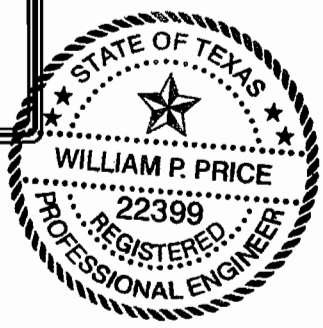
TRENCH SAFETY SPECIFICATIONS FOR BROOKHAVEN CLUB DRIVE SANITARY SEWER LINE

CITY OF ADDISON, TEXAS

Prepared for
BARSON UTILITY COMPANY

Project # 7410

TREN-TECH COMPANY
828 HOWELL DR.
COPPELL, TEXAS 75019
972-304-2171



I have reviewed these Trench Safety Guidelines and find that the recommendations and procedures conform to OSHA guidelines and regulations. The calculations herein are consistent with generally accepted engineering practice.

William P. Price, PE — 1.14.03

REGISTERED PROFESSIONAL ENGINEER **DATE**

1.0 DESIGN ASSUMPTIONS

1.1 General. These specifications cover the basic requirements for shoring and/or sloping of excavations for the installation of SANITARY SEWER LINES for the BROOKHAVEN CLUB DRIVE in the CITY of ADDISON, TEXAS.

1.2 This specification addresses the safety of workers in a trench excavation and does not, in any way relieve the Contractor of his responsibility and liability to ensure the safety of the project and workers.

1.3 It is not the intent of these specifications to specify every detail and procedure of the trenching/shoring operations; nevertheless, they shall conform to the high standards of engineering and of safe trench excavation.

1.4 The personnel protection systems shown in these specifications have been designed based on information obtained from the project drawings and specifications.

1.5 In accordance with Revised OSHA (Appendix A to Subpart P effective March 2,1990), the Contractor's "Competent Person" will conduct the required Soil Classification Tests. If soils other than those previously identified are found, this specification will be revised. During construction, the Contractor's "Competent Person" will monitor the soil classification as required by OSHA 1926.

1.6 Contractor shall be responsible for selecting the appropriate safety system option shown in these specifications, depending on trench depth and soil conditions.

1.7 The protection of existing structures and utilities which may be affected by these trench excavations is beyond the scope of this report (See Sect.4.2)

1.8 The Contractor must identify a "Competent Person" in the Contractor's firm responsible for performing inspections of the excavations to ensure that expected subsurface conditions are present. NOTE-This person must be "Competent" as described in OSHA 1926.650(b).

1.9 It is the Contractor's responsibility to ensure that all excavation work and site conditions are within the regulations as established by OSHA. Any property damage or bodily injury (including death) arising from the use of these specifications, from the Contractor's negligence in performance of contract work, or from Owner's failure to note exceptions to these specifications shall remain the sole responsibility and liability of the contractor.

2.0 DEFINITIONS

2.1 All definitions of section 1926.650 of Subpart P, Part 1926, of the Code of Federal Regulations shall be by reference an integral part of this section.

2.2 "Sealing Engineer"- The engineer whose Texas seal is affixed to these specifications.

2.3 "The Contractor"-The contractor responsible to the owner for the excavation work described herein.

2.4 "Competent" as described in OSHA 1926.650(b).

3.0 APPLICABLE CODE AND STANDARDS

3.1 The Contractor shall perform all shoring work under this contract in accordance with all applicable codes and standard safety requirements and regulations including:

3.1.1 OSHA 2207, Construction Industry Standards (Part 1926, Occupational Safety and Health Standards)

3.1.2 AISC Code of Standard Practice.

3.1.3 AISC Specifications of the design, fabrication, and erection of steel buildings

3.1.4 AITC Timber Construction Manual

3.1.5 AWS D1.1 Structural Welding Code

3.1.6 The Uniform Building Code

3.1.7 OSHA 2226

3.1.8 U S Army Corps of Engineers EM 385-1-1

3.2 The latest edition (including supplements and revisions) of the above publications in effect or promulgated at the time of the bid shall apply. Equipment fabricated to codes and standards in effect at time of bid but later revised shall be acceptable provided such revisions are not required by law.

4.0 SHORING/SLOPING

4.1 Description.

This section covers the technical requirements of the trenching/shoring work.

4.2 Existing Structures.

Where existing buildings, other utilities, streets, highways, or other structures are in close proximity to the trench, or may otherwise be affected by the proposed trenching operation, the Contractor shall provide adequate protection by the use of sheeting and shoring to protect the structure, street, or highway from possible damage. In the case of utilities, the Contractor may elect to remove the utility, provided that the removal and subsequent replacement meet with the approval of the engineer, the utility owner, or whoever has jurisdiction of the structure. In all cases, it shall be the responsibility of the Contractor to protect public and private property and any person or persons who might, as a result of the Contractor's work, be injured.

4.3 General Trenching and Shoring Requirements.

The Contractor shall be solely responsible for trench safety provisions meeting the applicable requirements of the United States Department of Labor-Occupational Safety and Health Administration, including subpart P, Part 1926, of the Code of Federal Regulations. All trenching operations and procedure shall also conform to the requirements listed in this specification.

4.3.1 The requirements of sections 1926.650 and 1926.651 of Subpart P, Part 1926, of the Code of Federal Regulations shall be by reference an integral part of this section.

4.4 REQUIREMENTS PRIOR TO EXCAVATION

4.4.1 Known underground installations are shown on the site plans. It is the Contractor's responsibility to verify exact locations in the field.

4.4.2 Before any individual enters an excavation, the excavation will be inspected by a "Competent Person" to ensure that trench excavation has been performed according to this specification and OSHA requirements and to ensure that no anomalies are observed which may effect the safety of the trench project. Note-This person must be "Competent" as described in OSHA 1926.650(b).

4.5 REQUIREMENTS DURING EXCAVATION

4.5.1 During excavation, the exact location of existing underground installations shall be determined by the Contractor, and when uncovered, proper precautions and supports shall be provided so as not to cause a hazard to the workmen or the project.

4.5.2 Daily inspections of the excavations shall be made by the Competent Person". If there is evidence of possible cave-ins or slides, all work in the excavation shall cease until the necessary precautions have been taken to ensure the safety of the workmen and the trench. Note-This person must be "Competent" as described in OSHA 1926.650. Excavations shall be inspected after every rainstorm or other hazard-increasing occurrence to ensure safety of the workmen and the trench.

4.5.3 Excavated material shall be stockpiled a distance away from the trench, so as not to affect the trench stability. The Contractor's means and methods will determine the distance. As a minimum to protect the workmen from falling debris, the toe of the stockpiled soil shall be no closer than two(2) feet from the edge of the excavation.

4.5.4 All precautions must be made to prevent surface water from entering the trench excavation. Adequate drainage must be provided in the area adjacent to the excavation.

4.5.5 Operation of heavy equipment adjacent to the edge of the trench may cause instability. The Contractor is responsible for the means and methods of excavation, and therefore, for loads imposed on the trench excavation and shoring design.

4.5.6 The Contractor must take precautions to protect the face of the excavation from exposure to excessive drying, water, or freezing.

4.5.7 Water shall not be permitted to stand in the bottom of the trench and suction pumps of adequate capacity shall be installed to ensure that such standing water is removed.

4.5.8 The Contractor shall provide a positive means of ensuring that hydrostatic pressure does not build up behind the shoring or shields.

4.5.9 If a condition requiring the use of a different method of shoring is encountered, this specification will be revised.

4.5.10 Remove shoring units from bottom to top as backfilling proceeds.

4.5.11 When backfill is within five(5) feet of the top of the trench, all shoring may be removed, unless the trench conditions indicate a hazard.

4.5.12 No person shall be exposed to the lower portion of the trench after shoring has been removed.

4.5.13 Additional shoring of larger sizes may be installed.

4.5.14 Ladders or other adequate means of exit must be provided and located so as to require no more than twenty-five(25) feet of lateral travel.

4.5.15 When two(2) trenches intersect, both trenches must be protected to a distance of not less that the depth of the deepest trench.

4.6 REQUIREMENTS FOR CONFINED SPACE

4.6.1 Prior to construction the contractor shall identify any areas near the proposed excavations that could expose workmen to harmful levels of atmospheric contaminants (i.e. landfills, manholes or materials storage).

4.6.2 During construction, before workmen are allowed in an excavation or existing structure, the contractor shall test the air quality at these previously identified areas for hazardous atmospheres in all excavations greater than four (4) feet in depth. Atmospheres containing less than 19.5 percent oxygen or more than 20 percent concentration of flammable gas shall be deemed "hazardous" adequate precautions shall be taken.

4.6.3 Retesting of work areas shall be conducted as often as necessary to ensure that the atmosphere remains safe for workmen.

4.6.4 During construction, emergency rescue equipment shall be readily available where potentially hazardous conditions are expected to develop.

4.6.5 As a minimum, the contractor shall have on site the following emergency equipment. Breathing apparatus, a safety harness and line, or a basket stretcher. During construction in potentially hazardous areas, the required equipment shall be attended.

SECTION 5.0

SITE SPECIFIC EXCAVATIONS

AND

SHORING SPECIFICATIONS

FOR

SANITARY SEWER LINES

5.1 EXCAVATIONS SPECIFIC TO THIS PROJECT

SANITARY SEWER LINE "BROOKHAVEN CLUB DRIVE"

LOCATION	MAX. DEPTH	OPTION	NOTES
0+00	32.0	I, II	CONST. MANHOLE
0+00 TO 0+64.53			INSTALL BY OTOC
0+64.53	27.0	I, II	INSTALL BY OTOC
0+64.53 TO 6+70			INSTALL BY OTOC
6+70	27.0	I, II	CONST. MANHOLE
6+70 TO 12+11.46			INSTALL BY OTOC
12+11.46	19.0	I, II	CONST. MANHOLE
12+11.46 TO 13+59.47			INSTALL BY OTOC
13+59.47	17.0	I, II	CONST. MANHOLE
13+59.47 TO 13+77.61	6.5	I, II, III	INSTALL 10" S.S.
13+77.61	8.5	I, II	CONST. MANHOLE
13+77.61 TO 13+87.61	6.5	I, II, III	INSTALL 10" S.S.

SANITARY SEWER LINE "SS-1"

LOCATION	MAX. DEPTH	OPTION	NOTES
-0+23.77	31.0	I, II	INSTALL MANHOLE
-0+23.77 TO 0+05.31			INSTALL BY OTOC
0+05.31	15.5	I, II	CONST. MANHOLE
0+05.31 TO 0+50±			INSTALL BY OTOC
0+50± TO 1+65	13.5	I, II, III	INSTALL 10" S.S.
1+65	13.0	I, II	CONST. MANHOLE

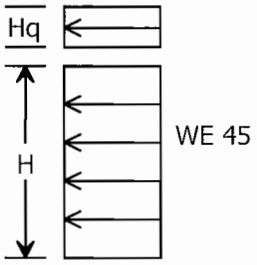
5.2 SHORING CONSIDERATIONS FOR THIS WORK

5.2.1 Trenches more than five(5) deep shall be shored, laid back to a stable slope, or some other equivalent means of protection shall be provided where employees may be exposed to moving ground or cave-ins. *Trenches less than five(5) feet in depth shall also be effectively protected when examination of ground indicates hazardous ground movement may be expected.*
The Contractor will have Options I, II or III for providing such protection.

5.2.2 Lateral Earth Pressure: P = We(H+Hq)

Assumed Soil: Clay

P= a uniformly distributed lateral soil pressure, in lbs./ft^2
We= Effective Soil Weight, pcf(Use 45 psf Type"B" Soil)
H= Depth of excavation from top of supported bank to bottom of excavation in feet.
Hq= Equivalent Height of Surcharge, in feet.
Reference OSHA Rules and Regulations-Part 1926 of 29 CFR as amended by the Federal Register Volume 54, Number 209, October 31, 1989



Maximum anticipated lateral earth pressure for this project is 1530 "PSF"

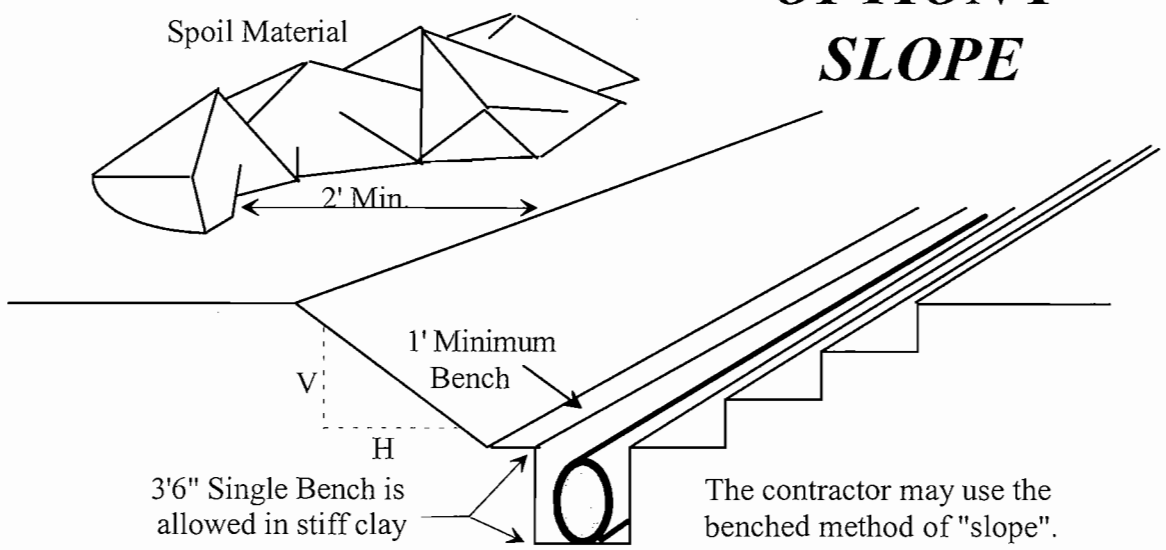
5.2.3 Option I The Contractor can use Slope as shown in the Option I section of the specification. Applicable slopes may be obtained by either straight cut or benched method. Vertical cuts for the benched method shall not exceed four(4) feet. Easement restrictions may limit the use of this option. See Drawing Option I.

5.2.4 Option II The Contractor may use a Trench Shield as shown in the Option II section of this specification. Requirements set forth in this Option shall include curricular trench shield(s) and or manhole boxes. All slopes above trench shield(s) shall conform to guidelines set forth in Option I. Trench shield(s) used on this project will be required to carry a minimum "PSF" as specified. Certification of trench shield(s) or manufacture's "tabulated data" shall be available for verification during construction. See Drawing Option II.

5.2.5 Option III The Contractor can use Trench Shores as shown in the Option III Section of this specification. Shores are to be installed as shown with horizontal spacing determined by the depth of cut and soil type but shall not exceed 6 feet. See Drawing Option III. If there is raveling of the trench wall, the contractor shall install plywood behind the shores as shown on the Option III drawing.

TRENCH SAFETY SPECIFICATIONS

OPTION I SLOPE



H/V - REQUIRED SLOPE PER SOIL TYPE

H/V = ¾ to 1	Stiff clay less than 12 feet in depth (Type "A")
H/V = 1 to 1	Stiff clay or weathered limestone (Type "A" or "B")
H/V = 1½ to1	Silty clays or saturated material (Type "C")
H/V = 2 to 1	Fill material or loose soil.

