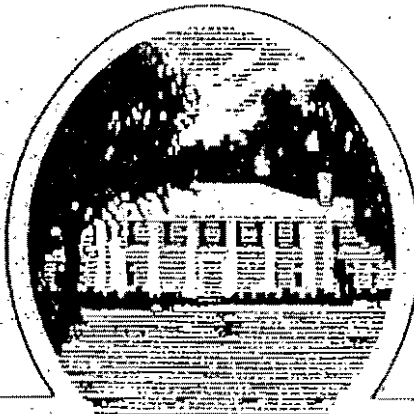


Project Manual

Including Contract Documents and Specifications For:

MILDRED STREET IMPROVEMENTS

for the



T O W N O F
ADDISON

JULY 1990

GINN, INC. CONSULTING ENGINEERS
17103 PRESTON ROAD, SUITE 100, LB-118

DALLAS, TEXAS 75248

(214) 248-4900



PROJECT MANUAL INCLUDING
CONTRACT DOCUMENTS AND SPECIFICATIONS

FOR

MILDRED STREET IMPROVEMENTS
SANITARY SEWER IMPROVEMENTS

TOWN OF ADDISON
DALLAS COUNTY, TEXAS

JULY 1990

Prepared By:

GINN, INC.
Consulting Engineers
17103 Preston Road
Dallas, Texas 75248

DIVISION 0-BIDDING AND CONTRACT REQUIREMENTS

00010	PRE-BID INFORMATION
00030	ADVERTISEMENT FOR BIDS
00040	BIDDERS QUALIFICATION FORMS
00100	INSTRUCTIONS TO BIDDERS
00110	GENERAL INSTRUCTIONS FOR BONDS
00300	PROPOSAL AND BID FORMS
00410	BID BOND FORM
00430	SUBCONTRACTOR LISTING
00510	STANDARD FORM OF AGREEMENT
00600	PERFORMANCE BOND (PB-1 THRU PB-2)
00610	PAYMENT BOND (PB-3 THRU PB-4)
00640	MAINTENANCE BOND
00650	CERTIFICATE OF INSURANCE
00700	GENERAL CONDITIONS OF AGREEMENT (GC-1 THRU GC-14)
00800	SUPPLEMENTARY CONDITIONS
00810	MODIFICATIONS TO GENERAL CONDITIONS
00830	SPECIFIC PROJECT REQUIREMENTS
00850	INDEX TO DRAWINGS
00900	ADDENDA AND MODIFICATIONS

DIVISION 1-GENERAL REQUIREMENTS

01014	WORK SEQUENCE
01015	CONTRACTOR USE OF PREMISES
01041	PROJECT COORDINATION
01050	FIELD ENGINEERING
01070	ABBREVIATIONS AND REFERENCE STANDARDS
01100	ALTERNATES AND ALTERNATIVES
01152	APPLICATIONS FOR PAYMENT
01202	PROGRESS MEETINGS
01300	SUBMITTALS
01310	CONSTRUCTION SCHEDULES
01320	PROGRESS REPORTS
01340	SHOP DRAWINGS, PRODUCT DATA AND SAMPLES
01370	SCHEDULE OF VALUES
01410	TESTING LABORATORY SERVICES
01420	RESIDENT PROJECT REPRESENTATIVE SERVICES
01500	TEMPORARY FACILITIES AND CONTROLS
01600	MATERIAL AND EQUIPMENT
01630	SUBSTITUTIONS AND PRODUCT OPTIONS
01700	CONTRACT CLOSE-OUT
01720	PROJECT RECORD DRAWINGS
01730	OPERATION AND MAINTENANCE DATA
01750	WARRANTIES AND BONDS

DIVISION 2-SITWORK

02000	STANDARD SPECIFICATIONS
02010	SPECIAL PROVISIONS
02100	SITE PREPARATION
02200	EARTHWORK
02210	SITE GRADING
02220	STRUCTURAL EXCAVATION, FILL AND BACKFILL
02221	EXCAVATION, TRENCHING AND BACKFILLING FOR UTILITIES
02610	PIPE AND FITTINGS
02615	CAST IRON AND DUCTILE IRON PIPE
02618	PRETENSIONED CONCRETE CYLINDER PIPE

DIVISION 3-CONCRETE

03200	CONCRETE REINFORCEMENT
03300	CAST-IN-PLACE CONCRETE

DIVISION 7-THERMAL AND MOISTURE PROTECTION

07920	SEALANTS AND CAULKING
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DIVISION 15-MECHANICAL

15100	MISCELLANEOUS PIPING
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APPENDICIES

APPENDIX A	DEFINITION OF TERM
APPENDIX B	ORDINANCE NO. 085-09 ORDINANCE NO. 085-051
APPENDIX C	WAGE RATE RESOLUTION NO.L R88-091
APPENDIX D	ORDINANCE NO. 084-051
APPENDIX E	SPECIAL PROVISIONS FOR CONCRETE PAVING STONE INSTALLATION AND REPAIR
	SOIL INVESTIGATION REPORT

END OF SECTION

DIVISION 0
BIDDING AND CONTRACT REQUIREMENTS

GINN, INC. - CONSULTING ENGINEERS
17103 PRESTON ROAD SUITE 100 LB118
DALLAS, TEXAS PROJECT NO. 439

MILDRED STREET IMPROVEMENTS
SANITARY SEWER IMPROVEMENTS
TOWN OF ADDISON, TEXAS

PART 1- GENERAL

1.1 GENERAL:

- A. The title of the project is MILDRED STREET IMPROVEMENTS, for the TOWN OF ADDISON, TEXAS.
- B. The bid opening date is August 14, 1990, 10:00 A.M.
- C. Plans will be available from the office of the Engineers on July 27, 1990.
- D. Advertisement dates: July 26 and August 2, 1990.
- E. Bids will be received at the Town Hall, 5300 Belt Line Road, Town of Addison, Texas.

1.2 LOCATION:

The specific location of the project is as shown on the location map provided in the plans: more specifically, the construction is for the existing Mildred Street, from Addison Road, east to Quorum Drive.

1.3 SCOPE:

- A. The project consists of the construction of a 45' wide to 56' wide, 8" thick concrete street, with concrete curb and gutter, storm drainage, sanitary sewer lines and all appurtenances to fully complete the project.
- B. The project will be a unit price bid proposal.
- C. The project length will be 120 calendar days.

1.4 BONDS:

- A. A Bid Bond, in the amount of 5% of the greatest amount bid will be required.
- B. A Performance Bond and a Material and Labor Payment Bond will be required of the successful bidder.

1.5 QUALIFICATIONS:

- A. Qualifications of bidders or information that will be required are as follows:
 - 1. Qualifications of bidder to do work.
 - 2. Experience record in this type work.
 - 3. List of equipment and manpower to be assigned to this project.
 - 4. Financial statement of firm submitting bid.
- B. Other information deemed necessary for the evaluation of the bids received.

1.6 DRAWINGS AND SPECIFICATIONS:

- A. Drawings and specifications may be viewed at the following locations:
 - 1. Office of the Engineer
 - 2. Dodge Room
 - 3. Texas Contractor
 - 4. Associated General Contractors
- B. Drawings and specifications may be purchased, only, at the office of the Engineer. The cost of the plans and specifications is \$100.00, **non-refundable**.

END OF SECTION

Sealed proposals addressed to the TOWN OF ADDISON, TEXAS for the **MILDRED STREET IMPROVEMENTS**, will be received at the Addison Town Hall, Council Chambers, 5300 Belt Line Road, Addison, Texas until 10:00 a.m., August 14, 1990, and then publicly opened and read aloud.

The Instructions to Bidders, Proposal Forms, Forms of Contract, Plans, Specifications, and Forms of Bid Bond, Performance and Payment Bond, and other contract documents may be examined at the following:

Ginn, Inc., Consulting Engineers
17103 Preston Road, Suite 100
Dallas, Texas 75248
(214) 248-4900

Dodge Reports
1111 W. Mockingbird, #1200
Dallas, Texas 75247
(214) 358-6111

Associated General Contractors
11111 Stemmons Freeway
Dallas, Texas 75229
(214) 358-5357

Texas Contractor
2510 National Drive
Garland, Texas 75041
(214) 271-2693

Copies may be obtained at the office of Ginn, Inc. for a payment of \$100.00 per set, **non-refundable**. Bidding documents will be mailed via U.S. Mail, fourth class, upon receipt of payment, plus \$10.00 handling and shipping charge.

The Owner reserves the right to waive any informalities and/or to reject any or all bids. Each Bidder must deposit with his bid, a security in the amount, form and subject to the conditions provided in the Instruction to Bidders.

PRINCIPAL ITEMS OF WORK INCLUDED IN THIS PROJECT

APPROXIMATELY 1150 LF OF 45' WIDE, 8" THICK REINFORCED CONCRETE PAVEMENT ON 6" THICK LIME STABILIZED MATERIAL; CONCRETE CURB AND GUTTER; BRICK PAVER BUS PARKING LANES; CONCRETE SIDEWALKS; STORM DRAINAGE SYSTEM, WITH INLETS AND STORM PIPE; SANITARY SEWER SYSTEM, 8" AND 12" DIAMETER PVC PIPE, INCLUDING MANHOLES; TRAFFIC BUTTONS; AND MISCELLANEOUS APPURTENANCES.

TOWN OF ADDISON

DATE

Ron Whitehead, City Manager

Advertisement Dates: July 26 and August 2, 1990.

Plans will be available on: July 27, 1990.

GINN, INC. - CONSULTING ENGINEERS
17103 PRESTON ROAD SUITE 100 LB118
DALLAS, TEXAS PROJECT NO. 439

MILDRED STREET IMPROVEMENTS
SANITARY SEWER IMPROVEMENTS
TOWN OF ADDISON, TEXAS



PART 1 - GENERAL (TO BE SUBMITTED WITH BIDS)

1.1 GENERAL:

Bidder: _____

Address: _____

Project: **MILDRED STREET IMPROVEMENTS
TOWN OF ADDISON TEXAS.**

Pursuant to Contract Documents and information for prospective bidders for above mentioned proposed project, the undersigned is submitting the information as required with the understanding that the purpose is for your confidential use only to assist in determining the qualifications of this organization to perform the type and magnitude of work included; and further, guarantee the trust and accuracy of all statements hereinafter made, and will accept your determination of qualifications without prejudice. The surety herein named, any other bonding company, bank, subcontractor, supplier, or any other persons, firms or corporations with whom I/we have done business, or who have extended any credit to me/us are hereby authorized to furnish you with any information you may request concerning me/us including but not limited to, information concerning performance on previous work and my/our credit standing with any of them: and I/we hereby release any and all such parties from any legal responsibility whatsoever on account of having furnished such information to you.

1.2 ITEMS TO BE FURNISHED:

- A. Qualification of Bidder Statement
- B. Experience Record
- C. Equipment Schedule
- D. Financial Statement
- E. Affidavit

PART 2 - PRODUCTS

2.1 GENERAL:

- A. Copies of forms furnished to Bidder.
- B. Bidder may use own forms, provided all pertinent information is supplied.

PART 3 - EXECUTION

3.1 QUALIFICATION OF BIDDER STATEMENT:

- A. Number of years in business as a general contractor: _____
- B. Classification of work done: ___ Building ___ Sewer
___ Water ___ Other (Explain: _____)
- C. Types of work done in each classification:
Building:
Sewer:
Water:

- D. Maximum number of contracts in excess of \$10,000 under construction at one time: _____
- E. Approximate dollar volume of incomplete work under contract at any one time: _____
- F. List of complete projects of comparable type and magnitude of this project:

Project	Owner	Arch/Engineer	Yr. Built	Contract Price

- G. List of incomplete projects:

Project	Owner	Arch/Engineer	% Complete	Contract Price

- H. Have you or any present partners or officers failed to complete a contract: _____ If so, give name of owner and/or surety; _____

I. Are there any unsatisfied demands upon you as to your accounts payable? _____ If so, give names, amounts and explanation: _____

J. Name and address of bank and officer for reference: _____

K. Other Credit References:

L. Name and address of Bidder's Surety and name and address of agent used by Bidder:

NOTE: Use additional paper if necessary.

3.2 EXPERIENCE RECORD:

A. List of Projects your Organization has successfully completed:

AMOUNT OF CONTRACT AWARD	TYPE OF WORK	DATE ACCEPTED	NAME AND ADDRESS OF OWNER
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B. List of Projects your Organization is now engaged in completing:

AMOUNT OF CONTRACT AWARD	TYPE OF WORK	ANTICIPATED DATE OF COMPLETION	NAME AND ADDRESS OF OWNER
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C. List of Surety Bonds in Force on above uncompleted work:

DATE OF CONTRACT AWARD	TYPE OF BOND	AMOUNT OF BOND	NAME AND ADDRESS OF SURETY
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3.3 EQUIPMENT SCHEDULE:

- A. List of Equipment owned by bidder that is in serviceable condition and available for use.

- B. Portions of work Bidder proposes to sublet in case of Award of Contract including amount and type:

3.4 FINANCIAL STATEMENT:

Condition of Bidder at close of business month, _____

ASSETS		
1.	Cash on Hand	\$ _____
	In Bank	_____
	Elsewhere	_____
		\$ _____
2.	Accounts receivable from completed contracts (Exclusive of claims not approved for payment).	\$ _____
3.	Accounts receivable from other sources than above	\$ _____
4.	Amounts earned on uncompleted contracts (not included in Item 3) (Contract price on completed portion of uncompleted contracts less total cost of completed portions).	\$ _____
5.	Deposits for bids on other guarantees	\$ _____
6.	Notes Receivable Past Due	\$ _____
	Due 90 Days	_____
	Due Later	_____
		\$ _____
7.	Interest earned	\$ _____
8.	Real Estate	
	Business Property, present value	\$ _____
	Other Property, present value	_____
		\$ _____
9.	Stocks & Bonds, listed on Exchange	\$ _____
	Unlisted	_____
		\$ _____
10.	Equipment, machinery, fixtures	\$ _____
	Less Depreciation	_____
		\$ _____
11.	Other Assets	\$ _____
	TOTAL ASSETS	\$ _____

3.5 LIABILITIES AND NET WORTH:

1.	Notes Payable to Banks		
	Regular	\$ _____	
	(For Certified Checks)	_____	
	Equipment Obligations	_____	
	Others	_____	\$ _____
2.	Accounts Payable		
	Current	\$ _____	
	Past Due	_____	\$ _____
3.	Real Estate Mortgages		\$ _____
4.	Other Liabilities		\$ _____
5.	Reserves		\$ _____
6.	Capital Stock Paid Up		
	Common	\$ _____	
	Preferred	_____	\$ _____
7.	Surplus		\$ _____
	TOTAL LIABILITIES		\$ _____

3.6 AFFIDAVIT:

Submitted by _____ an individual
a partnership
corporation

With principal office at _____

To be filled in by Corporation: To be filled in by Partnership:

Date incorporated _____ Date formed _____

Under the laws of _____ State State whether partnership is
general, limited or associated:

Executive Officer: _____ List Members: _____

State of _____

County of _____

_____ being duly sworn, deposes and

say that he is _____ of _____
(Title) (Name of Organization)

and that the answers to the foregoing questions on the attached forms and all statements therein are true and correct; that the financial statement, the experience record and the schedule of equipment are made a part of this affidavit as though written in full herein, and all statements and answers to questions given in the above mentioned financial statement, experience record and schedule of equipment are true and correct.

Sworn to before me this _____ day of _____, A.D., 19__

Notary Public

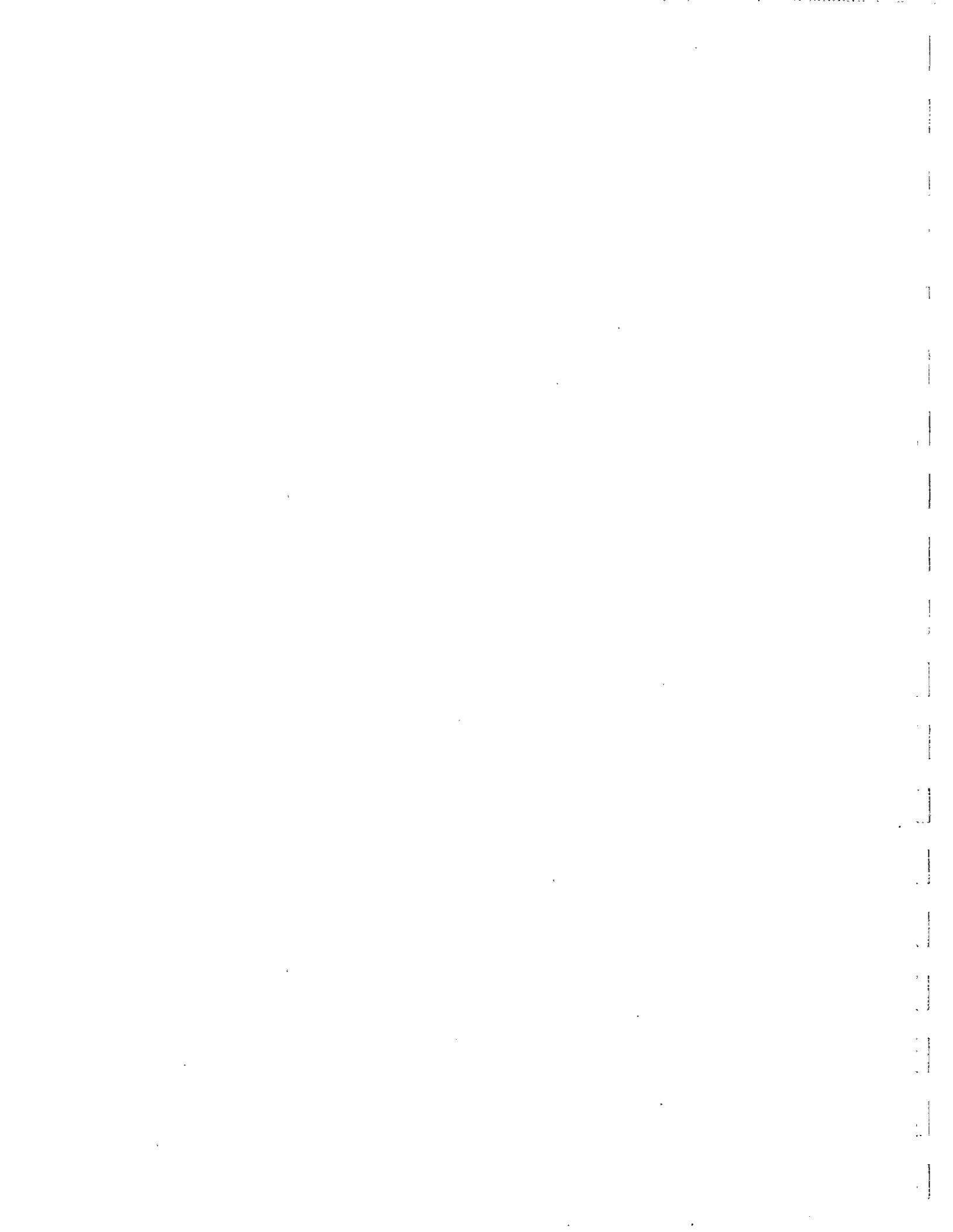
My Commission expires:

(SEAL)

END OF SECTION

GINN, INC. - CONSULTING ENGINEERS
17103 PRESTON ROAD SUITE 100 LB118
DALLAS, TEXAS PROJECT NO. 439

MILDRED STREET IMPROVEMENTS
SANITARY SEWER IMPROVEMENTS
TOWN OF ADDISON, TEXAS



PART 1- GENERAL

1.1 GENERAL:

- A. Defined Terms:** Terms used in these Instructions to Bidders which are in the General Conditions of the Construction Contract, have the meanings assigned to them in the General Conditions.

Owner: Wherever the word "OWNER" is used in the specifications and Contract Documents, it shall be understood as referring to the **TOWN OF ADDISON, Addison, Texas.**

Engineer: Wherever the word "ENGINEER" is used in the specifications and Contract Documents, it shall be understood as referring to **Ginn, Inc., 17103 Preston Road, Suite 100, LB 118, Dallas, Texas 75248, phone (214) 248-4900.**

Resident Project Representative: The authorized representative of the Engineer, assigned to observe and review any or all parts of the work and the materials to be used therein.

Bidder: An individual, firm or corporation or any combination thereof, submitting a proposal.

Contractor: The individual, firm or corporation or any combination thereof, party of the second part, with which the contract is made by the **TOWN OF ADDISON, Texas.**

Superintendent: The representative of the Contractor authorized to receive and fulfill instructions from the Engineer and who shall supervise and direct the construction.

- B. Documents:** Complete sets of the Bidding Documents, (full size drawings and specifications), may be obtained from the Engineer upon receipt of the required payment as stated in the Advertisement for Bids. The payment is non-refundable. No Bidding Documents will be issued later than four (4) days prior to the date for receipt of bids. If requested, Bidding Documents will be mailed via U.S. Mail, Fourth Class rate, upon receipt of the required payment, plus a \$10.00 handling and shipping charge. Private courier or overnight delivery service will be at the request and sole expense of the Bidder. The Owner and Engineer assume NO responsibility for delay or failure to receive plans sent by mail, or any other form of delivery service.

Plans and specifications may be examined at Ginn, Inc., and copies may be obtained upon providing the required payment. **No partial sets of plans, specifications or proposal forms will be issued.**

Complete sets of Bidding Documents shall be used in preparing Bids; neither Owner nor Engineer assume any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

- C. **Discrepancies:** Should a Bidder find any discrepancy, ambiguity, inconsistency, error or omission from the drawings, specifications or project manual or of the site and local conditions, or be in doubt as to their written meaning, it is requested that the Bidder promptly notify the Engineer who then will send a written instruction or interpretation to all known holders of the documents. Neither the Owner nor the Engineer will be responsible for any oral instructions.
- D. **Addenda:** Any addenda to the drawings, specifications, or project manual issued before or during the time of bidding shall be included in the proposal and become a part of the contract.

All questions by prospective bidders as to the interpretation of the Instructions to bidders, forms of proposal, forms of contract, drawings, specifications or bonds must be submitted, in writing, to the Engineer, at least ten (10) days before the date set for the opening of bids. An interpretation of all questions so raised which, in the Engineer's opinion, require interpretation will be mailed to prospective bidders at the addresses given by them no later than four (4) days before the date of the opening of bids. Failure of any bidder to receive any such addendum or interpretation shall not relieve such bidder from any obligation under his bid as submitted. All addenda so issued shall become part of the Contract Documents.

Any addenda will be mailed or delivered to all Bidders receiving a complete set of Bidding Documents.

No Addenda will be issued later than four (4) days prior to the date for receipt of bids except an Addendum, if necessary, postponing the date for receipt of bids or withdrawing the request for bids.

Each Bidder shall acknowledge on bid proposal that he has received all Addenda issued.

- E. **Substitutions:** The materials, products and equipment described in the specifications and/or shown on the drawings establish a standard or required function, dimension, appearance and quality as required by the Engineer. **NO SUBSTITUTIONS WILL BE CONSIDERED DURING BIDDING.**

- F. **Work to be done:** The work to be done under this contract is described in the specifications and shall be done in accordance with the contract drawing and specifications prepared by Ginn, Inc. - Consulting Engineers, Dallas, Texas.

1.2 BIDDING:

- A. **Method of Bidding:** The proposal provides for quotation of a price, or prices, for one or more bid items, which may be lump sum bid prices, alternate bid prices, or a combination thereof. No payment will be made for items not set up on the proposal, unless otherwise provided by contract amendment. All Bidders are cautioned that they should include in the prices quoted for the various bid items all necessary allowances for the performance of all work required for the satisfactory completion of the project.
- B. **Subcontracts:** The bidder is specifically advised that any person, firm or other party to whom it is proposed to award a subcontract under this contract must be acceptable to the Owner. It is further required that the name of the mechanical and electrical subcontractors and any other listed subcontractor be noted on the proposal form in the blank space provided. Failure to list these will be sufficient grounds to reject the proposal.

1.3 BID SECURITY:

- A. Bid Security shall be made payable to the Owner in an amount of five percent (5%) of the Bidder's maximum Bid price and in the form of certified or bank check or a Bid Bond issued by a Surety Company, licensed to transact such business in the State of Texas and listed on the current Treasury Department Circular No. 570.
- B. The Bid Security of the Successful Bidder and those of the three (3) lowest responsible and eligible bidders will be retained until the successful Bidder has executed the Agreement and furnished the required Contract Security, whereupon they will be returned. All bid securities will be returned on the execution of the contract or, if no award is made, within ninety (90) days after the actual date of the opening thereof unless forfeited under the conditions herein stipulated.
- C. In case a party to whom a Contract is awarded shall fail or neglect to execute the Contract and furnish the satisfactory bonds within the time stipulated, the Owner may determine that the bidder has abandoned the Contract and, thereupon, the proposal and acceptance shall be null and void and the bid security accompanying the proposal shall be forfeited to the Owner as liquidated damages for such failure or neglect

and to indemnify said Owner for any loss which may be sustained by failure of the bidder to execute the Contract and furnish the bonds as aforesaid, provided that in case of death, disability or other unforeseen circumstances affecting the bidder, such bid security may be returned to him. After execution of the contract and acceptance of the bonds by the Owner, the bid security accompanying the proposal of the successful bidder will be returned.

1.4 QUALIFICATION OF BIDDERS:

- A. To demonstrate qualifications to perform the Work, each Bidder may be required to submit written evidence of the types set forth in Section 00040 - Bidders Qualifications, such as financial data, previous experience and evidence of Bidder's qualification to do business in The State of Texas or covenant to obtain such qualification prior to award of the contract.
- B. Additionally, all Bidders shall be prepared to show that they are skilled, experienced in, and have been regularly engaged in the type of construction involved and that they have the necessary financial resources to finish the Work in a proper and satisfactory manner in the time specified.
- C. The Engineer and Owner reserve the right to require documented evidence of the foregoing from the Contractor prior to award of the contract.
- D. The Owner may make such investigations as it deems necessary to determine the ability of the bidder to perform the work and the bidder shall furnish to the Owner such information and data for this purpose. The Owner reserves the right to reject any proposal if the evidence submitted by or the investigation of such bidder fails to satisfy the Owner that such bidder is properly qualified to carry out the obligations of the Contract and to complete the work contemplated therein. The Owner reserves the right to reject any or all proposals bids if it would be in the public interest to do so. A proposal which includes for any item a bid that is abnormally low or high may be rejected as unbalanced.
- E. The investigations of a bidder will seek to determine whether the organization is adequate in size and experience and whether available equipment and financial resources are adequate to assure the Owner that the work will be completed at a rate consistent with the completion date set forth in the proposal. The amount of other work to which the bidder is committed will also be a consideration in establishing that a contractor is a "responsible and eligible bidder" in conformity with the requirements of the Contract.

1.5 EXAMINATION OF CONTRACT DOCUMENTS AND SITE:

- A. Conditions of Work:** Each Bidder must fully inform himself of the conditions relating to construction of the project and employment of labor thereon. Failure to do so will not relieve a Successful Bidder of his obligation to furnish all material and labor necessary to carry out the provisions of his contract. Insofar as possible, the Contractor must employ methods or means to cause no interruption of or interference with the work of any other contractor.
- B. Examination of Site:** All Bidders, including the general Contractor and subcontractors shall examine carefully the site of the Work to acquaint himself with working conditions and all difficulties that may be involved therein, and shall examine carefully all drawings, specifications and other Contract Documents to familiarize himself with all of the requirements, terms and conditions thereof. Any information relating to the Work furnished by the Owner or others, or failure to make these examinations shall in no way relieve any Bidder from the responsibility of fulfilling all of the terms of the contract, if awarded a contract. Also, failure to visit the site will in no way relieve the Successful Bidder from furnishing any materials or performing any work required to complete Work in accordance with drawings and project manual without additional cost to the Owner.
- C. Laws, Regulations, Permits and Taxes:** The Bidder's attention is directed to the fact that all applicable state laws, municipal ordinances, rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout, and they shall be deemed to be included in the contract the same as though herein written out in full as a part of these documents.
- Contractor shall secure, and include compensation for, in his proposal, all permits and all required taxes which are levied by governing bodies and which are assessable upon labor and materials entering into this Work.
- D.** Before submitting his Bid each Bidder may, at his own expense, make such investigations and tests of the site as the Bidder may deem necessary to determine his Bid for performance of the Work in accordance with the time, price and other terms and conditions of the Contract Documents.
- E.** On request, Owner will provide each Bidder access to the site to conduct such investigations and tests as each Bidder deems necessary for submission of his Bid.
- F.** The lands upon which the Work is to be performed, rights-of-way for access thereto and other lands designated for use by Contractor in performing the Work are identified in the

General Conditions, General Requirements or Drawings.

G. If project is bid, based upon unit price bidding, bidder shall be advised that; the quantities of work or materials as set forth in the proposal form or on the plans are a calculated approximation and are for the purpose of comparing the Bids on a uniform basis. Payment will be made by the Owner to the Contractor only for the actual quantities of work performed or materials furnished in accordance with the contract. The quantity of work to be done and materials to be furnished may be increased or decreased as hereinafter provided.

H. **Obligation of Bidder:** At the time of opening of bids, each Bidder will be presumed to have inspected the site and to have read and be thoroughly familiar with the drawings, specifications and the project manual, including all addenda.

The submission of Bid will constitute an incontrovertible representation by the Bidder that he has complied with every requirement of this section, and that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance of the Work.

I. No allowance will be made for any claim that the proposal is based upon incomplete information as to the nature and character of the site or the work involved. Conditional proposals will not be accepted.

1.6 BID PROPOSALS:

A. **General:** The Bidder shall submit two Original Bid Proposals based exactly on the documents as issued. No substitutions, revisions or omissions from the plans and/or specifications will be accepted unless authorized in writing by the Engineer.

The proposal form is attached hereto; additional copies may be obtained from the Engineer.

Bid proposals must be completed in ink or by typewriter. The Bid price of each item on the form must be stated in words and numerals; in case of a conflict, words will take precedence.

The Bid proposal must be signed with the full name of the Contractor and his address; if a partnership, by a member of the firm with the name and address of each member; if a corporation, by an officer thereof, the corporate name, and have a corporate seal affixed.

- B. **Form:** Make all proposals on forms provided and fill all applicable blank spaces without interlineation, alteration or erasure and must not contain recapitulation of the Work to be done. No oral, telegraphic, or telephonic proposals will be considered. Any addenda issued during the bidding shall be noted on the proposal form.
- C. **Submittal:** Each Bidder shall submit two copies of his Bid completely and properly executed on proposal forms provided. Each Bid, without the "Specifications and Contract Documents", shall be enclosed in a separate sealed envelope, with the words "Bid for" followed by the project title and the Bidder's name and address, and accompanied by the Bid Security and other required documents. If the Bid is sent through the mail or other delivery system, the sealed envelope shall be enclosed in a separate envelope with the notation "BID ENCLOSED" on the face thereof.

SPECIFICATIONS AND CONTRACT DOCUMENTS SHALL NOT BE RETURNED WITH THE BIDS.

- D. **Telegraphic Modifications:** Any Bidder may modify his Bid by telegraphic communication at any time provided such communication is received by the Owner prior to the scheduled closing time. Written confirmation must be received within two days from the closing time or no consideration will be given the telegraph modifications.
- E. **Withdrawal:** If, within twenty-four hours after Bids are opened, any Bidder files a duly signed written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of his Bid, that Bidder may withdraw his Bid and the Bid Security will be returned. Thereafter, that Bidder will be disqualified from further bidding on the Work.

1.7 OPENING OF BIDS:

- A. The TOWN OF ADDISON, Texas (herein called the "Owner") invites all Bids on the form attached hereto, all blanks of which must be appropriately filled in. Bids will be received by the Owner at time and place stated in **Section 00030 - Advertisement For Bids**, and then at said location publicly opened and read aloud. The envelopes containing the Bids must be sealed, addressed to the TOWN OF ADDISON, and designated as "Bid for MILDRED STREET IMPROVEMENTS."
- B. When Bids are opened publicly they will be read aloud, and an abstract of the amounts of the base Bids and major alternates (if any) will be made available after the opening of Bids on a bid tabulation sheet sent to all bidders.

1.8 BIDS TO REMAIN OPEN:

All Bids shall remain open for **ninety (90) days** after the day of Bid Opening, but Owner may, in his sole discretion, release any Bid and return the Bid Security prior to that date.

1.9 CONTRACT AWARD:

- A. Owner reserves the right to reject any and all Bids, to waive any and all informalities and to negotiate contract terms with the Successful Bidder, and the right to disregard all nonconforming, nonresponsive or conditional Bids. Discrepancies between words and figures will be resolved in favor of words. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.
- B. In evaluating Bids, Owner shall consider the qualifications of the Bidders, whether or not the Bids comply with the prescribed requirements, and alternates and unit prices if requested in the Bid forms. It is the Owner's intent to accept alternates (if any are accepted) in the order in which they are listed in the Bid form, but Owner may accept them in any order or combination.
- C. Owner may consider the qualifications and experience of subcontractors and other persons and organizations (including those who are to furnish the principal items of material or equipment) proposed for those portions of the Work as to which the identity of subcontractors and other persons and organizations must be submitted as provided in the Supplementary Conditions. Operating costs, maintenance considerations, performance data and guarantees of materials and equipment may also be considered by Owner.
- D. Owner may conduct such investigations as he deems necessary to assist in the evaluation of any Bid and to establish the responsibility, qualifications and financial ability of Bidders, proposed subcontractors and other persons and organizations to do the Work in accordance with the Contract Documents to Owner's satisfaction within the prescribed time.
- E. Owner reserves the right to reject the Bid of any Bidder who does not pass any such evaluation to Owner's satisfaction.
- F. If the contract is to be awarded it will be awarded to the lowest Bidder whose evaluation by Owner indicated to Owner that the award will be in the best interests of the project.
- G. If the contract is to be awarded, Owner will give the Successful Bidder a Notice of Award within ninety (90) days after the day of the Bid opening.

- H. After award of contract to Successful Bidder, the Contractor shall agree to begin work within ten (10) calendar days after the date of "Notice to Proceed" of the Owner and to fully complete the project within the stated number of consecutive calendar days thereafter as stipulated on the bid proposal and agreement between Owner and Contractor.

1.10 LIQUIDATED DAMAGES FOR FAILURE TO ENTER INTO CONTRACT:

In the event the Bidder's proposal is accepted, and he fails or refuses to enter into the contract and furnish the required Performance and Payment Bonds within fifteen (15) days after he has received notice of the acceptance of his Bid, unless given a written extension of time by the Owner, then the Bidder will be considered as having abandoned his proposal and his Bid Security will be retained by the Owner as liquidated damages, IT NOW BEING AGREED that the specified sum of the Bid Security is a fair estimate of the amount of damages that the Owner will sustain in case the Bidder fails to enter into the contract and furnish the Performance and Payment Bonds within the time stated in the proposal.

1.11 CONTRACT TIME:

- A. The number of days within which, or the date by which, the Work is to be completed (the Contract Time) is set forth in the Bid Form and will be included in the Agreement. The Contract Time for this project is:

ONE HUNDRED TWENTY (120) CALENDAR DAYS

- B. Extension of time of completion will be permissible in accordance with Section 4.02 of General Conditions of Agreement.

1.12 LIQUIDATED DAMAGES:

Provisions for liquidated damages are set forth in the Proposal. Liquidated damages for this project are:

FIVE HUNDRED DOLLARS (\$500.00) PER CALENDAR DAY

1.13 SUBCONTRACTORS, ETC.:

- A. The apparent Successful Bidder, and any other Bidder so requested will, within seven (7) days after requested by the Owner, submit to the Owner a list of all the suppliers, subcontractors and other persons and organizations (including those who are to furnish the principal items of material and equipment) proposed for those portions of the

Work as to which such identification is so required. Such list shall be accompanied by an experience statement with pertinent information as to similar projects and other evidence of qualification for each such Subcontractor, person and organization if requested by the Owner. If Owner or Engineer after due investigation has reasonable objection to any proposed Subcontractor, other person or organization, either may before giving the Notice of Award request the apparent Successful Bidder to submit an acceptable substitute without an increase to Bid price. If the apparent Successful Bidder declines to make any such substitution, the Contract shall not be awarded to such Bidder, but his declining to make any such substitution will not constitute grounds for sacrificing his Bid Security. Any Subcontractor, other person or organization so listed and to whom Owner or Engineer does not make written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer.

- B. No Contractor shall be required to employ any Subcontractor, other person or organization against whom he has reasonable objection.

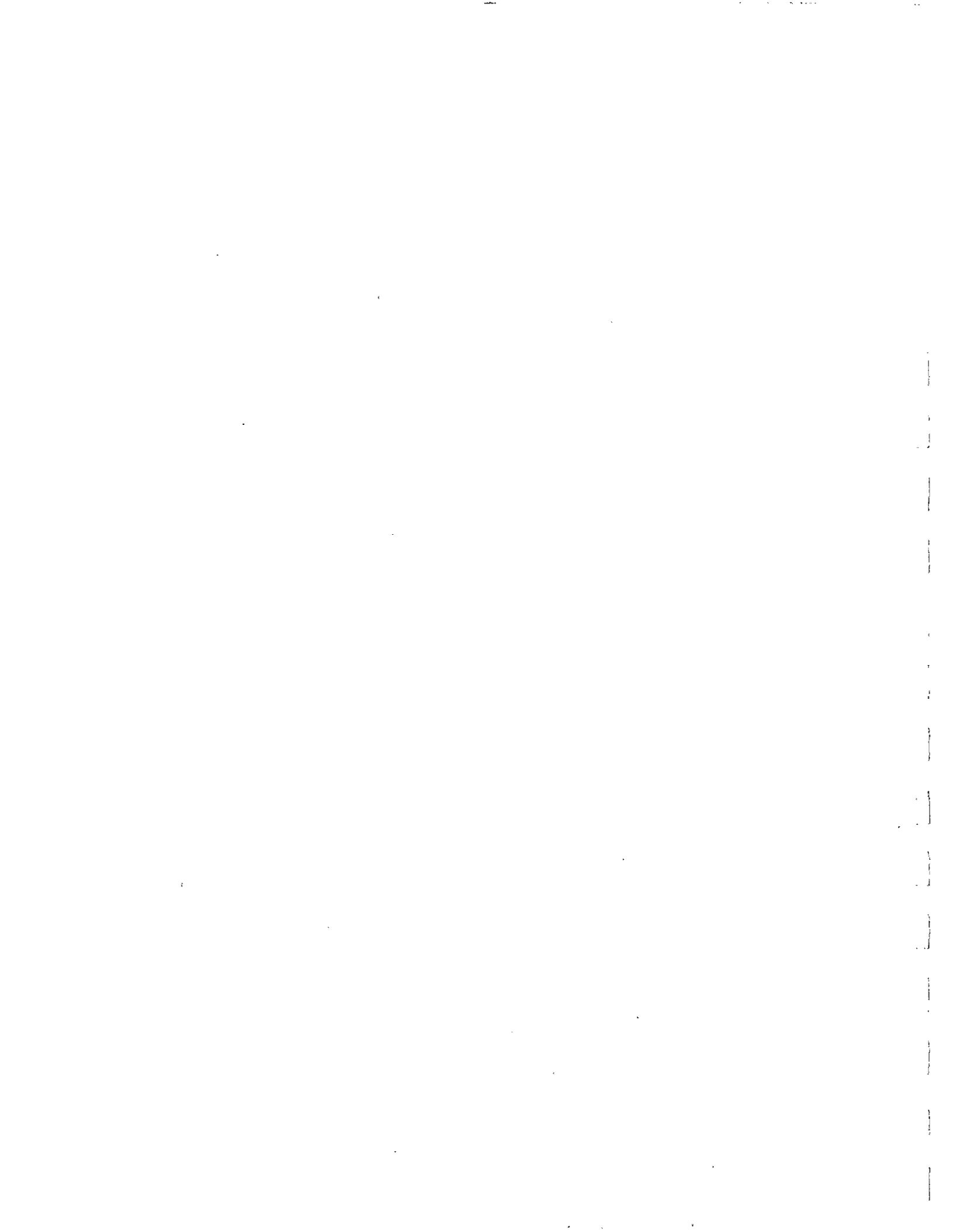
1.14 PERFORMANCE AND OTHER BONDS:

- A. **Security for Faithful Performance:** Simultaneously with his delivery of the executed contract, the Contractor shall furnish a surety bond or bonds as security for faithful performance of this contract and for the payment of all persons performing labor on the project under the contract and furnish materials in connection with this contract. The surety on such bond or bonds shall be by a duly authorized surety company, satisfactory to the Owner, if requested by the Bidder. Bonds shall remain in effect through the guarantee period unless otherwise required by State Law. Seal impressions will be required on all bonds submitted to Owner.
- B. **Power of Attorney:** Attorneys-in-fact, who sign contract bonds, must file with each bond a certified and effectively dated copy of their power of attorney.
- C. **Laws and Regulations:** The bidder's attention is directed to the fact that all applicable state laws, municipal ordinances and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the Contract throughout and they will be deemed to be included in the Contract the same as though herein written out in full.

1.15 SIGNING OF AGREEMENT:

When Owner gives a Notice of Award to the Successful Bidder, it will be accompanied by at least six unsigned counterparts of the Agreement and all other Contract Documents. Within fifteen (15) days thereafter, Contractor shall sign and deliver at least six counterparts of the Agreement to Owner with all other Contract Documents attached. Within ten (10) days thereafter, Owner will deliver all fully signed counterparts to Contractor. Engineer will identify those portions of the Contract Documents not fully signed by Owner and Contractor and such identification shall be binding on all parties.

END OF SECTION



PART 1- GENERAL

1.1 GENERAL

- A. The surety on each bond must be a responsible surety company which is qualified to do business in Texas and satisfactory to the Owner.
- B. The name, including full Christian name, and residence of each individual party to the bond shall be inserted in the body thereof, and each such party shall sign the bond with his usual signature on the line opposite the scroll seal, and if signed in Maine, Massachusetts or New Hampshire, an adhesive seal shall be affixed opposite the signature.
- C. If the principals are partners, their individual names will appear in the body of the bond, with the recital that they are partners composing a firm, naming it, and all the members of the firm shall execute the bond as individuals.
- D. The signature of a witness shall appear in the appropriate place, attesting the signature of each individual party to the bond.
- E. If the principal or surety is a corporation, the name of the state in which incorporated shall be inserted in the appropriate place in the body of the bond, and said instrument shall be executed and attested under the corporate seal, the fact shall be stated, in which case a scroll or adhesive seal shall appear following the corporate name.
- F. The official character and authority of the person or persons executing the bond for the principal, if a corporation, shall be certified by the secretary or assistant secretary according to the form attached hereto. In lieu of such certificate, records of the corporation as will show the official character and authority of the officer signing, duly certified by the secretary or assistant secretary, under the corporate seal, to be true copies.
- G. The date of this bond must not be prior to the date of the contract in connection with which it is given.
- H. Amounts of bonds shall be as set forth in Paragraph 3.10 of the General Conditions.

END OF SECTION

Vertical text along the right edge of the page, possibly a page number or margin note.

BID FOR: MILDRED STREET IMPROVEMENTS
TOWN OF ADDISON, TEXAS

THIS BID SUBMITTED TO:

TOWN OF ADDISON
5300 BELT LINE ROAD
P.O. BOX 144
ADDISON, TEXAS 75001

BIDDER: _____

Gentlemen:

The BIDDER, in compliance with your invitation for bids for the above referenced project, having examined the plans and specifications with related documents including any Addenda, (if issued) and the site of the proposed work, and being familiar with all of the conditions surrounding the construction of the proposed project including the availability of materials and labor, hereby proposes to furnish all labor, materials, and supplies, and to construct the project in accordance with the Contract Documents, of which this proposal is a part.

The undersigned BIDDER proposes and agrees, if this Bid is accepted, to enter into an agreement with OWNER in the form included in the Contract Documents to perform and furnish all Work as specified or indicated in the Contract Documents for the Contract Price and within the Contract Time indicated in this Bid and in accordance with the other terms and conditions of the Contract Documents.

BIDDER accepts all of the terms and conditions of the Advertisement, Invitation to Bid and Instructions to Bidders, including without limitation those dealing with the disposition of Bid security,. This Bid will remain subject to acceptance for ninety (90) days after the day of Bid opening. BIDDER will sign and submit the Agreement with the Bonds and other documents required by the Bidding Requirements within fifteen (15) days after the date of OWNER's Notice of Award.

The undersigned, as BIDDER, declares that the only person or parties interested in this proposal as principals are those named herein, that this proposal is made without collusion with any other person, firm or corporation; that he has carefully examined the form of Contract, Instruction to Bidders, Specifications, and the Plans herein referred to and has carefully examined the locations, conditions and classes of materials called for in the Contract Documents and Specifications in the manner prescribed and according to the requirements of the Owner as herein set forth.

This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm, or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation: BIDDER has not directly or indirectly induced or solicited any other Bidder to submit a false Bid: BIDDER has not solicited or induced any person, firm, or corporation to refrain from bidding: and BIDDER has not sought by collusion to obtain for itself any advantage over any other Bidder or over Owner.

BIDDER hereby agrees to commence work under this Contract on or before a date to be specified in written "Notice to Proceed" by the OWNER and to fully complete the project within 120 consecutive calendar days thereafter as stipulated in the Specifications. BIDDER further agrees to pay as liquidated damages, the sum of \$500.00 for each consecutive calendar day thereafter as hereinafter provided in Section 00810, Paragraph 1.1, E, 4.02 of the Modifications to General Conditions.

Accompanying this proposal is a (Certified or Cashier's Check payable to the Town of Addison) (Bid Bond) in the amount of (\$ _____),

which is five percent (5%) of the greatest amount bid.

BIDDER acknowledges receipt of the following addendum: (If none-issued, indicate N/A)

ADDENDA # _____ DATE _____
ADDENDA # _____ DATE _____
ADDENDA # _____ DATE _____
ADDENDA # _____ DATE _____

BIDDER agrees to perform all the work described in the Specifications and as shown on the Plans for the following unit prices:

(Amounts are to be shown in both words and figures. In case of discrepancy, the amount shown in words will govern.)

DIVISION 0 - BIDDING AND CONTRACT REQUIREMENTS
SECTION 00300 - PROPOSAL AND BID FORM

PAGE
00300-3

BID FORM

Item No.	Description	Appr. Qty.	Unit	Unit Price	Unit Price Written	Total For Item
100.1	PREPARE RIGHT OF WAY (65' R.O.W.)	6.55	STA.			
100.2	PREPARE RIGHT OF WAY (80' R.O.W.)	5.50	STA.			
100.3	PREPARE RIGHT OF WAY (60' R.O.W.)	0.65	STA.			
104.1	SAW-CUT FULL DEPTH EXIST ASPHALT OR CONCRETE PVMT.	240	LF			
104.2	REMOVE OLD CONCRETE OR ASPHALT PAVEMENT	75	SY			
110.0	ROADWAY EXCAVATION, (DENSITY CONTROL)	3500	CY			
160.0	FURNISHING AND PLACING TOPSOIL, INCL. RYE GRASS	2800	SY			
248.0	FLEXIBLE BASE, TYPE A, GRADE 1, CLASS 3, COMPL.	25	CY			
260.0	LIME TREATMENT FOR MAT'LS IN PLACE, (DENSITY CONTR)	4500	SY			
262.0	LIME TREATMENT FOR BASE COURSE, DENSITY CONTROL	2650	SY			
264.0	HYDRATED LIME, TYPE A 6% BY WEIGHT, 27#/S.Y.	100	TONS			
340	6" THICK, TYPE "D" HMACP	150	SY			
360.1	8" THICK REINFORCED CONC. PAVEMENT, CLASS C	6000	SY			
360.2	6" THICK REINFORCED CONC. PAVEMENT, CLASS C	835	SY			
360.3	CONCRETE STREET HEADER	37	LF			
400	TRENCH SAFETY FOR STORM DRAINAGE LINES	1	LS			

GINN, INC. - CONSULTING ENGINEERS
 17103 PRESTON ROAD SUITE 100 LB118
 DALLAS, TEXAS PROJECT NO. 439

MILDRED STREET IMPROVEMENTS
 SANITARY SEWER IMPROVEMENTS
 TOWN OF ADDISON, TEXAS

BID FORM

Item No.	Description	Appr. Qty.	Unit	Unit Price	Unit Price Written	Total For Item
464.1	18" RCP, C-76, CLASS III STORM SEWER PIPE, COMPL.	320	LF			
464.2	24" RCP, C-76, CLASS III STORM SEWER PIPE, COMPL.	385	LF			
464.3	30" RCP, C-76, CLASS III STORM SEWER PIPE, COMPL.	530	LF			
470.1	10' STANDARD CURB INLET COMPLETE, IN-PLACE	5	EA			
470.2	10' MODIFIED CURB INLET COMPLETE, IN-PLACE	5	EA			
479.1	ADJUST EXISTING MANHOLE	2	EA			
500	MOBILIZATION	1	LS			
530.1	CONCRETE CURB AND GUTTER COMPLETE, IN-PLACE	2100	LF			
530.2	CONCRETE SIDEWALK, 4" THK COMPLETE, IN-PLACE	730	SY			
530.3	CONCRETE DRIVEWAYS, 6"THK COMPLETE, IN-PLACE	140	SY			
530.4	BRICK PAVERS COMPLETE, IN-PLACE	840	SY			
582.1	ADJUST EXIST WATER VALVE COMPLETE, IN-PLACE	1	EA			
582.2	RELOCATE EXIST WATER METER, COMPLETE, IN-PLACE	1	EA			
582.3	LOWER 24" PCCP WATER LINE COMPLETE, IN-PLACE	80	LF			
618.1	2"/4" ELECTRICAL CONDUIT COMPLETE, IN-PLACE	425	LF			
618.2	2" IRRIGATION CONDUIT COMPLETE, IN-PLACE	40	LF			

DIVISION 0 - BIDDING AND CONTRACT REQUIREMENTS
SECTION 00300 - PROPOSAL AND BID FORM
BID FORM

Item No.	Description	Appr. Qty.	Unit	Unit Price	Unit Price Written	Total For Item
666.0	PAVEMENT MARKINGS, INCL. 24" STOP BAR, TURN LANE ARROWS, "ONLY" MARKINGS	1	LS			
676.1	TRAFFIC BUTTONS P-7W SINGLE REFLECTIVE, WHITE	108	EA			
676.2	TRAFFIC BUTTONS P-15W DOUBLE REFLECTIVE, WHITE	108	EA			
676.3	TRAFFIC BUTTONS P-117Y DOUBLE REFLECTIVE, YELLOW	152	EA			

MILDRED STREET IMPROVEMENTS

SUB-TOTAL BID \$ _____

_____ dollars and _____ cents.
 (written out in words)

\$ _____
 (figures)

SANITARY SEWER IMPROVEMENTS
BID FORM

Item No.	Description	Appr. Qty.	Unit	Unit Price	Unit Price Written	Total For Item
465.1	8" DIAM. PVC, DR 35 (8'-10' DEEP) SAN SEWER	570	LF			
465.2	8" DIAM. PVC, DR 35 (10'-12' DEEP) SAN SEWER	1240	LF			
465.3	12" DIAM. PVC, DR 35 (6'-8' DEEP) SAN SEWER	1070	LF			
465.4	12" DIAM. PVC, DR 35 (8'-10'DEEP) SAN SEWER	485	LF			
465.5	12" DIAM. PVC, DR 35 (10'-12'DEEP) SAN SEWER	650	LF			
465.6	4" DIAM. PVC, DR 35 (8'-10'DEEP) SAN SEWER	100	LF			

DIVISION 0 - BIDDING AND CONTRACT REQUIREMENTS
SECTION 00300 - PROPOSAL AND BID FORM
BID FORM

Item No.	Description	Appr. Qty.	Unit	Unit Price	Unit Price Written	Total For Item
465.7	6" DIAM. PVC, DR 35 (8'-10' DEEP) SAN SEWER	60	LF			
470.3	SANITARY SEWER MANHOLE (6'-8' DEEP) COMPLETE	2	EA			
470.4	SANITARY SEWER MANHOLE (8'-10' DEEP) COMPLETE	4	EA			
470.5	SANITARY SEWER MANHOLE (10'-12' DEEP) COMPLETE	9	EA			
472.0	RELAYING CULVERT PIPE	160	LF			
400.1	TRENCH SAFETY FOR SANITARY SEWER LINES	1	LS			

SANITARY SEWER IMPROVEMENTS

SUB-TOTAL BID \$ _____

_____ dollars and _____ cents.
 (written out in words)

\$ _____
 (figures)

TOTAL BID FOR:

MILDRED STREET IMPROVEMENTS AND SANITARY SEWER IMPROVEMENTS
 (TOTAL BID MUST ADD UP TO MILDRED STREET IMPROVEMENTS SUB-TOTAL
 PLUS SANITARY SEWER IMPROVEMENTS SUB-TOTAL)

TOTAL BID \$ _____

_____ dollars and _____ cents.
 (written out in words)

\$ _____
 (figures)

BIDDER agrees to provide the following documents which are attached to and made a condition of this Bid:

- a. Required Bid security in the form requested, 00410.
- b. A completed Subcontractor Listing as shown in Section 00430, of these documents.
- c. Required Bidder's Qualification statement with supporting data as indicated in Section 00040 of these documents.

BIDDER understands that the OWNER reserves the right to reject any or all bids and to waive any informalities in the bidding. Consideration for selection of the successful BIDDER will be as follows:

TOTAL BID AMOUNT

(COMBINATION OF MILDRED STREET IMPROVEMENTS AND SANITARY SEWER IMPROVEMENTS SUB-TOTAL AMOUNTS)

The BIDDER agrees that this bid shall be good and may not be withdrawn for a period of ninety (90) calendar days after the scheduled closing time for receiving bids.

Upon receipt of written notice of the acceptance of this bid, BIDDER will execute the formal Contract attached within fifteen (15) days and deliver a Surety Bond or Bonds as required by the General Conditions. The Bid Security attached in the sum of

_____ (written out)

\$ _____ (figures).

is to become the property of the OWNER in the event the Contract and Bond are not executed within the time above set forth, as liquidated damages for the delay and additional expense to the OWNER caused thereby.

Respectfully submitted,

(Firm)

By: _____

Title: _____

(SEAL-if bid is by a corporation)

(Business Address)

(Telephone Number)

END OF PROPOSAL



KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned,

as Principal, and _____

as Surety, are hereby held and firmly bound unto

_____ as Owner in the

penal sum of _____

for payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns.

SIGNED, this _____ day of _____, 19__.

The Condition of the above obligation is such that whereas the Principal has submitted to _____ a certain Bid, attached hereto and hereby made a part hereof to enter into a contract in writing, for the

NOW, THEREFORE,

- a. If said Bid shall be rejected, or in the alternate,
- b. If said Bid shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract attached hereto (Properly completed in accordance with said Bid) and shall furnish a bond for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said Bid,

then this obligation shall be void, otherwise and same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its bond shall be in no way impaired or affected by any extension of the time within which the Owner may accept such Bid; and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

Principal (L.S.)

Surety

By: _____

Date: _____

IMPORTANT - Surety companies executing bonds must appear on the Treasury Department's most current list (Circular 570, as amended) and be authorized to transact business in the state where the project is located.

END OF SECTION

GINN, INC. - CONSULTING ENGINEERS
17103 PRESTON ROAD SUITE 100 LB118
DALLAS, TEXAS PROJECT NO. 439

MILDRED STREET IMPROVEMENTS
SANITARY SEWER IMPROVEMENTS
TOWN OF ADDISON, TEXAS

PART 1 - GENERAL (TO BE SUBMITTED WITH BID PROPOSAL)

1.1 GENERAL:

A. Certified List of Subcontractors

The Bidder, _____, as part of the procedure for the submission of bids on a project known as **MILDRED STREET IMPROVEMENTS FOR THE TOWN OF ADDISON, TEXAS** submits the following list of subcontractors to be used in the performance of work to be done on said project:

<u>NAME</u>	<u>TRADE</u>	<u>DOLLAR AMOUNT</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

It is understood and agreed that, if awarded a contract by the Town of Addison, Texas, the Contractor will not make any additions, deletions or substitutions to this certified list without the consent of the Engineer and Owner.

CERTIFICATION AFFIDAVIT

THE ABOVE INFORMATION IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF. I FURTHER UNDERSTAND AND AGREE THAT, IF AWARDED THE CONTRACT, THIS CERTIFICATION SHALL BE ATTACHED THERETO AND BECOME A PART THEREOF.

NAME AND TITLE OF SIGNER: _____

(Name) (Please Print or Type)

(Title)

SIGNATURE: _____ DATE: _____

END OF SECTION

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STATE OF TEXAS
COUNTY OF _____

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

WITNESSETH: That for and in consideration of the payments and agreements hereinafter mentioned, to be made and performed by the Party of the First Part (**OWNER**), and under the conditions expressed in the bond bearing even date herewith, the said Party of the Second Part (**CONTRACTOR**), hereby agrees with the said Party of the First Part (**OWNER**) to commence and complete the construction of certain improvements described as follows:

MILDRED STREET IMPROVEMENTS

and all extra work in connection therewith, under the terms as stated in the General Conditions of the Agreement and at his (or their) 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 Notice to Contractors, General and Special Conditions of Agreement, Plans and other drawings and printed or written explanatory matter thereof, and the Specifications and addenda therefor, as prepared by: GINN, INC. CONSULTING ENGINEERS, 17103 PRESTON ROAD, SUITE 100, DALLAS, TEXAS 75248 herein entitled the **ENGINEER**, each of which has been identified by the **CONTRACTOR** and the **ENGINEER**, together with the **CONTRACTOR'S** written Proposal, the General Conditions of the Agreement, and the Performance and Payment Bonds hereto attached; all of which are made a part hereof and collectively evidence and constitute the entire contract.

