMINUM WITH 5" DIA. BALL.

VERTICAL EXTENSION: 4.62" DIA. x .250 WALL STEEL TUBE.

PIPE ARM: 2.50" (2.875" O.D.) SCH 40 STEEL PIPE.

DECORATIVE TAIL: CHANNEL SHAPED AND FORMED FROM 3/16" THICK ALUMINUM AND HELD ON WITH (3) STAINLESS STEEL U-BOLTS.

TENON: 12" LONG AND SLIP FITS INSIDE THE TOP OF THE POLE AND HELD BY MEANS OF (2) 1/2" STAINLESS STEEL BOLTS.



POLE SPECIFICATIONS

SHAFT: ROUND TAPERED STEEL. 8.79" DIA. AT BASE x 4.55" DIA. AT TOP x 7 GA. WALL.

HANDHOLE: 4" x 8" RE-INFORCED HANDHOLE WITH REMOVABLE COVER AND A 3/8" GROUND LUG.

BASE PLATE: 1.25" THICK x 14" SQ. WITH (4) 1.44" WIDE SLOTS ON A 14.50" BOLT CIRCLE TO ACCEPT (4) EXISTING 1.25" DIA. ANCHOR BOLTS ON A 14.50 BOLT CIRCLE.

BASE COVER: TWO-PIECE STEEL, 4.56" HIGH x 14.38" SQ.

FINISH: A ZINC RICH PRIMER IS APPLIED AT 3.5-4.0 MILS DFT AND A SMOOTH TOP COAT APPLIED AT 2.0-3.5 MILS DFT TO MATCH RAL 9006 NATURAL ALUMINUM.

DO NOT SCALE DRAWING

MILLERBERND LIGHTING
MILLERBERND LIGHTING 330 6TH STREET SOUTH P.O. BOX 37 WINSTED, MN. 55395 PHONE: 320.485.2085 FAX:320.485.3000

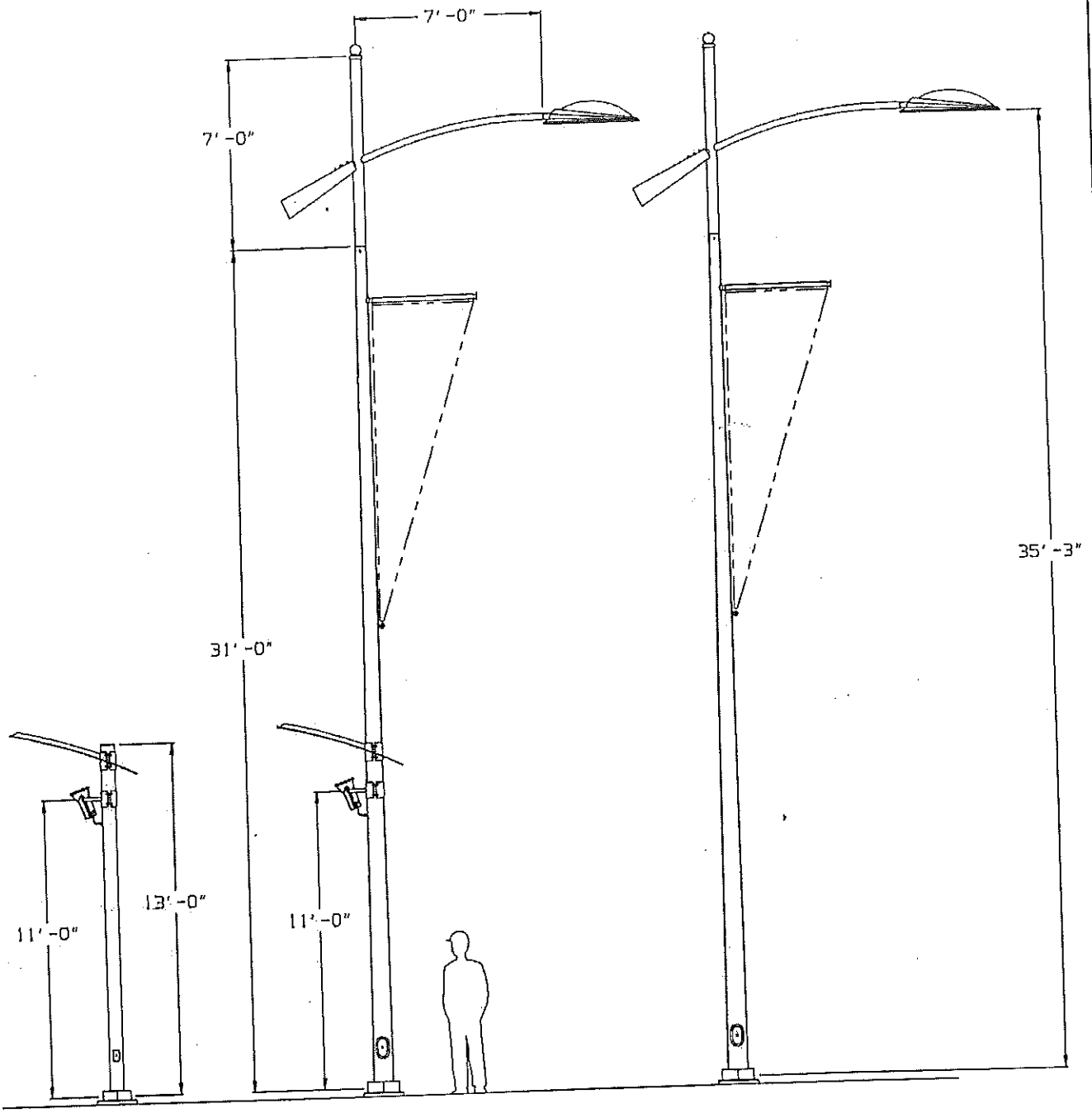
REV.	CHANGE MADE	DR:	DATE

DR: LANKKI | DATE: 10/10/2006

SHEET OF | JOB NAME: CITY OF ADDISON

TITLE: POLE FOR THE CITY OF ADDISON

RATIO: FULL | #: LPD-00021-00 | REV:



SEE DRAWING LPD-00019-00 FOR DETAILS ON THIS POLE.

SEE DRAWING LPD-00020-00 FOR DETAILS ON THIS POLE.

SEE DRAWING LPD-00021-00 FOR DETAILS ON THIS POLE.

MILLERBERND LIGHTING

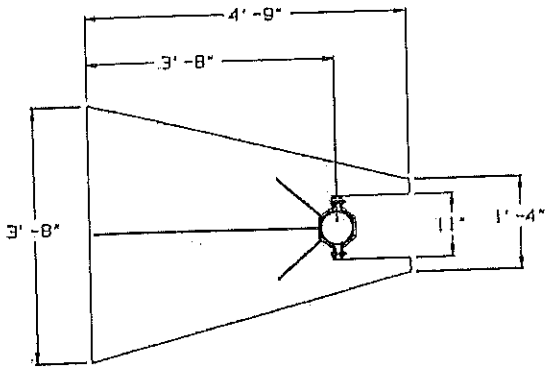
REV.	CHANGE MADE	BY:	DATE

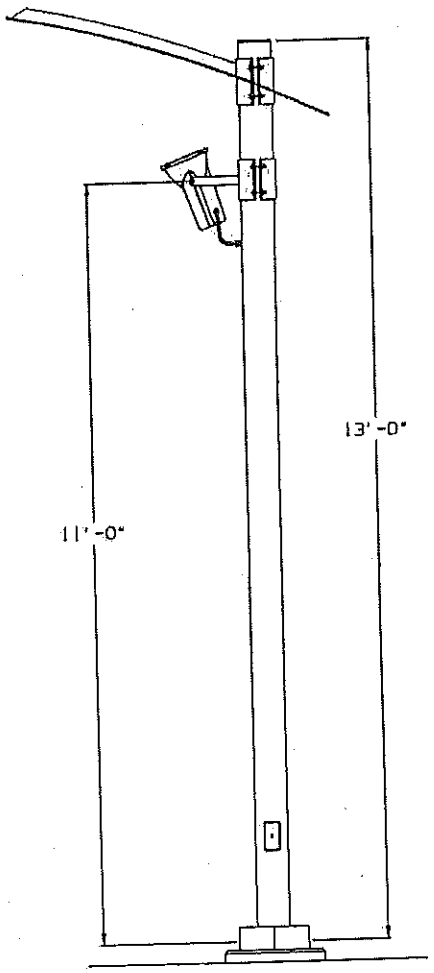
DR: LANKKI	DATE: 10/10/2008
SHEET OF	JOB NAME: CITY OF ADDISON

TITLE: POLES FOR THE CITY OF ADDISON

RATIO:	#:	REV.
FULL	LPD-00018-00	

MILLERBERND LIGHTING 330 6TH STREET SOUTH P.O. BOX 37 WINSTED, MN. 55395 PHONE: 320.485.2605 FAX: 320.485.3900





UPPER REFLECTOR SPECIFICATIONS

REFLECTOR: .25" THICK FORMED ALUMINUM WITH RIBBED GUSSETS ON TOP SIDE.

CLAMP: 3/8" THICK FORMED ALUMINUM WITH STAINLESS STEEL HARDWARE.

FLOODLIGHT SPECIFICATIONS

HOUSING: DIE-CAST ALUMINUM.

DOOR FRAME: DIE-CAST ALUMINUM.

LENS: FLAT, CLEAR, TEMPERED GLASS.

REFLECTOR: FORMED ALUMINUM WITH A POLISHED FINISH.

LAMPHOLDER: PORCELAIN, G-12 BASE.

LAMP: 70 WATT (T-6) METAL HALIDE. (LAMP, BY OTHERS).

BALLAST: 70 WATT, 120-277 VOLT ELECTRONIC BALLAST INTERNALLY MOUNTED IN FLOODLIGHT.

YOKE: FORMED STEEL, .188" THICK x 1.50" WIDE.

CORD: 16-3 BLACK, SO CORD.

CLAMP: 3/8" THICK FORMED ALUMINUM WITH STAINLESS STEEL HARDWARE.

UL LISTED FOR "WET LOCATIONS".

FINISH: A ZINC RICH PRIMER IS APPLIED AT 3.5-4.0 MILS DFT AND A SMOOTH TOP COAT APPLIED AT 2.0-3.5 MILS DFT TO MATCH RAL 9006 NATURAL ALUMINUM.

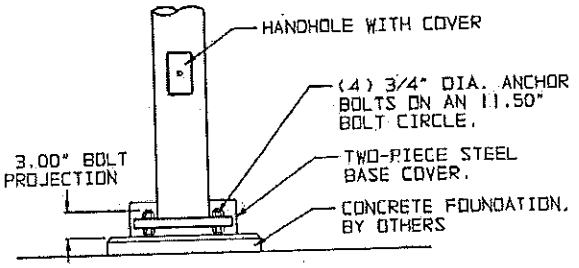
POLE SPECIFICATIONS

SHAFT: ROUND, STRAIGHT STEEL, 6.00" DIA. x .250" WALL.

HANDHOLE: 3" x 5" WITH REMOVABLE COVER AND A 3/8" GROUND LUG.

BASEPLATE: 1.00" THICK x 11.50" SQ. WITH (4) SLOTTED HOLES TO FIT 3/4" DIA. ANCHOR BOLTS ON AN 11.50" BOLT CIRCLE.

BASE COVER: TWO-PIECE STEEL, 4.00" HIGH x 12.50" SQ.



MILLERBERND LIGHTING

REV.	CHANGE MADE	DR:	DATE

DR: LANKKI	DATE: 10/10/2006
SHEET OF	JOB NAME: CITY OF ADDISON
TITLE: POLE FOR THE CITY OF ADDISON	
RATIO: FULL	#: LPD-00019-00 REV.

MILLERBERND LIGHTING 330 6TH STREET SOUTH P.O. BOX 37 WINSTED, MN. 55395 PHONE: 320.485.2605 FAX: 320.485.3900

All Bid information including Plan Holders List and Bid Tab is located on www.demandstar.com or www.ci.addison.tx.us under Purchasing Department.

You may also obtain a copy of the Bid document and addendums by contacting Shanna Sims at 972-450-7089, the Town of Addison Finance Building located at 5350 Belt Line Rd., or request a copy by email: ssims@ci.addison.tx.us.

End of Addendum 2

SECTION AB

ADVERTISEMENT FOR BIDS

SECTION AB

ADVERTISEMENT FOR BIDS

1. Sealed bids addressed to the Town of Addison, Texas, for **Paving & Drainage Improvements to Addison Road - Phase I (from Beltline Road to Arapaho Road)** in the Town of Addison, Texas, hereinafter called "City" in accordance with specifications and contract documents prepared by Birkhoff, Hendricks & Conway, L.L.P. will be received at the office of Shanna Sims, Budget and Procurement Manager, Finance Building, 5350 Belt Line Road, Addison, Texas until **2:00 p.m. on Tuesday, December 12, 2006**. Sealed bids should be labeled **"Bid 07-01 Paving & Drainage Improvements to Addison Road - Phase I (from Belt Line Road to Arapaho Road).** 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 Bid No. 07-01 ADDISON ROAD - PHASE I.

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 and be listed on the current U.S. Treasury Listing of Approved Sureties, 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 Shanna Sims, Budget and Procurement Manager, Finance Building, 5350 Belt Line Road, Addison, Texas. No fee or deposit for documents.

5. The right is reserved by the Mayor and the City Council as the interests 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 and be listed on the current U.S. Treasury Listing of Approved Sureties.

8. For information on bidding or to secure bid documents, call Shanna Sims (972) 450-7089. For information on the work to be performed, call Aaron Russell, P.E., Town of Addison (972) 450-2879 or John Birkhoff, P.E. of Birkhoff, Hendricks & Conway, L.L.P. (214) 361-7900.

9. The project consists of reconstructing Addison Road with reinforced concrete pavement in accordance with the specifications.

10. Estimated quantities for major items include the following:

Description	Quantity
10" Reinforced Concrete Pavement	10,000 S.Y.
Storm Sewer Pipe (18" to 51")	1,300 L.F.

11. Pre-Bid Conference will be held at 2:00 p.m., on Thursday, November 16, 2006 in the Conference Room of the Town of Addison's Service Center, 16801 Westgrove Dr., Addison, Texas 75001.

TOWN OF ADDISON, TEXAS

SECTION IB

INSTRUCTION TO BIDDERS

SECTION IB
INSTRUCTIONS TO BIDDERS

A. PROJECT: ADDISON ROAD – PHASE I, in the Town of Addison.

The bids will be evaluated as stated in Section "O" of the instructions to Bidders.

B. PROJECT DESCRIPTION: This project consists of furnishing and placing approximately 10,000 square yards of 10-inch reinforced concrete pavement on an 8-inch flexible base and approximately 1,300 linear feet of storm sewer pipe ranging from 18-inches to 51-inches in the plans and specifications.

C. PROPOSALS: Proposals must be in accordance with these instructions in order to receive consideration.

D. DOCUMENTS: Documents include the Bidding Requirements, including the Advertisement for Bids, these Instructions to Bidders, Proposal Forms, Contract Agreement, Performance Bond, Payment Bond, Maintenance Bond, Contractor's Affidavit of Bills Paid, General Provisions, Special Provisions, Technical Specifications, Waiver of Lien, Drawings, and Addenda which may be issued by the Town of Addison 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. **A Pre-Bid Meeting will be held at 2:00 P.M. on Thursday, the 16th day of November 2006** at the Addison Service Center, 16801 Westgrove Drive, Addison, Texas 75001, 972-450-2871.

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 Town of Addison, 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 Town of Addison 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 emailed, faxed 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, facsimile, email 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:** The completion time of the project will be set through the bidding technique used in the Proposal Form. A more detailed explanation of the bidding technique is given in the Special Provisions.

J. **PREPARATION OF BIDS:** Prices quoted shall include all items of cost, expense, taxes, fees and charges incurred by, 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. In the case of a discrepancy between a unit price and its extension, the unit price will govern. 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.

NOTE: A COMPUTER GENERATED PROPOSAL FORM MAY BE USED IN LIEU OF THE ENCLOSED FORMS. THE FORM SHALL BE 8 1/2" X 11" IN SIZE, AND WILL BE ATTACHED TO THE PROPOSAL IN THE PROPER SECTION, AND WILL BE MADE PART OF THE PROPOSAL AND CONTRACT DOCUMENTS.

NOTE: SPREADSHEET OPTION IS FOR THE CONVENIENCE OF THE BIDDER, NO WORDING IN THE SPREADSHEET SHALL MODIFY OR AMEND THE WORDING IN THE BID PROPOSAL OR PLANS.

THE UNIT PRICE ON THE FORM SHALL BE THE PRICE OF THE ITEM, AND ERRORS THAT MAY BE PRESENT IN THE PRINTOUT WILL NOT BE RECOGNIZED AS AN OPPORTUNITY TO REVISE THE PROPOSAL. THE SUMMARY SHEET INCLUDED IN THIS BID DOCUMENT SHALL BE UTILIZED FOR SUMMARIZING THE BID.

THE SPREAD SHEET SHALL PRESENT EACH ITEM IN THE ORDER AND NUMBER AS SHOWN IN THE CITY'S PROPOSAL AND BID SCHEDULE FOR THIS PROJECT. THE SPREAD SHEET SHALL BE IN A COLUMN FORMAT WITH THE FOLLOWING COLUMNS:

1. ITEM NUMBER
2. DESCRIPTION & UNIT PRICE IN WORDS
3. UNIT OF MEASURE
4. UNIT PRICE
2. ESTIMATED QUANTITY
3. AMOUNT BID

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 Town of Addison. 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 envelopes shall be marked with the following project names:

Bid 07-01 ADDISON ROAD - PHASE I

The Bid Bond must be completed and signed by each bidder and submitted with the bid. A separate bid must be submitted for each discipline that a contractor wishes to be awarded. Submit Bids by mail or in person prior to the time for receiving bids set forth in the Advertisement for Bids issued by the Town.

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 sixty (60) 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 Town of Addison. The bidder will be

required to establish to the satisfaction of the Owner 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 Town of Addison Public Works Department, 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.
4. Whether the bidder has complied with the terms and conditions of the A+B bidding.

Alternate items may or may not be awarded. Addition or deletion of other items or schedules will be governed by NCTCOG, 3rd Edition, Item 1.37 "Change or Modification of Contract".

P. EXECUTION OF THE CONTRACT: The successful bidder will be required to enter into a contract with the Owner within ten (10) days of notice by the Owner that his bid has been accepted. Failure to enter into a contract within the established time limit 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. The Contractor shall begin construction within ten (10) calendar days of the issuance of the Notice to Proceed.

R. COST PLUS TIME BIDDING: The time of completion is of the essence for this contract. A special bidding procedure will be used to determine the successful bidder for this project. This procedure takes into account the price offerings from the bidder and the time the bidder intends to complete the work. Details of this procedure are located in the Special 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. The performance and payment bonds shall name the Town of Addison, and others as directed by the Town, as joint obligees. Sample forms have been included in the Performance Bond, Payment Bond and Maintenance Bond sections. (Contractor shall confirm the legal names of obligees prior to execution of Bonds.)

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 surety company licensed to do business in the State of Texas as a guarantee that the bidder will enter into a contract and execute a Performance Bond and Payment 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 and re-staking will not be provided by the Owner. Benchmarks and Horizontal Control are shown on the plans. There is no separate bid item for staking, therefore, the contractor must include value for staking in the various bid items as subsidiary to the contract. Any staking or re-staking that is required shall be the responsibility of the Contractor and shall be at no cost to the Owner.

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 (3rd 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 record plans which indicate all construction variations from the original construction documents in accordance with Item 5 of the Special Provisions.

4. A two (2) year Maintenance Bond in accordance with Section MB.

Y. **PREVAILING WAGE RATES:** Wage rates paid on this project shall not be less than specified in the schedule of general prevailing rates of per diem wages as attached in the Special Provisions.

Z. **PRIORITY OF CONTRACT DOCUMENTS:** In case of conflict between contract documents, priority of interpretation shall be in the following order: signed agreement, performance and payment bonds, proposal, special provisions (or conditions), technical specifications, general provisions, advertisement for bids, project drawings, Standard Specifications for Public Works Construction – North Central Texas(3rd Edition); Standard Drawings. This priority list shall take precedence over item 1.19 of the NCTCOG standard specifications.

SECTION PF

PROPOSAL FORM

BID FORM

DECEMBER 12, 2006

TO: The Honorable Mayor and Town 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: _____

ACKNOWLEDGMENT OF ADDENDA:

The Bidder acknowledges receipt of the following addenda:

Addendum No. 1 11-16-2006

Addendum No. 2 12-6-2006

Addendum No. 3 _____

TOWN OF ADDISON, TEXAS
Paving & Drainage Improvements to Addison Road - Phase I
(From Beltline Road to Arapaho Road)

BID SCHEDULE
BASE BID

Item No.	Estimated Quantity	Unit	Description and Price in Words	Price in Figures	Extended Amount
1	1	L.S.	For Mobilization (not to exceed 5% of bid amount) complete in place, the sum of Seventy Eight Thousand, Eight Hundred Nineteen Dollars and No Cents per Lump Sum	$78,819.00	$78,819.00
2	10	Mo.	For Barricades, Signs, and Traffic Handling complete in place, the sum of Three Thousand Eight Hundred Thirty Seven Dollars and No Cents per Month	$3,837.00	$38,370.00
3	15.4	Sta.	For Preparation Right-of-Way complete in place, the sum of One Thousand Three Hundred Thirty Five Dollars and Thirty Nine Cents per Station	$1,335.39	$20,565.01
4	5,400	C.Y.	For Unclassified Street Excavation complete in place, the sum of Ten Dollars and One Cents per Cubic Yard	$10.01	$54,054.00
5	3	Ea.	For Relocating Existing Fire Hydrant complete in place, the sum of One Thousand Two Hundred Ninety One Dollars and Fifty Cents per Each	$1,291.50	$3,874.50

BASE BID

Item No.	Estimated Quantity	Unit	Description and Price in Words	Price in Figures	Extended Amount
6	5	Ea.	For Relocating Existing Mailbox, Including Temporary Mailbox complete in place, the sum of Two Hundred Dollars and No Cents per Each	$200.00	$1,000.00
7	8	Ea.	For Relocating Existing Sign complete in place, the sum of Two Hundred Fifty Dollars and No Cents per Each	$250.00	$2,000.00
8	370	L.F.	For Removal and Disposal of Existing Storm Sewer Pipe complete in place, the sum of Twelve Dollars and Sixty Cents per Linear Foot	$12.60	$4,662.00
9	52	L.F.	For Removal and Disposal of Existing 6-Inch Sanitary Sewer Pipe complete in place, the sum of Forty Five Dollars and Fifteen Cents per Linear Foot	$45.15	$2,347.80
10	16	Ea.	For Removal and Disposal of Existing Trees (3-Inch Thru 12-Inch in Diameter), including Root Structure complete in place, the sum of Four Hundred Twelve Dollars and Eight Cents per Each	$412.08	$6,593.28

BASE BID

Item No.	Estimated Quantity	Unit	Description and Price in Words	Price in Figures	Extended Amount
11	5	Ea.	For Removal and Disposal of Existing Trees (Greater Than 12-Inch in Diameter), including Root Structure complete in place, the sum of Eight Hundred Forty Two Dollars and Twenty Cents per Each	$842.20	$4,211.00
12	2	Ea.	For Removal and Disposal of Drop Inlet complete in place, the sum of Eight Hundred Forty Dollars and No Cents per Each	$840.00	$1,680.00
13	4	Ea.	For Removal and Disposal of Standard and Recessed Inlets complete in place, the sum of Eight Hundred Forty Dollars and No Cents per Each	$840.00	$3,360.00
14	200	L.F.	For Full Depth Asphalt Sawcut complete in place, the sum of Three Dollars and Thirty Cents per Linear Foot	$3.30	$660.00
15	985	L.F.	For Full Depth Concrete Sawcut complete in place, the sum of Three Dollars and Eighty Five Cents per Linear Foot	$3.85	$3,792.25
16	10	Ea.	For Adjusting Existing Manhole, Ring, and Cover complete in place, the sum of Four Hundred Twenty Dollars and No Cents per Each	$420.00	$4,200.00

BASE BID

Item No.	Estimated Quantity	Unit	Description and Price in Words	Price in Figures	Extended Amount
17	2	Ea.	For Adjusting Existing Sanitary Sewer Cleanout complete in place, the sum of Two Hundred Seventy Three Dollars and No Cents per Each	$273.00	$546.00
18	20	Ea.	For Furnishing and Installing Water Service Lines from Water Main to Meter, complete in place, the sum of Two Thousand Thirty Seven Dollars and No Cents per Each	$2,037.00	$40,740.00
19	20	Ea.	For Adjusting Existing Water Meter, including New Meter Box , Lid and All Appurtenances complete in place, the sum of Seven Hundred Sixty One Dollars and Twenty Five Cents per Each	$761.25	$15,225.00
20	3	Ea.	For Adjusting Existing Water Vault Top (Approximately 5-feet x 8-feet) complete in place, the sum of One Thousand Two Hundred Fifty Four Dollars and Eighty Cents per Each	$1,254.80	$3,764.40
21	9,460	S.Y.	For Furnishing and Placing 10-Inch Reinforced Concrete Pavement (4,000 psi) complete in place, the sum of Forty Eight Dollars and Eighty One Cents per Square Yard	$48.81	$461,742.60
22	1,150	S.Y.	For Furnishing and Placing 10-Inch Reinforced Stamped/Dyed Concrete Pavement (4,000 psi) complete in place, the sum of One Hundred Four Dollars and Sixty Eight Cents per Square Yard	$104.68	$120,382.00

BASE BID

Item No.	Estimated Quantity	Unit	Description and Price in Words	Price in Figures	Extended Amount
23	1,300	S.Y.	For Furnishing and Placing 8-Inch Reinforced Concrete Drive and Approach (4,000 psi) complete in place, the sum of Fifty Three Dollars and Thirty Cents per Square Yard	$53.30	$69,290.00
24	30	S.Y.	For Furnishing and Placing 5-Inch Reinforced Concrete Rip-Rap (3,000 psi) complete in place, the sum of Fifty Nine Dollars and Eighty Five Cents per Square Yard	$59.85	$1,795.50
25	1,050	S.Y.	For Furnishing and Placing 4-Inch Reinforced Concrete Sidewalk, including Compacted Subgrade Base (3,600 psi) complete in place, the sum of Forty Dollars and Five Cents per Square Yard	$40.05	$42,052.50
26	70	Ton	Furnish, Laying and Compacting Hot Mix (Type D) Asphaltic Concrete Pavement, including Prime Coat complete in place, the sum of One Hundred Eighty Three Dollars and Thirteen Cents per Ton	$183.13	$12,819.10
27	2,450	C.Y.	For Furnishing, Placing and Compacting Flexible Base Material complete in place, the sum of Fifty Two Dollars and Twenty One Cents per Cubic Yard	$52.21	$127,914.50

BASE BID

Item No.	Estimated Quantity	Unit	Description and Price in Words	Price in Figures	Extended Amount
28	3,155	L.F.	For Furnishing and Placing 6-Inch Reinforced Monolithic Concrete Curb complete in place, the sum of Three Dollars and No Cents per Linear Foot	$3.00	$9,465.00
29	60	L.F.	For Furnishing and Constructing 18-Inch Reinforced Concrete Curb and Gutter complete in place, the sum of Fifty Dollars and No Cents per Linear Foot	$50.00	$3,000.00
30	195	S.Y.	For Furnishing and Constructing Reinforced Concrete Barrier-Free Ramps complete in place, the sum of One Hundred Nineteen Dollars and Twenty Three Cents per Square Yard	$119.23	$23,249.85
31	58	L.F.	For Furnishing and Placing Reinforced Concrete Street Header complete in place, the sum of Twenty Dollars and No Cents per Linear Foot	$20.00	$1,160.00
32	4	C.Y.	For Furnishing and Constructing Reinforced Concrete Headwall TxDOT CH-11A (33-Inch Pipe) complete in place, the sum of Six Hundred Twenty Three Dollars and Seventy Cents per Cubic Yard	$623.70	$2,494.80
33	2	Ea.	For Constructing 3-Foot by 3-Foot Drop Inlet complete in place, the sum of Two Thousand Six Hundred Twenty Five Dollars and No Cents per Each	$2,625.00	$5,250.00

BASE BID

Item No.	Estimated Quantity	Unit	Description and Price in Words	Price in Figures	Extended Amount
34	4	Ea.	For Constructing 6-Foot Recessed Inlet complete in place, the sum of Two Thousand Four Hundred Ninety Seven Dollars and No Cents per Each	$2,497.00	$9,988.00
35	7	Ea.	For Constructing 8-Foot Recessed Inlet complete in place, the sum of Two Thousand Six Hundred Sixty Dollars and No Cents per Each	$2,660.00	$18,620.00
36	1	Ea.	For Constructing 10-Foot Recessed Inlet complete in place, the sum of Two Thousand Nine Hundred Sixty Nine Dollars and No Cents per Each	$2,969.00	$2,969.00
37	1	Ea.	For Constructing Reinforced Concrete Storm Sewer Junction Box A-1 complete in place, the sum of Five Thousand Nine Hundred Sixteen Dollars and No Cents per Each	$5,916.00	$5,916.00
38	446	L.F.	For Furnishing and Installing Reinforced Concrete Pipe Class III-18-Inch complete in place, the sum of Fifty Eight Dollars and Eighty Cents per Linear Foot	$58.80	$26,224.80
39	105	L.F.	For Furnishing and Installing Reinforced Concrete Pipe Class III-21-Inch complete in place, the sum of Fifty Nine Dollars and Eighty Five Cents per Linear Foot	$59.85	$6,284.25

BASE BID

Item No.	Estimated Quantity	Unit	Description and Price in Words	Price in Figures	Extended Amount
40	160	L.F.	For Furnishing and Installing Reinforced Concrete Pipe Class III-24-Inch complete in place, the sum of Sixty Five Dollars and Ten Cents per Linear Foot	$65.10	$10,416.00
41	0	L.F.	For Furnishing and Installing Reinforced Concrete Pipe Class III-30-Inch complete in place, the sum of Eighty One Dollars and Ninety Cents per Linear Foot	$81.90	$0.00
42	300	L.F.	For Furnishing and Installing Reinforced Concrete Pipe Class III-33-Inch complete in place, the sum of Ninety Seven Dollars and Sixty Five Cents per Linear Foot	$97.65	$29,295.00
43	203	L.F.	For Furnishing and Installing Reinforced Concrete Pipe Class III-36-Inch complete in place, the sum of One Hundred Twelve Dollars and Thirty Five Cents per Linear Foot	$112.35	$22,807.05
44	55	L.F.	For Furnishing and Installing Reinforced Concrete Pipe Class III-48-Inch complete in place, the sum of One Hundred Fifty Eight Dollars and Fifty Five Cents per Linear Foot	$158.55	$8,720.25
45	95	L.F.	For Furnishing and Installing Reinforced Concrete Pipe Class III-51-Inch complete in place, the sum of One Hundred Ninety Dollars and Five Cents per Linear Foot	$190.05	$18,054.75