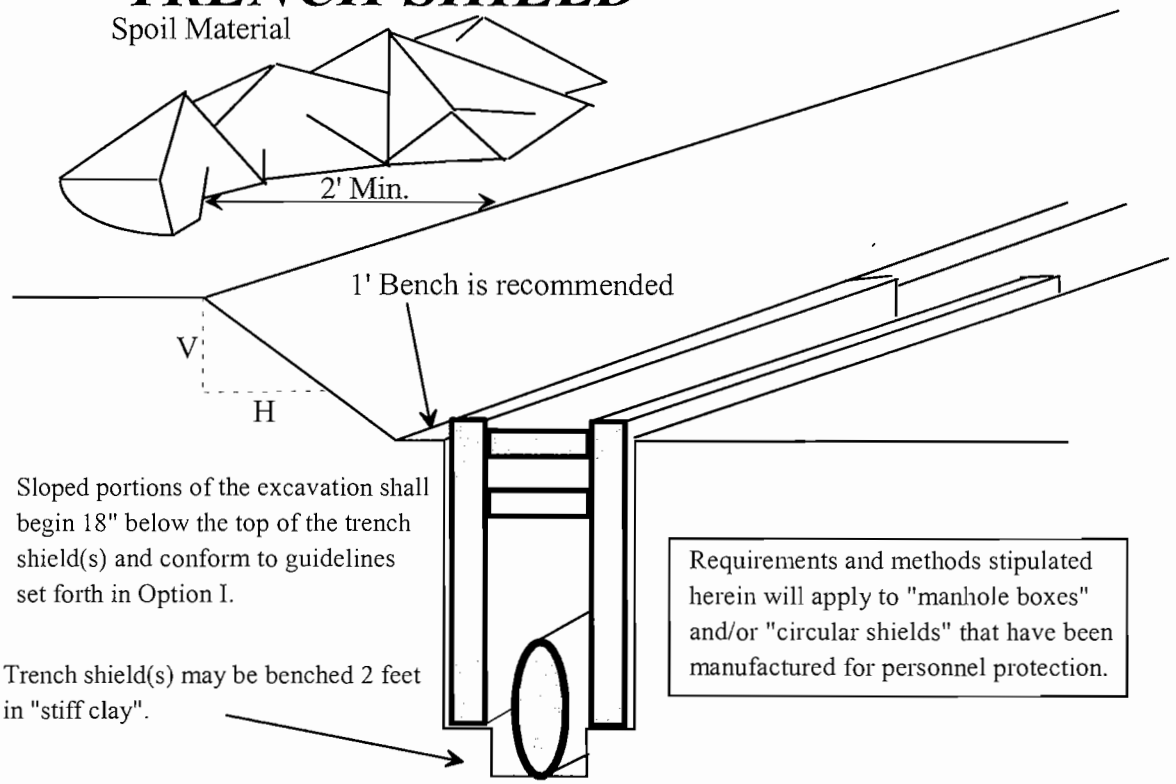
NOTES

1. All trenches shall be dewatered as specified in 4.5.7
2. All slopes assume sufficient right-of-way exists.
3. All slopes shall be flattened an additional ½ foot if an existing parallel utility line is located within the horizontal distance equal to the depth of the new utility excavation.
4. No spoil or equipment shall be permitted nearer than 2 feet from the edge of the excavation.
5. A single 3' 6" vertical bench may be used in "stiff clay" only.
6. Exposed existing utility lines are to be supported.

TRENCH SAFETY SPECIFICATIONS

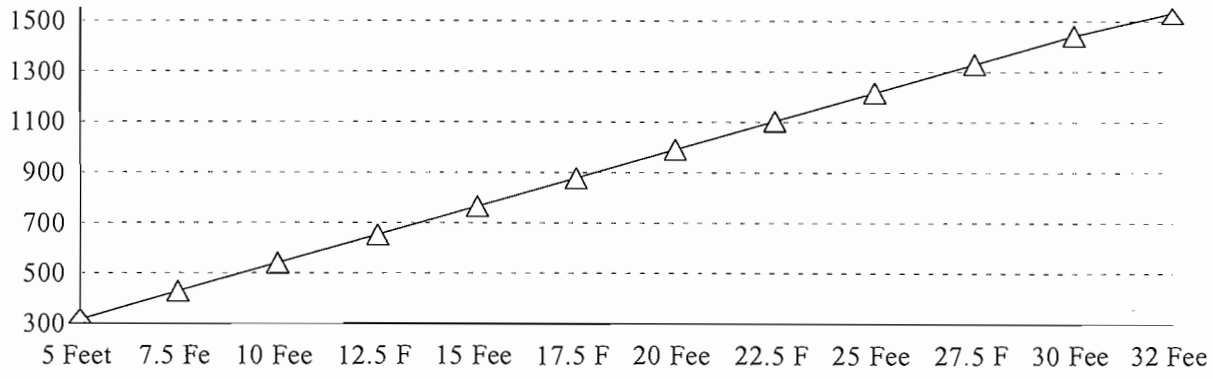
OPTION II

TRENCH SHIELD

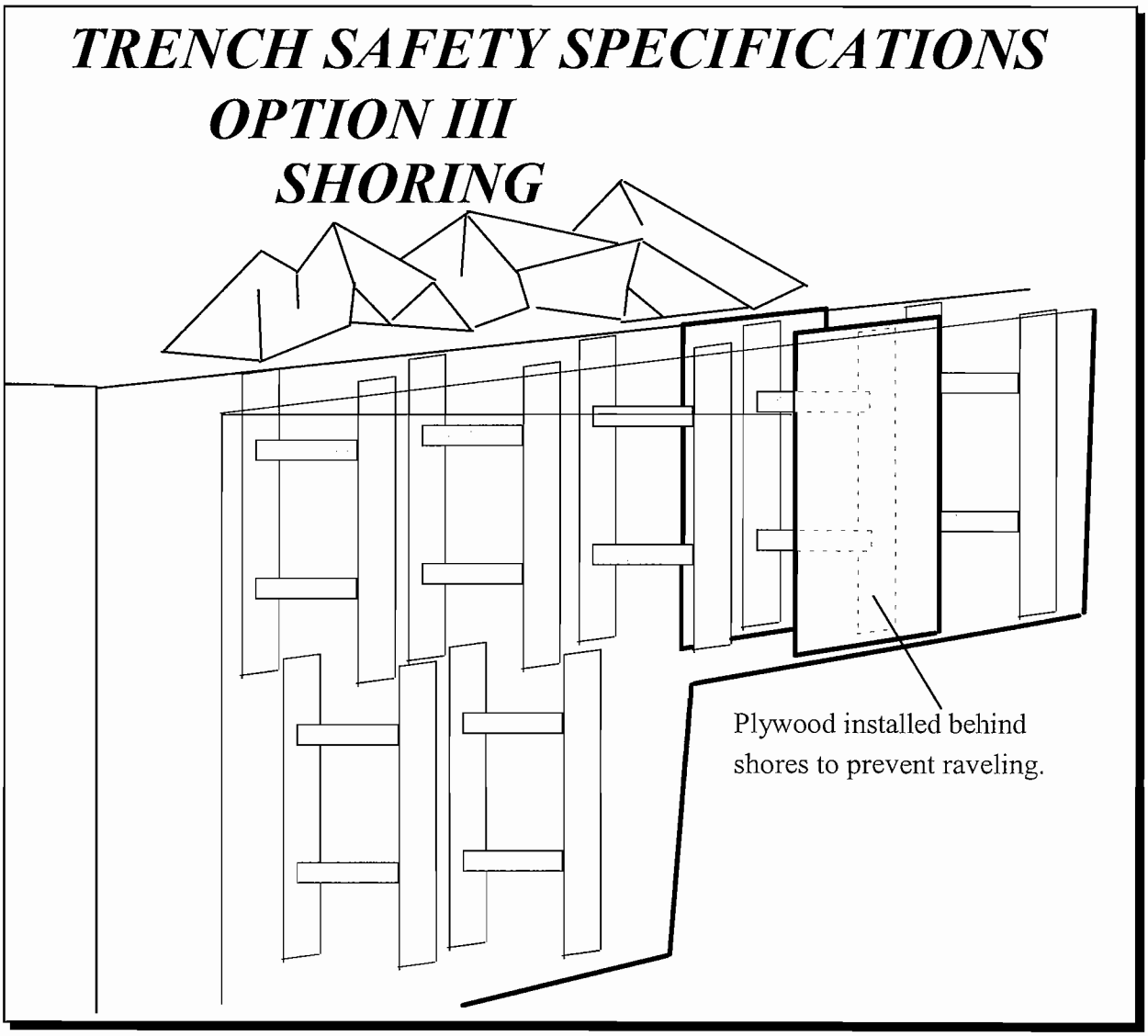


NOTES

1. Trench shields shall be inspected and be free of structural defects that may impair their proper function.
2. Trench shields shall be used in accordance with the manufacturer's guidelines and recommendations.
3. Trench shields shall be installed so as to prevent any lateral or other hazardous movement.
4. Personnel shall not be allowed in the trench shield during its installation or removal from the excavation.
5. When shield(s) are stacked, the upper shield shall be rated for its physical depth in the trench.
6. Trench shield(s) used on this project shall be rated to withstand anticipated **"PSF"** (left side of graph) for depth of cut indicated below. Manufacture's tabulated data or certification shall be maintained on site.



TRENCH SAFETY SPECIFICATIONS
OPTION III
SHORING



NOTES

1. Shores shall be double stacked when trench depths exceed nine (9) feet.
2. Maximum horizontal spacing for double stacked shores shall be five (5) feet.
3. Maximum allowable depth of cut for this Option shall be fourteen (14) feet.
4. Aluminum hydraulic shoring may be used in Type "A" or "B" soils only.
5. Maximum horizontal spacing of shores in Type "A" soil shall be 6 feet.
6. Maximum horizontal spacing of shores in Type "B" soil shall be 5 feet.
7. The contractor's competent person shall inspect shores and verify that they are in good working order.
8. The hydraulic shores shall have a minimum working pressure of 750 psi.
9. The contractor shall adhere to the shoring manufacturer's guidelines for use in trench excavations.
10. If there is evidence of raveling or caving the contractor is required to install $1^{1}/_{8}$" thick plywood or ¾" thick 14 ply arctic white birch (Finnland form).
11. Spoil material will not be allowed nearer than 2' from the edge of the excavation.

Addison!

BID NUMBER 02-45

SPECIFICATIONS, CONTRACT DOCUMENTS AND PLANS
FOR THE CONSTRUCTION OF

BROOKHAVEN CLUB
SANITARY SEWER LINE

PREPARED BY

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

AUGUST, 2002

SPECIFICATIONS, CONTRACT DOCUMENTS AND PLANS FOR THE CONSTRUCTION OF

BROOKHAVEN CLUB SANITARY SEWER LINE

FOR

TOWN OF ADDISON, TEXAS

Prepared for:

Town of Addison
P. O. Box 9010
Addison, Texas 75001

Prepared by:

Birkhoff, Hendricks & Conway, L.L.P.
7502 Greenville Ave., #220
Dallas, Texas 75231

August, 2002

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THESE DOCUMENTS ARE FOR BIDDING, CONSTRUCTION AND PERMIT PURPOSES.

John W Birkhoff

Date: 8/30/02

SECTION AB

ADVERTISEMENT FOR BIDS

SECTION AB

ADVERTISEMENT FOR BIDS

1. Sealed bids addressed to the Town of Addison, Texas, for **Brookhaven Club Sanitary Sewer Line** 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 Minok Suh, Purchasing Coordinator, Finance Building, 5350 Belt Line Road, Addison, Texas until **2:00 p.m. on Tuesday, September 24, 2002**. 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 BROOKHAVEN CLUB SANITARY SEWER LINE, Bid No. 02-45.

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 Minok Suh, Purchasing Coordinator, 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 Minok Suh (972) 450-7091. For information on the work to be performed, call Steve Chutchian, Town of Addison (972) 450-2886 or John Birkhoff of Birkhoff, Hendricks & Conway, L.L.P. (214) 361-7900.

9. The project consists of furnishing and installing perimeter fencing in accordance with the specifications.

10. Estimated quantities for major items include the following:

Description	Quantity
10" Sanitary Sewer Line by Directional Bore	1,400 L.F.
Sanitary Sewer Rehabilitation (Cured-in-Place or Folded-in-Form)	1,000 L.F.

11. No Pre-Bid Conference will be held.

TOWN OF ADDISON, TEXAS

SECTION IB

INSTRUCTIONS TO BIDDERS

SECTION IB

INSTRUCTIONS TO BIDDERS

A. PROJECT: Brookhaven Club Sanitary Sewer Line in the Town of Addison.

B. PROJECT DESCRIPTION: This project consists of furnishing and installing 1,400 linear feet of 10-inch sanitary sewer line by directional bore and 1,000 linear feet of sanitary sewer replacement (cured-in-place or folded-in-form), in accordance with the specifications.

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

D. DOCUMENTS: Documents include the Bidding Requirements, General Provisions, Special provisions, Technical Specifications, Drawings plus Addenda which may be issued by the Consultant during the bidding period. Bidding Documents may be viewed and/or obtained under the terms and conditions set forth in the Advertisement for Bids, Section AB of this Project Manual.

E. EXAMINATION OF DOCUMENTS AND SITE: Bidders shall carefully examine the Bidding Documents and the construction site to obtain first-hand knowledge of the scope and the conditions of the Work. Each Contractor, Subcontractor and Sub-subcontractor, by submitting a proposal to perform any portion of the Work, represents and warrants that he has examined the Drawings, Specifications (Project Manual) and the site of the work, and from his own investigation has satisfied himself as to the scope, accessibility, nature and location of the Work; the character of the equipment and other facilities needed of 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 of Sub-subcontractor to inform himself as to conditions affecting the Work.

F. INTERPRETATION OF DOCUMENTS: If any person contemplating submitting a bid for the proposed Contract is in doubt as to the meaning of any part of the Drawings, Specifications (Project Manual) or other proposed Contract Documents, he may submit to the Consultant, not later than four (4) 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. Request for substitutions must be received by the Consultant seven (7) calendar days prior to the established bid date.

H. ADDENDA: Interpretations, clarifications, additions, deletions and modifications to the Documents during the bidding period will be issued in the form of Addenda and a copy of such Addenda will be mailed, faxed or made available for pickup 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 U. S. Mail, facsimile, or available for pickup 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 has been acknowledged.

I. COMPLETION TIME: A reasonable completion time has been established by the Owner and is indicated in the Proposal Form.

J. PREPARATION OF BIDS: Prices quoted shall include all items of cost, expenses, taxes, fees and charges incurred, or arising out of, the performance of the work to be performed under the Contract. Bids shall be signed in ink. Any bid on other than the required form will be considered informal and may be rejected. Erasures or other changes in a bid must be explained or noted over the initials of the bidder. Bids containing any conditions, omissions, unexplained erasures and alterations, or irregularities of any kind may be rejected as informal. The prices should be expressed in words and figures or they may be deemed informal and may be rejected. In case of discrepancy between the prices written in the bid and those given in the figures, the price in writing will be considered as the bid. Failure to submit all requested information will make a bid irregular and subject to rejection. Bids shall be signed with name typed or printed below signature, and, if a partnership, give full name of all partners. When bidder is a corporation, bids must be signed with the legal name of the corporation followed by the name of the state of incorporation and the legal signature of an officer authorized to bind the corporation to a contract.

K. SUBMITTAL OF BIDS: Sealed proposal will be received at the time, date and place stated in the Advertisement for Bids. Proposals shall be made on unaltered Proposal Forms furnished by the Consultant. Submit proposal in an opaque, sealed envelope addressed to the Owner and plainly mark on the outside of the envelope the project name, and the name and address of the bidder. The Bid Bond must be completed and signed by each bidder and submitted with the bid. Submit Bids by mail or in person prior to the time for receiving bids set forth in the Advertisement for Bids issued by the City.