The CONTRACTOR hereby agrees to commence work within ten (10) days after the date written notice to do so shall have been given to him, and to substantially complete the same within _____ calendar days after the date of the written notice to commence work, subject to such extensions of time as are provided by the General and Special Conditions.

THE OWNER agrees to pay the CONTRACTOR in current funds the price or prices shown in the proposal, which forms a part of this contract, such payments to be subject to the General and Special Conditions of the contract.

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

Party of the First Part(OWNER)

Party of the Second Part(CONTRACTOR)

By: _____

By: _____

Title: _____

Title: _____

ATTEST:

ATTEST:

SEAL:

SEAL:

END OF SECTION

PERFORMANCE BOND

STATE OF TEXAS
COUNTY OF _____ }

KNOW ALL MEN BY THESE PRESENTS: That _____
_____ of the City of _____
County of _____, and State of _____, as
principal, and _____
authorized under the laws of the State of Texas to act as surety on bonds for principals, are held
and firmly bound unto _____ (Owner),
in the penal sum of _____ Dollars (\$ _____)
for the payment whereof, the said Principal and Surety bind themselves, and their heirs,
administrators, executors, successors and assigns, jointly and severally, by these presents:

WHEREAS, the Principal has entered into a certain written contract with the Owner,
dated the _____ day of _____, 19____, to

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 said Contract and shall in all respects duly and faithfully
observe and perform all and singular the covenants, conditions and agreements in and by said
contract agreed and covenanted by the Principal to be observed and performed, and according to
the true intent and meaning of said Contract and the Plans and Specifications hereto annexed,
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 (Article
5160 for Public Work) (Article 5472d for Private Work)* of the Revised Civil Statutes of Texas as
amended and all liabilities on this bond shall be determined in accordance with the provisions of
said Article to the same extent as if it were copied at length herein."

Surety, for value received, stipulates and agrees that no change, extension of time, alteration
or addition to the terms of the contract, or to the work performed thereunder, or the plans, speci-
fications, or drawings accompanying the same, shall in anyway affect its obligation on this

*Not applicable for federal work. See "The Miller Act," 40 U.S.C. S270.

bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract, or to the work to be performed thereunder.

IN WITNESS WHEREOF, the said Principal and Surety have signed and sealed this instrument this _____ day of _____, 19_____.

Principal

By _____

Title _____

Address _____

Surety

By _____

Title _____

Address _____

The name and address of the Resident Agent of Surety is:

PAYMENT BOND

STATE OF TEXAS }
COUNTY OF _____ }

KNOW ALL MEN BY THESE PRESENTS: That _____
_____ of the City of _____,
County of _____, and State of _____, as
principal, and _____
authorized under the laws of the State of Texas to act as surety on bonds for principals, are held
and firmly bound unto _____ (Owner),
in the penal sum of _____ Dollars (\$ _____)
for the payment whereof, the said Principal and Surety bind themselves and their heirs, adminis-
trators, executors, successors and assigns, jointly and severally, by these presents:

WHEREAS, the Principal has entered into a certain written contract with the Owner,
dated the _____ day of _____, 19____, to

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 Article 5160 of
the Revised Civil Statutes of Texas as amended and all liabilities on this bond shall be determined in
accordance with the provisions of said Article to the same extent as if it were copied at length herein.

Surety, for value received, stipulates and agrees that no change, extension of time, alteration
or addition to the terms of the contract, or to the work performed thereunder, or the plans,
specifications or drawings accompanying the same, shall in anywise affect its obligation on this

bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract, or to the work to be performed thereunder.

IN WITNESS WHEREOF, the said Principal and Surety have signed and sealed this instrument this _____ day of _____, 19_____.

Principal

Surety

By _____

By _____

Title _____

Title _____

Address _____

Address _____

The name and address of the Resident Agent of Surety is:

PART 1 - GENERAL

1.1 GENERAL:

- A. A Maintenance Bond in the amount of ten percent (10%) of the Contract Price of the improvements shall be executed by the Contractor in favor of the Town of Addison, Texas. This bond will secure maintenance of the improvements by the Contractor for one (1) year from the date of acceptance by the Owner.
- B. This Maintenance Bond will be submitted at the time of final acceptance of the project and will be binding for a one year period thereafter.
- C. A sample of the Maintenance Bond to be used is attached.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

MAINTENANCE BOND

KNOW ALL MEN BY THESE PRESENTS:

THAT _____, as PRINCIPAL,
and _____, a CORPORATION
organized under the laws of _____, as Sureties,
do hereby expressly acknowledge themselves to be held and bound
to pay unto the Town of Addison, Texas, the sum of _____
dollars (\$ _____) for the
payment of which sum will and truly to be made unto said Town of
Addison, Texas and its successors; said PRINCIPAL and SURETIES do
hereby bind themselves, their assigns and successors jointly and
severally.

THE CONDITION OF THIS OBLIGATION is such that whereas the
PRINCIPAL has entered into a certain Contract with the Town of
Addison, TX. dated the _____ day of _____, 19____, a
copy of which is hereto attached and made a part hereof for the
construction of MILDRED STREET IMPROVEMENTS, located in the Town
of Addison, Texas; and

WHEREAS, said Contract was entered into pursuant to the
requirements of the Town of Addison; and

WHEREAS, in said Contract, Contractor binds itself to use of
materials and methods of construction such that all improvements
will be initially completed free of perceptible defects and will
remain in good repair and condition and free of perceptible
defects for and during the period of ONE (1) YEAR after the date
of acceptance of the completed improvements by the Town of
Addison; and

WHEREAS, said Contractor binds itself to construct said
improvements in such a manner and obtain inspection approvals in
proper sequence as are required to obtain acceptance by the Town
of Addison and to repair or reconstruct the said improvements in
whole or in part at any time within said ONE (1) YEAR period to
such extent as the Town of Addison deems necessary to properly
correct all defects except those which have been caused by
circumstances and conditions occurring after the time of
construction over which the Contractor had no control and which
are other than those arising from defect of construction by the
Contractor; and,

WHEREAS, after the acceptance of the improvements by the Town of
Addison, said Contractor binds itself, upon receiving notice from
the Town of Addison of the need thereof to repair or reconstruct
said improvements, and if the Contractor fails to make the
necessary corrections, the Town of Addison may do or have done
all corrective work and shall have recovery hereon for
all expenses thereby incurred.

NOW THEREFORE, if said Contractor shall keep and perform its said agreement to maintain, repair or reconstruct said improvements for a period of ONE (1) YEAR, as provided, then these presents shall be null and void, and have no further effect. Otherwise, this Bond shall be and remain in full force and effect, said Town of Addison shall have and recover from the said Contractor and its Surety damages in the premises as prescribed by said Contract. This obligation shall be a continuing one and successive recoveries may be had hereon for successive breaches until the full amount hereof is exhausted.

IN WITNESS WHEREOF, the said _____
has caused these presents to be executed by them; and the said
_____ by its ATTORNEY-IN-FACT
_____, and the said ATTORNEY-IN-FACT
_____ has hereunto set his
hand this the _____ day of _____, 19__.

SURETY:

PRINCIPAL:

SEAL:

SEAL:

END OF SECTION

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PART 1 - GENERAL

1.1 GENERAL:

- A. After award of contract, Contractor will provide Owner with Certificate of Insurance which will be executed and bound here with final documents.
- B. **Insurance:** A certificate of insurance shall be filed with the Owner and the Engineer named as additional insureds with regard to the Project and evidencing insurance coverage of limits not less than those in the General Conditions.
- C. **Indemnification:** The Contractor shall indemnify and save harmless the Town of Addison, Texas, its agents and employees from and against all claims, damages, losses and expenses, including the attorney's fees arising out of or resulting from the performance of the work; provided that any such claim, damage, loss or expense (a) is attributable to bodily injury to or destruction of tangible property, including the loss of use resulting therefrom, and (b) is caused in whole or in part by any negligent act or omission of Contractor and Subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder.

In any and all claims against any party indemnified hereunder by any employee of the Contractor and Subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation herein provided shall not be limited in any way by any limitation of the amount or type of damages, compensation or benefits payable by or for the Contractor or any Subcontractor under workmen's compensation acts, disability benefits acts, or other employee benefits acts.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

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TABLE OF CONTENTS
FOR
GENERAL CONDITIONS OF AGREEMENT

1. Definition of Terms		Page
1.01	Owner, Contractor and Engineer	G-1
1.02	Contract Documents	G-1
1.03	Sub-Contractor	G-1
1.04	Written Notice	G-1
1.05	Work	G-1
1.06	Extra Work	G-1
1.07	Working Day	G-1
1.08	Calendar Day	G-1
1.09	Substantially Completed	G-1
 2. Responsibilities of the Engineer and the Contractor 		
2.01	Owner-Engineer Relationship	G-2
2.02	Professional Inspection by Engineer	G-2
2.03	Payments for Work	G-2
2.04	Initial Determinations	G-2
2.05	Objections	G-2
2.06	Lines and Grades	G-2
2.07	Contractor's Duty and Superintendence	G-2
2.08	Contractor's Understanding	G-3
2.09	Character of Workmen	G-3
2.10	Contractor's Buildings	G-3
2.11	Sanitation	G-4
2.12	Shop Drawings	G-4
2.13	Preliminary Approval	G-4
2.14	Defects and Their Remedies	G-4
2.15	Changes and Alterations	G-5
 3. General Obligations and Responsibilities 		
3.01	Keeping of Plans and Specifications Accessible	G-5
3.02	Ownership of Drawings	G-5
3.03	Adequacy of Design	G-5
3.04	Right of Entry	G-5
3.05	Collateral Contracts	G-5
3.06	Discrepancies and Omissions	G-5
3.07	Equipment, Materials and Construction Plant	G-5
3.08	Damages	G-6

3.09	Protection Against Accident to Employees and the Public	G-6
3.10	Performance and Payment Bonds	G-6
3.11	Losses from Natural Causes	G-6
3.12	Protection of Adjoining Property	G-6
3.13	Protection Against Claims of Sub-Contractors, Etc.	G-6
3.14	Protection Against Royalties or Patented Invention	G-7
3.15	Laws and Ordinances	G-7
3.16	Assignment and Subletting	G-7
3.17	Indemnification	G-7
3.18	Contractor's Liability Insurance	G-8
3.18.1	Certificate of Insurance	G-8

4. Prosecution and Progress

4.01	Time and Order of Completion	G-8
4.02	Extension of Time	G-9
4.03	Hindrances and Delays	G-9

5. Measurement and Payment

5.01	Quantities and Measurements	G-9
5.02	Estimated Quantities	G-9
5.03	Price of Work	G-9
5.04	Partial Payment	G-10
5.05	Use of Completed Portions	G-10
5.06	Final Completion and Acceptance	G-10
5.07	Final Payment	G-10
5.08	Payments Withheld	G-10
5.09	Delayed Payments	G-11

6. Extra Work and Claims

6.01	Change Orders	G-11
6.02	Minor Changes	G-11
6.03	Extra Work	G-11
6.04	Time of Filing Claims	G-12
6.05	Arbitration	G-12

7. Abandonment of Contract

7.01	Abandonment by Contractor	G-13
7.02	Abandonment by Owner	G-14

GENERAL CONDITIONS OF AGREEMENT

1. DEFINITIONS OF TERMS

1.01 OWNER, CONTRACTOR AND ENGINEER. The OWNER, the CONTRACTOR and the ENGINEER are those persons or organizations identified as such in the Agreement and are referred to throughout the Contract Documents as if singular in number and masculine in gender. The term ENGINEER means the ENGINEER or his duly authorized representative. The ENGINEER shall be understood to be the ENGINEER of the OWNER, and nothing contained in the Contract Documents shall create any contractual or agency relationship between the ENGINEER and the CONTRACTOR.

1.02 CONTRACT DOCUMENTS. The Contract Documents shall consist of the Notice to Contractors (Advertisement), Special Conditions (Instructions to Bidders), Proposal, signed Agreement, Performance and Payment Bonds (when required), Special Bonds (when required), General Conditions of the Agreement, Technical Specifications, Plans, and all modifications thereof incorporated in any of the documents before the execution of the agreement.

The Contract Documents are complementary, and what is called for by any one shall be as binding as if called for by all. In case of conflict between any of the Contract Documents, priority of interpretation shall be in the following order: Signed Agreement, Performance and Payment Bonds, Special Bonds (if any), Proposal, Special Conditions of Agreement, Notice to Contractors, Technical Specifications, Plans, and General Conditions of Agreement.

1.03 SUB-CONTRACTOR. The term Sub-Contractor, as employed herein, includes only those having a direct contract with the CONTRACTOR and it includes one who furnishes material worked to a special design according to the plans or specifications of this work, but does not include one who merely furnishes material not so worked.

1.04 WRITTEN NOTICE. Written notice shall be deemed to have been duly served if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered mail to the last business address known to him who gives the notice.

1.05 WORK. The CONTRACTOR shall provide and pay for all materials, supplies, machinery, equipment, tools, superintendence, labor, services, insurance, and all water, light, power, fuel, transportation and other facilities necessary for the execution and completion of the work covered by the contract documents. Unless otherwise specified, all materials shall be new and both workmanship and materials shall be of a good quality. The CONTRACTOR shall, if required, furnish satisfactory evidence as to the kind and quality of materials. Materials or work described in words which so applied have a well known technical or trade meaning shall be held to refer to such recognized standards.

1.06 EXTRA WORK. The term "Extra Work" as used in this contract shall be understood to mean and include all work that may be required by the ENGINEER or OWNER to be done by the CONTRACTOR to accomplish any change, alteration or addition to the work shown upon the plans, or reasonably implied by the specifications, and not covered by the CONTRACTOR'S Proposal, except as provided under "Changes and Alterations", herein.

1.07 WORKING DAY. A "Working Day" is defined as any day not including Saturdays, Sundays or any legal holidays, in which weather or other conditions, not under the control of the CONTRACTOR, will permit construction of the principal units of the work for a period of not less than seven (7) hours between 7:00 a.m. and 6:00 p.m.

1.08 CALENDAR DAY. "Calendar Day" is any day of the week or month, no days being excepted.

1.09 SUBSTANTIALLY COMPLETED. By the term "substantially completed" is meant that the structure has been made suitable for use or occupancy or the facility is in condition to serve its intended purpose, but still may require minor miscellaneous work and adjustment.

2. RESPONSIBILITIES OF THE ENGINEER AND THE CONTRACTOR

2.01 **OWNER-ENGINEER RELATIONSHIP.** The ENGINEER will be the OWNER'S representative during construction. The duties, responsibilities and limitations of authority of the ENGINEER as the OWNER'S representative during construction are as set forth in the Contract Documents and shall not be extended or limited without written consent of the OWNER and ENGINEER. The ENGINEER will advise and consult with the OWNER, and all of OWNER'S instructions to the CONTRACTOR shall be issued through the ENGINEER.

2.02 **PROFESSIONAL INSPECTION BY ENGINEER.** The ENGINEER shall make periodic visits to the site to familiarize himself generally with the progress of the executed work and to determine if such work generally meets the essential performance and design features and the technical and functional engineering requirements of the Contract Documents; provided and except, however, that the ENGINEER shall not be responsible for making any detailed, exhaustive, comprehensive or continuous on-site inspection of the quality or quantity of the work or be in any way responsible, directly or indirectly, for the construction means, methods, techniques, sequences, quality, procedures, programs, safety precautions or lack of same incident thereto or in connection therewith. Notwithstanding any other provision of this agreement or any other Contract Document, the ENGINEER shall not be in any way responsible or liable for any acts, errors, omissions or negligence of the CONTRACTOR, any subcontractor or any of the CONTRACTOR'S or subcontractor's agents, servants or employees or any other person, firm or corporation performing or attempting to perform any of the work.

2.03 **PAYMENTS FOR WORK.** The ENGINEER shall review CONTRACTOR'S applications for payment and supporting data, determine the amount owed to the CONTRACTOR and approve, in writing, payment to CONTRACTOR in such amounts; such approval of payment to CONTRACTOR constitutes a representation to the OWNER of ENGINEER'S professional judgment that the work has progressed to the point indicated to the best of his knowledge, information and belief, but such approval of an application for payment to CONTRACTOR shall not be deemed as a representation by ENGINEER that ENGINEER has made any examination to determine how or for what purpose CONTRACTOR has used the moneys paid on account of the Contract price.

2.04 **INITIAL DETERMINATIONS.** The ENGINEER initially shall determine all claims, disputes and other matters in question between the CONTRACTOR and the OWNER relating to the execution or progress of the work or the interpretation of the Contract Documents and the ENGINEER'S decision shall be rendered in writing within a reasonable time. Should the ENGINEER fail to make such decision within a reasonable time, appeal to arbitration may be taken as if his decision had been rendered against the party appealing.

2.05 **OBJECTIONS.** In the event the ENGINEER renders any decision which, in the opinion of either party hereto, is not in accordance with the meaning and intent of this contract, either party may file with the ENGINEER within thirty days his written objection to the decision, and by such action may reserve the right to submit the question so raised to arbitration as hereinafter provided.

2.06 **LINES AND GRADES.** Unless otherwise specified, all lines and grades shall be furnished by the ENGINEER or his representative. Whenever necessary, construction work shall be suspended to permit performance of this work, but such suspension will be as brief as practicable and the CONTRACTOR shall be allowed no extra compensation therefor. The CONTRACTOR shall give the ENGINEER ample notice of the time and place where lines and grades will be needed. All stakes, marks, etc., shall be carefully preserved by the CONTRACTOR, and in case of careless destruction or removal by him or his employees, such stakes, marks, etc., shall be replaced at the CONTRACTOR'S expense.

2.07 **CONTRACTOR'S DUTY AND SUPERINTENDENCE.** The CONTRACTOR shall give adequate attention to the faithful prosecution and completion of this contract and shall keep on the work, during its progress, a competent superintendent and any necessary assistants. The superintendent shall represent the CONTRACTOR in his absence and all directions given to him shall be as binding as if given to the CONTRACTOR.

The CONTRACTOR is and at all times shall remain an independent contractor, solely responsible for the manner and method of completing his work under this contract, with full power and authority to select the means, method and manner of performing such work, so long as such methods do not adversely affect the completed improvements, the OWNER and ENGINEER being interested only in the result obtained and conformity of such completed improvements to the plans, specifications and contract.

Likewise, the CONTRACTOR shall be solely responsible for the safety of himself, his employees and other persons, as well as for the protection of the safety of the improvements being erected and the property of himself or any other person, as a result of his operations hereunder. Engineering construction drawings and specifications as well as any additional information concerning the work to be performed passing from or through the ENGINEER shall not be interpreted as requiring or allowing CONTRACTOR to deviate from the plans and specifications, the intent of such drawings, specifications and any other such instructions being to define with particularity the agreement of the parties as to the work the CONTRACTOR is to perform. CONTRACTOR shall be fully and completely liable, at his own expense, for design, construction, installation and use, or non-use, of all items and methods incident to performance of the contract, and for all loss, damage or injury incident thereto, either to person or property, including, without limitation, the adequacy of all temporary supports, shoring, bracing, scaffolding, machinery or equipment, safety precautions or devices, and similar items or devices used by him during construction.

Any review of work in process, or any visit or observation during construction, or any clarification of plans and specifications, by the ENGINEER, or any agent, employee, or representative of either of them, whether through personal observation on the project site or by means of approval of shop drawings for temporary construction or construction processes, or by other means or method, is agreed by the CONTRACTOR to be for the purpose of observing the extent and nature of work completed or being performed, as measured against the drawings and specifications constituting the contract, or for the purpose of enabling CONTRACTOR to more fully understand the plans and specifications so that the completed construction work will conform thereto, and shall in no way relieve the CONTRACTOR from full and complete responsibility for the proper performance of his work on the project, including but without limitation the propriety of means and methods of the CONTRACTOR in performing said contract, and the adequacy of any designs, plans or other facilities for accomplishing such performance. Deviation by the CONTRACTOR from plans and specifications that may have been in evidence during any such visitation or observation by the ENGINEER, or any of his representatives, whether called to the CONTRACTOR'S attention or not shall in no way relieve CONTRACTOR from his responsibility to complete all work in accordance with said plans and specifications.

2.08 CONTRACTOR'S UNDERSTANDING. It is understood and agreed that the CONTRACTOR has, by careful examination, satisfied himself as to the nature and location of the work, the conformation of the ground, the character, quality and quantity of the materials to be encountered, the character of equipment and facilities needed preliminary to and during the prosecution of the work, the general and local conditions, and all other matters which can in any way affect the work under this contract. No verbal agreement or conversation with any officer, agent or employee of the OWNER or ENGINEER either before or after the execution of this contract, shall affect or modify any of the terms or obligations herein contained.

2.09 CHARACTER OF WORKMEN. The CONTRACTOR agrees to employ only orderly and competent men, skillful in the performance of the type of work required under this contract, to do the work; and agrees that whenever the ENGINEER shall inform him in writing that any man or men on the work are, in his opinion, incompetent, unfaithful or disorderly, such man or men shall be discharged from the work and shall not again be employed on the work without the ENGINEER'S written consent.

2.10 CONTRACTOR'S BUILDINGS. The building of structures for housing men, or the erection of tents or other forms of protection, will be permitted only at such places as the ENGINEER shall direct, and the sanitary conditions of the grounds in or about such structures shall at all times be maintained in a manner satisfactory to the ENGINEER.

2.11 SANITATION. Necessary sanitary conveniences for the use of laborers on the work, properly secluded from public observation, shall be constructed and maintained by the CONTRACTOR in such manner and at such points as shall be approved by the ENGINEER, and their use shall be strictly enforced.

2.12 SHOP DRAWINGS. The CONTRACTOR shall submit to the ENGINEER, with such promptness as to cause no delay in his own work or in that of any other Contractor, four checked copies, unless otherwise specified, of all shop and/or setting drawings and schedules required for the work of the various trades, and the ENGINEER shall pass upon them with reasonable promptness, making desired corrections. The CONTRACTOR shall make any corrections required by the ENGINEER, file with him two corrected copies and furnish such other copies as may be needed. The ENGINEER'S approval of such drawings or schedules shall not relieve the CONTRACTOR from responsibility for deviations from drawings or specifications, unless he has in writing called the ENGINEER'S attention to such deviations at the time of submission, nor shall it relieve him from responsibility for errors of any sort in shop drawings or schedules. It shall be the CONTRACTOR'S responsibility to fully and completely review all shop drawings to ascertain their effect on his ability to perform the required contract work in accordance with the plans and specifications and within the contract time.

Such review by the ENGINEER shall be for the sole purpose of determining the sufficiency of said drawings or schedules to result in finished improvements in conformity with the plans and specifications, and shall not relieve the CONTRACTOR of his duty as an independent contractor as previously set forth, it being expressly understood and agreed that the ENGINEER does not assume any duty to pass upon the propriety or adequacy of such drawings or schedules, or any means or methods reflected thereby, in relation to the safety of either person or property during CONTRACTOR'S performance hereunder.

2.13 PRELIMINARY APPROVAL. The ENGINEER shall not have the power to waive the obligations of this contract for the furnishing by the CONTRACTOR of good material, and of his performing good work as herein described, and in full accordance with the plans and specifications. No failure or omission of the ENGINEER to discover, object to or condemn any defective work or material shall release the CONTRACTOR from the obligations to fully and properly perform the contract, including without limitations, the obligation to at once tear out, remove and properly replace the same at any time prior to final acceptance upon the discovery of said defective work or material; provided, however, that the ENGINEER shall, upon request of the CONTRACTOR, inspect and accept or reject any material furnished, and in event the material has been once accepted by the ENGINEER, such acceptance shall be binding on the OWNER, unless it can be clearly shown that such material furnished does not meet the specifications for this work.

Any questioned work may be ordered taken up or removed for re-examination, by the ENGINEER, prior to final acceptance, and if found not in accordance with the specifications for said work, all expense of removing, re-examination and replacement shall be borne by the CONTRACTOR, otherwise the expense thus incurred shall be allowed as EXTRA WORK, and shall be paid for by the OWNER; provided that, where inspection or approval is specifically required by the specifications prior to performance of certain work, should the CONTRACTOR proceed with such work without requesting prior inspection or approval he shall bear all expense of taking up, removing, and replacing this work if so directed by the ENGINEER.

2.14 DEFECTS AND THEIR REMEDIES. It is further agreed that if the work or any part thereof, or any material brought on the site of the work for use in the work or selected for the same, shall be deemed by the ENGINEER as unsuitable or not in conformity with the specifications, the CONTRACTOR shall, after receipt of written notice thereof from the ENGINEER, forthwith remove such material and rebuild or otherwise remedy such work so that it shall be in full accordance with this contract.

2.15 CHANGES AND ALTERATIONS. The CONTRACTOR further agrees that the OWNER may make such changes and alterations as the OWNER may see fit, in the line, grade, form, dimensions, plans or materials for the work herein contemplated, or any part thereof, either before or after the beginning of the construction, without affecting the validity of this contract and the accompanying Performance and Payment Bonds.

If such changes or alterations diminish the quantity of the work to be done, they shall not constitute the basis for a claim for damages, or anticipated profits on the work that may be dispensed with, except as provided for unit price items under Section 5 "Measurement and Payment." If the amount of work is increased, and the work can fairly be classified under the specifications, such increase shall be paid for according to the quantity actually done and at the unit price, if any, established for such work under this contract, except as provided for unit price items under Section 5 "Measurement and Payment;" otherwise, such additional work shall be paid for as provided under Extra Work. In case the OWNER shall make such changes or alterations as shall make useless any work already done or material already furnished or used in said work, then the OWNER shall recompense the CONTRACTOR for any material or labor so used, and for any actual loss occasioned by such change, due to actual expenses incurred in preparation for the work as originally planned.

3. GENERAL OBLIGATIONS AND RESPONSIBILITIES

3.01 KEEPING OF PLANS AND SPECIFICATIONS ACCESSIBLE. The ENGINEER shall furnish the CONTRACTOR with an adequate and reasonable number of copies of all plans and specifications without expense to him, and the CONTRACTOR shall keep one copy of the same constantly accessible on the work, with the latest revisions noted thereon.

3.02 OWNERSHIP OF DRAWINGS. All drawings, specifications and copies thereof furnished by the ENGINEER shall not be reused on other work, and, with the exception of the signed contract sets, are to be returned to him on request, at the completion of the work. All models are the property of the OWNER.

3.03 ADEQUACY OF DESIGN. It is understood that the OWNER believes it has employed competent engineers and designers. It is, therefore, agreed that the OWNER shall be responsible for the adequacy of the design, sufficiency of the Contract Documents, the safety of the structure and the practicability of the operations of the completed project; provided the CONTRACTOR has complied with the requirements of the said Contract Documents, all approved modifications thereof, and additions and alterations thereto approved in writing by the OWNER. The burden of proof of such compliance shall be upon the CONTRACTOR to show that he has complied with the said requirements of the Contract Documents, approved modifications thereof and all approved additions and alterations thereto.

3.04 RIGHT OF ENTRY. The OWNER reserves the right to enter the property or location on which the works herein contracted for are to be constructed or installed, by such agent or agents as he may elect, for the purpose of inspecting the work, or for the purpose of constructing or installing such collateral work as said OWNER may desire.

3.05 COLLATERAL CONTRACTS. The OWNER agrees to provide by separate contract or otherwise, all labor and material essential to the completion of the work specifically excluded from this contract, in such manner as not to delay the progress of the work, or damage said CONTRACTOR, except where such delays are specifically mentioned elsewhere in the Contract Documents.

3.06 DISCREPANCIES AND OMISSIONS. It is further agreed that it is the intent of this contract that all work must be done and all material must be furnished in accordance with the generally accepted practice, and in the event of any discrepancies between the separate contract documents, the priority of interpretation defined under "Contract Documents" shall govern. In the event that there is still any doubt as to the meaning and intent of any portion of the contract, specifications or drawings, the ENGINEER shall define which is intended to apply to the work.

3.07 EQUIPMENT, MATERIALS AND CONSTRUCTION PLANT. The CONTRACTOR shall be responsible for the care, preservation, conservation, and protection of all materials, supplies, machinery, equipment, tools, apparatus, accessories, facilities, all means of construction, and any and all parts of the work, whether the CONTRACTOR has been paid, partially paid, or not paid for such work, until the entire work is completed and accepted.

3.08 DAMAGES. In the event the CONTRACTOR is damaged in the course of the completion of the work by the act, neglect, omission, mistake or default of the OWNER, or of the ENGINEER, or of any other CONTRACTOR employed by the OWNER upon the work, thereby causing loss to the CONTRACTOR, the OWNER agrees that he will reimburse the CONTRACTOR for such loss. In the event the OWNER is damaged in the course of the work by the act, negligence, omission, mistake or default of the CONTRACTOR, or should the CONTRACTOR unreasonably delay the progress of the work being done by others on the job so as to cause loss for which the OWNER becomes liable, then the CONTRACTOR shall reimburse the OWNER for such loss.

3.09 PROTECTION AGAINST ACCIDENT TO EMPLOYEES AND THE PUBLIC. The CONTRACTOR shall at all times exercise reasonable precautions for the safety of employees and others on or near the work and shall comply with all applicable provisions of Federal, State, and Municipal safety laws and building and construction codes. All machinery and equipment and other physical hazards shall be guarded in accordance with the "Manual of Accident Prevention in Construction" of the Associated General Contractors of America except where incompatible with Federal, State, or Municipal laws or regulations. The CONTRACTOR shall provide such machinery guards, safe walkways, ladders, bridges, gangplanks, and other safety devices. The safety precautions actually taken and their adequacy shall be the sole responsibility of the CONTRACTOR, acting at his discretion as an independent contractor.

3.10 PERFORMANCE AND PAYMENT BONDS. Unless otherwise specified, it is further agreed by the parties to this Contract that the CONTRACTOR will execute separate performance and payment bonds, each in the sum of one hundred (100) percent of the total contract price, in standard forms for this purpose, guaranteeing faithful performance of the work and the fulfillment of any guarantees required, and further guaranteeing payment to all persons supplying labor and materials or furnishing him any equipment in the execution of the Contract, and it is agreed that this Contract shall not be in effect until such performance and payment bonds are furnished and approved by the OWNER.

Unless otherwise approved in writing by the OWNER, the surety company underwriting the bonds shall be acceptable according to the latest list of companies holding certificates of authority from the Secretary of the Treasury of the United States.

Unless otherwise specified, the cost of the premium for the performance and payment bonds shall be included in the CONTRACTOR'S proposal.

3.11 LOSSES FROM NATURAL CAUSES. Unless otherwise specified, all loss or damage to the CONTRACTOR arising out of the nature of the work to be done, or from the action of the elements, or from any unforeseen circumstance in the prosecution of the same, or from unusual obstructions or difficulties which may be encountered in the prosecution of the work, shall be sustained and borne by the CONTRACTOR at his own cost and expense.

3.12 PROTECTION OF ADJOINING PROPERTY. The said CONTRACTOR shall take proper means to protect the adjacent or adjoining property or properties in any way encountered, which might be injured or seriously affected by any process of construction to be undertaken under this Agreement, from any damage or injury by reason of said process of construction; and he shall be liable for any and all claims for such damage on account of his failure to fully protect all adjoining property. The CONTRACTOR agrees to indemnify, save and hold harmless the OWNER and ENGINEER against any claim or claims for damages due to any injury to any adjacent or adjoining property, arising or growing out of the performance of the contract; but any such indemnity shall not apply to any claim of any kind arising out of the existence or character of the work.

3.13 PROTECTION AGAINST CLAIMS OF SUB-CONTRACTORS, LABORERS, MATERIALMEN AND FURNISHERS OF MACHINERY, EQUIPMENT AND SUPPLIES. The CONTRACTOR agrees that he will indemnify and save the OWNER and ENGINEER harmless from all claims growing out of the lawful demands of sub-contractors, laborers, workmen, mechanics, materialmen and furnishers of machinery and parts thereof, equipment, power tools, and all supplies, including commissary, incurred in the furtherance of the performance of this contract. When so desired by the OWNER, the CONTRACTOR shall furnish satisfactory evidence that all obligations of the

nature hereinabove designated have been paid, discharged or waived. If the CONTRACTOR fails so to do, then the OWNER may at the option of the CONTRACTOR either pay directly any unpaid bills, of which the OWNER has written notice, or withhold from the CONTRACTOR'S unpaid compensation a sum of money deemed reasonably sufficient to liquidate any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged, whereupon payments to the CONTRACTOR shall be resumed in full, in accordance with the terms of this contract, but in no event shall the provisions of this sentence be construed to impose any obligation upon the OWNER by either the CONTRACTOR or his Surety.

3.14 PROTECTION AGAINST ROYALTIES OR PATENTED INVENTION. The CONTRACTOR shall pay all royalties and license fees, and shall provide for the use of any design, device, material or process covered by letters patent or copyright by suitable legal agreement with the patentee or owner. The CONTRACTOR shall defend all suits or claims for infringement of any patent or copyright rights and shall indemnify and save the OWNER and ENGINEER harmless from any loss on account thereof, except that the OWNER shall defend all such suits and claims and shall be responsible for all such loss when a particular design, device, material or process or the product of a particular manufacturer or manufacturers is specified or required by the OWNER; provided, however, if choice of alternate design, device, material or process is allowed to the CONTRACTOR, then CONTRACTOR shall indemnify and save OWNER harmless from any loss on account thereof. If the material or process specified or required by the OWNER is an infringement, the CONTRACTOR shall be responsible for such loss unless he promptly gives such information to the OWNER.

3.15 LAWS AND ORDINANCES. The CONTRACTOR shall at all times observe and comply with all Federal, State and local laws, ordinances and regulations, which in any manner affect the contract or the work, and shall indemnify and save harmless the OWNER and ENGINEER against any claim arising from the violation of any such laws, ordinances, and regulations whether by the CONTRACTOR or his employees, except where such violations are called for by the provisions of the Contract Documents. If the CONTRACTOR observes that the plans and specifications are at variance therewith, he shall promptly notify the ENGINEER in writing, and any necessary changes shall be adjusted as provided in the contract for changes in the work. If the CONTRACTOR performs any work knowing it to be contrary to such laws, ordinances, rules and regulations, and without such notice to the ENGINEER, he shall bear all costs arising therefrom. In case the OWNER is a body politic and corporate, the law from which it derives its powers, insofar as the same regulates the objects for which, or the manner in which, or the conditions under which the OWNER may enter into contract, shall be controlling, and shall be considered as part of this contract, to the same effect as though embodied herein.

3.16 ASSIGNMENT AND SUBLETTING. The CONTRACTOR further agrees that he will retain personal control and will give his personal attention to the fulfillment of this contract and that he will not assign by Power of Attorney, or otherwise, or sublet said contract without the written consent of the ENGINEER, and that no part or feature of the work will be sublet to anyone objectionable to the ENGINEER or the OWNER. The CONTRACTOR further agrees that the subletting of any portion or feature of the work, or materials required in the performance of this contract, shall not relieve the CONTRACTOR from his full obligations to the OWNER, as provided by this Agreement.

3.17 INDEMNIFICATION. The CONTRACTOR shall defend, indemnify and hold harmless the OWNER and the ENGINEER and their respective officers, agents and employees, from and against all damages, claims, losses, demands, suits, judgments and costs, including reasonable attorneys' fees and expenses, arising out of or resulting from the performance of the work, provided that any such damages, claim, loss, demand, suit, judgment, cost or expense:

- (1) Is attributable to bodily injury, sickness, disease or death or to injury to or destruction of tangible property (other than the work itself) including the loss of use resulting therefrom; and,

- (2) Is caused in whole or in part by any negligent act or omission of the Contractor, any Subcontractor, anyone directly or indirectly employed by any one of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder.

The obligation of the CONTRACTOR under this Paragraph shall not extend to the liability of the ENGINEER, his agents or employees arising out of the preparation or approval of maps, drawings, reports, surveys, Change Orders, designs or specifications, or the giving of or the failure to give directions or instructions by the ENGINEER, his agents or employees, provided such giving or failure to give is the primary cause of the injury or damage.

3.18 INSURANCE. The CONTRACTOR at his own expense shall purchase, maintain and keep in force such insurance as will protect him from claims set forth below which may arise out of or result from the CONTRACTOR'S operations under the Contract, whether such operations be by himself or by any Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

- (1) Workmen's compensation claims, disability benefits and other similar employee benefit acts;
- (2) Claims for damages because of bodily injury, occupational sickness or disease, or death of his employees, and claims insured by usual bodily injury liability coverages;
- (3) Claims for damages because of bodily injury, sickness or disease, or death of any person other than his employees, and claims insured by usual bodily injury liability coverages; and
- (4) Claims for damages because of injury to or destruction of tangible property, including loss of use resulting therefrom.

3.18.1 CERTIFICATE OF INSURANCE. Before commencing any of the work, CONTRACTOR shall file with the OWNER valid Certificates of Insurance acceptable to the OWNER and the ENGINEER. Such Certificates shall contain a provision that coverages afforded under the policies will not be cancelled until at least fifteen days' prior written notice has been given to the OWNER.

The CONTRACTOR shall also file with the OWNER valid Certificates of Insurance covering all sub-contractors.

4. PROSECUTION AND PROGRESS

4.01 TIME AND ORDER OF COMPLETION. It is the meaning and intent of this contract, unless otherwise herein specifically provided, that the CONTRACTOR shall be allowed to prosecute his work at such times and seasons, in such order of precedence, and in such manner as shall be most conducive to economy of construction: provided, however, that the order and the time of prosecution shall be such that the work shall be substantially completed as a whole and in part, in accordance with this contract, the plans and specifications, and within the time of completion designated in the Proposal; provided, also, that when the OWNER is having other work done, either by contract or by his own force, the ENGINEER may direct the time and manner of constructing the work done under this contract, so that conflict will be avoided and the construction of the various works being done for the OWNER shall be harmonized.

The CONTRACTOR shall submit, at such times as may reasonably be requested by the ENGINEER, schedules which shall show the order in which the CONTRACTOR proposes to carry on the work, with dates at which the CONTRACTOR will start the several parts of the work, and estimated dates of completion of the several parts.

4.02 EXTENSION OF TIME. Should the CONTRACTOR be delayed in the completion of the work by any act or neglect of the OWNER or ENGINEER, or of any employee of either, or by other contractors employed by the OWNER, or by changes ordered in the work, or by strikes, lockouts, fires, and unusual delays by common carriers, or unavoidable cause or causes beyond the CONTRACTOR'S control, or by any cause which the ENGINEER shall decide justifies the delay, then an extension of time shall be allowed for completing the work, sufficient to compensate for the delay, the amount of the extension to be determined by the ENGINEER, provided, however, that the CONTRACTOR shall give the ENGINEER prompt notice in writing of the cause of such delay.

4.03 HINDRANCES AND DELAYS. No claims shall be made by the CONTRACTOR for damages resulting from hindrances or delays from any cause (except where the work is stopped by order of the OWNER) during the progress of any portion of the work embraced in this contract. In case said work shall be stopped by the act of the OWNER, then such expense as in the judgment of the ENGINEER is caused by such stoppage of said work shall be paid by the OWNER to the CONTRACTOR.

5. MEASUREMENT AND PAYMENT

5.01 QUANTITIES AND MEASUREMENTS. No extra or customary measurements of any kind will be allowed, but the actual measured and/or computed length, area, solid contents, number and weight only shall be considered, unless otherwise specifically provided.

5.02 ESTIMATED QUANTITIES. This agreement, including the specifications, plans and estimate, is intended to show clearly all work to be done and material to be furnished hereunder. Where the estimated quantities are shown for the various classes of work to be done and material to be furnished under this contract, they are approximate and are to be used only as a basis for estimating the probable cost of the work and for comparing the proposals offered for the work. It is understood and agreed that the actual amount of work to be done and material to be furnished under this contract may differ somewhat from these estimates, and that where the basis for payment under this contract is the unit price method, payment shall be for the actual amount of such work done and the material furnished.

Where payment is based on the unit price method, the CONTRACTOR agrees that he will make no claim for damages, anticipated profits or otherwise on account of any differences which may be found between the quantities of work actually done, the material actually furnished under this contract and the estimated quantities contemplated and contained in the proposal; provided, however, that in case the actual quantity of any major item should become as much as 20% more than, or 20% less than the estimated or contemplated quantity for such items, then either party to this Agreement, upon demand, shall be entitled to a revised consideration upon the portion of the work above or below 20% of the estimated quantity.

A "Major Item" shall be construed to be any individual bid item incurred in the proposal that has a total cost equal to or greater than five (5) per cent of the total contract cost, computed on the basis of the proposal quantities and the contract unit prices.

Any revised consideration is to be determined by agreement between the parties, otherwise by the terms of this Agreement, as provided under "Extra Work."

5.03 PRICE OF WORK. In consideration of the furnishing of all the necessary labor, equipment and material, and the completion of all work by the CONTRACTOR, and on the completion of all work and of the delivery of all material embraced in this Contract in full conformity with the specifications and stipulations herein contained, the OWNER agrees to pay the CONTRACTOR the prices set forth in the Proposal hereto attached, which has been made a part of this contract. The CONTRACTOR hereby agrees to receive such prices in full for furnishing all material and all labor required for the aforesaid work, also for all expense incurred by him, and for well and truly performing the same and the whole thereof in the manner and according to this Agreement.

5.04 PARTIAL PAYMENTS. On or before the 10th day of each month, the CONTRACTOR shall prepare and submit to the ENGINEER for approval or modification a statement showing as completely as practicable the total value of the work done by the CONTRACTOR up to and including the last day of the preceding month; said statement shall also include the value of all sound materials delivered on the site of the work that are to be fabricated into the work.

The OWNER shall then pay the CONTRACTOR on or before the 15th day of the current month the total amount of the approved statement, less 10 per cent of the amount thereof, which 10 per cent shall be retained until final payment, and further less all previous payments and all further sums that may be retained by the OWNER under the terms of this Agreement. It is understood, however, that in case the whole work be near to completion and some unexpected and unusual delay occurs due to no fault or neglect on the part of the CONTRACTOR, the OWNER may—upon written recommendation of the ENGINEER—pay a reasonable and equitable portion of the retained percentage to the CONTRACTOR, or the CONTRACTOR at the OWNER'S option, may be relieved of the obligation to fully complete the work and, thereupon, the CONTRACTOR shall receive payment of the balance due him under the contract subject only to the conditions stated under "Final Payment."

5.05 USE OF COMPLETED PORTIONS. The OWNER shall have the right to take possession of and use any completed or partially completed portions of the work, notwithstanding the time for completing the entire work or such portions may not have expired but such taking possession and use shall not be deemed an acceptance of any work not completed in accordance with the Contract Documents. If such prior use increases the cost of or delays the work, the CONTRACTOR shall be entitled to such extra compensation, or extension of time, or both, as the ENGINEER may determine.

The CONTRACTOR shall notify the ENGINEER when, in the CONTRACTOR'S opinion, the contract is "substantially completed" and when so notifying the ENGINEER, the CONTRACTOR shall furnish to the ENGINEER in writing a detailed list of unfinished work. The ENGINEER will review the CONTRACTOR'S list of unfinished work and will add thereto such items as the CONTRACTOR has failed to include. The "substantial completion" of the structure or facility shall not excuse the CONTRACTOR from performing all of the work undertaken, whether of a minor or major nature, and thereby completing the structure or facility in accordance with the Contract Documents.

5.06 FINAL COMPLETION AND ACCEPTANCE. Within ten (10) days after the CONTRACTOR has given the ENGINEER written notice that the work has been completed, or substantially completed, the ENGINEER and the OWNER shall inspect the work and within said time, if the work be found to be completed or substantially completed in accordance with the Contract Documents, the ENGINEER shall issue to the OWNER and the CONTRACTOR his Certificate of Completion, and thereupon it shall be the duty of the OWNER within ten (10) days to issue a Certificate of Acceptance of the work to the CONTRACTOR or to advise the CONTRACTOR in writing of the reason for non-acceptance.

5.07 FINAL PAYMENT. Upon the issuance of the Certificate of Completion, the ENGINEER shall proceed to make final measurements and prepare final statement of the value of all work performed and materials furnished under the terms of the Agreement and shall certify same to the OWNER, who shall pay to the CONTRACTOR on or after the 30th day, and before the 35th day, after the date of the Certificate of Completion, the balance due the CONTRACTOR under the terms of this Agreement, provided he has fully performed his contractual obligations under the terms of this contract; and said payment shall become due in any event upon said performance by the CONTRACTOR. Neither the Certificate of Acceptance nor the final payment, nor any provision in the Contract Documents, shall relieve the CONTRACTOR of the obligation for fulfillment of any warranty which may be required.

5.08 PAYMENTS WITHHELD. The OWNER may, on account of subsequently discovered evidence, withhold or nullify the whole or part of any certificate to such extent as may be necessary to protect himself from loss on account of:

- (a) Defective work not remedied.
- (b) Claims filed or reasonable evidence indicating probable filing of claims.
- (c) Failure of the CONTRACTOR to make payments properly to subcontractors or for material or labor.
- (d) Damage to another contractor.
- (e) Reasonable doubt that the work can be completed for the unpaid balance of the contract amount.
- (f) Reasonable indication that the work will not be completed within the contract time.

When the above grounds are removed or the CONTRACTOR provides a Surety Bond satisfactory to the OWNER, which will protect the OWNER in the amount withheld, payment shall be made for amounts withheld because of them.

5.09 DELAYED PAYMENTS. Should the OWNER fail to make payment to the CONTRACTOR of the sum named in any partial or final statement, when payment is due, then the OWNER shall pay to the CONTRACTOR, in addition to the sum shown as due by such statement, interest thereon at the rate of six (6) per cent per annum, unless otherwise specified, from date due as provided under "Partial Payments" and "Final Payments," until fully paid, which shall fully liquidate any injury to the CONTRACTOR growing out of such delay in payment, but the right is expressly reserved to the CONTRACTOR in the event payments be not promptly made, as provided under "Partial Payments," to at any time thereafter treat the contract as abandoned by the OWNER and recover compensation, as provided under "Abandonment of Contract," unless such payments are withheld in accordance with the provisions of "Payments Withheld."

6. EXTRA WORK AND CLAIMS

6.01 CHANGE ORDERS: Without invalidating this Agreement, the OWNER may, at any time or from time to time, order additions, deletions or revisions to the work; such changes will be authorized by Change Order to be prepared by the ENGINEER for execution by the OWNER and the CONTRACTOR. The Change Order shall set forth the basis for any change in contract price, as hereinafter set forth for Extra Work, and any change in contract time which may result from the change.

In the event the CONTRACTOR shall refuse to execute a Change Order which has been prepared by the ENGINEER and executed by the OWNER, the ENGINEER may in writing instruct the CONTRACTOR to proceed with the work as set forth in the Change Order and the CONTRACTOR may make claim against the OWNER for Extra Work involved therein, as hereinafter provided.

6.02 MINOR CHANGES: The ENGINEER may authorize minor changes in the work not inconsistent with the overall intent of the Contract Documents and not involving an increase in Contract Price. If the CONTRACTOR believes that any minor change or alteration authorized by the ENGINEER involves Extra Work and entitles him to an increase in the Contract Price, the CONTRACTOR shall make written request to the ENGINEER for a written Field Order.

In such case, the CONTRACTOR by copy of his communication to the ENGINEER or otherwise in writing shall advise the OWNER of his request to the ENGINEER for a written Field Order and that the work involved may result in an increase in the Contract Price.

Any request by the CONTRACTOR for a change in Contract Price shall be made prior to beginning the work covered by the proposed change.

6.03 EXTRA WORK: It is agreed that the basis of compensation to the CONTRACTOR for work either added or deleted by a Change Order or for which a claim for Extra Work is made shall be determined by one or more of the following methods:

Method (A)—By agreed unit prices; or
Method (B)—By agreed lump sum; or
Method (C)—If neither Method (A) nor Method (B) be agreed upon before the Extra Work is commenced, then the CONTRACTOR shall be paid the "actual field cost" of the work, plus fifteen (15) percent.

In the event said Extra Work be performed and paid for under Method (C), then the provisions of this paragraph shall apply and the "actual field cost" is hereby defined to include the cost to the CONTRACTOR of all workmen, such as foreman, timekeepers, mechanics and laborers, and materials, supplies, teams, trucks, rentals on machinery and equipment, for the time actually employed or used on such Extra Work, plus actual transportation charges necessarily incurred, together with all power, fuel, lubricants, water and similar operating expenses, also all necessary incidental expenses incurred directly on account of such Extra Work, including Social Security, Old Age Benefits and other payroll taxes, and, a rateable proportion of premiums on Performance and Payment Bonds and Maintenance Bonds, Public Liability and Property Damage and Workmen's Compensation, and all other insurance as may be required by any law or ordinance, or directed by the OWNER, or by them agreed to. The ENGINEER may direct the form in which accounts of the "actual field cost" shall be kept and the records of these accounts shall be made available to the ENGINEER. The ENGINEER or OWNER may also specify in writing, before the work commences, the method of doing the work and the type and kind of machinery and equipment to be used; otherwise these matters shall be determined by the CONTRACTOR. Unless otherwise agreed upon, the prices for the use of machinery and equipment shall be determined by using 100 per cent, unless otherwise specified, of the latest schedule of Equipment Ownership Expense adopted by the Associated General Contractors of America. Where practicable the terms and prices for the use of machinery and equipment shall be incorporated in the Written Extra Work Order. The fifteen (15%) per cent of the "actual field cost" to be paid the CONTRACTOR shall cover and compensate him for his profit, overhead, general superintendence and field office expense, and all other elements of cost and expense not embraced within the "actual field cost" as herein defined, save that where the CONTRACTOR'S Camp or Field Office must be maintained primarily on account of such Extra Work; then the cost to maintain and operate the same shall be included in the "actual field cost."

No claim for Extra Work of any kind will be allowed unless ordered in writing by the ENGINEER. In case any orders or instructions, either oral or written, appear to the CONTRACTOR to involve Extra Work for which he should receive compensation or an adjustment in the construction time, he shall make written request to the ENGINEER for written order authorizing such Extra Work. Should a difference of opinion arise as to what does or does not constitute Extra Work, or as to the payment therefor, and the ENGINEER insists upon its performance, the CONTRACTOR shall proceed with the work after making written request for written order and shall keep an accurate account of the "actual field cost" thereof, as provided under Method (C). The CONTRACTOR will thereby preserve the right to submit the matter of payment to arbitration, as hereinbelow provided.

6.04 TIME OF FILING CLAIMS. It is further agreed by both parties hereto that all questions of dispute or adjustment presented by the CONTRACTOR shall be in writing and filed with the ENGINEER within thirty (30) days after the ENGINEER has given any directions, order or instruction to which the CONTRACTOR desires to take exception. The ENGINEER shall reply within thirty (30) days to such written exceptions by the CONTRACTOR and render his final decision in writing. In case the CONTRACTOR should appeal from the ENGINEER'S decision, any demand for arbitration shall be filed with the ENGINEER and the OWNER in writing within ten (10) days after the date of delivery to CONTRACTOR of the ENGINEER'S final decision. It is further agreed that final acceptance of the work by the OWNER and the acceptance by the CONTRACTOR of the final payment shall be a bar to any claims by either party, except where noted otherwise in the Contract Documents.

6.05 ARBITRATION. All questions of dispute under this Agreement shall be submitted to arbitration at the request of either party to the dispute. The parties may agree upon one arbiter, otherwise, there shall be three, one named in writing by each party, and the third chosen

by the two arbiters so selected; or if the arbiters fail to select a third within ten (10) days, he shall be chosen by a District Judge serving the County in which the major portion of the project is located, unless otherwise specified. Should the party demanding arbitration fail to name an arbiter within ten (10) days of the demand, his right to arbitrate shall lapse, and the decision of the ENGINEER shall be final and binding on him. Should the other party fail to choose an arbiter within ten (10) days, the ENGINEER shall appoint such arbiter. Should either party refuse or neglect to supply the arbiters with any papers or information demanded in writing, the arbiters are empowered by both parties to take ex parte proceedings.

The arbiters shall act with promptness. The decision of any two shall be binding on both parties to the contract. The decision of the arbiters upon any question submitted to arbitration under this contract shall be a condition precedent to any right of legal action. The decision of the arbiter or arbiters may be filed in court to carry it into effect.

The arbiters, if they deem the case demands it, are authorized to award the party whose contention is sustained, such sums as they deem proper for the time, expense and trouble incident to the appeal, and if the appeal was taken without reasonable cause, they may award damages for any delay occasioned thereby. The arbiters shall fix their own compensation, unless otherwise provided by agreement, and shall assess the cost and charges of the arbitration upon either or both parties. The award of the arbiters must be made in writing.

7. ABANDONMENT OF CONTRACT

7.01 ABANDONMENT BY CONTRACTOR. In case the CONTRACTOR should abandon and fail or refuse to resume work within ten (10) days after written notification from the OWNER, or the ENGINEER, or if the CONTRACTOR fails to comply with the orders of the ENGINEER, when such orders are consistent with the Contract Documents, then, and in that case, where performance and payment bonds exist, the Sureties on these bonds shall be notified in writing and directed to complete the work, and a copy of said notice shall be delivered to the CONTRACTOR.

After receiving said notice of abandonment the CONTRACTOR shall not remove from the work any machinery, equipment, tools, materials or supplies then on the job, but the same, together with any materials and equipment under contract for the work, may be held for use on the work by the OWNER or the Surety on the performance bond, or another contractor in completion of the work; and the CONTRACTOR shall not receive any rental or credit therefor (except when used in connection with Extra Work, where credit shall be allowed as provided for under Section 6, Extra Work and Claims), it being understood that the use of such equipment and materials will ultimately reduce the cost to complete the work and be reflected in the final settlement.

Where there is no performance bond provided or in case the Surety should fail to commence compliance with the notice for completion hereinbefore provided for, within ten (10) days after service of such notice, then the OWNER may provide for completion of the work in either of the following elective manners:

7.01.1 The OWNER may thereupon employ such force of men and use such machinery, equipment, tools, materials and supplies as said OWNER may deem necessary to complete the work and charge the expense of such labor, machinery, equipment, tools, materials and supplies to said CONTRACTOR, and expense so charged shall be deducted and paid by the OWNER out of such moneys as may be due, or that may thereafter at any time become due to the CONTRACTOR under and by virtue of this Agreement. In case such expense is less than the sum which would have been payable under this contract, if the same had been completed by the CONTRACTOR, then said CONTRACTOR shall receive the difference. In case such expense is greater than the sum which would have been payable under this contract, if the same had been completed by said CONTRACTOR, then the CONTRACTOR and/or his Surety shall pay the amount of such excess to the OWNER; or

7.01.2 The OWNER under sealed bids, after five (5) days notice published one or more times in a newspaper having general circulation in the county of the location of the work, may let the contract for the completion of the work under substantially the same terms and conditions which are provided in this contract. In case any increase in cost to the OWNER under the new contract as compared to what would have been the cost under this contract, such increase shall be charged to the CONTRACTOR and the Surety shall be and remain bound therefor. However, should the cost to complete any such new contract prove to be less than what would have been the cost to complete under this contract, the CONTRACTOR and/or his Surety shall be credited therewith.

When the work shall have been substantially completed the CONTRACTOR and his Surety shall be so notified and Certificates of Completion and Acceptance, as provided in Paragraph 5.06 hereinabove, shall be issued. A complete itemized statement of the contract accounts, certified to by the ENGINEER as being correct, shall then be prepared and delivered to the CONTRACTOR and his Surety, whereupon the CONTRACTOR and/or his Surety, or the OWNER as the case may be, shall pay the balance due as reflected by said statement, within fifteen (15) days after the date of such Certificate of Completion.

In the event the statement of accounts shows that the cost to complete the work is less than that which would have been the cost to the OWNER had the work been completed by the CONTRACTOR under the terms of this contract; or when the CONTRACTOR and/or his Surety shall pay the balance shown to be due by them to the OWNER, then all machinery, equipment, tools, materials or supplies left on the site of the work shall be turned over to the CONTRACTOR and/or his Surety. Should the cost to complete the work exceed the contract price, and the CONTRACTOR and/or his Surety fail to pay the amount due the OWNER within the time designated hereinabove, and there remains any machinery, equipment, tools, materials or supplies on the site of the work, notice thereof, together with an itemized list of such equipment and materials, shall be mailed to the CONTRACTOR and his Surety at the respective addresses designated in this contract, provided, however, that actual written notice given in any manner will satisfy this condition. After mailing, or other giving of such notice, such property shall be held at the risk of the CONTRACTOR and his Surety subject only to the duty of the OWNER to exercise ordinary care to protect such property. After fifteen (15) days from the date of said notice the OWNER may sell such machinery, equipment, tools, materials or supplies and apply the net sum derived from such sale to the credit of the CONTRACTOR and his Surety. Such sale may be made at either public or private sale, with or without notice, as the OWNER may elect. The OWNER shall release any machinery, equipment, tools, materials, or supplies, which remain on the work, and belong to persons other than the CONTRACTOR or his Surety, to their proper owners. The books on all operations provided herein shall be open to the CONTRACTOR and his Surety.