BASE BID

Item No.	Estimated Quantity	Unit	Description and Price in Words	Price in Figures	Extended Amount
46	2	Ea.	For Furnishing and Installing Reinforced Concrete Pipe Tee Connection complete in place, the sum of One Thousand Sixty Seven Dollars and Ninety Cents per Each	$1,067.90	$2,135.80
47	9	Ea.	For Furnishing and Installing Reinforced Concrete Pipe Wye Connection complete in place, the sum of Eight Hundred Fifty Four Dollars and Seventy Cents per Each	$854.70	$7,692.30
48	1	Ea.	For Connecting Proposed 24-Inch Pipe to Existing Storm Sewer Manhole complete in place, the sum of Two Thousand Two Hundred Five Dollars and No Cents per Each	$2,205.00	$2,205.00
49	3	Ea.	For Connecting Proposed Pipe to Existing 18-Inch Storm Sewer Pipe complete in place, the sum of Five Hundred Seventy Seven Dollars and Fifty Cents per Each	$577.50	$1,732.50
50	2	Ea.	For Connecting Proposed Pipe to Existing 30-Inch Storm Sewer Pipe complete in place, the sum of Five Hundred Seventy Seven Dollars and Fifty Cents per Each	$577.50	$1,155.00
51	2	Ea.	For Connecting Proposed Pipe to Existing 42-Inch Storm Sewer Pipe complete in place, the sum of Seven Hundred Eighty Seven Six Hundred Eighty Two Dollars and Fifty Cents per Each	$682.50	$1,365.00

BASE BID

Item No.	Estimated Quantity	Unit	Description and Price in Words	Price in Figures	Extended Amount
52	4	Ea.	For Connecting Proposed Pipe to Existing 48-Inch Storm Sewer Pipe complete in place, the sum of Seven Hundred Eighty Seven Dollars and Fifty Cents per Each	$787.50	$3,150.00
53	1	Ea.	For Connecting Proposed Pipe to Existing 60-Inch Storm Sewer Pipe complete in place, the sum of One Thousand One Hundred Fifty Five Dollars and No Cents per Each	$1,155.00	$1,155.00
54	1	Ea.	For Connecting Existing 60-Inch Storm Sewer Pipe to Proposed Storm Sewer Manhole complete in place, the sum of Two Thousand Two Hundred Five Dollars and No Cents per Each	$2,205.00	$2,205.00
55	4	Ea.	For Plugging Existing 18-Inch Storm Sewer Pipe complete in place, the sum of Four Hundred Thirty Dollars and Fifty Cents per Each	$430.50	$1,722.00
56	1	Ea.	For Plugging Existing 30-Inch Storm Sewer Pipe complete in place, the sum of Four Hundred Thirty Dollars and Fifty Each	$430.50	$430.50
57	28	L.F.	For Furnishing and Installing 8-Inch PVC Sanitary Sewer by Open Cut with Embedment (Station 8+15) complete in place, the sum of One Hundred Twenty Six Dollars and No Cents per Linear Foot	$126.00	$3,528.00

BASE BID

Item No.	Estimated Quantity	Unit	Description and Price in Words	Price in Figures	Extended Amount
58	20	L.F.	For Furnishing and Installing 6-Inch PVC Sanitary Sewer by Open Cut with Embedment (Station 9+03) complete in place, the sum of One Hundred Twenty Six Dollars and No Cents per Linear Foot	$126.00	$2,520.00
59	6	Ea.	For Furnishing, Installing and Connecting Sanitary Sewer Service Line, including 2-Way Cleanouts complete in place, the sum of Eight Hundred Sixty One Dollars and No Cents per Each	$861.00	$5,166.00
60	46	L.F.	Furnish and Install 4-Inch SDR35 PVC Pipe with Two-Way Cleanout (Station 1+93) complete in place, the sum of Two Hundred One Dollars and Sixty Cents per Linear Foot	$201.60	$9,273.60
61	2	Ea.	For Constructing 4-Foot Diameter Standard Sanitary Sewer Manhole complete in place, the sum of Two Thousand Five Hundred Twenty Dollars and No Cents per Each	$2,520.00	$5,040.00
62	2	Ea.	For Connecting Existing 6-Inch Sanitary Sewer Pipe to Proposed Sanitary Sewer Manhole complete in place, the sum of Six Hundred Thirty Dollars and No Cents per Each	$630.00	$1,260.00

BASE BID

Item No.	Estimated Quantity	Unit	Description and Price in Words	Price in Figures	Extended Amount
63	2	Ea.	For Cutting and Plugging Existing 6-Inch Sanitary Sewer Pipe complete in place, the sum of One Thousand Four Hundred Seventy Dollars and No Cents per Each	$1,470.00	$2,940.00
64	215	Ea.	For Furnishing and Installing 4-Inch Square Acrylic Yellow Double Reflective Button complete in place, the sum of Three Dollars and Three Cents per Each	$3.03	$651.45
65	330	Ea.	For Furnishing and Installing 4-Inch Square Acrylic White Non-Reflective Button complete in place, the sum of Two Dollars and Forty Two Cents per Each	$2.42	$798.60
66	620	Ea.	For Furnishing and Installing 4-Inch Circular Yellow Non-Reflective Button complete in place, the sum of Two Dollars and Forty Two Cents per Each	$2.42	$1,500.40
67	203	Ea.	For Furnishing and Installing 4-Inch Square White Single Reflective Button complete in place, the sum of Three Dollars and Three Cents per Each	$3.03	$615.09

BASE BID

Item No.	Estimated Quantity	Unit	Description and Price in Words	Price in Figures	Extended Amount
68	5	Ea.	For Furnishing and Installing 4-Inch Square Acrylic Reflective Blue Buttons Center of Outside Lane at Fire Hydrant complete in place, the sum of Three Dollars and Thirty Cents per Each	$3.30	$16.50
69	122	L.F.	For Furnishing and Installing 18-Inch Solid White Thermoplastic Stripe complete in place, the sum of Four Dollars and Thirteen Cents per Linear Foot	$4.13	$503.86
70	66	L.F.	For Furnishing and Installing 24-Inch Solid White Thermoplastic Stripe complete in place, the sum of Four Dollars and Forty Cents per Linear Foot	$4.40	$290.40
71	29	Ea.	For Furnishing and Installing 8-Inch Wide x 2-Foot Long Solid White Thermoplastic Stripe complete in place, the sum of Three Dollars and Thirty Cents per Each	$3.30	$95.70
72	4	Ea.	For Furnishing and Installing White Thermoplastic Marking - "ONLY" complete in place, the sum of One Hundred Twenty Six Dollars and Fifty Cents per Each	$126.50	$506.00

BASE BID

Item No.	Estimated Quantity	Unit	Description and Price in Words	Price in Figures	Extended Amount
73	2	Ea.	For Furnishing and Installing White Thermoplastic Marking - "RR Xing" complete in place, the sum of Five Hundred Twenty Two Dollars and Fifty Cents per Each	$522.50	$1,045.00
74	4	Ea.	For Furnishing and Installing White Thermoplastic Marking - Straight Arrow complete in place, the sum of Ninety Nine Dollars and No Cents per Each	$99.00	$396.00
75	16	Ea.	Furnish and Install White Thermoplastic - Turn Arrow complete in place, the sum of Ninety Nine Dollars and No Cents per Each	$99.00	$1,584.00
76	480	S.Y.	For Furnishing and Placing Solid Sod, including Fertilizer and Watering complete in place, the sum of Dollars and Fifty Seven Cents per Square Yard	$4.57	$2,193.60
77	4,600	Ea.	For Furnishing and Planting Asian Jasmine (1-Gallon), including Watering complete in place, the sum of Four Dollars and Forty Three Cents per Each	$4.43	$20,378.00
78	42	Ea.	For Furnishing and Planting Crepe Myrtles (65 Gallon), including Watering complete in place, the sum of Two Hundred Sixty Two Dollars and Thirty Two Cents per Each	$262.32	$11,017.44

BASE BID

Item No.	Estimated Quantity	Unit	Description and Price in Words	Price in Figures	Extended Amount
79	103	Ea.	For Furnishing and Planting Loropetalum Bush (5-Gallon), including Watering complete in place, the sum of Fifteen Dollars and Forty Cents per Each	$15.40	$1,586.20
80	1	L.S.	For Furnishing and Installing a Fully Operational Irrigation System complete in place, the sum of Sixteen Thousand Five Hundred Eighty Four Dollars and No Cents per Lump Sum	$16,584.00	$16,584.00
81	1	L.S.	Furnish and Prepare a Trench Safety Plan complete in place, the sum of Seven Hundred Eighty Eight Dollars and No Cents per Lump Sum	$788.00	$788.00
82	1,350	L.F.	For Furnishing, Installing and Maintaining Trench Safety System complete in place, the sum of Two Dollars and Thirty One Cents per Linear Foot	$2.31	$3,118.50
83	1	L.S.	For Furnishing, Installing, Maintaining and Removing Erosion Control Devices complete in place, the sum of Thirteen Thousand Forty Seven Dollars and No Cents per Lump Sum	$13,047.00	$13,047.00
84	60	Days	For Furnishing and Maintaining Two Light Boards for Notifying Traffic of Construction complete in place, the sum of One Hundred Eighty Four Dollars and No Cents per Day	$184.00	$11,040.00

BASE BID

Item No.	Estimated Quantity	Unit	Description and Price in Words	Price in Figures	Extended Amount
85	1	L.S.	For Dust Control, Including Water Truck, as Directed by the City and at a Minimum Twice a Day complete in place, the sum of Three Thousand Six Hundred Fifty One Dollars and No Cents per Lump Sum	$3,651.00	$3,651.00
86	27	Ea.	For Furnishing and Installing Roadway/Pedestrian Lights SA complete in place, the sum of Eight Thousand Nine Hundred Twenty Five Dollars and No Cents per Each	$8,925.00	$240,975.00
87	3	Ea.	For Furnishing and Installing Roadway/ Pedestrian Light SAA complete in place, the sum of Eight Thousand Seventy Four Dollars and Fifty Cents per Each	$8,074.50	$24,223.50
88	26	Ea.	For Furnishing and Installing Pedestrian Fixture SB complete in place, the sum of Four Thousand Two Hundred Fifty Two Dollars and Fifty Cents per Each	$4,252.50	$110,565.00
89	2	Ea.	For Furnishing and Installing Parking Lot Fixture SC complete in place, the sum of Six Thousand Four Hundred Twenty Six Dollars and No Cents per Each	$6,426.00	$12,852.00

BASE BID

Item No.	Estimated Quantity	Unit	Description and Price in Words	Price in Figures	Extended Amount
90	56	Ea.	For Furnishing, Installing and Constructing Light Foundation, including Pull Box and Grounding Rod complete in place, the sum of One Thousand Eight Dollars and No Cents per Each	$1,008.00	$56,448.00
91	5,400	L.F.	For Furnishing and Installing 2-Inch Schedule 40 PVC Conduit, including Trenching, Backfilling and Restoration complete in place, the sum of Five Dollars and Seventy Eight Cents per Linear Foot	$5.78	$31,212.00
92	15,600	L.F.	For Furnishing and Installing No. 10 THHN/THWN Conductors (2#10, #10G) in 2-Inch Conduit complete in place, the sum of No Dollars and Ninety Cents per Linear Foot	$0.90	$14,040.00
93	1	L.S.	For Making All Connections and Making Lighting and Electrical System Operational complete in place, the sum of Seven Thousand Four Hundred Thirty Four Dollars and No Cents per Lump Sum	$7,434.00	$7,434.00
94	2	Ea.	For Arranging with TXU, and Furnishing and Installing All Equipment for Electric Service for Irrigation Service from Pedestrian Light complete in place, the sum of Four Thousand Ninety Five Dollars and No Cents per Each	$4,095.00	$8,190.00

BASE BID

Item No.	Estimated Quantity	Unit	Description and Price in Words	Price in Figures	Extended Amount
95	4	Ea.	For Arranging with TXU, and Furnishing and Installing All Equipment for Electrical Service (2-Street Lights and 2 for Pedestrian Lights) complete in place, the sum of Four Thousand Eight Hundred Ninety Five Dollars and No Cents per Each	$4,895.00	$19,580.00
96	16	Ea.	For Furnishing and Installing Traffic Control Signs in Accordance with Sign Plan complete in place, the sum of Five Hundred Fifty Dollars and No Cents per Each	$550.00	$8,800.00
97	35	C.Y.	For Furnishing and Installing Reinforced Concrete Retaining Wall complete in place, the sum of Four Hundred Eighty Three Dollars and No Cents per Cubic Yard	$483.00	$16,905.00
98	1	Unit	Bid Allowance for Irrigation Repairs, complete in place, the Bid Allowance of $5,000.00 per One Unit the sum of Five Thousand Dollars and No Cents per Unit	$5,000.00 *Bid Allowance*	$5,000.00
99	245	S.Y.	For Furnishing and Placing Crosswalk Pavers complete in place, the sum of Ninety Six Dollars and Ninety Three Cents per Square Yard	$96.93	$23,747.85
100	55	S.Y.	For Furnishing and Placing Driveway Pavers complete in place, the sum of Ninety Six Dollars and Ninety Three Cents per Square Yard	$96.93	$5,331.15
TOTAL AMOUNT OF BASE BID (Items 1 Through 100)					**$2,061,761.13**

ADDITIVE ALTERNATES

The following Additive Alternates will be added to the bid at the option of the Town of Addison.

ADDITIVE ALTERNATE 1

Item No.	Estimated Quantity	Unit	Description and Price in Words	Price in Figures	Extended Amount
101A	1,000	L.F.	For Furnishing and Installing 4-Inch PVC Conduit with 4-inch Caps, Meeting the requirements of TXU at Four Crossing complete in place, the sum of _____ Dollars and _____ Cents per Linear Foot		
AMOUNT OF ADDITIVE ALTERNATE 1 (Item 101A)					

NOT AWARDED

ADDITIVE ALTERNATE 2

Item No.	Estimated Quantity	Unit	Description and Price in Words	Price in Figures	Extended Amount
201A	140	C.Y.	For Furnishing and Placing 4-Inch Flex-Base Under Sidewalks complete in place, the sum of One Hundred Eight Dollars and Twenty Eight Cents per Cubic Yard	$108.28	$15,159.20
AMOUNT OF ADDITIVE ALTERNATE 2 (Item 201A)					**$ 15,159.20**

ADDISON ROAD - PHASE I
BID SCHEDULE SUMMARY

Bid Schedule & Description — **Total Amount Materials & Services**

BASE BID:

= TOTAL AMOUNT OF BASE BID (Items 1 Through 100) **(A): $ 2,061,761.13**

Written In Words: _____

TOTAL OF TIME BID: 300 (Calendar Days)

TOTAL OF CALENDAR DAYS x $3,000 **(B): $ 900,000.00**

BASIS FOR COMPARISON OF BIDS:

(A) + (B) = TOTAL BID: $ 2,961,761.13

Written In Words: Two Million, Nine Hundred Sixty One Thousand, Seven Sixty One and 13/100

AMOUNT OF ADDITIVE ALTERNATE 1 (Item 101A) $ -

NOT AWARDED

AMOUNT OF ADDITIVE ALTERNATE 2 (Item 201A) $ 15,159.20

TOTAL OF TIME BID: 4 (Calendar Days)

TOTAL AMOUNT OF BASE BID + ADDITIVE ALTERNATE 2	**$2,076,920.33**
TOTAL OF TIME FOR BASE BID + ADDITIVE ALTERNATE 2	**304 (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.
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. It is understood that the Bid Security shall be collected and retained by the Owner as liquidated damages in the event a contract is made by the Owner based on this proposal within ninety (90) calendar days after receiving bids and the undersigned fails to execute the contract
4. One contract will be awarded based on the total value of Item 1 in section, (A) plus (B).

Bidder's Tax I.D. No. or Employer No. 75-1940623

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 the 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.

MARY MURPHY, Bus. Mgr.
Name of Person Signing Bid

Signature of Person Signing Bid

2277 N. MACH BRANCH ROAD, DENTON TX 76207
Address

940-320-6340 940-320-6346
Telephone No. Fax No.

75-194-0623
T.I.N. (Tax Identification or Employer's Number)

If BIDDER is:

AN INDIVIDUAL

By _____ (Seal)
(Individual's Name)

doing business as _____

Business address: _____

_____

_____

Phone No. _____

A PARTNERSHIP

By J.R.J. PAVING L.P. (Seal)
(Firm Name)

JOHN R. MORRIOTT, JR. & JRMJ HOLDINGS, LLC.
(General Partner)

doing business as J.R.J. PAVING L.P.

Business address: 2277 N. MASCH BRANCH ROAD

DENTON TEXAS 76207

Phone No. 940-320-6340

SECTION CA

CONTRACT AGREEMENT

AGREEMENT

STATE OF TEXAS

COUNTY OF DALLAS

THIS AGREEMENT is made and entered into this 22nd day of January, 2007, by and between the Town of Addison, of the County of Dallas and State of Texas, acting through its City Manager, thereunto duly authorized so to do, Party of the First Part, hereinafter termed the OWNER, and JPJ Paving L.P., of the City of Denton, County of Denton, State of Texas, 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:

Paving & Drainage Improvements to Addison Road - Phase I *(from Beltline Road to Arapaho 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 ten (10) calendar days after the date of written notice to do so shall have been given to him, to complete the work within three hundred four (304) 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 Two million seventy-six thousand nine hundred twenty and 33/100's Dollars ($2,076,920.33) 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, TEXAS (OWNER)

By: _____
Ron Whitehead, City Manager

ATTEST:

By: _____
Mario Canizares, City Secretary

(CONTRACTOR)

By: _____

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 _____ (official title) of said corporation; that said 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

STATUTORY PERFORMANCE BOND PURSUANT TO CHAPTER 2253 OF THE TEXAS GOVERNMENT CODE (PUBLIC WORKS)

(Penalty of this Bond must be 100% of Contract Amount)

KNOW ALL MEN BY THESE PRESENTS, That JRJ Paving, LP (hereinafter called the Principal), as Principal, and Colonial American Casualty and Surety Company and Fidelity and Deposit Company of Maryland (hereinafter called the Surety), as Surety are held and firmly bound unto the **Town of Addison** (hereinafter called the Obligee), in the amount of Two Million, Nine Hundred Sixty One Thousand, Seven Hundred Sixt and 13/100 ---------- Dollars ($ 2,961,761.13) for the payment whereof the said Principal and Surety bind themselves and their heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written contract with the Obligee, dated the _____ day of _____, 2006 to

Paving & Drainage Improvements to Addison Road - Phase I
(from Beltline Road to Arapaho Road)

which contract is hereby referred to and made a part hereof as fully and to the same extent as if copied at length herein.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the said Principal shall faithfully perform the work in accordance with the plans, specifications and contract documents, then this obligation shall be void, otherwise to remain in full force and effect.

PROVIDED, HOWEVER, that this bond is executed pursuant to the provisions of Chapter 2253 of the Texas Government Code and all liabilities on this bond shall be determined in accordance with the provisions, conditions and limitations of said Chapter to the same extent as if it were copied at length herein.

IN WITNESS WHEREOF, the said Principal and Surety have signed this instrument this _____ day of _____, 2006.

Russella Blease

Ronni Moses

JRJ Paving, LP
(Principal)
By: _____
Marty Murphy, Manager/Estimating

Colonial American Casualty and Surety Company and Fidelity and Deposit Company of Maryland
(Surety)
By: Christene Davis
Christine Davis (Attorney-in-Fact)

SECTION PyB

PAYMENT BOND

STATUTORY PAYMENT BOND PURSUANT TO CHAPTER 2253 OF THE TEXAS GOVERNMENT CODE (PUBLIC WORKS)

(Penalty of this Bond must be 100% of Contract Amount)

KNOW ALL MEN BY THESE PRESENTS, That JRJ Paving, LP (hereinafter called the Principal), as Principal, and Colonial American Casualty and Surety Company and Fidelity and Deposit Company of Maryland (hereinafter called the Surety), as Surety are held and firmly bound unto the **Town of Addison** (hereinafter called the Obligee), in the amount of Two Million, Nine Hundred Sixty One Thousand, Seven Hundred Six and 13/100 ---------- Dollars ($ 2,961,761.13) for the payment whereof the said Principal and Surety bind themselves and their heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written contract with the Obligee, dated the _____ day of _____, 2006 to

Paving & Drainage Improvements to Addison Road - Phase I
(from Beltline Road to Arapaho Road)

which contract is hereby referred to and made a part hereof as fully and to the same extent as if copied at length herein.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the said Principal shall pay all claimants supplying labor and material to him or a subcontractor in the prosecution of the work provided for in said contract, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, HOWEVER, that this bond is executed pursuant to the provisions of Chapter 2253 of the Texas Government Code and all liabilities on this bond shall be determined in accordance with the provisions, conditions and limitations of said Chapter to the same extent as if it were copied at length herein.

IN WITNESS WHEREOF, the said Principal and Surety have signed this instrument this _____ day of _____, 2006.

Russella Blaze

Rosi Morales

JRJ Paving, LP
(Principal)

By: _____
Marty Murphy, Manager/Estimating

Colonial American Casualty and Surety Compar
and Fidelity and Deposit Company of Marylanc
(Surety)

By: Christine Davis
Christine Davis (Attorney-in-Fact)

SECTION MB

MAINTENANCE BOND

SECTION MB

2-YEAR MAINTENANCE BOND

STATE OF TEXAS

COUNTY OF DALLAS

That JRJ Paving, LP as principal and Colonial American Casualty and Surety and Fidelity and Deposit Company of Maryland, a corporation organized under the laws of Maryland 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

Two Million, Nine Hundred Sixty One Thousand, Seven Hundred Sixty One and 13/100

($ 2,961,761.13) 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

JRJ Paving, LP

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

Paving & Drainage Improvements to Addison Road - Phase I

(from Beltline Road to Arapaho Road)

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 two (2) years from the date of startup, 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 two (2) years, 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.

Fidelity and Deposit Companies
Home Office: 3910 Keswick Road Baltimore, MD 21211

IMPORTANT NOTICE

To obtain information or make a complaint:

You may call the Fidelity and Deposit Company of Maryland, Colonial American Casualty and Surety Company, and/or Zurich American Insurance Company's toll-free telephone number for information or to make a complaint at:

1-800-654-5155

You may contact the Texas Department of Insurance to obtain information on companies, coverages, rights, or complaints at:

1-800-252-3439

You may write the Texas Department of Insurance:

P.O. Box 149104
Austin, TX 78714-9104
FAX # (512) 475-1771

PREMIUM OR CLAIM DISPUTES: Should you have a dispute concerning the premium or about a claim, you should first contact Fidelity and Deposit Company of Maryland or Colonial American Casualty and Surety Company. If the dispute is not resolved, you may contact the Texas Department of Insurance.

ATTACH THIS NOTICE TO YOUR POLICY: This notice is for information only and does not become a part or condition of the attached document.

Power of Attorney
FIDELITY AND DEPOSIT COMPANY OF MARYLAND
COLONIAL AMERICAN CASUALTY AND SURETY COMPANY

KNOW ALL MEN BY THESE PRESENTS: That the FIDELITY AND DEPOSIT COMPANY OF MARYLAND, and the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, corporations of the State of Maryland, by WILLIAM J. MILLS, Vice President, and GERALD F. HALEY, Assistant Secretary, in pursuance of authority granted by Article VI, Section 2, of the By-Laws of said Companies, which are set forth on the reverse side hereof and are hereby certified to be in full force and effect on the date hereof, does hereby nominate, constitute and appoint **Jerry P. ROSE, Don E. CORNELL, Robbi MORALES, Lisa M. BONNOT, Chris J. KUTTER, Luke J. NOLAN, JR. and Christine DAVIS, all of Dallas, Texas, EACH** its true and lawful agent and Attorney-in-Fact, to make, execute, seal and deliver, for, and on its behalf as surety, and as its act and deed: **any and all bonds and undertakings, EXCEPT bonds on behalf of Independent Executors, Community Survivors and Community Guardians.** and the execution of such bonds or undertakings in pursuance of these presents, shall be as binding upon said Companies, as fully and amply, to all intents and purposes, as if they had been duly executed and acknowledged by the regularly elected officers of the Company at its office in Baltimore, Md., in their own proper persons. This power of attorney revokes that issued on behalf of Jerry P. ROSE, Don E. CORNELL, Robbi MORALES, Lisa M. BONNOT, Chris J. KUTTER, Luke J. NOLAN, JR., dated March 30, 2006.

The said Assistant Secretary does hereby certify that the extract set forth on the reverse side hereof is a true copy of Article VI, Section 2, of the By-Laws of said Companies, and is now in force.

IN WITNESS WHEREOF, the said Vice-President and Assistant Secretary have hereunto subscribed their names and affixed the Corporate Seals of the said FIDELITY AND DEPOSIT COMPANY OF MARYLAND, and the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, this 30th day of March, A.D. 2006.

ATTEST:

FIDELITY AND DEPOSIT COMPANY OF MARYLAND
COLONIAL AMERICAN CASUALTY AND SURETY COMPANY

FIDELITY AND DEPOSIT COMPANY OF MARYLAND INCORPORATED 1890 — COLONIAL AMERICAN CASUALTY AND SURETY COMPANY — SEAL

By:

Gerald F. Haley *Assistant Secretary* *William J. Mills* *Vice President*

State of Maryland }
City of Baltimore } ss:

On this 30th day of March, A.D. 2006, before the subscriber, a Notary Public of the State of Maryland, duly commissioned and qualified, came WILLIAM J. MILLS, Vice President, and GERALD F. HALEY, Assistant Secretary of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND, and the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, to me personally known to be the individuals and officers described in and who executed the preceding instrument, and they each acknowledged the execution of the same, and being by me duly sworn, severally and each for himself deposeth and saith, that they are the said officers of the Companies aforesaid, and that the seals affixed to the preceding instrument is the Corporate Seals of said Companies, and that the said Corporate Seals and their signatures as such officers were duly affixed and subscribed to the said instrument by the authority and direction of the said Corporations.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my Official Seal the day and year first above written.

DENNIS R. HAYDEN — HARFORD COUNTY MARYLAND — NOTARY PUBLIC

Dennis R. Hayden *Notary Public*
My Commission Expires: February 1, 2009

SECTION BP

CONTRACTOR'S AFFIDAVIT OF BILLS PAID

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

Paving & Drainage Improvements to Addison Road - Phase I
(from Beltline Road to Arapaho Road)
(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 _____, 2006.

_____
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

The General Provisions of the Contract shall be as stated in the Standard Specifications for Public Works Construction, North Central Texas Council of Governments 3rd Edition(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.

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SPECIAL PROVISIONS

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1. OWNER

The Town of Addison, herein referred to as Owner, party of the First Part of these Contract Documents, or as may be otherwise established through assignment of the contract.

2. ENGINEER

Town of Addison, 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 Ms. Shanna Sims, Budget and Procurement Manager, Finance Building, 5350 Belt Line Road, Addison, Texas, (972) 450-7089.

4. COPIES OF PLANS FURNISHED

Three (3) sets of 11" x 17" Plans shall be furnished to the Contractor, at no charge, for construction purposes. Additional copies may be obtained at cost of $50.00 per set 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 to 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:

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

b. Field changes of dimension and detail made during construction process.

c. Changes made by Change Order or Supplemental Agreement.

d. Details not on original Contract Drawings.

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

f. Changes made by Change Order or Supplemental Agreement.

g. Other matters not originally specified.

Shop Drawing. 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:

a. Date, project title and number.

b. Contractor's name and address.

c. Title and number of each record document.

d. Certification that each document as submitted is complete and accurate.

e. Signature of Contractor or his authorized representative.

6. HORIZONTAL AND VERTICAL SURVEY CONTROL

The Contractor will be responsible for horizontal and vertical survey control for this project. Benchmarks and alignment centerline coordinates are provided on the plans.

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 and his representatives 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 inspectors 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. The cost of this will be the Contractor's expense and shall not be paid for by the Town of Addison.

10. INSPECTION

Notwithstanding the foregoing, the Town of Addison reserves the right to inspect, test, measure or verify the construction work for this project as the Town deems necessary.

11. 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 improvements for **Addison Road Improvements – Phase I**.

12. 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.

13. 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.

14. TIME ALLOTTED FOR COMPLETION

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

15. 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.

16. 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.

17. 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.

18. LIGHTS AND POWER

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

19. 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.

20. 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.

21. ADDENDA

Bidders desiring further information, or interpretation of the Plans and Specifications, must make written request for such information to the Engineer (not later than three (3) calendar days prior to the date set for the Bid opening). Answers to all such requests will be emailed, faxed or mailed 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.

22. WATER FOR CONSTRUCTION

The Contractor shall acquire a meter and 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. There will be no separate pay item for connection into the existing water system and quantity of water required for construction purposes.

23. EXCAVATION

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

24. 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.

25. 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.

26. 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.

27. LANDS FOR WORK

The Owner shall provide as indicated on the Plans for this Project, or by separate instrument, 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.

28. CLEANING UP

The Contractor shall remove at his own expense daily, 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.

29. AWARD AND EXECUTION OF CONTRACT

For the purpose of award, each bid submitted shall consist of two parts whereby:

Standard Bid (A) = The correct summation of the products of the estimated quantities shown in the proposal, multiplied by their bid unit prices

Time Bid (B) = (CD x Daily Value) = the product of the number of calendar days (CD) provided by the Contractor and the Daily Value established by the Town.

For purposes of this Contract, the Daily Value is $3,000.00.
The lowest evaluated bid (Total Bid) will be determined by the Town as the lowest sum of Standard Bid (A) plus Time Bid (B) according to the following formula:

Total Bid = Standard Bid (A) + Time Bid (B)

Time Bid (B) from the preceding formula will not be used to determine final payment to the Contractor. All payments will be based on actual quantities and bid unit prices.

The Town desires to expedite construction on this contract to minimize the inconvenience to the traveling public and to reduce the time of construction. In order to achieve this, an incentive - disincentive provision is established for the contract. The total incentive payment shall not exceed $60,000.00. A bid with more than 310 days will be considered non-responsive and will be rejected. Contractor shall include in his bid down time during normally

scheduled weekend tour events such as Taste of Addison (May), Kaboom Town (July 4th) and Oktoberfest (September).

This shall include no work during the event and general clean up prior to event and opening of all available lanes for event traffic.

No claim will be considered for lost time or clean up efforts for these three events.