L. MODIFICATION AND WITHDRAWAL OF BIDS: Prior to the time set for bid opening, bids may be withdrawn or modified. Bids may be modified only on the official bid form and must be signed by a person legally empowered to bind the bidder. No bidder shall modify, withdraw or cancel his bid or any part thereof for thirty (30) calendar days after the time agreed upon for the receipt of bids.

M. DISQUALIFICATION OF BIDDERS: Bidders may be disqualified and their proposal not considered for any of the following specific reasons:

1) Reason for believing collusion exists among the bidders.

2) Reasonable grounds for believing that any bidder is interested in more than one proposal for the work contemplated.

3) The Bidder or his surety being currently in any litigation against the Owner, or where such litigation is contemplated or imminent, in the sole opinion of Owner.

4) The bidder being in arrears on any existing contract or having defaulted on a previous contract.

5) Lack of competency, responsibility or financial capability as revealed by the bid questionnaires, financial statement, etc.

6) Uncompleted work which in the judgement of the Owner shall prevent or hinder the prompt completion of additional work if awarded.

7) Failure of bidder to use Owner's form of bid bond in submitting his bid, or submission of a cashier's check drawn on a state or national bank not located in the Owner's jurisdiction area.

8) Unbalanced value of any bid items.

N. SUBMISSION OF POST-BID INFORMATION: Upon notification of acceptance, the selected bidder shall, within five (5) calendar days, submit the following:

1) A designation of the portions of the Work proposed to be performed by the bidder with his own force.

2) A list of names of the subcontractors or other persons or organizations, including those who are to furnish materials and equipment fabricated to a special design proposed for such portions of the Work as may be designated in the Bidding Documents or as may be requested by the Consultant.

3) The bidder will be required to establish to the satisfaction of the Owner and the Consultant the reliability and responsibility of themselves and proposed Subcontractors and suppliers to furnish and perform the Work. Bidder to provide experience record, including contact references (names and telephone) and dollar size of project.

O. AWARD: The Owner reserves the right to accept any or to reject any bids without compensation to bidders and to waive irregularities and formalities. 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 $1,000.00.

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 <u>not</u> 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 contractor. **The total incentive payment shall not exceed $25,000.00.** <u>A bid with more than 150 calendar days will be considered non-responsive and will be rejected</u>.

P. EXECUTION OF THE CONTRACT: The successful bidder will be required to enter into a contract with the Owner within ten (10) calendar days of notice by the Owner that his bid has been accepted. Failure to enter into contract within the established time limit without proper justification shall be considered grounds for forfeiture of the bid bond.

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

R. AWARD AND EXECUTION OF CONTRACT: 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 "O" 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, work deleted, change orders, supplemental agreements, disruptions, differing site conditions, utility conflicts, design changes or defects, time extensions, extra work, right of way issues, permitting issues, actions of suppliers, 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, 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 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 the 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 the Contract 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 Contact 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 "O" 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.

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 each in the amount of 100% of the contract will be required by the Owner. Sample forms have been included in the Performance Bond, Payment Bond and Maintenance Bond sections.

U. BID SECURITY: Bids shall be accompanied by a cashier's check or certified check upon a national or state band in an amount not less than five percent (5%) of the total maximum bid price payable without recourse to the Town of Addison, or a bid bond in the same amount from a reliable surety company as a guarantee that the bidder will enter into a contract and execute Performance Bond within ten (10) calendar days after notice of award of contract to him. Such checks or bid bonds will be returned to all except the three lowest bidders within three (3) days after the opening of bids, and the remaining checks or bid bonds will be returned promptly after the Owner has made an award of contract, or, if no award has been made within thirty (30) calendar days after the date of the opening of bids, upon demand of the bidder at any time thereafter, so long as he has not been notified of the acceptance of his bid.

V. RESOLUTIONS: If the bidder is a corporation, a copy of the resolution empowering the person submitting the bid to bind the bidder must be included with the bid.

W. CONSTRUCTION STAKING: Benchmarks and horizontal control are shown on the plans. Staking shall be the responsibility of the Contractor, at no extra pay.

X. FINAL PAYMENT: The general provisions for Final Payment shall be as stated in Item 1.51.4 of the North Central Texas Standard Specifications for Public Works Construction (1983 Edition) including all Amendments and Additions. Prior to final payment the Contractor shall provide the Owner with the following items:

1) A Contractor's Affidavit of Bills Paid in accordance with Section BP.

2) A Consent of Surety Company to Final Payment.

3) A complete set of Record Drawings which indicate all construction variations from the original construction documents.

4) A two (2) year Maintenance Bond in the amount of one hundred percent (100%) of the contract in accordance with Section MB.

END OF SECTION IB

SECTION PF

PROPOSAL FORM

BID FORM

October 1 , 2002

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 9-20-02

Addendum No. 2 9-26-02

Addendum No. 3 _____

Barson Utilities, Inc.
Contractor

By: Ronald E. Barson
(please print name)

Signature: _____

Title: President

Seal and Authorization
(If a Corporation)

5326 W. Ledbetter
Address

Dallas, Dallas County, Texas 75236
City, County, State and Zip

(214) 941-9700
Telephone Fax No.

E-Mail Address: _____

TOWN OF ADDISON, TEXAS
Brookhaven Club Sanitary Sewer Line

BID SCHEDULE

Item No.	Estimated Quantity	Unit	Description and Price in Words	Price in Figures	Extended Amount
1	30	L.F.	Furnish and Install 10-Inch Sanitary Sewer by Open Cut, including Embedment complete in place, the sum of Sixty-Seven Dollars and No Cents per Linear Foot	$ 67.00	$ 2,010.00
2	1,360	L.F.	Furnish and Install 10-Inch Sanitary Sewer by Directional Bore complete in place, the sum of Two Hundred Thirty-Four Dollars and No Cents per Linear Foot	$ 234.00	$ 318,240.00
3	1	Ea.	Furnish and Install 6-Foot Dia. Standard Manhole (Sheet No. 1) complete in place, the sum of Seventeen Thousand, Six Hundred Seventy-Five Dollars and No Cents per Each	$ 17,675.00	$ 17,675.00
4	2	Ea.	Furnish and Install 6-Foot Dia. Drop Manhole (Sheet No. 3) complete in place, the sum of Eleven Thousand, Fifteen Dollars and No Cents per Each	$ 11,015.00	$ 22,030.00
5	1	Ea.	Furnish and Install 4-Foot Dia. Standard Manhole (Sheet No. 3) complete in place, the sum of Four Thousand, One Hundred Thirty-Five Dollars and No Cents per Each	$ 4,135.00	$ 4,135.00

Item No.	Estimated Quantity	Unit	Description and Price in Words	Price in Figures	Extended Amount
6	1	Ea.	Furnish and Install 6-Foot Dia. Standard Manhole at Sta. 6+70, if required or directed by the City, including Backfill and Pavement Replacement (Sheet No. 2) complete in place, the sum of Seventeen Thousand, Four Hundred Seventy-Five Dollars and No Cents per Each	$ 17,475.00	$ 17,475.00
7	115	L.F.	Furnish and Install 10-Inch SDR35 Sanitary Sewer Line (Sheet No. 4) by Open Cut complete in place, the sum of Seventy-Four Dollars and No Cents per Linear Foot	$ 74.00	$ 8,510.00
8	75	L.F.	Furnish and Install 10-Inch SDR35 Sanitary Sewer Line (Sheet No. 4) by other than Open Cut complete in place, the sum of One Hundred Ninety-Three Dollars and No Cents per Linear Foot	$ 193.00	$ 14,475.00
9	2	Ea.	Furnish and Install 4.0 Drop Manholes (Sheet No. 4) complete in place, the sum of Four Thousand, One Hundred Eighty-Five Dollars and No Cents per Each	$ 4,185.00	$ 8,370.00
10	10	S.Y.	Concrete Pavement Removal, including Curbs, Driveways and Full Depth Saw Cut complete in place, the sum of Twenty-Four Dollars and No Cents per Square Yard	$ 24.00	$ 240.00

Item No.	Estimated Quantity	Unit	Description and Price in Words	Price in Figures	Extended Amount
11	10	S.Y.	Furnishing and Placing 10-Inch, 3600 PSI Reinforced Concrete Pavement, including Curbs and Dowels complete in place, the sum of Eighty-Two Dollars and No Cents per Square Yard	$ 82.00	$ 820.00
12	350	S.Y.	Furnishing, Placing and Installing Solid Sod in Disturbed Areas complete in place, the sum of Five Dollars and No Cents per Square Yard	$ 5.00	$ 1,750.00
13	1	L.S.	Furnishing, Maintaining and Removing Barricades, all locations complete in place, the sum of Five Thousand Dollars and No Cents per Lump Sum	$ 5,000.00	$ 5,000.00
14	30	L.F.	Furnishing, Maintaining and Removing Trench Safety Devices complete in place, the sum of One Dollars and No Cents per Linear Foot	$ 1.00	$ 30.00
15	1	Ea.	Furnish and Install Cleanout complete in place, the sum of Three Hundred Twenty Dollars and No Cents per Each	$ 320.00	$ 320.00
16	1	L.S.	Furnishing, Maintaining and Removing Trench Safety Devices for Bore Pits complete in place, the sum of Two Hundred Dollars and No Cents per Lump Sum	$ 200.00	$ 200.00

Item No.	Estimated Quantity	Unit	Description and Price in Words	Price in Figures	Extended Amount
17	1	L.S.	Trench Safety Design complete in place, the sum of Four Hundred Dollars and No Cents per Lump Sum	$ 400.00	$ 400.00
18	1	L.S.	Irrigation Repair and Replacement complete in place, the sum of One Thousand, Eight Hundred Dollars and No Cents per Lump Sum	$ 1,800.00	$ 1,800.00
19	8	Ea.	Tree Removal complete in place, the sum of One Thousand, Four Hundred Dollars and No Cents per Each	$ 1,400.00	$ 11,200.00
20	1	L.S.	Underwater Inspection of Swimming Pool, Block B, Lot 9 Wooded Creek Estates complete in place, the sum of One Thousand, One Hundred Fifty Dollars and No Cents per Lump Sum	$ 1,150.00	$ 1,150.00
21	1,010	L.F.	Sanitary Sewer Rehabilitation (Cured-in-Place) complete in place, the sum of Forty-Seven Dollars and No Cents per Linear Foot	$ 47.00	$ 47,470.00
22	300	L.F.	Furnish and Install 8-foot Cedar Wood Fence complete in place, the sum of Thirty-Two Dollars and No Cents per Linear Foot	$ 32.00	$ 9,600.00

Item No.	Estimated Quantity	Unit	Description and Price in Words	Price in Figures	Extended Amount
23	1	L.S.	Removal of Red Tip Photenia (Sheet 4) complete in place, the sum of Seven Hundred Fifty Dollars and No Cents per Lump Sum	$ 750.00	$ 750.00
24	345	S.Y.	Placing 1-Inch HMAC Overlay, including Tack Coat complete in place, the sum of Seventeen Dollars and No Cents per Square Yard	$ 17.00	$ 5,865.00
25	1	L.S.	Clearing and Reconstruction of Staging Area on Brookhaven College Tract complete in place, the sum of Two Thousand, Seven Hundred Fifty-Five Dollars and No Cents per Lump Sum	$ 2,755.00	$ 2,755.00
26	1	L.S.	Restoration of Disturbed Areas Across the Greenhaven Apartment Tract (Sheet 3), including Watering for 30-Days complete in place, the sum of Two Thousand, Seven Hundred Fifty-Three Dollars and No Cents per Lump Sum	$ 2,753.00	$ 2,753.00
27	1	L.S.	Restoration of Right-of-Way along Marsh Lane, including Watering for 30-Days complete in place, the sum of Three Thousand, Eight Hundred Five Dollars and No Cents per Lump Sum	$ 3,805.00	$ 3,805.00
28	100	L.F.	Removing and Replacing 4-Foot Wide Reinforced Cobble Stone Side Walk complete in place, the sum of Forty Dollars and No Cents per Linear Foot	$ 40.00	$ 4,000.00

Item No.	Estimated Quantity	Unit	Description and Price in Words	Price in Figures	Extended Amount
29	***Deleted Add #2***	L.S.	~~Furnishing, Installing and Making Operational Irrigation System complete in place, the sum of _____ _____ Dollars and Cents per Lump Sum~~	$ -	$ -
TOTAL AMOUNT BID (Items 1 Through 28)					**$ 512,828.00**

TOWN OF ADDISON, TEXAS
Brookhaven Club Sanitary Sewer Line
(Bid No. 02-45)

BID SCHEDULE SUMMARY

	Total Amount Materials & Services
(A) TOTAL OF STANDARD BID (Items 1 Through 28):	**$ 512,828.00**

Written in Words: Five Hundred Twelve Thousand, Eight Hundred Twenty-Eight and 00/100

TOTAL OF TIME BID: **90** **(calendar days)**

(B) TOTAL OF CALENDAR DAYS x $1,000.00 =** **$ 90,000.00

BASIS FOR COMPARISON OF BIDS: (A) + (B) = TOTAL BID:	**$ 602,828.00**

NOTES:

1. All items, labor, materials, equipment, facilities, incidentals, and work required for construction of the project are to be provided and installed by the Contractor as part of the project and payment for the cost of such shall be included in the price bid for the construction of the project.

2. Prices must be shown in words and figures for each item listed in this Proposal. In the event of discrepancy, the words shall control.

3. 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 and required bonds within ten (10) days from the date the Contractor is notified and has received the conformed documents. After this period, if the contract has been executed and the required bonds have been submitted, the said Bid Security shall be returned to the undersigned upon demand.

4. One contract will be awarded based on the total value of Items (A) plus (B).

Bidder's Tax I.D. No. or Employer No. 75-2569158

If BIDDER is:

AN INDIVIDUAL

By _____ (Seal)
(Individual's Name)

doing business as _____

Business address: _____

_____

_____

Phone No. _____

A PARTNERSHIP

By _____ (Seal)
(Firm Name)

_____
(General Partner)

doing business as _____

Business address: _____

_____

_____

Phone No. _____

A CORPORATION

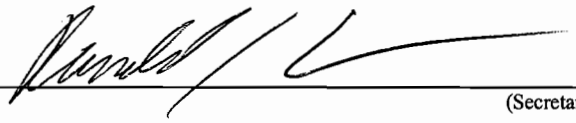
By Barson Utilities
(Corporation Name)

Texas
(State of Incorporation)

By Ronald E. Barson
(Name of Person Authorized to Sign)

President
(Title)

(Corporate Seal)

Attest 
(Secretary)

Business Address: 5326 W. Ledbetter, Dallas, Texas 75236

Phone No. (214) 941-9700

A JOINT VENTURE

By
(Name)

(Address)

By
(Name)

(Address)

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

SECTION CA

CONTRACT AGREEMENT

AGREEMENT

STATE OF TEXAS

COUNTY OF DALLAS

THIS AGREEMENT is made and entered into this **22nd** day of **October, 2002**, 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 Barson Utilities, Inc., of the City of Dallas, County of Dallas, 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:

Brookhaven Club Sanitary Sewer Line (Bid No. 02-45)

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

The CONTRACTOR hereby agrees to commence work within five (5) calendar days after the date of written notice to do so shall have been given to him, to complete the work within **Ninety (90) 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 **Six Hundred Two Thousand, Eight Hundred Twenty-Eight and 00/100 ($602,828.00)** Dollars 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
Ron Whitehead, City Manager

ATTEST:

By: C MORAN
Carmen Moran, City Secretary

BARSON UTILITIES, INC. (Contractor)

By:
Ronald E. Barson, President

ATTEST:

By: Carmen E Lane

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

I, RONALD E. BARSON certify that I am the secretary of the corporation named as CONTRACTOR herein; that RONALD E. BARSON, who signed this Contract on behalf of the CONTRACTOR is the PRESIDENT (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)

Bond No. PRF8668892

KNOW ALL MEN BY THESE PRESENTS, That Barson Utilities, Inc. (hereinafter called the Principal), as Principal, and Colonial American Casualty and Surety Company (hereinafter called the Surety), as Surety are held and firmly bound unto the **Town of Addison** (hereinafter called the Obligee), in the amount of Six Hundred Two Thousand, Eight Hundred Twenty-Eight and 00/100 Dollars ($ 602,828.00) 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 22nd day of October , 2002 to construct the

Brookhaven Club Sanitary Sewer Line (Bid No. 02-45)

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 14th day of November , 2002.