7.02 ABANDONMENT BY OWNER. In case the OWNER shall fail to comply with the terms of this contract, and should fail or refuse to comply with said terms within ten (10) days after written notification by the CONTRACTOR, then the CONTRACTOR may suspend or wholly abandon the work, and may remove therefrom all machinery, tools and equipment, and all materials on the site of work that have not been included in payments to the CONTRACTOR and have not been wrought into the work. And thereupon the ENGINEER shall make an estimate of the total amount earned by the CONTRACTOR, which estimate shall include the value of all work actually completed by said CONTRACTOR (at the prices stated in the attached proposal where unit prices are used), the value of all partially completed work at a fair and equitable price, and the amount of all Extra Work performed at the prices agreed upon, or provided for by the terms of this contract, and a reasonable sum to cover the cost of any provisions made by the CONTRACTOR to carry the whole work to completion and which cannot be utilized. The ENGINEER shall then make a final statement of the balance due the CONTRACTOR by deducting from the above estimate all previous payments by the OWNER and all other sums that may be retained by the OWNER under the terms of this Agreement and shall certify same to the OWNER who shall pay to the CONTRACTOR on or before thirty (30) days after the date of the notification by the CONTRACTOR the balance shown by said final statement as due the CONTRACTOR, under the terms of this Agreement.

PART 1 - GENERAL

1.1 GENERAL:

- A. These Supplementary Conditions supplement, modify, change, delete from and/or add to the Specifications and the "General Conditions of Agreement, Section 00700". Where any Article of the General Conditions is modified or any Paragraph, subparagraph or Clause thereof is modified or deleted by these supplements, the unaltered provisions of that Article, Paragraph, Subparagraph or Clause shall remain in effect.

1.2 DEFINITION OF TERMS:

Wherever the words, forms or phrases defined herein or pronouns used in their place occur in these Specifications, in the Contract, in the Bonds, in the advertisement, or any other document or instrument herein contemplated, or to which these Specifications apply or may apply, the intent and meaning shall be interpreted as follows:

- A. **Owner:** Wherever the word "OWNER" is used in the Specifications and the Contract Documents, it shall be understood as referring to the Town of Addison, Texas.
- B. **Engineer:** Wherever the word "ENGINEER" is used in the Specifications and the Contract Documents, it shall be understood as referring to Ginn, Inc., 17103 Preston Rd., Suite 100, LB 118, Dallas, Texas 75248.
- C. **Advertisement:** All of the legal publications pertaining to the work contemplated or under Contract.
- D. **Bidder:** Any person, persons, partnership, company, firm, association, or corporation acting directly or through a duly authorized representative submitting a Proposal for the work contemplated.
- E. **Contract:** The written agreement covering the performance of the work. The Contract includes the advertisement, Proposal, Specifications, including special provisions, Plans or working drawings and any supplemental changes or agreements pertaining to the work or materials therefore, and bonds.
- F. **Contractor:** The person, persons, partnership, company, firm, association, or corporation entering into Contract for the execution of the work, acting directly or through a duly authorized representative.
- G. **Payment Bond:** The approved form of security furnished by the Contractor and his surety as a guaranty for the protection of all claimants supplying labor and material

in the prosecution of the work provided for in this Contract; said security shall be in accordance with the provisions of Article 5160, Revised Civil Statutes of Texas, as amended by Acts of the Regular Session of the Legislature, 1959.

- H. **Performance Bond:** The approved form of security furnished by the Contractor and his surety as a guarantee of good faith on the part of Contractor to execute the work in strict accordance with the Plans, Specifications and terms of the Contract, and that the Contractor will maintain the work constructed by him in good condition for the period of time required; said security shall be in accordance with the provisions of Article 5160, Revised Civil Statutes of Texas, as amended by Acts of the Regular Session of the Legislature, 1959.
- I. **Plan or Plans:** All the Drawings pertaining to the Contract and made a part thereof, including any supplementary drawings or addenda as the Engineer may issue in order to clarify other drawings, or for the purpose of showing changes in the work hereinafter authorized, or for showing details not shown thereon.
- J. **Proposal:** The written statement or statements duly filed with the Town of Addison of the person, persons, partnership, company, firm, association, or corporation proposing to do the work contemplated, including the approved form on which the formal bids for the work are to be prepared.
- K. **Proposal Guaranty:** The security designated in the advertisement and Proposal, to be furnished by each bidder as a guaranty of good faith to enter into a Contract with the Town of Addison and execute the required bonds for the work contemplated after the work is awarded to him, and payment of damages upon his failure to enter into the Contract.
- L. **Special Provisions:** The special clauses setting forth conditions or requirements peculiar to the specific project involved, supplementing the standard Specifications, and taking precedence over any conditions or requirements of the standard Specifications with which they are in conflict.
- M. **Specifications:** The directions, provisions, and requirements contained herein, together with the special provisions, supplemental hereto, pertaining to the method and manner of performing the work or to the qualities or quantities of the materials to be furnished under the Contract.

- N. **Sureties:** The corporate bodies which are bound by such bonds as are required with and for the Contractor. Said sureties engaged to be responsible for the entire and satisfactory fulfillment of the Contract, and for any and all requirements as set out in the Specifications, Contract or Plans.
- O. **The Work:** All work, including the furnishing of labor, materials, tools, equipment, and incidental, to be performed by the Contractor under the terms of the Contract.
- P. **Working Day:** A working day is defined as: a calendar day including Saturdays, Sundays, or legal holidays in which weather or other conditions not under the control of the Contractor will permit the performance of the principal units of work under way for a continuous period of not less than 7 hours between 8 a.m. and 6 p.m. One day will be charged against the Contract working time when weather conditions will permit 7 hours of work as delineated above. A principal unit of work shall be that unit which controls the completion time of the Contract. Nothing in this definition shall be construed as prohibiting the Contractor from working on Saturdays if he so desires and has the approval of the Engineer. Work on Sundays will not be permitted (except in cases of extreme emergency and then only with the written permission of the Engineer).
- Q. **Qualification of Bidder Forms:** Bidder shall complete and submit the Qualification of Bidder Forms bound within these contract documents at the time the bids are received. The equipment schedule, experience schedule, and Financial Statements shall be current statements of a date not exceeding one (1) year prior to the date for receiving bids and the information provided in the statements shall not be substantially different from the contractor's actual status at the time bids are accepted. The Financial Statement submitted shall be prepared preferably by a Certified Public Accountant and be based on the yearly audit statement of the firm.

END OF SECTION

11

PART 1 - GENERAL

1.1 GENERAL:

The following designated items of the General Conditions of Agreement are modified as follows:

- A. Paragraph 2.06 - Lines and Grades is deleted in its entirety and the following substituted therefore . .

"The Engineer will provide references to bench marks and horizontal control points in close proximity to the Work. From these control points, the Contractor shall provide all surveying necessary to lay out the Work. Contractor shall be responsible for establishing all lines and grades necessary to control the Work and shall be responsible for the precise location of all facilities."

"The Engineer may make checks as the Work progresses to verify lines and grades established by the Contractor to determine the conformance of the completed work as it progresses with the requirements of the Contract Specifications and Drawings. Such checking by the Engineer shall not relieve the Contractor of his responsibility to perform all Work in connection with the Contract Drawings and Specifications and the lines and grades given therein.

- B. Paragraph 3.09 - Protection Against Accident to Employees and the Public is modified by adding the following:

"Contractor's attention is specifically directed to the Texas Occupational Safety Law."

"The Contractor shall so conduct his operations as to offer the least possible obstruction and inconvenience to public traffic. After the "Notice to Proceed" is issued, the Contractor shall notify the Engineer, at the earliest possible date, of the starting of hauling of materials and any construction work which might in any way inconvenience or endanger traffic."

"The Contractor shall provide and maintain flagmen at all points where his operations interfere in any manner with traffic flow. Flagmen shall be English speaking, courteous, well informed, physically and mentally able effectually to perform their duties in safeguarding and directing traffic and protecting the Work, and shall be neatly attired and groomed at all times when on duty. Flagmen, when directing traffic, shall use standard flagging procedures set forth in the 'Instructions to Flagmen' published by the Texas State Department of Highways and Public Transportation."

"The Contractor shall provide, construct and maintain suitable barricades as shown on the Plans and elsewhere when directed by the Engineer. The Contractor shall provide and maintain such standard barricades or special barricades, signs, lights and flags at points along the project as may be necessary to protect the Work and safeguard all traffic. All signs, barricades and working area layouts shall be provided and maintained in accordance with requirements of Part VI of the Manual on Uniform Traffic Control Devices, 'Traffic Controls for Street and Highway Construction and Maintenance Operations.' Signs and barricades to facilitate the flow of traffic will be the responsibility of the Contractor. The use of sufficient vertical panels with flashers in conjunction with necessary warning signs and barricades will be required to direct traffic."

"No direct payment will be made for the work involved in carrying out the public safety measures herein provided, the cost thereof being included in the prices paid for the various Contract items of work and no additional allowance will be made therefore."

C. Paragraph 3.10 - Performance and Payment Bonds is modified as follows:

1. With the execution and delivery of the Contract, the Contractor shall execute and furnish separate Performance and Payment Bonds on the forms provided as follows:

a. **Performance Bond:** A Performance Bond in the amount of one hundred percent (100%) of the Contract price, or any increases or deletions therefrom due to Contract modifications, guaranteeing faithful performance of the work and fulfillment of the obligations of the Contract. The Performance Bond shall guarantee that the Contractor shall repair and/or replace any defects in the work arising from defective or inferior workmanship or materials used therein, for a period of one (1) year from date of final acceptance of the work by the Owner.

b. **Payment Bond:** A Payment Bond in the amount of one hundred percent (100%) of the Contract price, or any increases or deletions therefrom due to Contract modifications, guaranteeing payment to all persons supplying labor and materials or furnishing equipment in the execution of the Contract.

2. Performance and Payment bonds shall be from an approved surety company holding a permit from The State of Texas to act as surety or other surety or sureties acceptable to the Owner.

D. **Paragraph 3.18** - Insurance is modified by the addition of the following . .

Contractor shall comply with each and every condition contained herein. The Contractor shall provide and maintain, until the work covered in the contract is completed and accepted by the Owner, the minimum insurance coverages as follows:

1. **Commercial General Liability** insurance at minimum combined single limits of \$1,000,000 per-occurrence and \$2,000,000 general aggregate for bodily injury and property damage, which coverage shall include products/completed operations, and XCU hazards. Coverage for products/completed operations must be maintained for at least two years after the construction work is completed. Coverage must be written on an occurrence form.
2. **Workers Compensation** insurance at statutory limits, including employers' liability coverage at minimum limits of \$500,000.
3. **Commercial Automobile Liability** insurance at minimum combined single limits of \$1,000,000 per-occurrence for bodily injury and property damage, including owned, non-owned, and hired-car coverage.
4. **All-Risk Builders' Risk** insurance at completed value if the contract is for the construction of a structure or building.

*Note that the general aggregate limit must be at least two times the per-occurrence limit.

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

With reference to the foregoing insurance requirement, Contractor shall provide the following endorsements:

1. Named insured wording which includes the Contractor, the Owner and Ginn, Inc., with respect to General Liability, Automobile Liability, and Builders' Risk.
2. All liability policies shall contain cross liability and severability of interest clause.
3. A waiver of subrogation in favor of the Owner and Ginn, Inc. with respect to the Builders' Risk and Workers Compensation Insurance.
4. The policy shall be endorsed to require the insurer to immediately notify the Owner and Ginn, Inc. of any material change in the insurance coverage.

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

1. A Best financial grading of A:X or better.
2. Licensed and admitted to do business in the State of Texas.

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:

1. The company is licensed and admitted to do business in the State of Texas.
2. The company's forms have been approved by the Texas State Board of Insurance.
3. Sets forth all endorsements as required above.
4. The Owner and Ginn, Inc. will receive at least sixty (60) days notice prior to cancellation or termination of the insurance.

Upon request, Contractor, shall furnish the Owner with certified copies of all insurance policies. The Contractor shall also file with the Owner valid Certificates of Insurance covering all subcontractors in accordance with the insurance requirements set forth herein for Contractor.

E. Section 4 - PROSECUTION AND PROGRESS is deleted in its entirety and the following substituted therefore:

4. TIME FOR COMPLETION AND LIQUIDATED DAMAGES

4.01. TIME FOR COMPLETION: The time allotted for completion of all items of work for this project shall be the number of consecutive calendar days, as stated on proposal form. It is hereby understood and mutually agreed, by and between the Contractor and the Owner, that the date of beginning and the time for completion as specified in the Contract of the work to be done hereunder are ESSENTIAL CONDITIONS of this Contract; and it is further mutually understood and agreed that the work embraced in this Contract shall be commenced on a date to be specified in the Notice to Proceed.

The Contractor agrees that said work shall be prosecuted regularly, diligently, and uninterruptedly at such a rate of progress as will insure full completion thereof within the time specified. It is expressly understood and agreed by and between the Contractor and the Owner, that the time for the completion of the work described herein is a reasonable time for the completion of same, taking into consideration the average climatic range and usual conditions prevailing in this locality.

4.02 LIQUIDATED DAMAGES: If the said Contractor shall neglect, fail or refuse to complete the work within the time herein specified or any proper extension thereof granted by the Owner, then the Contractor does hereby agree, as a part consideration for the awarding of this Contract, to pay to the Owner an amount as stipulated on bid proposal form FOR EACH CALENDAR DAY, not as penalty, but as liquidated damages for such breach of Contract as hereinafter set forth, for each and every calendar day that the Contractor shall be in default after time stipulated in the Contract for completing the work.

The said amount is fixed and agreed upon by and between the Contractor and Owner because of the impracticability and extreme difficulty of fixing and ascertaining the actual damages the Owner would in such event sustain, and said amount shall be retained from time to time by the Owner from current periodical estimates.

It is further agreed that time is of the essence of each and every portion of this Contract and of the Specifications wherein a definite and certain length of time is fixed for the performance of any act whatsoever; and where under the Contract an additional time is allowed for the completion of any work, the new time limit fixed by such extension shall be of the essence of this Contract. Provided, that the Contractor shall not be charged with liquidated damages or any excess cost when the Owner determines that the Contractor is without fault and the Contractor's reasons for the time extension are acceptable to the Owner; Provided further, that the Contractor shall not be charged with liquidated damages or any excess cost when the delay in completion of the Work is due:

- a. To any preference, priority or allocation order duly issued by the Government;
- b. To unforeseeable cause beyond the control and without the fault or negligence of the Contractor, including but not restricted to, acts of God, or of the public enemy, acts of the Owner, acts of another contractor in the performance of a Contract with the Owner, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and severe weather; and
- c. To any delays of subcontractors or suppliers occasioned by any of the causes specified in subsections (a) and (b) of this article; Provided further, that the Contractor shall within ten (10) days from the beginning of such delay, unless the Owner shall grant a further period of time prior to the date of final settlement of the Contract, notify the Owner, in writing, of the causes of the delay, who shall ascertain the facts and extent of the delay and notify the Contractor within a reasonable time of its decision in the matter.

- F. Paragraph 5.04 - Partial Payments, is deleted in its entirety and the following substituted therefore:

"On or before the tenth of the month, the Contractor shall prepare and submit to the Engineer for approval a statement showing as completely as practicable the total value of the work done by the Contractor up to the last day of the previous month; said statement shall also include the value of all sound materials delivered and stored on the job site of the work that are to be fabricated into the work.

"The Owner shall then pay the Contractor after receiving the Engineer's recommendation for payment. The amount paid shall be the total amount less five (5) percent of the amount if total project estimated cost exceeds \$400,000 or ten (10) percent of the amount if the estimated project cost is less than \$400,000, which percent retained shall be held until final payment, and further less all previous payments and all further sums that may be retained by the Owner under the terms of this agreement.

"It is understood, however, that in case the whole work be near to completion and some unexpected and unusual delay occurs due to no fault or neglect on the part of the Contractor, the Owner may---upon written recommendation of the Engineer--- pay a reasonable and equitable portion of the retained percentage to the Contractor, or the Contractor at the Owner's option, may be relieved of the obligation to fully complete the work and, thereupon, the Contractor shall receive payment of the balance due him under the Contract subject only to the conditions stated under 'Final Payment'."

END OF SECTION

PART 1 - GENERAL

1.1 OPERATION AND MAINTENANCE MANUAL:

- A. The Contractor shall prepare and assemble for submittal to the Owner's Engineer, six (6) copies of data for inclusion in an operation and maintenance manual. The data shall be bound in 3-ring note books, and shall consist of the following items:
1. Maintenance and operation instructions including routine adjustments and lubrication for all butterfly and gate vales, and all other functional equipment provided in this contract. Special emphasis shall be placed on preventive maintenance and safety recommendations.
 2. Annual man-hour estimates for the routine and preventive maintenance of the equipment as specified in Item 1 above.
 3. Manufacturer's manuals and parts lists for all equipment specified in Item 1 above.
 4. Shop drawings as approved by the Owner's Engineer.
- B. All Operation and Maintenance Manual data shall be submitted at one time and not later than the time at which the contract becomes 90% complete.

1.2 ORDER OF WORK:

- A. The Contractor shall schedule and conduct all his operations and perform his work in such a manner as to not interfere with the operation of the existing water system. No work will be performed on existing facilities until new construction has been completed and determined to be operationally acceptable.
- B. Any alterations to flows into or through the water system will be accomplished only after coordination with both the Director of Public Works and the Engineer, and only with the consent of both. Any special piping or valves required for temporary rerouting or diversion of flows shall be provided by the Contractor and no additional payment will be made therefor.

1.3 CONTRACT EXECUTION AND ISSUANCE OF WORK ORDER:

It is the intention of the Owner to notify the Successful Bidder in writing, within ninety (90) days after receiving bids, of his acceptance of the Proposal. The Contractor shall complete the execution of the required Bonds and Contract within FIFTEEN (15) days of such notice. Upon completion of the execution of the Contract Documents, the Owner/Engineer will issue a "Notice to Proceed with Construction."

1.4 STATE AND CITY SALES TAX:

- A. The Contractor's attention is directed to Amendment No. 7 to Section 6a, Article 20.01, Chapter 20, Title 122A, Taxation-General of the Revised Civil Statutes of Texas. This amendment provides that all items used or consumed by a contractor, whether incorporated into the project or not, can be purchased free of State and City sales tax when the project is being performed for an exempt agency. Included are equipment rentals and other items which are consumed by the contractor but are not incorporated into the project.
- B. This Contract is issued by an organization which qualifies for exception pursuant to the provisions of Article 20.04 (F) of the Texas Limited Sales, Excise and Use Tax.
- C. The contractor performing this Contract may purchase, rent or lease all materials, supplies, and equipment used or consumed in the performance of this Contract by issuing to his supplier an exemption certificate in lieu of the tax, said exemption certificate complying with State Comptroller's ruling No. 95-0.07. Any such exemption certificate issued by the contractor in lieu of the tax shall be subject to the provisions of the State Comptroller's ruling No. 95-0.09 as amended to be effective October 2, 1968.

1.5 EXISTING STRUCTURES:

The Plans show the locations of all known surface and sub-surface structures believed to be involved in this proposed construction. However, the Owner or Engineer 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 for extra work, unless the obstruction encountered is such as to necessitate changes in the lines or grades, or requires the building of special work, provisions for which are not made in the Plans and Specifications, in which case the provisions in the General

Conditions of Agreement for extra work shall apply.

1.6 PROTECTION AND RESTORATION OF PROPERTY:

The Contractor shall be responsible for the preservation from injury and damage, resulting directly or indirectly from the execution of the work under this Contract, of all public and private property adjacent to the work. He shall use every precaution to prevent the damage or destruction of buildings, poles, trees, shrubbery and lawns. Also, underground structures such as wires, cables, etc.; within or without the work area. He shall protect and carefully preserve all official survey monuments, properties and section markers or other similar markers until an authorized agent has witnessed or otherwise referenced their location and shall not remove them until directed.

When or where direct or indirect damages or injury is done to public or private property by or on account of any act, omission, neglect or misconduct in the execution of the work or in consequences of the nonexecution of same on the part of the Contractor, such property shall be restored at the Contractor's expense to a condition similar or equal to that existing before such damage or injury was done, he shall make good such damage or injury in an acceptable manner.

In case of failure on the part of the Contractor to restore such property, or make good such damage, or injury, the Engineer may upon twenty-four (24) hours written notice, proceed to repair, rebuild or otherwise restore such property as may be deemed necessary and the cost thereof shall be deducted from any moneys due the Contractor under the Contract.

1.7 REFERENCE SPECIFICATIONS:

Reference to ASTM, or others as listed below, shall be considered as referring to the Specifications or Method of Test as set forth by those various organizations and shall be considered as part of these Specifications when designated as such. Abbreviations and meanings are as follows:

A.S.A.....American Standards Association
A.S.T.M.....American Society of Testing Materials
A.A.S.H.T.O.....American Association of State Highway
& Transportation Officials
A.C.I.....American Concrete Institute
A.W.S.....American Welding Society
A.W.W.A.....American Water Works Association

S.S.P.C.....Steel Structures Painting Council, Federal
Specifications Treasury Department
Procurement Division, United States Government
U.L.....Underwriters Laboratories
N.E.M.A.....National Electrical Manufacturers Association
W.P.C.F.....Water Pollution Control Federation
T.S.D.H.P.T.....Texas State Department of Highways and
or THD Public Transportation
C.D.G.S.....City of Dallas General Specifications
S.S.P.W.C.N.C.T...Standard Specifications for Public Works
Construction North Central Texas
N.C.T.C.O.G.....North Central Texas Council of Governments

1.8 SUBSURFACE CONDITIONS:

Contractor shall make his own investigation of subsurface conditions. No claims for extra compensation due to unusual soil conditions that are found to exist will be allowed.

1.9 SERVICE OF MANUFACTURER'S REPRESENTATIVE:

The Contract price for the project shall include the cost of furnishing competent and experienced engineers or superintendents who shall represent the manufacturers and shall assist the Contractor, when required, to install, adjust and test the equipment in conformity with the Contract Documents. After the equipment is placed in permanent operation by the Owner, such engineer or superintendent shall make all adjustments and tests required by the Engineer to prove that such equipment is in proper and satisfactory operating condition, and shall instruct the Owner's representatives in the proper operation and maintenance of such equipment or system.

1.10 PLANS AND SPECIFICATIONS AVAILABILITY:

The Engineer will provide the Contractor with three (3) copies of Plans and Specifications in addition to the Contract Sets provided for use on the project. Additional copies may be purchased by the Contractor for the cost of printing. Reproducibles required for as-builts will be paid for by the Contractor. Engineer will provide the original Drawings for use in making reproducibles.

1.11 CONTRACTOR'S RESPONSIBILITY FOR UTILITIES AND SERVICES:

The Contractor shall make his own investigations and be fully responsible for locating and taking care not to damage any gas, water, sewer, or telephone lines. The Contractor shall not begin any operations which may interfere with or impair the normal service being rendered by public utility operators. The Contractor will be held responsible for the protection of the property or service of public utilities within the limits of the Work. In case

that such physical properties conflict with the performance of the Contract, it shall be the Contractor's responsibility to anticipate such conflicts and to give advance notice thereof to the owners of the utility.

The Contractor will be responsible for any damages done by him to any utility structure whether owned by a public or private agency. Damage of whatever nature to the existing facilities shall be repaired immediately at the Contractor's own expense as directed by the Engineer.

Contractor shall be responsible for the relocation of any water, sewer, gas, telephone or other utility which interferes with the performance of the Contract. No extra claims for compensation will be allowed for any utility relocation, unless approved in writing by Engineer, prior to relocation.

1.12 MANUFACTURER'S DIRECTIONS:

All manufactured articles, materials and equipment shall be applied, installed, connected, erected and used as directed by the manufacturers, unless herein specified to the contrary. Contractor shall furnish copies of all printed directions with the material.

1.13 SANITARY FACILITIES:

The Contractor shall provide at his own expense field toilets for the use of the employees and contractor forces. The facilities shall conform to the requirements of the Texas State Health Department and those of any other agencies having jurisdiction herewith. The field toilets shall be cleaned and scrubbed with a disinfectant at least once per day.

1.14 GUARANTEE OF WORK:

All work shall be guaranteed against defects resulting from the use of inferior materials, equipment or workmanship for one year from date of final completion and acceptance of the project.

1.15 FINAL REVIEW AND OBSERVATION:

When the work is completed, the Contractor shall notify the Owner in writing on which date he will be ready for final test and review. Notice shall be given seven (7) days in advance and verified by telephone twenty-four (24) hours prior to the time set for review and observation. After the Owner and Engineer are completely satisfied with the work, the Engineer shall make final measurements of all items and approve final estimate and recommend to the Owner to make final payment to the Contractor.

1.16 PERMITS AND LICENSES:

All permits and licenses of a temporary nature necessary for the prosecution of the work shall be secured and paid for by the Contractor. Building permit fees shall be waived for this work, but Contractor shall apply for a building permit in normal manner.

1.17 NOTICE-OF-REQUIREMENT FOR CERTIFICATION OF NON-SEGREGATED FACILITIES:

Bidders are cautioned as follows: By signing the Contract for which these bids are solicited, the bidder will be deemed to have signed and agreed to the provisions of the "Certificate of Non-segregated Facilities" as contained in the Specifications for this project.

1.18 LAYOUT OF PROJECT COMPONENTS:

Prior to start of any excavation, Contractor shall have laid out (horizontally and vertically) all components of the project, and have them reviewed by the Engineer before proceeding. The Contractor shall be responsible for all alignment and elevation control. The Contractor shall provide the Engineer a "cut sheet" prior to beginning any excavation or embankment, indicating all "cuts and fills" as required on the project.

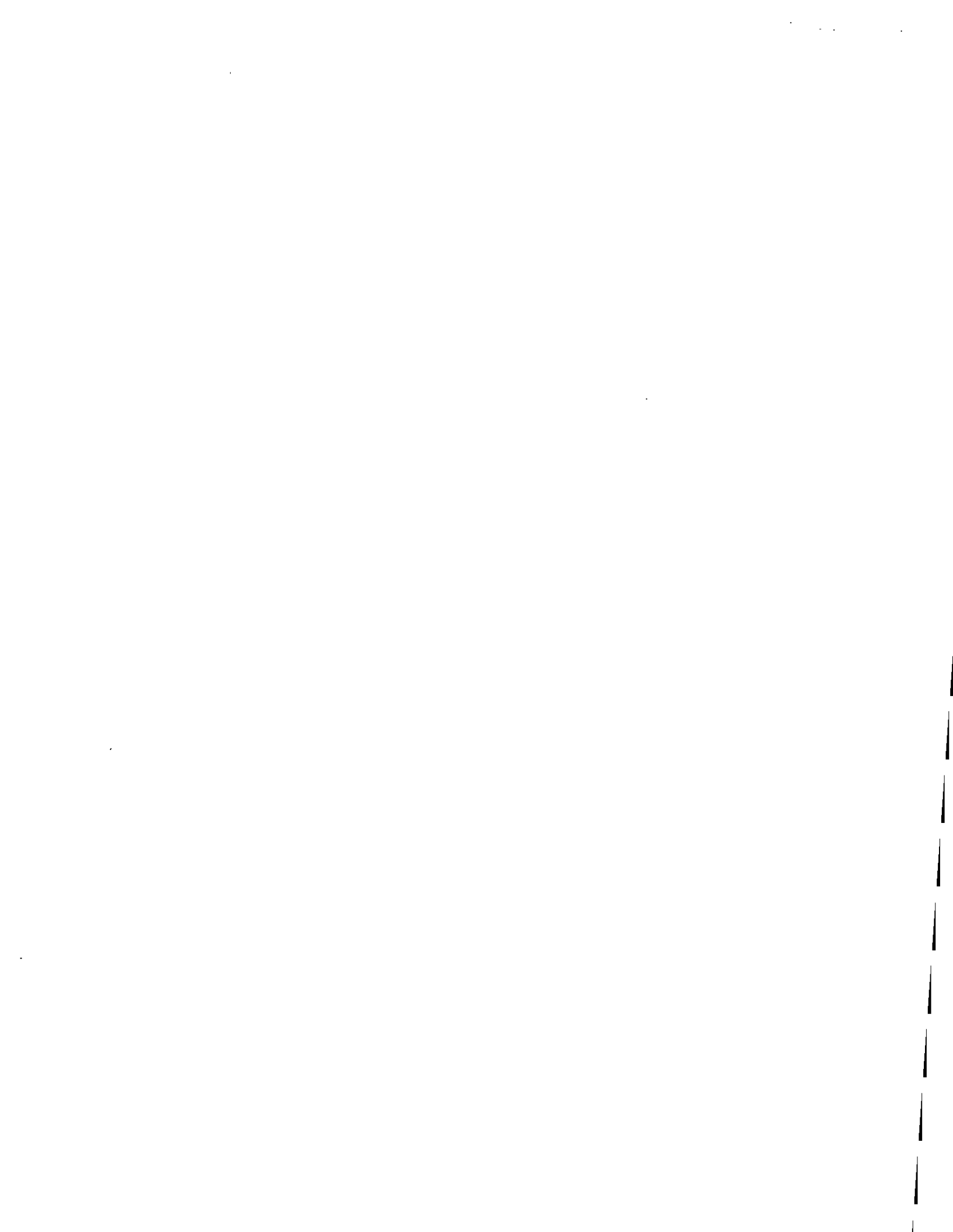
1.19 WAGE RATES

All employees directly employed on this project by the Contractor or his sub-contractors shall be paid the Prevailing Wage Scale for work of a similar character in the locality. The wage rates applicable to the work called for are the minimum to be paid to the various classes of labor and crafts. The Contractor is at liberty to pay any amount over and above the rates called for herein.

END OF SECTION

Sheet No.	Description
	COVER SHEET
M1	PAVING, STA. 0+00 TO STA. 5+00
M2	PAVING, STA. 5+00 TO STA. 8+50
M3	PAVING, STA. 8+50 TO STA. 11+45
M4	STANDARD DETAILS-PAVING
M5	STANDARD DETAILS-PAVING
M6	STANDARD DETAILS-PAVING
M7	STANDARD DETAILS-PAVING
M8	DRAINAGE AREA MAP
M9	DRAINAGE, STA. 0+00 TO STA. 5+00
M10	DRAINAGE, STA. 5+00 TO STA. 8+50
M11	DRAINAGE, STA. 8+50 TO STA. 11+45
M12	STANDARD DETAILS, DRAINAGE
S1	SANITARY SEWER LOCATION MAP
S2	SANITARY SEWER PLAN
S3	SANITARY SEWER - MILDRED STREET
S4	SANITARY SEWER - MILDRED STREET
S5	SANITARY SEWER - PROFILES
S6	SANITARY SEWER - JULIAN TO QUORUM
S7	SANITARY SEWER - QUORUM TO DALLAS NORTH TOLLWAY
S8	STANDARD DETAILS, SANITARY SEWER
S9	STANDARD DETAILS, SANITARY SEWER
S10	STANDARD DETAILS, SANITARY SEWER

END OF SECTION

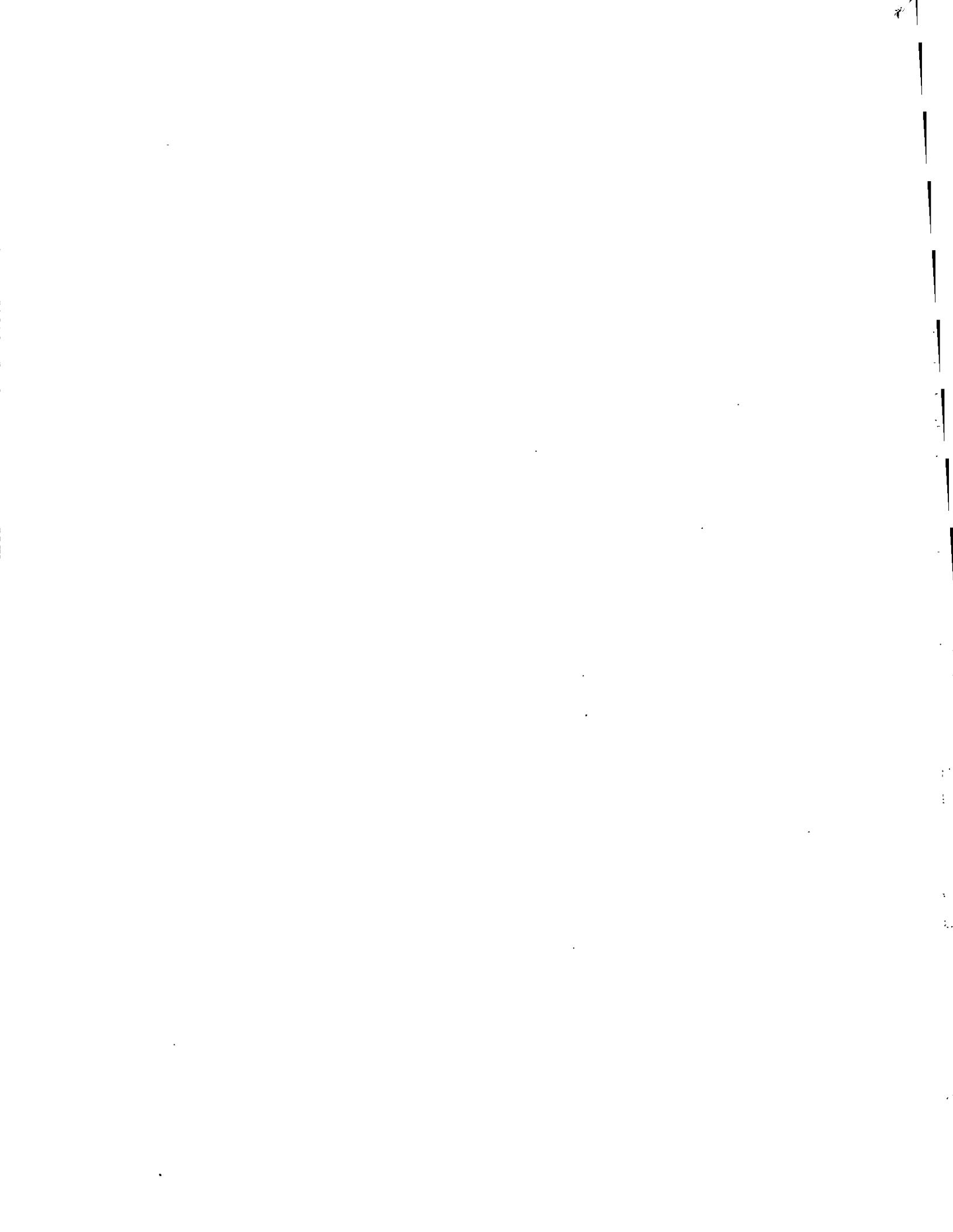


PART 1 - GENERAL

1.1 GENERAL:

- A. If required, the proposed Contract Documents for this Work, including the drawings and specifications prepared by Ginn, Inc. - Consulting Engineers, for the construction of the Work as shown, shall be modified, amended or changed; and specific information will be provided in this section.
- B. Addenda, if issued, will be either mailed, picked up by bidders, or delivered to all bidders receiving a complete set of Bidding Documents.
- C. No Addenda will be issued later than four (4) days prior to the date for receipt of bids, except an Addendum, postponing the date, or withdrawing the request for bids.

END OF SECTION



DIVISION 1
GENERAL REQUIREMENTS

GINN, INC. - CONSULTING ENGINEERS
17103 PRESTON ROAD SUITE 100 LB118
DALLAS, TEXAS PROJECT NO. 439

MILDRED STREET IMPROVEMENTS
SANITARY SEWER IMPROVEMENTS
TOWN OF ADDISON, TEXAS

PART 1 - GENERAL

1.1 GENERAL:

- A. Construct work so as to provide the least interruption of use of the existing operations.
- B. At all times throughout construction, existing water, utility and electric facilities shall remain in use. No discontinuation of service for any extended period of time will be allowed.
- C. Contractor shall submit a written construction schedule stating how construction will be phased. This schedule must be submitted and reviewed by the engineer prior to beginning construction.
- D. See Section 01310 - Construction Schedule.

1.2 SUGGESTED SEQUENCE OF CONSTRUCTION:

- A. Construct sanitary sewer lines along Mildred Street.
- B. Concurrently with the other construction, construct sanitary sewer line from Dallas North Tollway to Mildred Street.
- C. Construct storm sewer along Mildred Street, including laterals.
- D. Construct two east bound lanes of Mildred Street from Addison Road to Quorum Drive.
- E. Switch two-way traffic to newly constructed south side of Mildred Street.
- F. Construct two west bound lanes of Mildred Street from Addison Road to Quorum Drive.
- G. Construct bus lanes and circle.
- H. Construct sidewalks.
- I. Install traffic buttons and markings.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACTOR'S USE OF PREMISES:

- A. Contractor shall limit his use of the premises for work and for storage to the limits of areas allowed by owner.
- B. Confine operations at site to areas permitted by:
 - 1. Law
 - 2. Ordinances
 - 3. Permit
 - 4. Contract Documents
 - 5. Owner
- C. Do not unreasonably encumber site with materials or equipment. Coordinate use of premises with Owner/Engineer and property owners.
- D. Assume full responsibility for protection and safekeeping of products stored on premises.
- E. Move any stored products which interfere with operations of Owner or other contractors.
- F. Obtain and pay for, use of additional storage of work areas needed for operations.

END OF SECTION

PART 1 - GENERAL

1.1 DESCRIPTION:

- A. Scope: To set forth procedures, conditions and responsibility for coordination of the total project.
- B. Project Coordinator: The Contractor shall keep on his work during its progress a competent superintendent and any necessary assistants all satisfactory to the Engineer. The superintendent shall not be changed, except with the consent of the Engineer, unless the superintendent proves to be unsatisfactory to the Contractor and ceases to be in his employ. The superintendent shall represent the Contractor in his absence, and all direction given to him shall be binding as if given to the Contractor. Important directions shall be confirmed in writing to the Contractor. Other directions shall be so confirmed on written request in each case.

1.2 DUTIES OF PROJECT COORDINATOR:

A. General:

- 1. Coordination: Coordinate the work of all subcontractors and material suppliers.
- 2. Supervision: Supervise the activities of every phase of work taking place on the project.
- 3. Mechanical/Electrical: Take special care to coordinate and supervise the work of the plumbing, heating and cooling and electrical subcontractors.
- 4. Communication: Establish lines of authority and communication at the job site.
- 5. Location: The project coordinator must be present on the job most of the time.
- 6. Permits: Assist in obtaining building and special permits required for construction.

B. Interpretation of Contract Documents:

- 1. Consultation: Consult with Engineer to obtain interpretations.
- 2. Assistance: Assist in resolution of any question.
- 3. Transmission: Transmit written interpretations to concerned parties.

- C. Cessation of Work: Stop all work not in accordance with the requirements of the contract documents.
- D. Division One: Coordinate and assist in the preparation of all requirements of Division One and specifically as follows:
 - 1. Cutting and Patching: Supervise and control all cutting and patching of other trades' work.
 - 2. Project Meetings: Schedule and preside at all project meetings.
 - 3. Construction Schedules: Prepare and submit all construction schedules. Supervise work to monitor compliance with schedules.
 - 4. Shop Drawings Product Data and Samples: Administer the processing of all submittals required by the Project Manual.
 - 5. Schedule of Values: Assist in preparation and be knowledgeable of each entry in the Schedule of Values.
 - 6. Testing: Coordinate all required testing.
 - 7. Temporary Facilities and Controls: Allocate, maintain and monitor all temporary facilities.
 - 8. Substitutions and Product Options: Administer the processing of all substitutions.
 - 9. Project Closeout: Conduct final inspections and assist in collection and preparation of closeout documents.
 - 10. Cleaning: Direct and execute a continuing cleaning program throughout construction, requiring each trade to dispose their debris.
 - 11. Project Record Documents: Maintain up-to-date project record documents.
 - 12. Enforce all safety requirements.
- E. Changes: Recommend and assist in the preparation of requests to the Engineer for any changes in the contract.
- F. Application for Payment: Assist in the preparation and be knowledgeable of each entry in the Application and Certificate for Payment.

1.3 SUBCONTRACTOR'S DUTIES:

- A. The subcontractor is responsible to coordinate and supervise his employees in the work accomplished under his part of the contract.
- B. Schedules: Conduct work to assure compliance with construction schedules.
- C. Suppliers: Transmit all instructions to his material suppliers.
- D. Cooperation: Cooperate with the project coordinator and other subcontractors.
- E. All prime contractors and all subcontractors shall coordinate all work, one with the other, so as to facilitate the general progress of the work. Each trade shall afford all other trades every reasonable opportunity for the installation of their work.
- F. If any part of the Contractor's work depends on proper execution, or results upon the work of any other contractor, the Contractor shall inspect and promptly report to the Engineer any defects in such work, that renders it unsuitable for such proper execution. And, the result of his failure to inspect and report shall constitute an acceptance of his work, except as to the defects which may develop in the other contractor's work after the execution of his work.
- G. To insure the proper execution of his subsequent work, the Contractor shall measure work already in place and shall at once report to the Engineer any discrepancy between executed work and the drawings.
- H. Justifiable delays, such as strikes, acts of God, etc., caused by conditions beyond the control of any Prime Contractor, which in turn delays other prime contractors, shall not be considered as constituting a cause for claiming damages therefore from either the Prime Contractor or the Owner.

END OF SECTION



PART 1 - GENERAL

1.1 GENERAL:

- A. Contractor shall provide and pay for field engineering services required for the project and include in his bid the necessary allowance to cover same, including:
 - 1. Survey work required in execution of the project.
 - 2. Civil, structural, or other professional engineering services specified, or required to execute Contractor's construction methods.
- B. The Engineer will identify existing control points indicated on the drawings, as required.

1.2 QUALIFICATIONS OF SURVEYOR OR ENGINEER:

- A. Qualified engineer or registered land surveyor, registered in State of Texas, acceptable to Contractor and Engineer.

1.3 BENCH MARKS, MONUMENTS AND SURVEY REFERENCE POINTS:

- A. The Contractor will carefully maintain all bench marks, monuments, and other reference points. If destroyed or disturbed, the reference points will be replaced, by the Contractor, to their original positions. In any case in which a reference point is disturbed, the Contractor shall notify the Engineer.

1.4 PROJECT SURVEY REQUIREMENTS:

- A. The Contractor shall accurately stake out all components of the project and will be held entirely responsible for any errors in these lines and levels.
- B. The Contractor shall verify all grades, lines and levels and shall report any inconsistencies to the Engineer before commencing work.
- C. Establish line and levels, locate and layout by instrumentation:
 - 1. Site improvements:
 - a. Stakes for grading, excavation, fill, storm and sanitary sewer line placement.
 - b. Stakes for setting curb elevations.
 - c. Utility slopes and invert elevations.
 - d. Finished pavement grades.
 - 2. All appurtenances required by this contract.

1.5 RECORDS:

- A. Contractor shall maintain a complete accurate log of all control and survey work as it progresses, copies of which shall be available to the Engineer if requested.

1.6 SUBMITTALS:

- A. If requested by Engineer, Contractor shall submit:
1. Name and address of surveyor and/or professional engineer.
 2. Documentation to verify accuracy of field engineering work.
 3. Certificate signed by registered engineer or surveyor certifying that elevations and locations of improvement are in conformance, or non-conformance with Contract Documents.

END OF SECTION

PART 1 - GENERAL

1.1 ORGANIZATION AND SOCIETY ABBREVIATIONS:

- A. Publications of organizations and societies are referred in Contract Documents by following abbreviated designations:

American Concrete Institute	ACI
American Institute of Steel Construction	AISC
American Iron and Steel Institute	AISI
American National Standards Institute	ANSI
American Society for Testing and Materials	ASTM
American Society of Civil Engineers	ASCE
American Welding Society	AWS
Concrete Reinforcing Steel Institute	CRSI
Factory Mutual	FM
Federal Specifications	FS
Portland Cement Association	PCA
Precast Concrete Association	PCI
Steel Deck Institute	SDI
Steel Joist Institute	SJI
Steel Structures Painting Council	SSPC
Underwriters Laboratories	UL
Uniform Building Code	UBC

1.2 REFERENCE STANDARDS - GENERAL:

- A. Publications of organizations and societies listed in individual Specification Sections shall be considered integral part of Contract Documents to extent referenced.
- B. Publications are referred to in text by basic designation only with organizations and societies referenced by abbreviations.
- C. When standard is referred to in individual Specification Section but is not listed in this Section by title and date, it shall be considered to be latest revision at date of Project Manual issuance.
- D. Following listings include full title and applicable revision date.

1.3 REFERENCE STANDARDS:

- A. American Concrete Institute (ACI):

211.1-81 (R 1985), Standard Practice for Selecting Proportions for Normal and Heavyweight Concrete.

211.3-75 (R 1980), Recommended Practice for Selecting Proportions for No-Slump Concrete.

301-84 (R 1985), Specification for Structural Concrete for Buildings.

304R-85, Guide for Measuring, Mixing, Transporting, and Placing Concrete.

305R-77, Hot Weather Concreting.

306R-78, Cold Weather Concreting.

308-81 (R 1986), Standard Practice for Curing Concrete.

309-72 (R 1978), Standard Practice for Consolidation of Concrete.

315-80, Details and Detailing of Reinforced Concrete.

315R-80, Manual of Engineering and Placing Drawings for Concrete Reinforcement (Synopsis Only).

318-83, Building Code Requirements for Reinforced Concrete.

347-78, Recommended Practice for Concrete Formwork.

B. American Institute of Steel Construction (AISC):

Code of Standard Practice for Steel Buildings and Bridges (with Commentary), September 1, 1976.

Manual of Steel Construction, Eighth Edition.

Specification for Structural Joints Using ASTM A325 or A490 Bolts, April 26, 1978.

C. American Society for Testing of Materials (ASTM):

A 36-77a, Specification for Structural Steel.

A 47-77, Specification for Malleable Iron Castings.

END OF SECTION

PART 1 - GENERAL

1.1 GENERAL:

- A. This Section identifies each Alternate by number, and describes the basic changes to be incorporated into the Work, only when that Alternate is made a part of the Work by specific provisions in the Owner-Contractor Agreement.
- B. Related requirements in Other Parts of the Project Manual:
 - 1. Method of quotation of the cost of each Alternate, and the basis of the owner's acceptance of Alternates: Bidding Documents.
 - 2. Incorporation of Alternates into the Work: Owner-Contractor Agreement.
- C. Referenced sections of specifications stipulate pertinent requirements for products and methods to achieve the work stipulated under each Alternate.
- D. Coordinate pertinent related work and modify surrounding work as required to properly integrate the work under each Alternate, and to provide the complete construction required by Contract Documents.

1.2 DESCRIPTION OF ALTERNATES:

If Alternates are required or requested by the Owner, consideration of this Alternate shall be given at the time of Contract Award.

END OF SECTION

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PART 1 - GENERAL

1.1 GENERAL:

- A. Contractor to submit Applications for Payment to Engineer in accordance with the schedule established by Modifications to General Conditions, Section 00810, paragraph 1.1, F, Partial Payments.

1.2 FORMAT AND DATA REQUIRED:

- A. Submit six itemized applications typed on Application and Certificate for Payment, as approved by Engineer.

1.3 PREPARATION OF APPLICATION FOR EACH PROGRESS PAYMENT:

A. Application Form:

1. Engineer shall supply the initial application form to the Contractor.
2. Fill in required information, including that for Change Orders executed prior to the date of submittal of applications.
3. Fill in summary of dollar values to agree with the respective totals indicated on the continuation sheets.
4. Execute certification on each copy with the signature of a responsible officer of the Contract firm. Each copy shall bear an original signature.

B. Continuation Sheets:

1. Fill in total list of all scheduled component items of work, with item number and the scheduled dollar value for each item.
2. Fill in the dollar value in each column for each scheduled line item when work has been performed or products stored.
3. List each Change Order Number, and description, as for an original component item of work.

1.4 SUBSTANTIATING DATA FOR PROGRESS PAYMENTS:

- A. When the Owner or the Engineer requires substantiating data, Contractor shall submit suitable information, with a cover letter identifying:
1. Project
 2. Application number and date
 3. Detailed list of enclosures
- B. Submit one copy of data cover letter for each copy of application.

1.5 SUBMITTAL PROCEDURE:

- A. Submit Applications for Payment to Engineer at times stated in Section 00810.
- B. Number: Six (6) copies of each Application.
- C. Sign each copy and have each copy properly notarized.
- D. When Engineer finds the Application properly completed and correct, he will transmit three (3) copies of the certificate for payment to the Owner and one (1) copy to the Contractor.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

PART 1 - GENERAL

1.1 DESCRIPTION:

- A. Contractor shall schedule and administer periodic progress meetings, and specially called meetings throughout the progress of the work.
1. Prepare agenda for meetings.
 2. Distribute written notice of each meeting four days in advance of meeting date.
 3. Make physical arrangements for meetings.
 4. Preside at meetings.
 5. Record the minutes; include all significant proceedings and decisions.
 6. Reproduce and distribute copies of minutes within four (4) days after each meeting.
 - a. To all participants in the meeting.
 - b. To all parties affected by decisions made at the meeting.
 - c. Furnish three copies of minutes to Engineer.
- B. Representatives of contractors, subcontractors and suppliers attending the meetings shall be qualified and authorized to act on behalf of the entity each represents.
- C. Engineer may attend meetings to ascertain that work is expedited consistent with Contract documents and the construction schedules.
- D. Related requirements specified in other sections:
1. Construction Schedules: Section 01310
 2. Shop Drawings, Product Data and Samples: Section 01340
 3. Project Record Documents: Section 01720.

1.2 PROGRESS MEETINGS:

- A. Hold called meetings as required by progress of the work.
- B. Location of the meetings: The project field office of the Contractor, or some place designated acceptable to all concerned.
- C. Attendance:
 - 1. Engineer, and his professional consultants as needed.
 - 2. Subcontractors as pertinent to the agenda.
 - 3. General Contractor
 - 4. Owner
- D. Minimum Agenda:
 - 1. Review approved minutes of the previous meeting.
 - 2. Review work progress since last meeting.
 - 3. Note field observations, problems and decisions.
 - 4. Identify problems which impede planned progress.
 - 5. Review off-site fabrication problems.
 - 6. Revise construction schedule as indicated.
 - 7. Plan progress during the next work period.
 - 8. Review proposed changes.
 - 9. Complete other current business.

END OF SECTION

PART 1 - GENERAL

1.1 PRIOR TO BEGINNING WORK:

Submit the following items with the signed agreement form as a prerequisite to starting the work. The number of copies required of each submittal is six (6). The location of information concerning each submittal is referenced.

- A. Performance Bond. Bidding Documents, Contract Forms, General and Supplementary Conditions.
- B. Payment Bond. Bidding Documents, Contract Forms, General and Supplementary Conditions.
- C. Certificate of Insurance. General and Supplementary Conditions.
- D. List of Subcontractors. General and Supplementary Conditions, Bidding Documents.
- E. Schedule of Values. General Conditions and as specified in the section on Schedule of Values, Section 01370.
- F. Construction Schedule. General Conditions and as specified in the section on Construction Schedule, Section 01310.

1.2 DURING CONSTRUCTION:

During the progress of the work, make the following submittals in a timely manner to prevent any delay in the work.

- A. Progress Schedules. Submit progress schedules monthly as an evidence that the project will be completed by the date of contract completion.

Two copies are required. Submit with monthly pay application. Failure to submit with Application for Payment will result in delay of processing of application.

- B. Shop Drawings, Product Data and Samples. Submit in accordance with the section on Shop Drawings, Product Data and Samples included in Division 1 - General Requirements, Section 01340.
- C. Mill Certificates. Submit mill certificates on the following items as required by the specifications sections.

1. Reinforcing Steel: Division 3 - Concrete.
2. Bulk Cement: Division 3 - Concrete.

- D. Application for Payment. Submit applications for partial payment as specified in the General and Supplementary Conditions and within the time specified in the agreement.
- E. Change Order Proposal. A proposal for change order may be submitted to the Engineer whenever a need arises. The request must be in writing and must include sufficient information to assess the need for a change in the work, the contract time, or the contract sum.

1.3 PROJECT CLOSE-OUT:

With a written notice of completion, submit the following items in the proper form as a condition of final acceptance of the work.

- A. Project Record Documents. Submit in accordance with the section on Project Record Documents included in Division 1 - General Requirements, Section 01720.
- B. Operation and Maintenance Data. As specified in various sections of the specifications.
- C. Spare Parts and Maintenance Materials. As specified in the various specification sections.
- D. Other items as required by other sections of these documents.

END OF SECTION

PART 1 - GENERAL

1.1 GENERAL:

- A. Within 15 days after award of the Contract, the Contractor shall prepare and submit to the Engineer an estimated construction progress schedule for the Work, with dates on which he will start the salient features of the work and the contemplated dates for completing the same.
- B. Submit revised progress schedules with each application for payment. Submit two (2) copies. Failure to submit these will be cause for payment to be delayed.

1.2 RELATED REQUIREMENTS SPECIFIED IN OTHER SECTIONS:

- A. Work Sequence: Section 01014.
- B. Shop Drawings, Product Data and Samples: Section 01340.

1.3 FORM OF SCHEDULES:

- A. Prepare schedules in the form of a horizontal bar chart.
 - 1. Provide separate horizontal bar for each separate item or operation.
 - 2. Horizontal time scale: Identify by week, month, year, etc.
 - 3. Minimum sheet size: 8 1/2" x 11".
- B. Format of listings: The chronological order of the start of each item of work.
- C. Identification of Listings: By major specification section numbers.

1.4 CONTENTS OF SCHEDULE:

- A. Construction Progress Schedule:
 - 1. Show the complete sequence of construction by activity.
 - 2. Show the dates for the beginning, and completion of, each major element of construction.
 - 3. Show projected percentage of completion for each item, as of the first day of each month.

- B. Submittals Schedule for Shop Drawings, Product Data and Samples. Show:
 - 1. The dates for Contractor's submittals.
 - 2. The dates approved submittals will be required from the Engineer.
- C. Prepare and submit subschedules for each separate stage or work specified.
- D. Provide subschedules to define critical portions of prime schedules.

1.5 PROGRESS REVISIONS:

- A. Indicate progress of each activity to date of submission.
- B. Show changes occurring since previous submission of schedule.
 - 1. Major changes in scope.
 - 2. Activities modified since previous submission.
 - 3. Revised projections in progress and completion.
 - 4. Other identifiable changes.
- C. Provide a narrative report as needed to define:
 - 1. Problem areas, anticipated delays and the impact on schedule.
 - 2. Corrective action recommended and its effect.
 - 3. The effect of changes on schedules or other prime contractors.

1.6 SUBMISSIONS:

- A. Submit initial schedules within 15 days after award of contract.
 - 1. Engineer will review schedules and return review copy within 10 days after receipt.
 - 2. If required, resubmit within 7 days after return of review copy.

- B. Submit revised progress schedules with each application for payment.
- C. Submit two copies which will be retained by the Engineer.

1.7 DISTRIBUTION:

- A. Distribute copies of reviewed documents to:
 - 1. Job site file.
 - 2. Subcontractors.
 - 3. Other concerned parties.
- B. Instruct recipients to report promptly to Contractor, in writing, any problems anticipated by the projections shown in the schedules.

END OF SECTION

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PART 1 - GENERAL

1.1 GENERAL:

- A. Contractor to submit weekly progress reports to Engineer for the duration of the project.
- B. Reports shall be submitted in a form acceptable to the Engineer and shall include:
 - 1. Date of report (for week beginning to ending).
 - 2. Project name and location.
 - 3. Contract time remaining.
 - 4. Approximate percent complete.
 - 5. Work completed this period.
 - 6. Work in progress this period.
 - 7. Weather conditions throughout week.
 - 8. Additional comments.
- C. Submit original and one (1) copy to Engineer.
- D. Reports may be submitted on weekly basis by contractor, but compilation of weekly reports may be held and submitted along with Application for Payment.
- E. Weekly reports shall be kept current with Application for Payment. In no case shall contractor be greater than five weeks behind in submission of weekly reports. Failure to keep current with Application for payment will be cause for delays in processing the applications.

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PART 1 - GENERAL

1.1 GENERAL:

- A. Contractor to submit Shop Drawings, Product Data and Samples as required by the Contract Documents and as specified in other sections of the specifications.
- B. Related requirements specified in other sections.
 - 1. Construction Schedules: Section 01310.
 - 2. Record Documents: Section 01720.
 - 3. Sections requiring submittals.
- C. Designate in the construction, or in a separate coordinated schedule, the dates for submission and the dates that reviewed shop drawings, product data and samples will be needed.
- D. Shop drawings, product data and samples are not considered a part of contract documents.

1.2 SHOP DRAWINGS:

- A. As soon as practicable after contract award, submit to the Engineer, for review, the required number of bound copies of shop drawings of all items as specified in the various sections of these specifications, accompanied by letters of transmittal.
- B. Shop drawings shall include: Manufacturer's catalog sheets and/or descriptive data for materials and equipment; showing dimensions, performance characteristics, and capacities and other pertinent information as required to obtain Engineer's review and comment regarding the items involved.
- C. No work requiring shop drawings will be executed until review and appropriate comment(s) regarding such drawings has been obtained.
- D. Preparation by a qualified detailer is required.
- E. Where necessary for clarity, identify details by reference to sheet and detail numbers, schedule or room numbers as shown on the contract drawings.

1.3 PRODUCT DATA:

A. Preparation:

1. Clearly mark each copy to identify pertinent products or models.
2. Show performance characteristics and capacities.
3. Show dimensions and clearances required.
4. Show wiring diagrams and controls.

B. Manufacturer's standard schematic drawings and diagrams:

1. Modify drawings and diagrams to delete information which is not applicable to the work.
2. Supplement standard information to provide information specifically applicable to the work.

1.4 SAMPLES:

A. Provide samples as indicated in other parts of these specifications.

B. Submit office samples of sufficient size and quantity to clearly illustrate:

1. Functional characteristics of product or materials with integrally related parts and attachment devices.
2. Full range of color samples.

C. Erect field samples and mock-ups at the project site in an acceptable location. Construct each sample complete, including work of all trades required in finished work.