30. EXPLANATION OF CONTRACT TIME

In the event the Contractor completes the contract prior to the expiration of the Original Contract Time, the Town will pay the Contractor an incentive payment of the Daily Value amount specified in provision 29 for each calendar day the actual completion date precedes the Original Contract Time and subject to the conditions set forth below. The term "Original Contract Time" as used in this Provision will mean the number of calendar days established by the Contractor for completion of the work of the Contract on the date the Contract was executed. The term "calendar day" as used in this Article will mean every day shown on the calendar. Calendar days will be consecutively counted from commencement of Contract Time regardless of weather, weekends, holidays, suspensions of Contractor's operations, delays or other events as described herein. For purposes of the calculation and the determination of entitlement to the incentive payment stated above, the Original Contract Time will not be adjusted for any reason, cause or circumstance whatsoever, regardless of fault, save and except in the instance of a catastrophic event (i.e., war, invasion, riot, declared state of emergency, national strike, or other situations as declared by the Town of Addison). The parties anticipate that delays may be caused by or arise from any number of events during the course of the Contract, including, but not limited to, work performed, disruptions, permitting issues, actions of suppliers, subcontractors or other contractors, actions by third parties, weather, weekends, holidays, or other such events, forces or factors sometimes experienced in roadway construction work. Such delays or events and their potential impacts on performance by the Contractor are specifically contemplated and acknowledged by the parties in entering into this Contract, and shall not extend the Original Contract Time for purposes of calculation of the incentive payment set forth above. Further, any and all costs or impacts whatsoever incurred by the Contractor in accelerating the Contractor's work to overcome or absorb such delays or events in an effort to complete the Contract prior to expiration of the Original Contract Time, regardless of whether the Contractor successfully does so or not, shall be the sole responsibility of the Contractor in every instance. In the event the project is altered by work deleted, change orders, supplemental agreements, utility conflicts, design changes or defects, extra work, right of way issues, or other situations which are not the fault of or a direct result of contractor negligence which may impact the critical path of the project construction schedule, the Town may choose to negotiate the extension or reduction of the Original Contract Time with the Contractor.

In the event of a catastrophic event (i.e., war, invasion, riot, declared state of emergency, national strike, or other situations as declared by the Town of Addison) directly and substantially affecting the Contractor's operations on the Contract, the Contractor and the Town shall agree as to the number of calendar days to extend the Original Contract Time so that such extended Original Contract Time will be used in calculation of any incentive

payment. In the event the Contractor and Town are unable to agree to the number of calendar days to extend the Original Contract Time, the Town shall unilaterally determine the number of calendar days to extend the Original Contract Time reasonably necessary and due solely to such catastrophic event and the Contractor shall have no right whatsoever to contest such determination, save and except that the Contractor establishes that the number of calendar days determined by the Town were arbitrary or without any reasonable basis.
The Contractor shall have no rights under the Contract to make any claim arising out of this incentive payment provision except as is expressly set forth in this Provision. As conditions precedent to the Contractor's entitlement to any incentive the Contractor must:

(1) Actually complete all Contract requirements, including the completion of all punch list work, and obtain final acceptance by the Town prior to expiration of the Original Contract Time.

(2) The Contractor shall notify the Town in writing, within 30 days after final acceptance of the Contract by the Town, that the Contractor elects to be paid the incentive payment which the Contractor is eligible to be paid based on the actual final acceptance date, and such written notice shall constitute a full and complete waiver, release and acknowledgment of satisfaction by the Contractor of any and all claims, causes of action, issues, demands, disputes, matters or controversies, of any nature or kind whatsoever, known or unknown, against the Town, its employees, officers, agents, representatives, consultants, and their respective employees, officers and representatives, the Contractor has or may have, including, but not limited to, work performed, work deleted, change orders, supplemental agreements, delays, disruptions, differing site conditions, utility conflicts, design changes or defects, time extensions, extra work, right of way issues, permitting issues, actions of suppliers or subcontractors or other contractors, actions by third parties, shop drawing approval process delays, expansion of the physical limits of the project to make it functional, weather, weekends, holidays, suspensions of Contractor's operations, extended or unabsorbed home office or job site overhead, lump sum maintenance of traffic adjustments, lost profits, prime mark-up on subcontractor work, acceleration costs, any and all direct and indirect costs, any other adverse impacts, events, conditions, circumstances or potential damages, on or pertaining to, or as to or arising out of the Contract. This waiver, release and acknowledgment of satisfaction shall be all inclusive and absolute, save and except any routine Town final estimating quantity adjustments.

Should the Contractor fail to actually complete the Contract and obtain final acceptance by the Town prior to expiration of the Original Contract Time, or should the Contractor, having timely completed the Contract and obtained final acceptance by the Town prior to expiration of the Original Contract Time but having failed to timely request the incentive payment for any reason, and including but not limited to the Contractor choosing not to fully waive, release and acknowledge satisfaction as set forth in (2) above, the Contractor shall have no right to any payment whatsoever under this Article. Notwithstanding the Contractor's election or non-election of the incentive under this provision, the disincentive provision applies to all circumstances where the work in the Contract is not finally accepted by the Allowable Contract Time.

Should the Contractor fail to complete the Contract on or before expiration of the Allowable Contract Time, as adjusted in accordance with the provisions above, the Town shall deduct from the moneys due the Contractor the Daily Value as shown in provision 29 for each calendar day completion exceeds the Allowable Contract Time. The term "Allowable Contract Time" as used in this Article shall mean the Original Contract Time plus adjustments pursuant to the statements above . This deduction shall be the disincentive for the Contractor's failing to timely complete the Contract. **This shall be strictly enforced.**

In the event the Contractor elects to exercise this incentive payment provision, should this provision conflict with any other provision of the Contract; the Contract shall be interpreted in accordance with this provision.

31. USE OF EXPLOSIVES

Use of explosives will not be allowed.

32. 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.

33. DISPOSAL OF WASTE AND SURPLUS EXCAVATION

All asphalt, concrete, rock or excavated material, or other debris shall be removed from the property and the Town of Addison. Any required disposal permits shall be the sole responsibility of the Contractor.

34. 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 Engineer 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. Re-sawing of damaged edges will be at the Contractor's expense.

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 required 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. These items shall be subsidiary to other bid items unless quantified in the proposal as a separate bid item.

All private obstructions 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.

35. TOWN OF ADDISON APPROVAL

This project is subject to final approval and acceptance by the Town of Addison. Final approval acceptance will not be given until the punch list items are completed to the Towns satisfaction and as-built drawings are given to the Town of Addison.

36. 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.

37. FINAL ACCEPTANCE OF WORK

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

38. WORK AREA

Contractor shall restrict his construction activity to the project limits.

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.

Final payment to the construction contractor shall not be made until all Work has been finally completed and verified in accordance with the construction contract, plans and specifications and have been finally accepted by the Town of Addison.

41. SAMPLES AND TESTS OF MATERIALS

The Town shall designate and pay an independent testing laboratory to furnish testing for this project. Samples of all materials for tests shall be taken by the independent lab as necessary. Contractor shall provide access and the materials for testing. All re-tests shall be paid by the Contractor and such cost shall be deducted from monthly pay requests.

All samples and tests shall be performed in accordance with the Standard Specifications for Public Works Construction, North Central Texas Council of Governments (3rd Edition, 2002) as amended or supplemented.

All concrete mix designs and supporting data shall be submitted to the Owner for approval and acceptance at least ten (10) days prior to placing concrete. All costs for the field quality control testing shall be paid for by the Town of Addison.

42. COMPLIANCE WITH GENERAL RULES AND LAWS

Contractor shall familiarize himself with the nature and extent of the specifications, site conditions, traffic and safety requirements, and comply with all federal, state and local laws, ordinances, rules and regulations. Contractor shall determine how compliance with requirements, laws, rules, and regulations will affect his cost, progress or performance of the Work.

43.COMPLIANCE WITH IMMIGRATION LAWS

Contractor shall take all steps necessary to ensure that all of the Contractor's employees are authorized to work in the United States as required by the Immigration Reform and Control Act of 1986.

44.RESOLUTION OF DISPUTES

The parties hereby covenant and agree that in the event of any controversy, dispute, or claim, of whatever nature arising out of, in connection with or in relation to the interpretation, performance or breach of this agreement, including but not limited to any claims based on contract, tort or statute, before filing a lawsuit, the parties agree to submit the matter to Alternative Dispute Resolution pursuant to the laws of the State of Texas. The parties shall select a third party arbitrator or mediator from the current list of neutrals on file with the Alternative Dispute Resolution Administrator of the Dallas County District Courts. All forms of Alternative Dispute Resolution may be used except binding arbitration. The proceedings shall be conducted in accordance with the laws of the State of Texas.

45.GENERAL SEQUENCE OF CONSTRUCTION

Prior to the start of work, the contractor shall develop a detailed construction and sequence of construction schedule using the critical path method, to be submitted to the Town of Addison for approval, that shall cause minimum interference with traffic along, across and adjacent to the project during construction. If the schedule or sequence becomes unworkable or unsatisfactory as work proceeds, adjustments shall be made. During all phases of construction access to all taxiways and taxi lanes must be maintained at all times unless otherwise authorized in writing by the Town of Addison.

Erosion control devices must be properly installed and maintained during all stages of construction.

46.CONSTRUCTION STAKING

Construction staking will not be provided by the Owner or Engineer. This item will be performed by the Contractor and shall be subsidiary to other bid items. The Contractor will be responsible for maintaining stakes. If re-staking is required for any reason, it will be the Contractor's responsibility, including associated costs.

All construction staking shall be done under the supervision of a Registered Professional Land Surveyor registered in the State of Texas. The Contractor shall submit copies of cut sheets and field books for the construction of all paving, water, wastewater, and stormwater

improvements to the Town of Addison for review prior to construction of the improvements. The information on the cut sheets and field books shall include but not be limited to the following:

a. Heading to include date, contract number, project name, surveying firm, contractor, and construction plan sheet number.

b. Location, description of street/line and street/line name, number, letter, etc. designation.

c. Benchmark Data: Location, description, and elevation.

d. Slope or percent of grade of each curb line or utility line.

e. Stations at 50 foot intervals and including all PC, PT, PI, PVC, PVI, PVT, PRC, grade changes, etc.

f. Offset description including distance to center line or back of curb and direction of offset; left, right, east, west, etc,

g. Cut to subgrade, pavement, top of curb, or flowline of the street or utility being staked.

h. Clarifying remarks such as top of curb, gutter, pavement, subgrade, manhole, cleanout, valve, tee, cross, fire hydrant, wastewater lateral, water service, etc.

i. Cut sheets shall be signed by a Texas Registered Professional Land Surveyor.

47. GEOTECHNICAL INFORMATION

"Geotechnical Investigation, Addison Road, Addison, Texas" dated January 1999, prepared by Jack Haston, P.E. of Haston Engineering. A complete copy of this report is bound herein.

48. GRASS REPAIR

No separate pay shall be made for repair of damaged grass areas, not indicated on the plans, but such work shall be subsidiary to the various other items bid. Repair shall comply with applicable specifications elsewhere.

49. IRRIGATION AND SPRINKLER REPAIR

The contractor shall maintain all existing irrigation systems within the limits of the project during the duration of the contract. The contractor shall employ a licensed irrigator who is responsible for the repair or replacement of any damage to irrigation lines, valves, controllers, sprinklers, wiring and appurtenances which are damaged during construction. This repair is subsidiary to the various other items bid. The contractor will be responsible for any vegetation that dies as a result of damage to the irrigation system and replace it with equal vegetation at his own cost.

50. WORKERS' COMPENSATION INSURANCE COVERAGE

A. Definitions.

Certificate of Coverage ("certificate") - A copy of a certificate of insurance, a certificate of authority to self insure issued by the Texas Workers' Compensation Commission (the "TWCC"), or a coverage agreement (TWCC-81, TWCC-82, TWCC-83 or TWCC-84), showing statutory workers' compensation insurance coverage for the person's or entity's employees providing services on a project, for the duration of the project.

Duration of the Project - includes the time from the beginning of the work on the project until the Contractor's/person's work on the project has been completed and accepted by the governmental entity.

Persons Providing Services on the Project ("subcontractor" in Section 406.096 of the Texas Labor Code) - includes all persons or entities performing all or part of the services the Contractor has undertaken to perform on the project, regardless of whether that person contracted directly with the Contractor and regardless of whether that person has employees. This includes, without limitation, independent contractors, subcontractors, leasing companies, motor carriers, owner-operators, employees of any such entity or employees of any entity which furnishes persons to provide services on the project. "Services" include, without limitation, providing, hauling, or delivering equipment or materials, or providing labor, transportation, or other service related to a project. "Services" does not include activities unrelated to the project, such as food/beverage vendors, office supply deliveries, and delivery of portable toilets.

B. The Contractor shall provide coverage, based on property reporting of classification codes and payroll amounts and filing of any coverage agreement, which meets the statutory requirements of Texas Labor Code, 401.011(44) for all employees of the Contractor providing services on the project, for the duration of the project.

C. The Contractor must provide a certificate of coverage to the Owner prior to being awarded the contract.

D. If the coverage period shown on the Contractor's current certificate of coverage ends during the duration of the project, the Contractor must, prior to the end of the coverage period, file a new certificate of coverage with the Owner, showing that the coverage has been extended.

E. The Contractor shall obtain from each person providing services on the project, and provide to the Owner:

(1) a certificate of coverage, prior to that person beginning work on the project, so that the Owner will have on file certificates of coverage showing coverage for all persons providing services on the project; and,

(2) no later than seven days after receipt by the Contractor, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the project;

F. The Contractor shall retain all required certificates of coverage on file for the duration of the project and for one year thereafter.

G. The Contractor shall notify the Owner in writing by certified mail or personal delivery, within 10 days after the Contractor knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the project.

H. The Contractor shall post on each project site a notice, in the text, form and manner prescribed by the TWCC, informing all persons providing services on the project that they are required to be covered, and stating how a person may verify current coverage and report failure to provide coverage.

I. The Contractor shall contractually require each person with whom it contracts to provide Services on a project to:

(1) provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements, which meets the statutory requirements of Texas Labor Codes 401.011 (44) for all its employees providing services on the project, for the duration of the project;

(2) provide to the Contractor, prior to that person beginning work on the project, a certificate of coverage showing that coverage is being provided for all employees of the person providing services on the project, for the duration of the project;

(3) provide the Contractor, prior to the end of the coverage period, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the project;

(4) obtain from each person with whom it contracts, and provide to the Contractor;

a. a certificate of coverage, prior to the other person beginning work on the project; and,

b. a new certificate of coverage showing extension of the coverage period, prior to the end of the coverage period, if the coverage period shown on the current certificate of coverage ends during the duration of the project.

(5) retain all required certificates of coverage on file for the duration of the project and for one year thereafter;

(6) notify the Owner in writing by certified mail or personal delivery, within 10 days after the person knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the project; and

(7) contractually require each other person with whom it contracts to perform as required by paragraphs (1) - (7) with the certificate of coverage to be provided to the person for whom they are providing services.

J. By signing this contract or providing or causing to be provided a certificate of coverage, the Contractor is representing to the Owner that all employees of the Contractor who will provide services on the project will be covered by worker's compensation coverage for the duration of the project, that the coverage will be based on proper reporting of classification codes and payroll amounts, and that all coverage agreements will be filed with the

appropriate insurance carrier or, in the case of a self-insured, with the TWCC's Division of Self-Insurance Regulation. Providing false or misleading information may subject the Contractor to administrative penalties, criminal penalties, civil penalties or other civil actions.

K. The Contractor's failure to comply with any of these provisions is a breach of contract by the Contractor which entitles the Owner to declare the contract void if the Contractor does not remedy the breach within ten days after receipt of notice of breach from the Owner.

The following is the form of notice of workers' compensation coverage prescribed by the TWCC. Pursuant to Section 110.110 (d) (7), this notice must be printed with a title in at least 30-point bold type, and text in at least 19-point nominal type, and shall be in both English and Spanish and any other language common to the worker population.

REQUIRED WORKERS' COMPENSATION COVERAGE

"The law requires that each person working on this site or providing services related to this construction project must be covered by workers' compensation insurance. This includes persons providing, hauling or delivering equipment or materials, or providing labor or transportation or other service related to the project, regardless of the identity of their employer or status as an employee.

"Call the Texas Workers' Compensation Commission (TWCC) at (512) 440-3789 to receive further information on the legal requirements for coverage, to verify whether your employer has provided the required coverage, or to report an employer's failure to provide coverage."

51. STAGING AREA

Staging Area:

The location of the staging area shall be discussed at the pre-construction conference.

Any costs associated with the use and restoration of the staging areas will be the sole responsibility of the contractor and will not be an expense to the Town of Addison.

52. COORDINATION BETWEEN CONTRACTORS

Construction of certain private improvements may be underway simultaneous with the public improvements. The public contractors shall coordinate and sequence their construction with each other and the private contractors through the owner. The coordination with other contractors in no way relieves a single contractor from ensuring that the total project is coordinated and sequenced to stay on schedule.

53. RESTRICTED WORK HOURS

Per the Town of Addison Building Regulations, "It shall be unlawful for a person, firm or corporation to excavate, erect, build, construct, alter, repair or demolish any building or structure which has been issued or which is required to be issued a building permit by the Town of Addison between the hours of 7:00 p.m. and 7:00 a.m. Monday through Friday, and between the hours of 7:00 p.m. and 8:00 a.m. on Saturday and Sunday, if such activity is performed within a residential, apartment, or townhouse zoned area, or within three hundred (300) feet of an occupied residence, except in cases of urgent necessity or in the interest of public safety and convenience, and then only by permit of the City Manager."

54. PREVAILING WAGE RATES

Wage rates paid on this project shall not be less than specified in the schedule of general prevailing rates of per diem wages as attached hereto.

55. CLEAN AIR ACT AND CLEAN WATER ACT

Include in all construction contract exceeding $100,000, the following requirement: "Contractor is responsible for compliance with all applicable standards, orders, or requirements issued under Section 306 of the Clean Air Act, Section 505 of the Clean Water Act, Executive Order 11738, and Environmental Protection Agency regulations."

56. CLAIMS FOR DAMAGES OR INJURY

Item 1.24.3 - SMALL CLAIMS FOR DAMAGE OR INJURY is amended to read as follows:

If any person files a claim against the Owner or Contractor for personal injury or property damage resulting from, arising out of, or caused by, the operations of the Contractor, or any work within the limits of the project, the Contractor must either submit to the Owner a duly executed full release within thirty (30) days from the date of written claim, or immediately report the claim to his liability insurance carrier for their action in adjusting the claim. If the Contractor fails to comply with this provision within the stipulated time limit, it will be automatically deemed that the Contractor has appointed the Owner as it's irrevocably Attorney-In-Fact authorizing the Owner to report the claim directly with the liability insurance carrier. This provision is in and of itself a Power-of-Attorney from the Contractor to the Owner which authorizes the Owner to take said action on behalf of the Contractor without the necessity of the execution of any other document. If the Contractor fails to comply with the provisions of this item the Owner, at its own discretion, may terminate this contract or take any other actions it deems appropriate. Any payment or portion thereof due the Contractor, whether it is a final payment, progress payment, payment out of retainage or refund payment may be withheld by the Owner as is authorized by Item 1.52. Bankruptcy, insolvency or denial of liability by the insurance carrier shall not exonerate the Contractor from liability.

As a result of the additional work created to Owner due to un-responded claims for damages by Contractor to third parties, Contractor shall incur penalties for failure to abide by this Special Provision.

In accordance with the obligations set forth in Special Provision Item 1.24.3, Contractor shall respond to the claimant in writing regarding the status of the claim, including whether Contractor disputes the claim, wishes to settle, or will notify its liability insurance carrier regarding the claim. Contractor will be assessed a penalty by Owner of $75.00 per claim, for its failure to respond to the claimant as described above within thirty days of its written notice of claim by the City.

To ensure Contractor compliance, the Owner shall be notified, by copied correspondence of responses or settlement by Contractor.

57. ANTITRUST

The Contractor hereby assigns to the Owner any all claims for overcharges associated with this contract which arise under the antitrust laws of the United States 15 U.S.C.A. Sec. 1, et seq. (1973).

58. INSURANCE

Each insurance policy that the Contractor must furnish in accordance with these contract documents shall name the Town of Addison and the Engineer as additional insured.

Contractor shall include in their bid package a copy of their certificate of insurance showing compliance to the limits established by the Town of Addison.

1.0 The Contractor shall agree to furnish and maintain continuously during the period of this agreement, any renewals or extension, insurance coverage meeting all of the following requirements:

1.1 Commercial General Liability Insurance at minimum combined single limits of $1,000,000 per occurrence and $2,000,000 general aggregate for Bodily Injury and Property Damage, which coverage shall include Products/Completed Operations, and XCU Hazards. Coverage for product/completed operations must be maintained for at lest two (2) years after the construction work has been completed. Coverage must be amended to provide for an each-project aggregate limit of insurance. Contractual Liability must be included

1.2 Workers Compensation Insurance at statutory limits, including employer's liability coverage at minimum limits of $1,000,000 each occurrence-each accident, $1,000,000 by disease-each occurrence, and $1,000,000 by disease aggregate. (See attachment on Workers Compensation Commission rules)

1.3 Commercial Automobile Liability Insurance at minimum combined single limits of $1,000,000 per occurrence for bodily injury an property damage, including owned, non-owned, and hired car coverage.

1.4 Umbrella Liability at minimum limits of $1,000,000 each-occurrence $4,000,000 aggregate with respect to primary commercial general liability, automobile liability and employers liability policies.

1.5 Any Subcontractor(s) hired by the Contractor shall maintain insurance coverage equal to that required by the Contractor. It is the responsibility of the Contractor to assure compliance with this provision. The Town accepts no responsibility arising from the conduct, or lack of conduct, of the Subcontractor.

1.6 A comprehensive general liability insurance form may be used in lieu of a commercial general liability form. In this event, coverage must be written on an occurrence basis, at limits of $1,000,000 each-occurrence, combined single limit and coverage must include a broad form comprehensive general liability endorsement, products/completed operations, XCU hazards and contractual liability.

2.0 With reference to the foregoing insurance requirements, Contractor shall specifically endorse applicable insurance policies as follows:

2.1 The Town shall be named as an additional insured with respect to general liability and automobile liability..

2.2 All liability policies shall contain no cross liability exclusions or insured versus insured restrictions.

2.3 A waiver of subrogation in favor of the Town of Addison shall be contained in the workers compensation and all liability policies.

2.4 All insurance policies shall be endorsed to require the insured to immediately notify the Town of Addison of any material changes in the insurance coverage.

2.5 All insurance policies shall be endorse to the effect that the Town will receive at least thirty (30) days notice prior to cancellation or non-renewal of the insurance.

2.6 All certificates shall be mailed to Town of Addison, Purchasing Dept., P.O. Box 9010, Addison, Texas 75001.

2.7 All insurance policies, which name the Town as an additional insured, must be endorsed to read as primary coverage regardless of the application of other insurance.

2.8 Required limits may be satisfied by any combination of primary and umbrella liability insurances.

2.9 Contractor may maintain reasonable and customary deductibles, subject to approval by the Town.

3.0 All insurance shall be purchased from an insurance company who meets the following requirements:

3.1 Must be issued by a carrier, which is rated "A-" or better by A.M. Best's Key Rating Guide.

3.2 Licensed and admitted to do business in the State of Texas and is a subscriber to the Texas Guaranty Fund.

4.0 All insurance must be written on forms filed with and approved by the Texas State Board of Insurance. Certificates of insurance shall be prepared and executed by the insurance company or its authorized agent and shall contain provisions representing and warranting the following:

4.1 Set forth all endorsements and insurance coverages according to requirements and instruction contained herein.

4.2 Shall specifically set forth the notice-of-cancellation or termination provisions to the Town.

5.0 Upon request, Contractor, shall furnish the Owner with certified copies of all insurance policies.

59. NON-DISCRIMINATION POLICY

It is the policy of the Town of Addison to afford all people an equal opportunity to bid on any contract being let by the Town.

The Town of Addison has a policy that prohibits discrimination against any person because of race, color, sex, or national origin, in the award or performance of any contract.

The Town of Addison will require its employees, agents, and contractors to adhere to this policy.

60. SHOP DRAWING

Contractor shall furnish a minimum of four and a maximum of six copies of shop drawings for review by the City. Acceptable submittals will be returned as follows:

Two (2) – Town of Addison

One (1) – Contractor

One (1) – Birkhoff, Hendricks & Conway, L.L.P.

Maximum size of submittal shall be 11 x 17 inch. No fax copies are acceptable. All copies shall be from clear legible original.

Shop drawings shall include all items to be installed in the project, including:

- Concrete Mix Designs
- Storm Sewer Pipe
- Daily Phasing Plan
- Gradiation
- Lane Closure Plan
- Pipe
- Fire Hydrants
- Fittings
- Plantings
- Irrigation
- Roadway Marking Buttons & Epoxy
- Restoration Plan

61. BARRICADES, WARNING SIGNS, DETOURS AND SEQUENCE OF WORK

A. Throughout the construction operations, streets and intersections will remain open to traffic by constructing the work in stages. All streets, driveways, adjacent business and alleys shall remain open to traffic as far as is practicable.

B. General Construction: The Contractor shall plan his work sequence in a manner that will cause minimum interference with traffic during construction operations. Before beginning work on this project, the Contractor shall submit, for approval by the Owner, a plan of construction operations outlining in detail a sequence of work to be followed; setting out the method of handling traffic on streets, roads and driveways along, across and adjacent to the work. If at any time during the construction, the Contractor's proposed plan of operation for handling traffic does not provide for safe comfortable movement, the Contractor shall immediately change his operations to correct the unsatisfactory conditions.

Ditches across the traffic lanes will be kept covered with a portable traffic-bearing surface at all times unless work in the ditch is in progress. Only one lane of traffic may be closed at a time when work is in progress in a ditch.

C. Safety: The Contractor shall provide, construct and maintain barricades and signs at locations set out in the plans and in the Special Provisions in accordance with the Texas Manual on "Uniform Traffic Control Devices for Streets and Highways". In addition, he shall provide and maintain such other barricades and signs as deemed necessary by the Owner, and provide and maintain, between sunset and sunrise, a sufficient number of lights at barricades and points of danger for the protection of vehicular and pedestrian traffic.

Barricades shall be placed in such a manner as not to interfere with the sight distance of drivers entering the street from side streets.

The Contractor shall keep traveled surfaces used in his hauling operation clear and free of dirt or other material.

The Contractor shall provide and maintain qualified flagmen at such points and for such periods of time as may be required to provide for the safety and convenience of public travel and Contractor's personnel.

62. CONSTRUCTION IN PUBLIC ROADS AND PRIVATE DRIVES

No public road shall be entirely closed overnight. It shall be the responsibility of the Contractor to build and maintain all weather bypasses and detours, if necessary, and to properly light, barricade and mark all bypasses and detours that might be required on and across the roads involved in the work included in this contract.

No interference with traffic flow on city streets shall be permitted during the hours of 6:30 a.m. to 9:30 a.m. and 3:30 p.m. to 7:30 p.m., Mondays through Fridays.

The Contractor shall make every effort to complete construction and allow immediate access to adjacent property at driveway entrances located along the roadways. Owners or tenants of improvements where access and/or entrance drives are located shall be notified at least twenty-four (24) hours prior to the time the construction will be started at their driveways or

entrances and informed as to the length of time driveways will be closed. Contractor shall at all times maintain at least one point of access into all properties, unless obtaining written permission from property owner to do otherwise with such written permission being provided to the Town's inspector.

The Contractor shall be responsible for all road and entrance reconstruction and repairs and maintenance of same for a period of one year from the date of such reconstruction. In the event the repairs and maintenance are not made immediately to the satisfaction of the Owner, and it becomes necessary for the Town to make such repairs, the Contractor shall reimburse the Town for the cost of such repairs.

The Contractor shall, at all times, keep a sufficient width of the roadway clear of dirt and other material to allow the free flow of traffic. The Contractor shall assume any and all responsibility for damage, personal or otherwise, that may be caused by the construction along roads and private drives.

63. EXCAVATION SAFETY SYSTEMS

The work performed under this section of the specifications consists of providing trench safety systems consisting of shoring, sheeting, trench shield, and/or laid back slopes to meet the trench safety requirements of the Occupational Safety and Health Administration (O.S.H.A.), as required for this project and specified herein.

A. General

Trench safety systems shall be provided by the Contractor as provided in Subpart P - Excavation, Trenching and Shoring, Part 1926 of the Code of Federal Regulations which describes safety and health regulations as administered by the U.S. Department of Labor Occupational Safety and Health Administration (O.S.H.A.). The standards specified by the O.S.H.A. Regulations shall be the minimum allowed on this project. It shall be the responsibility of the Contractor to design and install adequate trench safety systems for all trenches excavated on this project.

The Contractor shall furnish to the Owner for review, prior to beginning construction activity, a Trench Safety Plan for the entire project. The trench safety plan must be prepared and sealed by a Professional Engineer registered in the State of Texas. In addition, all trench safety systems utilized in this project must be designed by a Professional Engineer registered in the State of Texas. The Contractor shall be totally responsible for the safety of all persons involved in the construction of this project.

A. Core Borings

Any core borings and soil data furnished by the Owner are for the convenience of the Contractor. The Contractor shall be responsible for any additional soil or geotechnical information required. The Contractor shall be responsible for properly designed trench safety systems to be utilized for any type of subsurface condition found on this project. The furnishing of soil information by the Owner in no way relieves the Contractor of this obligation.

If no core borings or soil data are furnished by the Owner, it shall be the Contractor's responsibility to obtain whatever geotechnical information required for preparation of trench safety systems.

B. Inspections

In addition to the inspections of the trench and trench safety systems required of the Contractor by the O.S.H.A. Regulations, the Owner may further inspect the work. The Owner shall have the right to reject any trench safety systems which he finds to be inadequate, and the Contractor shall immediately improve the system to comply with this specification.

C. Measurement and Payment

Measurement and payment of Trench Safety Systems shall be based on the actual linear footage of the pipe installed on the project. The payment shall be full compensation for all planning, engineering, materials, equipment, fabrications, installation, recovery and all incidental work required. All excavation and backfill in addition to that specified elsewhere in these specifications shall be considered subsidiary to this bid item.

64. PROJECT VIDEO

Prior to start of construction, Contractor shall video construction area and property adjacent to construction in the presence of the City Inspector. The format shall be DVD. Thxe video shall be narrated. The Contractor shall furnish the Owner a copy of the video in DVD format prior to commencement of project. This shall be subsidiary to project.

65. CAST-IN-PLACE MANHOLES

Cast-in-place manholes shall be in accordance with the details shown in the plans and as provided in NCTCOG Item 7 – Structures.

66. RECORD DRAWINGS

The Contractor shall maintain 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, and 14-days prior to request for final payment the Contractor shall deliver record drawings to the Owner which shall include the following:

- Delineation of each change made to the construction plans during construction.
- Certification that each document as submitted is complete and accurate.
- Signature of Contractor or his authorized representative.

67. CONCRETE SIDEWALKS

A. The intent of this specification is to describe the minimum acceptable standards for the construction of concrete sidewalks in the Town of Addison.

1) The Contractor shall furnish all materials and labor as required for the construction of sidewalks, in accordance with approved plans, specifications, and these instructions.

2) **Excavation:** All excavation required for the construction of sidewalks shall be in accordance with the lines and grades as established by the Town of Addison Sidewalk Procedure and Specifications.

Where excavation for sidewalks necessitates the re-grading of existing berms, the contractor shall grade beans as directed by the Street Superintendent and replant as needed. This work shall also include all necessary back-filling and grading behind retaining walls.

The Contractor shall perform all necessary filling, leveling and fine grading as required to bring the sub-grade to the exact grades specified; and compacted to 95 percent standard proctor density.