Barson Utilities, Inc.
(Principal)

By: _____
Ronald E. Barson, President

Colonial American Casualty and Surety Company
(Surety)

By: _____
Patricia Bartlett, (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)

Bond No. PRF8668892

KNOW ALL MEN BY THESE PRESENTS, That Barson Utilities, Inc. (hereinafter called the Principal), as Principal, and Colonial American Casualty and Surety Company (hereinafter called the Surety), as Surety are held and firmly bound unto the **Town of Addison** (hereinafter called the Obligee), in the amount of Six Hundred Two Thousand, Eight Hundred Twenty-Eight and 00/100 Dollars ($ 602,828.00) 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 22nd day of October , 2002 to construct the

Brookhaven Club Sanitary Sewer Line (Bid No. 02-45)

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 14th day of November , 2002.

Barson Utilities, Inc.
(Principal)

By: _____
Ronald E. Barson, President

Colonial American Casualty and Surety Company
(Surety)

By: _____
Patricia Bartlett, (Attorney-in-Fact)

Power of Attorney
FIDELITY AND DEPOSIT COMPANY OF MARYLAND
COLONIAL AMERICAN CASUALTY AND SURETY COMPANY
HOME OFFICES: 3910 KESWICK ROAD, BALTIMORE, MD 21211

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 PAUL C. ROGERS, Vice President, and T. E. SMITH, 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 **Sam J. MULLIS, JR., John W. NEWBY, R. Don HURST, Patricia BARTLETT and Julie HOGUE, 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 Sammy J. MULLIS, JR., John W. NEWBY, R. Don HURST, and Patty BARTLETT, dated April 8, 2002.

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 19th day of August, A.D. 2002.

ATTEST:

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

By:

T. E. Smith *Assistant Secretary* *Paul C. Rogers* *Vice President*

State of Maryland
County of Baltimore } ss:

On this 19th day of August, A.D. 2002, before the subscriber, a Notary Public of the State of Maryland, duly commissioned and qualified, came PAUL C. ROGERS, Vice President, and T. E. SMITH, 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.

Carol J. Fader *Notary Public*
My Commission Expires: August 1, 2004

POA-F 168-MULLA

Fidelity and Deposit Company of Maryland

Home Office: P.O. Box 1227, Baltimore, MD 21203-1227

IMPORTANT NOTICE

To obtain information or make a complaint:

You may call the Fidelity and Deposit Company of Maryland or Colonial American Casualty and Surety 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.

SECTION MB

MAINTENANCE BOND

SECTION MB

2-YEAR MAINTENANCE BOND

STATE OF TEXAS

COUNTY OF DALLAS

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

Six Hundred Two Thousand, Eight Hundred Twenty-Eight and 00/100 ($602,828.00)

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

Barson Utilities, Inc.

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

Brookhaven Club Sanitary Sewer Line (Bid No. 02-45)

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.

IN WITNESS WHEREOF, the said _____ has caused these presents to be executed by _____ and the said _____ has hereunto set his hand this the _____ day of _____ , 20 _____

SURETY

_____

_____

By: _____
Attorney in Fact

By: _____
Surety

_____

_____
Agency and Address

PRINCIPAL

Barson Utilities, Inc.

By: _____
Ronald E. Barson, President

ATTEST

_____
Secretary

NOTE: Date of Maintenance Bond must be same as date City acceptance.

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 Ronald E. Barson who, being duly sworn, on oath, says that he is a legal representative of Barson Utilities, Inc.
(full name of Contractor as in contract)

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

Brookhaven Club Sanitary Sewer Line (Bid No. 02-45)
(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: Ronald E. Barson

President
Title

Sworn to and subscribed before me this _____ day of _____, 2002.

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 (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

SECTION SP

SPECIAL PROVISIONS
BROOKHAVEN CLUB SANITARY SEWER LINE

SP.1 LOCATION OF PROJECT

The location of the sewer line project is located south of Brookhaven Club, running east from March Lane in the Town of Addison, Texas. A location map is included at the end of these specifications.

SP.2 SCOPE OF WORK

The work under this contract includes furnishing and installing approximately 1,400 linear feet of 10-inch sanitary sewer line and 1,000 linear feet of sanitary sewer rehabilitation.

SP.3 CONSTRUCTION SCHEDULE

Prior to starting work, the Contractor shall submit a proposed schedule for the work included herein and shall submit any major revisions to this schedule as the project progresses. This schedule shall provide for completion of the project within the time provided in the specifications. Working hours is 7:00 a.m. to 7:00 p.m. weekdays. No weekend work permitted.

SP.4 COPIES OF PLANS AND SPECIFICATIONS

Five (5) copies of the plans and specifications shall be furnished to the Contractor, at no charge, for construction purposes. Additional copies may be obtained at a cost of $50.00.

SP.5 REFERENCE SPECIFICATIONS

Where reference is made in these specifications, to specifications compiled by others, such reference is made for expediency and standardization from the material supplier's point of view, and such specifications referred to are hereby made a part of these specifications.

SP.6 TRADE NAMES AND MATERIALS

No material which has been used by the Contractor for any temporary purposes whatsoever is to be incorporated in the permanent structure without written consent of the Engineer.

Where materials or equipment are specified by a trade or brand name, it is not the intention of the Owner to discriminate against an equal product of another manufacturer, but rather to set a definite standard for quality or performance, and to establish an equal basis for the evaluation of bids. Where the words "equivalent", "proper", or "equal to" are used, they shall be understood to mean that the thing referred to shall be proper, the equivalent of, or equal to some other thing, in the opinion or judgment of the Engineer. Unless otherwise specified, all materials shall be the best of their respective kinds and shall be in all cases fully equal to approved samples. Notwithstanding that the words "or equal to" or other such expressions may be used in the specifications in connection with material, manufactured article, or process, the material, article or process specifically designated shall be used, unless a substitute shall be approved in writing by the Engineer, and the Engineer shall have the right to require the use of such specifically designated material, article or process.

SP.7 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.

SP.8 CLEANUP

During Construction: The Contractor shall at all times keep the jobsite as free from all disposable material, debris, and rubbish as is practicable, and shall remove same from any portion of the jobsite when it becomes objectionable or interferes with the progress of the project, in the opinion of the Engineer or the Owner. Broken pipe and other debris resulting from construction shall not be left on the site after the construction work is completed. During the construction the Contractor shall not damage improvements on public or private property, including shrubs, grass, pavement, walks, curbs and fences. In the event Contractor damages private property, Contractor shall immediately perform restoration at his own cost.

Video: Contractor shall make and provide to the Owner an original color, VHS format tape of existing conditions outside of lift station. The areas shall be narrated as to location. Video shall be provided to the Owner prior to actual construction work commencing. City Inspector shall be present during taping and take possession of tape when completed.

Final: Upon completion of the work, the Contractor shall remove from the site all plants, materials, tools and equipment belonging to him and restore the site with an appearance acceptable to the Engineer and the Owner. The Contractor shall thoroughly clean all equipment and materials installed by him and shall deliver over such materials and equipment in a bright, clean, polished and new-appearing condition.

SP.9 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 this 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.

Electricians shall be registered with the Town's Building Department. The registration fee of $60.00 shall be paid by the Contractor. Inspections from the Building Inspector shall be scheduled by Contractor, 24-hours prior to inspection.

SP.10 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."

SP.11 COORDINATION WITH OTHERS

In the event other contractors are doing work in the same area simultaneously with this project, the Contractor shall coordinate his proposed construction with other contractors.

SP.12 LIGHTS AND POWER

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

SP.13 WAGE RATES

All employees of the Contractor for the work to be performed under this contract shall be paid the prevailing wage scale in this locality for work of a similar character, and in no event less than the minimums prescribed in the following schedule:

The "prevailing rates" shown will be the minimum wags acceptable on this project.

If the construction project involves the expenditure of federal funds in excess of $2,000.00, the minimum wages to be paid various classes of laborers and mechanics will be based upon the wages that will be determined by the Secretary of Labor to be prevailing for the corresponding classes of laborers and mechanics employed on the project of a character similar to the contract work in the City of Addison or the rate given above, whichever is higher.

Except for work on legal holidays, the "general prevailing rate of per diem wage" for the various crafts or type of workers or mechanics is the produce to (a) the number of hours worked per day, except for overtime hours, times (b) the above respective Rate Per Hour.

For legal holidays, the "general prevailing rate of per diem wage" for the various crafts or type of workers or mechanics is the product of (a) one and one-half times the above respective Rate Per Hour, times (b) the number of hours worked on the legal holiday.

The "general prevailing rate for overtime work" for the crafts or type of workers or mechanics is one and one-half times the above respective Rate Per Hour.

Under the provisions of Article 5159a, Vernon's Annotated Texas Statutes, the Contractor shall forfeit as a penalty to the entity on whose behalf the contract is made or awarded, Ten Dollars ($10.00) for each laborer, worker or mechanic employed, for each calendar day, or portion thereof, such laborer, worker or mechanic is paid less than the said stipulated rates for any work under the contract, by him, or by any subcontractor under him.

PREVAILING WAGE RATES

GENERAL DECISION **TX000034** 07/07/00 TX34

General Decision Number **TX000034**

Superseded General Decision No. TX990034

State: TEXAS

Construction Type: HEAVY

County(ies):	COLLIN	DENTON	KAUFMAN
	DALLAS	ELLIS	ROCKWALL

Heavy Construction, including Treatment Plants (does not include water/sewer lines)

Modification Number	Publication Date
0	02/11/2000
1	02/18/2000
2	03/17/2000
3	05/05/2000
4	06/02/2000
5	06/30/2000
6	07/07/2000

	Rates	Fringes
ASBE0021C 05/01/1999		
Asbestos Workers/Insulators (includes application of all insulating materials, protective coverings, coatings, and finishings to all types of mechanical systems)	$16.20	$4.35
ELEC0020C 06/01/2000		
Electricians:		
Electrician	$20.20	11% + 2.45
Cable Splicer	$22.22	11% + 2.45
ELEC0020F 06/01/2000		
Line Construction:		
Lineman & Equipment Operators	$20.45	
Cable Splicers		
Groundman		
ENGI0178A 06/01/1999		
Cranes:		
Hydraulic over 35-tons (Derricks, Overhead Gentry, Stiffleg, Tower, etc., and Cranes w/Piledriving or Caisson attachments)	$17.00	$3.85
Hydraulic Crane (35 ton & under)	$16.50	$3.85
IRON0263K 06/01/2000		
Ironworkers:		
Reinforcing & Structural	$16.60	$4.05
PLUM0100B 05/01/2000		
Plumbers & Pipefitters	$19.80	$4.31
SHEE0068B 05/01/1996		
Sheet Metal Workers	$15.70	3% + 4.32
SUTX2034A 08/01/1990		
Carpenters	$10.536	
Concrete Finishers	$9.603	
Form Builders	$8.036	
Form Setters	$9.578	
Laborers:		
Common	$6.379	
Utility	$6.974	
Pipelayers	$7.961	
Power Equipment Operators:		
Backhoe	$10.971	
Bulldozer	$9.942	
Front End Loader	$10.771	
Mechanic	$9.880	
Motor Grader	$11.633	
Oiler	$9.183	
Scraper	$8.000	
Truck Drivers	$7.465	
Welders:		
Receive rate prescribed for craft performing operations to which welding is incidental.		

SP.14 COOPERATION OF CONTRACTORS

The Contractor shall have on the project at all times, as his agent, a competent Superintendent capable of reading and thoroughly understanding the plans and specifications, and thoroughly experienced in the type of work being performed. The Superintendent shall have full authority to execute orders or directions and to promptly supply such materials, equipment, tools, labor and incidentals as may be required. Such superintendent shall be furnished irrespective of the amount of work subcontracted.

The Superintendent and the Contractor shall be responsible for all work performed by the subcontractor at all times during construction.

SP.15 ANTITRUST

The Contractor hereby assigns to the Owner any and 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).

SP.16 PUBLIC UTILITIES AND OTHER PROPERTY TO BE CHANGED

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

SP.17 EXISTING UTILITIES AND SERVICE LINES

The Contractor shall be responsible for the protection of all existing utilities or service lines crossed or exposed by his construction operations. 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. Existing landscaping and irrigation shall be protected at all times.

SP.18 USE OF EXPLOSIVES

Use of explosives will not be allowed.

SP.19 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.

1.0 The Contractor shall agree to furnish and maintain, during the contract period, insurance coverage meeting the following requirements:

1.1 Commercial General Liability Insurance at minimum combined single limits of $500,000 per occurrence and $1,000,000 general aggregate for Bodily Injury and Property Damage, which coverage shall include Products/Completed Operations, and XCU Hazards. Contractual Liability must be maintained with respect to the Contractor's obligations contained in the contract. The policy must be amended to provide a per-project general aggregate limit of insurance of $1,000,000 with respect to this contract.

1.2 Workers Compensation Insurance at statutory limits, including employer's liability coverage at minimum limits of $500,000 by disease aggregate, $100,000 by disease - per occurrence, $100,000 per occurrence - each accident. (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.

2.0 Contractor shall provide the following endorsements:

2.1 Named insured wording which includes the Contractor and the Town of Addison with respect to general liability and automobile liability.

2.2 All liability policies shall contain cross liability and severability of interest clause.

2.3 A waiver of subrogation in favor of the Town of Addison with respect to the workers' compensation insurance.

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

2.5 The certificate shall notate the Project Name or Bid Number.

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

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

3.1 Is acceptable to the Town with regard to financial strength and stability.

3.2 Licensed and admitted to do business in the State of Texas.

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 The company is licensed and admitted to do business in the State of Texas.

4.2 The company's forms have been approved by the Texas State Board of Insurance.

4.3 Sets forth all endorsements as required above.

4.4 The Town of Addison will receive at least sixty (60) days notice prior to cancellation or termination of the insurance.

5.0 Upon request, Contractor, shall furnish the Owner with:

5.1 certified copies of all insurance policies, and

5.2 valid Certificates of Insurance covering all subcontractors in accordance with the insurance requirements set forth herein for Contractor.

SP.20 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 services 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 changes that materially affects the provisions 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 services 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."

SP.21 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.

SP.22 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.

SP.23 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 Stages as required by the Immigration Reform and Control Act of 1986.

SP.24 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 and include that cost in his bid.

SP.25 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:

- Pipe
- Valves
- Fire Hydrants
- Fittings
- Plantings
- Irrigation
- Mix Designs

SP.26 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.

SP.27 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 2-years (see Bond) 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.

SP.28 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.

B. 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.

C. 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.

D. 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.

SP.29 SPRINKLER REPAIR

The Contractor is responsible for the repair or replacement of any sprinkler damage caused by his construction. This repair is subsidiary to the contract unless there is a specific item for sprinkler repair. All repairs or replacements shall be completed by irrigator licensed in the State of Texas, paid for by the Contractor.

SP.30 PROJECT VIDEO

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

SP.31 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.