D. Include in transmittal letter all information required for submission.

E. Prepare the number of samples specified.

1.5 CONTRACTOR RESPONSIBILITIES:

A. Review Shop Drawings and Product Data prior to submission.

B. Determine and Verify:

1. Field measurements
2. Field construction criteria

3. Catalog numbers and similar data
4. Conformance with specifications.
- C. Coordinate each submittal with requirements of the work and of the Contract Documents.
- D. Begin no work which requires submittals until return of submittals with Engineer's review.
- E. Keep one (1) approved copy of shop drawings or product data at job site at all times.

1.6 SUBMISSION REQUIREMENTS:

- A. Make submittals promptly and in such sequence as to cause no delay in the work or in the work.
- B. Number of submittals required:
 1. For shop drawings and product data: Submit the number of copies which the contractor requires, plus four which will be retained by the Engineer.
- C. Submittals shall contain:
 1. The date of submission and the dates of any previous submissions.
 2. The project title.
 3. The names of:
 - a. Contractor
 - b. Supplier
 - c. Manufacturer
 - d. Subcontractor
 - e. Engineer
 4. Identification of the product.
 5. Field dimensions, clearly identified as such.
 6. Relation to adjacent structure or critical features of the work or materials.
 7. Applicable standards, such as ASTM or Federal Specification numbers.

8. Identification of deviations from Contract Documents.
9. Identification of revisions on resubmittals.
10. Contractor's stamp, initialed or signed, certifying to review of submittal, verification of products, field measurements and field construction criteria, and coordination of the information within the submittal with requirements of the work and of Contract Documents.
11. Fabrication and erection drawings lists and schedules.
12. Basis of design and design calculations signed and sealed by a registered professional engineer.
13. Seal and signature of a registered engineer on all structural submittals.
14. A blank space on each shop drawing, approximately 4" x 4", for the Engineer's Stamp.

D. REVIEW:

1. Shop drawing and product data information review will be general. Such review will not relieve the Contractor of any responsibility and work required by the Contract.
2. Reviewed shop drawings will be so designated and all sets, except four (4), returned to the Contractor. Rejected shop drawings will be so designated and all sets except two (2) will be returned to the Contractor, with indications of the required corrections and changes.
3. Rejected shop drawings will be corrected and resubmitted to the Engineer for acceptance.

1.7 RESUBMISSION REQUIREMENTS:

- A. Make any corrections or changes in the submittals required by the Engineer and resubmit until no further corrections or changes are noted per the Engineer's review.
- B. Shop Drawings and Product Data:
 1. Revise initial drawings or data, and resubmit as specified for the initial submittal.
 2. Indicate any changes which have been made other than those requested by the Engineer.

1.8 ENGINEER'S RESPONSIBILITIES:

- A. Review submittals with reasonable promptness.
- B. Affix stamp and initials or signature, and indicate requirements for resubmittal; or indicate reviewed with no other comments indicated on submittal.
- C. Return submittals to Contractor for distribution, or for resubmission.

1.9 ITEMS REQUIRING SHOP DRAWING SUBMITTALS:

- A. The items listed below are items which require shop drawings submitted as outlined above. Items not listed shall not be submitted unless specifically required in writing by the Engineer. In the event additional items are required for submission, no additional compensation for this task will be allowed and the below list shall be considered ammended to include the additional item and all submittal requirements shall be in full effect for the item as if it originally appeared on the list.

Frames, Grates, Covers, valve boxes and extensions
All Valves.
Pipe Materials, Fittings and Couplings
PVC Piping and fittings
RCP piping and fittings
Manholes, Inlets
Brick Pavers
Other Items As Specified

1.10 DISTRIBUTION AFTER REVIEW:

- A. Distribute copies of shop drawings and product data which carry the Engineer's stamp to, as applicable:
 - 1. Contractor's file.
 - 2. Job site file.
 - 3. Record document file.
 - 4. Subcontractors.
 - 5. Supplier.
 - 6. Fabricator.
- B. Distribute samples as directed. After review, samples may be used in construction.

END OF SECTION



PART 1 - GENERAL

1.1 GENERAL:

- A. Submit a schedule of values at least 15 days prior to submitting the first application for payment. Upon request, support values given with data that will substantiate the amounts. Use schedule of values only as basis for application for payment.
- B. Submit quantities of designated materials. List quantities of materials specified in unit prices.
- C. There will be no payment for materials stored on-site. Payment will be made when materials are incorporated into the project and completed and accepted.

PART 2 - PRODUCTS

2.1 FORM OF SUBMITTAL:

- A. Submit typewritten schedule of values on 8-1/2" x 11", plain bond, white paper. Use the proposal form of this project manual as a format for listing costs of work by units.

PART 3 - EXECUTION

3.1 PREPARING SCHEDULE OF VALUES:

- A. Itemize separate line item cost for each item of work as outlined in the Bid Form.
- B. Break down installed costs into:
 - 1. Delivered cost of product, with taxes paid.
 - 2. Total installed cost, with overhead and profit.
- C. Make sum of total costs for all items listed in the schedule equal to the total contract sum.

3.2 PREPARING SCHEDULE OF UNIT MATERIAL VALUES:

- A. Make a submittal form parallel to the schedule of values, with line items identified the same as line items in the schedule of values.
- B. Include in unit prices only:
 - 1. Cost of material.
 - 2. Delivery and unloading at site.

3. Sales taxes.
4. Installation.
5. Profit and overhead.

D. Make sure that the unit price multiplied by the quantity given equals the material cost of that item in the schedule of values.

3.3 REVIEW AND RESUBMITTAL:

- A. After review by the Engineer, revise and resubmit the schedule of values or material values, if required. Resubmit revised schedules in the same manner as the original schedules.

END OF SECTION

PART 1 - GENERAL

1.1 PAYMENT:

- A. The Engineer will employ and pay for services of an independent testing laboratory to perform specified testing except for testing required for equipment.
- B. When initial tests requested by the Engineer indicate non-compliance with the Contract Documents, all subsequent retesting occasioned by the non-compliance shall be scheduled by the Contractor and performed by the same testing laboratory at the sole expense of the Contractor. The cost of the initial test indicating non-compliance will also be at the sole expense of the Contractor under these circumstances.
- C. Inspection or testing performed exclusively for the Contractor's convenience shall be borne by the Contractor.
- D. The Contractor shall furnish concrete batch designs, properties of materials and conformation cylinders made from batch design at his expense.
- E. Employment of a testing laboratory by the Engineer in no way relieves the Contractor of his obligation to perform the work according to the Contract Documents.

1.2 RELATED WORK:

- A. General Conditions of the Contract for Construction. Inspections and testing required by laws, ordinances, rules and regulations or orders of public authorities are the responsibility of the Contractor.
- B. Specification Sections. Contained in the various specification sections are requirements for certification of products, testing, adjusting and balancing of equipment, and other tests and standards.

1.3 WORK INCLUDED:

- A. Testing is required for the following item(s) of work:
 - 1. Soils compaction control.
 - 2. Lime material.
 - 3. Concrete.
 - 4. Sewer line pipe.
 - 5. Asphalt.
- B. See paragraph 3.5 this Section for additional requirements.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

3.1 QUALIFICATIONS:

A. Standards.

1. Meet "Recommended Requirements for Independent Laboratory Qualification," latest edition, published by American Council of Independent Laboratories.
2. Meet basic requirements of ASTM E329, "Standards of Recommended Practice for Inspection and Testing Agencies for Concrete and Steel as Used in Construction."
3. Submit copy of report of inspection of facilities made by Materials Reference Laboratory of National Bureau of Standards during most recent tour of inspection; with memorandum of remedies of any deficiencies reported by inspection.

B. Testing Equipment.

1. Calibrated at maximum 12-month intervals by devices of accuracy traceable to either the National Bureau of Standards or accepted values of natural physical constants.
2. Submit copy of certificate of calibration, made by accredited calibration agency.

3.2 DUTIES:

- A. Cooperate with the Engineer and Contractor; provide qualified personnel promptly on notice.
- B. Perform specified inspections, sampling and testing of materials and methods of construction:
 1. Comply with specified standards; ASTM, other recognized authorities, and as specified.
 2. Ascertain compliance with requirements of the contract documents.

- C. Promptly notify the Engineer and Contractor of irregularities or deficiencies of work which are observed during performance of services.
- D. Prepare and distribute reports of inspections and tests within 3 days of test completion or weekly on continuous work as follows:
 - 1. Engineer: three copies.
 - 2. Contractor: two copies.
 - 3. Owner: one copy.
- E. Include the following information for each test as well as additional data specified in the applicable section.
 - 1. Date of test.
 - 2. Location of test.
 - 3. Specified standards.
 - 4. Test results.
 - 5. Remarks.

3.3 LIMITS OF AUTHORITY:

The laboratory is not authorized to:

- A. Release, revoke, alter, or enlarge on requirement of the contract documents.
- B. Approve or accept any portion of the work.
- C. Perform any duties of the Contractor.

3.4 CONTRACTOR'S RESPONSIBILITIES:

- A. Cooperate with laboratory personnel; provide access to the work or to manufacturer's operations.
- B. Provide to laboratory, preliminary representative samples of materials to be tested, in required quantities.
- C. Furnish copies of mill test reports.
- D. Furnish labor and equipment:
 - 1. To provide access to the work to be tested.

2. To obtain and handle samples at the site.
 3. To facilitate inspections and tests.
 4. For laboratory's exclusive use for storage and curing of test samples.
- E. Notify the laboratory at least 48 hours in advance of operations to allow for his assignment of personnel and scheduling of tests.
- F. Arrange with the laboratory and pay for additional samples and tests required for the Contractor's convenience.
- G. In the event of a test failure, the Engineer shall notify the Contractor in writing of the "failed test" and identify the area which is not acceptable. It is the responsibility of the Contractor to order and pay for retesting. All retest reports and invoices should be sent directly to the Contractor with copies to Engineer/Owner.
- 3.5 SPECIFIC TESTS, INSPECTIONS AND METHODS REQUIRED PERFORMED BY TESTING LAB: (AS APPLICABLE THIS PROJECT)
- A. Select Fill: Perform plasticity index tests on proposed select fill material prior to use to determine compliance with specified requirements.
1. Atterberg Limit Series: Per job requirements.
 2. Standard Procter Density: Per job requirements.
- B. Sub-grade Density Testing:
1. Establish moisture density relationship, ASTM D698, for each soil type.
 2. Perform field in-place density tests, ASTM D2922, as follows;
 - a. Paving subgrade: One test for each 5000 square feet or fraction thereof, per lift.
 3. Trench Backfill:
 - a. Make random tests of subsequent lifts of backfill to assure compliance with plans and specifications.

C. Reinforcing Steel:

1. If reinforcing steel is purchased direct from a United States mill, manufacturer's approved test sheets will suffice. If steel is from dealer's stock, perform tension and bending tests on three separate samples for each size of bar in every 5 tons of each type of steel as specified in the appropriate ASTM Specification. Contractor shall furnish all material for testing and pay for all such tests. Steel supplier shall furnish mill certificate reports.
2. Perform visual inspection prior to placement for size, type, and quality of materials.
3. Observe and report on placement of reinforcement, including size, vertical location, horizontal spacing, correctness of bends, splices, clearance between bars and forms, firmness of installation, and security of supports and ties, immediately prior to concreting.

D. Inspection and Testing of Concrete:

1. Concrete Mix Designs:

- a. Trial mixtures having proportions and consistencies suitable for the work shall be made based on ACI 211.1, using at least three different water-cement ratios which will produce a range of strengths encompassing those required for this project.
- b. Trial mixes shall be designed to produce a slump within 1/2" of the maximum permitted, and for air-entrained concrete, within .5 percent of maximum allowable air content.
- c. For each water-cement ratio, at least three compression test cylinders for each test age shall be made and cured in accordance with ASTM C192. Cylinders shall be tested at 7 and 28 days in accordance with ASTM C39, unless otherwise directed by the Engineer.
- d. From the results of the 28 day tests a curve shall be plotted showing the relationship between the water-cement ratio and compressive strength. From this curve, the water-cement ratio to be used in the concrete shall be selected to produce the average strength required.

- e. The cement content and mixture proportions to be used shall be such that this water-cement ratio is not exceeded when slump is the maximum permitted. Control in the field shall be based upon maintenance of proper cement content, slump, and air content.
 - f. Mix designs furnished by the concrete supplier and accompanied by test data showing an acceptable strength history, will be considered as an acceptable alternative to the procedure described in paragraphs 'a through d' above.
 - 1. Temperature of concrete in test data shall be within 5 degrees F of maximum temperature specified or expected for this project.
 - 2. Strengths indicated in test data shall be in accordance with ACI 318.
2. Inspection:
- a. Inspect and control concrete mixing and loading of transit-mix trucks at plant at start of each day's mixing. Prevailing conditions shall be compared to criteria indicated on appropriate design mix (temperature, moisture, condition of aggregates, etc.). Report significant deviances immediately; make corresponding adjustments to mix before materials are discharged.
 - b. Control addition of water to concrete at job site and length of time concrete is allowed to remain in truck during placement.
 - c. Certify each delivery ticket indicating class of concrete delivered, amount of water added and time at which cement and aggregate was discharged into truck, and time at which concrete was discharged from truck.
 - d. Temperature: Determine temperature of concrete sample of each strength test.
3. Test Cylinders:
- a. During progress of work, make test cylinders in accordance with ASTM C172. Make 3 test cylinders for each 100 cubic yards or fraction

thereof placed for any one day, for each different class of concrete.

- b. Mold and cure cylinders in accordance with ASTM C31; test cylinders in accordance with ASTM C39 (1 at 7 days and 2 at 28 days). Engineer may waive test requirements for placements of 25 cubic yards or less.
4. Slump Tests: Make slump assurance tests at beginning of each day's placement and for each set of test cylinders in accordance with ASTM C143.
5. Air Content: Determine total air content of air entrained normal weight concrete for each strength test in accordance with ASTM C231.

E. Inspection and Testing of Structural Steel:

1. Inspect structural steel during fabrication and after erection for conformance with Contract Documents and approved shop drawings.
2. Fabricator and Erector shall provide the Testing Laboratory with names of welders to be employed on work, together with certification that each of these welders has passed qualification tests within the last year using procedures covered in the American Welding Society Standard.
3. Inspect erected structural framework for conformance with requirements specified, including:
 - a. Location and adequacy of bracing.
 - b. Location and set of anchor bolts and other inserts.
 - c. Required alignment, plumbness, camber, etc.
4. Inspection of high strength bolted construction: In accordance with Section 6, AISC Specification for Structural Joints, and as follows:
 - a. Visually inspect all high strength bolted connections.
 - b. Check at least two bolts of every third connection between beams and girders with calibrated torque wrench for proper torque.

- c. Check at least two bolts of every connection between girders and columns as above, but not less than 10% of bolts.
5. Inspection of Field Welds: In accordance with Section 6 of AWS Building Code and as follows:
 - a. Visually inspect welds in accordance with Article 605.
 - b. Test full penetration welds by ultrasonic method in accordance with ASTM E164.
6. Special Inspections: If after the commencement of the work, the Engineer determines that any part of the work requires special inspection, testing or approval, he will instruct the Contractor to order such special inspection, testing or approval. If such special inspection or testing reveals a failure of the work to comply with the requirements of the Contract Documents, or with respect to the performance of the work, with laws, ordinances, rules, regulations or the orders of any public authority having jurisdiction; the Contractor shall bear all costs thereof, including Engineer additional services made necessary by such failure.

END OF SECTION

PART 1 - GENERAL

1.1 SCOPE:

This section summarizes the duties, responsibilities and limitations of authority of the Resident Project Representative (RPR) in connection with his observation and review of the work.

1.2 AUTHORITY:

- A. Services of the RPR are set forth in the General Conditions of the Contract for Construction. In particular, the definition of the Engineer's duties provide authority for observation and review of the work.
- B. The RPR's authority to require special inspection or testing in connection with rejected work is also provided in the General Conditions. Furthermore, the provisions that, upon request by the Contractor, the RPR review and accept or reject any material furnished is also granted in the General Conditions.
- C. The provision for removing work for inspection by the inspector is set forth in the General Conditions in the paragraph concerning uncovering of work.

1.3 DEFINITIONS:

- A. Resident Project Representative (RPR). A representative of the Engineer or Owner will be assigned authority to observe and review the work.
- B. Working Day. RPR's are not required to work on Saturdays, Sundays, or legal holidays. If the Contractor plans work on a Saturday or legal holiday, prior arrangements should be made for an RPR not later than 2:00 p.m. on the working day before the Saturday or legal holiday.
- C. Unobserved or Unreviewed Work. Any work performed on a Saturday, Sunday, or legal holiday without benefit of any observation or review by the RPR may require removal and replacement if so directed by the RPR. Removal and replacement will be completed at no additional cost to the Owner.

1.4 FULL-TIME RESIDENT PROJECT REPRESENTATIVE:

- A. Assist the Contractor's superintendent in understanding the intent of the contract documents.

- B. Conduct on-site observations and spot checks of the work in progress as a basis for determining conformance of work, materials and equipment with the contract documents.
- C. Consider and evaluate suggestions or recommendations which may be submitted by the Contractor to the Engineer and report them with recommendations to the Engineer for final decision.
- D. Be alert to the construction schedule and to conditions which may cause delay in completion, and report same to the Engineer.
- E. Maintain liaison with the Contractor and all subcontractors on the project only through the Contractor's superintendent.
- F. Attend conferences held at the project site as directed by the Engineer. Report to the Engineer the results of such meetings.
- G. Advise the Engineer in advance of the schedules of tests and observe that tests at the project site which are required by the contract documents are actually conducted; observe, record and report to the Engineer all details relative to the test procedures.
- H. If inspectors representing local, state or federal agencies having jurisdiction over the project visit the site, accompany such inspectors during their trips through the project; record and report to the Engineer's office the results of these inspections.
- I. Receive samples which are required to be furnished at the site; record date received and from whom, and notify the Engineer of their readiness for examination; record Engineer's approval or rejection; and maintain custody of approved samples.
- J. Review applications for payment submitted by the Contractor and forward them with recommendations to the Engineer for disposition.
- K. After substantial completion, check each incomplete or defective item as it is corrected.
- L. If a situation arises during construction which requires that work be rejected, report such situation immediately to the Engineer.

- M. The project representative shall not:
1. Authorize deviations from the contract documents.
 2. Personally conduct any tests.
 3. Enter into the area of responsibility of the Contractor's superintendent.
 4. Expedite the work for the Contractor.
 5. Advise on, or issue directions relative to any aspect of construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the work.
 6. Authorize or suggest that the Owner occupy the project, in whole or in part, prior to substantial completion.

END OF SECTION

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PART 1 - GENERAL

1.1 GENERAL:

- A. The facilities and controls specified in this section are considered minimum for the project. The Contractor may provide additional facilities and controls which he considers necessary for the proper execution of the work and to meet his responsibilities for protection of persons and property.

1.2 QUALITY ASSURANCE:

A. Regulation:

1. Comply with governing regulations for the installation and use of temporary construction facilities, and operation of security and protection facilities, including health and safety regulations.
2. Comply with pollution, environmental protection, and conservation regulations for the use of water and energy, and for the control of dust, air pollution, noise, trash and similar nuisances.

- B. Contractor shall assign responsibilities for installation and maintenance of temporary facilities security and protection, and compliance with regulations.

1.3 JOB CONDITIONS:

- A. Scheduled Uses: Provide temporary construction facilities at the time first needed to avoid delays in the performance of the work. Maintain, expand, and modify as needed through the progress of work.

- B. Conditions of Use: Operate, maintain, control, and protect temporary construction facilities in a manner which will prevent over-loading, freezing, pollution, contamination of water source, flooding, unsanitary conditions, hazardous exposures, fire, disease, erosion of site, damage or deterioration of completed work, public nuisances, trash and similar deleterious effects.

PART 2 - PRODUCTS

2.1 MATERIALS OF TEMPORARY FACILITIES:

- A. Either new or used materials and equipment, which are in substantially undamaged condition and without significant deterioration.
- B. Use materials and equipment which are recognized in the construction industry by compliance with appropriate standards, as being suitable for the intended use in each case, and capable of being maintained properly through the course of anticipated use of the project site.

PART 3 - EXECUTION

3.1 TEMPORARY CONSTRUCTION FACILITIES:

- A. Access :
 - 1. Construct and maintain in good condition all temporary roads and other points of access to the project site.
 - 2. Deliver construction materials only from locations designated by the Engineer and Owner.
 - 3. Protect curbs with timber bridging. At the completion of work, restore all damaged curbs to their original condition.
- B. Temporary Drainage Control: From commencement to completion of construction, maintain the site, excavations, and the construction free of accumulated water. Slope ground to drain surface water away from facilities and provide pumping and bailing equipment to keep excavations dry.

3.2 TEMPORARY GENERAL SERVICE FACILITIES: (ONLY AS APPLICABLE)

- A. Temporary Field Offices: Minimum 100 sq. ft. for use of the Owner and Engineer's field representative, equipped with a desk, plan table, two chairs, and a direct line telephone. (Not Applicable this Project).
- B. Provide temporary field office at the site on an approved location. The building shall be weatherproof with a lockable door, properly heated and air conditioned with adequate illumination. (Not Applicable this Project).

- C. Temporary Sanitary Facilities: Toilets, drinking water, and wash facilities for the use of all construction personnel. Portable facilities, properly maintained, may be used as approved by the County Health Department.
- D. Temporary Telephone Service: For use by construction personnel and the Engineer's representative. The Contractor shall pay for all local calls and charges. (Not Applicable this Project).
- E. Temporary Water Supply:
 - 1. Provide all water necessary for construction purposes. Make temporary connection to existing main to provide temporary water.
 - 2. The Contractor shall make the necessary arrangements with the City Water Department and include all expenses in the Contract Amount, or make arrangements to pay for them separately.

3.3 SECURITY AND PROTECTION:

A. Barriers and Fences:

- 1. Comply with recognized standards and applicable city ordinances for the erection of substantial and structurally adequate barricades and fences required during construction.
- 2. Provide barricades wherever needed to insure prevention of accidents and losses. Paint with appropriate colors and warning signs to inform personnel and general public of the hazard present.

B. Temporary Fire Protection:

- 1. During the construction period and until the time certain protection needs may be fulfilled by permanent facilities, install and maintain whatever types and forms of fire protection temporary facilities may be needed to adequately protect against fire losses which are reasonably predictable and controllable.
- 2. Comply with the applicable City Ordinances for fire protection.
- 3. Locate extinguishers where most convenient and effective.

4. Store combustible materials in fire-safe locations and containers.

3.4 TERMINATION AND REMOVAL:

- A. At the time the need has ended for each temporary facility, or at substantial completion of the project, promptly remove the facility.
- B. Any work that is damaged or otherwise affected by temporary facilities shall be restored to its original condition by the Contractor.

END OF SECTION

PART 1 - GENERAL

1.1 GENERAL:

A. Material and Equipment Incorporated into the Work.

1. Conform to applicable specifications and standards.
2. Comply with size, make, type and quality specified, or as specifically approved in writing by the Engineer.
3. Manufactured and Fabricated Products.
 - a. Design, fabricate and assemble in accord with the best engineering and shop practices.
 - b. Manufacture like parts of duplicate units to standard sizes and gages, to be interchangeable.
 - c. Two or more items of the same kind shall be identical, by the same manufacturer.
 - d. Products shall be suitable for service conditions.
 - e. Equipment capacities, sizes and dimensions shown or specified shall be adhered to unless variations are specifically approved in writing.
4. Do not use material or equipment for any purpose other than that for which it is designed or is specified.

B. Related Requirements Specified in Other Sections.

1. Work Sequence: Section 01014.
2. Shop Drawings, Product Data and Samples: Section 01340.

1.2 REUSE OF EXISTING MATERIAL:

- A. Except as specifically indicated or specified, materials and equipment removed from the existing facilities shall not be used in the completed work.
- B. For material and equipment specifically indicated or specified to be reused in the work:
 1. Use special care in removal, handling, storage and

reinstallation, to assure proper function in the completed work.

2. Arrange for transportation, storage and handling of products which require off-site storage, restoration or renovation. Pay all costs for such work.

1.3 MANUFACTURER'S INSTRUCTIONS:

- A. When contract documents require that installation of work shall comply with manufacturer's printed instructions, obtain and distribute copies of such instructions to parties involved in the installation, including two copies to Engineer. Maintain one set of complete instructions at the job site during installation and until completion.
- B. Handle, install, connect, clean, condition and adjust products in strict accord with such instructions and in conformity with specified requirements.
 1. Should job conditions or specified requirements conflict with manufacturer's instructions, consult with Engineer for further instructions.
 2. Do not proceed with work without clear instructions.
- C. Perform work in accord with manufacturer's instructions. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by contract documents.

1.4 TRANSPORTATION AND HANDLING:

- A. Arrange deliveries of products in accord with construction schedules; coordinate to avoid conflict with work and conditions at the site.
 1. Deliver products in undamaged condition, in manufacturer's original containers or packaging, with identifying labels intact and legible.
 2. Immediately on delivery, inspect shipments to assure compliance with requirements of contract documents and approved submittals, and that products are properly protected and undamaged.
- B. Provide equipment and personnel to handle products by methods to prevent soiling or damage to products or packaging.

1.5 STORAGE AND PROTECTION:

- A. Store products in accord with manufacturer's instructions, with seals and labels intact and legible.
 - 1. Store products subject to damage by the elements in weathertight enclosures.
 - 2. Maintain temperature and humidity within the ranges required by manufacturer's instructions.
- B. Exterior Storage.
 - 1. Store fabricated products above the ground, on blocking or skids, prevent soiling or staining. Cover products which are subject to deterioration with impervious sheet coverings; provide adequate ventilation to avoid condensation.
 - 2. Store loose granular materials in a well-drained area on solid surfaces to prevent mixing with foreign matter.
- C. Arrange storage in a manner to provide easy access for inspection. Make periodic inspections of stored products to assure that products are maintained under specified conditions, and free from damage or deterioration.
- D. Protection After Installation. Provide substantial coverings as necessary to protect installed products from damage from traffic and subsequent construction operations. Remove when no longer needed.

END OF SECTION

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PART 1 - GENERAL

1.1 GENERAL:

- A. Products List. Within 30 days after contract date, submit to Engineer a complete list of major products proposed to be used, with the name of the manufacturer and the installing subcontractor.
- B. Contractor's Options.
1. For products specified only by reference standard, select any product meeting that standard.
 2. For products specified by naming several products or manufacturers, select any one of the products or manufacturers named, which complies with the specifications.
 3. For products specified by naming one or more products or manufacturers and "or equal," Contractor must submit a request as for substitutions for any product or manufacturer not specifically named.
 4. For products specified by naming only one product and manufacturer, there is no option.
- C. Substitutions.
1. For a period of 30 days after contract date, Engineer will consider written requests from Contractor for substitution of products.
 2. Submit a separate request for each product, supported with complete data, with drawings and samples as appropriate, including:
 - a. Comparison of the qualities of the proposed substitution with that specified.
 - b. Changes required in other elements of the work because of the substitution.
 - c. Effect on the construction schedule.
 - d. Cost data comparing the proposed substitution with the product specified.
 - e. Any required license fees or royalties.
 - f. Availability of maintenance service, and source of replacement materials.

3. Engineer shall be the judge of the acceptability of the proposed substitution.

D. Contractor's Representation. A request for a substitution constitutes a representation that Contractor:

1. Has investigated the proposed product and determined that it is equal to or superior in all respects to that specified.
2. Will provide the same warranties or bonds for the substitution as for the product specified.
3. Will coordinate the installation of an accepted substitution into the work, and make sure other changes as may be required to make the work complete in all respects.
4. Waives all claims for additional costs, under his responsibility, which may subsequently become apparent.

E. Engineer will review requests for substitutions with reasonable promptness, and notify Contractor, in writing, of the decision to accept or reject the requested substitution.

F. Substitutions will not be considered if:

1. They are indicated or implied on Shop Drawings or Product Data submittal without formal request submitted in accordance with this section.
2. Acceptance will require substantial revision of the Contract Documents.

G. If substitution is not approved or accepted, Contractor shall furnish specified product.

END OF SECTION

PART 1 - GENERAL

1.1 GENERAL:

- A. Contractor shall comply with requirements stated in Conditions of the Contract and specifications for administrative procedures for closing out the work.
- B. Related requirements specified in other sections:
 - 1. Record Documents: Section 01720
 - 2. Warranties: Section 01750
 - 3. Operation and Maintenance Data: Section 00830.

1.2 SUBSTANTIAL COMPLETION:

- A. When Contractor considers the work is substantially complete, he shall submit to the Engineer:
 - 1. A written notice that the work, or designated portion thereof, is substantially complete.
 - 2. A list of items to be completed or corrected.
- B. Within a reasonable time after receipt of such notice, Engineer will make an inspection to determine the status of completion and shall furnish the Contractor a complete list of items of work to be completed or corrected. The list so developed shall, in no way, release the Contractor, or subcontractors from furnishing and installing or correcting items or work required by the Contract Documents.
- C. Should Engineer determine that the work is not substantially complete:
 - 1. Engineer will promptly notify the Contractor in writing, giving the reasons therefor.
 - 2. Contractor shall remedy the deficiencies in the work, and send a second written notice of substantial completion to the Engineer.
 - 3. Engineer will reinspect the work.
- D. When Engineer concurs that the work is substantially complete, he will:
 - 1. Prepare a tentative Certificate of Substantial Completion accompanied by Contractor's tentative list of items to be completed or corrected, as verified and amended by the Engineer.

2. Submit the tentative Certificate to Owner and Contractor for their written acceptance of the responsibilities assigned to them.
3. After due consideration of any objections to the tentative certificate that have been made by the Owner as provided in the General Conditions, the Engineer will execute and deliver to the Owner and Contractor a definite Certificate of Substantial Completion with a revised list of items to be completed or corrected.

1.3 FINAL INSPECTION:

- A. When Contractor considers the work is complete, he shall submit written certification that:
 1. Contract Documents have been reviewed.
 2. Work has been inspected for compliance with Contract Documents.
 3. Work has been completed in accordance with Contract Documents.
 4. Equipment and systems have been tested in the presence of the Owner's representatives and are operational.
 5. Work is completed and ready for final inspection.
- B. Engineer will make an inspection to verify the status of completion with reasonable promptness after receipt of such certification.
- C. Should Engineer consider that the work is incomplete or defective:
 1. Engineer will promptly notify the Contractor in writing, listing the incomplete or defective work.
 2. Contractor shall take immediate steps to remedy the stated deficiencies, and send a second written certification to Engineer that the work is complete.
 3. When the Engineer finds that the work is acceptable under the Contract Documents, he shall request the Contractor to make closeout submittals.

1.4 CONTRACTOR'S CLOSEOUT SUBMITTALS TO ENGINEER:

- A. Upon final acceptance by the Owner, and completion of all work, the Contractor shall submit to the Owner, through the Engineer, the following data:
1. Certificate stating that all accounts for labor, equipment and material are paid in full; or in the case of outstanding accounts because of this work, the Contractor shall furnish a release of claims by the individual or concerned party. This certificate shall be notarized and signed by the Contractor.
 2. The Contractor's Bonding Company shall furnish a release to the Owner, that it is with their consent that final payment be made to the Contractor.
 3. The Contractor shall furnish a letter guarantee of all workmanship to be free of defects for a period of one year, unless required longer by any division of the specifications, and should any defects arise, then such defects shall be restored to the original condition at no expense to the Owner. This shall include all necessary cutting and patching as may be required to correct the defective work.
 4. The Contractor shall submit accurate and detailed "As-Built Drawings" covering all changes to the work. Submit one set of reproducibles and two (2) blue line prints.
 5. The Contractor shall submit all guarantees, warranties, brochures, and operating instructions as required by the different divisions of the specifications.
 6. The Contractor shall submit a request for final payment, which shall include an audit of the account of the contract and said audit shall fully cover amounts paid by the Owner to the Contractor, and amounts due Contractor because of this work, all of which shall be fully covered by the contract documents and approved change orders.
 7. Certificate of Occupancy, if applicable.
 8. Certificates of inspection, if applicable.
 9. Operation and Maintenance Data, Instructions to Owner's Personnel. To requirements of respective sections in specifications.

10. Spare Parts and Maintenance Materials. As specified in respective sections of specifications.

1.5 FINAL ADJUSTMENT OF ACCOUNTS:

- A. Submit a final statement of accounting to Engineer. (Final pay application)
- B. Statement shall reflect all adjustments to contract sum:
1. Original contract sum.
 2. Additions and deductions resulting from:
 - a. Previous change orders.
 - b. Unit prices.
 - c. Deductions for uncorrected work.
 - d. Deductions for liquidated damages.
 - e. Other adjustments.
 3. Total contract sum, as adjusted.
 4. Previous payments.
 5. Sum remaining due.

1.6 FINAL PAYMENT:

Final payment shall be made upon submission of the documents called for above, and as covered under the general conditions and any modification thereto. Final payment will be made after review and approval by the City Council.

END OF SECTION

PART 1 - GENERAL

1.1 GENERAL:

- A. Prepare and maintain record documents for the project to accurately reflect the construction as built. Documents must be submitted at work completion as a condition of final acceptance.
- B. Related Requirements Specified Elsewhere:
 - 1. Shop Drawings, Product Data & Samples: Section 01340

1.2 MAINTENANCE OF RECORD DOCUMENTS:

- A. Maintain at the job site, one copy of:
 - 1. Contract drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Reviewed shop drawings.
 - 5. Change orders and field orders.
 - 6. Other contract modifications.
 - 7. Field test records.
 - 8. Correspondence.
- B. Store documents in approved location, apart from documents used for construction.
- C. Provide files and racks for storage of documents.
- D. Maintain documents in clean, dry legible condition.
- E. Do not use record documents for construction purposes.
- F. Make documents available at all times for inspection by Engineer and Owner.

PART 2 - PRODUCTS

2.1 MARKING DEVICES:

- A. Mark all changes with red pencil.

PART 3 - EXECUTION

3.1 RECORDING:

- A. Keep record documents current. Do not conceal any work until required information has been recorded.
- B. Label each document "PROJECT RECORD" in neat, large, printed letters. Legibly mark contract drawings to record actual construction:
 - 1. Depths of various elements of foundations in relation to benchmark elevation.
 - 2. Horizontal and vertical location of underground and underslab utilities and appurtenances referenced to permanent surface improvements.
 - 3. Location of internal utilities and appurtenances referenced to permanent surface improvements.
 - 4. Field changes of dimension and detail.
 - 5. Changes made by change order or field order.
 - 6. Details not on original contract drawings.
- C. Legibly mark specifications and addenda to record:
 - 1. Manufacturer, trade name, catalog number and supplier of each product and item of equipment actually installed.
 - 2. Changes made by change order or field order.
 - 3. Other matters not originally specified.
- D. Legibly annotate the shop drawings to record changes made after review.
- E. Final Drawings:
 - 1. Upon completion of Work, furnish Owner with one (1) complete set of marked-up reproducibles with "PROJECT RECORD DOCUMENTS" clearly printed in lower right hand corner of each sheet.
 - 2. Engineer when requested, will furnish set of reproducibles of mylars for mark-up. (Cost of reproducibles to Contractor)
 - 3. Accurately and neatly transfer changes and deviations from construction progress set to final set.

4. Prepare record Drawings where specified and as required. Provide reproducibles plus two (2) sets of blue line prints.

F. Final Specifications:

1. Upon completion of Work, furnish Owner with one (1) copy to Engineer with complete set marked-up with "PROJECT RECORD DOCUMENTS" clearly printed on cover.
2. Engineer, at cost of reproduction to Contractor, will furnish Specifications for mark-up.
3. With black ink, accurately and neatly transfer annotations from construction progress set to final set.

G. Samples: Record on transmittal, if not indicated, manufacturer, trade name, catalog number, color, and supplier.

H. Endorsement: Sign each final record drawing and cover of final record Specifications. Note thereon that record documents are complete and accurate.

3.2 SUBMITTALS:

- A. Collect and protect items submitted by manufacturer, supplier or subcontractor which accompany materials and equipment, such as bonds and warranties, special tools, extra maintenance parts and materials, and printed information regarding operation, lubrication, parts and maintenance. Submit to Owner upon completion of job, in bound tabbed volume.
- B. Upon completion of job, bind one copy of approved shop drawings and catalog of equipment actually installed in job, and post construction submittals, into tabbed, trade related volumes, and deliver to the Engineer for transmittal to the Owner.
- C. Preparation of Reproducibles: In preparation for Certification of Substantial Completion of the work, review completed mark-up of record drawings with Engineer. When authorized, proceed with preparation of a full set of corrected reproducibles for contract record drawings. Incorporate changes and additional information previously marked-up on print sets, by erasing and redrawing where applicable; refer instances of uncertainty to Engineer for determination. Identify and date each updated drawing.

- D. Accompany submittal with transmittal letter, in duplicate, containing:
1. Date.
 2. Project title and number.
 3. Contractor's name and address.
 4. Title and number of each record document.
 5. Certification that each document as submitted is complete and accurate.
 6. Signature of Contractor, or his authorized representative.
- E. At Contract close-out, deliver one set of reproducible and two sets (blue line prints) of record documents (as-built) to Engineer for the Owner. Cost of reproducible and blue lines will be borne by the Contractor.

END OF SECTION

PART 1 - GENERAL

1.1 DESCRIPTION:

- A. Compile product data and related information appropriate for Owner's maintenance and operation of products furnished under Contract.
- B. Prepare operation and maintenance data as specified in this Section and as referenced in other pertinent sections of Specifications.
- C. Instruct Owner's personnel in maintenance of products and in operation of equipment and systems.

1.2 QUALITY ASSURANCE:

- A. Preparation of DATA shall be done by personnel:
 - 1. Trained and experienced in maintenance and operation of described products.
 - 2. Familiar with requirements of this Section.
 - 3. Skilled as draftsman and writer to extent required to communicate essential data.

PART 2 - PRODUCTS

2.1 MATERIALS:

- A. Data
 - 1. Compile product data and related information appropriate for Owner's maintenance and operation of products furnished under Contract.
 - 2. Format:
 - a. Size: 8-1/2" x 11".
 - b. Text: Manufacturer's printed data, or neatly typewritten.
 - c. Drawings: Provide reinforced punched binder tab, bind in with text; fold larger drawings to size of text pages.
 - d. Provide tabbed fly-leaf for each separate product or each piece of operating equipment.

- e. Cover: Identify each volume with typed or printed title "OPERATION AND MAINTENANCE DATA", project title and name of Contractor.
- f. Binders: Commercial quality three-ring binders with durable and cleanable plastic covers.

PART 3 - EXECUTION

3.1 PREPARATION OF MANUAL:

- A. General
 - 1. Prepare data in form of instructional manual.
 - 2. When multiple binders are used, correlate data into related consistent groupings.
- B. List, with each product, name, address, and telephone number of:
 - 1. Subcontractor or installer.
 - 2. Maintenance contractor, as appropriate.
 - 3. Identify area of responsibility of each.
 - 4. Local source of supply for parts and replacement.
- C. Identify each product by product name and other identifying symbols as set forth in Contract Documents.
- D. Product Data: Include only those sheets pertinent to specific product. Clearly identify pertinent data; line out inapplicable text.
- E. Drawings: Supplement product data with drawings as necessary. Coordinate drawings with information in Project Records Documents to assure correct illustration of completed installation.
- F. Written text, as required to supplement product data for particular installation.
- G. Content for each unit of equipment and system, as appropriate:
 - 1. Description of unit and component parts.
 - 2. Operating and maintenance procedures.

3. Servicing and lubrication.
4. Description of sequence of operation by control manufacturer.
5. Original manufacturer's parts list, illustrations, assembly drawings and diagrams.
6. As installed piping diagrams.
7. Charts of valve tag numbers, with location and function of each valve.
8. List of replacement or maintenance parts, with local source, if available.
9. Other data as required under pertinent sections of specifications.

3.2 SUBMITTALS:

- A. Submit preliminary draft of proposed formats and outlines of contents at least 14 days prior to final inspection.
- B. Engineer will review draft and return one copy with comments.
- C. Submit two copies of approved data in final form within 10 days after final review and observation or acceptance.

3.3 INSTRUCTIONS OF OWNER'S PERSONNEL:

- A. Prior to final review and observation or acceptance, fully instruct Owner's designated operating and maintenance personnel in operation, adjustment and maintenance of products, equipment and systems.
- B. Operation and maintenance manual shall constitute basis of instruction.

END OF SECTION

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PART 1 - GENERAL

1.1 GENERAL:

- A. Contractor shall guarantee materials and workmanship for a period of one year from date of completion and final acceptance by the Owner except where additional guarantees or warranties are required under the technical sections of the specifications.
- B. Before final payment is made the General Contractor shall deliver to the Engineer all material and equipment guarantees or warranties in writing from sub-contractors and suppliers.
- C. The General Contractor shall also deliver to the Engineer before final payment three complete bound sets of manufacturer's instructions, service and parts manuals on each piece of equipment furnished under this contract.

END OF SECTION

DIVISION 2

SITWORK

GINN, INC. - CONSULTING ENGINEERS
17103 PRESTON ROAD SUITE 100 LB18
DALLAS, TEXAS PROJECT NO. 439

MILDRED STREET IMPROVEMENTS
SANITARY SEWER IMPROVEMENTS
TOWN OF ADDISON, TEXAS



PART 1 - GENERAL

1.1 GENERAL:

- A. All specifications and special provisions applicable to this project are identified as follows:

STANDARD SPECIFICATIONS: The 1982 Edition of the Texas State Department of Highways and Public Transportation Standard Specifications for Construction of Highways, Streets and Bridges as adopted by the State Department of Highways and Public Transportation, September 1, 1982, Part II, Construction Details.

- B. The following items are specifically hereby included:

<u>ITEM NO.</u>	<u>DESCRIPTION</u>
100	Preparing Right-of-Way
104	Removing Old Concrete
110	Roadway Excavation
248	Flexible Base
260	Lime Treatment for Materials in Place
262	Lime Treatment for Base Courses
264	Hydrated Lime & Lime Slurry
300	Asphalt, Oils, Emulsions
340	Hot Mix Asphaltic Concrete Pavement (Cl.A)
360	Concrete Pavement (Water Cement Ratio)
400	Structural Excavation
401	Excavation and Backfill for Sewers
420	Concrete Structures
421	Concrete for Structures
427	Surface Finishes for Concrete
440	Reinforcing Steel
470	Manholes and Inlets
471	Frames, Grates, Rings & Covers
472	Relaying Culvert Pipe
475	Headwalls, Wingwalls, Inlets and Manholes
479	Adjusting Manholes & Inlets
481	PVC Pipe
530	Concrete Curb, Curb and Gutter, Sidewalks
582	Water Mains and Drains
618	Conduit and Pullboxes
666	Thermoplastic Pavement Markings
674	Pavement Markings
676	Traffic Buttons

- C. In addition to the above Standard Specifications, the August 28, 1986 Edition of the North Central Texas Council of Governments Standard Specifications for Public Works Construction, Part II, Materials, and Part III, Construction Methods, where not in conflict with the

Highway Department Standards, shall be applicable to this project. If a conflict should occur, the Highway Department Specifications shall govern, unless stated otherwise.

END OF SECTION

PART 1 - GENERAL

1.1 GENERAL:

- A. The following Special Provisions shall govern and take precedence over the aforementioned Standard Specifications enumerated herein whenever they are in conflict.
- B. Mention herein or indication on the drawings of items, materials, operations or methods, requires that the Contractor provide and/or install each item mentioned or indicated of quality or subject to qualification noted; perform according to conditions stated each operation prescribed; and provide all necessary labor, equipment, supplies and incidentals.
- C. Requirements of the General Conditions, Special Conditions and Addenda, if issued, shall apply as if herein written.
- D. Separation of these specifications into items and sections is for convenience only and is not intended to establish limits of work.

<u>ITEM NO.</u>	<u>DESCRIPTION</u>
100	Preparing Right of Way
102	Clearing and Grubbing
104	Removing Old Concrete
110	Roadway Excavation
160	Furnishing and Placing Topsoil
210	Rolling (Flat Wheel)
260	Lime Treatment For Matl. In Place
262	Lime Treatment for Base Courses
264	Hydrated Lime & Lime Slurry
340	Hot Mix Asphaltic Concrete Pavement (Cl.A)
360	Concrete Pavement (Water Cement Ratio)
400	Structural Excavation
401	Excavation and Backfill for Sewers
420	Concrete Structures
421	Concrete for Structures
440	Reinforcing Steel
470	Manholes and Inlets
471	Frames, Grates, Rings and Covers
475	Headwalls, Wingwalls, Inlets & Manholes
481	PVC Pipe
482	Underground Irrigation Sleeves
502	Barricades, Signs and Traffic Handling
530	Concrete Curb, Curb and Gutter, Sidewalks
582	Water Mains and Drains
666	Thermoplastic Pavement Marking
674	Pavement Markers
676	Traffic Buttons

The following Special Provisions are provided for clarification or reference where required and shall govern if applicable to the project, or a specific portion of the project.

SPECIAL PROVISION TO ITEM 100 - PREPARING RIGHT-OF-WAY
(REFERENCE: NCTCOG SPECIFICATIONS, ITEM 3.1)

Article 100.3 MEASUREMENT. Delete the second paragraph and replace with the following:

Measurement for payment will be made between the limits of construction. Measurement will be parallel and adjacent to the centerline of the right-of-way along the centerline of the improvement. No separate measurements will be made parallel and adjacent to the centerlines of intersecting streets, unless shown otherwise.

The limits of construction will be the width of the established right-of-way throughout the entire project, along with any additional areas as indicated on drawings.

Article 100.4 PAYMENT. Delete the third paragraph and replace with the following:

No payment will be made for this item until the Contractor has verified the locations of all underground utilities which affect the work included in the scope of this Contract, and has submitted to the Engineer drawings detailing all conflicts between existing utilities and the work included in the scope of this Contract. The total payment for this item will not exceed 50 percent of the original contract remaining amount for this item prior to the final estimate. The portion of the contract amount for this item in excess of 50 percent of the total contract amount for this item will be paid on the final estimate.

SPECIAL PROVISION TO ITEM 102 - CLEARING AND GRUBBING (REFERENCE:
NCTCOG SPECIFICATIONS, ITEM 3.2 CLEARING AND GRUBBING)

Article 102.3 MEASUREMENT. Delete the second, third, fourth, fifth, and sixth paragraphs.

Article 102.4 PAYMENT. Delete in its entirety and replace with the following:

All work performed and measured as provided under "Measurement" will not be paid for directly but shall be considered as subsidiary to the work to which it applies.

SPECIAL PROVISION TO ITEM 104 - REMOVING OLD CONCRETE/OLD ASPHALT
(REFERENCE: NCTCOG SPECIFICATIONS, ITEM 8.8 SAWING)

Article 104.1 DESCRIPTION. Delete in its entirety and replace with the following:

Removing old concrete or old asphalt shall consist of all sawed break-out grooves for full depth of existing concrete, or asphalt, breaking up, removing and satisfactorily storing or disposing of old concrete or asphalt street, pavements, curb and gutter where shown on plans as Pay Items 104.1 and 104.2. All other old concrete or old asphalt within the limits of the public rights-of-way such as foundations, reinforced concrete pipe, curbs, driveways, or curb and gutter, not specifically provided for here or elsewhere by the plans and/or specifications shall be considered subsidiary to the work associated with the demolition and removal.

Article 104.2 CONSTRUCTION METHODS. Add the following to the second paragraph of this article:

The existing concrete and asphaltic pavement shall be cut to the full depth encountered for the entire length as required. The concrete or asphalt pavement removed shall be removed as indicated and according to the notes or details associated with the particular area or section of pavement.

Article 104.3 MEASUREMENT. Delete and replace with the following:

All full depth saw cuts required on this project will be measured by the linear foot, where shown on the plans. Whenever a straight, clean sawed line is required on concrete or asphalt it shall be paid for under Pay Item 104.1, Sawcut Existing Pavement.

All existing concrete or asphalt pavement, pavement, median strips, sidewalks, slabs 6" or thicker (i.e. driveways) removed as prescribed above; and specifically indicated on plans as Pay Item 104.2 shall be measured by the square yard in its original position, regardless of its thickness or the depth of covering. It shall be paid for under Pay Item 104.2, Remove Old Concrete/Asphalt. The removal of concrete or asphaltic surfaces, cement treated bases or other objectionable materials within the limits of the public right-of-way and sawed break-out grooves used to aid in the removal of pavement, and not specifically indicated on the plans as PAY ITEM 104.2, shall be considered subsidiary to the work to which it applies.

SPECIAL PROVISION TO ITEM 110 - ROADWAY EXCAVATION
(DENSITY CONTROL).

This special provision is added to the specifications and modified as follows:

Article 110.2 CONSTRUCTION METHODS. Delete the third and fourth paragraph in its entirety.

Article 110.3 SELECTION OF MATERIALS. Delete this section in its entirety.

Article 110.4 MEASUREMENT. Delete this section in its entirety and replace it with the following:

Contractor may provide "before and after" cross sections with all calculations for volume computed in cubic yards by the method of "average end areas", or payment will be based upon plan quantities, as shown in the proposal form.

Article 110.5 PAYMENT. Delete this section in its entirety and replace with the following:

The unit price bid shall be full compensation for furnishing all materials, tools, equipment, for any excavation, and to acquire suitable materials, provide specified compaction and sprinkling in order to complete the work as required herein. Payment for unauthorized work will not be made. Hauling and disposing of all unsuitable and objectionable materials shall be included in the unit price bid for this item.

SPECIAL PROVISION TO ITEM 130 - BORROW

Article 130.4 MEASUREMENT and 130.5 PAYMENT. Delete both articles in their entirety and replace with the following:

There will be no separate payment for borrow obtained from within the limit of the project. Material from excavation may be used as embankment material, if approved by the Engineer.

SPECIAL PROVISION TO ITEM 160 - FURNISHING AND PLACING TOPSOIL
(REFERENCE: NCTCOG SPECIFICATIONS, ITEM 3.8. TOPSOIL)

Article 160.1 DESCRIPTION. Delete in its entirety and replace with the following:

This item shall consist of stripping and removing the top 6" of topsoil from within the right-of-way limits, temporarily

stockpiling the material, then placing it to a minimum 6" uniform thickness, on areas disturbed during construction.

Article 160.2 MATERIAL. Delete in its entirety and replace with the following:

The topsoil shall be free of objectionable materials and be able to support the growth of block sodding or landscaping as hereinafter specified.

Article 160.4 CONSTRUCTION METHODS. (1) **RIGHT-OF-WAY SOURCES.** Add the following:

Adequate drainage of surface run-off must be maintained throughout the duration of the project regardless of how the material is stockpiled, and is considered subsidiary to the item to which the work applies.

Article 160.5 MEASUREMENT. Delete in its entirety and replace with the following:

Measurement shall be made for furnishing and placing topsoil by the square yard, complete in place.

Article 160.6 PAYMENT. Delete the second, third and fourth paragraphs.

SPECIAL PROVISION TO ITEM 210 - ROLLING (FLAT WHEEL)

Article 210.4 MEASUREMENT. and **210.5 PAYMENT.** Delete entirely and insert the following:

"Rolling (Flat Wheel)" shall not be measured separately for payment but shall be considered subsidiary to the various items of work to which it applies.

SPECIAL PROVISION TO ITEM 260 -- LIME TREATMENT FOR MATERIALS IN PLACE
(REFERENCE: NCTCOG SPECIFICATIONS, ITEM 4.6)

Article 260.2 MATERIALS. Type A hydrated lime shall be used for treatment of roadway subbase and subgrade at a maximum rate of 27#/square yard, (6% by weight), unless noted otherwise.

Article 260.4(4) COMPACTION of the lime treated roadway subbase or subgrade shall be 95% AASHTO T99 for the top six inches. Density Control shall be required for the method of compaction.

Article 260.6 MEASUREMENT. Type A hydrated lime will be measured by the ton of 2,000 pounds dry weight. Roadway subbase

preparation (Density Controlled) will be measured by the square yard.

SPECIAL PROVISION TO ITEM 264 - HYDRATED LIME AND LIME SLURRY

Article 264.2 TYPE. Type A, hydrated lime shall be used and applied in the form of a Lime Slurry.

SPECIAL PROVISION TO ITEM 310 - PRIME COAT (ASPHALTIC MATERIAL ONLY)

Article 310.2 MATERIALS. Add the following: Prime coat shall be MC-30 applied at a uniform rate of 0.10 gallons per square yard.

Article 310.4 MEASUREMENT AND 310.5 PAYMENT. Delete these articles entirely and insert the following:

"Prime Coat (Asphaltic Material Only)" shall not be paid for separately but shall be included in Pay Item 340.0 "HMACP, Type D, Class A." See the Special Provisions to Item 340, "Hot Mix Asphaltic Concrete."

SPECIAL PROVISION TO ITEM 340 - HOT MIX ASPHALTIC CONCRETE PAVEMENT
(REFERENCE: NCTCOG SPECIFICATIONS, ITEM 5.7 & 2.4)

Article 340.2 MATERIALS.

- (1) Mineral aggregate - pea gravel will not be allowed. All aggregate shall be crushed stone.
- (2) Asphaltic material: Tack coat shall be RC-250.

Article 340.3 PAVING MIXTURE. Add the following paragraph:

Type D (fine graded surface course) and Type B (fine graded base course) shall be used on this project where indicated on the plans. A maximum of two inch compacted lifts will be permitted to obtain the total thickness indicated.

Article 340.7 MEASUREMENT. Delete and replace with the following:

Type D and Type B asphaltic concrete will be measured by the Ton of 2,000 pounds, calculated in place. The weight will be figured based upon the calculated volume called for on plans and using unit weight of (110#/square yard per inch of depth of indicated thickness).

Tack coat will be required and will not be a separate pay item, but shall be considered subsidiary to the item to which the work applies.

Article 340.8 PAYMENT. Delete the last paragraph of Subarticle (1) and replace it with the following:

The unit price bid shall be full compensation for quarrying, furnishing all materials, freight involved, for all heating, mixing, hauling cleaning the existing base course or pavement, tack coat, placing asphaltic concrete mixture, rolling and finishing; and for all manipulations, labor, tools, equipment and incidentals necessary to complete the work and shall also include all maintenance required for the temporary detours used during construction, as directed by the Engineer.

SPECIAL PROVISION TO ITEM 360 - CONCRETE PAVEMENT
(Water Cement Ratio)
(REFERENCE: NCTCOG SPECIFICATIONS, ITEM 5.8)

Article 360.2 MATERIALS, Subarticle (1) Cement, is supplemented by the following:

When the cement is to be used in concrete with aggregates that may be deleteriously reactive, the alkali content ($\text{NaO} + 0.658\text{K}_2\text{O}$) of the cement shall not exceed 0.60%.

Article 360.2 MATERIALS. Subarticle (2) Admixtures, is supplemented by the following:

Mix designs with fly ash admixtures will not be accepted.

Article 360.4 PROPORTIONING CONCRETE, Subarticle (1) Proportions is supplemented by the following:

Where curbs are to be placed separately they shall conform to the applicable requirements of the Items for "Concrete Curb" or "Machine Laid Curb" and in addition 1/2" diameter by 8" dowels on 12" centers and a 1/2" diameter horizontal bar tied to the dowels shall be provided. An approved epoxy resin shall be applied to the pavement to receive curb after the pavement surface has been thoroughly cleaned with high-pressure water or other approved method. Curbs shall be grooved at transverse joints by use of hand tools. The placing of the curb, concrete mix design and equipment to be used shall be reviewed by the engineer prior to commencing curb work.

Article 360.4 PROPORTIONING CONCRETE, Subarticle (2) Concrete is hereby deleted in its entirety and replaced by the following:

CONCRETE STRENGTH. The concrete mix will be designed with the intention of producing a concrete having a specified minimum average compressive strength in pounds per square inch at the age in days and having the corresponding minimum average flexural strength (modulus of rupture) in pounds per square inch at the days indicated below.

The flexural test beams will be tested with a standard testing machine in which the load is applied at the center of the beam span in accordance with ASTM Designated C 293. For the specified strength the concrete mix shall comply with the following maximum allowable water content and minimum cement content requirements.

Compressive Strength (Days)	Flexural Strength (Days)	Water-Cement Ratio	Sacks of Cement (Type)
(psi)	(psi)	(max.gal./sack)	(min./c.y.)
3000 (2) Class F	700 (7)	5.50	7.0 (I,II)
3600 (28) Class C	600 (7)	6.00	6.0 (I,II)
3000 (28) Class A	500 (7)	6.50	5.0 (I,II)

The coarse aggregate factor (dry, loose volume of coarse aggregate per unit volume of concrete) shall not exceed 0.85.

PENALTY FOR DEFICIENT CONCRETE STRENGTH. It is the intent of this specification that all concrete construction covered by this specification be constructed in strict conformity with the plans and these specifications. Where any work is found to constructed of concrete with strength values of less than the specified minimum strength, the following rules relative to adjustment of payment for acceptable work and to replacement of faulty work shall govern.

(a) If the results of the compressive cylinder tests indicate a deficient strength and the Contractor does not elect to drill cores for a final compressive strength test, adjustments will be made on the basis for the compressive strength value for the particular area concerned as determined from the cylinders cast for compressive tests as hereinafter specified.

(b) If the Contractor elects to take cores for a final compressive strength test, the compressive strength value as determined by the core tests shall be conclusive. If the results of the core tests indicate a deficient strength, adjustment will be made on the basis of the compressive strength value as determined by the core tests.