3) **Forms:** Forms shall be of wood or metal, and of a sectional length satisfactory to the Street Superintendent. They shall be free from warp and of a depth equal to the thickness of the finished work. They shall be securely staked to line and grade, and maintained in a true position during the depositing of concrete. Forms shall be set to provide positive drainage for the finished sidewalk.

4) **Reinforcing Steel:** All steel reinforcement shall be accurately placed, and held in place during progress of concrete placement by such effective means (chairs, ties, etc.) that it shall not be moved out of true position. All reinforcement necessary for a section of concrete shall be placed and approved by the Street Superintendent before any concrete is deposited in the section. All steel must be free from paint and oil; all loose scale, rust, dirt, and other foreign substances shall be completely removed before using. Where new concrete sidewalks abut existing sidewalks 3/8" steel reinforcing bars shall be doweled into existing sidewalk, a minimum of 6" and secured with epoxy.

5) **Placing:** Concrete shall not be placed when the temperature is below 40 degrees F., and falling; but it may be placed when the temperature is above 35 degrees F., and rising. The temperature being taken in the shade and away from artificial heat. When concrete is being placed in cold weather, the Contractor shall have available for immediate use a sufficient supply of an approved covering material, to immediately protect the concrete when the air temperature falls to 32 degrees F. before the concrete has been in place four (4) hours.

Such protection shall remain in place during the period of not less than five (5) days. Neither salt nor chemical admixtures shall be added to the concrete to prevent freezing. The Contractor shall be responsible for the quality and strength of concrete under cold weather conditions, and all concrete damaged by freezing shall be removed and replaced by the Contractor at his own expense.

6) **Finishing:** Concrete sidewalks shall be finished to a true, even surface. They shall be troweled and finished with a light broom transverse to the direction of traffic. Where adjacent sidewalks differ from this standard, new sidewalks shall conform to adjacent

sidewalks, i.e., exposed aggregate. Joints and all edges shall be finished to a one-quarter ('/4) inch radius with suitable edging tools.

7) **Joints:** Expansion joints for sidewalks shall be formed using expansion joint material of an approved type and shaped to the section. Expansion joints shall be placed in sidewalks at 40-foot intervals, and to match street expansion joints when possible. Expansion joints shall also be placed at all driveways, curbs, foundations, other sidewalks, and other adjacent concrete work. Similar material shall be placed around all obstructions protruding into or through sidewalks. All expansion joints shall be 1/2 inch in thickness. Sidewalks shall be jointed with 1/4" radius trowel at intervals equal to the width of the sidewalk. Any expansion material extending above the finished work shall be neatly trimmed to the surface of the finished work.. All gaps between expansion material and curb, walks, or objects protruding through sidewalk, shall be sealed with a sealer approved by the Street Superintendent.

8) **Curing:** After finishing operations are complete, the concrete surfaces shall be sprayed with curing compound. The surface of the concrete shall be kept thoroughly damp between the completion of the finishing operations, and the application of the curing compound. The curing compound shall be applied under pressure, by means of a spray nozzle, at a rate not to exceed 200 square feet per gallon. A minimum of 72 hours curing time shall be required. Should the Contractor elect to remove the forms before the minimum curing time has elapsed, he shall apply curing compound to the newly exposed vertical faces. Forms shall remain in place at least 24 hours after completion of the concrete placement.

B. Town of Addison Sidewalk Procedures and Specifications

1) Native subgrade shall be cut to a minimum depth of five inches. If any trenching or excavation occurred before placement of sidewalk, care shall be taken to compact all backfill in lifts (8" loose) to a minimum of 95% of Standard Proctor Density, at Optimum to plus three moisture content. Backfill shall be brought to within five inches of finished sidewalk grade. Unless shown otherwise on approved plans, the sidewalk is to be located adjacent to the back of curb. Grades shall anticipate the approach of barrier free ramps at intersections or drive approaches.

2) Concrete sidewalks shall be five (5) feet wide (or as approved) and a minimum of 4" thick. The walk shall be of one course construction of 3,600 psi concrete, six (6) sack mix, and reinforced with 3/8" steel reinforcing bars on eighteen (18) inch centers (4 bars) longitudinally and twenty-four (24) inch centers transversely (minimum.).

3) Sidewalks shall be poured in sections and in lengths manageable in allotted work time. They shall be tooled (1/4" radius) in five (5) foot sections (or equal to the width of the walk). One-half (1/2) inch expansion joint shall be placed every eight (8) joints, where new works abut old work, or where new work is constructed adjacent to other concrete work, walls, foundations, vaults, poles, or pedestals, The expansion joint shall be made of pre-molded bituminous filler or redwood, and shall extend the entire depth and width of the concrete section. Expansion joints shall be thickened according to standard drawing.

4) Finish walks by lightly brooming the surface transversely to direction of main traffic or, where adjacent sidewalks differ from this standard, new sidewalks shall conform to adjacent sidewalk, i.e., exposed aggregate. Cross-slope sidewalk one-fourth (¼) inch per foot, (max.) or as shown on the drawings to provide drainage.

5) Approved barrier-free ramps shall be providing at street intersections and at all drive approaches as required by the Town of Addison. Ramps must comply with the requirements of ADA and/or TAS. Ramps shall contrast adjacent sidewalk both texturally and visually by colored truncated domes.

C. Special Instructions (Sidewalk Repairs, Ramp, Curb & Gutter Construction)

General

1) The contractor shall furnish all labor and materials necessary for the complete construction of any repairs. Construction shall be in accordance with the latest edition of the NCTCOG Standard Specifications for Public Works Construction, and/or as shown on approved plans.

2) All work within the public right-of-way shall also comply with all applicable sections of the Town of Addison Code of Ordinances, Chapter 70.

3) Where Sprinkler systems have previously been installed, the Contractor shall relocate, at his own expense, the entire portion of that system in conflict with sidewalk construction. This relocation shall be completed by a licensed irrigator, registered with, and approved by, the Town of Addison. No part of this system shall remain beneath the new sidewalk, with the possible exception of the water meter. Special attention shall be given to the replacement of the proper sprinkler heads in order to ensure adequate coverage. All sprinkler system relocation shall be completed within five (5) days, beginning at the time of shut off. Contractor shall be responsible for hand watering all landscape materials during this time, and take any action necessary, as determined by the Street Superintendent, or the Parks Department Superintendent, to ensure the integrity of all landscaping. Any landscape material within the right-of-way requiring relocation due to the construction, shall be moved by the Contractor at his expense. Live sod, matching the predominate grasses (St. Augustine, Bermuda, etc.), shall be applied as necessary, leaving the construction area in the condition as near as possible to that existing before such construction began.

4) The contractor shall submit a copy of the concrete batch design for approval, prior to construction.

5) Contractor shall adjust all water meter boxes, valve stacks, clean outs, etc. To finished grade as directed.

6) The Addison Street Department shall remove/relocate all street name and/or regulatory signs after being given 24 hour notice by contractor.

7) Where power poles, fire hydrants, and similar obstructions exist, contractor shall widen sidewalk around obstruction to provide a minimum three foot wide clear walk, or as required to comply with the ADA and/or TAS.

8) All fire hydrant break away flanges and bolts will be above the concrete surface. It shall be Contractors responsibility to furnish all parts and labor necessary to raise all fire hydrant break away flanges that will not be above the finished concrete surface of the sidewalk.

9) The Town of Addison reserves the right to sequence locations of work as necessary.

10) Contractor shall employ a qualified project manager, fluent in the English language, who will be responsible for directing all work crews. Project Manager shall remain on the job at all

times, in order to supervise the work of all sub-contractors, as well as the Contractor's own work crews.

11) The contractor shall so conduct his operation as to offer the least possible obstruction and inconvenience to public traffic. The contractor shall provide, construct, and maintain suitable barricades, signage, and/or directions as directed by the Inspector. At points along the project as may be necessary to protect the work and safeguard all traffic, both vehicle and pedestrian. All signs, barricades, and working area layouts shall be maintained in accordance with the Texas Manual on Uniform Traffic . Control Devices, Part VI, the Town of Addison Code of Ordinances, and other applicable standards. Alternate temporary walkways shall be provided as directed by the Inspector.

12) All work shall be guaranteed against defects resulting from the use of inferior materials, equipment or workmanship for a period of two years from the date of final completion and acceptance of the project. Contractor will make all necessary repairs as required for a period of two years, at no additional cost to the city.

SECTION PS

PROJECT SIGNS

PROJECT SIGN

1. **Quantity**

Two (2) Project Designation signs will be constructed and installed on the project site as directed by the Owner. It will be the responsibility of the Contractor to maintain the sign in a presentable condition at all times during construction. Maintenance will include painting and repairs as directed by the City Engineer or his appointee. The locations of the signs will be given to the Contractor by the Town of Addison at the Pre-Construction Meeting.

2. **Material**

Sign shall be constructed of ¾-inch thick smooth finish fir plywood (Grade A-C, exterior or better).

Sign will be securely mounted to 6" x 6" square posts. Nuts and bolts will not protrude from face of sign. Posts will be mounted to a support system that will provide adequate stabilization to ensure the sign will not fall over in heavy winds. Sand bags or other techniques may be necessary to protect sign.

3. **Dimensions**

Size of sign will be four feet tall and six feet wide. The height and arrangement of the lettering shall be in accordance with the attached detail.

4. **Paint**

Sign will be one-sided and will have a white background. Text will be black, except for the word "Addison!" which will be a blue color approved by the City Engineer. The paint will be an outdoor paint and will be maintained throughout the project in proper order. The quality of the paint, painting, and lettering on the signs shall be approved by the City Engineer or his appointee.

5. **Payment**

Signs will not be a separate pay item, but will be subsidiary to other bid items. This will include all labor, equipment, tools, and incidentals necessary to complete and install the work.

The Town of *Addison!*

PLEASE PARDON THE TEMPORARY INCONVENIENCE DURING THIS PROJECT

PAVING AND DRAINAGE IMPROVEMENTS ADDISON ROAD

BELTLINE ROAD TO ARAPHO ROAD

CONTRACTOR: ESTIMATED COMPLETION DATE: DECEMBER 2005

AN ADDISON PROJECT; FUNDED FROM DALLAS COUNTY
FOR MORE INFORMATION, PLEASE CALL 972-450-2871

TECHNICAL SPECIFICATIONS

TS-1 – Irrigation

TS-2 – General Requirements for Water Service

TS-3 – Water Service

TS-4 - Electrical

TECHNICAL SPECIFICATIONS

TS-1 - IRRIGATION

Revised 04/22/04

These revised specifications supersede any and all others. However, any discrepancies between the approved construction plans and those of the Town MUST be brought to the attention of the Town's designated representative for a final determination. The contractor will present the Town's representative an as-built plan at the final walk-through, along with three Bucker V075 quick coupling keys with hose-end swivels.

A. All work is to be accomplished by or directly supervised at all times by an on-site Irrigator licensed by the State of Texas.

B. The contractor shall verify the water pressure before the installation begins. If the static pressure is different than that of the design pressure, contact the designer and Town's representative immediately so changes can be made. Send a fax to the Parks dept. at 972-450-2834 with the current dated and timed static pressure reading. Design head to head with no single head coverage. Use appropriate size nozzles for a given landscape area so as not to spray onto or over paved surfaces or structures. Do not exceed manufacturer's recommendations.

C. The irrigation installer is responsible for resetting head and/or box height due to settling and after turf, groundcover, shrubs, trees, and mulch is added to the landscape areas. The irrigation contractor must supply a workmanship warranty for (1) year from date of acceptance.

D. Plans are diagrammatic and field adjustments are often necessary. For this reason, prior to trenching, valve locations and head layout with flags needs to be done and approved by the Town's irrigation inspector. Not doing so may result in the relocation of heads and/or valves at the irrigation contractor's expense.

E. Water Taps: Water taps will be 2" in size. All parts must conform to the Town of Addison Water Department specifications and are the responsibility of the irritation contractor to provide. Inspection of taps by the Water Department Representative ~ occur. Excavation and tap permits are required. Contact the Town of Addison Water Department at (972) 450-2871.

F. Water Meters: Only Master or Hersey meters with two (2) brass flanges are acceptable. Meter lay lengths must be in accordance with the Town of Addison Water Department's specifications, housed in appropriate size (to be determined by the Town's Irrigation Inspector) concrete box with lid. New stainless steel bolts and nuts must be used in the installation along with new neoprene gaskets. The box should be level with the final grade using concrete payers to support and prevent sinking. Backfill inside the box, 3" below meter base with at least 6" of fine (1/2") pea gravel. Connection to main must be approved and inspected by the Town's Water Department Inspector and all tap materials are to be purchased at the expense of the contractor and must comply with the Town of Addison's specifications.

G. Backflow Devices: Only Watts 007 M series inline check valve assemblies with the stainless steel ball valve handles and nuts are to be used. Irrigation contractor shall provide and install brass plugs

for the test cocks. Connect to the flange using teflon taped copper nipple of sufficient length to center the DCA within its housing.

The device will be housed in an appropriate size, (to be determined by the Town's Irrigation Inspector)

Rectangular concrete box with lid using concrete payers for proper stability and height adjustment. The irrigation contractor shall be responsible for the DCA testing in accordance with State of Texas law, using a Licensed Backflow Assembly Tester registered with the Town of Addison Water Department.

H. Sleeves: All paving must have Town approved sleeve sizes and quantities present. It is the responsibility of the irrigation contractor to notify the Town's Irrigation Inspector of any area where sleeves should be present but are not and provide such materials at his cost. Any paving installed without sleeves will necessitate a bore and subsequent materials at the irrigation contractor's expense. All sleeves 2" and smaller will be Schedule 40 PVC with size and location noted on the plan. Larger sizes will be Class 200. All piping underneath paving, including sidewalks, must be sleeved. All sleeves are to be belled end PVC pipe. A minimum length of 12 inches of sleeve material must extend beyond the pavement.

I. Glue and Primer: Use Turftite brand glue on laterals and IPS Grey Heavy Body on main lines and a good quality purple primer on all. Avoid excessive use and wipe excess glue off of all joints and fittings with a clean rag.

J. Pipe: All main line pipe 2 inches and smaller is to be Schedule 40 belled PVC; larger sizes are to be Class 200 belled PVC with a minimum depth of 14" and a maximum depth of 16". Put not more than two (2) pipes in any one trench and separate the main line from the lateral line with at least two (2) inch of cover. Class 200 belled PVC lateral piping is to be used with a minimum depth of 12" and a maximum depth of 14".

K. Fittings: No crosses are permitted. Separate tees, *45's,* elbows and other fittings by at least 12 inches. Reduction tees are preferred over use of single reducer bushings. Multiple reducer bushings will not be accepted. Only Spears and/or Lasco fittings are permitted. Allow 18 inches outside of sleeve before the first fitting. No 45 degree elbows on 1 inch and larger pipe are allowed.

L. Valves:

1. Master Valves: Every point of connection to the water supply system shall have a Weathermatic 11000 FCR series valve as the Master Valve, housed in a standard (large) Ametek rectangular plastic valve box with 4 to 6 inches of small (1/2") pea gravel placed underneath the valve in such a manner as to prevent soil infiltration into the box. Use concrete payers or ricks placed under edges of valve box for stability. Note: Valve box must not rest on pipe. Blue wire shall be used as the station wire for the Master Valve.

2. Station Valves: Only Weathermatic 11000 FCR series valves are permitted. A Ball Valve will be installed before every station or zone valve. They are to be located within a standard (large) Ametek rectangular plastic valve boxes with 4 to 6 inches of(1/2") pea gravel placed underneath the valve in such a manner as to prevent soil infiltration into the box. The pea gravel should be 2 inches from the bottom of the valve body. A minimum of 3" 's of valve box must extend below bottom of valve. If necessary use valve box extensions.

3. Ball Valves: Female threaded plastic Spears or Lasco ball valves with positive T-handle cut off must be installed on every 200 feet of mainline for isolation purposes. A ball valve is also required to be installed before every

   Station valves. Use 10" Ametek valve box with a minimum of 3" extending below bottom of valve and fill to bottom of valve with 1/2" pea gravel. Use bricks or concrete box.

4. Quick Coupler Valves: Use only Buckner V075 single lug 3/4" quick coupling valves with a metal top. They are to be connected to a threaded fitting. Teflon tape and appropriate length of gray schedule 80 nipples and schedule 40 fittings are to be used for the swing joint. Secure to 18 inch by *'h* inch steel rebar with a stainless steel worm screw clamp. House QCV in a 10 inch round plastic Ametek valve box. Install Spears ball valve prior to each QCV. Bricks or payers need to be installed under edges of valve boxes for stability. Backfill bottom of box with 1/2" pea gravel halfway up body of valve.

5. Flowmeters: Purchase from a Rain Master supplier and install appropriately sized Data Industrial flowmeter. Follow all installation instructions as approved by Rain Master. The irrigation contractor must also purchase from Rain Master and install shielded Rain Master EVCab-Sen flow meter cable and install within continuous 3/4" or larger gray PVC conduit with 6 inch or larger 3-boxes placed every 200 feet or where 360 degrees of fittings are installed; only sweep fittings are permitted. Only a continuous run of cable is allowed; ~ splices wilt be allowed except at the point of connection to the flow meter. Connections at the flow meter must first be soldered and then water proofed within a 3-M DBY connector. Note: certain Rain Master requirements must also be met regarding installation order and distances of separation between DCA, flow meter, master valve and the first fitting. It is the responsibility of the irrigation contractor to adhere to these requirements. At final walk through, proper operation of the flow meter at the Rain Master Controller must be demonstrated by the irrigation contractor.

M. Heads: All heads will be installed using polyethylene green nipples (^{3}/4"x6" for rotors and '/_"x6" for pop-ups) screwed into threaded fittings unless noted otherwise. No swing joints on 4" pop-ups or rotors will be allowed.

   1. Pop-ups — Only Rainbird 1800 series are permitted. Install 3/4 inch above the finished grade.

      a. 4 inch pop-ups: turf, tree bubblers within turf areas (use Hunter PCN 10 bubbler nozzles on spray heads.

      b. 6 inch pop-ups with no side inlet: very low ground cover (less than 6 inches at mature height).

      c. 12-inch pop-ups with side inlet: Ground cover and low growing shrubs. The ground cover and shrubs should not be more than 12" at maturity. The Town Inspector reserves the right to determine if and when side inlets installed using funny pipe verses the bottom inlet will be allowed. When authorized, use Hardie Blue Line Pipe with Toro barb fittings.

      d. Use 1/2" Sch 80 risers with schrub adapter and Hunter PCN 10 bubbler nozzles for all tree wells with tree grates. Risers shall be a minimum of 2" below bottom of tree grates with nozzle 2" above mulch.

   2. Rotors - Only Hunter 1-20 Series are permitted, unless noted otherwise. Install 3/4" above finished grade.

N. Risers: Use Sch 80 PVC with Weathermatic LXS Series shrub head adapters with a '/2"x6" green poly cut-off nipple screwed into the threaded fitting in the ground. The irrigation inspector reserves the right to determine placement of risers versus pop-ups.

O. Wiring: All wires will be 14 gauge UF. Station wires will be red. Common wires will be white. Master valve wire will be blue. Anytime the wiring changes direction, such as at an elbow or a tee, allow a loop of at least 12 inches alongside the fitting at that location. Only continuous wire runs are permissible. Wire should follow the main line where possible and lay along a single side not crossing over lateral lines. Wire is to be placed under mainline with 2" of dirt between wire and pipe.

P. Wire Connectors: Use only DBY connectors for all field wire splices other than at the valves themselves. Allow at least 36 inches of pigtailed wire at each splice. Use King One Step tan colored connectors for all valve splices. All valve box splices are to be housed in standard (large) Ametek rectangular plastic valve boxes. All field splices are to be in 10 inch round Ametek plastic valve boxes or standard, large rectangular Ametek plastic valve boxes at the discretion of the Town's representative.

Q. Backfilling: Prior to any backfilling of trenches, an inspection by the Town's irrigation representative must take place and any necessary changes implemented; otherwise manual excavation to enable proper inspection will be necessary. Use clean and approved topsoil to backfill all pipe to a depth. All heads and boxes are to be backfilled to grade with clean topsoil. No rocks greater than 1 inch are allowed. Compact trenches to alleviate settling. Minimal depth of coverage is 12 inches.

R. Valve sequencing must be performed by the contractor and in an order approved by the Town Irrigation Inspector. At least 12 inches of extra station wiring within the bottom of the pedestal is necessary for each zone and must be of neat and orderly appearance.

S. Any deficiencies in coverage noted by the Town's irrigation inspector will be rectified at the cost of the contractor.

T. Controller: A Town irrigation representative will determine the type of controller to be used. ALE controllers shall have a concrete pad of 36"x36"x6". Pad will be set at 3" above final grade. Install the controller after the concrete pad is completely cured (two days). Use only appropriately sized stainless steel bolts, washers and nuts to secure the controller to the concrete pad. All wiring is to enter the pedestal via appropriately sized PVC sweep elbows extending at least 1" thru and 6" out from under the pad. Control/master valve wiring, flow meter wiring and 120-V service wiring are to be separated with each having its own access elbow, An additional spare 3/4" sweep elbow for phone service is to be installed as well. All national and local codes must be followed during the installation.

1. A/C controller - Only Irritrol MC Plus controllers will be acceptable. Both Mini-click rain and freeze sensors will be installed and placed where they can operate properly. All non-Rain Master controllers must be permanently wired for quick attachment to a Rain Master remote control unit.

2. Battery and/or Solar Operated Controllers - Only LEIT controllers will be acceptable. Install rain or freeze sensors on these controllers with 5K1T8821-4 installation kit. Install on galvanized thick wall poles and set controller panel to height above finished grade to be determined by Town's representative.

3. Rain Master: Only an approved size Rain Master Evolution DX-2 controller with a stainless steel pedestal and heavy duty transient protection is permitted. The controller must include allnecessary hardware to ensure reliable communication and operation with the Town's central control located at 16801 Westgrove. Installation must include the following Rain Master hardware, purchased only from a Rain Master supplier: DX-03 sensor board, DX-PH phone communication option, Data Industrial flow meter (same size as the mainline), and shielded EV-CAB-SEN flow meter cable. It is the irrigation contractor's responsibility to entail the cost of and work in conjunction with South Western Bell Telephone to establish a dedicated phone service and install an interface within the pedestal at each controller location via direct burial cable within 1" PVC conduit. The entire installation must conform to Rain Master specifications and be approved by the Town's irrigation inspector prior to and be inspected during installation. Such specifications will include grounding and pad configurations and distances of separation from water meter to DCA to master valve to flow meter and the first fitting. A functional Mini-click freeze and rain sensor with a Hunter bypass switch must be installed in an approved location and by an approved method. For part numbers and pricing of any Rain Master equipment, contact Mark Stricker of John Deere Landscapes at 972-881-0205. For technical questions, call John DuBose of RainMaster at 214-632-2289.

U. Communication is the key. If you are unsure, call Ron Lee, the Operations Manager of the Addison Parks Department (972) 450-2863.

TECHNICAL SPECIFICATIONS

TS -2 - GENERAL REQUIREMENTS FOR WATER SERVICE

All new meters installed in the Town of Addison shall be equipped with electronic encoder registers, programmed to read in thousand gallon increments, and equipped with touch-pad readers.

Connection Fees		
.75"= $50.00	2" = $400.00	6" = $800.00
1" = $100.00	3"=$500.00	8" = $1,000.00
1.5" = $150.00	4" $600.00	10" = $1,200.00

A. Domestic (potable) Use:

1. AU commercial unit applications for domestic use having flow demand's greater than160 g.p.m. shall employ either a compound type meter, or a single-jet meter,? 2", and conforming to Town of Addison Specifications. Hersey MCTW"-~, Neptune Tru/floTM, or Badger Recordall—~ Compound Series are the accepted compound models at this time. Single-jet meters shall be Metron-Farnier Spectrum".

2. All services with flow capabilities 160 g.p.m. shall employ either a nutaling disc, single-$, or turbine meter, sized (2", conforming to Town of Addison Specifications. Disc meters shall be Hersey400 Series llS-~ or 500 Series IISTM, Neptune T-10-~', or Badger RecordalI—~ Disc Series. Single-jet shall be Metron-Farmer Spectrum~, and turbine meters shall be Hersey MVRTh, Neptune HP"", or Badger Recordall" Turbo Series meters.

B. Lawn Irrigation:

1. All irrigation services to 1.5" shall employ a turbine, or single-jet type meter conforming to the above guidelines.

2. Less than 1.5" irrigation meter may be disc meters, but turbine meters are preferred.

3. Connection fees are waived for Irrigation services. Fire Service:

4. Less than or equal to 2" meters shall be a turbine, or single-jet meter as described above.

5. Greater than 2" shall be either a Double Check Detector Assembly, or a Reduced Pressure Zone Detector Assembly. These assemblies shall be approved by the University of Southern California Foundation for Cross Connection Control and Hydraulic Research (USC-FCCCHR), and installed in USC approved orientations and clearances.

6. Connection fees apply; see above.

C. Backflow Prevention Assemblies:

1. All water services (except fire services> 2", see page one) shall have the appropriate BPA installed immediately after the meter. If there are space limitations or other considerations that would preclude installation in that location, the BPA may be installed inside a building or other location.

There may be no unprotected taps or tees into the service between the meter and the BPA. The Town of Addison Public Works Department must approve proposed installations prior to actual installation. All installations shall comply with USC-FCCCHR approved orientations and clearances as found in the most recent edition of the Manual pf Cross-Connection Control.

2. All BPA's must be on the most current List ofAvvroved Backflow Prevention Assemblies as published by the USC-FCCCHR.

3. The appropriate BPA will be determined by the Town of Addison Utility Division, using the most current edition of the Manual 9f Cross-Connection Control as published by USC-FCCCHR as a guideline. Final determination rests with the Town of Addison.

4. The plumber, contractor, and/or owner is responsible for having the BPA tested upon installation and initiation of service by a Tester certified according to TCEQ Rules for the specific type of installation (i.e. Fireline, General) and registered with the Town of Addison Utility Division. Thereafter, it will be the responsibility of the party paying the water bill, to have the BPA tested as determined by the Town of Addison Utility Division based on type of device and Degree of Hazard. Reduced Pressure Zone Assemblies shall be tested at least annually.

5. Stainless steel, brass, or nylon/plastic plugs shall be placed in all test cocks after testing. The use of Teflon tape is required to facilitate removal of plugs for future testing of the device. Plumber's putty or pipe dope is unacceptable for this installation.

6. Double Check Valve Assemblies may be placed in a meter box, but the box must be of sufficient size to provide the proper clearances for accessing, testing, and repair of the device. All above ground device installations shall be protected from freezing with apparatus designed for such use. In no case shall Reduced Pressure Zone Assemblies be permitted in a meter box or vault, or any other below grade installation.

TECHNICAL SPECIFICATIONS

TS-3 - WATER SERVICE (Sizes 3/4" .2")

Contractors and/or plumbers are responsible for compliance with the following specifications:

A. The Owner/Developer, or their contractor, shall supply water meters that conform to Town specifications as to make and type (See General Requirements for Water Service). All meters shall be equipped with electronic encoder registers for connection to touch-pad readers. Touch-pads shall be mounted at the direction of the Utilities Superintendent.

B. Meters shall be set within the Utility easement and out of vehicular traffic flow and/or parking spaces. Curb stops are to be set 6" to 12" below finished grade.

C. To prevent the inflow of mud or silt into the box, 4" to 6" of washed pea gravel shall be placed under the meter inside the box, allowing for 2" to 6" of open space below the meter. Meter box shall be minimum 1 8"deep. (See Figure SM-I)

D. Meter boxes and openings shall be large enough to allow access to, and operation of, all meter nuts' flanges/bolts, and the curb stop without obstruction.

E. Boxes unavoidably vulnerable to vehicular traffic shall have load-bearing frames and lids designed to withstand the anticipated load. Submittal and City engineer approval is required.

F. An approved Backflow Prevention Assembly shall be installed on all water services after the meter, with a brass or copper nipple between the meter and the Assembly of sufficient length to allow placement in separate boxes. Both meter and assembly shall be accessible for testing and repairs. It shall be the responsibility of the contractor to have the Assembly tested upon installation by a TCEQ certified tester, registered with the Town of Addison Utilities Division, who shall provide the original of the test report to the Town of Addison Utility Division prior to final, continuous connection to the City's water supply.

All companion flanges shall be elliptical brass, and all bolts & nuts shall be grade 316 stainless steel,5/8-11 x 2'/2" hex head.

H. Meters shall be set level in all directions.

I. 2" meters shall have a laying length of 17"; *1.5"* meters shall have a laying length of 13". Meters may be *'~compact,"* but the difference shall be made up with a strainer upstream or a spool with test port downstream from the meter. *5/8"* x 3/4" meters shall have 7 ½ laying length, 3/4" meters shall have 9" laying length, and 1" meters shall have 10 3/4" laying length. (Approval of Utility Inspector)

J. A meter deposit is required for all meters before initiation of service. The party responsible for the water bill will make application and deposit for service to the Town of Addison Utility Billing Department. (Call 450-7081)

3/4" -2" WATER SERVICE APPROVED MATERIALS and PROCEDURES

1. Double-strap bronze tapping saddle with CC. (AWWA taper) threads: Mueller #BR2B, Ford #202B, or McDonald #3 825. Tap shall be set at 45° of vertical on the mainline. Alternate tapping saddle #2 following.

2. Mueller Servi—Sea1TM style 502,504,506,508; 7" mm. length; Ford Style FS303-CC, or equal (Submittal to Public Works Dept. for approval).

3. Corporation stop with AWWA taper thread (CC) by conductive compression connection: Mueller H-iSO 13 or B25008 (1.5", 2"), Mueller H-15008 or H-25008 (3/4", 1"), Ford FBI000 or Fl000 *(1.5"*, 2", -6-0, -7-6, respectively), (3/4", 1", -3-0, -4-6, respectively), McDonald 4701T or 470 1BT

4. Pipe and meter size shall be determined by owner with approval of Building Inspection or Public Works/Engineering Departments: Piping shall be continuous type "K" copper from corporation to curb stop and completely embedded in sand 6" around the pipe.

5. 90 degree angle curb stop with lock-wing: Mueller H-14277 or B24276 *(1.5* -2"), Ford KV43-

   666W-G or Fy43-

   777W-G *(1.5'~* 2"), Mueller H-14277 or B24258 (3/4", 1"), Ford KV43-332W-G or KV43-444W-G

   (3/4", 1"), McDonald 4646BT or 4606BT. All companion flanges *(1.5* -2") shall be brass.

6. Meter boxes shall be of sufficient size to accommodate the curb stop, meter, and all connections. They shall have a cover with reader lid. Concrete boxes shall be stacked to achieve sufficient depth (see "138cC" page one).

7. In-line curb-stops, meter yokes/setters, and/or meter risers may be considered on a case-by-case basis dependent on situation and subject to approval of Utility Inspector and/or Utility Superintendent. NQ gate valves will be allowed on the inlet side of the meter.,

8. The type of I3ackflow Prevention Assembly required will depend upon the degree of hazard or potential hazard which exists. Contact Utility Superintendent for further information at 972-66 1-.1693.