SP.32 HORIZONTAL DIRECTIONAL DRILLING AND HDPE PIPE INSTALLATION

A. General

This specification describes the requirements for the installation of a polyethylene water and sanitary sewer piping system as shown on the plans, using the trenchless construction process called Horizontal Directional Drilling (HDD). The Contractor shall provide all labor, machinery, construction equipment and materials to perform in a good workmanlike manner all items herein specified.

The Contractor shall perform the following tasks:

1) Transport all equipment, labor, consumables, and materials to and from the job site.

2) Prepare the site including drill pits and reception pits as defined on the drawings and herein specified.

3) Perform Horizontal Directional Drilling operations including the drilling of pilot holes, reaming of pilot holes to a suitable diameter for the installation of the polyethylene conduits as specified on the drawings.

4) Collect and haul off spoils daily, including drilling fluids. Fill or cover all holes and pits daily. Clean up and perform final restoration of all work areas.

The following Sections contain requirements that relate to this Section:

- SS-2 High Density Polyethylene Water Pipe

B. Submittals

The Contractor shall submit six copies (one original and five copies) of the documents requested in this section for review by the Engineer and/or Owner. The Engineer will review all submittals for compliance with the requirements of this project and other contract documents and Drawings. Such review does not relieve the Contractor in any way of his responsibilities under the Contract. Contractor shall not commence work on any Part or Subpart requiring a prior submission until his submittals have been reviewed and approved (if required) by the Engineer.

1) Technical Items to be Submitted after Bid Opening

Low Bid Contractor shall submit for the Owner's and Engineer's review the following items within 3 working days of bid opening:

a) Equipment: Supply full details of the Horizontal Directional Drilling System to be utilized including:

- Technical specifications and manufacturer of Horizontal Directional Drilling system. Date of manufacture of the Horizontal Directional Drilling System.
- Technical specifications and manufacturer for downhole drilling assembly and reaming equipment.
- Technical specifications and manufacturer for guidance and control system.
- Description of projects on which items a) through c) have been used by Contractor including names and phone numbers of owners representatives for these projects.

b) Methods and Work Plan: Contractor shall supply full details of the procedures and resources which will be employed to carry out the work including method and sequence of:

- Drilling Operations: number and size of construction crew, hours to be worked, pilot hole drilling procedure, reaming procedure, method of monitoring the drilling head, method of verifying pipe location for record drawing and schedule for completing major activities. Contractor shall supply this information on Forms 1-A and 2-A, which are provided in Appendix A.
- Pipeline Assembly and Installation: number and size of construction crew, assembly procedure, thermal butt fusion joining procedure for pipes, and installation/pullback procedure.
- Spoil separation and disposal.
- Emergency procedures for blowholes or breakouts of drilling fluids and other types of problems that may be experienced on this project.

c) Experience: The bidder shall provide details of similar contract experience successfully completed or in progress within the last three (3) years. This shall include at least three (3) projects of similar materials, pipe size and difficulty and magnitude to this project. Information shall include the following:

- Name and brief description of project
- Length of installation
- Type and manufacturer of equipment used
- Diameter of completed bore
- Diameter of installed conduit
- Conduit type
- Ground conditions encountered
- Name, address, telephone and fax number and contact person of Owner

2) Pre Construction Submittals

Before initiating construction, the Contractor shall conduct and/or submit the following to the Owner for review and approval:

a) Site Plan – Contractor shall supply a site plan for the following

- Sample set-up for proposed entry of drilling rig.
- Sample set-up for proposed exit area including laydown area for pipe.
- Proposed pipe storage areas.
- Any other off-site areas that will be utilized.

b) Contractor shall ensure all downhole drilling components are appropriate for the work to be performed. Contractor shall provide descriptions for all downhole components prior to initiation of the project.

c) Contractor shall provide verification of downhole surveying equipment calibration prior to initiation of the project.

d) Contractor shall provide a copy of Daily Log for collecting the information required in Section 1.2-C.

3) Documentation During and After Construction

a) Daily Logs

Contractor shall maintain a complete set of project records. Contractor shall maintain a daily activity log during Horizontal Directional Drilling operations. A copy of the log shall be submitted to the Owner for record purposes on a daily basis. These documents shall include but not be limited to:

- Start and finish time of each section of drill pipe for pilot hole drilling and reaming.
- For pilot hole drilling, drill bit location at least every 30 ft. along the drill path. Contractor will mark the record drawings on a daily basis with drilling progress.
- General description for each ground condition drilled.
- Details and perceived reasons for delays greater than one hour other than normal breaks and shift changes.
- Details of any unusual conditions or events.

b) Record Drawings

Contractor shall keep and maintain at construction site a complete set of field drawings for recording the project as actually constructed. Upon completion of construction, Contractor shall be required to provide record drawings in the form of a plot of the pipe installations with reference dimensions to locations on the plan. The Contractor shall sign the record drawings and provide to the Engineer at the end of construction.

C. Qualifications

The Contractor's project manager, superintendent and driller operator assigned to this project must be experienced in work of this nature and must have successfully completed similar projects using

Horizontal Directional Drilling. These personnel must have completed at least three (3) projects of similar difficulty and magnitude to the proposed work.

D. Safety

The responsibility for a safe work site rests solely with the Contractor. The Contractor shall be familiar with, and shall conform at all times to all applicable regulations of the "General Construction Safety Orders" and "Trench Construction Safety Orders" of the State of Texas. The Contractor shall carry out operations in strict accordance with equipment manufacturer's safety requirements.

It shall be the responsibility of the Contractor to ensure that the appropriate items of personnel protective equipment necessary for the various working conditions are available and utilized by staff and subcontractors.

E. Quality Assurance

The Contractor shall maintain a quality assurance program to ensure that minimum standards are met.

F. General Requirements

The Contractor shall assume all responsibility for his methods of construction, the stability and accuracy of the drilled and reamed hole and pits constructed by him, and all costs for damages resulting from any failure thereof. The Contractor shall be solely responsible for the safety of the pits and related structures, and personnel engaged in underground construction throughout the duration of the work.

The general dimensions, arrangement and details for the drilled hole and pits to be constructed shall be as indicated on the Shop Drawings.

Methods of excavation, equipment and procedures for the horizontal directional drilling operation and pits shall be selected by the Contractor to provide adequate working space and clearances for the work to be performed.

Pit excavation methods, ground water control and pit support techniques shall be selected by the Contractor.

1) General

The pipeline will be installed by Horizontal Directional Drilling. Horizontal Directional Drilling is a trenchless excavation technique for installing pipelines and conduits in two phases. The first phase consists of drilling a small diameter pilot hole along a designed directional path. The second phase consists of enlarging the pilot hole to a diameter suitable for installation of the pipe, and pulling the pipe into the enlarged hole. The method is accomplished using a surfaced launched horizontal directional drilling rig and ancillary tools and equipment.

2) Utility Protection

Utility lines and structures indicated on the Construction Drawings, which are to remain in service, shall be protected by the Contractor from any damage as a result of his operations. Where utility lines or structures not shown on the Plan are encountered, the Contractor shall report them to the Owner before proceeding with the Work. The Contractor shall bear the cost of repair or replacement of any utility lines or structures, which are broken or damaged by his operations. All utilities in close proximity to the drill pilot bore, back ream or product pipe installation must be exposed through a "pot-hole", in accordance with appropriate utility locate

laws and regulations, to ensure, through visual inspection, that the drill, reamer or product pipe has caused no damage to the utility and maintains adequate clearance.

Contractor shall take the following steps prior to commencing drilling operations in a location that might contain underground facilities:

a) Contact the utility or utility location/notification service, if appropriate for the construction area.

b) Positively locate and stake all existing lines, cables, or other underground facilities including exposing any facilities, which are located within 10 ft. of the designed drilled path.

c) Modify drilling practices and downhole assemblies to prevent damage to existing facilities.

3) Applicable Regulations and Codes

All work covered by this section shall be performed in accordance with the applicable federal and state codes and laws which pertain to such work and supplemental regulations which are contained in these specifications. In case of conflict between these specifications and any federal or state codes or laws, the most stringent shall govern.

G. Materials

1) Product Pipe

The high-density polyethylene (HDPE) product pipe (see page SP-34 for specification) will be installed using the Horizontal Directional Drilling Process.

2) Drilling Fluids

The Contractor must use a high quality bentonite drilling fluid or equivalent to ensure hole stabilization, cuttings transport, bit and electronics cooling and hole lubrication to reduce drag on the drill pipe and the product pipe. Oil based drilling fluids or fluids containing additives that can contaminate the soil or ground water will not be considered acceptable substitutes. Composition of the fluid must comply with all federal and local environmental regulations.

Drilling fluids must be mixed with potable water to ensure no contamination is introduced into the soil during the drilling, reaming or the pipe installation process.

Disposal of drilling fluids shall be the responsibility of the Contractor and shall be conducted in compliance with all relative environmental regulations, right-of-way and workspace agreements and permit requirements.

Drilling fluid returns can be collected in the entrance pit, exit pit or spoils recovery pit. The Contractor shall immediately clean up any drilling fluid spills or overflows from these pits. Drilling fluids collected in the pits must be removed at the end of each day.

3) Water

Contractor is responsible for obtaining, transporting and storing water required for drilling fluids.

H. Mobilization and Site Preparation

The Contractor shall mobilize all necessary personnel, equipment and materials to construct an entry area for drilling operations and exit area for drilling operations as shown on the plans.

Contractor shall provide appropriate supports to maintain safe working conditions; ensure stability of the entry, exit, settlement and containment pits; minimize loosening, deterioration and disturbance of the surrounding ground, sidewalks, landscaped areas and roads.

I. Horizontal Directional Drilling

1) Directional Drilling Alignment and Profile

a) Contractor shall utilize the available right-of-way or easements for launching the horizontal directional drilling rig. Additional space or an alternative space for securing the horizontal directional drilling rig may be obtained by the Contractor with the Owner's approval.

b) The Contractor may submit alternate horizontal directional drilling routes for approval by the Owner prior to initiating construction. The Contractor shall identify the entry and exit points for each proposed installation route utilizing horizontal directional drilling. The Contractor shall select installation routes to minimize inconvenience to the homeowners or businesses, minimize disruption to landscaped areas and minimize damage to trees.

2) Drill Entrance and Exit Angle

The Contractor shall select drill entrance and exit angles appropriate for the proposed installation routes.

3) Pilot Hole

A smoothly curved pilot hole shall be drilled along the installation routes. The directional tolerance of the hole will be as follows:

a) Vertical tolerances – Plus or minus 0.5 ft from the centerline of the polyethylene conduits. However, the crown of the Product Pipe shall be installed at the depths described on the plans.

b) Horizontal tolerances – Plus or minus 1.0 ft. from the centerline of the polyethylene conduits.

c) Curve radius – At no point in the drilled profile shall the radius of curvature be less than 20 ft.

4) Drill Size

A horizontal directional drill is specified for this project with a minimum of 12,000 lbs of pull back capacity and 1,000 ft-lb of drill head torque. If a drilling rig of smaller size is proposed, justification by both of two methods must be established as follows:

a) Contractor must provide installation load calculations that support the use of a smaller drill rig with an adequate margin of safety to perform the installation.

b) Documented experience in comparable soils, depths, length of installation and pipe diameter must be supplied along with customer verification of satisfactory performance on comparable projects.

5) Instrumentation & Fail Safe

Contractor shall at all times provide and maintain instrumentation which will accurately locate the pilot hole, measure drill string axial and torsional loads, and measure drilling fluid discharge

rate and pressure. Engineer will have access to these instruments, readings and written output at all times.

The position of the drill string shall be monitored by Contractor with an aboveground locator/"walkover" system. Contractor shall compute the position in the x, y and z axis relative to the ground surface from downhole survey data at a minimum of once per length of each drill pipe. Deviations of 1-foot or more either horizontally or vertically between the recorded position of the drill string and the specified position of the drill string shall be documented and immediately brought to the attention of the Engineer and owner.

A quality assurance piece of SDR 13.5 HDPE pipe shall be pulled with each drilled section of SDR 11 HDPE to monitor the pulling force.

6) Reaming Operations

Reaming operations to the required hole size shall be submitted by the Contractor to the Engineer for review and approval prior to initiation of construction.

7) Drill Pit Protection & Repair

All pits and "pot holing" must be filled in or covered completely at the end of each day. All holes and pits must be filled in within 3 days of opening. Any disturbed pavement shall be repaired. Fills shall consist of 8-inch loose lifts mechanically compacted to 95% modified proctor.

8) Installation for Tight Radius Installation Routes

When open-cut trench installations are shown on the plans, narrow trenching techniques shall be followed. Trenches shall have a maximum width of 3 ft and lengths no greater than 100 ft. The Contractor may exercise the option to use horizontal directional installations in such cases. Contractor will be required to submit plan drawings that illustrate that the radius of curvature will not be less than 20 ft.

9) Water/Sewer, Storm Drain Conflicts

Areas of conflict between water, sewer and storm utilities are identified on the plan. Prior to initiating construction, Contractor shall submit proposed plan and method statement for installing Product Pipe at the identified locations to the Owner for approval.

10) Monitoring

The Contractor shall provide continuous competent monitoring during the installation of the Product Pipes along the designed routes. The Contractor shall record the ground elevation ahead of the horizontal directional drilling operation prior to initiating the project.

The Contractor shall monitor ground movements associated with the project until all activities are completed and for one week thereafter. Readings shall be reported daily to the Engineer. The allowable settlement or surface raising shall not be greater than 0.5 inches. In the case of observed settlement or surface raising, the monitoring points and observation frequency shall be increased as requested by the Engineer. Any problems detected above the allowable limits shall be corrected by the Contractor at his own expense.

J. Environmental and Clean-Up

1) Waste cuttings and drilling mud shall be dewatered and dried by Contractor to the extent necessary for disposal in offsite landfills.

2) "Blow holes" or "breakouts" of drilling fluid to the surface must be cleaned up immediately and the surface area washed and returned to original condition. All drilling fluids, spoils and separated material will be disposed of in compliance with local environmental regulations. If the amount of surface returns exceeds that which can be contained and collected using small sumps, drilling operations shall be discontinued until surface return volumes can be brought under control. Equipment and materials for cleanup and contingencies must be provided by Contractor and stored at all sites. No fluid shall be allowed to enter the storm sewer system. Fluids shall be vacuumed.

3) Construction related activities involving fuels and lubricants such as vehicle refueling and equipment maintenance, including the draining and pumping of lubricants shall be conducted at sufficient distance from the homes to eliminate contamination in case of a spill. Any fuels or lubricants spilled shall be cleaned up immediately to the satisfaction of the Engineer.

4) Contractor shall provide sanitation and garbage facilities and all wastes shall be transported offsite for disposal.

5) Immediately upon completion of work, all rubbish and debris shall be removed from the job site. All construction equipment and implements of service shall be removed and the entire area involved shall be left in a neat, clean and acceptable condition.

K. Pipeline Assembly and Installation

The Contractor shall provide, assemble and pretest the product pipes for installation in the drilled holes as shown on the Drawings. Contractor shall supply all necessary materials, equipment and services to perform the pipeline assembly and installation.

1) Assembly of High Density Polyethylene (HDPE) Product Pipe

a) The Contractor shall assemble the HDPE product pipe in lengths (minimum length 100-feet) sufficient to reach from entry of site to exit of site with sufficient extra length to enable joining to adjacent lengths of pipe. At the Contractor's option thermal butt-fusion or electrofusion may be used for assembling the product pipe sections to be installed with horizontal directional drilling.

b) The Contractor shall string out the product pipe on sufficient rollers to prevent the pipe from being dragged on the ground during stringing or pullback.

c) During assembly and stringing out the Contractor shall exercise traffic control measures in accordance with the Manual or Uniform Traffic Control Devices. Residents shall be informed at least 24-hours in advance of any blocked access to their homes.