(c) If the concrete compressive strength is less than the minimum required strength, the amount of penalty per square yard of concrete having a deficient strength shall be in accordance with the following table:

<u>PERCENT DEFICIENT</u>	<u>AMOUNT OF PENALTY</u>
0% TO 5%	\$2.00/S.Y.
Greater than 5--not more than 10%	\$5.00/S.Y.
Greater than 10--not more than 15%	NO Payment*

The amount of Penalty shall be deducted from payment due or to become due to the Contractor; such penalty deducted is to defray the cost of extra maintenance. *If, in the judgment of the Engineer, the area of deficiency should not be removed and replaced, there will be no payment for the area retained.

(d) All concrete having a strength more than 15 percent deficient shall be removed and replaced with concrete meeting the requirements of these specifications at the entire cost and expense of the Contractor.

(e) The area of concrete concerned in the adjustment or removal shall be the designated area represented by the compressive strength values determined as hereinabove specified.

Measurement for adjustment or removal shall be made to points equidistant between acceptable and unacceptable test points (points at which a compressive strength value was determined).

Article 360.4 PROPORTIONING CONCRETE, Subarticle (5) Mix Design, is hereby deleted in its entirety and replaced by the following:

MIX DESIGN. It is the intent of this specification to develop and use the most economical mix designs possible which will fulfill all requirements of this specification when using acceptable materials as furnished by the Contractor. Contractor shall submit mix designs for the various areas of concrete pavement as noted on the plans.

Prior to the beginning of concrete placements, and thereafter before any change in source or characteristics of any of the ingredients except mineral filler, mix design tests shall be performed using the cement and aggregates proposed for use.

The Contractor will be required to furnish the Engineer with all concrete batch designs necessary to produce the required strength as specified in the contract and specifications. All designs must be submitted by the Contractor and approved by the Engineer before the placing of concrete will be

permitted. At any time when any change in source or characteristics of any of the ingredients except mineral filler is expected, results of the mix design tests required above shall be submitted to the Engineer in order that he may determine whether a change in the approved mix design is required.

Concrete mixes will be designed and made in sufficient number to represent a wide range of water-cement ratios; these mixes shall comply with the requirements therein prescribed for workability. The water-cement ratio is defined as the total U.S. gallons of water (weight 8.33 pounds) including the moisture content of all aggregates per sack of cement (weight 94 pounds net). From the concrete of each mix design test beams will be made, cured and tested to determine the flexural strength of the concrete at stated number of days. From these preliminary tests, the water-cement ratio required to produce concrete of the specified strength will be selected.

Prior to placing of any concrete, the Contractor, will be required to furnish and operate the specified mixer approved for use on the project and shall produce batches of the size to be used in the concreting operations. From these batches, pilot beams will be made and tested in order to determine if the designs submitted comply with the strength requirements. No additional compensation will be paid for equipment, materials, and labor for making these preliminary test specimens. Such tests may be waived upon submission of approved independent laboratory design or previous satisfactory tests obtained from materials of the same sources.

After the mix proportions and water-cement ratio required to produce concrete of the specified strength have been determined and after the Engineer has approved the mix design, placing of concrete may be started.

Concurrence on the part of the Engineer in any proposed mixing or placing methods or approval of any proposed mix design shall not relieve the Contractor of the responsibility of furnishing concrete in place conforming to the requirements of these specifications.

Changes in the water-cement ratio and the mix design shall be made when the strength of the concrete departs from the specified minimum strength as indicated by the strength values obtained from tests of specimens made from concrete being placed.

Article 360.4 PROPORTIONING CONCRETE, Subarticle (6) Test Specimens, is hereby deleted in its entirety and replaced by the following:

TEST SPECIMENS AND QUALITY CONTROL. During the progress of the work the Engineer will cast test cylinders and beams for testing to maintain a check on the compressive and flexural strengths of the concrete actually being placed. Concrete failing to meet the specifications for materials, proportions, construction methods, strength or dimensions may be required to be removed and replaced with concrete meeting the specified requirements.

Not less than 3 test cylinders for a compressive strength value and/or 2 test beams for a flexural strength value will be taken from the concrete for each 450 square yards or less of concrete pavement placed each day. A compressive or flexural strength value shall be the average of the strengths of the three cylinders or two beams as the case may be.

Additional cylinders or beams may be made by the Engineers as required by concrete placing conditions, or for adequately determining the strength of the concrete where the early use of the base or pavement is dependent upon the concrete strength tests. No extra compensation will be paid the Contractor for materials and labor involved in fulfilling these requirements.

Beam boxes shall be furnished by the Contractor. Beam boxes shall be as specified or as directed by the Engineer. Furnishing of beam boxes will not be paid for as a separate contract pay item, and the costs thereof shall be included in such pay items as are provided in the proposal and contract. Beam boxes shall be maintained by the Contractor without cost to the Owner.

The test beams shall be tested at the age of 2 or 7 days in order to determine the flexural strength. Should the average 2 or 7 day flexural strength value, as determined by the average of the last 10 flexural strength values obtained from test of beams made from concrete of the same water-cement ratio, fail to meet the strength requirement, the Contractor shall modify the mix design to obtain additional strength in order to fulfill the requirements of our compressive strength at 2 or 28 days. Should any set of test cylinders representing a given area where an individual test beam has failed to meet strength requirements, that area shall be considered to be composed of concrete having deficient strength.

The Engineer, at his option, may reject as non-representative any individual flexural strength value in each group of ten where strengths more than 10 percent above or below the average for the group are indicated, and compute the average flexural strength on the basis of the remaining values.

Article 360.5 SUBGRADE AND FORMS, Subarticle (2) Placing and Removing Forms. Delete the third paragraph in its entirety and replace with the following:

Forms shall be leveled using material approved by the Engineer.

Article 360.6 CONCRETE MIXING AND PLACING, Subarticle (1) Mixing Methods is voided and replaced by the following:

The concrete shall be mixed in a mixer conforming to the requirements of Subarticle 360.3 (4) of this item. Ready-mix concrete, conforming to the requirements of the Item, "Ready Mix Plants", shall be used for mixing concrete for pavement on this project.

Article 360.8 SPREADING AND FINISHING. Add the following paragraph.

The Contractor shall take extra precaution to insure that the surface skidding or slipping resistance of the new concrete is similar to that of the surrounding pavement. This will guard against the possible initiation of skidding action of a vehicle. Failure to do so may require removal and replacement of the new concrete pavement.

Article 360.12 MEASUREMENT. Delete the second paragraph in its entirety.

Article 360.13 PAYMENT. Delete the second and third paragraphs and replace with the following:

Payment will be made on concrete which has been completed and accepted as described in Article 360.12, as herein amended.

Payment will be made only on that concrete which reaches the compressive strength specified within the stated days, or if any concrete is found to have strength values of less than the specified minimum strength then the adjustment as determined in other Sections of these specifications shall apply.

SPECIAL PROVISION TO ITEM 420 - CONCRETE STRUCTURES
(REFERENCE: NCTCOG SPECIFICATIONS, ITEM 7.6)

Article 420.3 GENERAL REQUIREMENTS. Delete the first paragraph and replace with the following:

The Contractor shall be responsible for the adequacy of all construction equipment and methods used on the project and compliance of such with these Specifications and all Local, State and Federal building codes and safety standards.

Forms, falsework, and bracing shall be designed by the Contractor for all loads and pressures and prescribed by these Specifications, local building codes, ACI 347, or as anticipated for the job conditions, whichever is most severe.

Article 420.8 FALSEWORK. Revise the first paragraph to read:

It shall be the responsibility of the Contractor to insure that all falsework is designed and constructed to safely carry the maximum anticipated loads and to provide the necessary rigidity.

Article 420.9 FORMS. Revise as follows:

Subarticle (1) General. Third paragraph:

It shall be the responsibility of the Contractor to insure that studs, joists, wales or other devices used for form supports are of sufficient section and rigidity to withstand undue bulging or settling of the forms.

Subarticle (1) General. Delete the sentence in the fourth paragraph that reads:

'Forming plans shall be submitted for approval subject to the requirements of Article 420.3.'

Article 420.22 REMOVAL OF FORMS AND FALSEWORK. Add the following paragraphs:

No backfill is to be replaced behind or on top of any structure prior to the structure attaining its specified 28-day compressive strength.

When tests are performed to determine flexural strengths of the concrete as the basis for removal of forms or shoring, or support of forms or elements on previously placed portions of the structure, it shall be done at the expense of the Contractor. Specimens shall be field cured, under the same conditions as the actual structure, in accordance with ASTM C-31. Flexural tests shall be performed in accordance with ASTM C-78. The average strength, based on a minimum of two tests on two beam specimens, will be the basis for evaluation.

In lieu of flexural tests, the Contractor may use the required 28 day strength as the basis for formwork or shoring removal. The concrete shall obtain its 28 day strength, prior to removal of forms or falsework or support of forms or elements on previously placed portions of the structure.

When 28 day compressive strengths are used as the basis for formwork or shoring removal, the Contractor may either;

At his own expense, have an independent laboratory make samples in accordance with ASTM C-31 and conduct compressive strength tests in accordance with ASTM C-39. The samples shall be field cured in accordance with ASTM C-31. A minimum of two cylinders will be made for each element to be evaluated or 100 C.Y. maximum. The average strength of the two will be the basis for evaluation of the 28 day strength.

Utilize the compressive strength tests conducted by the Owner, as specified herein, on laboratory cured samples.

When formwork removal is based on the concrete reaching its specified 28-day strength, the concrete shall be presumed to have reached this strength in accordance with the following:

When test cylinders, field cured under the most unfavorable conditions prevailing for any portion of the concrete represented, have reached the required strength. Except for the field curing and age at test, the Cylinders shall be molded and tested as specified in ASTM C-31.

SPECIAL PROVISION TO ITEM 421 - CONCRETE FOR STRUCTURES
(REFERENCE: NCTCOG SPECIFICATIONS, ITEM 7.4)

Article 421.2 MATERIALS, (2) Cement. The first paragraph of this Subarticle is hereby revised to read as follows:

(2) Mixing Water. Water for use in concrete and for curing shall be potable and be free from oils, acids, organic matter or other deleterious substances and shall not contain more than 1000 parts per million of chlorides as Cl nor more than 1000 parts per million of sulfates as SO₄. Mixing water used on the site will be subject to sampling and testing by the Owner to assure compliance with this specification.

Delete the second paragraph that requires submittal of water samples for testing.

Article 421.7 CLASSIFICATIONS AND MIX DESIGN. Revise the first paragraph to read:

It shall be the responsibility of the Contractor to furnish the mix designs, for the class(es) of concrete specified, to conform with the requirements contained herein and in accordance with SDHPT Bulletin C-11 and Supplement thereto. The Contractor shall perform at his own expense the work required to substantiate the design including the testing of strength specimens. Complete concrete design data shall be submitted to the Engineer for approval.

Delete the third paragraph that gives the Contractor the option of accepting a mix design furnished by the Engineer.

Article 421.9 QUALITY OF CONCRETE. Delete paragraphs three, seven and eight. Add the following paragraphs:

EVALUATION OF CONCRETE STRENGTH PLACED IN STRUCTURES

Evaluation of Test Results. The strength level of the placed concrete for a particular element will be considered satisfactory when the averages of all consecutive strength test results equal or exceed the specified strength and no individual strength test result falls below the specified strength by more than 500 psi.

When the strength level is not satisfactory in accordance with the above, Core Tests may be required at the direction of the Engineer. Costs of core sampling and testing will be borne by the Contractor.

Core samples will be at least 2 inches in diameter and will be tested in accordance with ASTM C-42.

A minimum of three core samples will be taken from the deficient member at locations determined by the Engineer. Non-destructive testing (impact hammers, sonoscopes, etc.) will be used to determine relative strengths of various areas of the deficient element as an aid in locating cores; these non-destructive tests will not be used as a basis of acceptance or rejection. Core samples containing reinforcing will be unacceptable for testing; additional cores will be required. Plug core holes solid with high strength, non-metallic, non-shrink grout.

Concrete in the area represented by a core test will be considered adequate if the average strength of the cores is equal to at least 85 percent of, and if no single core is less than 75 percent of, the specified 28 day strength.

SPECIAL PROVISION TO ITEM 427 -- SURFACE FINISHES FOR CONCRETE

Article 427.5 APPROVAL OF SURFACE FINISHING MATERIALS. Delete the article in its entirety and replace with the following:

The material to be furnished shall meet the requirements of the Texas State Department of Highways and Public Transportation Specification D-9-8110, Structural Coatings, latest revision.

SPECIAL PROVISION TO ITEM 440 - REINFORCING STEEL

Article 440.8 MEASUREMENT and 440.9 PAYMENT. Delete entirely and insert the following:

Reinforcing steel shall not be measured separately for payment but shall be considered subsidiary to the item to which the work applies.

SPECIAL PROVISION TO ITEM 464 - REINFORCED CONCRETE PIPE CULVERTS
(REFERENCE: NCTCOG SPECIFICATIONS, ITEM 2.12)

Article 464.3 CONSTRUCTION METHODS, (1) Excavation and (5) Backfilling. Delete in their entirety and replace with the following:

Excavation and backfilling shall be in accordance with the requirements of the Special Provisions to Item 401, "Excavation and Backfill for Sewers."

Article 464.5 PAYMENT. Revise the last paragraph with the following:

Structural excavation and backfill will not be measured for separate payment, but will be considered included in the unit price bid for each respective size pipe. There will be no extra compensation for excavating rock or other incompressible materials.

SPECIAL PROVISION TO ITEM 475 - HEADWALLS, WINGWALLS, INLETS & MANHOLES

Article 475.1 DESCRIPTION. Delete the paragraph in its entirety and insert the following: This item shall govern for the materials used and for constructing, furnishing and placing

headwalls and wingwalls in accordance with the details shown on the plans. Headwalls and wingwalls shall be cast-in-place and hereinafter described as concrete units.

Article 475.11 MEASUREMENT. Delete the first three paragraphs entirely and replace with the following:

Headwalls and wingwalls of the type and size shown on the plans will be measured for each headwall/wingwall. Excavation and backfill will not be measured for separate payment but will be considered subsidiary to the unit price bid for each headwall/wingwall. Measurement will only be considered when the headwall/wingwall is complete-in-place per the plans and specifications.

Article 475.12 PAYMENT. Delete in its entirety and replace with the following:

Payment for complete headwalls/wingwalls of the types shown on the plans, complete-in-place and in accordance with these specifications and measured as prescribed above, will be made at the unit price bid for each headwall/wingwall of the type specified.

Payment as provided above shall be full compensation for furnishing, transporting and placing all concrete, reinforcing steel, brick, mortar and castings for shaping of bed, jointing to the new or existing structures; bedding, cofferdams, dewatering, pumps, excavation, backfill, sprinkling, compaction, all other materials, tools, equipment, labor and incidentals necessary to perform the applicable work.

SPECIAL ITEM 482 - UNDERGROUND IRRIGATION SLEEVES

PART 1 - GENERAL

482.1.1 DESCRIPTION: Provide underground irrigation sleeves at locations as indicated on Drawings, or as required by the Engineer.

482.1.2 REFERENCED STANDARDS:

American Society for Testing and Materials:

1. ASTM - D2441 Poly (Vinyl Chloride) (PVC) Plastic Pipe (DR-14, Class 200).
2. ASTM - D2466 Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Socket Type, Schedule 40.
3. ASTM - D2564 Solvent Cements For Poly (Vinyl Chloride) (PVC) Plastic Pipe and Fittings.

PART 2 - MATERIALS

482.2.1 DEFINITIONS:

A. Sleeve: A pipe within which another pipe for carrying water will be installed.

482.2.2 GENERAL:

Polyvinyl Chloride Pipe (PVC): DR-14 Class 200, Manufactured in accordance with standards noted herein:

A. Marketing and Identification: Permanently marked with SDR number, ASTM standard number, and the NSF (National Sanitation Foundation) seal.

B. Solvent: As recommended by manufacturer to make solvent-welded joints. Thoroughly clean pipe and fittings before applying solvent.

PART 3 - EXECUTION

482.3.1 INSTALLATION:

A. Coverage: Provide 36 inches cover over top of sleeve from finish grade.

B. Sleeve Extensions: Extend sleeves one foot past edge of pavement or concrete walls. Install a 90 degree long radius elbow on the largest sleeve end and add additional length of same size pipe to extend above finish grade by 6 inches. Cap pipe ends using PVC caps.

482.3.2 BACKFILL:

A. Compaction: Place backfill over sleeves in 6" lifts. Tamp firmly into place taking care not to damage sleeve. Complete backfill and compaction to prevent future settlement. Compact to 85 percent Standard Proctor.

B. Damage: Repair any damage resulting from improper compaction including pavement repair and replacement.

PROVISION TO ITEM 502 - BARRICADES, SIGNS AND TRAFFIC HANDLING
(REFERENCE: NCTCOG SPECIFICATIONS, ITEM 8.1)

Article 502.3 MEASUREMENT and 502.4 PAYMENT. Delete both articles and replace with the following:

The work and materials as prescribed by this item will not be paid for as a separate item, but shall be considered as subsidiary to the particular projects and items of work.

SPECIAL PROVISION TO ITEM 530.3 - PAVERS

Article 530.1 DESCRIPTION. Add the following:

Furnish and install solid concrete paving stones as shown on the drawings and as recommended by the manufacturer. Furnish and install the sand laying course and all accessory items as required.

Article 530.2 MATERIALS.

1. Pavers

Materials furnished under this item shall be as manufactured by the Pavestone Company, Box 413, Grapevine, Texas, 76051, phone (817) 581-5801, or approved equal:

a. Pavers: Shall be Holland Stone I, 2 3/8" (6 cm.) thickness, by Pavestone Co.

b. Physical requirements: All pavers shall conform to ASTM C 936-82.

Colors for the above shall be as approved by the Owner.

2. Cementitious Materials and Aggregates: Shall conform to ASTM C-150 and ASTM C-33, respectively.

3. Sand: Masonry sand will not be allowed. The sand laying course shall be a well graded clean washed sharp sand with 100% passing a 3/8" sieve size and a maximum of 3% passing a No. 200 sieve size. This is commonly known as manufactured concrete sand, limestone screening, or similar. The sand laying course should be the responsibility of the paving stone subcontractor.

Article 530.3 INSTALLATION.

Installation shall be performed by a subcontractor approved by the Engineer. Installation shall conform to manufacturer's recommendations and the following:

A. Construction of Sand Laying Course

1. The finished base course shall be approved before the placement of the sand laying course.
2. The construction of the sand laying course shall be in accordance with manufacturer's recommendation and approved by Engineer prior to beginning installation.

B. Placing Pavers

1. The paving stones shall be laid in such a manner that the desired pattern is maintained and the joints between the stones are as tight as possible. For maximum interlock it is recommended that joints between stones do not exceed 1/8" (3mm.). Use running bond pattern.

2. String lines should be used to hold all pattern lines true.
3. The gaps at the edge of the paver surface shall be filled with standard edge stone or with stones cut to fit. Cutting shall be accomplished to leave a clean edge to the traffic surface using a double-headed breaker or a masonry saw. However, when cutting precision designed areas, a masonry saw is recommended. Whenever possible, no cuts should result with a paver less than 1/3 of original dimension.
4. Paving stones shall be vibrated into the sand laying course using a vibrator capable of 3,000 to 5,000 pounds compaction force with the surface clean and joints open.
5. After vibration, clean masonry type sand containing at least 30% of 1/8" (3mm.) particles shall be spread over the paving stone surface, allowed to dry, and vibrated into joints with additional vibrator passes and brushing so as to completely fill joints.
6. Surplus material shall then be swept from the surface or left on surface during construction time to insure complete filling of joints during initial use. This sand also may provide surface protection from construction debris.

Article 530.4 MEASUREMENT.

Pavers, Item 530.4, will be measured by the square yard, complete and in place, for the complete installation as approved by the Engineer.

Article 530.5 PAYMENT.

Pavers, Item 530.4, will be paid for by the square yard for an installation complete and in place.

SPECIAL PROVISION TO ITEM 662 - CONSTRUCTION PAVEMENT MARKINGS

Article 662.2 MATERIALS. Delete the third paragraph entirely. Add the following to the second paragraph.

All markings shall be white or yellow, unless directed otherwise by the Engineer. All temporary detours shall be marked with a yellow centerline stripe in accordance with the Texas Manual on Uniform Traffic Control Devices. All other requirements by the Texas Manual on Uniform Traffic Control Devices shall be complied with in addition to the above requirement.

Article 662.4 MEASUREMENT and Article 662.5 PAYMENT. Delete entirely and replace with the following:

Construction Pavement Markings shall not be measured separately for payment but shall be considered subsidiary to the various items of work to which they apply.

SPECIAL PROVISION TO ITEM 666 -- THERMOPLASTIC MARKINGS

Article 666.2 GENERAL. Add the following:

All markings shall comply with these specifications herein and with the Texas Manual on Uniform Traffic Control Devices for streets and highways.

Article 666.9 MEASUREMENT and Article 666.10 PAYMENT. Delete entirely and replace with the following:

Markings for Stop Bars will not be measured as a separate pay item. The work performed and the materials furnished shall be included in and paid for at the lump sum price bid for Pay Item 666.0, which includes 24" stop bars, turn lane arrows and "ONLY" pavement markers.

The lump sum price bid for the above items shall be full compensation for cleaning the pavement, furnishing equipment and incidentals necessary to complete the work in accordance with the applicable specifications herein included.

SPECIAL PROVISION TO ITEMS 674 AND 676 RAISED PAVEMENT MARKER INSTALLATIONS

Article 674.2 and 676.2 MATERIALS. Delete entirely and replace with the following:

Markers - All markers shall be a glazed ceramic type and must be approved by the Engineer. All markers as described herein shall be similar in design and function to Permark Brand manufactured by the American Clay Forming Plant of the Ferro Corp.

Non-Reflective White Marker shall be circular, approximately 4" in diameter by .75" high with a domed surface glazed white. The bottom surface shall not be glazed and may have a designed irregular finish to aid bonding to the pavement (American Clay Designation P-7, or equal).

Mono-Directional Reflective White Marker shall be either circular or oval approximately 4" in diameter by .75" high

with a glazed white surface finish. A single white "high intensity" reflective rod shall be permanently embedded in the surface facing essentially horizontal. (American Clay Designation P-15 or P-15A, or equal)

Mono-Directional Reflective White or Yellow Barrier Marker shall be circular, approximately 8" in diameter by 2.86" high with a glazed white or yellow surface finish. A single white "high intensity" reflective rod shall be permanently embedded in the surface facing essentially horizontal. (American Clay Designation P-18-1 or equal)

Bi-Directional Reflective Yellow Marker shall be of circular or oval design approximately 4" in diameter by .75" high with a glazed yellow surface finish. Two yellow "high intensity" reflective rods shall be placed in opposing directions, permanently embedded in the surface facing essentially horizontal. (American Clay Designation P-117 or equal)

Non-Reflective White Traffic Buttons shall be circular, approximately 8" in diameter by 2.86" high with a domed surface glazed white as specified per the plans. The bottom surface shall not be glazed and may have a designed irregular finish to aid bonding to the pavement. (American Clay Designation P-18-W or equal)

Epoxy Adhesive - Ceramic traffic markers shall be permanently affixed to the pavement surface by means of epoxy resin adhesive. The epoxy shall be a two component compound of resin and hardener to be mixed immediately prior to installation. The allowable type of epoxy adhesive shall conform to that specified by the State Department of Highways and Public Transportation for hand mix or machine mix epoxy adhesive. (Type II or III or II-M or II-M respectively)

Article 674.4 and 676.4 CONSTRUCTION METHODS. Add the following paragraphs:

The Contractor shall install the required types of markers as described herein and shown on the contract drawings.

Skipped White Lane Line designation separation of lanes of the same direction of traffic shall be on a total cycle length of 40 feet with a 15 foot marking and 25 foot space. The lead marker of the pattern shall be a mono-reflective type as described herein with the reflective portion facing oncoming traffic. The remaining 3 markers shall be non-reflective as described herein. Interruption of the marking pattern shall occur at cross-street intersections as shown on the contract drawings.

White Left Turn Lane Line designating separation of left-turn lane from through lanes. The marking shall be continuous with single reflective ceramic marker on 10-foot spacing. The continuous line shall be twenty feet shorter than the left-turn lane length.

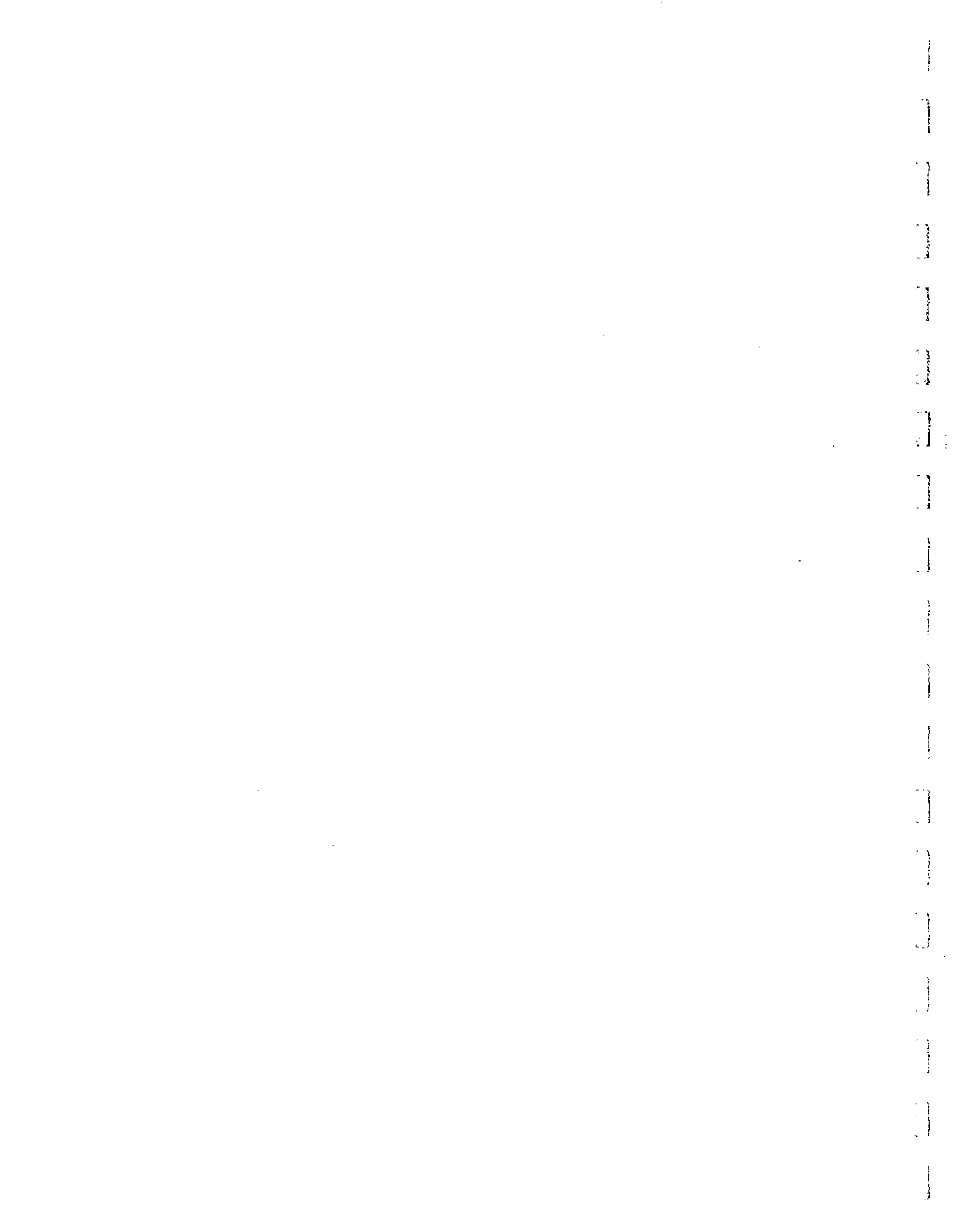
Double Yellow Centerline designates the separation of lanes with traffic in opposing directions on an undivided multiple-lane street. The marking shall be continuous except for interruption at cross-streets. The marking shall consist of continuous parallel lines with 4-inch (.33 feet) lateral separation. The bi-directional reflective yellow markers for each line shall be placed 10 feet apart.

Skipped Yellow Centerline designates the separation of lanes with traffic in opposing directions on a 2-lane undivided street. The marking shall be on a total cycle length of 40 feet with a 15 foot marking and 25 foot space. The 15 foot marking shall consist of 4 markers placed 5 feet apart. The marking shall be bi-directional reflective yellow markers.

PAVEMENT PREPARATION

The pavement shall be prepared in such a manner as to insure the best possible bonding of the marker to the pavement and in accordance with the epoxy marker manufacturer recommendation.

END OF SECTION



PART 1 - GENERAL

1.1 CONDITIONS OF THE CONTRACT AND DIVISION 1 - GENERAL REQUIREMENTS: Are hereby made a part of this section

1.2 SCOPE:

Work in this section includes furnishing all labor, materials, equipment and services required for clearing and grubbing, removal and disposal of items as specified herein and as shown on the plans.

1.3 RELATED WORK SPECIFIED ELSEWHERE:

A. Earthwork: Refer to Section 02200.

PART 2 - PRODUCTS

2.1 No products are required to execute this work, except as the contractor may deem necessary.

PART 3 - EXECUTION

3.1 CLEARING AND GRUBBING:

Clearing and grubbing shall consist of removing all natural and artificial objectionable materials from the project site or from areas of construction specified within the site.

A. In general, clearing and grubbing shall be performed in advance of grading and earthwork operations and shall be performed over the entire area of earthwork operations.

B. All dead trees, logs, stumps, rubbish of any nature, and other surface debris shall be cleared.

C. Ground covers of weeds, grass, and other herbaceous vegetation shall be removed prior to stripping and stockpiling topsoil from areas of earthwork operations. Such removal shall be accomplished by "blading" off the uppermost layers of sod or rootmatted soil for removal.

3.2 TREES AND SHRUBS TO BE PRESERVED AND PROTECTED:

Unless otherwise specified on the plans, trees shall not be cleared (removed).

A. The Contractor will protect trees from construction damage such as trunk impacts and scrapes, limb breakage, compaction of soil within the drip line, and other injurious construction activities.

1. If necessary, the Owner may direct the Contractor, at the Contractor's expense, to erect protective stockades along the drip lines of trees that the Owner considers vulnerable to damage. Such stockades shall be of eight (8') foot long x six (6") inch diameter posts vertically buried three (3') feet deep at six (6') foot intervals along the drip line.
- B. Where grading or clearing and grubbing operations are to occur between trees that are to be preserved and protected, the Contractor will prune the lower branches of those trees as necessary to prevent their breakage and to permit access by construction machinery. Branches will be cut off to the trunk or major limb in a workmanlike manner. The engineer may direct that the Contractor remove additional branches in such a manner that the tree presents a balanced appearance. Scars will be treated with a heavy coat of an approved tree sealant.

3.3 BACKFILLING:

All holes, cavities, and depressions in the ground caused by site preparation operation will be backfilled and tamped to normal compaction and will be graded to prevent ponding of water and to promote drainage. In areas that are to be immediately excavated, the Engineer may permit holes, etc., to remain open.

3.4 DISPOSAL OF WASTE MATERIALS:

Unless otherwise stated, materials generated by clearing, grubbing, removal, and demolition shall be known as "waste" or "spoils" and shall be removed from the site and disposed of by the Contractor. Similar materials may be unearthed or generated by earthwork operations. Unless otherwise specified, any merchantable items become the property of the Contractor.

3.5 MEASUREMENT AND PAYMENT:

All work performed and measured as provided will not be paid for as a separate pay item, but shall be considered as subsidiary to the work to which it applies.

END OF SECTION

PART 1 - GENERAL

1.1 CONDITIONS OF THE CONTRACT AND DIVISION 1 - GENERAL REQUIREMENTS:

Are hereby made a part of this section.

1.2 SCOPE:

Work in this section includes furnishing all labor, materials, equipment, and services required to construct, shape, and finish earthwork to the required lines, grades, and cross sections as specified herein and on the plans.

1.3 RELATED WORK SPECIFIED ELSEWHERE:

- A. Site Preparation: Refer to Section 02100.
- B. Site Grading: Refer to Section 02210.

PART 2 - PRODUCTS

2.1 UNCLASSIFIED EXCAVATION:

Unclassified excavation shall consist of all excavation, unless separately designated, within the limits of the work. Unclassified excavation includes all material encountered regardless of its nature or the manner in which it is to be excavated.

2.2 UNCLASSIFIED FILL:

Unclassified fill shall consist of all fill within the limits of the work. All suitable native materials removed in unclassified excavation, or similar imported materials, shall be used insofar as practicable as unclassified fill. Properly deposited, conditioned, and compacted fill is hereinafter referred to as "earth embankment", or "fill material".

2.3 TOPSOIL:

Topsoil shall consist of an average depth of six (6") inches of native surface soil left in place after the ground cover of herbaceous vegetation and other objectionable matter has been cleared by "blading," as specified in Section 02100, "Site Preparation." Topsoil may be greater or less than the upper six (6") inches in depth. However, it must be removable without contamination by the subsoil or substratum or other objectionable matter that would render it as "unsuitable material" as described herein.

2.4 SELECT MATERIALS:

Select materials shall be imported from offsite sources, unless they are available from areas on the site, designated as unclassified fill. All backfill, designated as "select fill" should consist of material having a PI of 4 to 12. All "select fill" should be placed in 8" lifts at plus to minus 3 percentage points of optimum moisture and compacted to a minimum of 95% Standard Proctor density, unless otherwise shown differently on the plans or specified elsewhere in these specifications.

2.5 UNSUITABLE MATERIALS:

Topsoil, select material, or unclassified fill will be declared as "unsuitable" by the Engineer if, in his opinion, any of the following conditions or matter and particles are present to a degree that is judged detrimental to the proposed use of the material:

- Moisture.
- Decayed or undecayed vegetation.
- Hardpan clay, heavy clay, or clay balls.
- Rubbish.
- Construction rubble.
- Sand or gravel.
- Rocks, cobbles, or boulders.
- Cementitious matter.
- Foreign matter of any kind.

Unsuitable materials will be disposed of as "waste" as specified in Section 02100. Wet Material: If fill material is unsatisfactory for use as embankment solely because of high moisture content, the Engineer may grant the Contractor permission to process the material to reduce the moisture content to a usable optimum condition.

PART 3 - EXECUTION

3.1 SITE PREPARATION:

In general, "Site Preparation," as specified in Section 02100, shall be performed in advance of grading and earthwork operations and shall be completed over the entire area of earthwork operations.

3.2 TOPSOIL:

The removal and storage of topsoil shall occur after site preparation is complete and before excavation and embankment construction begin. Likewise, topsoil will be replaced after excavation and embankment construction are complete.

- A. Removal: Topsoil shall be stripped to an average depth of six (6") inches in areas where excavation and embankment construction are planned. Topsoil may be obtained from greater depths if it is uncontaminated by the substratum and it is of good quality, in the opinion of the Engineer.
- B. Storage: Topsoil shall be stored in stockpiles conveniently located to areas that will later receive the topsoil. Stockpiles shall be out of the way of earthwork operations in locations approved by the Owner or Engineer. Stored topsoil shall be kept separate from other excavated materials and shall be protected from contamination by objectionable materials that would render it unsuitable.
- C. Timing: Topsoil will not be replaced (deposited) until construction activities are complete that would otherwise create undesirable conditions in the topsoil such as overcompaction or contamination.
- D. Replacement: Topsoil will be deposited in a single layer or lift. It will be placed, processed, compacted, and graded to leave a finished layer of topsoil not less than six (6") inches in depth. Unless otherwise indicated, topsoil will be replaced over all areas of earthwork (including slopes), except where pavement is planned.
- E. Grading: Topsoil will be final graded to the elevations shown on the plans. Fine grading will be accomplished with a weighted spike harrow, weighted drag, tractor box blade, light maintainer, or other acceptable machinery. Grading operations and equipment will be such that topsoil does not become overcompacted. Bulldozer blades and front-end loader buckets are not acceptable devices for topsoil grading operations.
- F. Acceptability: Finished areas of topsoil are satisfactory if they are true to grade, true in plane, even in gradient (slope), uniform in surface texture, and of normal compaction. Areas of loose granular pockets or of overcompacted soils are not acceptable and will be reworked. Finished areas will promote surface drainage and will be ready for grass planting.

3.3 UNCLASSIFIED EXCAVATION:

All excavated areas shall be maintained in such condition as to assure proper drainage at all time, and ditches shall be constructed and maintained to avoid damage to the areas under construction.

- A. **Surplus Material:** Surplus excavation, or excess excavation, is that quantity of fill material that may be left over after the grading plan is executed, and all earthwork operations, including excavation, embankment construction, topsoil replacement, and final grading, are completed. All surplus material will be removed from the site, unless otherwise directed by the Engineer.

3.4 EARTH EMBANKMENT:

Earth embankment is defined as embankment composed of suitable materials removed in unclassified excavation and/or select fill. The construction of embankment includes preparing the area on which fill is to be placed and the depositing, conditioning, and compaction of fill material.

- A. **General:** Except as otherwise required by the plans, all embankment shall be constructed in layers approximately parallel to the finished grade of the graded area, and each layer shall be so constructed as to provide a uniform slope as shown on the grading plan. Embankments shall be constructed to correspond to the general shape of the typical sections shown on the plans, and each section of the embankment shall be continuously maintained to its finished section and grade until the project is accepted.
- B. **Preparation:** Prior to placing any embankment, all preparatory operations will have been completed on the excavation sources and areas over which the embankment is to be placed. Stump holes or other small excavations in the limits of the embankments shall be backfilled with suitable material and thoroughly tamped by approved methods before commencing embankment construction. The surface of the ground, including plowed, loosened ground, or surfaces roughened by small washes or otherwise, shall be restored to approximately its original slope by blading or other methods, and, where indicated on the plans or required by the Engineer, the ground surface, thus prepared, shall be compacted by sprinkling and rolling.
- C. **Scarification:** The surface of all areas and slopes over which fill are to be placed, shall be scarified to a depth of four (4") to six (6") inches to provide a bond between the surface and the embankment to be constructed thereon. Scarification shall be accomplished by plowing, discing, or other approved means. The material that has been loosened shall be recompacted with the new embankment.
- D. **Benching:** Scarification is normally adequate for sloping surfaces. However, in certain cases where fill

is to be placed against hillsides or existing embankment with slopes greater than four to one (4:1) Engineer may direct Contractor to key fill material to existing slopes by benching. A minimum of two (2') feet normal to the slope shall be removed and recompacted to insure that new work is constructed on a firm foundation free of loose or disturbed material.

- E. Depositing: Fill material shall be placed in horizontal layers or lifts, evenly spread, not to exceed eight (8") inches in loose depth before conditioning and compaction. Unless otherwise permitted, each layer of fill material shall cover the length and width of the area to be filled and shall be conditioned and compacted before the next higher layer of fill is placed. Adequate drainage shall be maintained at all times.
- F. Watering: At the time of compaction, the moisture content of fill material shall be such that the specified compaction will be obtained, and the fill will be firm, hard, and unyielding. Fill material which contains excessive moisture shall not be compacted until it is dry enough to obtain the specified compaction.
- G. Compacting: Each layer of earth fill shall be compacted by approved tamping or sheepsfoot rollers, pneumatic tire rollers, or other mechanical means acceptable to the Engineer. Hand directed compaction equipment shall be used in areas inaccessible to vehicular compactors.
- H. Grading: Embankments shall be constructed in proper sequence and at proper densities for their respective functions. Accordingly, the upper layer of embankment shall be graded to within plus or minus 0.10 foot of the proper subgrade elevation prior to depositing topsoil.

3.5 DENSITY CONTROL:

- A. Earth Embankment in General: Earth embankment shall be compacted to ninety-five (95%) percent of Standard AASHTO Density with plus or minus three (3%) percent of optimum moisture content, unless otherwise shown on the plans or elsewhere in these specifications.

3.6 MOISTURE MAINTENANCE:

The specified moisture content shall be maintained in all embankments. After completion of the embankment, the Contractor shall prevent excessive loss of moisture in the embankment by sprinkling as required. Loss of moisture in

excess of two (2%) percent below optimum in the top twelve (12") inches of the fill will require that the top twelve (12") inches of the embankment be scarified, wetted, and recompacted.

3.7 TESTING:

Spot field tests of embankment densities shall be required of the Contractor by the Owner or Engineer at the place and time of their choosing. Any area not meeting density control requirements shall be immediately reworked, reconstructed, and retested, at the expense of the Contractor, until satisfactory results are obtained. Initial testing will be paid for by the Owner.

Anticipated tests to be performed on fill material are:

1. Atterberg Limit Series
2. Moisture-Density Curves
3. Standard Proctor Density

3.8 MEASUREMENT AND PAYMENT:

Unclassified excavation, unclassified fill, select fill, hauling of materials, removal and storage of topsoil, disposal of unsuitable materials, and embankment construction shall not be measured and paid for as a separate pay item, but shall be considered subsidiary to the item to which the work applies and shall be included in the pay item, as applicable.

END OF SECTION

PART 1 - GENERAL

1.1 DESCRIPTION:

- A. The work to be performed under this section of the specifications consists of furnishing all labor and equipment necessary to grade the areas to the finish grades and dimensions as shown on the plans, or as specified herein.
- B. Related Work:
 - 1. Section 02100 - Site Preparation
 - 2. Section 02200 - Earthwork

1.2 QUALITY ASSURANCE:

- A. The Engineer shall be the sole and final judge of suitability of all materials and workmanship.
- B. Materials in question, pending test results, shall not be used in the work. The Contractor shall remove all materials that fail to meet the requirements of the specifications.
- C. Fills, embankments, backfills, or subgrades which do not meet the specification requirements shall be removed or recompacted until the requirements are satisfied.
- D. Upon completion of the work, the areas shall have a uniform appearance and graded evenly throughout. Grades to be as shown on the plans.
- E. Backfilling and construction of fills and embankments during freezing weather shall not be done except by permission of the Engineer. No backfill, fill, or embankment materials shall be installed on frozen surfaces, nor shall frozen materials, snow, or ice be placed in any backfill, fill, or embankment.

1.3 PROTECTION:

- A. Protection of Existing Improvements
 - 1. Protection shall be provided to prevent damage to existing improvements indicated to remain in place on the Owner's property and adjoining properties.
 - 2. Damaged improvements shall be restored to their original condition, as acceptable to parties having jurisdiction.

3. Land areas outside the limits of permanent work performed under this contract shall be preserved in their present condition. The Contractor shall confine his construction activities to areas defined for work on the Drawings.

B. Protection of Existing Utilities

1. The Contractor shall verify all existing utility locations either shown or not shown on the Drawings.
2. The Contractor shall immediately notify the Engineer and applicable utility company of any damages to existing utilities.
3. Repairs to damaged utilities shall be made in accordance with the requirements of the applicable utility company at no extra cost to the contract amount.
4. The Contractor shall coordinate with the Engineer and the applicable utility company for shutoff of or connection to active utilities. Existing utility services shall not be interrupted except as authorized in writing by the Engineer.

- C. Protection of Work Site: Barricades or other type protectors shall be provided to prevent unauthorized personnel from entering work sites.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

3.1 EXCAVATION:

- A. Excavation, regardless of material encountered, shall be performed to the lines and grades indicated on the Drawings.
- B. Suitable excavated material shall be transported to and placed in fill areas within the limits of the work. Unsuitable material encountered within the limits of the work shall be excavated below the grade shown and replaced with suitable material as directed by the Engineer.
- C. No material shall be deposited in a manner that may endanger a partly finished structure by direct pressure or by overloading banks contiguous to the operations or that may otherwise be detrimental to the completed

work.

3.2 BACKFILL ADJACENT TO STRUCTURES:

- A. Backfill adjacent to structures shall be placed and compacted uniformly in such a manner as to prevent wedging action or eccentric loading upon or against the structures.
- B. During backfilling operations and in formation of embankments, equipment that will overload the structure in passing over and compacting these fills shall not be used.

3.3 PREPARATION OF GROUND SURFACE FOR FILL:

- A. Areas upon which fills are to be placed shall be properly prepared before the fill is started.
- B. When surfaces on which fills are to be placed do not meet the specified density requirements, the ground surface shall be broken up to a depth of 8 inches, pulverized, and compacted to the specified density.
- C. When surfaces on which fills are to be placed do not meet the specified moisture content requirements, the ground shall be wetted, aerated, or dried to the specific moisture content.
- D. When the subgrade is part fill and part excavation, the excavated portion shall be scarified to a depth of 8 inches and compacted as specified for the adjacent fill.

3.4 FILL:

- A. Fills and embankments shall be constructed at the locations and to the lines and grades indicated on the Drawings.
- B. The material shall be placed in successive horizontal layers of 8" to 12" in loose depth for the full width of the cross section, and compacted.

3.5 COMPACTION:

- A. Compaction shall be accomplished by sheep's-foot rollers, pneumatic-tired rollers, steel-wheeled rollers, or power-driven hand tampers well suited to the soil being compacted. Material shall be aerated or moistened to maintain the required moisture content.
- B. Each layer shall be thoroughly compacted to 95 percent of the maximum density at recommended optimum moisture content, as determined by the soils investigation report and recommendations.

3.6 FINISH GRADING:

- A. Excavated and filled sections, and adjacent transition areas, shall be uniformly smooth graded. The finished surface shall be reasonably smooth, compacted, and free from irregular surface changes.
- B. The degree of finish shall be that ordinarily obtainable from blade-grader operations, except as otherwise specified.
- C. Finished surfaces shall not vary more than 0.10 foot from the established grade and cross section and shall be free of depressed areas where water would pond.

3.7 MEASUREMENT AND PAYMENT:

Unless otherwise stated, no separate payment shall be made for this item. It shall be considered subsidiary to the work for which it applies.

END OF SECTION

PART 1 - GENERAL

1.1 DESCRIPTION:

This section describes requirements for:

- A. The excavation for all structures, backfilling around completed structures and the disposal of all excess excavated material. All operations required for the proper completion of the excavation work, including sheeting, shoring and bracing, dewatering of excavations and compaction of backfill are included.

1.2 RELATED WORK:

- A. Division 2 - Site Work
- B. Division 3 - Concrete.

1.3 REFERENCE STANDARDS:

- A. American Society for Testing and Materials (ANSI/ASTM).
 - 1. ANSI/ASTM C 33 - Standard Specification for Concrete Aggregate.
 - 2. ANSI/ASTM C 40 - Standard Test Method for Organic Impurities in Sands for Concrete.
 - 3. ANSI/ASTM C 136 - Standard Test Method for Sieve or Screen Analysis of Fine and Coarse Aggregate.
 - 4. ANSI/ASTM C 150 - Standard Specification for Portland Cement.
 - 5. ANSI/ASTM D 423 - Standard Test Method for Liquid Limit of Soil.
 - 6. ANSI/ASTM D 424 - Standard Test Method for Plastic Limit and Plasticity Index of Soils.
 - 7. ANSI/ASTM D 698 - Standard Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 5.5-lb. (2.49-Kg) Rammer and 12-in. (305 mm) Drop.
 - 8. ANSI/ASTM D 1557 - Standard Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures using 10-lb. (4.54-Kg) Rammer and 18-in. (457 mm) Drop.

9. ANSI/ASTM D 2049 - Standard Test Method for Relative Density of Cohesionless Soils.

B. U.S. Department of Commerce/National Bureau of Standards. PS-17-Polyethylene Sheeting (Construction, Industrial and Agricultural Applications).

1.4 SUBMITTALS:

Submit in accordance with the requirements of the General Conditions and Division 1 - General Requirements.

A. Testing laboratory reports, as specified or required, to show compliance with specifications for material from off-site locations. The specified tests shall be performed by a certified independent testing laboratory.

1.5 PROTECTION OF FACILITIES:

A. Before the start of excavation operations, adequately protect existing structures, utilities, trees, shrubs and other permanent objects. Costs resulting from damage to permanent facilities due to negligence or lack of adequate protection will be charged to the Contractor. The Contractor will also be charged for damage to facilities scheduled for later removal or demolition if the damage sufficiently impairs proper operation to the extent that temporary replacement or repair is required. Prior to beginning of the project, a joint inspection will be made by the Engineer and Contractor to determine the condition of any existing structures or other permanent objects.

B. Provide surface drainage during the period of construction to protect the work and to avoid ponding of water on adjoining property.

C. The Contractor shall conduct his operations in such fashion that trucks and other vehicles do not create a dirt nuisance in the streets. The truck beds shall be sufficiently tight, and shall be loaded in such a manner that objectionable materials will not be spilled onto the streets. Any dirt, mud, or other materials that are spilled onto the streets or deposited onto the streets by the tires of vehicles shall be promptly cleared away by the Contractor.

1.6 BLASTING:

A. Blasting will not be permitted.

1.7 QUALITY ASSURANCE:

- A. A testing laboratory, as specified in Division 1 - General Requirements, will perform compaction tests on the compacted material. The Contractor shall cooperate with the testing laboratory in performing these tests. The Contractor shall notify the Engineer at least 48 hours in advance of the time at which tests will be required. Any area failing to comply with the specifications shall be reworked as required to conform to the specifications.
- B. Initial testing for work in this section will be random and at the discretion of the Engineer. Re-tests shall be required to be paid for by the Contractor.

1.8 OBSERVATION OF EXCAVATIONS:

- A. Notify the Engineer at least 48 hours prior to completion of any excavation so that the excavation may be observed. Do not place reinforcing steel or concrete in the excavation prior to observation unless approval has been given to proceed without such observation.
- B. Notify the Engineer at least 48 hours prior to backfilling of pipe trenches. Do not begin backfilling of pipe trenches until all pipe joints have been observed or consent has been given to backfill the trenches without such observation.

1.9 DEWATERING:

- A. The Contractor shall provide and maintain adequate dewatering equipment to remove and dispose of all surface and ground water entering excavations, trenches, or other parts of the work. Each excavation shall be kept dry during subgrade preparation and continually thereafter until the structure to be built, or the pipe to be installed therein, is completed to the extent that no damage from hydrostatic pressure, flotation, or other cause will result.
- B. All excavations for concrete structures or trenches which extend down to or below ground water shall be dewatered by lowering and keeping the ground water level beneath such excavations 12 inches or more below the bottom of the excavation.
- C. Surface water shall be diverted or otherwise prevented from entering excavated areas or trenches to the greatest extent practicable without causing damage to adjacent property.

- D. The Contractor will be held responsible for the condition of any pipe or conduit which he may use for drainage purposes, and all such pipes or conduits shall be left clean and free of sediment.

PART 2 - PRODUCTS

2.1 REGULAR NATIVE MATERIAL:

- A. Where no other material is specified or shown, use suitable soils from the excavation. Do not use peat or other organic matter, silt, muck, debris or similar materials. Suitable soils shall be defined as excavated materials that are capable of achieving the required level of compaction specified or shown for the location where it is used.

2.2 SELECT MATERIAL:

- A. Where select material is shown or specified, use clayey sand or sandy clay, from an approved off-site source, free of roots, grass, trash or other organic material, having a plasticity index between 4 and 12, as determined by ASTM D 424. Prior to bringing any of the proposed material to the site, submit, for review by the Engineer, an analysis of the proposed material including, but not necessarily limited to, Atterberg Limits (ASTM D 423 and ASTM D 424) for clays or Grain Size Analysis (ASTM D 422) for sands and gravels and a moisture-density relationship curve (ASTM D 698) by a certified independent testing laboratory employed and paid by the Contractor.
- B. Select Material - (Crushed Austin Chalk Limestone). This select backfill should consist of excavated crushed Austin Chalk Limestone broken sufficiently so that all fragments are less than 6 inches in diameter prior to place in the backfill area.
- C. Crushed Limestone. Crushed limestone shall be Chico limestone from the Bridgeport, Texas area. Granular fills shall be placed on suitably prepared subgrades and compacted. Granular fill material shall be crushed stone free from dust, clay, or trash, and shall be graded to ASTM C33 Size No. 3, aggregate. (Max. nominal size of 1 inch.)

Where crushed stone fills are to be covered with concrete, the top surface shall be graded to the required subgrade and covered with polyethylene film having a minimum thickness of 6 mils.

- D. Washed Gravel. Washed gravel shall consist of hard durable gravel graded from 3/4 inch to No. 4. The material shall be washed to remove any fines and shall not have any sharp edges so as to prevent damage to the protective coatings of the barrels.
- E. Concrete (For fill or thrust blocking). Conform to ASTM C-94. The compressive strength of the concrete shall be at least 2000 psi and shall contain at least four (4) sacks of cement per cubic yard.

2.3 SAND:

- A. Where sand is specified or shown, use reasonably clean bank sand from an approved source. The sand must be free from large lumps of clay, rubbish, organic matter or other deleterious substance, and having a plasticity index of 12 or less.

PART 3 - EXECUTION

3.1 PREPARATION:

- A. Prepare the construction site and area of excavation according to accepted construction practices.

3.2 REPAIR OF CONCRETE PAVEMENT

- A. Concrete pavement.

(1) Subgrade. Scarify to a depth of 6 inches below the indicated depth and recompact to 95 percent maximum density at plus to minus 2% of optimum moisture as determined by ASTM D 698. The recompact subgrade shall be proof-rolled with a pneumatic tired roller in order to detect any soft areas. Soft and wet areas not achieving compaction will require removal and replacement with select material of at least 12 inches compacted thickness. Depressions from stump removal shall be cleaned of all organic matter and filled with select material.

(2) Fill. Upon completion of subgrade preparation, place select material in uniform layers of loose material, 6 to 8 inches in depth, dried or moistened as required to obtain at plus to minus 2% of optimum moisture content, and compact each layer as specified. Fill shall be placed while subgrade

is at its required optimum moisture content range as specified herein.

B. Compaction.

- (1) The subgrade and fill material shall be compacted to a minimum of 95 percent of maximum density at plus to minus 2% of optimum moisture as determined by ASTM D 698. The methods used to secure the specified compaction and moisture content will be the Contractor's responsibility. Wet soils shall be worked by plowing, disking, or scarifying and air drying as required to reduce the moisture content to optimum levels. The Contractor may, at his option, add flue dust or other drying material acceptable to speed up the drying procedure at no change in the contract sum.
- (2) The compacting equipment and method of compaction shall be such that uniform density will be obtained over the entire area and depth of material being compacted. All fill materials deposited in place by scrapers, dump trucks, drag lines or similar equipment shall be thoroughly broken up before being spread into uniform layers.

3.3 EXCAVATION: (AS APPLICABLE THIS PROJECT)

- A. Excavation work shall be unclassified and includes removal of all types of materials encountered without exception. Make excavations to lines and grades indicated on drawings. Complete excavations within the tolerances specified.
- B. Excavate in such a manner to conform to the dimensions and elevations indicated on the drawings for each structure. Extend excavation a sufficient distance from the walls to allow for placing and removal of forms, installation of piping, and for Engineer's observation of work.
- C. Excavation below Water Table. At all times maintain a dewatered surface in all excavations to prevent softening of the subgrades and to prevent excessive settlement of the foundations. Undercut and excavate all soft materials found at subgrade and replace with crushed stone, or concrete as directed by the Engineer at no additional cost to the Owner.
- D. Structures.
 - (1) Wherever practicable, cut all excavations to neat lines with a tolerance of minus 1 inch or plus 3 inches, and place concrete to bear against earth sides.

- (2) Excavate to the elevations shown on the drawings forming a level undisturbed surface free of mud or other soft material. All excavations will be observed. Undercut and excavate to deeper levels when suitable foundation soils are not encountered at the planned depth. Remove all pockets of soft or otherwise unstable material and replace with concrete or with suitable well-compacted material as directed by the Engineer, at no additional cost to the Owner.
- (3) Fill all unauthorized excessive excavation with concrete at no change in the contract sum.
- (4) Protect all open excavations from rainfall or excessive drying so as to maintain the foundation subgrade in a satisfactory, undisturbed condition. Keep excavations reasonably free of water at all times and completely free of water during placement of concrete. Soils below foundation, which become soft, loose or otherwise unsatisfactory for support of the foundation as a result of inadequate excavation, dewatering or other construction methods shall be removed and replaced with satisfactory material at the Contractor's expense.
- (5) Concrete shall be placed in foundation excavations the same day that excavation is completed to final grade. Base of excavations left open for longer periods shall be protected by a seal slab of lean concrete or cement-stabilized sand furnished and placed at Contractor's expense.

3.4 SHEETING AND SHORING:

- A. Except where banks are cut back on a stable slope, excavation for structures shall be properly and substantially sheeted, braced, and shored, as necessary, to prevent caving or sliding, to provide protection for workmen and the work, and to provide protection for existing structures and facilities. Sheeting, bracing, and shoring shall be designed and built to withstand all loads that might be caused by earth movement or pressure and shall be rigid, maintaining shape and position under all circumstances.
- B. In all cases, excavation shall conform to the stricter of the requirements of the Occupational Safety and Health Act of 1970 or the Trench Safety requirements.

3.5 BACKFILL:

A. General

1. Do not begin backfilling until authorization has been obtained from the Engineer.
2. Complete backfill to the surface of natural ground or to the lines and grades shown on drawings. Use regular native material except where special materials are shown or specified. Deposit backfill in uniform layers and compact each layer as specified.

B. Structural Backfill

1. Place backfill as promptly as practicable after completion of each structure or portion of a structure. Do not, however, place backfill against concrete walls or similar structures until concrete has been cured at least 7 days. Where the top of walls are supported by slabs or intermediate walls, do not begin backfill operations until the slab or intermediate walls have been placed and the concrete has cured for a minimum of 7 days. Remove concrete forms before starting backfill and remove shoring and bracing as the work progresses. Take care to prevent any wedging action of backfill against the structure. Step cut or serrate the slopes bounding the excavation as required to prevent wedging. Compact backfill as specified below in sub-section 3.5-D

C. Non-Structural Backfill

1. All other backfill placed outside this area (assuming that no structure or piping will be placed thereon) may be either regular or select material as specified on the plans deposited in layers not to exceed 8" in uncompacted thickness and mechanically compacted to at least 95 percent of maximum density at plus to minus 2% of optimum moisture content as determined by ASTM D698. Compaction of backfill by rolling will be permitted provided the desired compaction is obtained and damage to the structure is prevented. **Compaction of backfill by inundation with water will not be permitted.**
2. The material shall contain no wood, grass, roots, broken concrete, stones, trash, or debris of any kind. No backfill shall be deposited or compacted in water.