9. The tapping saddle and corporation stop must be poly-wrapped (8 mil) and hand backfilled with sand to a depth of 12". Additional backfill may be done by machine, with material free of rocks and clods exceeding three (3) inches in diameter. *CAUTION!!* Inspection must be called for and completed ~ri~ to backfill, or tap must be re-exposed by the contractor so that the Town's representative may complete the inspection.

   Lawn irrigation sprinklers are exempt from connection fees. Connection to an existing service will require a $35.00 connection fee. See Figure SM-i for detail.

WATER SERVICE (Sizes >2")

Contractors, plumbers, and/or developers are responsible for compliance with the following specifications:

A. Provide and install mechanical joint tapping sleeve or Stainless Steel tapping sleeve (such as Mueller H-6 15 or Mueller H-304 respectively). Submittal and approval required if other.

B. Provide and install tapping valve to meet Addison specification GV-95. 1, for resilient wedge gate valve.

C. Provide and install piping. Piping shall conform to ANSI/AWWA C-909-98 for Molecularly Oriented PVC Pressure pipe for water distribution. Pipe shall be 150-psi minimum class rating for domestic use, and 200-psi minimum class rating for fire line applications. Submittal and approval required, if other.

D. Fittings shall be ductile iron mechanical joint style, with restraining glands (such as MegaLug). Fittings shall be wrapped with 8-mu poly prior to backfill.

E. Pipe embedment shall conform to NCTCOG Class "B-2", or "B+" (from Standard Specifications for Public Works Construction, Third Edition, Drawing 3020, 3030). Crushed stone shall be separated from the granular material by a layer of geotextile fabric. Variations allowed with engineer's seal and approval of City Engineer.

F. Service meter or Fire Line DCDA shall be placed in a pre-cast concrete vault with floor and access hatch. Hatch shall be "Bilco"-type, aluminum, spring-assisted, lockable, and sufficiently sized to allow for removal of complete meter or assembly. Vault shall be placed within the public ROW, wherever possible, clear of vehicular traffic flow and/or parking areas.

G. All meters shall be equipped with electronic encoder registers calibrated to read in 1000 U.S. gallon increments, and remote touch-pad reading devices. (See *General Requirements J~Q! Water Service)*

H. The meter and/or backflow assembly and piping shall be supported with manufactured supports designed for such application. (For clarification, reference Specification for *Stanton Pipe Supports* as manufactured by Material Resources Co., Hillsboro, Oregon; 503-693-0727 _Models S89 or S92).

I. There shall be an MJ by flange coupling adapter rn-line on the inlet side of the meter or device.

ELECTRICAL SPECIFICATIONS

DIVISION 16 – ELECTRICAL
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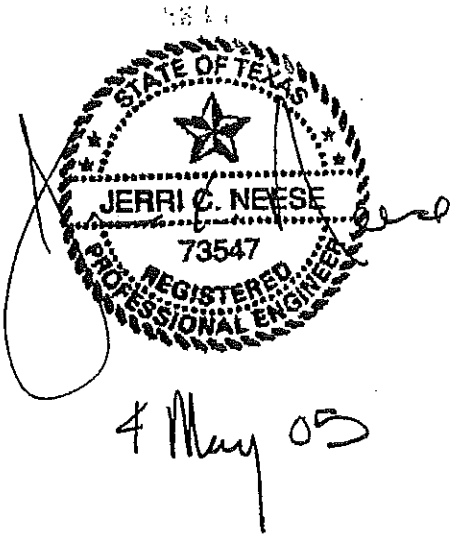

SECTION 16010

GENERAL REQUIREMENTS FOR ELECTRICAL WORK

PART 1 - GENERAL

1.1 DESCRIPTION

A. General Requirements for Electrical Work are intended to be complementary to General Requirements of Construction Contract.

B. Work Included: Provide complete electrical items where shown on Drawings, as specified herein, and as needed for complete and proper installation including, but not necessarily limited to following summary of Work.

1. Electrical work will consist of the installation of pedestrian, roadway/pedestrian and parking lot fixtures and poles. Power for pedestrian and roadway fixtures will be provided by (2) new utility services. Parking lot fixtures will be served from existing Minol parking lot circuits.

1.2 QUALITY ASSURANCE AND APPLICABLE STANDARDS

A. Use adequate numbers of skilled workers thoroughly trained and experienced in necessary crafts and completely familiar with specified requirements and methods needed for proper performance of Work of this Division. Ensure that there is minimum of one licensed journeyman electrician, on job site whenever Division 16 Work is being performed.

B. Without additional cost, provide labor and materials as required to complete Work of this Division in accordance with requirements of Governmental Agencies having jurisdiction, regardless of whether materials and associated labor are called for elsewhere in these Contract Documents.

C. Codes: Electrical work shall conform to requirements and recommendations of latest edition of National Electrical Code and local codes and ordinances. When codes conflict, more stringent requirements shall govern.

D. Materials incorporated into or used in conjunction with Work provided in this Division shall be change-of-century compliant. Century 1900 and 2000 values shall be processed correctly without abnormally ending and date values processed by applicable software shall contain correct century and include at minimum: date data century recognition, calculations that accommodate same century and multiple century formulas and date values, and date interface values that reflect century. Materials and equipment shall not contain timers, clocks, counters, or other limiting designs or routines that cause items to be erased, inoperable, or otherwise incapable of being used in full manner for which designed after occurrence or lapse of triggering event. Materials and equipment shall be warranted to not cause other materials, equipment, or systems to become erased, contaminated, inoperable, or otherwise incapable of being used in intended manner.

E. Standards: Specifications and Standards of following organizations are by reference made part of these Specifications. Electrical Work, unless otherwise indicated, shall comply with requirements and recommendations wherever applicable:
1. Association of Edison Illuminating Companies (AEIC)
2. American National Standards Institute (ANSI)

3. American Society for Testing and Materials (ASTM)
4. Certified Ballast Manufacturers (CBM)
5. Electrical Testing Laboratories (ETL)
6. Institute of Electrical and Electronic Engineers (IEEE)
7. Insulated Power Cable Engineers Association (IPCEA)
8. National Bureau of Standards (NBS)
9. National Electrical Contractors Association (NECA)
10. National Electrical Manufacturer's Association (NEMA)
11. National Fire Protection Association (NFPA)
12. Radio-Television Manufacturer's Association (RTMA)
13. Reflector Luminaire Manufacturers (RLM)
14. Underwriters' Laboratories, Inc. (UL)

1.3 REQUIREMENTS OF REGULATORY AGENCIES

A. Requirements and recommendations of latest editions of Occupational Safety and Health Act (OSHA), Americans with Disabilities Act (ADA), and Texas Accessibility Standards (TAS) are by reference made part of these Specifications. Work shall comply with requirements and recommendations wherever applicable.

1.4 RELATED WORK SPECIFIED ELSEWHERE

A. Other Divisions of Contract Documents. Refer to each Division's Specifications and Drawings for requirements.

1.5 DEFINITIONS

A. Terms *furnish*, *install*, and *provide* are used interchangeably and shall mean to furnish and install, complete and ready for intended use.

1.6 SUBMITTALS

A. Comply with pertinent provisions of Division 1.

B. Submittals required of materials and equipment include following:

1. Materials list of items proposed to be provided under Division 16.

2. Manufacturer's specifications and other data needed to prove compliance with specified requirements. Term "Compliance" is understood to mean that Contractor certifies that submitted equipment meets or exceeds Contract Document requirements. Items that do not clearly meet this definition should be identified and explained as required in following paragraph.

3. Explain with enough detail so that it can easily be determined that item complies with functional intent. List disadvantages or advantages of proposed item versus specified item. Submit technical data sheets and/or pictures and diagrams to support and clarify. Organize in clear and concise format. Substitutions must be approved in writing by Engineer. Engineer's decision shall be final.

4. Allow minimum of 10 working days for review of each submittal and re-submittal.

5. Items of equipment that are not accepted in writing as approved equal shall be replaced or revised to comply with Contract Documents at Contractor's expense.

6. The manufacturer's recommended installation procedures shall become basis for accepting or rejecting actual installation procedures used on Work.

7. Shop drawings shall consist of detailed drawings with dimensions, schedules, weights, capacities, installation details and pertinent information needed to describe the material or equipment.

C. Submittals required of materials and equipment under this Division include following listed items not supplied by Owner. These submittal requirements are intended to be complimentary to requirements that may be listed in individual sections. In event of conflict, more stringent requirement shall apply.

1. Conductors and Cables

a. Submit product data for each specified product.

b. Submit tabular list of wire and wiring systems that will be increased in capacity or size to comply with Section 16120 and/or similar requirements shown on Drawings. List shall include size shown on Drawings, proposed increase to comply with Section 16120, and proposed installed length.

2. Raceways and Boxes

a. Submit product data for surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets.

b. Submit Shop Drawings including layout drawings showing components and wiring for nonstandard boxes, enclosures, and cabinets.

3. Grounding

a. Submit product data for grounding rods, connectors and connection materials, and grounding fittings.

4. Exterior Lighting

a. Submit product data describing fixtures, lamps, ballasts, poles, and accessories. Arrange product data for fixtures in order of fixture designation. Include data on features, poles, accessories, and finishes.

b. Submit outline drawings indicating dimensions and principal features of fixtures and poles.

c. Submit electrical ratings and photometric data including certified results of laboratory tests for fixtures and lamps.

d. Submit wind resistance calculations, certified by registered professional engineer.

e. Submit Shop Drawings detailing nonstandard fixtures and poles and indicating dimensions, weights, and methods of field assembly, components, and accessories.

f. Submit wiring diagrams detailing wiring for control system showing both factory-installed and field-installed wiring for each specific system, which differentiates between factory-installed and field-installed wiring.

g. Submit anchor-bolt templates, keyed to specific poles and certified by manufacturer.

h. Submit maintenance data for products to include in operation and maintenance manual specified in this Section.

i. Submit lamp data for each lamp type.

j. Submit ballast data.

5. Record Documents. Refer to "Project Record Documents" Paragraph of this Section.

6. Operation and Maintenance Data. Refer to "Operation and Maintenance Data" paragraph of this Section.

D. Resubmittals of rejected submittals shall be limited to one (1) in number. Costs for processing subsequent resubmittals in excess of the first resubmittal, resulting from the Contractor's disregard of Engineer's primary submittal rejection comments, shall be borne by the Contractor. Costs shall be based on Engineer's hourly rates as published in their current professional fee schedules and shall also include reimbursable costs for delivery, mailing, and photocopies at direct cost fifteen percent (15%).

1.7 SUBSTITUTIONS

A. The Contract Documents list manufacturers' names and catalog numbers followed by phrase "or equivalent" are to establish a standard of quality and utility for the specified items and to provide a dimensional reference to the scaled drawings.

B. Submittals for "equivalent" items shall include the following data, which is not necessarily required for specified items which list the manufacturer and catalog number:

1. Performance characteristics.

2. Materials.

3. Finish.

4. Certification of conformance with specified codes and standards.

5. Manufacturer's specifications and other data needed to prove compliance with specified requirements. Term "compliance" is understood to mean that the submitted equipment will meet or exceed the Contract Document requirements. Items that do not clearly meet this definition shall be identified and explained as required in following Paragraph.

6. Identify difference between specified equipment and proposed substituted equipment. Explain with enough detail so that /Owner can easily determine that item complies with functional intent. List disadvantages or advantages of proposed item versus specified item. Submit technical data sheets and/or pictures and diagrams to support and clarify. Organize in clear and concise format. Engineer shall approve substitutions in writing. Engineer's decision shall be final.

C. Submittals of "equivalent" components or systems may be rejected if:

1. Material or equipment would necessitate alteration of mechanical, electrical, architectural, or structural design.

2. Dimensions vary from specified material or equipment so that accessibility or clearances are impaired or Work of other trades is adversely affected.

D. Proposed substitutions for materials or equipment must be submitted 10 days prior to final bid date for consideration as approved equals. Otherwise, substitutions will not be permitted. Only prime bidders shall make proposals for substitutions.

E. No substitution shall be made unless authorized in writing by Architect/Engineer. Should substitution be accepted, and should substitute material prove defective or otherwise unsatisfactory for service intended, and within guarantee period, replace this material or equipment with material or equipment specified, to satisfaction of Engineer and at no cost to Owner.

1.8 ORDINANCES, PERMITS, METERS, UTILITIES AND ROYALTIES

A. Purchase all necessary permits and licenses necessary for completion of the Work. Pay all lawful fees required and necessary pursuant in obtaining said permits and licenses. Required certificates of approvals and inspections by local governing and regulating authorities.

B. Pay all fees required for connection of utility power and telephone services required for the Work.

C. Pay royalty payments or fees required for use of patented equipment or systems. Defend lawsuits or claims for infringement of patent rights and hold Owner and/or Engineer harmless from loss as result of said suits or claims.

1.9 COMPATIBILITY OF EQUIPMENT

A. Assume full responsibility for satisfactory operation of component parts of electrical systems. Assure compatibility of equipment and performance of integrated systems in accordance with requirements of the Construction Documents. Notify the Engineer before submitting a bid should Specifications or Drawings make acceptance of responsibility impossible, prohibitive, or restrictive. The bid shall be accompanied by a written statement listing any objections or exceptions to the applicable specification section and/or drawing.

1.10 UTILITIES AND TEMPORARY POWER

A. Verify location and capacity of all existing utility services before starting Work. The locations and sizes of electrical lines are shown in accordance with data secured from Owner's survey. The data shown is offered as estimating guide without guarantee of accuracy.

1.11 EXCAVATION AND BACKFILLING

A. Perform excavation and backfilling in strict accordance with Section 02161, including trench safety requirements.

B. Perform excavation and backfilling associated with Work in strict accordance with provisions of these Specifications, including trench safety requirements.

C. Perform excavation and backfilling necessary for installation of Work. This shall include shoring and pumping in ditches to keep them in dry condition until Work has been installed. Shoring required to protect excavation and safeguard employees shall be properly performed.

D. Excavations shall be made to proper depth, with allowances made for floor slabs, forms, beams, etc. Ground under conduits shall be well compacted before conduits are installed.

E. Exterior conduits shall be installed with minimum of 36 inches of cover below finished grade, unless otherwise indicated or required by local ordinances. Exterior conduit shall be installed with minimum of 12 inches of cover below finished paving grade, unless otherwise indicated or required by local ordinances.

F. Backfilling shall be made with selected soil, free from rocks and debris and shall be pneumatically tamped with 6-inch layers to secure field density ratio of 90 percent as defined by ASTM Designation D698-57T (Proctor Soil Compaction Test).

G. Excavated materials not suitable and not used in backfill shall be removed from site.

H. Field verify locations of underground utilities. If existing utilities are damaged, they shall be repaired at no cost to Owner.

I. Restore all lime stabilization and replace concrete, curbs, paving and other surface improvements cut during excavation to original condition.

1.12 FLASHINGS, SLEEVES, AND INSERTS

A. Furnish and install flashings where conduits pass through outside walls. Flashings shall be properly formed to fit around conduit and shall be caulked, with 790 Silicone Building Sealant by Dow Corning Corporation, so as to make watertight seal between conduit and building.

B. Unless otherwise specified, install sleeves for each conduit where it may pass through interior walls or floors. Galvanized 22 gage sheet iron sleeves shall be used. Finish flush with each finished wall surface. In pipe chases, the sleeve shall extend 1-1/2 inches above floor slab and shall be watertight.

C. Raceways that pass through concrete beams or walls and masonry exterior walls shall be provided with galvanized wrought iron pipe sleeves, unless shown otherwise on drawings. Inside diameter of these sleeves shall be at least 1/2 inch greater than outside diameters of service pipes. After pipes are installed in these sleeves, fill annular space between pipes and sleeves with 790 Silicone Building Sealant by Dow Corning Corporation. Completed installation shall be watertight.

D. Penetrations through walls, floors and ceilings shall be done in manner to maintain integrity of fire rating of respective wall, floor, or ceiling.

E. Reference Section 07902 for additional sealant requirements. Where conflicts occur with the specified requirements, the more stringent shall apply.

1.13 CUTTING AND PATCHING

A. Perform cutting and patching in strict accordance with provisions of these Specifications and following:

1. Coordinate Work to minimize cutting and patching.

2. Use adequate number of skilled workers who are thoroughly trained and experienced in necessary crafts and who are completely familiar with specified requirements and methods needed for proper performance of Work.

B. Request for Engineer's consent:

1. Prior to cutting which affects structural safety, submit a written request to Engineer for permission to proceed with cutting.

2. When conditions of Work or schedule require a change of materials or methods for cutting and patching, notify Engineer and secure written permission to proceed with the work.

C. Perform cutting and demolition using methods that will prevent damage to other portions of Work.

D. Perform fitting and adjusting to provide a finished installation complying with specified tolerances and finishes.

1.14 SURFACE CONDITIONS

A. Examine areas and conditions under which Work of this Division will be performed. Work required to correct conditions detrimental to timely and proper completion of Work shall be included as part of Work of this Division. Do not proceed until unsatisfactory conditions are corrected.

1.15 CONSTRUCTION REQUIREMENTS

A. Drawings show arrangements of Work. Rearrangement of spaces and equipment will be considered when Project conditions make this necessary and/or materials or equipment can be installed to better advantage. Prior to proceeding with Work, coordinate with various trades to prepare and submit five (5) copies of Drawings of proposed arrangement for Engineer's review. Allow minimum of 10 working days for review.

B. Installation or rearrangement of equipment and space for Contractor's convenience or to accommodate material or equipment substitutions will be considered. Assume responsibility for rearrangement of equipment and space and have Engineer review change before proceeding with Work. Request for changes shall be accompanied by Shop Drawings of affected equipment and space. Identify proposed monetary credits or other benefits. Allow minimum of 10 working days for review.

C. Properly locate and size all required pipe sleeves and slots, holes, or openings in structure.

1.16 PREPARATION AND COORDINATION

A. Coordinate the work in strict accordance with the Contract Documents as follows:

B. Information on the Drawings and in these Specifications is as accurate as could be secured, but absolute accuracy is not guaranteed. The drawings are diagrammatic, and the exact locations, distances, levels, and other conditions shall be governed by actual construction. The drawings and specifications shall be for guidance.

C. Field verify measurements. No extra compensation will be allowed because of differences between Work shown on Drawings and actual site measurements.

1.17 PROJECT RECORD DOCUMENTS

A. Provide Project record documents associated with Work in accordance with provisions of these Specifications. Refer to Sections 01700 and 01730 for additional requirements.

B. Throughout progress of the Work, maintain accurate record of all changes in Contract Documents (Drawings and Specifications). Changes shall include Addendums issued during bidding and location of electrical service lines, receptacles, and outside utilities.

C. Delegate responsibility for maintenance of record documents to one person on Contractor's staff.

D. Accuracy of Records

1. Thoroughly coordinate changes within record documents, making adequate and proper entries on each page of Specifications and each sheet of Drawings and other documents where required to show change properly. Match symbology and format of base documents.

2. Accuracy of records shall be such that future search for items shown in Contract Documents may rely reasonably on information obtained from approved Project record documents.

E. Maintain a job set of record documents protected from deterioration and from loss and damage until completion of Work. Transfer all recorded data to final Project record documents.

F. Making Entries on Drawings

1. Using erasable colored pencil (not ink or indelible pencil), clearly describe change by graphic line and note as required.

2. Date entries.

3. Call attention to entry by "cloud" drawn around area or areas affected.

4. In event of overlapping changes, use different colors for overlapping changes.

5. Make entries within 24 hours after receipt of information that changes have occurred.

6. Maintain base drawing format and use same symbology.

7. Convert field mark-ups to finished CADD record drawings when required in this Section.

G. Conversion of Schematic Layouts

a. The purpose of the final Project Record Documents is to provide factual information regarding all aspects of the Work, both concealed and visible, to enable future modification of the Work to proceed without lengthy and expensive site measurement, investigation, and examination.

2. Provide CADD electronic files in dwg Format using AutoCAD Release 2000 software. Upon written request, completion of a release form, and payment of the Engineer's standard fee of $200 plus applicable sales tax for a set-up charge and $25 per drawing plus applicable sales tax for copies of such files, Engineer will provide AutoCAD Release 2000 electronic files of base Contract Drawings in dwg format on 3-1/2 inch electronic or on compact disc. Engineer will also provide a list of drawing layers and names that shall be maintained.

3. Provide completed record drawings on electronic 3-1/2" disks or CD and one mylar film reproducible of each drawing.

4. Refer to Section 01770 for additional requirements.

H. Final Project Record Documents

1. Provide CADD Electronic files in .dwg format using AutoCAD Release 14 software. Upon written request, Engineer will provide AutoCAD Release 14 electronic files of base Contract Drawings in .dwg format on 3-1/2-inch electronic disks at no cost. Engineer will also provide a list of drawing layers and names that shall be maintained in record set.

2. Provide completed record drawings on electronic 3-1/2-inch disks and one reproducible Mylar film of each drawing.

3. Refer to Section 01720 for additional requirements.

1.18 OPERATION AND MAINTENANCE DATA

A. Submit two copies of preliminary draft of proposed manual or manuals to Engineer for review and comments. Allow minimum of 10 working days for review. Refer to Sections 0130, 01700 and 01730 for additional requirements.

B. Submit approved manual to Engineer prior to indoctrination of operation and maintenance personnel.

C. Where instruction manuals are required for submittal, they shall be prepared in accordance with the following:

Format:

Size: 8-1/2-inch by 11-inch

Paper: White bond, at least 20 pound weight

Text: Neatly written or printed

Drawings: 11 inches in height preferable; bind in with text; foldout acceptable; larger drawings acceptable but fold to fit within Manual and provide drawing pocket inside rear cover or bind in with text.

Flysheets: Separate each section of Manual with neatly prepared flysheets briefly describing contents of ensuing section; flysheets may be

in color.

Binding: Use heavy-duty plastic or fiberboard covers with binding mechanism concealed inside manual; 3-ring binders will be acceptable; binding is subject to **Engineer's** approval.

Measurements: Provide measurements in U.S. standard units (e.g., feet, inches, and pounds). Where items may be expected to be measured within 10 years in accordance with metric formulae, provide additional measurements in "International System of Units" (SI).

Provide front and back covers for each manual, using durable material approved by Engineer, and clearly identified on or through cover with at least following information:

OPERATING AND MAINTENANCE INSTRUCTIONS

Name and Address of Work

Name of Contractor

General subject of this manual

Space for approval signature of Engineer and approval date[s]

E. Contents: Include at least following:

1. Neatly typewritten index near front of Manual, giving immediate information as to location within manual of emergency information regarding installation.

2. Complete instructions regarding operation and maintenance of equipment involved including lubrication, disassembly, and reassembly.

3. Complete nomenclature of parts of equipment.

4. Complete nomenclature and part number of replaceable parts, name and address of nearest vendor and other data pertinent to procurement procedures.

5. Copy of guarantees and warranties issued.

6. Manufacturer's bulletins, cuts, and descriptive data, where pertinent, clearly indicating precise items included in this installation and deleting, or otherwise clearly indicating, manufacturers' data with which this installation is not concerned.

7. Other data as required in pertinent Sections of these Specifications.

1.19 TESTING AND INSPECTION

A. Provide personnel and equipment, make required tests, and secure required approvals from Engineer and Governmental Agencies having jurisdiction.

B. Make written notice to Engineer adequately in advance of each of following stages of construction:

1. When rough-in is complete, but not covered.

2. At completion of Work of this Division.

3. In underground condition prior to placing backfill, concrete floor slab, and when associated electrical Work is in place.

C. When material or workmanship is found to not comply with specified requirements, remove items from job site and replace them with items complying with specified requirements at no additional cost to Owner. This shall be performed within 3 days after receipt of written notice of noncompliance.

D. In Engineer's presence, test parts of electrical system and prove that items provided under this Division function electrically in required manner.

1.20 WARRANTY

A. Warrant equipment and workmanship for period of one year after date of substantial completion and replace or repair faulty equipment or installation at no cost to Owner for service during this period, in accordance with requirements of Division 1.

B. Warranty shall not void specific warranties issued by manufacturers for greater periods of time or void rights guaranteed to Owner by law.

C. Warranties shall be in writing in form satisfactory to Owner, and shall be delivered to Owner before final payment is made.

1.21 PROJECT COMPLETION

A. Upon completion of Work of this Division, thoroughly clean exposed portions of electrical installation, removing traces of soil, labels, grease, oil, and other foreign material, and using only type cleaner recommended by manufacturer of item being cleaned.

B. Thoroughly indoctrinate Owner's operation and maintenance personnel in contents of operations and maintenance manual required to be submitted as part of this Division of these Specifications.

END OF SECTION 16010

SECTION 16111

RACEWAYS AND FITTINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The General Provisions of the contract, including General and Supplementary Conditions, apply to the Work specified in this Section.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. All other Sections of Division 16.

B. All other Divisions of the Contract Documents. Refer to each Division's Specifications and Drawings for requirements.

1.3 SCOPE

A. Provide all equipment, materials, labor, supervision, and services necessary for or incidental to the installation of a complete and operating electrical raceway system, as indicated on the Drawings and as specified.

B. Work included:

1. Rigid metal conduit and fittings
2. Rigid metal and fittings with PVC coated jacket
3. Non-metallic conduit and fittings

1.4 QUALITY ASSURANCE

A. Use adequate numbers of skilled workers who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

B. Without additional cost to the Owner, provide such other labor and materials as are required to complete the work of this Section in accordance to the requirements of governmental agencies having jurisdiction, regardless of whether such materials and associated labor are called for elsewhere in these Contract Documents.

C. When requested, provide the Architect with manufacturer's certificates that confirm that materials meet or exceed minimum requirements as specified.

PART 2 - PRODUCTS

2.1 CONDUITS AND FITTINGS

A. Provide metal conduits, tubing, fittings, and couplings of types, grades, sizes, and weights (wall thicknesses) for each service indicated. Where types and grades are not indicated, provide proper selection determined by installer to fulfill wiring requirements and comply with applicable portions of NEC for raceways.

B. Rigid Metal Conduit and Fittings

1. Rigid steel conduit: ANSI C80.1

2. Fittings and conduit bodies: ANSI/NEMA FB 1; threaded type, material to match conduit.

C. Plastic Conduit and Fittings

1. Conduit: NEMA TC 2; Schedule 40 PVC

2. Fittings and Conduit Bodies: NEMA TC 3

2.2 CONDUIT SUPPORTS

A. Conduit Clamps, Straps, and Supports: Steel or malleable iron

PART 3 - EXECUTION

3.1 CONDUIT SIZING, ARRANGEMENT, AND SUPPORT

A. Size of conduit shall be as indicated on the drawings or sized for conductor type installed, whichever is larger. Size all conduits in accordance with the NEC. Minimum conduit size shall be ¾ inch.

B. Arrange conduit to maintain maximum headroom and present a neat appearance.

C. Route exposed conduit and conduit above accessible ceilings parallel and perpendicular to walls and adjacent piping.

D. Maintain minimum 6-inch clearance between conduit and piping. Maintain 12-inch clearance between conduit and heat sources such as flues, steam pipes, and heating appliances.

E. Arrange conduit supports to prevent distortion of alignment by wire pulling operations. Fasten conduit using galvanized straps, lay-in adjustable hangers, clevis hangers, or bolted split stamped galvanized hangers.

F. Group conduit in parallel runs where practical and use conduit rack constructed of steel channel with conduit straps or clamps.

G. Do not fasten conduit with wire or perforated pipe straps. Remove all wire used for temporary conduit support during construction, before conductors are pulled.

3.2 CONDUIT INSTALLATION

A. Cut conduit square using a saw or pipe cutter; de-burr cut ends.

B. Bring conduit to the shoulder of fittings and couplings and fasten securely.

C. Use conduit hubs for fastening conduit to cast boxes and for fastening conduit to sheet metal boxes in damp or wet locations.

D. Install no more than the equivalent of three 90-degree bends between boxes.

E. Use conduit bodies to make sharp changes in direction, as around beams.

F. Use hydraulic one-shot conduit bender or factory elbows for bends in conduit larger than 2-inches in size.

G. Avoid moisture traps where possible; where unavoidable, provide junction box with drain fitting at conduit low point.

H. Use suitable conduit caps to protect installed conduit against entrance of dirt and moisture.

I. Provide a pull tape for spare empty conduits. The tape shall be fiberglass reinforced polyester tape with distance marking in feet continuous along its length. Furnish T&B or Greenlee products.

J. Install expansion joints where conduit crosses building expansion joints.

K. Where conduit penetrates fire-rated walls and floors, provide mechanical firestop fittings with UL listed fire rating equal to wall or floor rating. Seal opening around conduit with UL listed foamed silicone elastomer compound.

L. Route conduit through roof openings for piping and ductwork where possible; otherwise route through roof jack with pitch pocket.

M. Maximum size conduit in slabs above grade: 3/4 inch.

N. Make joints in accordance with manufacturers' written instructions.

O. Provide plastic warning tape for underground conduit or duct bank installations. Install warning tape directly above conduit one foot below finished grade or as shown on drawings.

P. Sand for intermediate fill around underground conduits shall be washed sand, suitable for concrete or masonry. Reference Section 16010 for additional backfill and excavation requirements.

3.3 CONDUIT INSTALLATION SCHEDULE

A. Underground installations more than two feet from foundation wall: Schedule 40 plastic conduit.

B. Installations underground within 2 feet of foundation wall: Rigid steel conduit with PVC jacket.

C. In slab or concrete above grade: Rigid steel conduit.

D. Exposed outdoor locations: Rigid steel conduit.

E. Installations below concrete slab: Schedule 40 PVC conduit.

END OF SECTION 16111

SECTION 16120

WIRE AND CABLE (600 VOLTS)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The General Provisions of the Contract, including General and Supplementary Conditions, apply to the Work specified in this Section.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. All other Sections of Division 16.

B. All other Divisions of the Contract Documents. Refer to each Division's Specifications and Drawings for requirements, including but not limited to the following:

1. Section 16111 - Raceways and Fittings

1.3 SCOPE

A. Provide all equipment, materials, labor, supervision, and services necessary for or incidental to the installation of conductors as indicated on the Drawings and as specified.

B. Work included:

1. Wiring connections and terminations, 600 Volt rating and below.

1.4 QUALITY ASSURANCE

A. Use adequate numbers of skilled workers who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

B. Without additional cost to the Owner, provide such other labor and materials as are required to complete the work of this Section in accordance to the requirements of governmental agencies having jurisdiction, regardless of whether such materials and associated labor are called for elsewhere in these Contract Documents.

C. When requested, provide the manufacturer's certifications that confirm that materials meet or exceed minimum requirements as specified.