2) Thermal Butt-Fusion of High Density Polyethylene Water Pipe

a) The HDPE water pipe shall be joined together using thermal butt-fusion according to ASTM D2657.

b) The Contractor's plastic pipe welders must possess skill, knowledge and prior formal training by a qualified instructor to consistently produce high quality thermal butt-fusion joints as identified in ASTM D2657. The Contractor shall certify in writing that his welders meet these requirements.

c) The Contractor shall use a butt fusion machine to make all joints. Records of fusion temperature, pressure and time shall be kept by the Contractor for each joint. The

correct tools, including scraping devices must be used. Verification of the correct scraping device by the pipe manufacturer is required.

d) The Contractor's welders must utilize care in the heating operation to prevent damage to the plastic material from overheating or having the material not sufficiently heated to assure a sound joint.

e) All joints shall be visually inspected and compared to standards for good joints for this type of pipe. Beads should be of uniform shape and size all around the joint. Visual inspection results shall be documented by the Contractor.

f) The external bead formed at each butt-fusion joint shall be removed using suitable run-around planning tools. The bead shall be removed down to the pipe's surface, but not below it. The joint must be completely cooled to ambient air temperature before bead removal is commenced.

g) The Contractor shall conduct destructive tests on 5% of all joints made (1 in 20) in accordance with ASTM D638 and document all test results.

3) Electrofusion of High Density Polyethylene Pipe

a) Tie-ins and other joints made in excavations shall be made by electrofusion according to ASTM F1290.

b) The Contractor's plastic pipe welders must possess skill, knowledge and prior formal training by a qualified instructor to consistently produce high quality electrofusion joints as identified in ASTM F1290. The Contractor shall certify in writing that his welders meet these requirements. The Contractor must utilize the correct scraping devices. Verification from the fittings manufacturer will be required.

c) The Contractor shall use an electrofusion machine with data logging facilities to make all joints. Records of current, voltage and fusion cycle time shall be kept by the Contractor for each joint.

d) All joints shall be visually inspected and compared to standards for good joints for this type of pipe. Visual inspection results shall be documented by the Contractor.

e) The Contractor shall conduct destructive tests on 5% of all joints made (1 in 20) in accordance with ASTM D638 and document all test results.

4) Pre-Installation Test of Product Pipe

After each Product Pipe section has been assembled and prior to pullback, the Contractor shall perform an air pretest. The test pressure shall be 50 psi and this pressure shall be held for 30 minutes. Contractor is responsible for providing air compressors for this test. Pressure and temperature shall be monitored and recorded with certified instruments during the test.

End caps, fitting or valves connected to the Product Pipe section shall have a pressure rating equal to or greater than the test pressure.

The Contractor shall confirm with the Product Pipe's manufacturer that the specified test procedures are suitable for the supplied pipe. Any recommended modifications to the procedures outlined in this specification shall be brought to the attention of the Owner for approval.

If leakage is indicated, the pipe shall be visually inspected and the leaking joint(s) shall be cut out and replaced and the section re-tested in accordance with the Specification requirements. All cost of repair and re-testing shall be borne by the Contractor.

5) Pipe Support Rollers

Contractor shall provide adequate supports and rollers along the laydown space to support the Product Pipe during stringing and pullback. At no time shall the Product Pipe be dragged along the ground.

6) Pipeline Installation

During the pipeline installation and pullback operation, the Contractor shall monitor the pipe roller system and use of any other equipment to control damage to the pipes. Contractor shall cease installation operations if damage to the pipes occurs. Damage pipes should be repaired or replaced immediately. Pulling operations may not resume until the pipe is repaired or replaced.

Contractor shall ensure that the Product Pipes are not distorted from a circular cross section in accordance with ASTM F714 and ASTM D2122. Contractor shall monitor pulling tensions during the installation process.

a) During the installation of the HDPE pipe, the Contractor shall monitor the pipe roller system to prevent damage to the assembled pipes. The contractor shall cease installation operations if damage to the pipe occurs. Any such damage shall be repaired by the contractor before installation operations resume.

b) During pullback of the HDPE pipe care shall be taken to prevent pipe buckling and bending beyond the pipe manufacturer's recommended bending radius.

c) The HDPE pipe may be installed by pulling or a combination of pulling and pushing. At all times the push/pull load applied to the pipe shall be continually monitored by calibrated load measuring devices.

d) The Contractor shall attach a pulling head to the front section of the pipe being installed. Prior to commencement of pull back operations, the pulling head design shall be submitted to the Engineer for approval.

e) The pullback of the HDPE pipe shall be done on such a manner so as not to damage the pipe.

f) During pullback of the HDPE pipe, the pulling load shall not exceed the following:

21,000-lbs. for 8-inch pipe
33,000-lbs. for 10-inch pipe
46,000-lbs. for 12-inch pipe

g) Connection to existing pipelines requires restraint as shown on the Detail Sheet.

7) Boring Pit Protection & Repair

Soils and spoils removed for boring pits shall be removed from the site by the end of each day. Boring pits shall be covered or filled at the end of each working day. Final fill and repair of boring pits shall consist of NCTCOG flowable backfill (2.1.5e) using Type "B" fill (2.1.5c), and pavement repair as appropriate. Refer to Embedment Detail. All costs associated with removal and replacement of select fill shall be included in pipe installation.

SP.33 HIGH DENSITY POLYETHYLENE WATER PIPE

A. Summary

1) This Section includes specific requirements related to the manufacture and testing of high density polyethylene product pipe.

2) Related Sections: The following sections contain requirements that relate to this Section:

- Item SS-1 Horizontal Direction Drilling

B. Submittals

Prior to initiating construction, the Contractor shall conduct and/or submit the following to the Engineer for review and approval:

- The manufacturer shall certify that the materials used to manufacture the pipe meet the requirements of this specification.

C. Reference Standards

The following publications form a part of this Specification to the extent referenced. All materials and fittings supplied and work performed herein shall conform to the latest edition of the applicable industry, codes, standards, references and recommended practices listed below. In case of conflict, the requirements of the specification shall prevail. The publications are referred to in the text by abbreviation only:

1) American Society of Testing Materials (ASTM)

a) ASTM D1248 – Specification for Polyethylene Plastics Molding and Extrusion Materials

b) ASTM D3350 – Standard Specification for Polyethylene Plastics Pipe and Fittings Materials

c) ASTM D2657 – Heat Joining of Polyolefin Pipe and Fittings

d) ASTM D3261 – Butt Heat Fusion Polyethylene Plastic Fittings for Polyethylene Plastic Pipe and Tubing

e) ASTM D638 – Standard Test Method for Tensile Properties of Plastic

f) ASTM F1055 – Electrofusion Type Polyethylene Fittings for Outside Diameter Controlled Polyethylene Pipe and Tubing

g) ASTM F1290 – Electrofusion Joining Polyolefin Pipe and Fittings

2) American Water Works Association (AWWA)

AWWA C906 – Polyethylene Pressure Pipe and Fittings, 4 inch through 63 inch for Water Distribution

3) National Sanitation Foundation (NSF)

NSF Standard #14 – Plastics Piping Components and Related Materials

SP.34 SANITARY SEWER LINE AND MANHOLE TESTING

Each completed sanitary sewer line section shall be tested, prior to the final acceptance of completed section. The following tests shall be performed in accordance with the Texas Natural Resource Conservation Commission Chapter 317, and published in Texas Register (Volume 18, Number 68, September 7, 1993).

a) Low pressure air test for all Sanitary Sewer Line (pipe burst, bore, open cut, etc.) included in this Contract.

b) Deflection testing (Mandrel Test) after the final backfill has been in place at least 30 days.

1) The mandrel shall have an outside diameter (O.D.) equal to 95% of the inside diameter (I.D.) of the pipe. The inside diameter of the pipe, for the purpose of determining the outside diameter of the mandrel, shall be the average outside diameter minus two minimum wall thicknesses for O.D. controlled pipe and the average inside diameter for I.D. Controlled pipe, all dimensions shall be per appropriate standard. statistical or other "tolerance packages" shall not be considered in mandrel sizing.

2) The mandrel shall be constructed of a metal or a rigid plastic material that can withstand 200 psi without being deformed. The mandrel shall have nine or more "runners" or "legs" as long as the total number of legs is an odd number. The barrel section of the mandrel shall have a length of at least 75% of the inside diameter of the pipe. A proving ring shall be provided and used for each size mandrel in use.

3) Adjustable or flexible mandrels are prohibited. A television inspection is not a substitute for the deflection test. A deflectometer may be approved for use on a case-by-case basis. Mandrels with removable legs or runners may be accepted on a case-by-case basis.

c) Acceptance Testing: After the completion of the manhole, the manholes shall be visually inspected by the Owner before final acceptance. In addition, the Contractor shall perform low pressure vacuum air testing on each manhole. Each manhole shall be tested separately and independently of the sanitary sewer lines. All sanitary sewer lines coming into the manhole shall be sealed with an internal pipe plug. The method of testing shall be by means of creating an air vacuum within the manhole, whereby, a 10" Hg. (mercury) vacuum will be developed. The air vacuum shall then be monitored once it has reached 10" Hg. for a test period of one minute. The allowance drop in air vacuum shall be no greater that 1" Hg. during the one-minute test period.

The air vacuum testing procedures for the manholes shall be according to the recommendations of Cherne Industries, Inc., (Air-Loc Vacuum Manhole Tester), or such other manufacturers/suppliers that would have acceptable equipment designed specifically for air vacuum testing of manholes. All test shall be completed in the presence of the City's or site representative. The following information shall be contained in the Contractor's report to the City:

1) Date and time of testing
2) Name of contractors representative performing the tests
3) Equipment used and calibration procedures
4) Manhole location(s)
5) Air-vacuum maximum (Hg.)
6) Test period
7) Drop of air vacuum within the test period
8) Other observers at the testing site

The following Table presents 5% deflection mandrel sizes adopted for this project to comply with Chapter 317 of 30 Texas Administrative code. Dimensions listed below supersede the dimensions given in Item 6.7.2(g) of The Standard Specifications for Public Works Construction--North Central Texas.

5% DEFLECTION MANDREL

Nominal I.D., Inches	Mandrel O.D., Inches	Nearest 1/16	Minimum Runner Length, Inches	Minimum Number of Mandrel Runners
6	5.70	5-11/16	4-1/2	9
8	7.60	7-10/16	6	9
10	9.50	9-1/2	7-1/2	9

9) Deflection tests shall be done without mechanical pulling devices.

10) The rigid mandrel shall be constructed of a metal or rigid plastic that can withstand 200 psi without deforming.

11) Adjustable or flexible mandrels are prohibited.

12) Mandrels with removable legs or runners may be accepted on a case by case basis.

13) A proving ring shall be provided for each size mandrel used.

SP.35 SANITARY SEWER LINE MATERIAL

The following sewer pipe for open cut and bore is acceptable for this project in accordance with the assigned NCTCOG Standard Specification, item number:

- Gravity Sewers:

  NCTCOG Item 2.12.26
  Polyethylene (HDPE) DR21
  ASTM D-1248
  PE Resin - PE 3408
  Cell Classification ASTM D-3350
  Inside Pipe shall be White

SP.36 SANITARY SEWER LINING

A. Description

It is the intent of this specification to provide for the reconstruction of pipelines and conduits by the installation of a resin-impregnated flexible tube and then cured by circulating hot water or introducing controlled steam within the tube (cured-in-place pipe, CIPP), or by a fold and form method, in which a folded pipe is inserted in the pipe and heated, pressurized internally causing the liner to expand against the interior of the original pipe. The finished liner pipe shall extend over the installation length in a continuous, tight fitting, watertight, pipe-within-a-pipe. All liners shall be smooth walled when set. It shall be the responsibility of the Contractor for all design, materials, transportation, equipment and labor necessary for the successful completion of the lining.

The Contractor shall contact the owner/residents and businesses within the project limits to inform them of the project and provide them with any information deemed necessary for the successful performance of the contract, and to inform them of temporary sewer service disconnections.

If the Contractor damages the sewer during construction and is unable to complete the lining in a satisfactory manner, the cost of the dig and/or repairs shall be included in the unit price bid for the cured in place liner.

TV tape is available from the Owner for the sanitary sewers listed in the plans. The bidder shall satisfy himself as to the condition of the sanitary sewer and the number of point repairs to be made.

B. Materials

The minimum length of the liner pipe shall be that deemed necessary by the Contractor to produce a finished pipe tightly formed to the existing pipe and which effectively spans the distance from the inlet to the outlet of the respective manholes.

1) Tube: The tube material and design considerations shall meet the requirements of ASTM F1216, Section 5.1 (or current ASTM Standards), and modified as follows:

   a. The tubes shall have a uniform thickness that when compressed at installation pressures will equal the specified nominal tube thickness not to exceed 1/2-inch.

   b. The tube shall be fabricated to a size that when installed will tightly fit the internal circumference and length of the original pipe. Allowance should be made for circumferential stretching during inversion.

   c. The tube shall be homogeneous across the entire wall thickness containing no intermediate or encapsulated elastomeric layers. No materials shall be included in the tube that are subject to delamination in the cured insitupipe.

   d. The wall color of the interior pipe surface of the liner after installation shall be white or light brown so that a clear detail examination with closed circuit television inspection equipment may be made.

2) Resin: The resin system shall meet the requirements of ASTM F1216.

3) Fold-and-Form

   a. PVC Materials: PVC Fold-and-Form Pipe shall meet the performance requirements of ASTM D3034. The PVC compound used for the folded pipe shall conform to ASTM D1784 classification 12334B, 12344B, or 12454B or C. Compounds that have different cell classifications because one or more properties are superior to those of the specified compounds are also acceptable.

   b. Polyethylene Materials: Folded polyethylene liner pipe shall be manufactured from a high density polyethylene compound and meet or exceed the standards of PE 3408, Type III, Class C, Category 5, Grade P34 in accordance with ASTM D1248, ASTM 2837.

C. Design Considerations

1) Buckling

The Contractor shall be responsible for all aspects of the design of the liner pipe. The pipe after lining shall be capable of sustaining outside loads, resist chemical attack that normally occurs in sanitary sewer, and will maintain hydraulic characteristics over a fifty year design life. No design shall rely on bonding to the existing pipe or rely on the remaining strength of the existing pipe. The minimum acceptable design criteria shall be as follows:

The Liner Pipe shall be designed to fit the existing sanitary sewer. Provisions shall be made in the manufacture such that these SDR's will be achieved after the pipe has been expanded to the existing pipe.

The existing sewer shall be considered to be in a fully deteriorated gravity pipe condition and that the original pipe is not structurally sound and cannot support soil and live loads. The liner pipe shall be designed to support hydraulic, soil and live loads. The following equation should be used to calculate the thickness required to withstand these loads without collapsing.

$$q_t = \frac{C}{N}[32R_wB' E'_s (E_L\ 1/D^3)]^{1/2}$$

where:

q_t = total external pressure on pipe, psi

R_w = Water buoyancy factor (.067 min.) = $1 - 0.33 (H_W/H)$

H_w = height of water above top of pipe, ft. = 12.0 feet

H = height of soil above top of pipe, ft., (use existing cover)

B = coefficient of elastic support = $1/(1 + 4e^{-0.065H})$ inch-pound units

l = moment of inertia of liner in. ^{4}/in. = $t^3/12$

t = thickness of liner, in.