D. Compacting Backfill

1. Place material in uniform layers of prescribed maximum thickness and wet or dry the material to approximately optimum moisture content. Compact using mechanical means and methods able to consistently achieve the prescribed required density.
2. Regular and Select Material. Place in 8-inch maximum layers, loose measure. Compact to not less than 95 percent of maximum soil density at plus to minus 2% of optimum moisture content as determined by ASTM D 698.
3. Sand Material. Place in 6-inch maximum layers, loose measure. Compact to not less than 95 percent of maximum soil density at plus to minus 2% of optimum moisture content as determined by ASTM D 2049.

END OF SECTION

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PART 1 - GENERAL

1.1 SCOPE:

Work in this section shall consist of furnishing all equipment, materials and labor for excavation, trenching and backfilling for water distribution mains, water service lines, irrigation system piping, electrical conduit, sanitary sewer system piping, and other utility systems and appurtenances, as applicable this project.

1.2 RELATED WORK:

A. Division 2, Site Work.

PART 2 - PRODUCTS

2.1 EARTH BACKFILL:

Earth backfill shall be free of lumps, stones, trash and spongy or otherwise objectionable material. Approved backfill material may be from the excavation or borrowed.

2.2 SAND:

Obtain bank sand from an approved source. Use sand that is free from clay lumps, organic and other deleterious material, and having a plasticity index of 12 or less.

2.3 SELECT MATERIALS:

Where select material is shown or specified, use clayey sand or sandy clay, from an approved off-site source, free of roots, grass, trash or other organic material, having a plasticity index between 6 and 15 with a maximum liquid limit of 30, as determined by ASTM D-4318.

PART 3 - EXECUTION

3.1 EXCAVATION:

A. Procedure. Excavate to indicated or specified depths.

1. Excavate by open cut with trenching machine or back hoe. Where machines other than ladder or wheel type trenching machines are used, do not use excavated material composed of large chunks or clods for backfill, but dispose of such material and provide other suitable material for backfill without additional expense.

2. During excavation, pile material suitable for backfilling in an orderly manner far enough from the bank of the trench to avoid overloading, slides or cave-ins.
3. Remove from site, or waste as indicated, all excavated materials not required or suitable for backfill.
4. Grade as necessary to prevent surface water from flowing into trenches or other excavations.

B. Trench Excavation

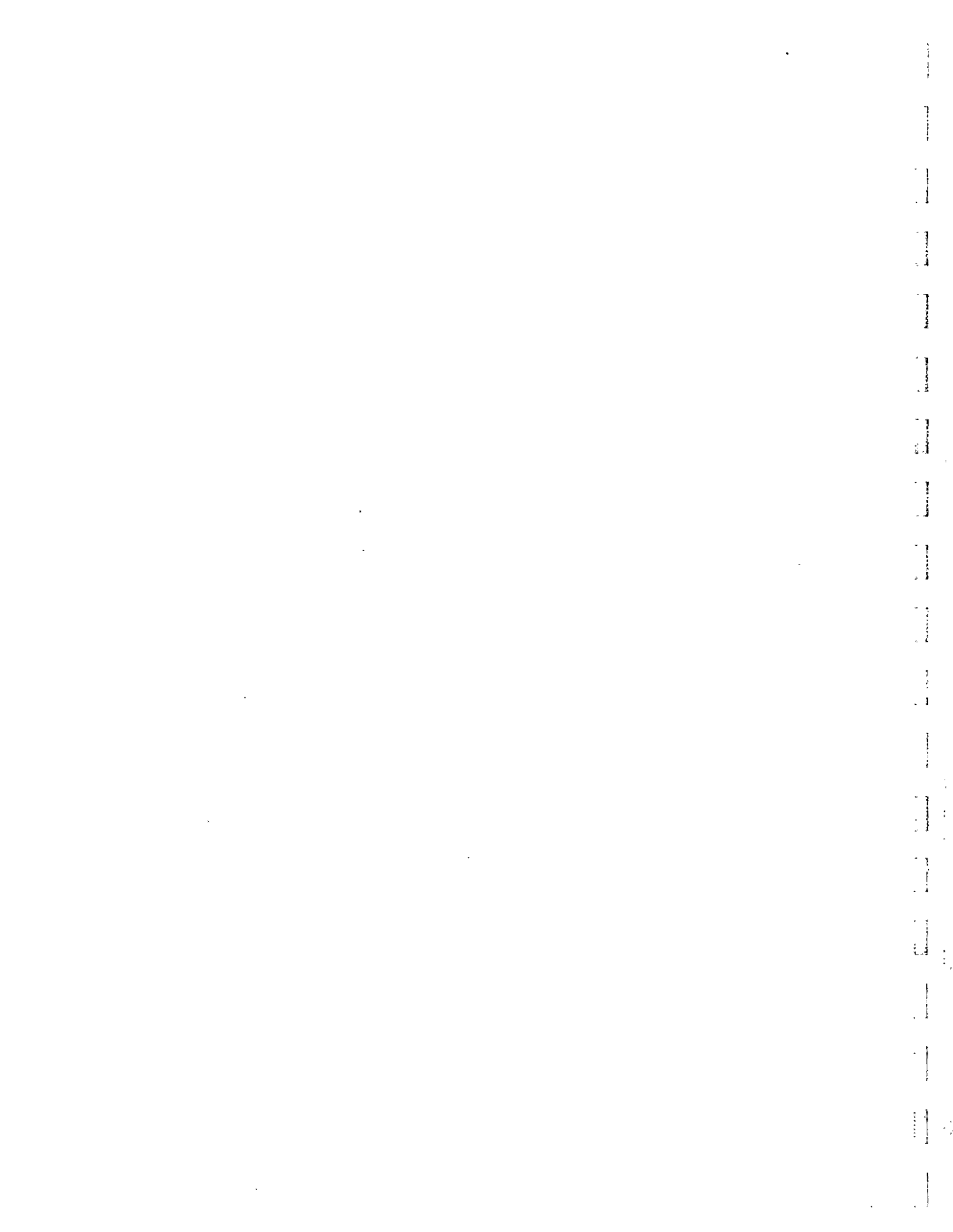
1. Cut banks of pipe trench as nearly vertical as practical. Remove stones as necessary to avoid point-bearing. Overexcavate wet or unstable soil from the trench bottom to permit construction of a more stable bed for pipe.
2. Dig the trench the proper width as shown. If the trench width below the top of pipe is wider than specified in this section or shown on the plans, then the Contractor shall install higher class of pipe and/or improved bedding as determined by the Engineer. No additional payment will be made.
3. Accurately grade the trench bottom to provide uniform bearing and support for each section of pipe on undisturbed soil at every point along its entire length, except where necessary to excavate for bell holes and for proper sealing of pipe joints. Dig bell holes and depressions for joints after the trench bottom has been graded. Make bell holes and depressions for joints no deeper, longer or wider than needed to make the joint properly.
4. Do not overexcavate. If any excavation is carried beyond the lines and grades required or authorized, the Contractor shall, at his own expense, fill such space with concrete or other suitable material as directed by the Engineer. No additional payment will be made.

- C. Water in Excavation. The Contractor shall, at all times, take such precautions as are necessary to keep the work free from ground or surface water. Pumps of adequate capacity or other approved method shall be provided to remove water from the excavation in such a manner that it will not interfere with the progress of the work of the proper placing of other work.

3.2 BACKFILLING:

- A. Do not backfill trenches until all required pressure tests are performed and utility systems as installed conform to specified requirements of appropriate sections. Backfill trenches to ground surface with selected material. Reopen trenches improperly backfilled to depth required for proper compaction. Refill and recompact as specified, or otherwise correct the condition in an approved manner.
- B. In the pipe zone, place backfill evenly and carefully around and over pipe in layers no thicker than 6 inches. Compact with hand tampers to 95 percent maximum density as determined by ASTM D 698, until there is a cover of not less than 1 foot over pipe lines. Use selected backfill material of optimum moisture content.
- C. Above the pipe zone, deposit backfill in 8 to 12 inch layers. Compact each layer to 95 percent maximum density at or slightly above optimum moisture as determined by ASTM D 698.
- D. No jetting of backfill will be allowed.

END OF SECTION



PART 1 - GENERAL

1.1 SCOPE:

- A. Provide 4-inch-thick, 3000 psi @ 28 days, reinforced concrete sidewalks in conformity with the lines, grades and details shown on drawings. Construct on an approved sand bed. All details shall be in accordance with the Town of Addison sidewalk ordinance, if different than indicated this section.

PART 2 - PRODUCTS

2.1 CONCRETE:

Provide materials and proportions for concrete and reinforcing steel which conform to the applicable requirements of the section on Concrete.

2.2 EXPANSION JOINT FILLER:

Preformed bituminous type conforming to ASTM D 994, having thickness of 3/4-inch unless otherwise shown on the drawings, or redwood boards, nominally 1" in thickness.

2.3 SAND BED:

Obtain bank sand from an approved source. Use sand that is free from clay lumps, organic and other deleterious material, and having a plasticity index of 12 or less.

PART 3 - EXECUTION

3.1 PREPARATION:

- A. Subgrade. Excavate subgrade 6 inches beyond the outside lines of the sidewalk. Shape to the line, grade and cross section. Compact the subgrade to a minimum of 95% of maximum dry density per ASTM D698.
- B. Sand Bed. Immediately after subgrade is prepared, cover with a 2-inch-thick compacted sand bed. Place concrete when sand is moist.
- C. Forms. Use wood or metal forms with the proper section. Select pieces which are straight, unwarped and nominally 4 inches deep. Securely stake forms to line and grade and maintain in true position during concrete placement.

3.2 REINFORCEMENT:

Install No. 3 reinforcing steel bars on 24-inch centers longitudinally and across the walk. Lay longitudinal bars in walk continuously, except through expansion joints. During concrete placement, see that reinforcement is in the approximate center of the slab, by use of plastic "chairs".

3.3 EXPANSION JOINTS:

Provide 3/4-inch expansion joints along and across the sidewalk at intervals of 20 feet or less throughout the entire length of the sidewalk. Extend the expansion joint filler the full depth of the slab and the entire width of the walk.

3.4 PLACING AND FINISHING:

- A. Placing. Place the concrete in forms to the specified depth and tamp thoroughly with a "jitterbug" tamp to bring the mortar to the surface.
- B. Finishing. Strike off to a smooth finish with a wood strike board. Finish smoothly with a wood hand float. Brush across the sidewalk lightly with a fine-haired brush.
- C. Tool Joints. Unless otherwise shown on drawings, mark off walks 1/4 inch deep, at spacing equal to the width of the walk. Use a joint tool as wide as an edging tool. Finish the edges with a tool having 1/4-inch radius.

3.5 CURING AND PROTECTION:

Cover the sidewalk with burlap or suitable cotton mats. Keep the cover wet for 48 hours after the burlap or mats are placed. Commence curing as soon as the concrete has hardened sufficiently to be unmarked by the method of curing. Instead of sprinkling, membrane curing methods may be used. Protect sidewalks from traffic for 48 hours after pouring.

3.6 BACKFILLING:

After the concrete has set sufficiently, refill the space along the sides of the sidewalk to the top of the walk with suitable material. Tamp until firm and solid.

END OF SECTION

PART 1 - GENERAL

1.1 DESCRIPTION:

- A. This item shall govern for all materials and work necessary for furnishing and installing all utility mains of the type specified, and any and all distribution lines as shown on the plans, including all sheeting, shoring, excavation, dewatering, pipe laying, jointing, testing, backfilling, and any other work that is required or necessary to complete the installation as shown on the plans and as specified herein.
- B. The Contractor shall be responsible for all materials furnished to him by his material suppliers and shall replace at his expense all such materials that are found to be defective in manufacture or that are damaged in handling.
- C. The Contractor shall install piping to meet all applicable standards. The contractor shall provide manufacturer's certificate that materials meet or exceed minimum requirements as hereinafter specified.

1.2 RELATED WORK:

- A. Section 02615 - Cast Iron and Ductile Iron Pipe

PART 2 - PRODUCTS

2.1 GENERAL:

- A. All phases of this project shall be installed using the materials designated on the plans and as specified herein. All materials shall be new and meet the following minimum specifications.

2.2 POLYVINYL CHLORIDE WATER PIPE AND FITTINGS (PVC):

- A. Unless otherwise specified on the plans, 1/2 inch PVC pipe shall be Class 315, 3/4 inch or larger PVC shall be Class 200. All thermoplastic PVC pipe shall fulfill the requirements of ASTM D2241, Class 200, DR 14.
- B. Where specified on the plans, Schedule 40 PVC pipe shall be PVC 1120 and shall meet requirements of ASTM D 1785.
- C. PVC, DR 14, shall meet or exceed requirements of AWWA C-900, latest revision, with cast iron outside dimensions and with rubber ring bell joint which shall be an integral and homogeneous part of the pipe barrel

conforming to ASTM D 3139, latest revision. Rubber gaskets shall conform to ASTM F 477.

- D. PVC water pipe shall be listed by Underwriter Laboratories and approved for use in cities and towns of Texas by the State Board of Insurance.
- E. The rigid PVC pipe shall bear the seal of approval (or "NSF" mark) of the National Sanitation Foundation Testing Laboratory for potable water pipe.
- F. Pipe shall be made from NSF approved Class 12454-A or B PVC compound conforming to ASTM D 1784 resin specification.

2.3 CAST IRON PIPE/DUCTILE IRON PIPE AND FITTINGS (C.I.P.) (D.I.P.):

- A. Unless otherwise specifically shown on the plans, or approved in writing, shall conform to ANSI A21.51 (AWWA C151, latest revision), 200 psi working pressure, and shall be centrifugal cast pipe of rubber gasket type joint, furnished in 16' or 18' nominal laying lengths. All such pipe shall bear a mark denoting approval by the Underwriters Laboratories.
- B. Cast iron pipe under these specifications shall have a tensile strength of 21,000 lbs. per square inch and 45,000 lbs. per square inch modulus of rupture. All such pipe shall be manufactured in accordance with ANSI "Manual for Thickness Design of Cast Iron Pipe", and shall be designed for 200 lbs. water working pressure, 12 feet of cover, and field condition B.
- C. Ductile iron pipe shall be manufactured from metal having a minimum tensile strength of 60,000 lbs. per square inch, a minimum yield strength of 40,000 lbs. per square inch and a minimum elongation of 18 percent (60-40-18), and shall meet all requirements of AWWA Specification C150 and C151, latest revision, Class 56.
- D. Joints for cast iron or ductile iron pipe shall be:
 - 1. Push-on joint with rubber gasket conforming to ANSI A21.11 (AWWA C111) of latest revision, or
 - 2. Mechanical joint conforming to ANSI A21.11 (AWWA C111) of latest revision, or
 - 3. Bell and spigot joints conforming to ANSI A21.11 (AWWA C111), of latest revision, or
 - 4. Flanged joint conforming to ANSI/AWWA -

C110/A21.10, 250 psi working pressure, drilled and faced to match ANSI B-16.1, 125# Class.

- E. Fittings for cast iron or ductile iron pipe shall be rated for a minimum of 250 psi working pressure and shall be: (shown on plans)
1. Mechanical joint fittings conforming to ANSI A21.11 (AWWA C111), of latest revision, or
 2. Bell and spigot fittings, conforming to ANSI A21.11 (AWWA C111), of latest revision.
 3. Flanged fittings, 250 psi working pressure, conforming to ANSI A21.10 (AWWA C110), with rubber ring gaskets, drilled and faced to match ANSI B-16.1, 125# Class.
- F. All ductile iron pipe shall have a standard thickness of cement mortar lining as specified in ANSI A21.4, latest revision (AWWA C104), except for flanges, which will receive an inside tar coating in place of the cement mortar lining.
- G. All ductile iron pipe, valves, and fittings shall be coated on the outside with hot dipped coal tar varnish conforming to Federal Specification WW-P-421 or, in lieu of coal tar coating, polyethylene encasement may be used for ductile iron pipe in accordance with ANSI/ASTM C 105/A21.5 latest revision. The film shall have a minimum nominal thickness of 0.008 inches (8 mils.).
- H. Bolts and nuts for mechanical joints or flanged ends shall be of a high-strength low-alloy corrosion-resistant steel and shall conform to ASTM Designation A 325 (Type 3).

2.4 POLYVINYL CHLORIDE (PVC) SEWER PIPE AND FITTINGS:

- A. All pipe and fittings shall be suitable for use as a gravity sewer conduit and shall conform to ASTM D3034 (SDR 35), latest revision, minimum pipe stiffness, 46 psi. Pipe shall be similar to Certaineed Fluid-Tite PVC pipe, Johns-Manville Ring-Tite PVC Gravity Sewer Pipe, or approved equal.
- B. Joints for PVC sewer pipe shall be integral bell gasketed joint designed so that when assembled, the elastomeric gasket inside the bell is compressed radially on the pipe spigot to form a positive seal.

The joint shall be so designed to avoid displacement of the gasket when installed in accordance with the manufacturer's recommendation. Joints shall conform to ASTM D3212, latest revision. Gaskets shall conform to ASTM F477, latest revision.

2.5 DUCTILE IRON SEWER PIPE AND FITTINGS: (IF APPLICABLE)

- A. Ductile iron gravity sewer pipe shall conform to ASTM A746, latest revision. ANSI A21.51 or AWWA C151, latest revisions, Class 52.
- B. Joints for ductile iron pipe shall be:
 - 1. Mechanical joint, conforming to ANSI A21.11 (AWWA C111) of latest revision, or
 - 2. Push-on joint, with rubber gasket as described in ANSI A21.11 (AWWA C111) latest revision.
- C. Cement-mortar lining shall conform to ANSI A21.4.

PART 3 - EXECUTION

3.1 SCOPE:

- A. The work to be performed under this section shall include all labor, materials, equipment, transportation, all excavation, installation, and all backfill, testing and facilities necessary for proper installation of all water lines, and all distribution lines as shown on the plans, and/or as herein specified.
- B. All lines shall be constructed from the utility mains, shown on the drawings or connecting to utility service lines. The contractor shall be responsible to check all elevations of inverts of existing pipes before construction of station piping or mains.
- C. Utility extension, rerouting and connection costs shall be paid and arranged for by contractor. All costs involved in extending, rerouting and connecting the utilities whether or not part of the work must necessarily be performed by the various utility company crews shall be paid by this contractor. Any charges for connections to mains, valving, extending to property line or building, furnishing equipment, etc., shall be paid for as a part of the work of this section. Regardless of whether the Owner may have to sign with the utility company for any or all of these services, the contractor shall include in his bid all fees, city inspection charges, permit charges, work

charges, etc., and shall be ready to deposit with the utility company said fees when required at time of Owner's signing for same.

- D. All welding operations shall be in strict accordance with AWWA C206 and AWS D1.1, Structural Welding Code.

The Contractor shall submit qualification test results for all welders prior to commencing construction.

3.2 EXISTING SITE CONDITIONS:

- A. Existing Utilities: Locations and sizes of existing utilities as shown on the drawings are based on the best available information and may not be entirely correct. Exact location, depth and size must be verified by the contractor in the field. Additional compensation will not be allowed if damage to the utilities results because of minor discrepancies between locations shown on the drawings and actual field locations. Relocation of utilities in place shall be done whether or not such work is specifically shown on the drawings.
- B. Any existing utilities that may be shown on the drawings or the location of which is made known to the contractor prior to excavation shall be protected from damage during the excavation and backfilling of trenches and, if damaged, shall be repaired by the contractor at his expense.
- C. Any existing utility that is not shown on the drawings or the location of which are not known to the contractor in sufficient time to avoid damage, if inadvertently damaged during excavation, shall be immediately repaired by the contractor due to the existence of utilities that are not shown on the drawings or the location of which is not known to the contractor at the time of bidding.
- D. Any existing utility lines and services shall be maintained at all times, except for such short periods of time as may be necessary to actually make connections to new work to the existing system. When it is necessary to temporarily interrupt service for the above purpose, such shall be done only at such date and time as may be established in advance by the Engineer. Those lines shown on the drawings to be abandoned or removed shall not be abandoned or removed until after it has been determined that they are no longer required for service and until such action has been approved by the Owner and the Engineer.

3.3 LINES, GRADES, STAKES AND TEMPLATES:

- A. The Contractor shall, at his own expense, furnish all stakes, templates, patterns, platforms and labor, including a person qualified to lay out all of the work.
- B. The engineer will furnish, upon request from the Contractor, limit marks and bench marks reasonably necessary for the execution of the work.
- C. It shall be the Contractor's responsibility to protect these limit marks and bench marks set by the Engineer. Should the marks become destroyed or damaged, the cost of their replacement will be at the Contractor's expense.
- D. The Engineer may furnish a representative to check alignment and grade, after it has been laid out ready for construction; however, this will in no way lessen the responsibility of the Contractor to see that grade and alignment are correct at all times.
- E. The lines and grade of the piping, as well as the location of valves, tees, meters and all other appurtenances, will be as shown on the plans or as directed by the Engineer.
- F. The Engineer reserves the right to indicate which phases of the project will receive priority in construction.
- G. The Contractor shall give the Engineer a minimum of forty-eight (48) hours notice for any engineering or inspection necessary to continue or complete the work.
- H. No deviation shall be made from the required line or grade without written approval from the Engineer.

3.4 EXCAVATION:

- A. The Contractor shall perform all excavation that may be required for the installation of any and all parts of this section.
- B. All excavations shall be made by open cuts except as shown on the plans. The sides of the trench shall be kept as nearly vertical as possible, especially from the trench floor to a level on one (1) foot above the top of the pipe. Trench bottoms shall not be less than 12 inches wider nor more than 16 inches wider than the outside diameter of the pipe laid therein, and shall be excavated true to line, so that clear space of not less than 6 inches nor more than 12 inches in width is

provided on each side of the pipe. The bottom of trenches shall be accurately graded to provide uniform bearing and support for each section of pipe or undisturbed soil at every point along its entire length, except for positions of the pipe sections where it is necessary to excavate for bell holes. Bell holes shall be excavated only to an extent sufficient to permit accurate work in the making of the joints and to insure that the pipe, for a maximum of its length, will rest upon the prepared bottom of the trench. The bottom of all trenches shall be rounded so that at least one-fourth (1/4) of the circumference of the pipe rests firmly on undisturbed soil. If the Contractor should, be error, excavate below the proper elevation for the bed of the pipe or should he desire to substitute an approved granular backfill, properly tamped, for supporting the pipe to the same extent as the shape trench bottom, then the Contractor must bring the trench bottom to the proper grade by refilling, at the Contractor's expense, with an approved granular backfill. This backfill material shall be sand or fine gravel that does not contain large rocks or other deleterious materials and should be placed so that it is at least 6 inches deep below the bottom and so that the lower one-third (1/3) of the pipe is uniformly supported on undisturbed soil.

- C. All excavation shall be placed on one side of the trench, unless permission is given by the Engineer to place it on both sides. Excavated materials shall be placed so as not to endanger the work, and so that free access may be had at all times to all parts of the trench.
- D. The Contractor shall provide, without additional compensation, suitable temporary channels for the water that may flow along or across the site of the work. Any water pumped from the trenches, or other excavations, must be disposed of in a manner satisfactory to the Engineer.

3.5 BRACING AND SHORING:

- A. The Contractor shall, when necessary or when directed by the Engineer, furnish, put in place, and maintain all without additional compensation, such sheeting, bracing, etc., as may be required to support the sides of the excavation and to prevent any movement which can in any way damage adjacent pavement or other structures, damage or delay the work or construction, or endanger life and health. Care shall be taken to prevent voids outside the sheeting, but, if voids are formed, they shall be immediately filled and rammed to the satisfaction of the Engineer.

- B. For the purpose of preventing injury to persons, corporations or property, whether public or private, (where the liability for damage on account of which is to be assumed entirely and solely by the Contractor under this contract) he may also leave in place, to be embedded in the backfill of the trench any and all sheeting, bracing, etc., in addition to that ordered in writing by the Engineer to be left in place.
- C. All voids left by the withdrawal of sheeting shall be immediately refilled and compacted by ramming or otherwise, as may be directed.
- D. The right of the Engineer to order sheeting and bracing left in place shall not be construed as creating an obligation on his part to issue such orders; and his failure to exercise his right to do so shall not relieve the Contractor from liability or damages to persons or property, occurring from or upon the work of constructing the sewer occasioned by negligence or otherwise, growing out of the failure of the Contractor to leave in place in the trench sufficient sheeting and bracing to prevent any caving or moving of the ground adjacent to the banks of the trench.

3.6 DEWATERING:

The Contractor shall at all time during construction, provide and maintain ample means and devices with which to promptly remove and properly dispose of all water entering the pipe trenches or excavations, and keep said excavations dry until the structures are poured and the concrete has set. No pipes shall be laid, nor pipe joints made, in water; nor shall water be allowed to rise over masonry or mortar until the concrete or mortar has set at least twenty-four (24) hours.

3.7 BEDDING MATERIAL:

- A. Six inches of granular material shall be used to receive the pipe barrel and each pipe section, when in place, shall have a uniform bearing on the granular material for the full length of the pipe barrel. Pipe shall not be laid unless the granular material is free of water and in a condition satisfactory to the Engineer. Adjustments of the pipe to line and grade shall be made by scraping away or filling in with gravel, or approved selected material, and not by wedging or blocking up the bell. After pipe is in place, 12" of select material shall be placed above the pipe prior to backfilling with native material.

- B. Bedding material will not be measured or paid for as a separate item. The cost thereof will be included in the unit price bid.
- C. In no case will extra compensation be allowed for furnishing any bedding material required to complete the installation of pipe.

3.8 PROTECTION AND INSTALLATION:

- A. Care and precautions shall be taken to prevent the introduction of foreign materials into the existing system. Well fitted stoppers or bulkheads shall be securely place in all openings and in the end of the line when construction is stopped temporarily and at the end of each day's work. It shall be the responsibility of the Contractor to deliver to the Owner a pipeline which is clean throughout its entire length.
- B. Bell holes of ample size shall be cut under and around all joints to provide adequate room for making joints and to assure that the barrel of the pipe rests uniformly and in continuous contact with the supporting ground for its entire length.
- C. Water will not be permitted in the trenches while the pipe is being laid. The Contractor shall not open up more trenches than the available pumping facilities are able to dewater to the satisfaction of the Engineer.
- D. A tolerance of 1" from the established grade may be permitted, if approved by the Engineer, in order to prevent excessive breaks in alignment at the joints to such an extent that the joints cannot be properly made.
- E. The interior of the pipe shall be clean and joint surfaces shall be clean and dry when the pipe is lowered into the trench. Each pipe, fitting, and valve shall be lowered into the trench carefully and laid true to line and grade.
- F. All joints shall be made in strict accordance with the manufacturer's specifications.

3.9 THRUST BLOCKS:

- A. 2000 psi concrete shall be placed for blocking at each change in direction of all pressure pipelines in such manner as will substantially brace the pipe against undisturbed trench walls. Concrete blocking, made from Type 1 cement, shall have been in place four days prior to testing the pipeline as hereinafter specified. Test

may be made in two days after completion of blocking if Type III cement is used.

- B. At all points where wet connections are made to existing, mains, the tapping connection fittings shall be supported by blocking up to the spring line with 2000 psi concrete.
- C. All valves shall be supported by a 2000 psi concrete pad, 6 inches thick and of sufficient size to rest against undisturbed earth, unless shown otherwise on plans.

3.10 CONNECTIONS AND APPURTENANCES:

- A. The Contractor shall make the alterations and the necessary connections to existing water mains as shown on the plans. Such connections shall be made at such times and in a manner that will be agreeable to the Owner in each case, when the work is started, it shall be prosecuted expeditiously and continuously until completed.
- B. Where it is necessary or indicated in the plans, connections to existing mains under pressure shall be made by tapping connection fittings. Where it is possible to valve off the section of existing main where the connection is to be made, the Contractor may have the option of either connecting by means of tapping connection fittings or by cutting the main and using standard fittings.
- C. Tapping sleeves, crosses and valves shall be of standard manufacture and mechanical joint type to fit AWWA pipe specifications in Classes A, B, C, and D. Tapping sleeves and crosses shall be designed for minimum working pressure of 200 pounds per square inch. Connecting flanges on tapping sleeves, crosses and valves shall be ASA Class 125. Tapping valves shall be designed for minimum working pressure of 200 pounds per square inch.

3.11 CLEANUP:

- A. In areas where the piping has been backfilled, the Contractor shall clear the surrounding ground, and shall dispose of all waste materials and debris resulting from his operations. He shall fill and smooth over holes and ruts and shall repair all miscellaneous and unclassified ground damage done by him, and shall restore the ground to such stable and usable conditions as may reasonably be required, consistent with the conditions of the ground prior to the laying of the piping.

3.12 TESTING OF WATER LINES:

- A. After all pipe is installed and flushed of dirt and foreign material, the pipe shall be filled with water, care being exercised to expel all air from the pipe. During the test period, pipe, valves, meter, fittings, and joints shall be carefully examined for defects.
- Any observed leaks or defective pipe shall be satisfactorily repaired or replaced at the expense of the Contractor and the test repeated until the section under test is within the limits prescribed. All new piping or parts thereof shall be tested under hydrostatic pressure of 150 pounds per square inch, for a period of two hours if joints are exposed, or for a twenty-four (24) hour period if joints are covered, or as directed by the Engineer.
- B. Care shall be taken to insure that water mains existing prior to this contract are not pressure tested. Any old mains damaged by pressure testing shall be repaired at the expense of the Contractor.
- C. Leakage shall be measured by an approved calibrated meter through which all of the water required to maintain test pressure is pumped.
- D. All testing shall be performed in the presence of the Engineer.
- E. The Contractor shall furnish the pump, pipe, connections, closure fittings, gauges meters, water and all other necessary apparatus and shall furnish all labor and do all work required to make the tests. All costs of testing shall be borne by the Contractor.
- F. Testing operations shall remain in operation for a minimum of two (2) hours or until approved by the Engineer. For cast iron, ductile iron, PVC, and PCCP pipe, the allowable leakage shall not exceed 11.65 gallons of water per day per mile of pipe per inch of nominal diameter, for pipe in 18 foot lengths when evaluated at a pressure of 150 psi in accordance with AWWA C600, Section 4. There shall be no allowable leakage from steel pipe. No allowance will be made for possible leakage through any valve without the Engineers approval. If the line under test contains sections of various diameters, the allowable leakage will be the sum of the computed leakage for each size.
- G. Any and all known leaks shall be stopped regardless of the test requirements.

3.13 DISINFECTION:

- A. After completion of the installation, the water lines shall be thoroughly flushed out to remove dirt and foreign matter, hydrostatically tested, and then be sterilized in accordance with the requirements of the Texas Department of Health and AWWA C601.
- B. When the piping is sterilized, at least two (2) samples of water shall be extracted from the system for examination by the Texas Department of Health to determine whether the system is free of organisms of the Coil-Aerogenes group. If the samples submitted do not show negative for such organisms, the piping shall be disinfected and reinfected by the Contractor in accordance with the requirements of the Texas Department of Health until the system is free of contamination. All materials and labor required for complete sterilization of the piping shall be furnished by the Contractor at no additional expense to the Owner.

3.14 MEASUREMENT:

A. PIPING

Piping, fittings, and flanges will be measured for payment. The cost of these items shall be included in the Contract Unit Price for the item. This item includes all nuts, bolts, gaskets, and other incidentals needed for completion of the project as specified on the plans.

3.15 PAYMENT:

Payment for Piping will be included in the Contract Unit Price, which price shall constitute full compensation for furnishing all pipe, pipe joints, fittings, specials and all other materials not particularly specified; for furnishing all labor, tools, equipment and incidentals and performing all work including preparation of right-of-way, excavation, pipe installation, painting, backfill (where required), testing, sterilization, cleanup and any other operations essential to completing the work as shown on the Contract Drawings.

END OF SECTION

PART 1 - GENERAL

1.1 SCOPE:

Ductile iron pipe, fittings and specials are to be installed at the line and grade shown on the plans and as specified in these Contract Documents.

1.2 RELATED WORK:

- A. Section 02610 - Pipe and Fittings
- B. Section 02221 - Excavation, Trenching and Backfilling for Utilities.

PART 2 - PRODUCTS

2.1 MATERIALS:

- A. For description of designated materials to be used on this project, see Section 02610.

PART 3 - EXECUTION

3.1 PIPE HANDLING:

- A. All pipe, fittings and specials shall be lowered into the trench by derrick, tripod, crane or other suitable method. Rolling or dumping it into the trench will not be permitted. Pipe and fittings shall be handled in such a manner as not to damage the coating. All dirt and trash shall be removed from the barrel and the ends of the pipe while it is suspended. Slings shall be used to handle all pipe and fittings; no hooks will be permitted.
- B. Where it becomes necessary to deflect the pipe to avoid obstruction the deflection of each joint must be approved by the Engineer.
- C. The pipe is to be kept clean during the laying operation and free of all dirt and trash and, at the close of each operating day, the open end of the pipe is to be effectively sealed against the entrance of all objects and, especially, water.

3.2 JOINT-MAKING:

The types of joints to be used for the various sizes of pipes will be as specified in Section 02610, Pipe and Fittings. The methods of making each type of joint will be as follows:

A. Mechanical Joints:

The Contractor shall wire brush and thoroughly clean the surfaces with which the gasket comes in contact on the bell and spigot. The cleaned surfaces of the bell and spigot shall then be lubricated with a nontoxic vegetable soap lubricant just prior to slipping the gasket over the spigot end and into the bell. The follower ring shall then be bolted into compression against the gasket, with the follower bolts tightened to the following torque range:

<u>Bolt Size in Inches</u>	<u>Range of Torque in Foot Lbs.</u>
5/8	40 - 60
3/4	60 - 90
1	70 - 100
1-1/4	90 - 120

A torque indicating wrench shall be used to obtain the specified torque range. The gland shall be tightened toward the flange, maintaining approximately the same distance between the gland and the face of the flange at all points around the socket. If effective sealing is not attained at the maximum torque indicated above the joint shall be disassembled and reassembled after thorough cleaning. Overstressing of bolts to compensate for poor installation practice will not be permitted.

B. Slip-On Joints:

Slip-on joints, such as Tyton, Bell-Tite, or Fastite, shall be made in the following manner. The gasket and the gasket seat inside the bell shall be wiped clean of all extraneous matter. Place the gasket in the bell in thin film of nontoxic vegetable soap lubricant to the inside of the gasket and the outside of spigot prior to entering the spigot into the bell. Force the spigot home in the bell by use of a crow bar or a fork tool on sizes 2 inches through 8 inches or by use of a jack on sizes 10 inches and larger. When using a field cut plain end piece of pipe taper the outside cut end of the pipe about 1/8 inch back at an angle of 30 degrees with a portable grinder or a coarse file before making up joint.

C. Flanged Joints:

Flanged connections shall be made by means of erection bolts and drift pins without undue forcing and with no restraint on the ends of the pipe or fitting which would prevent pressure from being evenly and uniformly

applied to the gasket. The pipe or fitting must be free to move in any direction while bolting. Bolts shall be gradually tightened, each in turn, at a uniform rate around the entire flange. Flange bolts shall be installed with all bolt heads in one direction.

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PART 1 - GENERAL (To be used for water line lowering)

1.01 SCOPE

This section covers Pretensioned reinforced concrete pipe with a steel cylinder and steel fittings lined and coated with concrete or mortar, to be furnished and installed as shown on the drawings.

Pipe shall be furnished and installed complete with all jointing materials and accessories, anchors and blocking, and other necessary appurtenances, in accordance with AWWA Manual M-9 - "Installation of Concrete Pipe".

1.02 GOVERNING STANDARD

Except as modified or otherwise provided herein, the manufacture of pretensioned concrete cylinder pipe shall be governed by AWWA C303-78. The supplementary information required in the foreword of the governing standard is as follows:

Tabulated Layout Schedule (Sec. 1.5.2)	Required.
Identification Marks (Sec. 1.6)	Required.
Steel Test Reports & Specimens (Sec. 1.9.3) and (Sec. 1.9.4)	Not required.
Rubber Gasket Test Results (Sec. 1.9.5)	Not required.
Affidavit of Compliance (Sec. 1.10)	Required.
Concrete Aggregate Samples (Sec. 2.2.3)	Not required.
Design Calculations (Sec. 3.2.1)	Required.
Welding Details (Sec. 3.5.2)	Not required.
Specials and Fittings (Sec. 4.1)	As specified herein.
Structural Steel Connections (Sec. 4.2.3)	Interior lining required.

1.03 THRUST RESTRAINTS

In lieu of concrete thrust blocks, contractor shall weld joint rings, designed to resist thrust of test pressures, or minimum 200 p.s.i.

PART 2 - PRODUCTS

2.01 MATERIALS

Unless otherwise specified herein, all materials used in the manufacture of pipe, fittings, and accessories shall conform to AWWA C303-78.

- | | |
|--------------------------|---|
| A. Fine Aggregate | Clean natural sand, ASTM C33. Artificial or manufactured sand will not be acceptable. |
| B. Gaskets | AWWA C303, Sections 2.8 and 3.4, except polymer shall be synthetic rubber. Natural rubber will not be acceptable. |
| C. Joint Diapers | |
| 24 Inch Pipe and Smaller | Cotton or fiberglass fabric with wire in hems or burlap fabric with steel strap in hems, at least 7 inches wide. |
| 30 Inch Pipe and Larger | Burlap or fiberglass fabric with steel strap in hems, at least 9 inches wide. |
| D. Flanges | AWWA C207. |
| E. Joint Harness | |
| Bolts | ASTM A193, Grade B7. |
| Nuts | ASTM A194, Grade 2H. |

2.02 BASIS OF DESIGN

- A. Design Criteria. All pipe, fittings and specials shall be designed for a combination of the following internal, external and surge pressures:
1. Internal Pressure: 150 psi minimum or higher as indicated in Pipeline Schedule.
 2. External Pressure: 6.0 feet of cover minimum or such greater pressures and earth loads as shown on the drawings.

B. Inspection and Testing.

1. Shop Inspection. When specified in Job Conditions, pipe, fittings and specials will be inspected at the manufacturer's plant by the Owner's Agent. The costs of such inspection will be paid by the Owner.
2. Shop Visits. The Owner's Agent shall at all times have free access to the manufacturer's plant while production is in progress.
3. Shop Testing. In accordance with the requirements of AWWA C303, Section 1.9. Pipe manufacturer shall provide copies of mill test reports, steel specimens, gasket rubber and related test reports when requested by Owner's Agent.
4. Shop Welding. Manual-welding operators shall be qualified under Section IX, Part A, of the ASME Boiler and Pressure Vessel Code.
5. Inspection by the Owner's Agent, or failure to provide inspection, shall not relieve the Contractor of his responsibility to provide materials and perform the work in accordance with the specifications.

C. Pipe Rejection. Pipe may be rejected for failure to meet any of the following items:

1. If adequate means and methods are not provided so as to insure the manufacture of a product of uniform quality.
2. A piece broken out of the pipe.
3. Any crack extending entirely through the barrel of the pipe or to the steel cylinder or rods.
4. Any shattering or flaking of concrete at a crack.
5. Any excessive surface cracking due to temperature conditions. Pipe manufacturer shall control these cracks by adequate concrete mix, curing or preservation of moisture in pipe interior during yard storage and shipment to job site.

D. Reference Standards

1. Specifications of the American Water Works Association (AWWA) listed below shall apply to this Section:

C-207	Steel Pipe Flanges
C-303-78	Pretensioned Concrete Pressure Pipe, Steel Cylinder Type, For Water and Other Liquids

2. Specifications of the American Society for Testing and Materials (ASTM) listed below shall apply to this Section:

A194	Carbon and Alloy Steel Nuts for Bolts for High Pressure and High Temperature Service
A325	Specification for High-Strength Bolts for Structural Steel Joints, including Suitable Nuts and Plain Hardened Washers

2.03 FITTINGS AND SPECIALS

In addition to straight pipe, all bends, tees, adapters, closure pieces, blowoff fittings, and other fittings or specials shall be furnished as indicated on the drawings or required to complete the work. Except as modified or otherwise provided herein, the design and manufacture of fittings and specials shall be governed by the same requirements as the connecting piping.

- A. Connections. Connections to concrete pipe shall be of the types indicated on the drawings. The following requirements shall govern connections to concrete pipe.

1. Flanges	Ring type except where otherwise permitted.
Diameter, Drilling and Thickness	ANSI B-16.1, 125# Class or AWWA C207, Class E.
Finish	Flat faced with concentric or spiral serrated finish.
Bolts and Gaskets	As specified for connecting piping.
Tapped Holes	ANSI B1.1, coarse thread, Class 2B fit.

2. Mechanical Joints ANSI A21.11.
 3. Threaded Connections ANSI B2.1, NPT.
 4. Mechanical Couplings Plain end steel spigots
 at least 12 inches long.
- B. Blowoffs. Each blowoff shall be arranged to provide a horizontal flanged drain line connection. One of the following arrangements shall be employed:
1. Tangential flanged outlets.
 2. Radial flanged outlets, plus a 60 degree flanged cast iron or cast steel bend for each.
- C. Fittings. Fittings shall comply with Section 4 of AWWA C303. Fittings shall be designed for the same loads and internal pressures as the adjacent pipe.
- D. Anchored Joints. Where indicated on the drawings, joints shall be anchored by clamps, set screws, bolt harness assemblies, or other method acceptable to the Engineer. Welding the joint rings will be acceptable. Harness bolts, if used, shall be designed on a basis of 60,000 psi. Each anchored pipe shall be designed to resist thrust of the magnitude, resulting from application of the specified hydrostatic test pressure.
- E. Reducers. Tapered reducers shall be provided at the locations indicated on the drawings. Reducers shall be concentric and shall have a diametrical reduction of not more than 3 inches per foot of length.

2.04 MARKING

Each pipe, fitting, or special section shall have plainly and permanently marked thereon:

- A. Pipe class.
- B. Date of manufacture.
- C. Manufacturer's name or trademark.
- D. On bends, the angle turned thereby.
- E. Identification of specials to show proper location in line.

Markings shall be idented in the pipe or painted thereon with waterproof paint.

PART 3 - EXECUTION

3.01 HANDLING

Concrete pipe and fittings shall be handled carefully and shall not be bumped or dropped. Hooks shall not be permitted to come in contact with joint surfaces.

3.02 CLEANING

The interior of all pipe and fittings shall be thoroughly cleaned of foreign matter before being installed and shall be kept clean until the work has been accepted. All joint contact surfaces shall be kept clean until jointing is completed.

Every precaution shall be taken to prevent foreign material from entering the pipe during installation. No debris, tools, clothing, or other materials shall be placed in the pipe.

Whenever pipe laying is stopped, the open end of the pipe shall be sealed with a watertight plug which will prevent trench water from entering the pipe.

3.03 ALIGNMENT

Piping shall be laid to the lines and grades indicated on the drawings. Pipelines or runs intended to be straight shall be laid straight. Curves may be formed by using fittings or beveled joints or by opening the joints. The Contractor is responsible for using approved methods to maintain the alignment and grade of the pipe.

3.04 LAYING PIPE

Pipe shall be protected from lateral displacement by pipe embedment material installed as specified in the excavation and trenching section. Under no circumstances shall pipe be laid in water and no pipe shall be laid under unsuitable weather or trench conditions.

Pipe shall be laid with bell ends facing the direction of laying except when reverse laying is specifically permitted by the Engineer.

3.05 JOINTING

Rubber and steel joints shall be installed in accordance with the pipe manufacturer's recommendations. Immediately before the pipe is jointed, all exterior spigot and interior bell surfaces shall be thoroughly cleaned and well lubricated. Lubricant shall be suitable for use in potable water, shall be stored in closed containers, and shall be

kept clean. The rubber gasket shall then be stretched over the spigot and settled into the spigot groove, and the pipe pushed or pulled into final position.

The position and condition of the rubber gasket shall be checked before the next piping unit is installed. In jointing 30 inch or larger concrete pipe, steel inserts shall be used to prevent the pipe from entering to the full depth of the bell until the position of the gasket has been checked.

Joint space outside the rubber gasket shall be filled with grout. To prevent entrance of earth into the joint space before grouting and to serve as a form for the grout, a diaper shall be placed around the outside of the joint.

Grout shall be composed of one part portland cement and 2 parts sand, mixed to a pouring consistency and constantly stirred while being poured to prevent segregation. Sand for grout shall be clean masonry sand passing a 16 mesh sieve. Grout shall be poured between the diaper and the pipe and allowed to run down around to the bottom of the pipe. The grout shall be rodded, while being poured, with a stiff wire curved to the approximate radius of the pipe. The joint recess shall be completely filled at all joints.

Not less than two lengths of pipe shall be in final position in advance of joint grouting. If pipe embedment operations are resumed before the grout has attained initial set, extreme care shall be taken to prevent damage to the grout while placing and compacting embedment material.

After trench backfilling operations over the pipe have been completed, the inside joint recess of all 30 inch or larger concrete pipe shall be filled with stiff mortar mixed in proportions of one part portland cement to 2 parts masonry sand passing a 16 mesh sieve. Joint surfaces shall be damp, but free from surface water when the mortar is placed. Mortar shall be thoroughly compacted and finished smooth. All excess mortar shall be removed from the pipe.

3.06 CONNECTIONS WITH EXISTING LINES

Where connections are made between new work and existing piping, such connections shall be made using suitable fittings for the conditions encountered. Each connection with an existing pipe shall be made at the time and under conditions which will least interfere with service to customers affected thereby, and as authorized by the Engineer. Facilities shall be provided for proper dewatering and for disposal of all water removed from the dewatered lines and excavations without damage to adjacent property.

Special care shall be taken to prevent contamination when dewatering, cutting into, and making connections with existing pipe. No trench water, mud, or other contaminating substances shall be permitted to get into the lines. The interior of all pipe, fittings, and valves installed in such connections shall be thoroughly cleaned and then swabbed with a solution having a chlorine content of 200 milligrams per liter.

3.07 CONCRETE ENCASEMENT AND BLOCKING

Concrete encasement and blocking shall be installed where and as indicated on the drawings. Concrete and reinforcing steel shall be as specified in the cast-in-place concrete section. All pipe to be encased shall be suitably supported and blocked in proper position and shall be anchored against flotation. Blocking shall bear against undisturbed earth.

3.08 PROTECTIVE COATINGS

Unless otherwise specified, metal surfaces shall be protected as specified herein.

A. Shop Coatings. Bolts, flange faces, and steel joint rings shall be shop coated with rust preventive compound, Houghton "Rust Veto 344" or Rust-Oleum "R-9." All other metal surfaces shall be shop primed with Koppers "Bitumastic Mill Undercoat" or Valspar "35-J-6 Bituminous Black."

B. Surfaces Exposed Underground. All metal surfaces which will be in contact with backfill after installation (not encased in concrete) shall be cleaned to remove all rust and foreign materials, primed, and wrapped with two half-lapped layers of coal tar saturated fabric, Protecto Wrap "200GT" or Tapecoat "CT". The wrapping shall be applied in accordance with the manufacturer's recommendations. Backfill adjacent to wrapped surfaces shall consist of clean sand or pea gravel.

C. Surfaces Exposed in Manholes. All metal surfaces exposed inside manholes after installation shall be cleaned and given two coats of Koppers "Bitumastic Super Service Black," Tnemec "450 Heavey Tnemecol," or Porter "Tarmastic 100."

3.09 LEAKAGE

All joints shall be watertight and free from leaks. Each leak which is discovered during the pressure and leakage tests shall be repaired by and at the expense of the Contractor.

3.10 PRESSURE TEST

The following lines shall be subjected to a hydrostatic pressure test. The test pressure shall be maintained for at least two hours while the line is inspected.

Line	Test Pressure
A - 24" Diam.	200 psi

The Contractor shall provide all necessary pumping equipment, piping connections between the piping and the nearest available source of test water, pressure gages, and other equipment, materials, and facilities necessary for the tests.

All pipe, fittings, valves, pipe joints, and other materials which are found to be defective shall be removed immediately and replaced with new and acceptable material, by and at the expense of the Contractor.

3.11 PIPELINE SCHEDULE

Line	Working Pressure	Working Surge
Line A	125 psi	75 psi

3.12 DRAWINGS AND DATA

Drawings, specifications, installation schedules, and other data showing complete details of the design, fabrication, construction, field locations and elevations, and installation of pipe, fittings, specials, and connections, together with complete data covering all materials proposed for use in connection therewith, shall be submitted in accordance with the submittals section. The drawings and data shall include but shall not be limited to the following for each size and class of pipe.

- A. Pipe design.
- B. Details of specials.
- C. Laying schedule.

3.13 TRENCH SAFETY

Trench Safety must be strictly adhered to during installation of all piping.

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DIVISION 3

CONCRETE

**GINN, INC. - CONSULTING ENGINEERS
17103 PRESTON ROAD SUITE 100 LB118
DALLAS, TEXAS PROJECT NO. 439**

**MILDRED STREET IMPROVEMENTS
SANITARY SEWER IMPROVEMENTS
TOWN OF ADDISON, TEXAS**

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PART 1 - GENERAL

1.1 SCOPE:

- A. Reinforcing steel shall be of the type, size and quantity designated for use in structures as shown on the plans and in accordance with these requirements. All reinforcing steel shall be of domestic manufacture.
- B. Tests: Mill tests shall be made as required by ASTM specifications A615 and A185, and certified copies of all tests shall be provided to the Engineer prior to acceptance of any materials.
- C. Shop Fabrication: Insofar as possible, all bending of bars shall be done in the shop. Bending shall be done cold, and true to the shapes shown on the plans. Bar schedules shall be submitted prior to fabrication for approval of the Engineer. Bars shall be detailed and bent in accordance with the requirements of ACI Standard 315.
- D. Storing: Steel reinforcement shall be stored above the surface of the ground upon platforms, skids, or other supports, and shall be protected insofar as practicable from mechanical injury and surface deterioration caused by exposure to conditions producing rust. When placed in the work, it shall be free from dirt, scale, dust, paint, rust, oil, or other foreign material.

1.2 RELATED WORK:

- A. Section 03300 - Cast-in-place Concrete

PART 2 - PRODUCTS

2.1 GENERAL:

- A. All bar reinforcement shall be new billet steel conforming to the requirements of ASTM Specification A615, Grade 60. All bars shall be deformed as defined in "Building Code Requirements for Reinforced Concrete" (ACI-318) except those used for expansion joint dowels, where smooth bars are indicated on the plans.
- B. Reinforcement:
 - 1. Deformed Bars. Use deformed bars conforming to ASTM A615 including Supplementary Requirements SI, grade as shown on drawings. Where grade is not shown on the drawings, use Grade 60.

2. Smooth Bars. Use smooth bars conforming to ASTM A36, ASTM A615, Grade 60, or ASTM A675, Grade 70 for all bars shown on the drawings to be smooth bars.

C. Welding:

Welding of reinforcing bars is prohibited.

D. Welded Wire Fabric: Welded wire fabric shall be electrically-welded, cold-drawn wire (70,000 psi yield point) of gage and mesh size shown on the drawings and shall conform to "Specifications for Welded Steel Wire Fabric for Concrete Reinforcement" (ASTM-185). Wire size and spacing shall be as shown on the plans. Flat sheets shall be furnished where noted.

PART 3 - EXECUTION

3.1 BENDING

Reinforcement bars shall be bent cold to the shape indicated on the plans. All bending of hard grade new billet steel bars shall be done in the shop. Bends shall be true to the shapes indicated.

3.2 STORAGE

Reinforcement shall be stored above the ground surface upon skids, platforms or other supports and shall be protected from mechanical injury and surface deterioration by exposure to the weather. When placed in the work, the reinforcements shall be free from dirt, rust, scale, paint, oil, or other foreign materials.

3.3 SPLICES

No splices of bars, except when shown on the plans, will be permitted except upon the written permission and approval of the Engineer. Bars shall be rigidly clamped or wired at all splices in a manner approved by the Engineer.

3.4 DETAILING

Completely detailed shop drawings and schedules should be submitted by the Contractor for review by the Engineer prior to fabrication. Shop drawings may not be made by reproducing the plans or contract documents.

The bars shall be supplied in lengths which will allow them to be conveniently placed in the work and provide sufficient lap at joints. Dowels of proper length, size

and shape shall be provided for tying walls, beams, floors and the like together where shown, specified or ordered.

Steel reinforcement shall be of the type and size, cut to lengths and bent to shapes as indicated on the plans. Unless otherwise indicated, hooks, laps, splices, and other details of reinforcement shall be provided as set forth in the ACI Building Code (ACI-318) and the "Manual of Standard Practice for Detailing Reinforced Concrete Structures" (ACI-315) to develop the full tensile strength of the bar.

3.5 PLACING REINFORCEMENT:

Metal reinforcement when placed shall be free from mill and rust scale or any other coating that would destroy or reduce its bond with the concrete. When there is a delay in concreting operations and the reinforcement has been in place more than two (2) days, it shall be reinspected and, when necessary, cleaned.

Metal reinforcement shall be accurately positioned and dimensional in accordance with the plans and specifications. The bars and mesh shall be tightly secured against displacement by ties of annealed wire, of not less than No. 16 gauge, or suitable clips at intersections. Wall reinforcement shall be supported and held securely against displacement in its proper position clear of the forms as indicated on the plans.

Nails shall not be driven into the wall forms to support reinforcement nor shall any other device used for this purpose come in contact with the form in the waterside of any water containing structure.

The main reinforcement of slabs in contact with the ground shall be supported in its proper position, as indicated on the plans, by means of precast cement mortar blocks, or approved dimensions, resting on the slabs' subbase. Such precast blocks shall be made of mortar composed of one part Portland cement and two parts sand with annealed wirecast into each block. The length of the blocks shall be spaced at the intervals required to maintain the reinforcement in its required position in the slab during the placing of the concrete. The slab reinforcement shall not be used to support planking or runways used in placing concrete.

In the case of floor slabs, galleries, deck slabs, and beams, metal chairs, spacers and other metal accessories necessary to provide the required clear distances and proper alignment and spacing between bars shall be used subject to the approval of the Engineer.

Additionally, placement of reinforcement shall comply with the following:

A. Comply with ACI 318.

B. Placing:

1. Comply with recommendations of Concrete Reinforcing Steel Institute's "Recommended Practice for Placing Reinforcing Bars" and "Recommend Practice for Placing Bar Supports".
2. Support and wire reinforcing bars together to prevent displacement by construction loads.
3. Lap welded wire fabric at least 1-1/2 meshes plus end extension of wires but not less than 12" in structural slabs.
4. Lap at least 1/2 mesh plus end extension of wires but not less than 6" in slabs on ground.
5. Extend mesh across supporting walls.
6. Adequate support for mesh shall be provided by the use of "chairs" to ensure that the mesh is completely surrounded by concrete and not less than 3 inches above the bottom of slabs on ground or 1/2-inch above form work.
7. Offset vertical bars in walls at least one bar diameter at lap splices. To insure proper placement, templates shall be furnished for all column dowels.
8. Make splices only as indicated on Drawings.
9. Do not bend reinforcement after being partially embedded in hardened concrete except for field bent dowels.
10. Clean reinforcement of form oil or other bond inhibitors prior to placing concrete.
11. Where parallel reinforcement is placed in two or more layers, place reinforcing steel in upper layer directly above those in bottom layer with clear distance between layers not less than one bar diameter or 1".

3.6 CONCRETE PROTECTION FOR REINFORCEMENT

Steel reinforcement shall be placed and held in position so

that the concrete cover, as measured from the surface of the bar shall be as specified on the plans or specified by ACI-318.

3.7 PAYMENT

No separate payment will be made for work performed in accordance with this section of the specifications, and the cost thereof shall be subsidiary to the work for which it applies.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS:

- A. Comply with Division 1 - General requirements and referenced documents.
- B. This section of the specifications shall govern for the construction of structures or structural units requiring the use of concrete.
- C. All concrete structures and/or structural units shall be constructed in accordance with the design requirements and details shown on the plans, shall conform to other items of the specifications which are applicable to a complete installation, and shall be in conformity with the requirements contained herein.
- D. Form design shall be the full responsibility of the Contractor.

1.2 RELATED WORK:

- A. Section 03200 - Concrete Reinforcement

1.3 SUBMITTALS:

A. Shop Drawings:

- 1. Show reinforcement fabrication, bar placement location, splices, spacing and bar designation, bar type, length, size, bending, number of bars, bar support type, and other pertinent information, including dimensions. Information must correspond directly to data listed on the bill of materials.

Submit bills of materials to be reviewed with shop drawings.

- 2. Indicate location of construction joints.
- 3. Do not make shop drawings using reproductions of Contract Drawings. Detail in accordance with ACI 315.
- 4. Submit in writing any request for modifications to Drawings and Specifications. Submitting shop drawings for review does not constitute "in writing" unless it is brought to attention of Engineer that specific changes are being suggested.