PART 2 - PRODUCTS

2.1 CONDUCTORS

A. Provide conductors made of soft-drawn annealed copper with a conductivity not less than that of 98% pure copper.

B. Building Wire:

1. Thermoplastic-insulated building wire: NEMA WC 5.

2. Feeders and branch circuits: Copper, stranded conductor, 600-volt insulation, THHN/THWN-2.

3. Control circuits: Copper, stranded conductor 600-volt insulation, THHN/THWN-2.

4. Use the following color code system:

	208Y/120 Volt Systems (NA)	480/240 Volt Systems
Phase A	Black	Brown
Phase B	Red	Orange
Phase C (NA)	Blue	Yellow
Neutral	White	Gray
Ground	Green	Green

C. Remote Control and Signal Cable:

1. Control cable for Class 2 or Class 3 remote control and signal circuits: Copper conductor, 300-volt insulation, rated 60-degree C, individual conductors twisted together, shielded, and covered with a PVC jacket; UL listed.

2. Plenum cable for Class 2 or Class 3 remote control and signal circuits: Copper conductor, 300-volt insulation, rated 60-degree C, individual conductors twisted together, shielded, and covered with a nonmetallic jacket; UL listed for use in air handling ducts, hollow spaces used as ducts, and plenums.

2.2 ACCEPTABLE MANUFACTURERS

A. Provide products by the following manufacturers:

1. Rome
2. Cablec
3. Pirelli
4. Belden
5. Or approved equal

PART 3 - EXECUTION

3.1 GENERAL WIRING METHODS (LESS THAN 600 VOLTS)

A. The minimum wire size shall be 12 AWG for power and lighting circuits, and no smaller than 18 AWG for control wiring. Remote control wiring shall not be less than 14 AWG for installed lengths of 50 feet or less. Remote control conductors shall be increased one size (per NEC Table 310) for each additional 50 feet of length. Increase the raceway system to accommodate the increased wire size.

B. Provide an equal number of conductors of equal size for each phase of a circuit in same raceway or cable.

C. Splice only in junction boxes, outlet boxes, pullboxes, or manholes.

D. Neatly train and lace wiring inside boxes, equipment, and panelboards.

E. Make conductor lengths for parallel circuits equal.

3.2 WIRING INSTALLATION IN RACEWAYS

A. Pull all conductors into a raceway at the same time. Use UL listed wire-pulling lubricant for pulling 4 AWG and larger wires.

B. Install wire in raceway after interior of building has been physically protected from the weather and all mechanical work likely to injure conductors has been completed.

C. Completely and thoroughly swab raceway system before installing conductors.

3.3 WIRING CONNECTIONS AND TERMINATIONS

A. Splice only in accessible boxes or manholes.

B. Use solderless pressure connectors with insulating covers for copper wire splices and taps 8 AWG and smaller.

C. Use split bolt connectors for copper wire splices and taps 6 AWG and larger. Tape uninsulated conductors and connectors with electrical tape to 150 percent of the insulation value of conductor.

D. Thoroughly clean wires before installing lugs and connectors.

E. Make splices, taps and terminations to carry full capacity of conductors without perceptible temperature rise.

F. Terminate spare conductors with electrical tape.

3.4 FIELD QUALITY CONTROL

A. Field inspection and testing will be performed under applicable provisions of Division 16.

B. Inspect wire and cable for physical damage and proper connection.

C. Torque test conductor connections and terminations to manufacturer's recommended values.

D. Perform continuity tests on all power and equipment branch circuit conductors. Verify proper phasing of all connections.

3.5 WIRE AND CABLE INSTALLATION SCHEDULE

A. All locations: Building wire in raceways.

END OF SECTION 16120

SECTION 16135

PRECAST ELECTRICAL MANHOLES AND PULLBOXES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The General Provisions of the Contract, including General and Supplementary Conditions, apply to the Work specified in this Section.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. All other Sections of Division 16.

B. All other Divisions of the Contract Documents. Refer to each Division's Specifications and Drawings for requirements including the following:

1. Section 16111 – Raceways and Fittings
2. Section 16450 - Grounding

1.3 SCOPE

A. Provide all equipment, materials, labor, supervision, and services necessary for or incidental to the installation of precast concrete electrical manholes and pullboxes, as indicated on the Drawings and specified.

B. Work included:

1. Prefabricated Manholes
2. Manhole Accessories
3. Excavation and Backfill as Required

1.4 REFERENCES

A. AASHO H-20 *Standard Specification for Highway Bridges*

B. ANSI/ASTM A153 – *Zinc Coating (Hot-Dip) on Iron and Steel Hardware*

C. ANSI/ASTM A569 – *Steel, Sheet and Strip, Carbon (0.15 Maximum Percent), Hot-Rolled, Commercial Quality*

D. ASTM A48 – *Gray Iron Castings*

E. ASTM A124 – *Zinc (Hot-Galvanized) Coatings and Products Fabricated from Rolled, Pressed, And Forged Steel Shapes, Plates, Bars and Strips*

1.5 QUALITY ASSURANCE

A. Use adequate numbers of skilled workers who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

B. Without additional cost, provide such other labor and materials as are required to complete the work of this Section in accordance with the requirements of governmental agencies having jurisdiction, regardless of whether such materials and associated labor are called for elsewhere in the Contract Documents.

C. Manufacturer: Manufacturer shall be company specializing in structures with three (3) years' documented experience.

1.6 SUBMITTALS

A. Product Data: Submit the following:

1. Materials list of items proposed to be provided as part of the Work of this section.

2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements. Submit shop drawings and product data as follows:

a. Materials specifications, dimensions, capacities, sizes and locations of openings, reinforcing details, and accessory locations.

b. Product data for manhole accessories.

3. Manufacturer's recommended installation procedures which, when approved, will become the basis for accepting or rejecting actual installation procedures used on the Work. Documentation from the manufacturer, sealed by a professional structural engineer, stating that each manhole or pullbox is properly designed and constructed to meet all requirements of the intended location shall be required.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Strongwell/Quazite

B. Approved equal

PART 3 - EXECUTION

3.1 PREPARATION

A. Excavate, install base material, and compact base material in accordance with manufacturer's instructions.

3.2 INSTALLATION – PRECAST MANHOLES

A. Install and seal precast sections in accordance with manufacturer's instructions.

B. Install plumb.

C. Set the top of each pullbox to finished elevation.

3.3 INSTALLATION – ACCESSORIES

A. Install ground rod with top protruding 4 inches (100 mm) above manhole floor.

3.4 COORDINATION OF BOX LOCATIONS

A. Provide pullboxes as shown on Drawings and as required for splices, taps, wire pulling, equipment connections and code compliance.

B. Locations shown on Drawings are approximate unless dimensioned.

END OF SECTION 16135

SECTION 16410

UNDERGROUND ELECTRIC DISTRIBUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The General Provisions of the Contract, including General and Supplementary Conditions, apply to the Work specified in this section.

B. Refer to Section 16402 for work relating to utility electric service.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. All other Sections of Division 16.

B. All other Divisions of the Contract Documents. Refer to each Division's Specifications and Drawings for requirements, including but not limited to the following:

1. Section 16010 - General Requirements for Electrical Work
2. Section 16111 - Raceways and Fittings
3. Section 16120 - Wire and Cable (600Volts)

1.3 SCOPE

A. Provide and install materials, labor, supervision and services necessary for or incidental to the installation of a complete underground electric service as shown or indicated on the drawings and/or as specified.

B. Work Included:

1. Conduit
2. Conductors
3. Excavation
4. Pull Boxes

1.4 QUALITY ASSURANCE

A. When requested, provide the manufacturer's certificates that confirm that materials meet or exceed minimum requirements as specified.

B. Perform cable pulling calculations for the electrical power and communications systems based on the actual field routing of underground conduit or duct prior to duct or conduit installation. Calculations shall demonstrate that cable pulling tensions and sidewall pressures do not exceed manufacturer's requirements.

C. Submit calculations to the Engineer for approval. Provide pullboxes as required at no additional cost and where required in locations dictated by the calculations.

PART 2 - PRODUCTS

2.1 EQUIPMENT

A. Conduit: See Section 16111.

B. Markers: Continuous-printed plastic tape: Reference Section 16195.

C. Conductors: See Section 16120.

D. Duct Spacers: Fabricated plastic, UL approved.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Slope service to drainage point.

B. Terminate conduit in panel with grounding bushing. Make ground connection from bushing to ground bus with ground conductor sized as per drawings.

3.2 CONDUIT

A. Adjust final slopes on site to coordinate with existing utilities.

B. Install on undisturbed soil where possible. Use gravel and sand, placed in 8-inch lifts and compacted for backfill.

C. Clean and swab ducts/conduits.

END OF SECTION 16410

SECTION 16450

GROUNDING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The general provisions of the Contract, including General and Supplementary Conditions, apply to the work specified in this Section.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. All other Sections of Division 16.

B. All other Divisions of the Contract Documents. Refer to each Division's specifications and drawings for all requirements, including but not limited to the following:

1. Section 16111 - Raceways and Fittings.
2. Section 16120 - Wire and Cable.

1.3 SCOPE

A. Provide all equipment, materials, labor, supervision, and services necessary for or incidental to the installation of electrical systems grounding as shown or indicated on the Drawings and/or as specified.

B. Work Included:

1. Electrical equipment and raceway grounding and bonding.

1.4 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

B. Without additional cost to the Owner, provide such other labor and materials as are required to complete the work of this Section in accordance with the requirements of governmental agencies having jurisdiction, regardless of whether such materials and associated labor are called for elsewhere in these Contract Documents.

C. When requested, provide the Engineer with the manufacturer's certificate that materials meet or exceed minimum requirements as specified.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Provide electrical grounding system indicated with assembly of materials, including but not limited to:

1. Wires and cables.
2. Connectors.
3. Terminals.
4. Ground rods.
5. Bonding jumper braid.

B. Where materials or components are not indicated, provide products complying with NEC, UL, IEEE, and established industry standards for applications indicated.

2.2 GROUND ROD

A. Ground Wire Termination: Exothermic connection to 4/0 conductor. U-bolt with pressure plate provided as test point.

B. Ground Rods: Copper-clad steel, 3/4" diameter, minimum length 8 feet.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install electrical grounding systems in accordance with applicable portions of NEC, with NECA's "Standard of Installation," and in accordance with recognized industry practices to ensure that products comply with requirements and serve intended functions.

B. Provide a separate, insulated equipment grounding conductor in feeder circuits. Terminate each end on a grounding lug, bus, or bushing.

3.2 FIELD QUALITY CONTROL

A. Inspect grounding and bonding system conductors and connections for tightness and proper installation.

B. Electrical Tests:

1. Perform fall-of-potential test or alternative in accordance with IEEE Standard 81-1991 on the main grounding electrode or systems.

2. Perform point-to-point tests to determine the resistance between the main grounding system and all major electrical equipment frames, system neutral, and/or derived neutral points.

C. Test Values:

1. The resistance between the main grounding electrode and ground should be no greater than five ohms. Install additional grounding electrodes, as required, to achieve the specified resistance value.

2. Investigate point-to-point resistance values which exceed 0.5 ohm. Correct deficiencies at no additional cost. Retest to prove compliance

D. Provide written certification to the Engineer that the grounding system has been tested and complies with the specified requirements.

E. Provide test report.

END OF SECTION 16450

SECTION 16503

POLES AND STANDARDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The General Provisions of the Contract, including General and Supplementary Conditions, apply to the Work specified in this Section.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. All other Sections of Division 16.

B. All other Divisions of the Contract Documents. Refer to each Division's Specifications and Drawings for requirements, including but not limited to the following:

1. Section 16120 - Wires and Cables
2. Section 16450 - Grounding
3. Section 16530 - Site Lighting

1.3 SCOPE

A. Provide all equipment, materials, labor, supervision, and services necessary for or incidental to the installation of poles and standards as shown or indicated on the Drawings and/or as specified.

B. Work Included:

1. Concrete bases and base reinforcement.
2. Anchor bolts.

1.4 SUBMITTALS

A. Reference Section 16010 for detailed requirements.

1.5 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

B. Without additional cost to the Owner, provide such other labor and materials as are required to complete the work of this Section in accordance to the requirements of governmental agencies having jurisdiction, regardless of whether such materials and associated labor are called for elsewhere in these Contract Documents.

C. When requested, provide the Architect with manufacturer's certificate that materials meet or exceed minimum requirements as specified.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Provide poles and standards as specified on the lighting fixture schedule or an approved equal.

2.2 POLES

A. Provide poles as specified on the lighting fixture schedule or an approved equal.

B. Handhole: Complete with removable weatherproof cover installed 18 inches above bottom of pole.

C. Finish: Factory painted, color selection by architect.

2.3 ANCHOR BOLTS

A. Provide anchor bolts as recommended by manufacturer. All items to be hot-dipped galvanized.

B. Provide template for positioning of anchor bolts.

C. Provide anchor bolt covers painted to match pole.

PART 3 - EXECUTION

3.1 BASES

A. Construct as indicated on the civil drawings.

B. Install anchor bolts with 2 inch projection above top of bases unless indicated otherwise on the contract drawings.

3.2 INSTALLATION

A. Mount standards on bases plumb and true, utilizing shims as necessary.

B. Touch-up chips and scratches on poles upon completion.

END OF SECTION 16503

SECTION 16530

SITE LIGHTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The General Provisions of the Contract, including General and Supplementary Conditions, apply to the Work specified in this Section.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. All other Sections of Division 16.

B. All other Divisions of the Contract Documents. Refer to each Division's Specifications and Drawings for requirements, including but not limited to the following:

1. Section 16111 - Conduit.
2. Section 16503 - Poles and Standards.

1.3 SCOPE

A. Provide all equipment, materials, labor, supervision, and services necessary for or incidental to the installation of site lighting as shown or indicated on the Drawings and/or as specified.

B. Work Included:

1. Exterior lighting fixtures.

1.4 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

B. Without additional cost to the Owner, provide such other labor and materials as are required to complete the work of this Section in accordance to the requirements of governmental agencies having jurisdiction, regardless of whether such materials and associated labor are called for elsewhere in these Contract Documents.

C. When requested, provide the Architect with manufacturer's certificate that materials meet or exceed minimum requirements as specified.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Provide exterior lighting fixtures of the types specified on the Drawings.

2.2 EXTERIOR LUMINAIRES AND ACCESSORIES

A. Enclosures: Complete with gaskets, stops, and barriers to form weatherproof assembly and prevent light leaks.

B. Provide low temperature ballasts, with reliable starting to -20 degrees F.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install underground wiring in conduit with watertight connections. Refer to Section 16111.

END OF SECTION 16530

U.S. Department
of Transportation

Federal Aviation
Administration

Advisory Circular

Subject: SPECIFICATION FOR OBSTRUCTION LIGHTING EQUIPMENT | **Date:** 09/12/06 | **Initiated by:** AAS-100 | **AC No.:** 150/5345-43F | **Change:**

1. **PURPOSE.** This advisory circular (AC) contains the Federal Aviation Administration (FAA) specification for obstruction lighting equipment.

2. **EFFECTIVE DATE.** Effective 6 months after the date of this circular, only that equipment qualified per this specification will be listed in AC 150/5345-53, Airport Lighting Equipment Certification Program.

3. **CANCELLATION.** AC 150/5345-43E, *Specification for Obstruction Lighting Equipment,* dated October 19, 1995, is canceled.

4. **APPLICATION.** The specifications contained in this AC are recommended by the FAA in all applications involving development of this nature. For airport projects receiving Federal funds under the airport grant assistance program, the use of these standards is mandatory.

5. **DEFINITIONS.**

a. Beam Spread. The angle between the two directions in a plane for which the intensity is equal to 50 percent of the minimum specified peak beam effective intensity.

b. Vertical Aiming Angle. The angle between the horizontal and a straight line intersecting the beam at its maximum intensity.

c. Steady-Burning (fixed) Light. A light having constant luminous intensity when observed from a fixed point.

d. Effective Intensity. The effective intensity of a flashing light is equal to the intensity of a steady-burning (fixed) light of the same color that produces the same visual range under identical conditions of observation.

6. **PRINCIPAL CHANGES.**

a. Added a requirement for the use of ultraviolet and ozone resistant materials with xenon flashtubes.

b. Added a requirement for solar radiation resistant plastic parts and applicable testing.

c. Added a requirement for surge protection and testing for equipment with solid-state devices.

d. Added requirements from FAA Engineering Brief #67 as necessary to provide requirements for obstruction lighting using alternative light sources (ALDs).

e. Added optional radiated emissions requirements with no testing required.

7. METRIC UNITS. To promote an orderly transition to metric units, this AC includes both English and metric dimensions. The metric conversions may not be exact equivalents, and until there is an official changeover to the metric system, the English dimensions will govern.

8. COMMENTS OR SUGGESTIONS for improvements to this AC should be sent to:

Manager, Airport Engineering Division
Federal Aviation Administration
ATTN: AAS-100
800 Independence Avenue, S.W.
Washington, DC 20591

9. COPIES OF THIS AC. The Office of Airport Safety and Standards makes this AC available online at www.faa.gov.

DAVID L. BENNETT
Director of Airport Safety and Standards

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U.S. Department
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DAVID L. BENNETT
Director of Airport Safety and Standards

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CHAPTER 1. SCOPE AND CLASSIFICATION.

1.1 Scope.

This specification sets forth the Federal Aviation Administration (FAA) requirements for obstruction lighting equipment used to increase conspicuity of structures to permit early obstruction recognition by pilots.

1.2 Equipment Classification.

Type	Description
L-810	Steady-burning red obstruction light
L-856	High intensity flashing white obstruction light, 40 Flashes Per Minute (FPM)
L-857	High intensity flashing white obstruction light, 60 FPM
L-864	Flashing red obstruction light, 20-40 FPM
L-865	Medium intensity flashing white obstruction light, 40 FPM
L-866	Medium intensity flashing white obstruction light, 60 FPM
L-885	Flashing red obstruction light, 60 FPM

Copies of FAA ACs may be obtained from:

U.S. Department of Transportation
Subsequent Distribution
Office Ardmore East Business Center
3341 Q 75th Ave.
Landover, MD 20785

Tel: (301) 322-4961
FAX: (301) 386-5394
Website: www.faa.gov

Copies of military standards and specifications may be obtained from:

DAPS/DODSSP
Building 4, Section D
700 Robbins Avenue
Philadelphia, PA 19111-5094

Tel: (215) 697-2179
FAX: (215) 697-1460
Website: dodssp.daps.dla.mil

Copies of IEEE standards may be obtained from:

IEEE Customer Service Center
445 Hoes Lane
P.O. Box 1331
Piscataway, NJ 08855-1331

Tel: (800) 678-4333
FAX: (732) 981-0060 *(Worldwide)*
FAX: (732) 981-9667
E-mail: storehelp@ieee.org
Website: shop.ieee.org/ieeestore

Copies of the ISO document are available online from:

Website: www.iso.ch

Copies of ICAO documents may be obtained from:

ICAO, Document Sales Unit
999 University Street
Montreal, Quebec, Canada H3C 5H7

Telephone: +1 (514) 954-8022
FAX: +1(514) 954-6769

E-mail: sales@incao.int
Website: www.icao.int

Copies of IES of North America (IESNA) documents may be obtained from:

Website: www.techstreet.com
or
Website: www.iesna.org/shop/

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CHAPTER 3. EQUIPMENT REQUIREMENTS.

3.1 General.

This section addresses environmental, design, and photometric requirements for obstruction light equipment. Criteria for selecting the proper obstruction lighting equipment, installation tolerances, and administrative information are in AC 70/7460-1, *Obstruction Marking and Lighting.*

3.2 Environmental Requirements.

Obstruction lighting equipment must be designed for continuous operation under the following conditions:

a. Temperature. Storage/shipping: -67 degrees Fahrenheit (F) (-55 degrees Celsius (C)) to 130 degrees F (55 degrees C). Operating: -40 degrees F (-40 degrees C) to 130 degrees F (55 degrees C).

b. Humidity. 95 percent relative humidity.

c. Wind. Wind speeds up to 150 miles per hour (mph) (240 kilometeres per hour (kmph)).

d. Wind-blown Rain. Exposure to wind-blown rain from any direction.

e. Salt Fog. Exposure to salt-laden atmosphere.

f. Sunshine. Exposure to solar radiation.

3.3 Design Requirements.

3.3.1 Light Unit.

The light unit must be lightweight and designed for easy servicing and lamp (or flashtube) replacement. Materials used within the light unit must be selected for compatibility with their environment. All plastic lens parts (including gaskets), that are exposed to ultraviolet radiation or ozone gas must not change color, crack, check, disintegrate, or be otherwise degraded (photometry must remain compliant) and meet the equipment warranty requirements of AC 150/5345-53, Appendix 2. Each light unit must be an independent unit and must flash at the specified intensity or at its highest intensity when control signals are absent.

3.3.2 Light Covers.

Light-transmitting covers for light units must be per the requirements in MIL-C-7989. In addition, if plastic covers are used, they must be resistant to checking, crazing, or color changes caused by ultraviolet radiation or ozone gas exposure.

3.3.3 Light Colors.

The aviation red must be per ICAO Annex 14, Volume 1, Appendix 1, *Colours for Aeronautical Ground Lights,* at operating temperature within the following chromaticity boundaries:

purple boundary $y = 0.980 - x$

yellow boundary $y = 0.335$
$x + y + z = 1$

Xenon flashtube emission or a color temperature range from 4,000 to 8,000 degrees Kelvin is acceptable for white obstruction lights. See Engineering Brief #67 for additional information about lamp chromaticity requirements.

3.3.3.1 Light Color During Daytime.

Means must be provided on all L-810 obstruction lights to indicate the specified non-powered color during daytime viewing. See Engineering Brief #67 for additional information.

3.3.4 Aiming (for L-856 and L-857).

Light units must have a method for adjustment of the vertical aiming angle between 0 and +8 degrees. A spirit level or other device must be provided as part of each light unit for setting the vertical aiming angle of the light beam with an accuracy of one degree.

3.3.5 Control Unit.

3.3.5.1 Flashing White Obstruction Lighting Systems.

The control unit must set the system's flash rate, intensity and sequence and must be capable of controlling light units up to a distance of 2,500 feet (ft) (762 meters (m)). If the control unit or control wiring fails, the light units must continue to flash per Table 4 flash rate. Failure of an intensity step change circuit must cause all light units to remain operating at their proper intensity or alternatively to operate at the high intensity step.

3.3.5.1.1 Monitoring.

Each light unit must be monitored for FLASH/FAIL status. FAIL status is defined as either of the following conditions: unit misses four or more consecutive flashes; unit flashes at wrong intensity step during day operation. Monitoring must be fail safe (i.e., active signals for FLASH and absence of signals for FAIL). There must be a provision to permit connection to a remote alarm device, (supplied by others or as an option), to indicate the system and individual light unit FLASH/FAIL status.

NOTE: *See Engineering Brief #67 for additional information regarding the failure requirements for multiple alternative lighting devices (ALDs).*

3.3.5.1.2 Placement.

The control and monitor functions may be consolidated in a light unit or in a single enclosure for remote mounting or they may be distributed into several light units.

3.3.5.1.2.1 Remote Mounting.

In addition to the above, if placed in a remote mounted enclosure, the control unit must display the status of each light unit. An intensity control override switch must also be mounted in the enclosure to manually control light intensity during maintenance or in the event of a photoelectric control malfunction.

3.3.5.2 Flashing Red Obstruction Lights.

The control unit must set the system flash rate and flash sequence. Failure of the flashing circuit must cause the light units to energize and operate as steady burning lights. An override switch must be mounted on the control unit to manually control the lights during maintenance or in the event of a lack of a photoelectric control signal. To insure proper operation, all flashing red obstruction lights, inclusive of any associated system steady burning red lights, must be certified with a control unit whether internal or external to the lighting unit.

3.3.5.2.1 Dual Lighting Systems.

The control unit may be a separate unit or incorporated as part of either the white or red obstruction light control unit. The control unit must set the operating mode for each light unit in the system. Outage of one of two lamps, or any failure in the device that causes a reduction in intensity of the horizontal beam or results in an outage in the uppermost red beacon (L-864 unit) or outage of any uppermost red strobe, must cause the white obstruction light system to operate in its specified "night" step intensity. At no time should both red and white systems be on simultaneously. An override switch must be mounted on the control unit to manually control the operating mode of the system during maintenance or in the event of a lack of a photoelectric control signal.

3.3.5.2.2 Monitoring.

Each separate L-864 light unit and each tier of L-810 light units must be monitored for FLASH/FAIL status. FAIL is defined as outage of any lamp in an L-864 light unit, outage of any one lamp in a tier of L-810 light units, or failure of a flasher (steady on and/or total) for an L-864 light unit. Monitor signals must be fail safe (i.e., active signals for FLASH and absence of signals for FAIL). There must be a provision to permit connection to a remote alarm device, (supplied by others or as an option) to indicate FLASH/FAIL status.

NOTE: *See Engineering Brief #67 for additional information regarding the failure requirements for multiple alternative lighting devices (ALDs).*

3.3.6 Input Voltage.

The obstruction lighting equipment must be designed to operate from the specified input voltage ±10 percent. Incandescent lamps must be operated to within ±3 percent of the rated lamp voltage to provide proper light output.

3.3.7 Performance Criteria.

Manufacturers are required to publish performance criteria for all light generating devices (see Engineering Brief #67).

3.3.8 Transient Protection.

Equipment with solid state devices must be designed to withstand and/or include separate surge protection devices that are tested against defined waveforms per IEEE C62.41-1991, Table 4, Location Category C1, for single phase modes (line to ground, line to neutral, line and neutral to ground).

3.3.9 Radiated Emissions.

NOTE: *Optional only. No equipment qualification is required.*

a. Obstruction lighting that uses electronic circuitry to power the light source must be classified as an incidental radiator (47 CFR §15.13). This applies to equipment that does not intentionally generate any radio frequency energy, but may create such energy as an incidental part of its intended operations.

b. Obstruction light systems must employ sound engineering practices to minimize the risk of harmful interference.

3.3.10 Warning Labels.

All enclosures that contain voltages exceeding 150 volts direct current (VDC) or alternating current (AC) root mean square (rms) must have high voltage warning label(s) placed at a conspicuous location(s). Also, a visual indicator must be included within the enclosure to indicate that greater than 150 VDC is present on the high voltage capacitors.

3.3.11 Interlock Switches.

Interlock switches must be incorporated in each power supply and optionally in each flashhead so that opening either unit must (1) interrupt incoming power and (2) discharge all high voltage capacitors within the enclosure to 50 volts or less within 30 seconds.

3.3.12 Nameplate.

A nameplate, with the following information, must be permanently attached to each unit:

a. Name of unit (light unit, control unit, etc.).

b. FAA type (e.g., L-856, L-864, etc.).

c. Manufacturer's catalog number.

d. Manufacturer's name and address.

e. Rated separation distance in feet is ____ to ____ between power supply and optical head using American Wire Gage (AWG) ____ conductors. (Item e is required if a unique power supply and its associated optical head are separate components of the lighting system as in the case of some discharge lights.)

In addition to the above, the power supply must include nominal input voltage, number of phases, frequency, and peak VA rating.

3.3.13 Optional Arctic Kit

Light systems may be offered with an optional arctic kit to enable operation in temperatures below -40 degrees F (-40 degrees C).

3.3.14 Component Ratings.

3.3.14.1 Discharge Type Lighting Equipment.

The flashtube or flashtubes must have a minimum rated life of two years without maintenance or loss of light output below the minimum specified candela.

3.3.14.2 Component Separation Rating.

If the light unit's power supply and optical head are separate components, the manufacturer must rate each light unit for maximum and minimum separation at a given AWG wire size. The manufacturer must include this rating on the nameplate per section 3.3.12. The rating certifies that the unit meets all requirements within the rated distances. The manufacturer must maintain records of test results which support the stated separation rating until the next system re-qualification.

3.3.14.3 Incandescent Light Equipment.

Lamps must have a minimum rated life of 2,000 hours at rated voltage.

3.3.14.4 Alternative Light Source Equipment.

Light sources other than incandescent or xenon (light emitting diodes, cold cathode) must have a minimum rated life of two years without maintenance or loss of light output below the minimum specified intensity (see Engineering Brief #67).

3.3.14.5 Light Equipment Components.

All components used in obstruction lighting equipment, except lamps, must be designed to meet performance requirements for a minimum of one year without maintenance.

3.3.15 Leakage Current.

All obstruction lighting equipment classified in paragraph 1.2 must be designed to withstand application of 1,000 volts AC or 1,414 volts DC between the input power leads and equipment chassis for 10 seconds during which the leakage current must not exceed 10 microamperes at ambient room temperature and humidity.

3.4 Performance Requirements.

3.4.1 Photometric.

3.4.1.1 General.

The effective intensity for flashing lights must be calculated per the following formula by the method described for *Flashing Light Signals* in the IES Handbook, 1993 Reference and Application Volume 8th Edition, Pages 96 and 97:

$$I_e = \left(\int_{t_1}^{t_2} Idt \right) / (0.2 + (t_2 - t_1))$$

Where:

I_e	=	Effective intensity (Candela)
I	=	Instantaneous intensity (Candela)
$t1$, $t2$	=	Times in seconds of the beginning and end of that part of the flash when the value of I exceeds I_e. This choice of the times maximizes the value of I_e.

For discharge type flashing lights, the equipment must provide the specified light output at the specified temperature extremes as the input voltage simultaneously varies by ±10 percent from nominal. The light intensity and beam distribution requirements for obstruction lighting equipment are specified below. All intensities listed are effective intensities (except steady-burning red obstruction lights) measured at the flash rate specified in Table 4. All incandescent lights will be tested as steady burning lights. Additional requirements for ALDs are in Engineering Brief #67.

The effective intensity for multiple pulse flashes as used in strobe lights during nighttime operation must be calculated by:

$$I_e = \left(\frac{\int_{t_1}^{t_A} Idt}{0.2 + t_A - t_1} \right) + \left(\frac{\int_{t_B}^{t_C} Idt}{0.2 + t_C - t_B} \right) + \left(\frac{\int_{t_D}^{t_E} Idt}{0.2 + t_E - t_D} \right) + \ldots + \left(\frac{\int_{t_X}^{t_Z} Idt}{0.2 + t_Z - t_X} \right)$$

The frequency of the pulses must not be less than 50 Hz and the interval t_A- t_1 must not vary by more than ±5% from the nominal value from pulse to pulse over the simultaneous extremes of temperature and input voltage.

3.4.1.2 L-810 Light Unit.

The center of the vertical beam spread must be between +4 and +20 degrees. With a minimum vertical beam spread of 10 degrees and at all radials throughout 360 degrees, there must be a minimum intensity of 32.5 candela. Mechanical interface for installation must be 3/4 or 1 inch National Pipe Thread (NPT) side and/or bottom.

3.4.1.3 L-856 Light Unit.

The beam spread and effective intensity must be per Table 1.

Table 1. L-856 Intensity Requirements.

Step	Beam Spread		Peak Intensity (candela) [2]
	Horizontal [1] (degrees)	Vertical (degrees)	
Day	90 or 120	3 - 7	270,000 ±25%
Twilight	90 or 120	3 - 7	20,000 ±25%
Night	90 or 120	3 - 7	2,000 ±25%

NOTES:

(1) Multiple light units may be used to achieve a horizontal coverage of 360 degrees.