C = ovality reduction factor (up to 5%) = 0.64

N = factor of safety = 2

E'_s = modulus of soil reaction, psi = 700 psi

E_L^S = long term (50 year) modulus of elasticity of liner, psi

Polyethylene (PE) = 22,000 psi

Polyvinyl chloride (PVC) = 140,000 psi

Cured-in-place pipe with standard polyester resin (CIIP) = 125,000 psi

Cured-in-place pipe with enhanced polyester resin (CIPP) = 200,000 psi

Existing Soil Density, lb./cu. ft. = 120 pcf

Live Load, lb./sq. ft = AASHTO H_{20} Wheel Load of 16,000 lb.,

and

D = mean inside diameter of original pipe, in.

The linear design from the above equation should have a minimum thickness as calculated by the following formula:

$$\frac{E\ 1}{D^3} = \frac{E}{12\ (SDR)^3} > 0.093 \text{ (inch-pound Units),}$$

where:

E = initial modulus of elasticity, psi (min.)

Polyethylene (PE) = 110,000 psi

Polyvinyl Chloride (PVC) = 400,000 psi

Cured-in-place pipe with standard polyester resin (CIPP-Insituform) = 250,000 psi

Cured-in-place pipe with enhanced polyester resin (CIPP-Insituform) = 400,000 psi

NOTE: Flexural modulus has been reduced for long-term loading in accordance with the recommendations contained in AASHTO Standard Specifications for Highway Bridges, Section 18, "Soil-Thermo Plastic Pipe Interaction System."

The in-place liner thickness shall be as designed by the Contractor and manufacturer. The maximum thickness designed shall provide for the following characteristics after the liner is completed in place.

Section	Upstream M.H.	Downstream M.H.	"n" Factor	Minimum Required Capacity MGD
5	169	127	0.013	0.65
8	147	146	0.013	0.80
9A	152	151	0.013	0.47
10	200	199	0.013	0.65
11	43	41	0.013	0.60
12	110	108	0.013	0.46
	108	106	0.013	0.40
14	1872	1874	0.013	0.54
	1874	1871	0.013	0.54
	1871	1897	0.013	0.48
	1897	1875	0.013	0.55

The Contractor shall submit all design calculations for review and approval by the Owner fourteen working days prior to commencement of the work to install the liners in existing pipe.

2) Hydraulic Capacity

Overall condition of the pipeline system shall be maintained with its hydraulic profile as large as possible. Offsets of two adjacent pipe sections more than 25 percent of the diameter of the pipe shall be repaired by grinding and/or straightening the offset to be a usable shape in a manner mutually acceptable between the Contractor and the Engineer.

D. Installation

1) Safety: The Contractor shall carry out his operation in strict accordance with all OSHA and manufacturers' safety requirements. Particular attention is drawn to those safety requirements involving entering confined spaces.

2) Traffic Control: Traffic Control shall be the responsibility of the Contractor and shall conform to TxDOT and other portions of these specifications and the contract Special Provisions. The Contractor shall maintain traffic during working periods. During non-working periods, the Contractor shall open the entire roadway to traffic.

3) Access: The City will designate all manhole access points and provide rights of access to these points. If a street must be closed to traffic because of the orientation of the sewer, the

Contractor shall institute the actions necessary to do this for the mutually agreed time period between the City and the Contractor.

4) Water Usage: Water is available at City hydrants for cleaning, inversion and other work items requiring water. The system is owned by City and the Contractor shall obtain a temporary meter from the Owner prior to utilizing hydrants for a water source.

5) Cleaning of Sewer Lines: The Contractor shall remove all internal debris out of the sewer line that will interfere with the installation of liner pipe. The material removed from the sanitary sewer shall be disposed by the Contractor at Contractor's expense.

6) Bypassing Sewage: The Contractor shall provide for the flow of sewage around the section or sections of pipe designated for lining. Pumps and bypass lines utilized shall be of adequate capacity and size to handle the flow. The Contractor shall provide to the City a detail of the bypass plan.

7) Inspection of Pipelines: The Contractor shall provide inspection of existing lines with experienced personnel trained in locating breaks, obstacles and service connections by closed circuit television. The interior of the pipeline shall be carefully inspected to determine the location of any conditions which may prevent proper installation of the Insitutube or Liner in the pipelines, and it shall be noted so that these conditions can be corrected. A videotape and suitable log shall be provided to the Owner. The Contractor shall base the design of the liner on inspections made immediately prior to installation. Inspections shall be undertaken in the presence of the Owner. No compensation will be made for point repairs.

8) Line Obstructions: It shall be the responsibility of the Contractor to clear the line of obstruction such as solids, dropped joints, roots, protruding service connections and collapsed pipe that will prevent the insertion of the liner pipe. If inspection reveals an obstruction that cannot be removed by conventional sewer cleaning equipment, then the installer shall make a point repair excavation to uncover and remove or repair the obstruction and shall be included as part of the original bid.

   The Contractor shall remove protruding taps to the inside wall of the pipe. In no case shall the pipe be less than 95 percent open to flow.

   At all points where the liner pipe has been exposed (such as service connection fittings, or other points where the old pipe must be removed), the liner pipe and fittings shall be encased in cement-stabilized sand or other high density material as specified by the Owner to prevent deflection due to difference in subsidence.

   After the encasement material is in place and accepted by the Owner's representative, backfill is placed and compacted to required finish grade in accordance with the specifications. Particular care shall be taken to ensure compaction of earth beneath the lateral pipe in order to reduce subsidence and resultant bending at the lateral connection at the sewer main.

9) Installation

   a. The cured-in-place pipe (CIPP) installation shall be in accordance with ASTM F1216, Section 7, with the following additional requirements:

      i) Resin Impregnation: The quantity of resin used for the tube impregnation shall be sufficient to fill the volume of air voids in the tube with additional allowances for polymerization shrinkage and the loss of resin through cracks and irregularities in the original pipe wall. A vacuum impregnation process shall be used to uniformly

distribute the resin through the tube. A roller system shall be used to uniformly distribute the resin throughout the tube.

ii) The resin shall be cured by circulating hot water within the tube or other method approved in writing by the City. When cured, the finished insitupipe will be continuous and tight fitting.

Temperature gauges shall be placed to determine the temperature of the incoming and outgoing water from the heat source. Another such gauge shall be placed inside the tube at the remote end to determine the temperature at that location during the cure cycle.

b. Fold-and-Form Pipe

Fold-and-Form shall be manufactured in a folded shape and spooled in a continuous length for storage and shipping to the jobsite.

The spool of folded pipe shall be heated to make it flexible, so that it may be bent for insertion into the existing pipe without crimping, kinking over-straining or scoring the folded pipe against the existing structures.

A cable shall be strung through the existing pipe and attached to the folded pipe. It shall then be pulled through the existing pipe to the terminating end.

After it is fully inside the existing pipe, the folded pipe shall be cut off at the starting point and restrained at the terminating piping. It shall then be rounded manually at the terminating points and steel (or nonplastic) manifold pipes banded to it as required for the processing. Heat in the form of steam shall be continually applied. The rounding shall be performed in stages as required by the material properties and the licensors procedures.

The Contractor shall submit the details of the proposed processing, including the progression of steps, the pressure (specified steam, air, or water), the duration and the temperatures. When processing at temperatures near the melting temperature, the Contractor shall demonstrate how the folded pipe is to be contained or protected from blowouts. Any damage, either to the pipe or property of others shall be repaired at the Contractor's expense, to the satisfaction of the parties involved.

For PVC, the rounding shall begin when the temperature of the material reaches a range of 185° to 210°F. The rounding device shall be inserted into the manifold and by use of steam pressure, the rounding device shall be forced through the pipe rounding it in a progressive manner. In this way extraneous water shall be progressively moved to the terminating end, and dimples will be formed at all branch connections. When rounding is complete, air pressure will replace steam as the heat is removed. Water may be added while maintaining the air pressure to cool the pipe to ambient temperature.

For polyethylene, steam pressure shall be increased, in order to raise the temperature within the material to 235°F, its crystalline temperature, to reestablish a memory within the material. Temperature sensors must be positioned in the pipe wall in order to direct the addition or cessation of heat to meet these requirements.

When the temperature within the wall uniformly reaches the 235°F temperature, the rounding shall begin. If sequential rounding by use of rounding tool traversing the inside of the line is not utilized, the Owner may require dewatering of the solid surrounding the

pipe, if in his opinion, infiltration in the pipeline cannot or will not drain, and incomplete re-rounding is likely to result.

Prior to removing steam pressure, air pressure shall be applied to maintain balance as the heat is removed. When the inside temperature falls below 130°F, water may be added to cool the pipe to ambient temperature. Care shall be taken to sustain air pressure until ambient temperature is reached.

c. Service Connections

Active services must be identified by the Contractor prior to installing the lining. After the pipe has been relined and tested only existing active service connections shall be reconnected. The reconnection of services shall be done without excavation, unless otherwise specified by the Owner; this will be accomplished from the interior of the pipeline by a television camera directed cutting device. All recut service connection shall be free of burrs and frayed edges, or any restriction preventing free wastewater flow. Location of the service shall be made by inspection of the preconstruction TV tape and other proven detection methods employed by the Contractor.

The Contractor shall certify that he has a minimum of two (2) complete operational units plus components on site before each relining. No additional payment will be made for excavations for the purpose of reopening connections and the Contractor will be responsible for all costs and liability associated with such excavation and restoration work.

The cost of all service connections shall be included in the linear foot cost for lining the existing liner. Open-cut service connections shall include the cost for landscape restoration as set forth in these Special Conditions.

d. Inspection and Testing

After all testing and work is completed, the Contractor shall provide the Owner with videotape showing the completed work including the restored conditions.

The lining pipe shall be continuous, without joints over the entire length of the pipe. The liner shall be free of all visual and material defects except those resulting from pre-lined conditions (such conditions shall be brought to the attention of the Owner prior to relining). There shall be no pits, pinholes, cracks or crazing. The surface shall be smooth and free of waviness throughout the pipe.

Any defects that will affect the structural integrity of the reconstructed pipe shall be repaired or the liner replaced at the Contractor's expense.

Cured-in-place pipe, CIPP samples shall be prepared and tested in accordance with ASTM F1216, Section 8.1 using either method proposed.

Leakage testing of the CIPP shall be accomplished during cure while under a positive head. Products in which the pipe wall is cured while not in direct contact with the pressurizing fluid (e.g., a removable blender) must be tested by an alternative method approved by the Owner.

Visual inspection of the CIPP shall be in accordance with ASTM F1216, Section 8.4.

e. Cleanup

After the installation work has been completed and all testing acceptable, the Contractor shall clean up the entire project area and return the ground cover to grade. All excess material and debris not incorporated in to the permanent installation shall be disposed of by the Contractor. Sidewalk, driveway, street surfaces and lawn areas shall be restored in accordance to the City Specifications at the Contractor's expense.

f. Acceptance and Quality Control of Sanitary Sewers

i) Final Sewer Cleaning

Prior to final acceptance and final manhole inspection of the sewer system by the City, Contractor shall flush and clean all parts of the system. Remove all accumulated construction debris, rocks, gravel, sand, silt, and other foreign material from the sewer system at or near the closest downstream manhole. If necessary, use water jet, mechanical rodding or bucketing equipment.

ii) Acceptance of Sanitary Sewer

Prior to final acceptance of any sanitary sewer, the Contractor shall inspect by means of remote closed circuit television equipment the entire segment of sanitary sewer, manhole to manhole. Sewers shall be cleaned prior to inspection. The original videotape of the inspection shall be furnished to the City.

The following conditions shall apply to the sewer acceptance TV inspection:

a. The videotape shall be of the 1/2" VHS tape with a high quality picture and sound and shall be recorded in color.

b. The Contractor shall supply the videotapes and the recording shall be done in the "E.P. Mode" (360 minutes/tape).

c. The TV camera shall be pulled through the sewer at a maximum rate of 35 feet per minute.

d. The camera shall be pulled downstream in all cases.

e. The lens of the camera shall be cleaned at each manhole or when directed by the City.

f. The videotape shall have an on-screen display showing the following:

- Upstream and downstream MH numbers
- Footage from upstream MH
- Date of inspection

g. Sewer shall not be televised within 48 hours of a rainfall event greater than 1/4".

Dimensions: The Contractor shall be responsible for determining diameters of sanitary sewers.

SP.37 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.

SP.38 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 of 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 provision in these Specifications for extra work shall apply.

SP.39 WATER FOR CONSTRUCTION

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

SP.40 SOLID SOD

The Contractor shall furnish, place and maintain solid sod throughout the contract. Maintaining sod shall include, but not be limited to watering, fertilizing and aerating. All areas disturbed by the Contractor shall be restored by fine raking and the placement of solid sod. The Town will only pay for solid sod in the parkway between the back of curb and right-of-way line, and between the designated stations along the sanitary sewer line and within the 15-foot permanent easement. All areas disturbed outside the permanent easement for convenience of construction within these station limits shall be restored with solid sod at contractors expense.

SP.41 TESTING

SEWERLINE – NCTCOG Item 6.7.2 (c) TU inspection of line; Air test lines; Vacuum test manholes; Mandrel test of line (TNRCC requirements).

SECTION TOA

Town of Addison Irrigation Specification

Town of Addison Irrigation Specifications

Revised 01/31/02

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.

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

2. 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. 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.

3. The 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 contractor must supply a workmanship warranty for (1) year from date of acceptance.

4. 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 contractor's expense.

5. 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 contractor to provide. Inspection of taps by the Water Department Representative must occur. Excavation and tap permits are required. Contact the Town of Addison Water Department at (972) 450-2871.

6. 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 pavers 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.

7. Backflow Devices: Only Watts 007 M series inline check valve assemblies with the stainless steel ball valve handles and nuts are to be used. 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 pavers for

proper stability and height adjustment. The 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.

8. Sleeves : All paving must have Town approved sleeve sizes and quantities present. It is the responsibility of the 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 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.

9. Glue and Primer: Use Turftite or Wet-R-Dry brand glue and a good quality purple primer on all lateral lines and all main lines. Avoid excessive use and wipe excess glue off of all joints and fittings with a clean rag.

10. 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. 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.

11. 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.

12. Valves:

A. 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. Blue wire shall be used as the station wire for the Master Valve.

B. 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 small (1/2") pea gravel placed underneath the valve in such a manner as to prevent soil infiltration into the box. The small (1/2") pea gravel should be 2 inches from the bottom of the valve body.

C. 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.

D. Quick Coupler Valves: Use only Buckner QB3SBL07 ¾ inch single lug 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 ½ inch steel rebar with a stainless steel worm screw clamp. House QCV in a 10 inch round plastic Ametek valve box.

E. Flowmeters: Purchase from a Rain Master supplier and install appropriately sized flowmeter. Follow all installation instructions as approved by Rain Master. The contractor must also purchase from Rain Master and install shielded Rain Master EV-Cab-Sen flow meter cable and install within continuous ¾" or larger gray PVC conduit with 6 inch or larger J-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; no splices will 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 contractor to adhere to these requirements. At final walk through, proper operation of the flow meter at the Rain Master controller must be demonstrated.

13. Heads: All heads will be installed using the polyethylene green nipples screwed into threaded fittings unless noted otherwise.

A. Pop-ups - Only Toro 570Z series are permitted. Install ¾ inch above the finished grade.

a. 4 inch pop-ups: turf, tree bubblers within turf areas (use Toro FB-PC nozzles).

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 no 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 of and when heads with side inlets installed using funny pipe will be allowed. When authorized, use Hardie Blue Line Pipe with Toro barb fittings.

B. Rotaries - Only Hunter I-20 Series are permitted, unless noted otherwise. Install ¾" above finished grade.

14. Risers: Use sch.80 PVC with Toro 570-Z shrub head adapters with a short polyethylene nipple screwed into the threaded fitting in the ground. The Inspector reserves the right to determine placement of risers versus pop-ups.