- B. Submit to Engineer for review by Testing Laboratory for proof of compliance with Specifications as follows:
1. Concrete:
 - a. Proposed concreting materials.
 - b. Proposed concrete mix designs.
 2. Reinforcing Steel:

Submit the manufacturer's certificates giving the properties of steel proposed for use. List the manufacturer's test number and heat number, chemical analysis, yield point, tensile strength and percent elongation. Also identify on the certificates the proposed location of the steel in the work.
 3. Cement. Submit mill certificates for all bulk cement.
- C. Design Mix. Submit the design mix and test data on the proposed design mix for each type and strength of concrete in the project. The design mixes shall be prepared by a certified independent testing laboratory employed and paid by the Contractor. The design mix submittal shall include manufacturer's technical information for each type of admixture proposed for use on the project.
- D. Product Data. Submit manufacturer's technical literature, including application instructions, on the following products proposed for use by the Contractor, to the Engineer for approval:
1. Air entraining agent.
 2. Admixtures.
 3. Concrete bonding agent.
 4. Joint sealant.
 5. Waterstops.
- E. Submit material samples along with the manufacturer's technical data on the waterstops.

1.4 STORAGE OF MATERIALS:

- A. Comply with detailed recommendations of ACI 304.
- B. Store cement in weathertight buildings, bins, or silos which provide protection from dampness and contamination and minimize warehouse set.

C. Aggregates:

1. Arrange stockpiles to avoid excessive segregation or contamination with other materials or with other sizes of aggregates.
2. Ensure that conditions are met by testing for conformance to requirements for cleanliness and grading of samples secured from aggregates at point of batching.
3. Fine and coarse aggregates shall be regarded as separate ingredients.
4. Each size of coarse aggregate and combination of two or more shall conform to grading requirements of ASTM C33 or C330, as required.

PART 2 - PRODUCTS

2.1 CONCRETE MATERIALS:

A. Cements:

1. Portland Cement: ASTM C150 Type I.
2. Air Entrained Portland Cement: ASTM C150.
3. Do not use different cements interchangeable.

B. Admixtures:

1. Air Entraining Admixtures: ASTM C260.
2. No fly ash or calcium chloride shall be permitted.
3. Chemical Admixtures: ASTM C494.
4. Two or more admixtures may be used in same concrete, provided admixtures are added separately during batching sequence. Admixtures used in combination shall retain full efficiency and have no deleterious effect on concrete or on properties of each other.

C. Water:

1. Fresh, clean and potable.
2. Use nonpotable water only if water produces mortar cubes having seven (7) day strengths equal to strength of similar specimens made with distilled water when tested in accordance with ASTM C109.

2.2 PROPORTIONING:

- A. Concrete for work shall be homogenous. When hardened, concrete shall have required strength, resistance to deterioration, durability, resistance to abrasion, watertightness, appearance, and other specified qualities.
- B. Type: Ultimate strength type concrete for use in structures or structural elements which have been analyzed and proportioned by ultimate strength design theory.
- C. Strength:
 - 1. Normal Weight Concrete: Base strength requirements on 28 day compressive strengths, unless high early strength is used, in which case required strengths shall be obtained at seven (7) days.
- D. Durability:
 - 1. Provide concrete which will be subject to potentially destructive exposure, other than wear or loading, such as freezing and thawing, severe weathering or chemicals.
 - 2. Water-cement ratio for air entrained concrete shall not exceed 5.75 gallon per sack of cement, unless otherwise approved by Engineer.
- E. Slump:
 - 1. Slump of concrete of normal weight, as determined by ASTM C43, shall be in accordance with Table A.

TABLE A - SLUMPS FOR VARIOUS KINDS OF CONSTRUCTION

KINDS OF CONSTRUCTION	SLUMP (IN.)	
	Maximum	Minimum
Footings, Walls, Columns	4	1
Slabs, Beams	5	3

- F. Maximum Size of Coarse Aggregate:
 - 1. Nominal Maximum Size of Aggregate:
 - a. Slabs: 1"
 - b. Walls and beams: 1"

2. Coarse Aggregates in Concrete of Normal Weight:

- a. One size for concrete placed in one day when quantities to be placed are too small to permit economical use of more than one mix design.
- b. When single mix design is used, maximum nominal size shall be as required for most critical conditions of concreting, in accordance with requirements of preceding section.

G. Air Entrainment:

1. Air entrainment in concrete of normal weight shall conform to Table 5.3.3, ACI 211.1.
2. Determine air content by either ASTM C231 or ASTM C138.

H. Admixtures:

1. Air Entrained Admixtures, and Proprietary Chemical Admixtures: In accordance with manufacturer's recommendations.

2.3 MIXING:

A. Comply with recommendations of ACI 304R-85.

B. Mix and transport ready mixed concrete in accordance with ASTM C94. The ready mix producer shall be certified for compliance to the Standards of NRMCA.

1. The mixing shall be done in a batch mixer of approved type and size which will insure the uniform distribution of the material throughout the mass so that the mixture will be uniform in color and smooth in appearance.
2. Concrete shall be mixed only in such quantities as are required for immediate use and shall be used before initial set has taken place. All concrete in which initial set has begun shall not be used in the work and no concrete shall be retempered.
3. The maximum elapsed time between the introduction of the mixing water and the discharge of the concrete shall be 1 1/2 hours if the temperature of the concrete is below 80F (27C). If the temperature of the concrete is between 80F and 90F (27 and 32C) the maximum elapsed time shall not exceed one (1) hour.

4. Concrete improperly mixed shall not be placed in any structure. The rate of delivery of mixed concrete shall be so arranged that a cold joint is not allowed for form between loads, and shall be placed within the time limits stipulated above.
5. Concrete that is transported shall be constantly agitated and mixed until placement.
6. Whenever a concrete mixer of any kind is not adequate or suitable for the work, it shall be removed from the site upon order from the Engineer, and a suitable mixer shall be provided by the Contractor.
7. The transit mixer shall be of an approved revolving drum or revolving blade type so constructed as to produce a thoroughly mixed concrete with a uniform distribution of the materials throughout the mass. It shall be equipped with a discharge mechanism which will insure the discharging of the mixed concrete without segregation.
8. The mixer drum shall be water-tight when closed and shall be equipped with a locking device which will automatically prevent the discharging of the mixer prior to receiving the required number of revolutions.
9. The entire quantity of mixing water shall be accurately measured and controlled. Any additional mixing shall be done at a lower speed specified by the manufacturer for agitation and shall be continuous until the batch is discharged.

C. Central Mixing Plant

1. A central mixing plant will be allowed provided the method of mixing and handling has first been approved by the Engineer, and concrete produced is in conformity with the specification requirements.
2. The batch mixer shall conform to the requirements of the Mixer Manufacturer Bureau of the A.G.C. The mixer shall have a manufacturers rating plate showing the capacity and recommended RPM. It shall be equipped with a suitable charging hopper, water storage tank and measuring device, and shall be capable of thorough mixing of aggregates, cement, and water to provide a uniform mass within the specified time and capable of discharging the concrete without segregation.

3. The batch shall be so charged into the mixer that some water will enter in advance of the cement and aggregates. Water shall continue to flow for a period which may extend to the end of the first 25% of the specified mixing time. Controls shall be provided to insure that the batch cannot be discharged until the required mixing time has elapsed; and to insure that no additional water may be added during mixing. Controls shall be provided to prevent batched ingredients from entering the mixer before the previous batch has been completely discharged.
4. Each batch of one (1) cubic yard or less shall be mixed for not less than one (1) minute. The mixing time shall be increased 15 seconds for each additional cubic yard or fraction thereof. At least three-quarters of the required mixing time shall take place after the last of the mixing water has been added.
5. The mixer shall be clean and the pick-up and throw-over blades in the drum shall be replaced when they have lost 10 percent of their original depth.

D. Weather Conditions:

1. General:

- a. Detailed recommendations for placing concrete during extreme weather conditions are given in ACI 306, "Cold Weather Concreting" and ACI 305, "Hot Weather Concreting". The Contractor shall, on request, furnish a thermometer for measuring the ambient temperature and a thermometer for measuring the temperature of the concrete.
- b. Concrete shall not be placed during rain, fog, sleet, or snow. Rainwater shall not be allowed to increase the mixing water nor damage the surface finish.

2. Cold Weather:

- a. In cold weather, the temperature of the concrete when delivered at the site of the work shall conform to the following temperature limitation:

Air Temperature Deg. F.	Minimum Concrete Temperature, Deg. F.	
	For Sections With Least Dimension Less Than 12 in.	For Sections With Least Dimension 12 in. or Greater
	30 to 45	60
0 to 30	65	55
Below 0	70	60

b. If water or aggregate has been heated, the water shall be combined with the aggregate in the mixer before cement is added. Cement shall not be added to mixtures of water and aggregate when the temperature of the mixture is greater than 100 degrees Fahrenheit.

3. Hot Weather:

The ingredients may be cooled before mixing if necessary to maintain the temperature of the concrete below the maximum placing temperature of 90 degrees F (32C).

2.4 RELATED MATERIALS:

A. Expansion Bolts: Phillips "Red-Heads", "Capsule Anchors" by Molly or Hilti, or equivalent. Size as indicated on Drawings.

B. Sealers and Hardeners: "Floorcron" non-metallic hardener by Gifford-Hill or "Non-Metallic Hardener" by The Burke Company.

C. Embedded Items:

1. All sleeves, inserts, frames, anchors and other embedded items required shall be placed prior to placing concrete. Blocking out instead of placing embedded items will require the approval of the Engineer.

2. All embedded items, including expansion joint material, waterstop, etc., shall be accurately positioned and supported against displacement. Voids in sleeves, anchor slots, etc., shall be protected to prevent the intrusion of concrete during the pour.

D. Construction Joints:

1. Construction joints shall be placed as shown on the plans unless otherwise specifically authorized by the Engineer, in which case the joints shall be so

placed and formed as to least impair the strength and appearance of the structure. All construction joints shall be made on horizontal and vertical planes. Sufficient section shall be provided in horizontal and vertical keys to resist shear.

2. All reinforcing steel and wire fabric shall be continued across joints. The surface of the old concrete at all joints shall be thoroughly cleaned and all laitance removed, by sand blasting, and prior to the new pour, wetted with water and slushed with a grout mix.

E. Expansion Joints:

1. Expansion joints shall be placed where shown on the plans and according to the detailed drawings. All reinforcing steel of other embedded items bonded to the concrete (except expansion dowels bonded on one side only of a joint), shall not be permitted to extend continuously through any expansion joint.
2. The concrete surface of the finished concrete at the joint shall be thoroughly cleaned by sandblasting prior to the installation of expansion joint filler and sealer.
3. Expansion Joint Filler. Use preformed bituminous type conforming to ASTM D994 or cane fiber asphalt impregnated type conforming to ASTM D1751. Provide 3/4-inch-thick filler unless otherwise shown.

PART 3 - EXECUTION

3.1 PREPARATION PRIOR TO PLACING CONCRETE:

- A. The Contractor shall give the Engineer at least 24 hours advance notice that he intends to pour concrete in any structure to permit the inspection of forms, of the placement of reinforcing steel and of the preparations for the mixing and placing of the concrete. The Contractor shall arrange for inspection of the reinforcing steel by the Engineer prior to closing the forms. All hardened concrete and foreign materials shall be removed from the inner surface of concrete pumps, hoppers, buckets, and other conveying equipment, all vibrators, handling and finishing tools. Semiporous subgrades shall be sprinkled sufficiently to eliminate suction and extremely porous subgrades shall be sealed in an approved manner.
- B. Formwork shall have been completed and cleaned; excess water shall have been removed; reinforcement shall have been secured in place; expansion joint material,

anchors, and other embedded items shall have been positioned. In the event concrete is anticipated to be placed after daylight hours, the Contractor shall demonstrate that he has sufficient lighting, power generators, etc., to accomplish the work in a satisfactory manner. The Contractor shall ensure that adequate facilities are provided for concrete testing and control.

3.2 PLACING CONCRETE, GENERAL:

- A. The sequence of placing concrete shall be the contractor's option. The operation of depositing and compacting the concrete shall be conducted so as to form a compact, dense, impervious mass of uniform texture which shall show smooth faces on all surfaces. The placing shall be so regulated that the pressures caused by the plastic concrete shall not exceed the loads used in the design of forms.
- B. No concrete shall be placed in any structure prior to completion of the form work and the placement of the reinforcing and other steel.
- C. The method and manner of placing shall be such as to avoid the possibility of segregation or separation of the aggregate or the displacement of the reinforcement. Concrete shall not have a free fall sufficient to cause segregation of materials. Tremies shall be used in order that the free fall of mix shall be held to a maximum of three (3) feet, unless otherwise approved by the Engineer.
- D. Each part of the forms shall be filled by depositing concrete as near its final position as possible. The coarse aggregate shall be worked back from the face of the forms and the concrete shall be forced under and around the reinforcement bars without displacing them. Depositing large quantities at one point in the forms and running or working it along the forms will not be allowed. After the concrete has taken initial set, the forms or the reinforcing steel shall not be jarred or any strain placed on projecting reinforcement.
- E. Chutes, troughs, or pipes used as aids in placing concrete shall be arranged and used so that the ingredients of the concrete will not be separated. When steep slopes are necessary the chutes shall be equipped with baffle boards or be made in short lengths that reverse the direction of movement. Open troughs and chutes shall extend, if necessary, down inside the forms or through holes left in the forms, or the ends of such chutes shall terminate in vertical downspouts. All chutes, troughs, and pipe shall be kept clean and

free from coating of hardened concrete by a thorough flushing with water before and after each placement. Water used for flushing shall be discharged clear of the concrete in place. The use of chutes in excess of thirty-five (35) feet total length for conveying concrete will not be permitted except by specific authorization from the Engineer.

- F. Where the Contractor's operations involve the placing of concrete from above, that is, directly into an excavated area or through the completed forms, particularly in the cast of columns, walls, floors, slabs and footings, all concrete so placed shall be deposited through a vertical sheet metal or other approved pipe no less than six (6) inches nor more than ten (10) inches in diameter. The pipe shall be made in sections so that the outlet may be adjusted to proper heights during placing operations.
- G. Concrete shall be placed in continuous horizontal layers approximately 12 inches in thickness. The rate of delivery shall be so arranged that a cold joint is not allowed to form between loads. The Contractor shall avoid unauthorized construction joints by placing required portions of abutments, piers, walls, floors, slabs, columns, or superstructures in one continuous operation. Openings in the forms shall be provided for the removal of laitance and other foreign material.
- H. All concrete shall be well compacted and the mortar slushed to the surface of the forms by continuous working with concrete spading implements and mechanical vibrators of an approved type. Vibrators of the type which operate by attachment to reinforcement will not be permitted. Vibrators of a type for the attachment to the outside of forms may be used after written permission is given by the Engineer and if forms are so designed to permit such use without damage thereto. The vibrators shall be applied to the concrete immediately after deposit and shall be moved throughout the mass, thoroughly working the concrete around the reinforcement, embedded fixtures, and into the corners and angles of the forms until it has been reduced to a plastic mass. The mechanical vibrator shall not be operated so that it will penetrate or disturb layers placed previously which have become partially set or hardened. The vibration shall be of sufficient duration to accomplish thorough compaction and complete embedment of reinforcement and fixtures but shall not be done to an extent that will cause segregation. Vibration shall be supplemented by hand spading to insure the flushing of mortar to the surface of all forms. Vibrators shall not be moved horizontally. Vibrators shall be of the high frequency and high

amplitude type and a standby vibrator shall be provided for use at all times, at each location of concrete placement.

3.3 PLACING JOINTS AND EMBEDDED ITEMS:

A. Construction Joints:

1. Make and locate to least impair strength of structure.
2. Locate horizontal joints in concrete only where they normally occur or where indicated.
3. Make joints perpendicular to main reinforcement.
4. Continue reinforcing steel and mesh across joints.
5. Thoroughly clean surface of concrete at joints and remove laitance.
6. Obtain bond by one of the following methods:
 - a. Chemical retarder:
 1. Comply with ASTM C494, which delays but does not prevent setting of surface mortar.
 2. Remove retarded mortar within four (4) hours after placing to produce exposed aggregate bonding surface.
 - b. Roughen surface of concrete in a manner which will expose aggregate uniformly and leave contact surface clean, free of laitance, loosened particles of aggregate or damaged concrete. Intentionally roughen surface to a full amplitude of approximately 1/4".
7. Joints shall be thoroughly wet before placing new concrete.

B. Other Embedded Items:

1. Place sleeves, inserts, anchors, and embedded items required for adjoining work or for support prior to concreting.
2. Give ample notice and opportunity to introduce or furnish embedded items and work related to concrete or support before concrete is placed.
3. Position expansion joint material, waterstops, and embedded items accurately and support against displacement.

4. Fill voids in sleeves, inserts, and anchor slots temporarily with removable material to prevent entry of concrete into voids.
5. Horizontal sleeves through walls and vertical sleeves through slabs less than 12" may be placed as required provided no conflict with scheduled or detailed reinforcement occurs.
6. Conduit to be embedded in slabs which are not indicated on Drawings may be placed in concrete within the following limitations:
 - a. Conduit shall not be larger in outside dimensions than one third of the overall thickness of slab in which they are embedded and not spaced less than 3 diameters or widths on center.
 - b. Place conduit in slabs between top and bottom reinforcement.
 - c. In slabs with only one mat of reinforcement, provide the following concrete cover to conduit, including fittings:
 1. Concrete exposed to earth or weather, 1-1/2".
 2. Concrete not exposed to weather or in contact with ground, 3/4".
 - d. Notify Engineer of any conduit to be embedded which cannot meet the herein stated limitations.
7. Position embedded items to avoid conflicts with reinforcement. Provide 1" clear cover between reinforcement and inserts, anchors and embedded items, and 1-1/2" clear cover between sleeves and reinforcement. Notify Engineer of conflicts between embedded items and reinforcement prior to correction.
8. No embedded items made of aluminum shall be permitted unless coated effectively or covered to prevent aluminum-concrete reaction or electrolytic action between aluminum and steel.

3.4 REPAIR OF SURFACE DEFECTS:

- A. Removal: After forms have been removed, remove concrete which is not formed as required, which is out of alignment or level beyond specified tolerances or which shows defective surface that cannot be properly repaired or patched.
- B. Repairing and Patching:
1. Patch tie holes and repair defective areas immediately after form removal.
 2. Defective Areas:
 - a. Remove honeycombed and other defective concrete to sound concrete, but in no case to depth of less than 1".
 - b. Dampen area to be patched and area at least 6" wide surrounding to prevent absorption of water from patching mortar.
 - c. Mix bond coat of approximately 1 part neat portland cement to 1 part fine sand passing No. 30 mesh sieve and water to consistency of thick cream. Brush mix into surface.
 - d. Make patching mixture of same material and of approximately same proportions as used for concrete, except omit coarse aggregate and use mortar that consists of not more than 1 part cement to 2-1/2 parts sand by damp loose volume.
 - e. Substitute white Portland Cement for part of gray Portland Cement on exposed concrete in order to produce color matching color of surrounding concrete, as determined by trial patch.
 - f. Add only quantity of mixing water necessary for handling and placing.
 - g. Mix patching mortar in advance and allow to stand with frequent manipulation with trowel, without addition of water, until mortar has reached stiffest consistency to permit placing.
 - h. After surface water has evaporated from area to be patched, brush bond coat into surface.
 - i. When bond coat begins to lose water sheen, apply premixed patching mortar.

- j. Thoroughly consolidated mortar into place and strike off to leave patch slightly higher than surrounding surface.
 - k. To permit initial shrinkage, leave mortar undisturbed for at least 1 hour before being finally finished.
 - l. Keep patched area damp for seven (7) days.
 - m. Do not use metal tools in finishing patch in formed surface which will be exposed.
3. Tie Holes: After cleaning and thoroughly dampening, fill tie holes solid with patching mortar.
4. Proprietary Patches:
- a. Proprietary compounds for adhesion or as patching ingredients may be used in lieu of or in addition to specified patching procedures.
 - b. Use compounds in accordance with manufacturer's recommendations.

3.5 FINISHING OF FORMED SURFACES:

- A. General: Finishes are an integral part of concrete placing and the following schedule of types of finish shall be used unless otherwise shown on the plans or directed by the Engineer.

Steel Trowel Finish: Interior floor slabs, wall tops.

Brush or Broomed Finish: Sidewalks, curb and gutter, exterior slabs.

Rubbed Surface Finish: Interior work areas.

Smooth Form Finish: Exposed exterior walls 12" below grade and above; exposed interior walls of liquid containers to 12" below water level; exposed undersides of slabs.

- B. Sealers and Hardeners: Non-metallic floor hardener surface treatments shall be applied in accordance with the manufacturer's recommendations or as directed by the Engineer. Surface treatments shall be applied to all interior concrete floor surfaces that do not receive tile or other toppings.

3.6 FLATWORK:

A. Edge Forms and Screeds:

1. Set edge forms and intermediate screed strips accurately to produce designated elevations and contours in finished surface and still be sufficiently strong to support vibrating bridge screeds or roller pipe screeds if nature of finish specified requires use.
2. Align concrete surface to contours of screed strips by use of strike off templates or appropriate compacting type screeds.
3. When formwork is cambered, set screeds to same camber to maintain proper concrete thicknesses.

B. Consolidation:

1. Thoroughly consolidate concrete in slabs.
2. Use internal vibration in beams and girders of framed slabs and along bulkheads of slab on grade.
3. Obtain consolidation of slabs and floors with vibrating bridge screeds, roller pipe screeds, or other appropriate means.
4. Concrete to be consolidated shall be as dry as practicable and surfaces shall not be manipulated prior to finishing operations.

C. Jointing:

1. Locate joints in slabs on grade as indicated.
2. Time cutting of saw cut joints properly with set of concrete.
3. Start cutting as soon as concrete has hardened sufficiently to prevent aggregates from being dislodged by saw.
4. Complete before shrinkage stresses have developed sufficiently to induce cracking.
5. Install control joint form in accordance with manufacturer's recommendations.

D. Finishes:

1. Floated Finish:
 - a. After concrete has been placed, struck off, consolidated and leveled, do not work concrete further until ready for floating.

- b. Begin floating when water sheen has disappeared or when mix has stiffened sufficiently to permit proper operation of power driven float.
 - c. Consolidate surface with power driven floats of impact type except in thin sections such as pan slabs.
 - d. Use hand floating with wood or cork faced floats in locations inaccessible to power driven machine.
 - e. Recheck trueness of surface at this stage with 10' straightedge applied at not less than two different angles.
 - f. Cut down high spots and fill low spots to produce planes checking true under straight edge in any direction, with tolerances not exceeding 1/8" in 10'.
 - g. Refloat slab immediately to uniform smooth, granular texture.
2. Troweled Finish:
- a. Finish surface first with impact power floats, where applicable, then with power trowels, and finally with hand trowels.
 - b. Perform first troweling after power floating with power trowel to produce smooth surface which is relatively free of defects but which may still contain some trowel marks.
 - c. Perform additional trowelings by hand after surface has hardened sufficiently.
 - d. Final troweling shall be done when ringing sound is produced as trowel is moved over surface.
 - e. Thoroughly consolidate surface by hand troweling operations.
 - f. Finished surface shall be free of trowel marks and uniform in texture and appearance.
 - g. Remove defects of sufficient magnitude by grinding.

3. Brush Finish or Broom Finish:

Following the steel trowel finish, surface of the concrete shall be brushed lightly with a soft-bristled brush, or broom. The brush shall be kept clean and shall be dipped in water frequently so that it will be clean and wet at all times. Brushing shall be limited to that necessary to remove the glaze and produce a non-slip surface.

4. Rubbed Surface Finish:

a. Surfaces to receive a rubbed finish shall be rubbed with carborundum fluted surface stones providing an abrasive which, when applied in surface rubbing at the proper time in the concrete aging process, will remove form marks, surface imperfections, and otherwise smooth, shape or finish the surface. Surface rubbings shall proceed as soon as forms are removed.

b. On removal of forms all necessary pointing shall be done. When the pointing has set sufficiently to permit rubbing, all surfaces requiring surface finish shall be wet and given a surface rubbing with a No. 16 Carborundum Stone or an abrasive of equal quality. The rubbing shall be continued sufficiently to bring the surface to a paste, to remove all form marks, and projections, and to produce a smooth dense surface without pits or irregularities. The material that has been ground into a paste shall be carefully spread or brushed uniformly over the surface and allowed to take a reset. The use of cement to form a surface will not be permitted.

c. In general, chamfered corners shall not be rubbed in the first surface rubbing.

d. The surface of the entire structure requiring finish shall then be cleaned of all drip marks, dirt and discolorations and shall be given a final finish rubbing with a No. 30 Carborundum Stone or an abrasive of equal quality. On completion of this rubbing, the finished surfaces shall be allowed to take a reset. After the mortar has taken a reset, the surface shall be washed down with clean water. The entire structure shall be left with a clean, neat, and uniform appearing finish and shall be uniform in color.

- e. If necessary to obtain bond between a rubbed surface and concrete wall, use of an admixture or epoxy bonding compound with rubbing will be allowed; however, plastering in lieu of rubbing will not be permitted.

5. Smooth Form Finish:

- a. On formed surfaces, where rubbing or special surface treatment is not required, the Contractor, immediately after removing forms, shall point up all honey-comb and other defects, and remove all fins, areas where there has been concrete leakage at joints, etc., examine the surface for "form air pockets," particularly but not limited to cement laitance that may cover or conceal defective areas, and point up such defective areas by use of retempered cement from the concrete areas. Simple "plastering" will not be permitted. Contractor shall use whatever means required to expose such areas, if necessary with a light sandblasting. Repairs shall be to the Engineer's complete satisfaction.

3.7 CURING AND PROTECTION:

A. Curing:

- 1. Comply with recommendations of ACI 308-81.
- 2. General:
 - a. Protect freshly deposited concrete from premature drying and excessively hot or cold temperatures.
 - b. maintain without drying at relatively constant temperature or period of time necessary for hydration of cement and proper hardening of concrete.
- 3. Initial Curing:
 - a. Immediately follow finish operations.
 - b. Keep concrete continuously moist at least overnight.

- c. Use one of the following materials or methods:
 - 1. Ponding or continuous sprinkling.
 - 2. Absorptive mat or fabric kept continuously wet.
 - 3. Sand or other covering kept continuously wet.
 - 4. Continuous steam not exceeding 150 degrees F or vapor mist bath.
 - 5. Curing compounds:
 - a. Apply in accordance with recommendations of manufacturer.
 - b. Do not use on surfaces against which additional concrete or other cementitious finishing materials are to be bonded, over surfaces to receive waterproofing, or on surfaces on which curing is prohibited by Specifications.
- 4. Final Curing: Immediately following initial curing and before concrete has dried, accomplish additional curing one of the following materials or methods.
 - a. Continuing method used in initial curing.
 - b. Waterproof paper complying with ASTM C171.
- 5. Duration of Curing:
 - a. Final curing shall continue until cumulative number of days or fractions, not necessarily consecutive, during which temperature of air in contact with concrete is above 50 degrees F has totaled seven (7) days.
 - b. If high early strength concrete has been used, final curing shall continue for total of three (3) days.
 - c. Rapid drying at end of curing shall not interfere with subsequent finish.
- 6. Formed Surfaces:
 - a. Keep steel forms heated by sun and wood forms in contact with concrete during final curing period wet.

- b. If forms are to be removed during curing period, employ one of the above curing materials or methods immediately.
 - c. Continue curing for remainder of curing period.
- B. Curing Temperature:
- 1. Cold Weather:
 - a. Comply with recommendations of ACI 306R-78.
 - b. When mean daily temperature of atmosphere is less than 40 degrees F, maintain temperature of concrete as placed for the length of time indicated in Table 1.4.2, ACI 306R.
 - c. When necessary, make arrangements in advance of placement to maintain required temperature and moisture conditions without injury to concrete.
 - 2. Hot Weather:
 - a. Comply with recommendations of ACI 305R-77.
 - b. When necessary, make arrangements in advance of placement, and take protective measures as quickly as concrete hardening and finishing operations will permit.
 - 3. Excessive Temperature Changes: Changes in temperature of concrete shall be as uniform as possible and shall not exceed 5 degrees F in any one (1) hour or 50 degrees F in any 24 hour period.
- C. Protection: Protect freshly placed concrete from rain, flowing water, hail, sleet, etc., until concrete has hardened.

3.8 FIELD QUALITY CONTROL:

- A. Testing laboratory will conduct strength tests of concrete in accordance with following procedures.
 - 1. Secure composite samples in accordance with ASTM C172.
 - 2. Obtain each strength test from different batch of concrete on representative, truly random basis, avoiding selection of test batch other than by number selected at random before commencement of concrete placement.

3. When pumping or pneumatic equipment is used, samples shall be taken at discharge end.
4. Mold three specimens from each sample in accordance with ASTM C31 and cure under standard moisture and temperature conditions in accordance with ASTM C31, Section 7(a).
5. Test two specimens at 28 days in accordance with ASTM C39, and one specimen at 7 days.
6. 28 day test result shall be average of strengths of two (2) specimens.
7. When high early strength is required, specimens shall be tested at seven (7) days.
8. Make one (1) strength test for each 100 cubic yards or fraction thereof for each mix design of concrete placed in one (1) day.

B. Additional Testing That May Be Required:

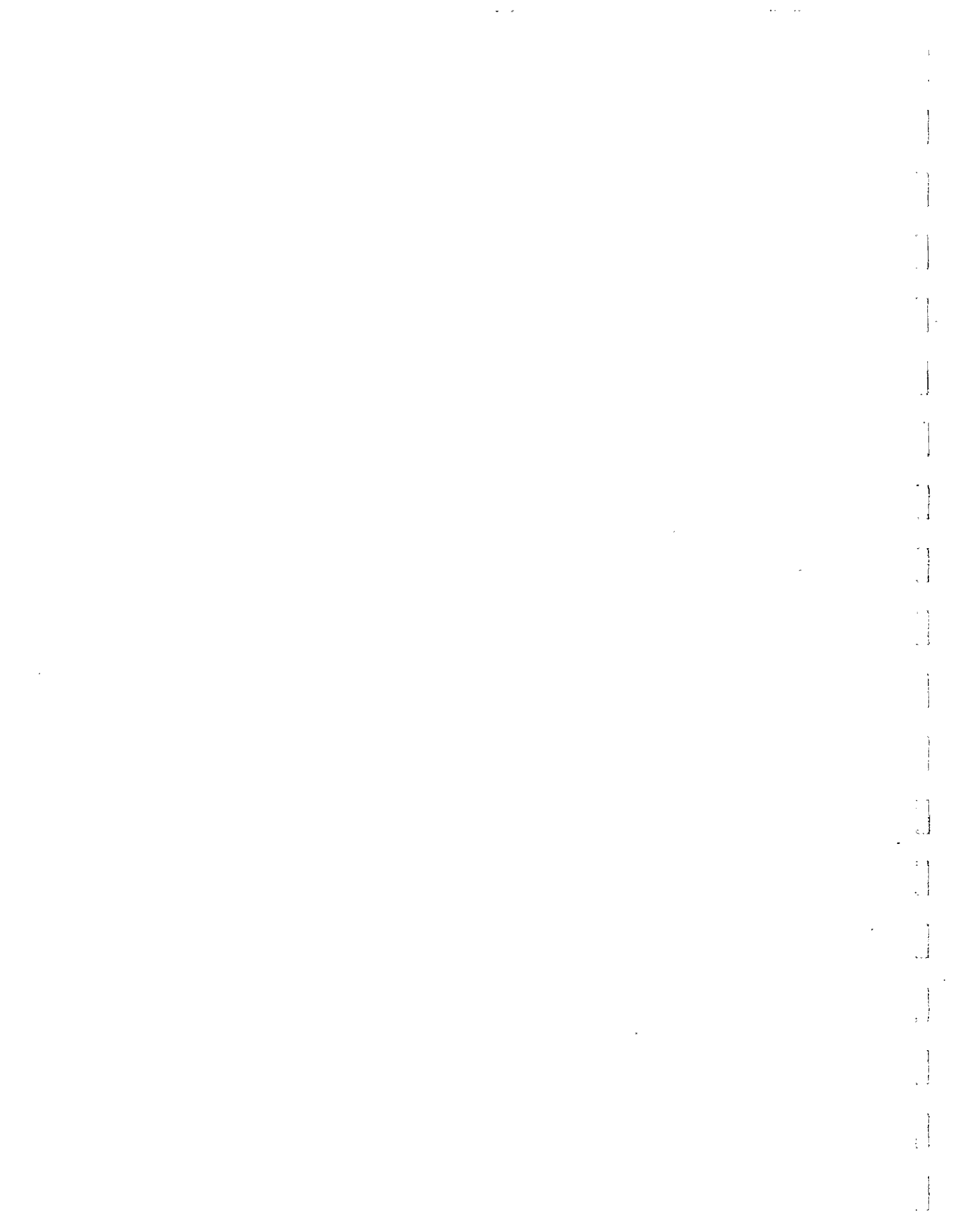
1. Determine air content of normal weight concrete on regular and frequent basis in accordance with either ASTM C231 for air content and with ASTM C567 for unit weight.
2. Report temperature of concrete at time of placing.
3. Report total water quantity added to concrete batches, including that added after departure of concrete trucks from batch plant.
4. Check slump consistency and uniformity of concrete to the extent deemed necessary to assure compliance with Specifications.
5. Inspect reinforcement as follows:
 - a. Visual inspection prior to placement for size, type quantity and quality of materials.
 - b. Make continuous inspections of placement of reinforcement immediately prior to concreting.

C. Evaluations:

1. Strength level of concrete will be considered satisfactory provided averages of all sets of three consecutive strength test results equal or exceed specified 28 day strength, and no individual strength test result falls below specified 28 day strength by more than 500 psi.

2. If strength tests fail to meet minimum requirements, concrete represented by such tests shall be considered questionable and shall be subject to further testing at expense of Contractor.
3. Take at least three representative cores from each member or area of concrete in place that is considered potentially deficient. Location of cores shall be determined by Engineer so as least to impair strength of structure.
4. Conduct additional tests of questionable concrete at expense of Contractor in accordance with ASTM C42.
5. Concrete in area represented by a core test will be considered adequate if average strength of cores is equal to at least 95% of and if no single core is less than 85% of specified 28 day strength.
6. Fill core holes with low slump concrete or mortar.
7. If core tests are inconclusive or impractical to obtain and structural analysis does not confirm the safety of the structure, load test may be required at no additional cost to the Owner. The results shall be evaluated in accordance with ACI 318, Chapter 20.
8. Concrete work judged inadequate by structural analysis or by load test shall be reinforced with additional construction or replaced at no additional cost to the Owner. Any additional construction shall be approved by the Engineer prior to the start of the work.

END OF SECTION



PART 1 - GENERAL

1.01 SCOPE OF WORK:

- A. Furnish labor and materials to seal joints in portland cement paving, and sidewalks as shown on the drawings.

1.02 SUBMITTALS:

- A. Manufacturers Technical Data Sheets shall be provided.
- B. Cured product samples will be provided.
- C. Upon delivery of material to the project, Certified test results on each lot of material will be provided. Certified test results will show conformance to the specifications.
- D. Manufactures application guide will be provided.

1.03 QUALITY ASSURANCE:

- A. Contractor shall provide documentation that he has experience in the application of the product specified or approved for a minimum of five years.
- B. Manufacturer shall provide jobsite assistance at the beginning of work, and throughout the project, to insure correct installation of the sealant.
- C. A pre-installation conference shall be held before commencement of work. Contractor shall provide supervisory personnel and workmen who will be responsible for the installation work.

1.04 WARRANTY:

- A. Upon successful completion and acceptance of the work, the contractor shall provide a workmanship warranty for a period of two years. The sealant manufacturer shall provide a written material performance warranty for a period of five years.

1.05 DELIVERY, HANDLING, AND STORAGE:

- A. Materials shall arrive at jobsite in sealed, unopened containers, properly labeled showing the quantity of material in the drum and the lot number. Hazardous material information shall appear on the drums.
- B. Material Safety Data sheets shall be onsite at all times.

1.06 PROJECT SITE CONDITIONS:

- A. Material shall not be applied in environments not allowed by the manufacturer's installation guide.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. Materials provided shall be as manufactured by Dow Corning Corp., Midland, Michigan 48686-0994, or approved equal.
- B. Material shall be low-modulus silicone sealant, gun-grade, or self-leveling, complying with Modified Federal Specification TT-S-0015433, Class A.
- C. Sealant Type I shall be Dow Corning 888, or approved equal, in accordance with the following specifications:

TYPE I - SILICONE JOINT SEALANT

Test Method	Test	Requirement
AS SUPPLIED		
***	Non volatile Content, % min.	95
MIL-S-8802	Extrusion Rate, grams/min.	90 to 250
ASTM D 1475	Specific Gravity	1.450 to 1.515
MIL-S-8802	Flow, inches maximum	0.2
MIL-S-8802	Tack-free time, minutes	35 to 75
***	Cure Time, days	7
***	Full Adhesion, days	14 to 21
AS CURED, AFTER 7 DAYS @ 25 DEGREES C (77 DEGREES F) AND 50% RH		
ASTM D 412, Die C	Elongation, % minimum	1200
ASTM D 412, Die C	Modulus @ 150% elongation, psi maximum	45
ASTM C 719	Movement, 10 cycles @ +100/-50%	NO FAILURE
ASTM D 3583 (Sec.14 Mod.)	Adhesion to Concrete, % Elongation min.	500
ASTM D 793	Accelerated Weathering, @ 5,000 hours.	No Bond Loss

- D. Sealant Type II shall be Dow Corning 890 SL, or approved equal complying with the following performance specifications:

TYPE II - SELF-LEVELING SILICONE JOINT SEALANT

Test Method	Test	Requirement
AS SUPPLIED		
***	Non volatile Content, % min.	96 to 99
MIL-S-8802	Extrusion Rate, grams/min.	275 to 550
ASTM D 1475	Specific Gravity	1.260 to 1.340
***	Skin-Over Time, minutes max.	60
***	Cure Time, days	14 to 21
***	Full Adhesion, days	14 to 21
AS CURED, AFTER 21 DAYS @ 25 DEGREES C (77 DEGREES F) AND 50% RH		
ASTM D 412, Die C	Elongation, % minimum	1400
ASTM D3583, Die C (Sec. 14 Mod)	Modulus @ 150% elongation, psi maximum	9
ASTM C 719	Movement, 10 cycles @ +100/-50%	NO FAILURE
ASTM D 3583 (Sec.14 Mod.)	Adhesion to Concrete, % Elongation min.	600
ASTM D 3583 (Sec.14 Mod.)	Adhesion to Asphalt, % Elongation min.	600

2.02 ACCESSORIES:

- A. Backer Rod shall be Silspec Backer Rod as manufactured by S.S.I., Tulsa, Oklahoma, or approved equal.
- B. Bond Breaker Tape shall be Silspec Bond Breaker Tape as manufactured by S.S.I., Tulsa, Oklahoma, or approved equal.

2.03 EQUIPMENT:

- A. Equipment shall include all machinery and accessories required to plow, saw, clean and seal the joints as shown on the drawing and as specified.

PART 3 - EXECUTION

3.01 EXAMINATION OF EXISTING CONDITIONS:

- A. Contractor shall inspect conditions prior to beginning work to determine the proper application methods to be used.

3.02 SEALANT SCHEDULE:

- A. Vertical surfaces shall be sealed with Type I silicone sealant.
- B. Horizontal surfaces shall be sealed with Type II self-leveling silicone sealant.

3.03 INSTALLATION:

- A. General: The joint reservoir saw cutting, cleaning, bond breaker installation and joint sealant placement shall be performed in a continuous sequence of operations.
- B. Plowing of joints will be allowed as long as plowing does not spall joint walls. After plowing, the joints are to be sawed to a width (approximately 1/16" - 1/8" per side) sufficient to leave clean sawed joint walls. Depth of cut will be determined by the following chart:

<u>Joint Width</u>	<u>Minimum Joint Depth</u>
1/4"	1"
3/8"	1 1/4"
1/2"	1 1/4"
5/8"	1 1/2"
3/4"	1 3/4"
7/8"	1 7/8"
1"	2"
greater than 1"	2" plus

- C. Sawing Joints: The faces of the joints shall be uniform in width and depth along the full length of the joint.
- D. Cleaning Joints: Immediately after sawing, the resulting concrete slurry shall be completely removed from the joint and adjacent area by flushing with high pressure water. The water flushing shall be done in one-direction to prevent joint contamination.

After complete drying, the joints shall be sandblasted. The nozzle shall be attached to a mechanical aiming device so that the sand blast will be directed at an angle of 45 degrees and at a distance of one to two inches from the face of the joint. Both joint faces shall be sandblasted in separate, one directional passes.

Upon the termination of the sandblasting, the joints shall be blown out using filtered oil-free compressed air. The blow tube shall fit into the joints.

The blown joint shall be checked for residual dust or other contamination. If any dust or contamination is found, the sandblasting and blowing shall be repeated until the joint is cleaned. Solvents shall not be permitted to remove stains and contamination.

Immediately upon satisfactorily cleaning, the bond breaker, breaker rod, and sealant shall be placed in the joint. Open, cleaned joints shall not be left unsealed overnight.

- E. Bond Breaker Rod and Tape: The bond breaker rod and tape shall be installed in the cleaned joint prior to the application of the joint sealant in a manner that will produce the required dimensions.
- F. Joint Sealant: Upon placement of the bond breaker rod and tape, the joint sealant shall be applied using the mechanical injection tool. The joint sealant application shall not be permitted when the air and pavement temperature is less than 40 degrees F (4 degrees C.). Joints shall not be sealed unless they are clean and dry. The sealant surface shall be tooled (not necessary if self-leveling silicone joint sealant is used) to produce a slight concave surface approximately one-quarter inch (1/4") below the pavement surface. The tooling shall be accomplished before a skin forms on the surface of the sealant. The use of soap or oil as an aid in tooling shall not be allowed.

Unsatisfactorily sealed joints shall be refilled. Excess sealant left of the pavement surface shall be removed and discarded and shall not be used to seal the joints. The pavement surface shall present a clean final condition.

Traffic shall not be allowed on the fresh sealant until it becomes tack-free.

- G. Approval of Joints: A representative of the sealant manufacturer shall be present at the job site at the beginning of the final cleaning and sealing of the joints. He shall demonstrate to the Contractor the acceptable method for sealant installation. The manufacturer's representative shall approve the clean, dry joints before the sealing operation commences.
- I. Measurement and Payment: Work performed and materials furnished and used as specified, shall be measured and paid for as follows:

Roadway joints will not be measured or paid for as a separate pay item, but shall be considered subsidiary to the work for which it applies. Contractor shall include the cost of this item in the unit cost of the item to which it applies.

Such payment shall be full compensation for furnishing all materials, and for all equipment, tools, labor, and incidentals necessary to satisfactorily complete the work.

END OF SECTION

1.0 GENERAL

1.01 SCOPE

This section covers drainage piping, and other miscellaneous piping, where applicable for this project. See other specification sections for ductile iron pipe, concrete pipe, PVC pipe, and pretensioned concrete cylinder pipe.

Miscellaneous piping shall be furnished and installed complete with all fittings, jointing materials, hangers and supports, anchors, and other necessary appurtenances.

2.0 PRODUCTS

2.01 MATERIALS

A. Copper Tubing

- | | |
|-------------------------|---|
| 1. Water Tubing | ASTM B88 or Fed Spec
WW-T-799, Type K; cadmium
plated where used for
chlorine service. |
| 2. Fittings | |
| Flared | ANSI B16.26. |
| Solder | ANSI B16.18 or B16.22. |
| 3. Solder | Solid wire, ASTM B32,
Alloy Grade 50A (50-50). |
| 4. Soldering Flux | Paste type, Fed Spec
O-F-506, Type I, Form A. |
| 5. Brazing Filler Metal | AWS A5.8, Bcup-5;
Engelhard "Silvaloy 15,"
Goldsmith "GB-15," or
Handy & Harman "Sil-Fos." |
| 6. Brazing Flux | Paste type, Fed Spec
O-F-499, Type B. |

B. PVC Pipe

- | | |
|-----------------------|--|
| 1. Irrigation Service | ASTM D1785, Schedule 80,
PVC 1120, bearing nSf
seal. |
|-----------------------|--|

C. Protective Coatings

Tape Wrap	AWWA C209; Protecto Wrap "200" or Tapecoat "CT."
Coal Tar Coating	MIL-C-18480; Koppers "50 Bitumastic," Porter "Tarmastic 101," or Tnemec "476 Super Tnemecol."

3.0 EXECUTION

3.01 SERVICE AND TYPE REQUIREMENTS

Except as otherwise specified or authorized, pipe and tubing shall conform to the general requirements which follow. Kinds of pipe for service conditions not listed shall be as specified in other sections, as indicated on the drawings or, in the absence of any definite requirement, as determined by the Engineer.

A. Copper Water Tubing

1. Soft Annealed with Flared Fittings. To be used for piping in contact with earth or submerged.

1-1/4 inch or smaller cold water supply piping.

2. Hard Drawn with Solder Fittings. To be used for 3" or smaller piping inside structures.

Cold water supply piping.

B. PVC Pipe

1. PVC Water Service Pipe With Push-on Solvent Welded Joints.

Miscellaneous piping.

3.02 PIPE JOINTS.

Pipe joints shall be carefully and neatly made in accordance with the requirements which follow.

- A. Threaded. Pipe threads shall conform to ANSI B2.1, NPT, and shall be full and cleanly cut with sharp dies. Not more than three threads at each pipe connection shall remain exposed after installation. Ends of pipe shall be reamed, after threading and before assembly, to remove all burrs.

- B. Flared. Ends of annealed copper tubing shall be cut square and all burrs shall be removed. Flared ends shall be uniform without scratches or grooves.
- C. Solder and Brazed. Joints in 2 inch and larger copper tubing shall be brazed. Where solder fittings are specified for lines smaller than 2 inch, joints may be soldered or brazed at the option of the Contractor. Joints in copper chlorine tubing (if needed) shall be brazed; solder will not be acceptable.

Surfaces to be joined shall be thoroughly cleaned with flint paper and coated with a thin film of flux. At each joint, tubing shall enter to the full depth of the fitting socket.

Care shall be taken to avoid overheating the metal or flux. Each joint shall be uniformly heated to the extent that filler metal will melt on contact. While the joint is still hot, surplus filler metal and flux shall be removed with a rag or brush.

- D. Solvent Welded. The ends of PVC pipe shall be cut square and smooth and shall be wiped clean. Solvent cement shall be applied to the outside of the pipe and the inside of the fitting socket with a small paint brush. The coated surfaces shall be immediately pushed snugly together and the pipe rotated approximately 1/2 turn to insure uniform distribution of the cement. Excess cement shall be removed by wiping.
- E. Flanged. Flange bolts shall be tightened sufficiently to slightly compress the gasket and effect a seal, but not so tight as to distort the flanges.
- F. Welded. Welding shall conform to the specifications and recommendations contained in the "Code for Pressure Piping," ANSI B31.1.
- G. Push-on. Gasket installation and other jointing operations shall be in accordance with the recommendations of the manufacturer. Each spigot end shall be suitably beveled to facilitate assembly. All joint surfaces shall be lubricated with a heavy vegetable soap solution immediately before the joint is completed. Lubricant shall be suitable for use in potable water, shall be stored in closed containers, and shall be kept clean.

3.03 PIPE INSTALLATION

Pipe shall be installed as specified, as indicated on the drawings or, in the absence of detail piping arrangement, in a manner acceptable to the Engineer.

In all piping, insulating fittings shall be provided to prevent contact of dissimilar metals wherever copper tubing or fittings are connected to iron or steel pipe or fittings.

Buried PVC piping shall be "snaked" in the trench and shall be kept as cool as possible during installation. PVC pipe shall be kept shaded and shall be covered with backfill immediately after installation.

3.04 CLEANING

The inside of all pipe, valves, and fittings shall be smooth, clean, and free from blisters, loose mill scale, sand, and dirt when erected. All lines shall be thoroughly blown before placing in service.

3.05 TESTS

All specified tests shall be made by and at the expense of the Contractor in the presence, and to the satisfaction of, the Engineer or his representative. Piping shall be tested at the following pressures:

Service	Test Pressure	Test Medium
Water	150 psi	water
Other piping	1-1/2 times working pressure but not less than 100 psi	suitable fluid or gas

Leakage may be determined by loss of pressure, soap solution, chemical indicator, or other positive and accurate method acceptable to the Engineer or his representative. All fixtures, devices, or other accessories which are to be connected to the lines and which would be damaged if subjected to the specified test pressure shall be disconnected and ends of the branch lines plugged or capped as required during the testing procedures.

All necessary testing equipment and materials, including tools, appliances, and devices shall be furnished and all tests shall be made by and at the expense of the Contractor and at such time as directed by the Engineer.

All joints in piping shall be tight. All joints which are found to leak by observation or during any specified test shall be repaired and tests repeated.

END OF SECTION

APPENDIX A

**GINN, INC. - CONSULTING ENGINEERS
17103 PRESTON ROAD SUITE 100 LB118
DALLAS, TEXAS PROJECT NO. 439**

**MILDRED STREET IMPROVEMENTS
SANITARY SEWER IMPROVEMENTS
TOWN OF ADDISON, TEXAS**



APPENDIX A
DEFINITIONS OF TERMS

APPENDIX A - DEFINITION OF TERMS

Wherever the words, forms or phrases defined herein or pronouns used in their place occur in these specifications, in the contract, in the bonds, in the advertisement, or any other document or instrument herein contemplated, or to which these specifications apply or may apply, the intent and meaning shall be interpreted as follows:

Addenda. The Owner reserves the right to issue addenda to the Project Manual prior to accepting bids for the work. Such addenda shall be and are hereby made a part of these Specifications and Contract Documents. Upon receipt of the addenda, the Contractor shall acknowledge their receipt by listing the addenda and signing the appropriate spaces in the Proposal. The failure of any bidder to receive any such addenda shall not relieve such bidder from any obligation under his bid as submitted.

Advertisement. All of the legal publications pertaining to the work contemplated or under contract.

Approved Equal Substitutions. Several items in the Technical specifications and on the plans are specified by a manufacturer's brand name and catalog number followed by the phrase "or approved equal." This is not intended to unduly restrict competitive procurement or bidding, but it is done to assure a minimum standard of quality which the Engineer and Owner believe to be best for the item specified.

If a Contractor wishes for a substitute item to receive consideration as an "approved equal," the Contractor and each item must meet the following requirements without exception:

(1) An item to be considered as a substitute must meet the same substantial specifications of materials, fabrication or construction, dimension or size, shape, finish, performance standards, warranty or guarantee, and any other pertinent and salient features of quality as indicated in the manufacturer's specifications for the original specified item.

(2) A sample of the item, along with a written request for consideration, shop drawings, and written specifications, must have been received by the Engineer a minimum of fourteen (14) days before the item is to be integrated into the project. The item will then be examined, and the Contractor will be notified in writing seven (7) days later whether or not the item is an "approved equal." The Engineer, acting for the Owner, shall be the final judge of whether or not an item submitted for consideration qualifies as an acceptable substitute.

(3) Under no circumstances will an item be given consideration as an "approved equal" substitute later than fourteen (14) days before item is to be integrated into the project. After that date, all items will be constructed per the original

APPENDIX A - DEFINITION OF TERMS

specifications. Likewise, unless certified as an "approved equal" per the time frame and requirements above, the successful Contractor will install all items per the original Plans and Specifications.

Bidder. Any person, persons, partnership, company, firm, association, or corporation acting directly or through a duly authorized representative submitting a proposal for the work contemplated.

City. The Town of Addison, Texas, acting by and through (a) its governing body, or (b) its City Manager.

Completion Time. The work shall be completed within the number of calendar days provided as part of the Bid Proposal.

Contract. The written agreement covering the performance of the work. The contract includes the advertisement, proposal, specifications, including special provisions, plans or working drawings and any supplemental changes or agreements pertaining to the work or materials therefor, bonds, and all portions of the project manual.

Contractor. The person, persons, partnership, company, firm association, or corporation entering into contract for the execution of the work, acting directly or through a duly authorized representative.

Fees and Permits. This Contractor shall be responsible for securing and paying for all permits, fees, bonds, inspections, etc., as required by the Town of Addison, Texas.

Intent of Plans and Specifications. The Contractor shall complete all work as provided for in this contract, including plans, drawings, and technical specifications. Anything mentioned in the Specifications and not shown on the drawings, or shown on the drawings and not mentioned in the Specifications, shall be included and shall be applicable.

Marked-Up Drawings. The Contractor shall maintain a complete set of Contract Drawings in the field, upon which he is required to note in red, or other clear manner, all deviations, final dimensions, and explanatory notes arising out of actual work installed or performed in the field, and showing all changes arising out of performance of such work. Notes on these drawings shall indicate the installed locations and dimensioned clearances. A set of marked-up (as built) drawings shall be delivered by the Contractor to the Engineer at the completion of the Project.

Measurements. Before ordering materials or doing any work, the Contractor shall in all cases verify measurements at the site or premises and check same against the Drawings. No extra charge or compensation will be allowed on account of differences between

APPENDIX A - DEFINITION OF TERMS

actual dimensions and measurements shown on the drawings. Any differences found shall be submitted to the Owner for resolution before proceeding with the work.

Payment Bond. The approved form of security furnished by the Contractor and his surety as a guaranty for the protection of all claimants supplying labor and material in the prosecution of the work provided for in this contract; said security shall be in accordance with the provisions of Article 5160, Revised Civil Statutes of Texas, as amended by Acts of the Regular Session of the Legislature, 1959.

Performance Bond. The approved form of security furnished by the Contractor and his surety as a guarantee of good faith on the part of the Contractor to execute the work in strict accordance with the plans, specifications and terms of the contract, and that the condition for the period of time required; said security shall be in accordance with the provisions of Article 5160, Revised Civil Statutes of Texas, as amended by Acts of the Regular Session of the Legislature, 1959.

Plan, Plans, or Drawings. All the drawings pertaining to the contract and made a part thereof, including any supplementary drawings or addenda as the Engineer may issue in order to clarify other drawings, or for the purpose of showing changes in the work hereinafter authorized, or for showing details not shown thereon.

Preconstruction Conference. Prior to commencement of the work, the Contractor shall meet with the Owner and the Engineer to develop mutual understanding relative to compliance with this provision regarding the construction of the Work.

Proposal. The written statement or statements duly filed with the City of the person, persons, partnership, company, firm, association, or corporation proposing to do the work contemplated, including the approved form on which the formal bids for the work are to be prepared.

Proposal Guaranty or Bid Bond. The security designated in the advertisement and proposal, to be furnished by each bidder as a guaranty of good faith to enter into a contract with the City and execute the required bonds for the work contemplated after the work is awarded to him, and payment of damages upon his failure to enter into the contract.

Punch List. The Engineer, upon receipt of written notice that work is ready for final observation will arrange to observe and shall observe for compliance of work with terms of the Contract Documents. During observation, the Engineer will prepare duplicate list of deficiencies noted, as a matter of record, and will give one copy to Contractor for his use in correcting said deficiencies.

Delivery of such a "Punch List" to the Contractor by the Engineer shall not be construed by the Contractor as an acceptance of work not performed, nor as an acceptance of work not strictly conforming to Contract Document requirements; nor shall such list be construed as limiting work remaining to be performed by the Contractor for the Project.

Special Provisions. The special clauses setting forth conditions or requirements peculiar to the specific project involved, supplementing the standard specifications, and taking precedence over any conditions or requirements of the standard specifications with which they are in conflict.

Specifications. The directions, provisions, and requirements contained herein, together with the special provisions, supplemental hereto, pertaining to the method and manner of performing the work or to the qualities or quantities of the materials to be furnished under the contract.

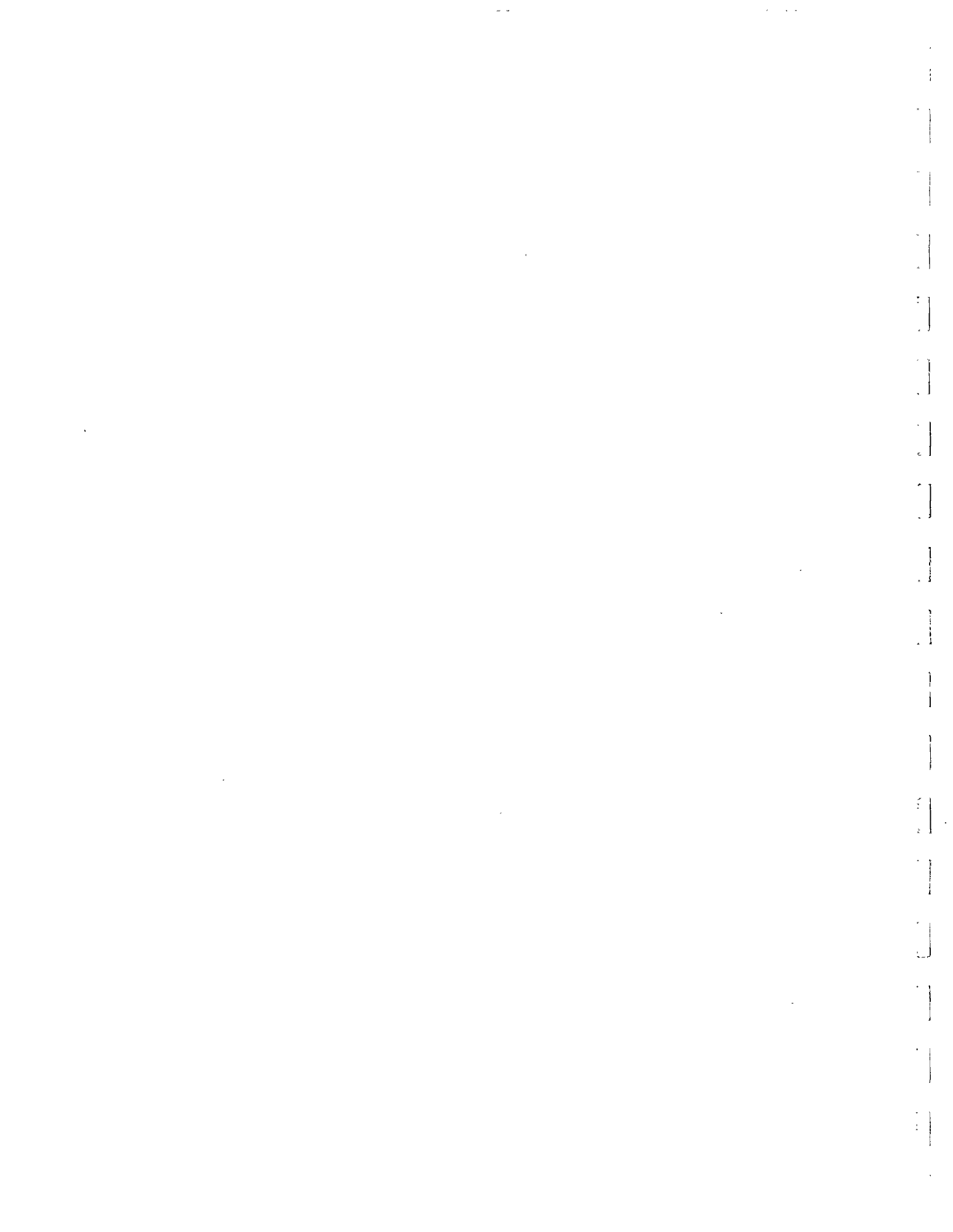
Sureties. The corporate bodies which are bound by such bonds as are required with and for the Contractor. Said sureties engaged to be responsible for the entire and satisfactory fulfillment of the contract, and for any and all requirements as set out in the specifications, contract or plans.