(2) When the light unit is installed per the manufacturer's instructions, the intensity at zero degrees elevation angle (horizontal) must be at least as great as the minimum specified beam peak intensity. For stray light, the intensity at 10 degrees below horizontal, at any radial, must not be greater than 3% of the peak intensity at the same radial.

3.4.1.4 L-857 Light Unit.

Photometric requirements are defined in Table 2.

Table 2. L-857 Intensity Requirements.

Step	Beam Spread		Peak Intensity (candela) [2]
	Horizontal (degrees) [1]	Vertical (degrees)	
Day	90 or 120	3 - 7	140,000 ±25%
Twilight	90 or 120	3 - 7	20,000 ±25%
Night	90 or 120	3 - 7	2,000 ±25%

NOTES:

(1) Multiple light units may be used to achieve a horizontal coverage of 360 degrees.

(2) When the light unit is installed per the manufacturer's instructions, the intensity at zero degrees elevation angle (horizontal) must be at least as great as the minimum specified beam peak intensity. For stray light, the intensity at 10 degrees below horizontal, at any radial, must not be greater than 3% of the peak intensity at the same radial.

3.4.1.5 L-864 Light Unit.

At all radials throughout the omnidirectional 360 degrees, there must be a peak effective intensity of 2,000 ±25 percent candela. There must also be a minimum effective intensity of 750 candela throughout a minimum vertical beam spread of 3 degrees.

3.4.1.5.1 Beam Adjustment.

When the light unit is installed per the manufacturer's instructions, the intensity at zero degrees elevation angle (horizontal) must be at least as great as the minimum specified beam peak intensity.

3.4.1.6 L-865 Light Unit.

Photometric requirements are defined in Table 3.

Table 3. L-865 Intensity Requirements.

Step	Beam Spread		Peak Intensity (candela)[2]
	Horizontal (degrees) [1]	Vertical (degrees)	
Day/Twilight	360	3 minimum	20,000 ±25%
Night	360	3 minimum	2,000 ±25%

NOTES:

(1) Multiple light units may be used to achieve a horizontal coverage of 360 degrees.

(2) When the light unit is installed per the manufacturer's instructions, the intensity at zero degrees elevation angle (horizontal) must be at least as great as the minimum specified beam peak intensity. For stray light, the intensity at 10 degrees below horizontal, at any radial, must not be greater than 3% of the peak intensity at the same radial.

3.4.1.7 L-866 Light Unit.

The requirements are the same as the L-865 light unit, except the flash rate must be 60 flashes per minute (FPM).

3.4.1.8 L-885 Light Unit.

The requirements are the same as the L-864 light unit, except the flash rate must be 60 FPM.

3.4.2 Flash Rate and Duration.

Flash characteristics are defined in Table 4.

Table 4. Flash Characteristics for Obstruction Lights

Type	Intensity Step	Flash Rate (1)	Flash Duration (2)
L-856	Day & Twilight	40 FPM	Less than 100 milliseconds (ms)
L-856	Night	40 FPM	Between 100 and 250 ms inclusive
L-857	Day & Twilight	60 FPM	Less than 100 ms
L-857	Night	60 FPM	Between 100 and 250 ms inclusive
L-864	Single	20-40 FPM	1/2 to 2/3 of flash period if incandescent lighting (3), and between 100 and 2000 ms inclusive if other lighting sources.
L-865	Day & Twilight	40 FPM	Less than 100 ms
L-865	Night	40 FPM	Between 100 and 1000 ms inclusive
L-866	Day & Twilight	60 FPM	Less than 100 ms
L-866	Night	60-FPM	Between 100 and 250 ms inclusive
L-885	Single	60 FPM	1/2 to 2/3 of flash period if incandescent lighting (3), and between 100 and 670 ms inclusive if other lighting sources.

NOTES:

(1) Flash rates have a tolerance of ±5 percent.

(2) When the effective flash duration is achieved by a group of short flashes, the short flashes must be emitted at a rate of not less than 50 Hz.

(3) The light intensity during the "off" period must be less than 10 percent of the peak effective intensity. The "off" period must be at least 1/3 of the flash period.

3.4.3 System Flashing Requirements.

3.4.3.1 Simultaneous Flashing Systems.

All obstruction lights in systems composed of either L-864 light units or L-856 and/or L-865 light units must flash within 1/60 of a second of each other.

3.4.3.2 Sequenced Flashing Systems.

a. Catenary support structure systems composed of L-857, L-866, or L-885 light units must have a sequenced flashing characteristic.

b. This system consists of three lighting levels on or near each supporting structure. One light level is near the top, one at the bottom or lowest point of the catenary, and one midway between the top and bottom.

c. The flash sequence must be middle, top, and bottom.

d. The interval between top and bottom flashes must be about twice the interval between middle and top flashes.

e. The interval between the end of one sequence and the beginning of the next must be about 10 times the interval between middle and top flashes.

f. The time for the completion of one cycle must be one second (±5 percent).

3.4.4 Intensity Step Changing.

3.4.4.1 White Obstruction Lights.

The light unit intensity must be controlled by a photocell facing the northern (polar) sky. White obstruction lights must automatically change intensity steps when the ambient light changes as follows:

a. From day intensity to twilight intensity when the illumination decreases below 60 foot-candles (645.8 lux) but before it reaches 35 foot-candles (376.7 lux).

b. From twilight intensity to night intensity when the illumination decreases below 5 foot-candles (53.8 lux) but before it reaches 2 foot-candles (21.5 lux).

c. From night intensity to twilight intensity when the illumination increases above 2 foot-candles (21.5 lux) but before it reaches 5 foot-candles (53.8 lux).

d. From twilight intensity to day intensity when the illumination increases above 35 foot-candles (376.7 lux) but before it reaches 60 foot-candles (645.8 lux).

3.4.4.2 Red Obstruction Lights.

If automatic control is utilized, the light unit must turn on when the ambient light decreases to not less than 35 foot-candles (367.7 lux) and turn off when the ambient light increases to not more than 60 foot-candles (645.8 lux). Single L-810 light units are controlled in a manner compatible with the particular installation.

3.4.4.3 Dual Obstruction Lighting System.

White obstruction lights must turn off and red obstruction lights must turn on when the ambient light changes from twilight to night per paragraph 3.4.4.1b. Red obstruction lights must turn off and white obstruction lights must turn on when the ambient light changes from night to twilight per paragraph 3.4.4.1c.

3.5 Instruction Manual.

An instruction manual containing the following information must be furnished with all obstruction lighting equipment:

a. Complete system schematic and wiring diagrams showing all components cross-indexed to the parts list.

b. Complete parts list of field replaceable parts with applicable rating and characteristics of each part, and with the component manufacturer's part number as appropriate.

c. Installation instructions, including leveling and aiming of light units.

d. Maintenance instructions, including lamp or flashtube replacement, theory of operation, troubleshooting charts and, as appropriate, conspicuous warnings about alignment and replacement of lamps and light units with other than manufacturer recommended items. Explanation of testing requirements regarding light units with specific lamps must be provided in the text. A discussion must be included about mixing light units as replacements with other manufacturers' units with emphasis on assuring that system design of obstruction lighting is not degraded.

e. Operating instructions.

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CHAPTER 4. EQUIPMENT QUALIFICATION REQUIREMENTS.

4.1 Qualification Procedures.

Procedures for qualifying equipment to be furnished under the Federal grant assistance program for airports are contained in AC 150/5345-53, *Airport Lighting Equipment Certification Program.*

4.2 Qualification Tests.

Qualification tests must be conducted on the light unit in the following order:

a. Initial photometric test, per paragraph 4.2.1

b. Environmental tests, per paragraphs 4.2.2, 4.2.3, 4.2.4, 4.2.5, 4.2.6, 4.2.7, and 4.2.8 (in any order)

c. 1000 hours of continuous operation, per paragraph 4.2.10

d. System Operational Test, per paragraph 4.2.10

e. Leakage Current Test, per paragraph 4.2.11

f. Sampling Photometric Test, per paragraph 4.2.1

g. Visual examination, per paragraph 4.2.12

h. Transient Protection Test, per paragraph 4.2.9. The equipment may be damaged by this test. It should only be performed when testing per paragraphs a though c above is complete.

Sample photometric and system operational tests must be conducted after completion of all environmental tests. The same unit(s) must be used throughout the tests. The following tests are required to demonstrate compliance with this specification. The tests may be run on the control unit, power supply, and a single light unit, with a simulated load replacing the other light units. Equipment tested must be as a complete system.

4.2.1 Photometric Test.

a. A full photometric test as described in this section must be performed before all environmental tests.

NOTE: *To verify proper color correction, photometric testing conducted on alternative light source fixtures must be done with a detector having an up to date calibration including spectral response data (see Engineering Brief #67).*

b. A sampling photometric retest must be conducted after the unit has been operated continuously for 1000 hours with normal (12 hour) day/night cycling. This sampling must consist of measuring the vertical beam pattern for compliance with photometric requirements at a minimum of two of the previously tested horizontal radials.

c. Light units must be energized by the system power supply and control unit, and must be tested for compliance with photometric requirements.

d. For alternative light source equipment high temperature testing, see Engineering Brief #67.

e. Incandescent lamps must be tested at ±3 percent of their nominal voltage.

f. Red light intensity may be measured in white light and then calculated if the glassware manufacturer certifies the chromaticity and transmissivity values of the red filter material for the particular source.

g. If more than one lamp type is to be used, the qualification testing must be completed for each lamp type.

h. For a discharge type flashing system, if the power supply and optical head are separate components, the manufacturer must demonstrate that the required photometrics are produced with the units separated by maximum and minimum recommended distances and connected by cable recommended by the manufacturer.

i. Photometric test results must be in the forms of:

(1) Vertical beam pattern: Distribution curve (vertical angle versus candela) with minimum one degree spacing of test points over range of specified angles.

(2) Horizontal beam pattern: Polar plot (horizontal angle versus candela) with minimum 30 degree spacing of test points.

4.2.2 High Temperature Test.

a. The high temperature test must be conducted per MIL-STD-810F, Method 501.4, Procedure II. The equipment must be subjected to a constant temperature of +130 degrees F (+55 degrees C) for 4 hours after equipment temperature stabilization and be operated throughout the test.

NOTE: *For steady state temperature testing, consider thermal stabilization to be achieved when the temperatures of critical internal operating components are relatively constant. (Because of test item duty cycling or the operating characteristics, a constant temperature may never be achieved.)*

b. During the test, the manufacturer must demonstrate that the equipment maintains the specified flash rate and (for discharge type flashing light) the proper amount of energy is being delivered to the flashtube as the input voltage is varied by ±10 percent from nominal.

c. A visual examination must be conducted after the equipment is removed from the chamber. Failure of the equipment to operate as specified is cause for rejection.

4.2.3 Low Temperature Test.

a. The low temperature test must be conducted per MIL-STD-810F, Method 502.4, Procedure II. The equipment must be placed in a chamber that maintains a temperature of -67 degrees F (-55 degrees C) for shipping/storage requirements and -40 degrees F (-40 degrees C) for equipment operational requirements.

b. Equipment operation must be demonstrated at the beginning of the test.

c. The equipment storage and shipping low temperature requirement is -67 degrees F (-55 degrees C). The equipment must be stabilized and cold soaked at the storage/shipping temperature for one hour. The test chamber must then be ramped to the -40 degree F (-4 degrees C) equipment operating temperature at no more than 6 degrees F (3 degrees C) per minute to prevent thermal shock to the equipment.

d. The equipment, with input power off, must then be exposed to a 24-hour soaking period at -40 degrees F (-40 degrees C) after which the equipment must be turned on for one hour, and must operate normally. For discharge type flashing lights, the unit must achieve specified flash rate and intensity within 1 minute after being energized. During the one hour of operation, the manufacturer must demonstrate that the equipment maintains the specified flash rate and, for discharge type flashing lights, the proper amount of energy is being delivered to the flashtube as the input voltage is varied by ±10 percent from nominal.

e. At the conclusion of the test, a visual inspection must be conducted. Failure of the equipment to operate as specified is cause for rejection.

4.2.4 Rain Test.

The wind-blown rain test must be conducted per MIL-STD-810F, Method 506.4, Procedure I, paragraph 4.4.2. The rain must be at a rate of 5.2 inches per hour (132 mm/hour) with an exposure time of 30 minutes per side. The equipment must be operated throughout the test. Failure of the equipment to operate as specified is cause for rejection.

4.2.5 Wind Test.

Evidence must be provided, either by testing or by calculation of mechanical force, to demonstrate that installed light units meet the wind requirement in paragraph 3.2c.

4.2.6 Humidity Test.

The test must be per MIL-STD-810F, Method 507.4, Procedure, paragraph 4.5.2. The equipment must be subjected to two complete cycles per Table 507.4-1, except the maximum chamber temperature must be +130 degrees F (+55 degrees C). Failure of the equipment to operate as specified is cause for rejection.

4.2.7 Salt Fog Test.

The salt fog test must be conducted per MIL-STD-810F, Method 509.4, Procedure, paragraph 4.5.2. Failure of the equipment to operate as specified is cause for rejection. If corrosion is present, the third party certification body must determine if it has impacted equipment structural integrity or functionality.

4.2.8 Sunshine Test.

NOTE: *The manufacturer may submit a certificate of compliance (for consideration by the third party certification body) from the material(s) manufacturer attesting to UV resistance (per MIL-STD-810F) in lieu of the testing requirements below.*

The equipment must be in its normal operational configuration for this test.

a. A sunshine test must be conducted per MIL-STD-810, Method 505.4, paragraph 4.4.3, Procedure II for all obstruction lighting equipment with nonmetallic exterior parts or plastic/thermoplastic light covers.

b. The equipment must be subjected to a minimum of 56 cycles.

c. Perform an operational test of the equipment after 56 cycles.

d. Any evidence of deterioration of plastic parts: chalking, bleaching, cracking, hazing, or color changes (yellowing) to the thermoplastic lenses of the test unit must be causes for rejection.

e. For plastic/thermoplastic optical lenses or covers, the photometric performance must be measured after this test.

4.2.9 Transient Protection Test.

NOTE: *The equipment may be damaged by this test. Perform this test only when tests in paragraphs 4.2.1 through 4.2.8 are completed.*

a. Subject the obstruction lighting equipment to 2 pulses at 15 second intervals to a combination wave 1.2 microseconds (µs)/50µs and 8µs/20µs (6,000 volts, 3,000 amps) test pulse per the descriptions in IEEE C62.41, Table 4, Location Category C1.

b. See IEEE C62.41-1991 Section 9.3 for test condition and test generator information.

c. See IEEE C62.41-1991 Section 9.4 for a detailed combination pulse generation and parameters discussion.

d. See also IEEE C62.45, *IEEE Recommended Practice on Surge Testing for Equipment Connected to Low-Voltage (1,000 volts (V) and Less) AC Power Circuits* for guidance about equipment test methods.

e. The equipment under test must operate normally at the conclusion of the test.

4.2.10 System Operational Test.

a. A system operational test must be performed after the unit has been operated continuously without failure for 1000 hours with normal (12 hour) day/night cycling.

b. System components must be connected with the necessary wiring to electrically simulate an actual installation in which the top and bottom light units on a structure are separated by 2,000 feet (609.6 m) for a system composed of L-856 and/or L-865 and 500 feet (152.4 m) for system composed of L-857 or L-866, and the controller separated an additional 2,500 feet (762.0 m). Simulated interconnecting cables with equivalent impedance may be used in lieu of full cable lengths.

c. The system must be energized and operated to demonstrate compliance with all specification operating requirements such as flash rate, flash sequence, photoelectric switching of intensity steps, operation of interlocked devices, and satisfactory operation under input voltage variations.

d. If the power supply and optical head are separate components, it must be demonstrated that with the maximum and minimum nameplate rated separation between components, proper energy is delivered to the light unit to produce the specified photometrics.

e. It must be demonstrated that L-810 and L-864 lights produce the specified photometric requirement when energized over conductors (actual or simulated) representing the maximum and minimum nameplate rated cable length at the minimum input voltage.

4.2.11 Leakage Current Test.

Light units must be tested for compliance to the leakage current requirement in paragraph 3.3.15. Leakage current must be measured between the primary power connection points to the equipment chassis. The primary power connection points may be connected together during this test, but all other internal wiring must be connected as in normal operation. Devices for surge and lightning protection connected directly to input power wiring may be disconnected during this test.

4.2.12 Visual Examination.

The obstruction lighting equipment must be examined for compliance with the requirements on materials, finish, and quality of workmanship.

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CHAPTER 5. PRODUCTION TEST REQUIREMENTS.

5.1 System Production Tests.

A visual examination must be performed for all components in a system to verify proper materials and assembly. Each component of the system must be energized and tested to verify specified operation and conformance to photometric requirements.

5.2 Incandescent Light Unit Production Tests.

All light units must be visually examined for proper materials and assembly. The manufacturer must demonstrate that the on-going production photometric test results show the manufacturing process meets the photometric requirements per paragraphs 3.4.1.2, 3.4.1.5, or 3.4.1.8 and per section 5.6.

5.3 Alternative Lighting Devices (ALD).

All light units must be visually examined for proper materials and assembly. The manufacturer must demonstrate that the ongoing production photometric test results show the manufacturing process meets the photometric requirements per paragraphs 3.4.1.2 through 3.4.1.8 and per section 5.6.

5.4 Discharge Light Unit Production Test.

All light units must be visually examined for proper materials and assembly. The units must be energized and tested to verify proper operation and conformance to photometric requirements as specified in Tables 5 and 6.

5.5 Production Operational Test.

All light units must be tested to verify specified operation per the following minimum standards.

a. Each unit must be operated a minimum of 24 hours at highest intensity and a minimum of 12 hours at lowest intensity.

b. During highest intensity operation, each unit must be monitored for FLASH/FAIL as defined in 3.3.5.1.1. Minimum acceptable quality is zero FAILs in 24 hours of high intensity operation.

c. After a minimum 36 hours elapsed time of operation each light unit must be tested to verify proper operation of the following:

(1) All intensity step changes per paragraph 3.4.4.1

(2) Proper operation of monitoring per paragraph 3.3.5.1.1

(3) Proper interlock switch operation and discharge time to 50 volts (bank potential) per paragraph 3.3.11.

(4) Simultaneous flashing and intensity changing for multi-light systems per paragraphs 3.4.3.1 and 3.3.5.1, respectively

(5) Leakage current test per paragraph 3.3.15.

5.6 Production Photometric Test.

Photometric testing must be performed per Table 5 or Table 6 using either conventional sampling per column 2 or statistical process control (SPC) per column 3. If SPC is used for a characteristic, it must show statistical capability with Cpk ≥ 1.0 and $\sigma \geq 3.0$.

Table 5. L-856/L-857 Production Photometric Requirements.

CHARACTERISTIC TESTED [1]	TEST POINTS	
	CONVENTIONAL	SPC
a) Beam peak (Day Intensity)	3 radials each unit: 1 at center of Horizontal beam +2 radials ±45 degrees or ±60 degrees from center	1 radial each unit, random orientation
b) Beam peak (Twilight Intensity)	Same radials as (a)	Same radials as (a)
c) Beam peak (Night Intensity)	Same radials as (a)	Same radials as (a)
d) Intensity at -10 degrees (Night)	Same radials as (a)	Same radials as (a)

NOTES:

(1) Characteristic must meet all specifications per paragraph 3.4.1.3 or 3.4.1.4.

Table 6. L-865/866/864[1] /885[1] Production Photometric Requirements.

CHARACTERISTIC TESTED [2,3]	TEST POINTS	
	CONVENTIONAL	SPC
a) Beam peak (Day Intensity)	4 radials each unit: equally spaced, random orientation	1 radial each unit, random orientation
b) Beam peak (Night Intensity)	Same radials as (a)	Same radials as (a)
c) Intensity at -10 degrees	Same radials as (a)	Same radials as (a)

NOTES:

(1) Discharge type and alternative light source light only.

(2) Characteristic must meet all specifications per paragraph 3.4.1.5 or 3.4.1.6.

(3) Day, night, and -10 degrees where applicable.

5.7 Production Test Records.

Records showing actual test results of all tests required by paragraph 5.5 must be maintained for a period of three years by the manufacturer. These records must be traceable to the units tested and in the case of discharge light units traceable by serial number.

5.8 Production Test Equipment.

All measuring and test equipment used in the production of obstruction lighting equipment classified under paragraph 1.2 must have its accuracy and precision maintained by a calibration program with traceability to ISO-10012 *Measurement Management Systems – Requirements for Measurement Processes and Measuring Equipment* or current industry accreditation criteria. The manufacturer must show that all production photometric testing equipment correlates to the certifying laboratory's equipment to within ±5 percent. Photometric testing must be performed in a properly designed photometric range using a calibrated photometer. For discharge type flashing lights, all photometric measurements must be based on a minimum five flash average.

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GEOTECHNICAL REPORT

REPORT OF

PAVEMENT INVESTIGATION

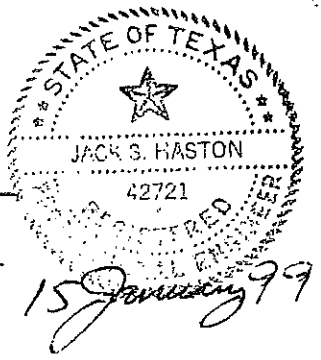
FOR

ADDISON ROAD
FROM BELTLINE ROAD TO KELLER-SPRINGS ROAD
ADDISON, TEXAS

Prepared For:

Mr. John W. Birkhoff, P.E.
Shimek, Jacobs & Finklea, L.L.P.
Consulting Engineers
8333 Douglas Avenue, #820
Dallas, Texas 75225

Prepared by:



Jack S. Haston, P. E.

Haston Associates
1824 Holm Oak St.
Arlington, TX 76012
(817) 265-2253

15 January 1999
Job No. H9812

SUBSURFACE INVESTIGATION
ADDISON ROAD
FROM BELTLINE ROAD TO KELLER-SPRINGS ROAD
ADDISON, TEXAS

TABLE OF CONTENTS

I. INTRODUCTION

This report contains the details of field exploration and laboratory testing performed for the proposed reconstruction of Addison Road from Beltline Road to Keller-Springs Road in Addison, Texas.

A. Authorization

This study was authorized by Mr. John Birkhoff, P.E., of Shimek, Jacobs and Finklea, L.L.P.

B. Purpose

The purpose of this investigation was to determine the subsurface materials and conditions present at the site and to make recommendations concerning pavement design.

C. Scope

In order to accomplish the purpose of the study, the following scope of services was provided:

1. A geologic reconnaissance at the site and the area was conducted.
2. Eleven exploratory borings were drilled to depths ranging from 3.0 feet to of 10.0 feet below the existing pavement surface to determine subgrade soil types and to obtain samples.
3. Laboratory tests were conducted to determine pertinent engineering properties of the subsurface materials.

II. FIELD AND LABORATORY SERVICES

To accomplish the proposed scope of services, field and laboratory studies were conducted. These activities are described in the following paragraphs.

A. Field Activities

The signatory of this report conducted a site visit and windshield survey of the area to determine site conditions and geology. This reconnaissance included a preliminary review of available published geological and topographic information. This activity encompassed about four hours and was conducted before field exploratory drilling.

Subsurface materials and conditions were explored 6 November 1998 by means of eleven borings located approximately as shown on attached Sheet 1. The borings were advanced through the pavement with an auger and then Shelby-tube samplers were used to obtain relatively undisturbed samples. The samples were labeled, sealed in moisture-proof containers, and transported to the laboratory for further examination and analysis.

Observations for the presence of groundwater were made during and after the drilling operations. Results of groundwater observations are shown by the notes on the attached Logs of Borings.

B. Laboratory Testing

Samples were selected to determine pertinent engineering properties. After tests were complete, the field logs were edited to prepare final Logs of Borings (attached) in general accordance with ASTM D 2487, Standard Test Method for Classification of Soils for Engineering Purposes.

Atterberg Limits Tests

Atterberg Limits tests were performed on selected samples to assist in identification and classification. The method was in general accordance with ASTM D 4318, Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

Minus 200-Mesh Sieve Tests

The primary purpose of sieve tests was also to aid in proper classification of the soils. The method used was in general accordance with ASTM D 1140, Standard Test Method for Amount of Material in Soils Finer Than the No. 200 (75μm) Sieve.

Moisture Content Tests

The soil moisture condition of selected samples was determined in general accordance with ASTM D 2216, Standard Method for Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures.

pH Lime Series Tests

Two tests were performed to determine the subgrade soil reaction with lime. These were performed in accordance with ASTM C 977 Appendix X.1. Results are shown in the appendix.

Unconfined Compressive Strength Tests

Unconfined compressive strength tests were performed on selected undisturbed samples to determine strength and consistency properties. The method used was in general accordance with ASTM D 2166, Standard Test Method for Unconfined Compressive Strength of Cohesive Soils.

III. SITE CONDITIONS

Based on the results of field reconnaissance, exploration, testing, literature review, and experience, site and subsurface conditions are interpreted as described in the following paragraphs.

A. General Description

The roadway alignment is located on fairly level ground with only about 5-10 of ground surface elevation rise from Beltline Road to Keller-Springs Road, based on the USGS Addison, Texas, Quadrangle Map.[1] The existing roadway is a four-lane road with asphalt pavement.

B. Subsurface Materials and Conditions

The site is situated on the mapped outcrop of the Austin Chalk geologic formation.[2] The Austin chalk is a marine deposited marl, or chalky limestone, which is gray in its unweathered state and changes color to tan or white due to leaching during the weathering process. The bark brown or black soils at the ground surface are derived from further weathering of the formation. Shallow water tables and seepage are common in the Austin Chalk.

The depth and thickness of each soil stratum may vary between borings. However, the subsurface materials at the site can be generally described as follows:

5 to 10 inches of asphalt pavement (or concrete with asphalt overlay);

0 to 4 inches of crushed stone base;

0.0 to 5.1 feet of dark brown clay;

0.0 to 3.5 feet brown clay;

0.0 to 3.0 feet of tan or tan and brown clay; and,

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[1] *Addison Quadrangle*, Texas-Dallas Co., 7.5 Minute Series (Topographic), 1959, photorevised 1981, for sale by the U. S. Geological Survey, Denver, Colorado 80225.

[2] *Geologic Atlas of Texas, Dallas Sheet,* published by the Bureau of Economic Geology, The University of Texas at Austin, Austin, Texas 78712, 1972, Revised 1988.

Austin Chalk limestone down to at least the bottoms of the borings.

D. Groundwater

Groundwater was encountered in only one boring, No. 11, at the 6.5-foot depth. This groundwater may originate as precipitation, lawn and landscape irrigation, leakage, or spillage. The porous soils and fractured rock in the upper portion of the Austin chalk are an unconfined aquifer. Shallow seepage is common in the area.

IV. ANALYSIS AND RECOMMENDATIONS

We understand that jointed reinforced concrete pavement is to be used for reconstruction of Addison Road, in accordance with the City's General Design Standards. Based on the AASHTO-86 pavement design method (data sheets attached), the concrete pavement thickness should be 10 inches with 3,500 psi concrete.

In our opinion, lime stabilization of the subgrade soils is the best method of providing a durable non-pumping subbase at this site. The recommended application rate for hydrated lime is 7 percent, or 30 pounds per square yard for a 6-inch compacted thickness[3].

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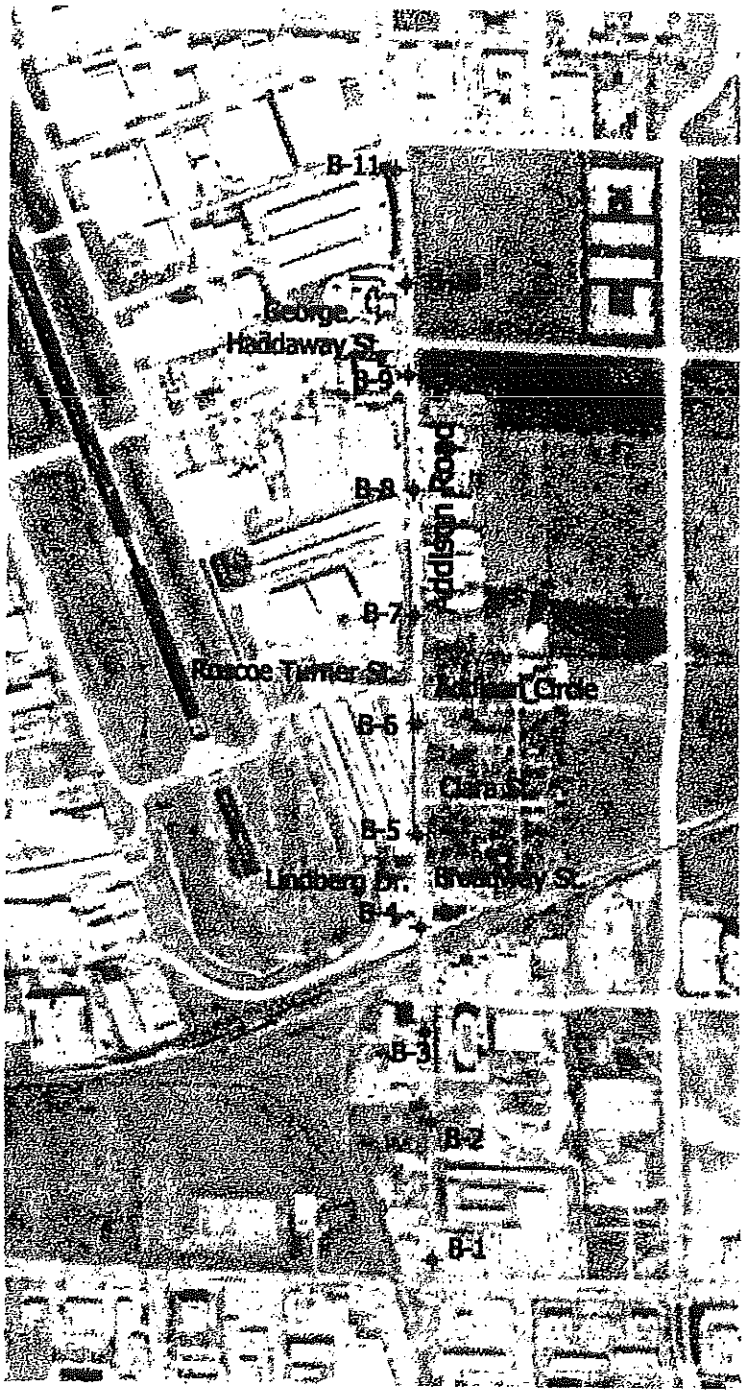
[3] Haston, J.S., "A Quick Method for Selecting the Optimum Lime content for Subgrade Stabilization," approved in 1996 for publication in as a technical note in the ASCE *Journal of Construction Engineering and Management*, publication in progress.