15. 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.

16. 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.

17. Backfilling: Prior to any backfilling of trenches, an inspection by the Town's 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 top soil. No rocks greater than 1 inch are allowed. Compact trenches to alleviate settling. Minimal depth of coverage is 12 inches.

18. 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.

20. Any deficiencies in coverage noted by the Town Irrigation Inspector will be rectified at the cost of the contractor.

19.Controller: A Town's representative will determine the type of controller to be used. All controllers shall have a concrete pad of 36" by 36" by 6". 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 ¾" sweep elbow for phone service is to be installed as well. All national and local codes must be followed during the installation.

A. A/C controller - Only Irritrol MC Plus controllers will be acceptable. Both Mini-clickrain 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.

B. Battery and/or Solar Operated Controllers - Only LEIT controllers will be acceptable. Do not install rain or freeze sensors on these controllers.

C. 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 all necessary 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, flow meter (same size as the mainline), and shielded EV-CAB-SEN flow meter cable. It is the 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. The entire installation must conform to Rain Master specifications and be approved by the Town 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-clik freeze and rain sensor must be installed in an approved location and by an approved method. For part numbers and pricing of any Rain Master equipment, contact Matt Swor of Longhorn Inc. at (972) 406-

0222. For technical questions,call John DuBose of Rain Master at 214-632-2289.

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

TOWN OF ADDISON
PAYMENT AUTHORIZATION MEMO

DATE: 4/15/03 Claim # _____ Check $ 63,222.97

Vendor No. _____

Vendor Name BARSON UTILITIES, INC.

Address 5326 W. LEDBETTER

Address DALLAS, TEXAS 75236

Address _____

Zip Code _____

INVOICE # OR DESCRIPTION	FUND	DEPT	OBJ	PROJ	SAC	AMOUNT
	(00)	(000)	(00000)	(00000)	(000)	($000,000.00)
03-0007	62	000	58210	93601		63,222.97

TOTAL # 63,222.97

EXPLANATION CONSTRUCTION PAYMENT ON BROKHAVEN CLUB SANITARY SEWER REHAB.

Steve Chittham
Authorized Signature

Finance

DALE- PLEASE LOOK THIS OVER. THANKS!

Steve C.

BUI JOB NO: 03-0007

PRJ. NO: N/A

OWNER: Town of Addison
PROJECT: Brookhaven Club Sanitary Sewer Line
NUMBER OF DAYS: 95 DAYS
W.O. DATE: 1-13-03
DAYS USED: 78 Days

ESTIMATE PERIOD:
Estimate No: 2
March 1, 2003 to March 31, 2003

CONTRACT AMT: $ 602,828.00
CHANGE ORDER:
REVISED AMT:

ITEM	DESCRIPTION	QTY	UNIT M/S	UNIT PRICE	CONTRACT VALUE	THIS REQUEST	PREVIOUS WORK	TOTAL TO DATE	THIS ESTIMATE	VALUE TO DATE
1	10" SEWER	30	LF	$ 67.00	$ 2,010.00			0	$ -	$ -
2	10" SEWER BY DIRECTIONAL	1360	LF	$ 234.00	$ 318,240.00		1442	1442	$ -	$ 337,428.00
3	6FT MANHOLE (SHEET#1)	1	EA	$ 17,675.00	$ 17,675.00	1 ✓		1	$ 17,675.00	$ 17,675.00
4	6FT DIA DROP MANHOLE	2	EA	$ 11,015.00	$ 22,030.00	2 ✓		2	$ 22,030.00	$ 22,030.00
5	4FT DIA MANHOLE (SHEET 3) + Sheet 1	1	EA	$ 4,135.00	$ 4,135.00	2 ✓		2	$ 8,270.00	$ 8,270.00
6	6FT DIA MANHOLE @ 6+70	1	EA	$ 17,475.00	$ 17,475.00			0	$ -	$ -
7	10" SEWER BY OPEN CUT	315	LF	$ 74.50	$ 8,510.00	100 ✓	108	208	$ 7,400.00	$ 15,392.00
8	10" SEWER BY BORE	75	LF	$ 193.00	$ 14,475.00			0	$ -	$ -
9	4FT DIA DROP MANHOLE	2	EA	$ 4,185.00	$ 8,370.00			0	$ -	$ -
10	CONCRETE PAVEMENT	10	SY	$ 24.00	$ 240.00			0	$ -	$ -
11	10" CONCRETE PAVEMENT	10	SY	$ 82.00	$ 820.00			0	$ -	$ -
12	SOD	350	SY	$ 5.00	$ 1,750.00	500 ✓		500	$ 2,500.00	$ 2,500.00
13	BARRICADES	1	LS	$ 5,000.00	$ 5,000.00		1	1	$ -	$ 5,000.00
14	TRENCH SAFETY	30	LF	$ 1.00	$ 30.00	178 ✓	30	208	$ 178.00	$ 208.00
15	CLEANOUT	1	EA	$ 320.00	$ 320.00	1		1	$ 320.00	$ 320.00
16	TRENCH SAFETY FOR BORE	1	LS	$ 200.00	$ 200.00		1	1	$ -	$ 200.00
17	TRENCH SAFETY DESIGN	1	LS	$ 400.00	$ 400.00		1	1	$ -	$ 400.00
18	IRRIGATION REPAIR	1	LS	$ 1,800.00	$ 1,800.00			0	$ -	$ -
19	TREE REMOVAL	8	EA	$ 1,400.00	$ 11,200.00		8	8	$ -	$ 11,200.00
20	UNDERWATER INSPECTION	1	LS	$ 1,150.00	$ 1,150.00		1	1	$ -	$ 1,150.00
21	CIPP	1010	LF	$ 47.09	$ 47,470.00			0	$ -	$ -
22	8FT CEDAR FENCE	300	LF	$ 32.00	$ 9,600.00			0	$ -	$ -
23	REMOVE RED TIP PHOTENIA	1	LS	$ 750.00	$ 750.00			0	$ -	$ -
24	1" HMAC OVERLAY	345	SY	$ 17.00	$ 5,865.00			0	$ -	$ -
25	CLEARING AND RECONST OF	1	LS	$ 2,755.00	$ 2,755.00	0.5	0.5	1	$ 1,377.50	$ 2,755.00
26	RESTORATION OF GREENHAVEN	1	LS	$ 2,753.00	$ 2,753.00			0	$ -	$ -
27	RESTORATION OF MARSH LN	1	LS	$ 3,605.00	$ 3,605.00			0	$ -	$ -
28	REMOVE REPLACE 4FT WIDE	100	LF	$ 40.00	$ 4,000.00			0	$ -	$ -
										$ 424,626.00
	CHANGE ORDER NO.1									
	MANHOLE 6+70	27	VF	$ 1,000.00	$ 27,000.00					
	TRENCH SAFTEY MH 6+70	1	LS	$ 5,000.00	$ 5,000.00					
	CHANGE ORDER NO.2									
	ELECTRIC LINE RELOCATION	1	LS	$ 3,800.00	$ 3,800.00	1 ✓		1	$ 3,800.00	$ 3,800.00
	CHANGE ORDER NO.3									
	DEMO SIGN AT MARSH & BROOKHAVEN	1	LS	$ 3,000.00	$ 3,000.00	1 ✓		1	$ 3,000.00	$ 3,000.00
									TOTAL C.O.	$ 6,800.00

TOTAL CONTRACT	$ 602,828.00
VALUE TO DATE	$ 431,326.00
LESS PREVIOUS PAY	$ 346,538.63
LESS RETAINAGE	$ 21,566.40
THIS REQUEST	$ 63,222.97

BARSON UTILITIES INC. CONTRACTOR — 4-4-03 DATE

DAVE WILDE- INSPECTOR — 4/8/03 DATE

STEVEN Z. CHUTCHIAN- ENGINEER — 4/14/03 DATE

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

Date: 18-Nov-02

Job Code: 1999123

Barson Utilities, Inc.
5326 W. Ledbetter
Dallas Texas 75236

Attention:

Re: Town of Addison, Texas
Brookhaven Club Sewer

We are transmitting herewith THREE copies of the submittal data furnished by FRASER
These copies have been reviewed and marked as follows:

No. Sheets	Dwg. Description	Explanation				
		No Exceptions Taken	Rejected	Make Corrections Noted	Revise and Resubmit	Submit Specified Items
	HDPE 12.75 inch OD 10.293 inch ID	☑	☐	☐	☐	☐
		☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐
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		☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐

Remarks:

By copy of this letter we are returning TWO copies of the submittal to Town of Addison, Mr. Luke Jalbert

By: John W. Birkhoff, P.E.

Checking of shop drawings by Birkhoff, Hendricks and Conway, L.L.P. is only for general conformance with the design concept of the project and general compliance with the information given in the contract documents. Any action shown is subject to the requirements of the plans and specifications. Contractor is responsible for: dimensions which shall be confirmed and correlated at the job site; fabrication processes and techniques of construction, coordination of his work with that of all other trades; and performing his work in a safe and satisfactory manner.

MINING &
INDUSTRIAL SUPPLY
FRASER

10/31/02

To: Sam Laney
Barson Utilities, Inc.

From: Larry Lisowski
Fraser Mining & Industrial Supply

Subject: Material Data Sheets (6) copies, for HDPE Material Submittal for:
City of Addison-Brookhaven Club Sanitary Sewer Contract.

Proposed pipe is ~~12"~~ 10" IPS SDR-17 Performance Pipe 4600 series
Pipe meets all specification as noted on Addendum No. 2 dated. 9/24/02
O.D. of pipe is 12.750" with an ave. I.D. of 10.293" (meets min. 10" I.D. requirement).
Pipe has a light color interior, also as specified.

☒ NO EXCEPTIONS TAKEN ☐ MAKE CORRECTIONS NOTED
☐ REJECTED ☐ REVISE AND RESUBMIT
☐ SUBMIT SPECIFIED ITEM

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

Date: 11/18/02 By: JCB

P.O. Box 736 Mansfield, TX 76063 • PHONE (817) 477-2900 • FAX (817) 477-5705

DRISCOPLEX™ PE 3408 HDPE Data Sheet

Typical Material Physical Properties of DRISCOPLEX™ HDPE High Density Polyethylene Material

Property		Units	Standard	Typical Value†
Material Designation		–	ASTM F 412	PE 3408
Cell Classification		–	ASTM D 3350	345464C (black) 345464E (color)
Density	[3]	gm/cm^3	ASTM D 1505	0.955 (black) 0.947 (color)
Melt Index	[4]	g/10 minutes	ASTM D 1238	0.1
Flexural Modulus	[5]	lb/in^2	ASTM D 790	>130,000
Tensile Strength	[4]	lb/in^2	ASTM D 638	3200
SCG (PENT)	[6]	hours	ASTM F 1473	>100
HDB at 73°F (23°C)	[4]	lb/in^2	ASTM D 2837	1600
Color; UV Stabilizer	[C] [E]	– –	ASTM D 3350	Black with minimum 2% carbon black Color with UV stabilizer
Linear Thermal Expansion		inch/inch/°F	ASTM D 696	9×10^{-5}
Elastic Modulus		lb/in^2	ASTM D 638	110,000
Brittleness Temperature		°F (°C)	ASTM D 746	<-180°F (,-118°C)
Hardness		Shore D	ASTM D 2240	65

†NOTICE. This data sheet provides typical physical property information for polyethylene resins used to manufacture PERFORMANCE PIPE™ polyethylene piping products. It is intended for comparing polyethylene piping resins. It is not a product specification, and it does not establish minimum or maximum values or manufacturing tolerances for resins or for piping products. These typical physical property values were determined using compression-molded plaques prepared from resin. Values obtained from tests of specimens taken from piping products can vary from these typical values. Performance Pipe has made every reasonable effort to ensure the accuracy of this data sheet, but this data sheet may not provide all necessary information, particularly with respect to special or unusual applications. This data sheet may be changed from time to time without notice. Contact Performance Pipe to determine if you have the most recent edition.

PLASTICS PIPE INSTITUTE

Rev. 1 - Feb. 2002 Supercedes all previous publications

Table 1 DRISCOPLEX™ Products for Municipal and Industrial Sewer Applications

Typical Markets for Pipe and Fittings	DRISCOPLEX™ Piping Product	Typical Features	Previous Designations	
			Former Plexco Product	Former Driscopipe Product
Industrial Sewer, Municipal Sanitary Sewer	DRISCOPLEX™ 4200	1, 5, 6	GREENSTRIPE™ (IPS)	4200 GREENSHELL (IPS)
	DRISCOPLEX™ 4300	3, 4, 6	GREENSTRIPE™ (DIPS)	4300 GREENSHELL (DIPS)
	DRISCOPLEX™ 2000 SPIROLITE®	7	SPIROLITE®	–
Treated/Reclaimed Water	DRISCOPLEX™ 4400	1, 5, 8	PURPLESTRIPE™ (IPS)	4400 LAVENDERSHELL (IPS)
	DRISCOPLEX™ 4500	3, 4, 8	PURPLESTRIPE™ (DIPS)	4500 LAVENDERSHELL (DIPS)
Sanitary Sewer Sliplining	DRISCOPLEX™ 4600	1, 9, 11	PLEXVUE® (IPS)	–
	DRISCOPLEX™ 4700	3, 4, 9, 13	PLEXVUE® (DIPS)	–
	DRISCOPLEX™ 1200	1, 10, 11	–	1200 OPTICORE (IPS)
	DRISCOPLEX™ 1400	3, 10	–	1400 OPTICORE (DIPS)
Industrial & Specialty	DRISCOPLEX™ 1000	1, 15	EHMW	1000
Perforated Pipe	DRISCOPLEX™ 1900	1, 2	EHMW Perforated Pipe	–
Manholes, Structures, Tanks	DRISCOPLEX™ 2000	14	Manholes, Structures, Tanks	–
Industrial	DRISCOPLEX™ 8700	1, 12	EHMW	8700

NOTICE. *Capabilities vary from manufacturing plant to manufacturing plant. Contact Performance Pipe to determine the availability of specific products and the availability of particular stripe or shell colors, striping patterns, and IPS or DIPS sizing.*

Legend for Typical Features:

1. IPS sizing system.
2. Various perforation patterns are available.
3. DIPS sizing system.
4. The standard DIPS longitudinal color stripe pattern is three equally spaced pairs of color stripes extruded into the pipe OD.
5. The standard IPS longitudinal color stripe pattern is four equally spaced single color stripes extruded into the pipe OD.
6. Green color stripes standard. Green color shell available on special order.
7. RSC 40-160 in 18" – 120" ID sizes in open or closed profile.
8. Purple color stripes standard. Lavender color shell available on special order.
9. Solid light gray color.
10. Light gray color lining extruded into pipe ID.
11. Custom wall thickness and diameter available on special order.
12. PE 3408/PE100 material.
13. Green color stripes standard.
14. Manholes, tanks and special structures made from DRISCOPLEX™ 2000 SPIROLITE® and DRISCOPLEX™ PE 3408 piping products.
15. 1-1/2" IPS and smaller sizes only.

MINING & INDUSTRIAL SUPPLY
FRASER

10/31/02

To: Sam Laney
Barson Utilities, Inc.

From: Larry Lisowski
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CONSULTING ENGINEERS, DALLAS, TEXAS

Date: 11/18/02 By: JLB

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CPChem
PERFORMANCE PIPE™

www.performancepipe.com

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	DRISCOPLEX™ 4700	3, 4, 9, 13	PLEXVUE® (DIPS)	–
	DRISCOPLEX™ 1200	1, 10, 11	–	1200 OPTICORE (IPS)
	DRISCOPLEX™ 1400	3, 10	–	1400 OPTICORE (DIPS)
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