Plan of Borings

Addison Road from
Beltline Road to Keller-Springs Road

Drawn by JSH	Scale: As Shown
Date 02-Nov-98	Job No. H9812

Heston Associates

Sheet 1

Heston Assocs., 1824 Holm Oak St., Arlington, TX 76012 Metro (817) 265-2253

AASHTO '86 -- Pavement Analysis Program (1)

Addison Road H9812

********** Rigid Analysis **********

* Pavement Depth	=	9.32	inches
* Design E 18's	=	5,000,000	
* Reliability	=	85.00	percent
* Overall Deviation	=	0.35	
* Modulus of Rupture	=	705.0	psi
* Modulus of Elasticity	=	4,018,000	psi
* Load Transfer, J	=	3.20	
* Mod. of Subgrade Reaction	=	11	psi/in
* Drainage Coefficient	=	0.90	
* Initial Serviceability	=	5.00	
* Terminal Serviceability	=	2.50	

SUMMARY OF LABORATORY TEST RESULTS

CT Job No. : 98.0850
Date : 11/9/98
Haston Job No. : H9812

Location: Addison Road (Between Belt Line & Keller Springs)
Addison, Texas

Boring No.	Depth Feet	Soil Description	Class	Water Content %	Dry Unit Weight pcf	Liquid Limit %	Plastic Limit %	Plasticity Index %	Unconfined Compressive Strength ksf	Unit Strain %
1	0-1.5	CLAY, dark brown,	CH	8.1						
1	1.5-3.0	CLAY, dark brown,	CH	30.4	94	64	21	43		
						68.5 % Passing # 200 Sieve				
1	3.0-4.5	CLAY, dark brown,	CH	31.3	91				3.1	7.6
1	4.5-5.0	CLAY, dark brown,	CH	23.5						
1	9	LIMESTONE, tan, weathered	LS							
2	0-1.5	CLAY, brown, (Fill)	CH	18.7	108					
2	1.5-3.0	CLAY, brown, (Fill)	CH	19.7	111					

SUMMARY OF LABORATORY TEST RESULTS

CT Job No. : 98.0850
Date : 11/9/98
Haston Job No. : H9812

Location: Addison Road (Between Belt Line & Keller Springs)
Addison, Texas

Boring No.	Depth Feet	Soil Description	Class	Water Content %	Dry Unit Weight pcf	Liquid Limit %	Plastic Limit %	Plasticity Index %	Unconfined Compressive Strength ksf	Unit Strain %
3	0-1.5	CLAY, dark brown, (Fill)	CH	11.8	116					
3	1.5-3.0	CLAY, dark brown,	CH	30.1	92					
3	3.0-4.5	CLAY, brown,	CH	29.0	94				2.3	4.7
3	4.5-6.0	CLAY, brown,	CH	29.8						
3	6.0-7.5	CLAY, tan,	CH	29.9		60	19	41		
						76.8 % Passing # 200 Sieve				
3	7.5-9.0	CLAY, tan,	CH	21.1						

SUMMARY OF LABORATORY TEST RESULTS

CT Job No. : 98.0850
Date : 11/9/98
Haston Job No. : H9812

Location: Addison Road (Between Belt Line & Keller Springs)
Addison, Texas

Boring No.	Depth Feet	Soil Description	Class	Water Content %	Dry Unit Weight pcf	Liquid Limit %	Plastic Limit %	Plasticity Index %	Unconfined Compressive Strength ksf	Unit Strain %
4	0-1.5	CLAY, dark brown, (Fill)	CH	15.5	105					
4	1.5-3.0	CLAY, dark brown, (Fill)	CL	20.3	103	39	14	25		
						39.6 % Passing # 200 Sieve				
4	3.0-4.5	CLAY, dark brown,	CH	34.8						
4	4.5-6.0	CLAY, dark brown,	CH	33.5						
4	6.0-7.5	CLAY, brown & tan,	CH	34.2						
4	7.5-9.0	CLAY, brown & tan,	CH	32.8						
5	0-1.5	CLAY, dark brown,	CH	35.4	109					
5	1.5-3.0	CLAY, brown,	CH	32.9	87					

SUMMARY OF LABORATORY TEST RESULTS

CT Job No. : 98.0850
Date : 11/9/98
Haston Job No. : H9812

Location: Addison Road (Between Belt Line & Keller Springs)
Addison, Texas

Boring No.	Depth Feet	Soil Description	Class	Water Content %	Dry Unit Weight pcf	Liquid Limit %	Plastic Limit %	Plasticity Index %	Unconfined Compressive Strength ksf	Unit Strain %
6	0-1.5	CLAY, dark brown,	CH	30.8	93					
6	1.5-3.0	CLAY, dark brown,	CH	29.7	92					
7	0-1.5	CLAY, brown, with limestone particles (Fill)	CL	13.3	112	25.7 % Passing # 200 Sieve				
7	1.5-3.0	CLAY, dark brown,	CH	30.3	94					
7	3.0-4.5	CLAY, dark brown,	CH	34.4						
7	4.5-6.0	CLAY, dark brown,	CH	34.0		70	22	48		
						78.2 % Passing # 200 Sieve				
7	6.0-7.5	CLAY, brown & tan, with limestone particles	CH	27.3						

SUMMARY OF LABORATORY TEST RESULTS

CT Job No. : 98.0850
Date : 11/9/98
Haston Job No. : H9812

Location: Addison Road (Between Belt Line & Keller Springs)
Addison, Texas

Boring No.	Depth Feet	Soil Description	Class	Water Content %	Dry Unit Weight pcf	Liquid Limit %	Plastic Limit %	Plasticity Index %	Unconfined Compressive Strength ksf	Unit Strain %
8	0-1.5	CLAY, dark brown,	CH	16.3						
8	1.5-3.0	CLAY, dark brown,	CH	34.9	90					
8	3.0-4.5	CLAY, brown,	CH	30.6						
8	4.5-6.0	CLAY, tan,	CH	30.3		65	23	42		
						70.6 % Passing # 200 Sieve				
8	6.0-7.5	CHALKY CLAY, tan,	CL	18.1						
9	0-1.5	CLAY, brown, with limestone particles	CL	27.3		22.4 % Passing # 200 Sieve				

SUMMARY OF LABORATORY TEST RESULTS

CT Job No. : 98.0850
Date : 11/9/98
Haston Job No. : H9812

Location: Addison Road (Between Belt Line & Keller Springs)
Addison, Texas

Boring No.	Depth Feet	Soil Description	Class	Water Content %	Dry Unit Weight pcf	Liquid Limit %	Plastic Limit %	Plasticity Index %	Unconfined Compressive Strength ksf	Unit Strain %
10	0-1.5	CLAY, dark brown,	CH	15.1	112					
10	1.5-3.0	CLAY, dark brown,	CH	28.6		61	23	38		
						65.0 % Passing # 200 Sieve				
10	3.0-4.5	CLAY, brown & tan, with limestone particles	CH	25.8						
11	0-1.5	CLAY, brown, with limestone particles (Fill)	CH	27.0	95					
11	1.5-3.0	CLAY, brown, with limestone particles (Fill)	CH	25.2	95	54	25	29		
						60.4 % Passing # 200 Sieve				
11	3.0-4.5	CLAY, dark brown,	CH	35.9						
11	4.5-6.0	CLAY, dark brown,	CH	35.7	85				1.9	10.3

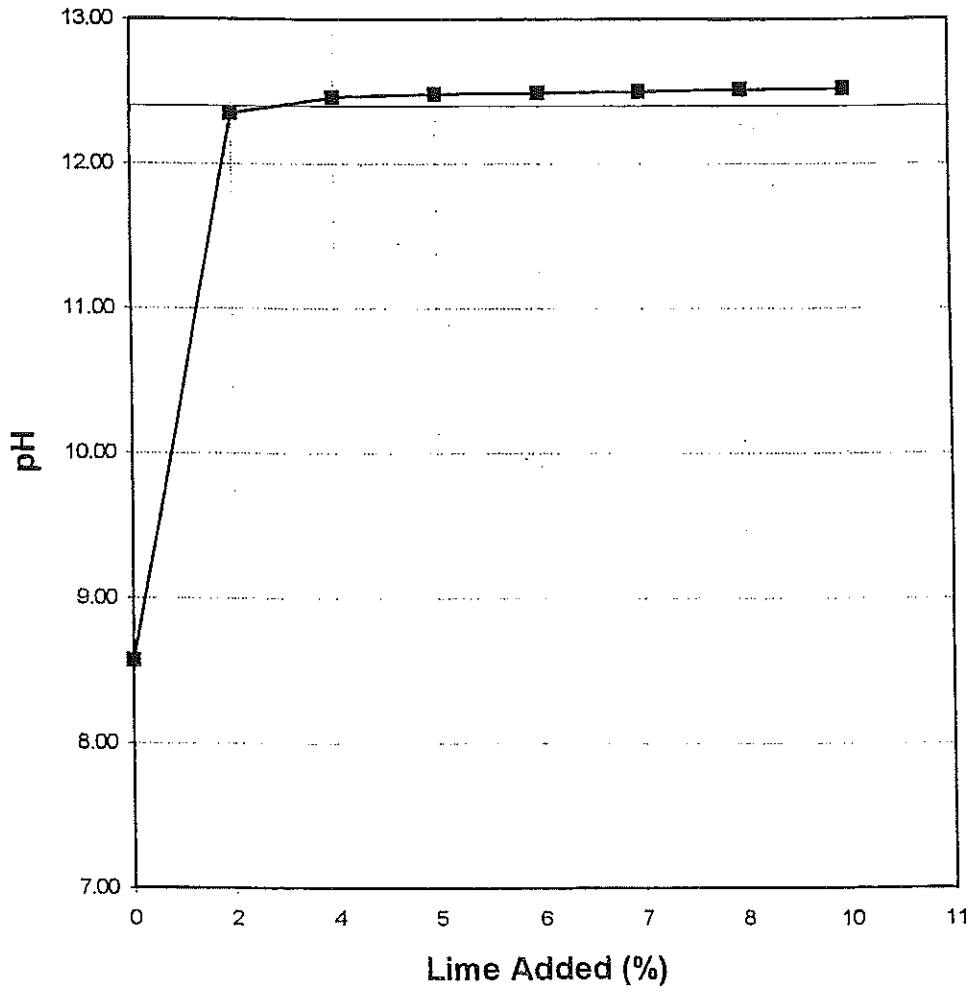
pH Lime Series ASTM C977

Haston Job Number H 9812

Addison Road (Between Belt Line & Keller Springs)

Boring #1 @ 1.5-3.0' - Dark brown clay

Lime Added (%)	pH
0	8.57
2	12.35
4	12.46
5	12.48
6	12.49
7	12.50
8	12.51
10	12.52



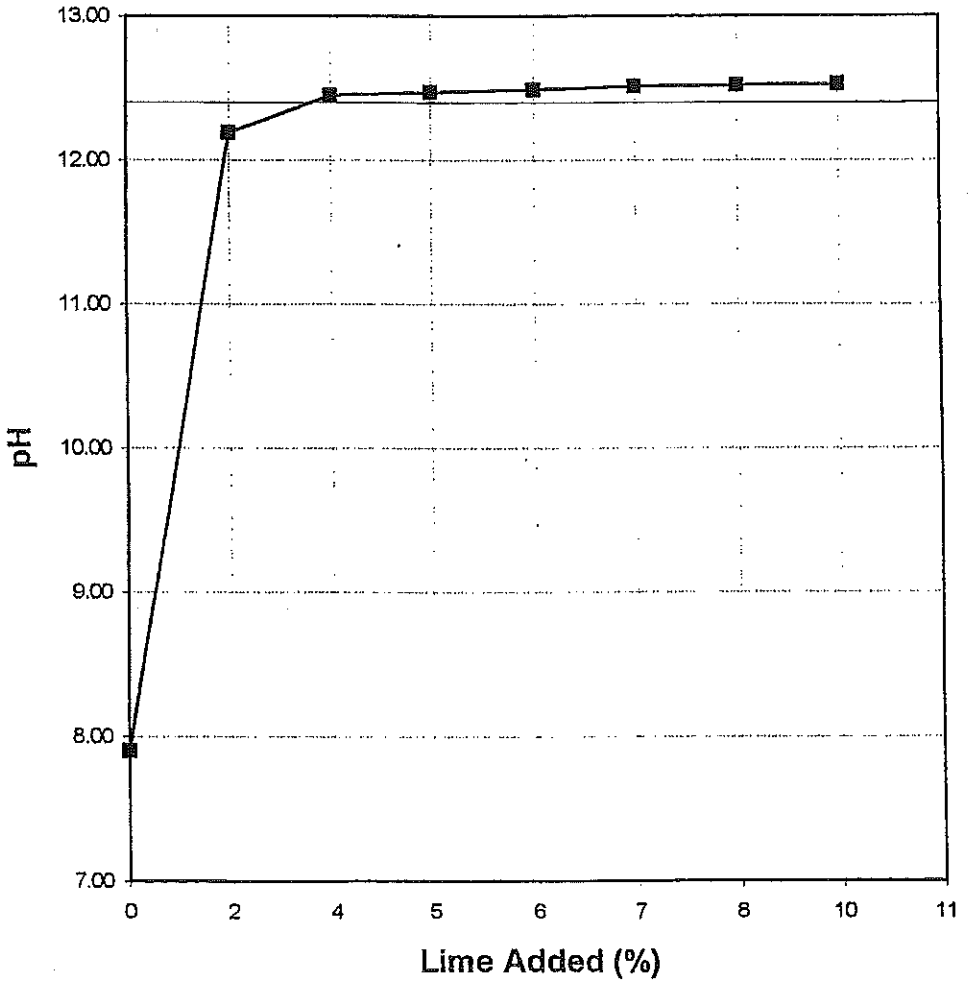
pH Lime Series ASTM C977

Haston Job Number H 9812

Addison Road (Between Belt Line & Keller Springs)

Boring #4 @ 1.5-3.0' - Dark brown clay

Lime Added (%)	pH
0	7.90
2	12.19
4	12.45
5	12.47
6	12.49
7	12.51
8	12.52
10	12.53



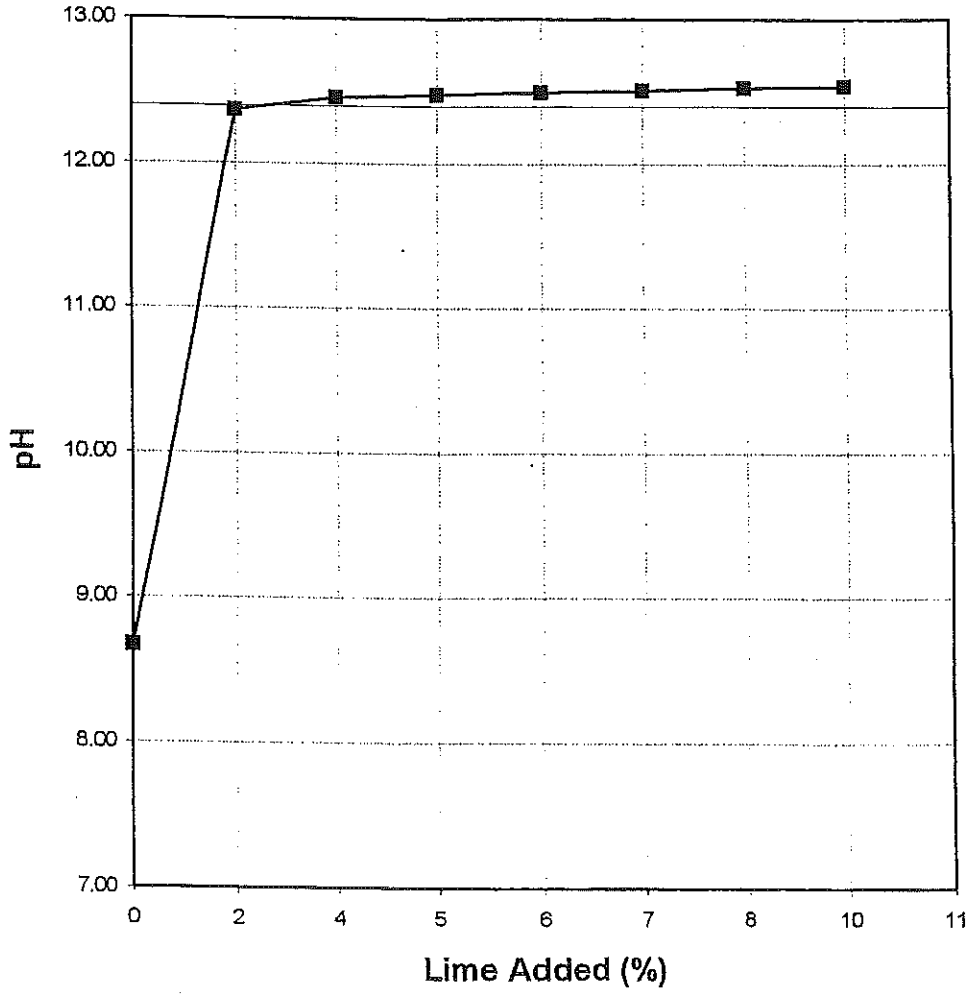
pH Lime Series ASTM C977

Haston Job Number H 9812

Addison Road (Between Belt Line & Keller Springs)

Boring #8 @ 0-1.5' - Dark brown clay

Lime Added (%)	pH
0	8.67
2	12.37
4	12.46
5	12.48
6	12.50
7	12.51
8	12.53
10	12.54



LOG OF BORING

PROJECT : Addison Road - # H9812 BORING NO : 1

CLIENT : Haston Associates LOCATION : Addison, Texas

CT JOB NO : 98.0850 BORING TYPE : CFA

DATE : 11/6/98 DRILLER: Luna GROUND ELEVATION: -

Legend:

S - Shelby Tube
P - STD Penetration Test
T - THD Cone Penetration Test
B - Bag
C - Core
X - No Recovery
▽ - Water Table

Depth - Feet	Symbol	Sample Type	Penetrometer Readings, TSF	Penetration Test, Blows/6"	Description of Stratum	
		X	-		Asphalt 10", Base 2"	1.0'
		S	2.50		Dark brown clay, very stiff & moist	
		S	2.25			
5		S	3.00			5.0'
					Tan weathered limestone, soft & dry	
10		TX		50/2.75 50/2.00		
15						
					End of boring 10'	
20					Note: Boring dry at completion.	
25						
30						
35						
40						

LOG OF BORING

PROJECT : Addison Road - # H9812 BORING NO : 2

CLIENT : Haston Associates LOCATION : Addison, Texas

CT JOB NO : 98.0850 BORING TYPE : CFA

DATE : 11/6/98 DRILLER: Luna GROUND ELEVATION: -

Legend:

S - Shelby Tube
P - STD Penetration Test
T - THD Cone Penetration Test
B - Bag
C - Core
X - No Recovery
▽ - Water Table

Depth -Feet	Symbol	Sample Type	Penetrometer Reading, TSF	Penetration Test, Blows/6"	Description of Stratum	
		X	-		Asphalt 5", Base 1"	0.5'
		S	4.25		Brown clay, hard & moist (Fill)	
		S	3.75			
5						
10						
15					End of boring 3'	
20					Note: Stopped boring at 3' due to top of sewer line.	
25						
30						
35						
40						

LOG OF BORING

PROJECT : Addison Road - # H9812 BORING NO : 3

CLIENT : Haston Associates LOCATION : Addison, Texas

JOB NO : 98.0850 BORING TYPE : CFA

DATE : 11/6/98 DRILLER: Luna GROUND ELEVATION: -

Legend:

S - Shelby Tube
P - STD Penetration Test
T - THD Cone Penetration Test
B - Bag
C - Core
X - No Recovery
▽ - Water Table

Depth - Feet	Symbol	Sample Type	Penetrometer Reading, TSF	Penetration Test, Blows/6"	Description of Stratum	
		X	-		Asphalt with concrete 8", Base 2"	0.8'
		S	4.00		Dark brown clay, hard & moist (Fill)	1.5'
		S	2.50		Dark brown clay, very stiff & moist	3.0'
		S	2.50			
5		S	3.00		Brown clay, very stiff & moist	6.0'
		S	2.75		Tan clay, very stiff & moist	9.0'
		S	2.50			
10		TX	50/1.75 50/1.25		Tan weathered limestone, soft & dry	
15						
20						
25						
30						
35						
40						

End of boring 10'

Note: Boring dry at completion.

LOG OF BORING

PROJECT : Addison Road - # H9812 BORING NO : 4

CLIENT : Haston Associates LOCATION : Addison, Texas

JOB NO : 98.0850 BORING TYPE : CFA

DATE : 11/6/98 DRILLER: Luna GROUND ELEVATION: -

Legend:

S - Shelby Tube
P - STD Penetration Test
T - THD Cone Penetration Test
B - Bag
C - Core
X - No Recovery
▽ - Water Table

Depth - Feet	Symbol	Sample Type	Penetrometer Reading, TSF	Penetration Test, Blows/6"	Description of Stratum	
		X	-		Asphalt with concrete 9", Base 2"	0.9'
		S	4.5+		Dark brown clay, hard & moist (Fill)	3.0'
		S	2.50			
		S	1.00		Dark brown clay, stiff & moist	6.0'
5		S	2.00			
		S	2.00		Brown & tan clay, very stiff & moist	9.0'
		S	2.50			
10		TX	50/3.00		Tan weathered limestone, soft & dry	
			50/2.25			
15						
20					End of boring 10'	
25					Note: Boring dry at completion.	
30						
35						
40						

LOG OF BORING

PROJECT : Addison Road - # H9812 BORING NO : 5

CLIENT : Haston Associates LOCATION : Addison, Texas

CT JOB NO : 98.0850 BORING TYPE : CFA

DATE : 11/6/98 DRILLER: Luna GROUND ELEVATION: -

Legend:

S - Shelby Tube
P - STD Penetration Test
T - THD Cone Penetration Test
B - Bag
C - Core
X - No Recovery
▽ - Water Table

Depth - Feet	Symbol	Sample Type	Penetrometer Readings, TSF	Penetration Test, Blows/6"	Description of Stratum	
		X	-		Asphalt with concrete 9"	0.8'
		S	3.25		Dark brown clay, very stiff & moist	1.5'
		S	2.50		Brown clay, very stiff & moist	5.0'
					Grey limestone, medium hard & dry	6.5'
					Tan limestone, medium hard & dry	8.0'
10		TX		50/1.25 50/0.75	Grey limestone, medium hard & dry	
15						
					End of boring 10'	
20					Note: Boring dry at completion.	
25						
30						
35						
40						

LOG OF BORING

PROJECT : Addison Road - # H9812 BORING NO : 6

CLIENT : Haston Associates LOCATION : Addison, Texas

CT JOB NO : 98.0850 BORING TYPE : CFA

DATE : 11/6/98 DRILLER: Luna GROUND ELEVATION: -

Legend:

S - Shelby Tube
P - STD Penetration Test
T - THD Cone Penetration Test
B - Bag
C - Core
X - No Recovery
▽ - Water Table

Depth -Feet	Symbol	Sample Type	Penetrometer Reading, TSF	Penetration Test, Blows/6"	Description of Stratum	
		X	-		Asphalt with concrete 7", Base 4"	0.9'
		S	4.5+		Dark brown clay, hard & moist	
		S	4.00			3.0'
5					Tan weathered limestone, soft & dry	
						6.5'
10		TX	50/1.00 50/0.50		Grey limestone, medium hard & dry	
15						
					End of boring 10'	
20					Note: Boring dry at completion.	
25						
30						
35						
40						

LOG OF BORING

PROJECT : Addison Road - # H9812 BORING NO : 7

CLIENT : Haston Associates LOCATION : Addison, Texas

JOB NO : 98.0850 BORING TYPE : CFA

DATE : 11/6/98 DRILLER: Luna GROUND ELEVATION: -

Legend:

S - Shelby Tube
P - STD Penetration Test
T - THD Cone Penetration Test
B - Bag
C - Core
X - No Recovery
▽ - Water Table

Depth - Feet	Symbol	Sample Type	Penetrometer Reading, TSF	Penetration Test, Blows/6"	Description of Stratum	
		X	-		Asphalt with concrete 9", Base 2"	0.9'
		S	4.5+		Brown clay with limestone particles, hard & moist (Fill)	1.5'
		S	3.00		Dark brown clay, very stiff & moist	
5		S	3.00			
		S	2.50			6.0'
		S	4.5+		Brown & tan clay with limestone particles, hard & moist	9.0'
10		TX	50/2.75 50/2.00		Tan weathered limestone, soft & dry	
15						
					End of boring 10'	
20					Note: Boring dry at completion.	
25						
30						
35						
40						

LOG OF BORING

PROJECT : Addison Road - # H9812 BORING NO : 8

CLIENT : Haston Associates LOCATION : Addison, Texas

JOB NO : 98.0850 BORING TYPE : CFA

DATE : 11/6/98 DRILLER: Luna GROUND ELEVATION: -

Legend:

S - Shelby Tube
P - STD Penetration Test
T - THD Cone Penetration Test
B - Bag
C - Core
X - No Recovery
▽- Water Table

Depth - Feet	Symbol	Sample Type	Penetrometer Reading, TSF	Penetration Test, Blows/6"	Description of Stratum	
		X	-		Asphalt with concrete 10", Base 2"	1.0'
		S	4.5+		Dark brown clay, very stiff & moist	3.0'
		S	2.50			
		S	2.25		Brown clay, very stiff & moist	4.5'
5		S	2.75		Tan clay, very stiff & moist	6.0'
		S	4.5+		Tan chalky clay, hard & moist	7.5'
10		TX	50/1.75 50/1.00		Tan weathered limestone, soft & dry	
15						
					End of boring 10'	
20					Note: Boring dry at completion.	
25						
30						
35						
40						

LOG OF BORING

PROJECT : Addison Road - # H9812 BORING NO : 9

CLIENT : Haston Associates LOCATION : Addison, Texas

CT JOB NO : 98.0850 BORING TYPE : CFA

DATE : 11/6/98 DRILLER: Luna GROUND ELEVATION: -

Legend:

S - Shelby Tube
P - STD Penetration Test
T - THD Cone Penetration Test
B - Bag
C - Core
X - No Recovery
▽ - Water Table

Depth - Feet	Symbol	Sample Type	Penetrometer Readings, TSF	Penetration Test, Blows/6"	Description of Stratum	
		X	-		Asphalt 1", Concrete 7"	0.7'
		S	4.5+		Brown clay with limestone particles, hard & moist	1.5'
5					Tan weathered limestone, soft & dry	6.0'
					Grey limestone, medium hard & dry	7.0'
10		TX		50/1.25 50/1.00	Tan weathered limestone, soft & dry	
15						
20					End of boring 10'	
25					Note: Boring dry at completion.	
30						
35						
40						

LOG OF BORING

PROJECT : Addison Road - # H9812 BORING NO : 10

CLIENT : Haston Associates LOCATION : Addison, Texas

CT JOB NO : 98.0850 BORING TYPE : CFA

DATE : 11/6/98 DRILLER: Luna GROUND ELEVATION: -

Legend:

S - Shelby Tube
P - STD Penetration Test
T - THD Cone Penetration Test
B - Bag
C - Core
X - No Recovery
▽ - Water Table

Depth -Feet	Symbol	Sample Type	Penetrometer Reading, TSF	Penetration Test, Blows/6"	Description of Stratum	
		X	-		Asphalt 8", Base 2"	0.8'
		S	4.5+		Dark brown clay, hard & moist	3.0'
		S	4.00		Brown & tan clay with limestone particles, very stiff & moist	4.5'
		S	2.50			
5					Tan weathered limestone, soft & dry	
10		TX	50/1.25 50/1.00			
15						
20					End of boring 10'	
25					Note: Boring dry at completion.	
30						
35						
40						

LOG OF BORING

PROJECT : Addison Road - # H9812 BORING NO : 11

CLIENT : Haston Associates LOCATION : Addison, Texas

JOB NO : 98.0850 BORING TYPE : CFA

DATE : 11/6/98 DRILLER: Luna GROUND ELEVATION: -

Legend:

S - Shelby Tube
P - STD Penetration Test
T - THD Cone Penetration Test
B - Bag
C - Core
X - No Recovery
▽ - Water Table

Depth - Feet	Symbol	Sample Type	Penetrometer Reading, TSF	Penetration Test, Blows/6"	Description of Stratum	
		X	-		Asphalt 9"	0.8'
		S	2.25		Brown clay with limestone particles, very stiff & moist (Fill)	
		S	3.50			3.5'
5		S	2.00		Dark brown clay, stiff & moist	
		S	1.00			6.0'
					▽	6.5'
					Tan weathered limestone, soft & dry	
10		TX	50/0.75 50/0.25			
15						
					End of boring 10'	
20					Note: Water at completion of boring 10.0'.	
25						
30						
35						
40						

ACORD™ CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YY): 01/10/2007

PRODUCER
Allied N. America Corp. of Tx
12770 Colt Road, Suite 750
Dallas, TX 75251
(972)455-1400 F:(972)387-8837

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

INSURERS AFFORDING COVERAGE

INSURED
JRJ Paving, LP
P. O. Box 2136
Denton, Texas 76202

INSURER A: Virginia Surety Company, Inc.
INSURER B: Great American Insurance Co
INSURER C:
INSURER D:
INSURER E:

COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
A	GENERAL LIABILITY [X] COMMERCIAL GENERAL LIABILITY [ ] CLAIMS MADE [X] OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: [ ] POLICY [X] PRO-JECT [ ] LOC	2CG50346700	08/29/06	08/29/07	EACH OCCURRENCE FIRE DAMAGE (Any one fire) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$ 1,000,000 $ 500,000 $ 50,000 $ 1,000,000 $ 2,000,000 $ 2,000,000
A	AUTOMOBILE LIABILITY [X] ANY AUTO [ ] ALL OWNED AUTOS [ ] SCHEDULED AUTOS [X] HIRED AUTOS [X] NON-OWNED AUTOS	2CA50346600	08/26/06	08/29/07	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$ 1,000,000 $ $ $
	GARAGE LIABILITY [ ] ANY AUTO				AUTO ONLY - EA ACCIDENT OTHER THAN AUTO ONLY: EA ACC AGG	$ $ $
B	EXCESS LIABILITY [X] OCCUR [ ] CLAIMS MADE [ ] DEDUCTIBLE [ ] RETENTION $	TUU6627691	08/29/06	08/29/07	EACH OCCURRENCE AGGREGATE	$ 10,000,000 $ 10,000,000 $ $ $
A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY	2CW50346800	08/29/06	08/29/07	[X] WC STATUTORY LIMITS [ ] OTHER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	 $ 1,000,000 $ 1,000,000 $ 1,000,000
	OTHER					

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/EXCLUSIONS ADDED BY ENDORSEMENT/SPECIAL PROVISIONS

Project: Paving and Drainage Improvements to Addison Road Phase I from Beltline Road to Arapaho Road / Bid # 07-01
If required by written contract signed by Named Insured, Town of Addison as Project Owner and Birkhoff, Hendricks & Conway, L.L.P. are named Additional Insured as Primary basis, excluding Professional Liability, and are provided Waiver of Subrogation for all coverages.

CERTIFICATE HOLDER | [ ] ADDITIONAL INSURED; INSURER LETTER: ___ | CANCELLATION

Town of Addison
Purchasing Department
P. O. Box 9010
Addison Texas 75001

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ~~EXDEAVOR TO~~ MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, ~~BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES.~~

AUTHORIZED REPRESENTATIVE

ACORD 25-S (7/97)