Temporary Water. The Contractor shall make arrangements to provide temporary water and shall pay all associated costs.

The Work. All work, including the furnishing of labor, materials, tools, equipment, and incidentals, to be performed by the Contractor under the terms of the contract.

Working Day. A working day is defined as: a calendar day including Saturdays, Sundays, or legal holidays in which weather or other conditions not under the control of the Contractor will permit the performance of the principal units of work underway for a continuous period of not less than 7 hours between 8 a.m. and 6 p.m. One day will be charged against the contract working time when weather conditions will permit 7 hours of work as delineated above. A principal unit of work shall be that unit which controls the completion time of the contract. Nothing in this definition shall be construed as prohibiting the Contractor from working on Saturdays if he so desires and has the approval of the Engineer. Work on Sundays will not be permitted (except in cases of extreme emergency and then only with the written permission of the Engineer).

END OF APPENDIX A



APPENDIX B

ORDINANCE NO. 085 - 094

AND

EXCAVATION ORDINANCE NO. 084 - 051

**GINN, INC. - CONSULTING ENGINEERS
17103 PRESTON ROAD SUITE 100 LB118
DALLAS, TEXAS PROJECT NO. 439**

**MILDRED STREET IMPROVEMENTS
SANITARY SEWER IMPROVEMENTS
TOWN OF ADDISON, TEXAS**



APPENDIX B

ORDINANCE NO. 085-094

**GINN, INC. - CONSULTING ENGINEERS
17103 PRESTON ROAD SUITE 100 LB118
DALLAS, TEXAS PROJECT NO. 439**

**MILDRED STREET IMPROVEMENTS
SANITARY SEWER IMPROVEMENTS
TOWN OF ADDISON, TEXAS**



ORDINANCE NO. 085-094

AN ORDINANCE OF THE TOWN OF ADDISON, TEXAS, AMENDING CHAPTER 16, DIVISION 2 CONSTRUCTION, OF THE CODE OF ORDINANCES OF THE TOWN OF ADDISON, TEXAS, REGULATING THE OPENING AND EXCAVATING OF STREETS, ALLEYS, SIDEWALKS, AND OTHER PUBLIC GROUNDS; REQUIRING A PERMIT THEREFOR AND PAYMENT OF A FEE; IMPOSING REQUIREMENTS FOR THE PROTECTION OF LIFE AND PROPERTY IN CONNECTION WITH EXCAVATION WORK, INCLUDING TRAFFIC AND PEDESTRIAN SAFEGUARDS AND THE PROTECTION OF UTILITIES AND OTHER PROPERTY; REGULATING THE BACK-FILLING AND RESURFACING OF EXCAVATIONS; PRESCRIBING SURETY BOND AND INSURANCE REQUIREMENTS; PROVIDING FOR PENALTIES; PROVIDING FOR REPEAL; PROVIDING FOR SEVERABILITY; AND DECLARING AN EMERGENCY.

BE IT ORDAINED BY THE CITY COUNCIL OF THE TOWN OF ADDISON, TEXAS:

SECTION 1. That the Code of Ordinances of the Town of Addison, Texas, is hereby amended to amend Chapter 16, Division 2, to read as follows:

DIVISION 2 CONSTRUCTION

Sec. 16-53. Short Title. This Ordinance shall be known and may be cited as the "Street Excavation Ordinance of the Town of Addison."

Sec. 16-56. Definitions. For the purposes of this Ordinance, the following terms, phrases, words and their derivations shall have the meaning given herein. When not inconsistent with the context, words used in the present tense include the future, words in the plural number include the singular number, and words in the singular number include the plural number. The word "shall" is always mandatory and not merely directory.

A. "Applicant" is any person making written application to the Director of Streets for an excavation permit hereunder.

B. "City" is the Town of Addison

C. "City Council" or "Council" is the City Council of the Town of Addison.

D. "Director of Streets" is the Director of Streets of the Town of Addison or his designee.

E. "Excavation Work" is the excavation and other work permitted under an excavation permit and required to be performed under this Ordinance.

F. "Permittee" is any person who has been granted and has in full force and effect an excavation permit issued hereunder.

G. "Person" is any person, firm, partnership, association, corporation, company or organization of any kind.

H. "Street" is any street, highway, sidewalk, alley, avenue, or other public way or public grounds in the City.

I. "Working Day" is any Monday, Tuesday, Wednesday, Thursday or Friday which is not a holiday observed by the City.

Sec. 16-57. Excavation Permit. It shall be unlawful for any person to dig up, break, excavate, jack, bore, tunnel, undermine or in any manner break up any street or to make or cause to be made any excavation in or under the surface of any street for any purpose or to place, deposit or leave upon any street any earth or other excavated material or construction material obstructing or tending to interfere with the free use of the street, unless such person shall first have obtained an excavation permit therefor from the Director of Streets.

Sec. 16-58. Application. No excavation permit shall be issued unless a written application for the issuance of an excavation permit is submitted to the Director of Streets. The written application shall state the name and address of the applicant, the nature, location and purpose of the excavation, the date of commencement and date of completion of the excavation, and other data as may reasonably be required by the Director of Streets. The application shall be accompanied by plans showing the extent of the proposed excavation work, the dimensions and elevations of both the existing ground prior to said excavation and of the proposed excavated surfaces, the location of the excavation work, and such other information as may be prescribed by the Director of Streets. No application shall be

accepted by the Director of Streets more than ten (10) working days prior to date of commencement.

Sec. 16-59. Excavation Permit Fees. A permit fee shall be charged by the Director of Streets for the issuance of an excavation permit which shall be in addition to all other fees for permits or charges relative to any proposed construction work. The excavation permit fee shall be in an amount of Ten and no/100 Dollars (\$10.00).

Sec. 16-60. Revocation of Permit. The Director of Streets may revoke the permit issued hereunder upon the following grounds:

1. failure of Permittee to start excavation work on the commission date provided for in the application or to diligently do such work after beginning.
2. violation any terms or provisions of this Ordinance.
3. giving false information upon the application.
4. changing of subcontractors responsible for the excavation work.

Sec. 16-61. Excavation Placard. The Director of Streets shall provide each permittee at the time a permit is issued hereunder a suitable placard plainly written or printed in English letters at least one inch high with the following notice: "Town of Addison Permit No. _____ Expires _____" and in the first blank space there shall be inserted the number

of said permit and after work "expires" shall be stated the date when said permit expires. It shall be the duty of any permittee hereunder to keep the placard posted in a conspicuous place at the site of the excavation work. It shall be unlawful for any person to exhibit such placard at or about any excavation not covered by such permit, or to misrepresent the number of the permit or the date of expiration of the permit.

Sec. 16-62. Surety Bond. Before an excavation permit as herein provided is issued, the applicant shall deposit with the Director of Streets a surety bond in the amount of \$25,000.00 payable to the City. The Director of Streets shall have the right to reduce the amount of the bond, if he determines in his sole discretion that the proscribed amount would be unreasonable in the light of the scope and cost of the work.

The required surety bond must be:

- A. With good and sufficient surety;
- B. By a surety company authorized to transact business in the state;
- C. Satisfactory to the City Attorney in form and substance;
- D. Conditioned upon the permittee's compliance with this Ordinance and to secure and hold the City and its officers harmless against any and all claims, judgments, or other costs arising from the excavation and other work covered by the excavation permit or for which the City, the

City Council or any city officer may be made liable by reason of any accident or injury to persons or property through the fault of the permittee either in not properly guarding the excavation or for any other injury resulting from the negligence of the permittee, and further conditioned to fill up, restore and place in good and safe condition as near as may be to its original condition, and to the satisfaction of the Director of Streets, all openings and excavations made in streets, and to maintain any street where excavation is made in as good condition for the period of twelve (12) months after said work shall have been done and accepted by City, usual wear and tear excepted, as it was in before said work shall have been done. Any settlement or upheaval of the surface within said twelve (12) month period shall be deemed conclusive evidence of defective back-filling by the permittee. Nothing herein contained shall be construed to require the permittee to maintain any repairs to pavement made by the City if such repairs should prove defective. Any owner of real estate repairing or engaging another to repair his own sidewalk shall not be required to give such bond. Recovery on such bond for any injury or accident shall not exhaust the bond but it shall in its entirety cover any or all future accidents or injuries during the excavation work for which it is given. In the event of any suit or claim against the City

by reason of the negligence or default of the permittee, upon the City's giving written notice to the permittee of such suit or claim, any final judgment against the City requiring it to pay for such damage shall be conclusive upon the permittee and his surety. An annual bond may be given under this provision which shall remain in force for one year conditioned as above, in the amount specified above and in other respects as specified above but applicable as to all excavation work in streets by the principal in such bond during the term of one year from said date.

Sec. 16-63. Routing of Traffic. The permittee shall take appropriate measures to assure that during the performance of the excavation work, traffic conditions as nearly normal as practicable shall be maintained at all times so as to cause as little inconvenience as possible to the occupants of the abutting property and to the general public, provided that the Director of Streets may permit the closing of streets to all traffic for a period of time prescribed by him if in his opinion it is necessary. 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 6:30 p.m., Mondays through Fridays. Emergency closures during these hours shall be with the approval of the Director of Streets. The permittee shall route and control traffic including its own vehicles as directed by the Police Department.

The following steps shall be taken before any street may be closed or restricted to traffic:

A. The permittee must receive the approval of the Director of Streets and the Police Department therefor;

B. The permittee must notify the Chief of the Fire Department of any street so closed;

C. Upon completion of construction work, the permittee shall notify the Director of Streets, Fire Department and the Police Department before traffic is moved back to its normal flow so that any necessary adjustments may be made;

D. Where flagmen are deemed necessary by the Director of Streets, they shall be furnished by the permittee at its own expense. Through traffic shall be maintained without the aid of detours, if possible. In instances in which this would not be feasible, the Director of Streets will designate detours. The City shall maintain roadway surfaces of existing highways designated as detours without expense to the permittee, but in case there are no existing highways, the permittee shall construct all detours at its expense and in conformity with the specifications of the Director of Streets. The permittee will be responsible for any unnecessary damage as may be determined in the Director of Street's sole discretion caused to any highways by the operation of its equipment.

Sec. 16-64. Clearance for Fire Equipment. The excavation

work shall be performed and conducted so as not to interfere with access to fire stations and fire hydrants. Materials or obstructions shall not be placed within 15 feet of fire hydrants.

Passageways leading to fire escapes or fire-fighting equipment shall be kept free of excavated material or other obstructions.

Sec. 16-65. Protection of Traffic. The permittee shall erect and maintain suitable timber barriers to confine earth from trenches or other excavations in order to encroach upon streets as little as possible. The permittee shall construct and maintain adequate and safe crossings over excavations and across streets under improvement to accommodate vehicular and pedestrian traffic at all street intersections. Vehicular crossings shall be constructed and maintained of plank, timbers and blocking of adequate size to accommodate vehicular traffic safely. Decking shall be not less than four inches thick and shall be securely fastened together with heavy wire and staples. Pedestrian crossings shall consist of planking three inches thick, 12 inches wide and of adequate length, together with necessary blocking. The walk shall be not less than three feet in width and shall be provided with a railing as required by the Director of Streets.

Sec. 16-66. Barricades. A permittee shall be responsible for the placement of barricades, warning signals and signal lights sufficient to warn the public of hazard and which are in compliance with the Town of Addison ordinances concerning bar-

ricading of public streets.

Sec. 16-67. Removal and Protection of Utilities. The permittee shall not interfere with any existing utility without the written consent of the utility company or person owning the utility. If it becomes necessary to remove an existing utility, this shall be done by its owner. No utility owned by the City shall be moved to accommodate the permittee unless the cost of such work be borne by the permittee. The cost of moving privately owned utilities shall be similarly borne by the permittee unless it makes other arrangements with the person owning the utility. The permittee shall support and protect by timbers or otherwise all pipes, conduits, poles, wires or other apparatus which may be in any way affected by the excavation work, and do everything necessary to support, sustain and protect them under, over, along or across said work. In case any of said pipes, conduits, poles, wires or apparatus should be damaged, they shall be repaired by the agency or person owning them, and the expense of such repairs shall be charged to the permittee, and his or its bond shall be liable therefor. The permittee shall be responsible for any damage done to any public or private property by reason of the breaking of any water pipes, sewer, gas pipe, electric conduit or other utility. The permittee shall inform itself as to the existence and location of all underground utilities and protect the same against damage.

Sec. 16-68. Protection of Adjoining Property. The permit-

tee shall at all times and at his or its own expense preserve and protect from injury any adjoining property by providing proper foundations and taking other measures suitable for the purpose. Where in the protection of such property it is necessary to enter upon private property for the purpose of taking appropriate protective measures, the permittee shall obtain a license from the owner of such private property for such purpose, and if he cannot obtain a license from such owner, the Director of Streets may authorize him to enter the private premises solely for the purpose of making the property safe. The permittee shall, at its own expense, shore up and protect all buildings, walls, fences or other property likely to be damaged during the progress of the excavation work and shall be responsible for all damage to public or private property or highways resulting from its failure properly to protect and carry out said work. Whenever it may be necessary for the permittee to trench through any lawn area, the sod shall be carefully cut and rolled and replaced with live sod after ditches have been back filled as required in this Ordinance. All construction and maintenance work shall be done in a manner calculated to leave the lawn area clean of earth and debris and in a condition as nearly as possible to that which existed before such work began. The permittee shall not remove, even temporarily, any trees or shrubs which exist in streets without first having notified and obtained the consent of the appropriate City department or City official having control of

such property.

Sec. 16-69. Sidewalk Excavations. Any excavation made in any sidewalk or under a sidewalk shall be provided with a substantial and adequate footbridge over said excavation on the line of the sidewalk, which bridge shall be at least three feet wide and securely railed on each side so that foot passengers can pass over safely at all times.

Sec. 16-70. Protective Measures. The permittee shall erect such fence, railing or barriers about the site of the excavation work as shall prevent danger to persons using the City streets or sidewalks, and such protective barriers shall be maintained until the work shall be completed or the danger removed. At twilight, there shall be placed upon such place of excavation and upon any excavated materials or structures or other obstructions to streets suitable and sufficient lights which shall be kept burning throughout the night during the maintenance of such obstructions. It shall be unlawful for anyone to remove or tear down the fence or railing or other protective barriers or any lights provided there for the protection of the public.

Sec. 16-71. Attractive Nuisance. It shall be unlawful for the permittee to suffer or permit to remain unguarded at the place of excavation or opening any machinery, equipment or other device having the characteristics of an attractive nuisance likely to attract children and hazardous to their safety or health.

Sec. 16-72. Care of Excavated Material. All material excavated from or other materials stored next to trenches and piled adjacent to the trench or in any street shall be piled and maintained in such manner as not to endanger those working in the trench, pedestrians or users of the streets, and so that as little inconvenience as possible is caused to those using streets and adjoining property. Where the confines of the area being excavated are too narrow to permit the piling of excavated material beside the trench, such as might be the case in a narrow alley, the Director of Streets shall have the authority to require that the permittee haul the excavated material to a storage site and then rehaul it to the trench site at the time of back-filling. It shall be the permittee's responsibility to secure the necessary permission and make all necessary arrangements for all required storage and disposal sites.

Sec. 16-73. Damage to Existing Improvements. All damage done to existing improvements during the progress of the excavation work shall be repaired by the permittee. Materials for such repair shall conform with the requirements of any applicable code or ordinance. If upon being ordered, the permittee fails to furnish the necessary labor and materials for such repairs, the Director of Streets shall have the authority to cause said necessary labor and materials to be furnished by the City and the cost shall be charged against the permittee, and the permittee shall also be liable on his or its bond therefor.

Sec. 16-74. Property Lines and Easements. Property lines and limits of easements shall be indicated on the plan of excavation submitted with the application for the excavation permit and it shall be the permittee's responsibility to confine excavation work within these limits.

Sec. 16-75. Clean-up. As the excavation work progresses, all streets and private properties shall be thoroughly cleaned of all rubbish, excess earth, rock and other debris resulting from such work. All clean-up operations at the location of such excavation shall be accomplished at the expense of the permittee and shall be completed to the satisfaction of the Director of Streets. From time to time as may be ordered by the Director of Streets and in any event immediately after completion of said work, the permittee shall at his or its own expense clean up and remove all refuse and unused materials of any kind resulting from said work and upon failure to do so within 24 hours after having been notified to do so in writing by the Director of Streets, said work may be done by the Director of Streets and the cost thereof charged to the permittee, and the permittee shall also be liable for the cost thereof under the surety bond provided hereunder.

Sec. 16-76. Protection of Water Courses. The permittee shall provide for the flow of all water courses, sewers or drains intercepted during the excavation work and shall replace the same in as good condition as it found them or shall make such provi-

sions for them as the Director of Streets may direct. The permittee shall not obstruct the gutter of any street but shall use all proper measures to provide for the free passage of surface water. The permittee shall make provision to take care of all surplus water, muck, silt, slickings or other run-off pumped from excavations or resulting from sluicing or other operations and shall be responsible for any damage resulting from its failure to so provide.

Sec. 16-77. Breaking Through Pavement. Whenever it is necessary to break through existing pavement for excavation purposes and where trenches are to be four feet or over in depth, the pavement and the base shall be removed to at least twelve inches beyond the outer limits of the sub-grade that is to be disturbed in order to prevent settlement, and a twelve-inch shoulder of undisturbed material shall be provided on each side of the excavated trench. The face of the remaining pavement shall be approximately vertical. A power-driven concrete saw shall be used so as to permit complete breakage of concrete pavement or base without ragged edges for the full depth of the pavement. Asphalt paving shall be scored or otherwise cut in a straight line. No pile driver may be used in breaking up the pavement.

Sec. 16-78. Jacking, Boring or Tunneling.

A. Description. This specification shall govern for the provision of the required opening for the installation

of conduits by the methods of jacking, boring, or tunneling as shown on the plans and in conformity with this specification.

B. Construction Requirements. Where encasement or carrier pipe is required to be installed under railroad embankments or under highways, streets, or other facilities by jacking, boring or tunneling methods, construction shall be made in a manner that will not interfere with the operation of the railroad, highway or other facility, and will not weaken or damage any embankment or structure.

The drilling or pilot holes for the alignment of pipe prior to its installation by jacking, boring or tunneling will be a requirement.

The contractor shall take the proper precautions to avoid excavating earth or rock or shattering rock beyond the limits of excavation needed to install the conduit.

C. Construction by Jacking. If the grade of the pipe at the jacking end is below the ground surface, suitable pits or trenches shall be excavated for the purpose of conducting the jacking operations and for placing end joints of the pipe. This excavation shall not be carried to a greater depth than is required for placing of the guide and jacking timbers and no nearer the roadbed than two (2) feet.

At the other end of the pipe, an approach trench shall be excavated accurately to grade. All open trenches and

pits shall be braced and shored in such a manner as will adequately prevent caving or sliding of the walls into the open trench or pit.

Heavy duty jacks suitable for forcing the pipe through the embankment shall be provided. In operating jacks, even pressure shall be applied to all jacks used. A suitable jacking head not less than six (6) inches larger than the outside diameter of the pipe, usually of timber, and suitable bracing between jacks and jacking head shall be provided so that pressure will be applied to the pipe uniformly around the ring of the pipe. The jacking head shall be of such weight and dimensions that it will not bend or deflect when full pressure is applied at the jack. The jacking head shall be provided with an opening for the removal of excavated material as the jacking proceeds. A suitable jacking frame or backstop shall be provided. The pipe to be jacked shall be set on guides which are straight and securely braced together in such a manner to support the section of the pipe and to direct it in the proper line and grade. All timber and other materials used in the construction of the jacking assembly will be of such quality and dimensions that they will withstand all stresses to which they are subjected in such a manner as to insure even pressures on the pipe during jacking operations. The whole jacking assembly shall be placed so as to line up with the

direction and grade of the pipe.

As the jacking proceeds, the embankment material shall be excavated slightly in such a manner to avoid making the excavation larger than the outside diameter of the pipe, with the excavated material being removed through the pipe. The excavation for the underside of the pipe, for at least one-third ($1/3$) of the circumference of the pipe, shall conform to the contour and grade of the pipe. The excavation for the top half of the pipe shall conform closely to the outside diameter of the pipe and a clearance greater than two (2) inches will not be permitted. All voids between the pipe and the earth will be filled with grout proportioned 1:7 minimum mix grout with five percent (5%) to forty percent (40%) air entrainment. Grout holes may be provided in the pipe or grouting may be made through drill holes from the ground surface if practical. The grouting shall follow immediately upon completion of the jacking operation.

All carrier pipe installed by jacking shall be supported by quarter point cradle of 2000 PSI concrete across the jacking pit and to the first joint in the ditch section on each end.

The distance that the excavation shall be extended beyond the end of the pipe depends on the character of the material, but it shall not exceed two (2) feet in any case. The pipe, preferably, shall be jacked from the low or

downstream end.

When the jacking of pipe is once begun, the operation shall be carried on without interruption, insofar as practicable to prevent the pipe from becoming firmly set in the embankment.

Any pipe damaged in jacking operations shall be repaired or removed and replaced by the contractor at his entire expense.

The pits or trenches excavated to facilitate jacking operation shall be filled immediately after the jacking of the pipe has been completed unless an encasement only has been installed; in which case, the trenches and pits shall be left open until the carrier pipe has been laid through and manholes have been built if required. The pits or trenches will then be backfilled in accordance with the location and conditions as are covered elsewhere in these specifications.

If a carrier pipe is laid through an encasement pipe, the bedding of crushed rock, concrete, grout or granular material, if any, will be considered a part of the jacking operation.

D. Construction by Boring. The hole shall be bored mechanically with a suitable boring assembly designed to produce a smooth, straight shaft and so operated that the completed shaft will be at the established line and grade.

The size of the bored hole shall be of such diameter to provide ample clearance for bells or other joints. All carrier pipe installed by boring shall be supported by quarter point cradle of 2000 PSI concrete across the boring pit and to the first joint in the ditch section on each end.

All voids will be grouted with a 1:7 minimum mix with five percent (5%) to forty percent (40%) air entrainment, and will be considered a part of the unit price of the boring operation.

E. Construction by Tunneling. The tunnel shall be excavated in such a manner and to such dimensions which will permit placing of the proper supports necessary to protect the excavation.

All equipment operated in the tunnel shall be powered by either air or electricity. No equipment will be permitted in the tunnel that uses a petroleum product for fuel. Electric lights shall be used for illumination of the tunnel construction, for illumination of completed portions of the tunnel used for passage, and wherever lighting is needed for inspection of the work. Sufficient number of lamps shall be used to properly illuminate the work, and all wiring for electric power and lights shall be installed and maintained in a safe and secure manner in accordance with the current Electrical Code of the City. The contractor shall maintain the tunnel air in a condition suitable for

the health of the workmen and sufficiently clear for surveying operations. A sufficient supply of fresh air shall be provided to make for the quick and complete removal of gases and dust resulting from blasing or other tunnel operations. Except when unnecessary due to natural ventilation, artificial ventilation shall be maintained in the tunnel by ventilating plants of ample capacity operated when needed to meet the preceding requirements.

If required by the plans or if required for safety, suitable steel or timber sheeting shoring and bracing shall be used to support the sides and roof of the excavation. Supports may be left in place provided that they clear the encasement or carrier pipe. Nothing contained herein shall prevent the contractor from placing such temporary or permanent supports as he shall deem necessary, nor shall it be construed as relieving the contractor from his full responsibility for the safety of the work, and for all damages to persons and property.

If the tunnel is to be lined with concrete as a monolithic structure, then the overbreak, if any, or voids will be poured with concrete of the required strength as detailed on plan. If the strength is not indicated, the 28-day strength will be a minimum of 3000 PSI.

Unless otherwise indicated or specified, the entire void between the outside of the pipe and the tunnel walls or

the inside face of the tunnel lining shall be backfilled with concrete having a minimum compressive strength of 2000 pounds per square inch at 28 days or 1:7 minimum mix grout with five percent (5%) to forty percent (40%) air entrainment. No concrete or grout shall be placed around the pipe unless the permanent sheeting, bottom, sides and roof of the tunnel are in a condition satisfactory to the Director of Streets. The minimum thickness of concrete or grout backfill shall be maintained throughout. Concrete required for backfill in excess of the minimum dimensions shown on plan will be at the entire expense of the contractor.

Sec. 16-79. Back-filling. Unless waived by the Director of Streets, back-filling in any street opened or excavated pursuant to an excavation permit issued hereunder shall be compacted to a minimum dry density of 95% of standard proctor density, within three percent (3%) of optimum moisture. Compacting shall be done by mechanical tampers or vibrators by rolling in layers, as required by the soil in question and sound engineering practices generally recognized in the construction industry. The Director of Streets shall have the right to require testing to determine the compaction, and such testing shall be at the expense of permittee.

Sec. 16-80. Dry Back-Filling. Back-filling up to the first 12 inches above the top of the utility pipes or similar installations shall be done in four inch to six inch layers. Each layer

is to be tamped by manual or mechanical means. Layers that are hand tamped shall not exceed four inches in thickness. Layers that are power tamped shall not exceed six inches in thickness. The same requirements shall apply to the remainder of the back-filling if tamping is the method used for back-filling. Back-filling of all pipes of over 24 inches in diameter shall be carried up to the spring line of the pipe in three-inch layers, with each layer moistened and thoroughly tamped with suitable mechanical equipment. The back-fill around all pipes 24 inches or less in diameter shall be tamped as specified above to a depth of 12 inches above the top of the pipe before any additional back-filling is placed thereon.

Sec. 16-81. Back-Fill Material. Whenever any excavation for the laying of pipe is made through rock, the pipe shall be laid six inches above the rock bottom of the trench and the space under, around and six inches above the pipe shall be back-filled with clean river sand, non-corrosive soil or one-quarter inch minus gravel or in accordance with manufacturer's specification if approved in writing by the Director of Streets. Broken pavement, large stones, and debris shall not be used in the back-fill.

Sec. 16-82. Back-Filling of the Surface. Back-filling shall be completed by placing the back-fill material well up over the top of the trench. For dry back-filling, the material shall be compacted with a roller of an approved type or with the rear

of a truck carrying at least five tons until the surface is unyielding. The surface shall then be graded as required.

Sec. 16-83. Restoration of Surface. The permittee shall restore the surface of all streets, broken into or damaged as a result of the excavation work, to its original condition in accordance with the specifications of the Director of Streets. The permittee may be required to place a temporary surface over openings made in paved traffic lanes. Except when the pavement is to be replaced before the opening of the cut to traffic, the fill above the bottom of the paving slab shall be made with suitable material well tamped into place and this fill shall be topped with a minimum thickness of bituminous mixture which is suitable to maintain the opening in good condition until permanent restoration can be made. The crown of the temporary restoration shall not exceed one inch above the adjoining pavement. The permittee shall exercise special care in making such temporary restorations and must maintain such restorations in safe traveling condition until such time as permanent restorations are made. The asphalt which is used shall be in accordance with the specifications of the Director of Streets.

Permanent restoration of the street shall be made by the permittee in strict accordance with the specifications prescribed by the Director of Streets to restore the street to its original and proper condition, or as near as may be.

Acceptance or approval of any excavation work by the

Director of Streets shall not prevent the City from asserting a claim against the permittee and his or its surety under the surety bond required hereunder for incomplete or defective work if discovered within twelve (12) months from the completion of the excavation work. The Director of Streets' presence during the performance of any excavation work shall not relieve the permittee of its responsibilities hereunder.

Sec. 16-84. City's Right to Restore Surface. If the permittee shall have failed to restore the surface of the street to its original and proper condition upon the expiration of the time fixed by such permit or shall otherwise have failed to complete the excavation work covered by such permit, the Director of Streets, if he deems it advisable, shall have the right to do all work as necessary to restore the street and to complete the excavation work. The permittee shall be liable for the actual cost thereof plus 25% of such cost for general overhead and administrative expenses. The City shall have a cause of action for all fees, expenses and amounts paid out and due it for such work and shall apply in payment of the amount due it any funds of the permittee deposited as herein provided, and the City shall also enforce its rights under the permittee's surety bond provided pursuant to this Ordinance.

It shall be the duty of the permittee to guarantee and maintain the site of the excavation work in the same condition it was prior to the excavation for one year after restoring it to its

original condition.

Sec. 16-85. Trenches in Pipe Laying. Except by special permission from the Director of Streets, no trench shall be excavated more than 250 feet in advance of pipe laying nor left unfilled more than 500 feet where pipe has been laid. The length of the trench that may be opened at any one time shall not be greater than the length of pipe and the necessary accessories which are available at the site ready to be put in place. Trenches shall be braced and sheathed according to generally accepted safety standards for construction work as prescribed by the Director of Streets. No timber bracing, lagging, sheathing or other lumber shall be left in any trench.

Sec. 16-86. Prompt Completion of Work. The permittee shall prosecute with diligence and expedition all excavation work covered by the excavation permit and shall promptly complete such work and restore the street to its original condition, or as near as may be, as soon as practicable and in any event not later than the date specified in the excavation permit therefor.

Sec. 16-87. Urgent Work. If in his judgment, traffic conditions, the safety or convenience of the traveling public or the public interest require that the excavation work be performed as emergency work, the Director of Streets with the consent of the City Manager, if the excavation is within 300 feet of a residence, shall have full power to order, at the time the permit is granted, that a crew of men and adequate facilities be employed

by the permittee 24 hours a day to the end that such excavation work may be completed as soon as possible.

Sec. 16-88. Emergency Action. In the event of any emergency in which a sewer or water main, conduit or utility in or under any street breaks, bursts or otherwise is in such condition as to immediately endanger the property, life, health or safety of any individual, the person owning or controlling such sewer, main, conduit or utility, without first applying for and obtaining an excavation permit hereunder, shall immediately take proper emergency measures to cure or remedy the dangerous conditions for the protection of property, life, health and safety of individuals. However, such person owning or controlling such facility shall apply for an excavation permit not later than the end of the next succeeding day during which the Director of Streets' office is open for business, and shall not proceed with permanent repairs without first obtaining an excavation permit hereunder.

Sec. 16-89. Noise, Dust and Debris. Each permittee shall conduct and carry out the excavation work in such manner as to avoid unnecessary inconvenience and annoyance to the general public and occupants of neighboring property. The permittee shall take appropriate measures to reduce to the fullest extent practicable in the performance of the excavation work, noise, dust and unsightly debris and during the hours of 10:00 p.m. and 7:00 a.m. shall not use, except with the express written per-

mission of the City Manager, or in case of an emergency as herein otherwise provided, any tool, appliance or equipment producing noise of sufficient volume to disturb the sleep or repose of occupants of the neighboring property.

Sec. 16-90. Preservation of Monuments. The permittee shall not disturb any surface monuments or hubs found on the line of excavation work until approved to do so by the Director of Streets.

Sec. 16-90a. Inspections. The Director of Streets shall make such inspections as are reasonably necessary in the enforcement of this Ordinance. The Director of Streets shall have the authority to promulgate and cause to be enforced such rules and regulations as may be reasonably necessary to enforce and carry out the intent of this Ordinance.

Sec. 16-90b. Maintain Drawings. Users of sub-surface street space shall maintain accurate drawings and plans showing the location and character of all underground structures.

Sec. 16-90c. Applicability of Ordinance to City Work and Utility Companies. The provisions of this Ordinance shall not be applicable to any excavation work under the direction of a competent city authority by employees of the City. Any contractor of the City performing work for or in behalf of the City necessitating openings or excavations in streets shall comply with this Ordinance unless the Director of Streets shall, in writing, waive compliance of the requirements of this Ordinance upon the terms

and conditions he deems necessary. All provisions of this Ordinance shall be applicable to public utility companies and their contractors, except the provision which requires the payment of a permit fee and the provision which requires a surety bond provided such utility company has agreed to indemnify the City against damage and losses covered by the bond.

Sec. 16-90d. Insurance. A permittee, prior to the commencement of excavation work hereunder, shall furnish to the Director of Streets satisfactory evidence in writing that the permittee has in force and will maintain in force during the performance of the excavation work and the period of the excavation permit public liability insurance of not less than \$100,000 for any one person and \$300,000 for any one accident and property damage insurance of not less than \$50,000 duly issued by an insurance company authorized to do business in this State. However, if the Director of Streets determines that the cost of the excavation to be performed by permittee exceeds \$50,000, then the Director of Streets, at his discretion, may require the permittee to maintain in force during the performance of the excavation work and the period of excavation permit public insurance not less than \$1,000,000 for any one person and \$3,000,000 for any one accident and property damage insurance not less than \$500,000, duly executed by an insurance company authorized to do business in this State.

Sec. 16-90e. Liability of City. This Ordinance shall not

be construed as imposing upon the City or any official or employee any liability or responsibility for damages to any person injured by the performance of any excavation work for which an excavation permit is issued hereunder; nor shall the City or any official or employee thereof be deemed to have assumed any such liability or responsibility by reason of inspections authorized hereunder, the issuance of any permit or the approval of any excavation work.

Sec. 16-90f. Unlawful Activities. It shall be unlawful for any person to injure, deface, destroy unlawfully, willfully and maliciously, any pipes, cables, lines, belonging to the Town of Addison or public utilities, including, but not limited to, gas, electric, telephone and cable T.V.

SECTION 2. Any person, firm or corporation violating any of the provisions of this Ordinance, shall upon commission be deemed guilty of a misdemeanor, and shall be subject to a fine not to exceed the sum of Two Hundred and no/100 Dollars (\$200.00) for each offense, and each day such violation continues shall constitute a separate offense.

SECTION 3. That all ordinances of the City in conflict with the provisions of this ordinance be, and the same are hereby repealed and all other ordinances of the City not in conflict with the provisions of this ordinance shall remain in full force and effect.

SECTION 4. That should any paragraph, sentence, subdivi-

sion, clause, phrase or section of this ordinance be adjudged or be held to be unconstitutional, illegal or invalid, the same shall not affect the validity of this ordinance as a whole or any part or provision thereof other than the part so decided to be invalid, illegal, or unconstitutional.

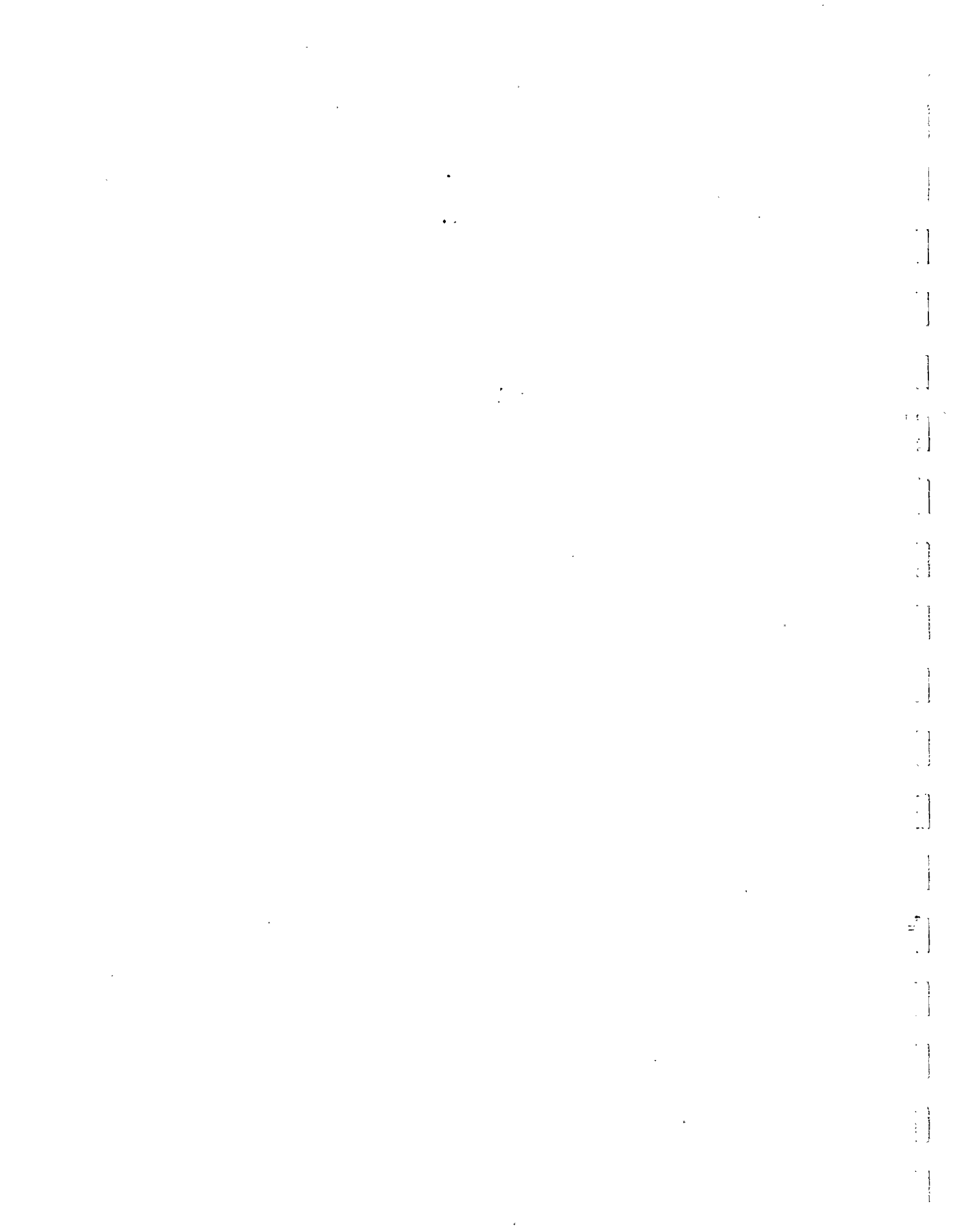
SECTION 5. The fact that the present Code does not provide for the regulation of opening and excavating streets, alleys, sidewalks, and other public ground and is therefore inadequate to properly safeguard the general public, health and safety, creates an emergency and an imperative public necessity, and the ordinance shall take effect and be in force from and after its adoption.

DULY PASSED BY THE CITY COUNCIL OF THE TOWN OF ADDISON,
TEXAS, this the _____ day of _____, 1985.

MAYOR

ATTEST:

CITY SECRETARY

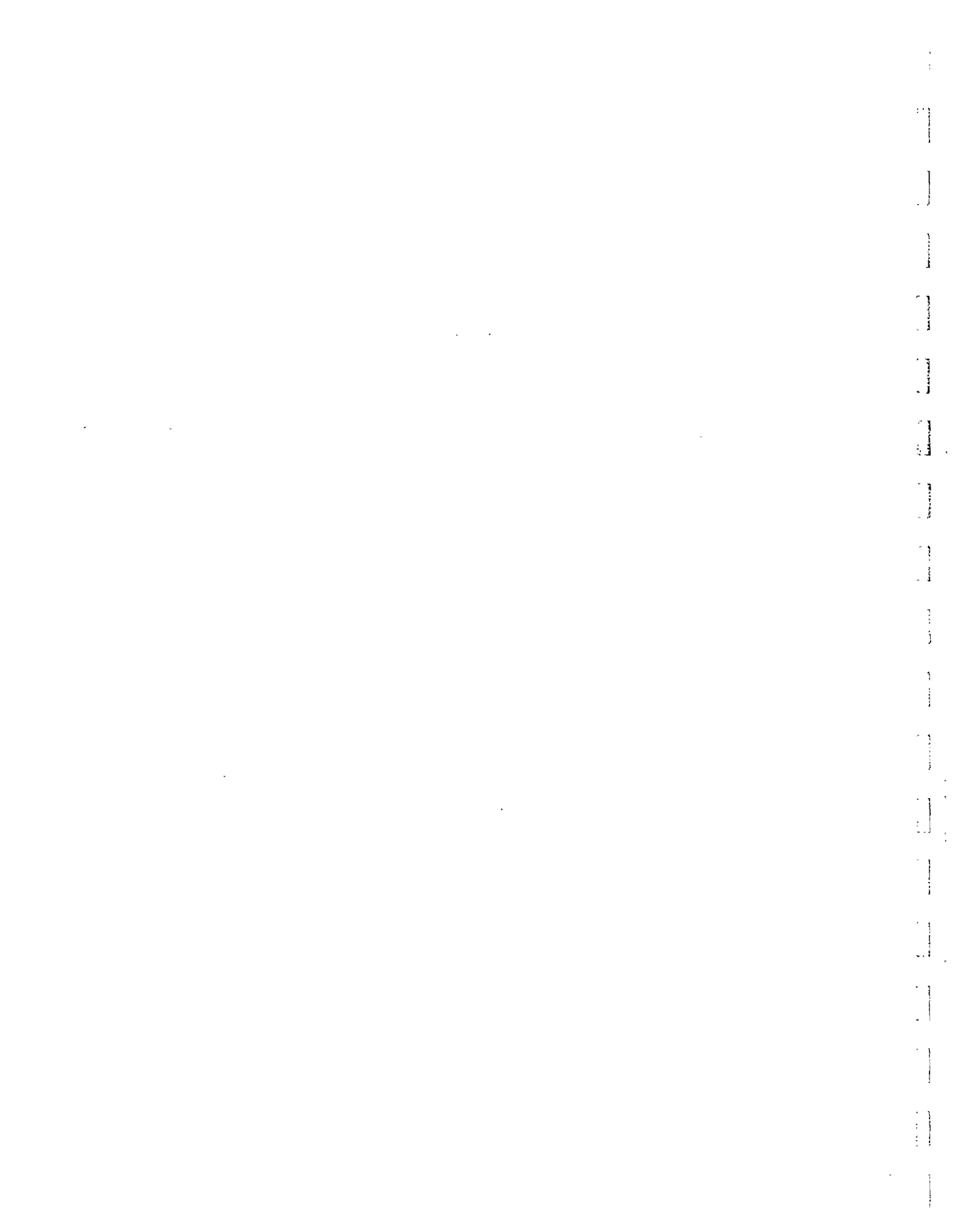


APPENDIX B

EXCAVATION ORDINANCE NO. 084-051

**GINN, INC. - CONSULTING ENGINEERS
17103 PRESTON ROAD SUITE 100 LB118
DALLAS, TEXAS PROJECT NO. 439**

**MILDRED STREET IMPROVEMENTS
SANITARY SEWER IMPROVEMENTS
TOWN OF ADDISON, TEXAS**



ORDINANCE NO. 084-051

AN ORDINANCE OF THE TOWN OF ADDISON, TEXAS, AMENDING CHAPTER 5 OF THE CODE OF ORDINANCE BOOK OF THE TOWN OF ADDISON, TEXAS, PROVIDING FOR INTENT AND PURPOSE; PROVIDING FOR PROHIBITING EXCAVATION, ERECTION, CONSTRUCTION OR DEMOLITION AT NIGHT; PROVIDING FOR AN EXCEPTION; PROVIDING FOR A PERMIT; PROVIDING FOR PENALTIES; PROVIDING FOR CONFLICTING SECTIONS; PROVIDING FOR A REPEAL CLAUSE; PROVIDING FOR SEVERABILITY; AND DECLARING AN EMERGENCY.

BE IT ORDAINED BY THE CITY COUNCIL OF THE TOWN OF ADDISON, TEXAS:

SECTION 1. That the Code of Ordinance Book of the Town of Addison, Texas, is hereby amended by adding Section 5-37.5 to read as follows:

Sec. 5-37.5. Prohibiting excavation, construction or demolition at night.

(a) Intent and purpose. The City Council of the Town of Addison finds and declares that:

1. The uncontrolled excavation, erection, construction or demolition at night upon buildings or structures presents an inconvenience or danger to the welfare and safety of those persons residing within or near the buildings or structures worked upon.
2. Such nocturnal activity causes inconvenience or danger to those persons residing within or near the buildings or structures worked upon so as to constitute a public nuisance.
3. It is matter of public necessity that the Town of Addison protect those persons residing within or near the buildings or structures worked upon from the danger posed by such nocturnal activity.
4. The provisions and prohibitions hereinafter contained

and enacted are in pursuance of and for the morals and general welfare of persons in the Town of Addison.

5. There is an immediate and present danger presented by the above described uncontrolled nocturnal activity, creating an emergency.

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

(c) The provisions of this section shall not apply to city and utility company when engaged in the installation or repair of utility lines situated within such buildings or structures.

SECTION 2. That any person, firm, or corporation violating any of the provisions of this ordinance shall upon commission be deemed guilty of a misdemeanor, and shall be subject to a fine not to exceed the sum of Two Hundred Dollars (\$200.00) for each offense, and each day such violation continues shall constitute a separate offense. Further more, the construction or building permit of a person, firm or corporation may be revoked if said person, firm or corporation continues violating any of the provisions of this ordinance.

SECTION 3. That all ordinances of the City in conflict with the provisions of this ordinance be, and the same are hereby repealed and all other ordinances of the city not in conflict with the provisions of this ordinance shall remain in full force and effect.


SECTION 4. That should any paragraph, sentence, subdivision, clause, phrase or section of this ordinance be adjudged or be held to be unconstitutional, illegal or invalid, the same shall not affect the validity of this ordinance as a whole or any part or provision thereof other than the part so decided to be invalid, illegal, or unconstitutional.

SECTION 5. The importance of this ordinance creates an emergency and an imperative public necessity, and the ordinance shall take effect and be in force from and after its adoption.

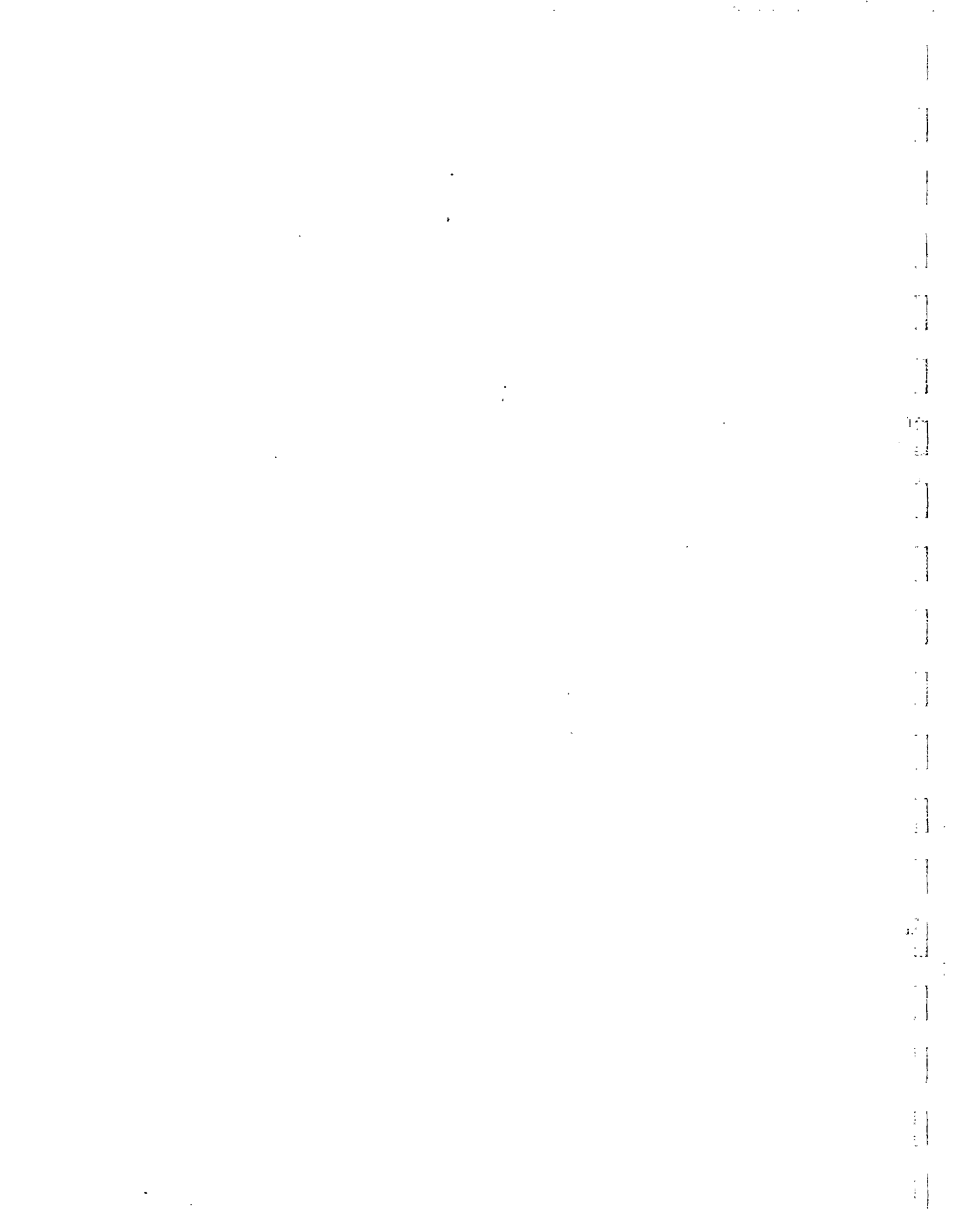
DULY PASSED BY THE CITY COUNCIL OF THE TOWN OF ADDISON,
TEXAS, on this the 24th day of July, 1984.


MAYOR

ATTEST:


ASSISTANT CITY SECRETARY

IS



APPENDIX C

WAGE RATE RESOLUTION NO. R88-091

**GINN, INC. - CONSULTING ENGINEERS
17103 PRESTON ROAD SUITE 100 LB118
DALLAS, TEXAS PROJECT NO. 439**

**MILDRED STREET IMPROVEMENTS
SANITARY SEWER IMPROVEMENTS
TOWN OF ADDISON, TEXAS**

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RESOLUTION NO. R88-091

A RESOLUTION OF THE TOWN OF ADDISON, TEXAS, ADOPTING A SCHEDULE FOR GENERAL PREVAILING RATES OF PER DIEM WAGES FOR PUBLIC WORKS PROJECTS.

WHEREAS, Article 5159a of Texas Revised Civil Statutes requires a municipality to ascertain the general prevailing rate of per diem wages for public works projects in the locality;

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE TOWN OF ADDISON, TEXAS:

That, the Highway, Heavy, Utilities & Industrial Branch schedule (the "Schedule") attached hereto as Exhibit "A" and incorporated herein by reference, accurately reflects the general prevailing rate of per diem wages in the area; and

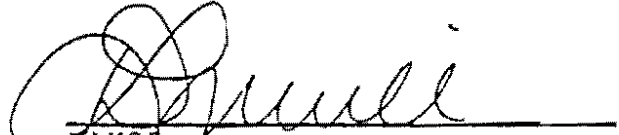
That, the City Council hereby adopts the Schedule attached hereto as Exhibit "A" as the prevailing rate of per diem wages for public works projects performed in the Town of Addison, Texas, and its vicinity; and

That, the Schedule shall be made a part of every contract for public work on behalf of the Town of Addison, Texas, and shall be made a part of every call for bids for such contract; and

That, pursuant to state law, the Town of Addison, Texas, intends that the contractor to whom the public works contract is awarded, and upon every subcontractor working under him, pay to all laborers, workmen and mechanics employed by them in the exe-

cution of the contract rates not less than those listed on the
Schedule.

DULY PASSED BY THE CITY COUNCIL OF THE TOWN OF ADDISON,
TEXAS, this the 8th day of November, 1988.


MAYOR

ATTEST:


CITY SECRETARY

**AGC OF TEXAS
HIGHWAY, HEAVY, UTILITIES & INDUSTRIAL BRANCH
SEPTEMBER 1988**

**WAGE RATES PAID FOR HIGHWAY-HEAVY CONSTRUCTION AND PAVING AND UTILITIES
INCIDENTAL TO GENERAL BUILDING CONSTRUCTION, ZONE 36, WHICH INCLUDES:**

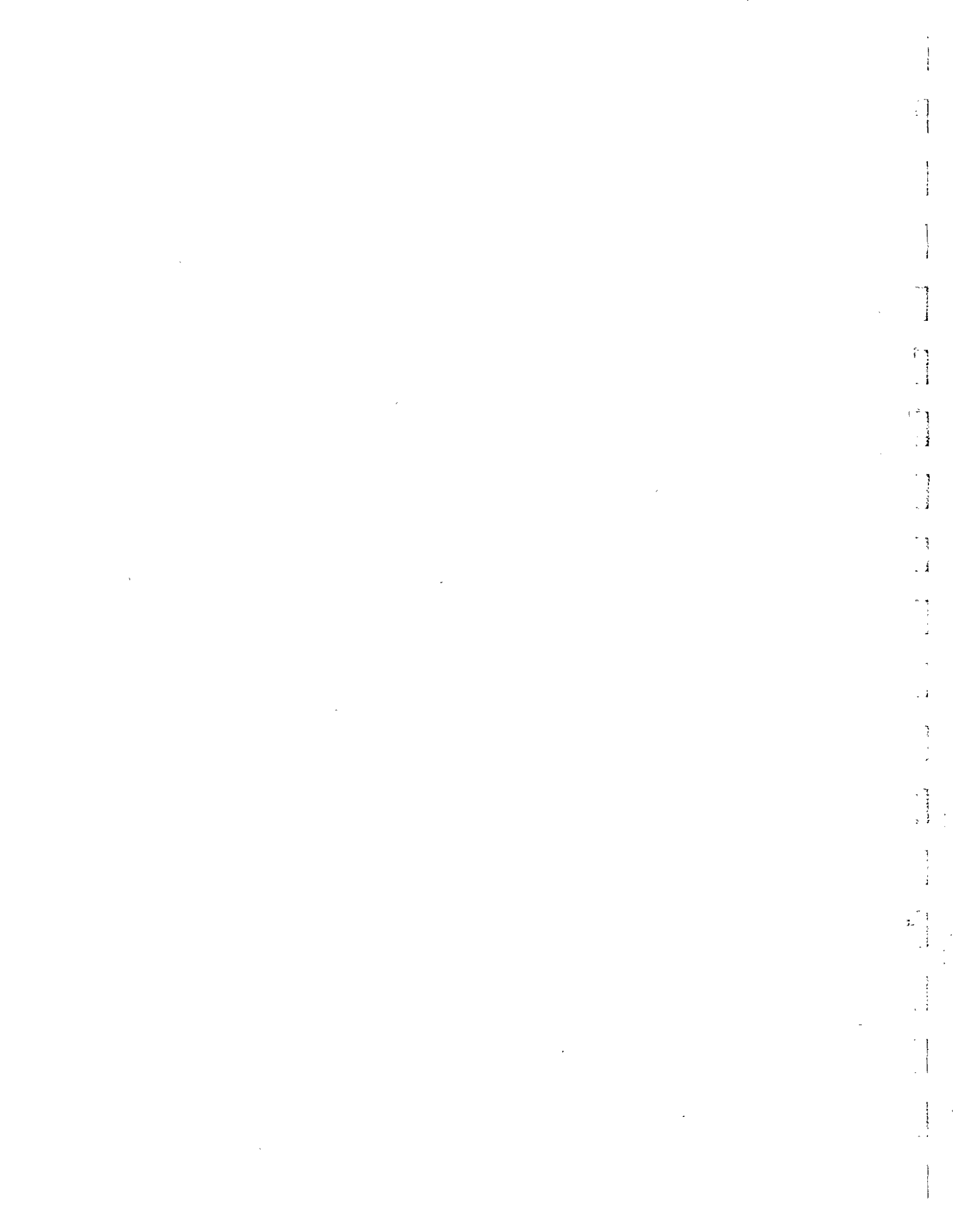
DALLAS COUNTY TEXAS

<u>Classification</u>	<u>Hourly Rate</u>	<u>Classification</u>	<u>Hourly Rate</u>
Air Tool Operator	7.50	<u>POWER EQUIPMENT OPERATORS, CONT.</u>	
Asphalt Heater Operator	8.00	Roller, Steel Wheel (Other	8.05
Asphalt Raker	9.00	Flat Wheel or Tamping)	
Asphalt Shoveler	8.25	Roller, Pneumatic (Self	7.10
Batching Plant Scale Operator	8.50	Propelled)	
Batterboard Setter	8.45	Scrapers (17 CY & Less)	7.90
Carpenter, Rough	9.10	Scrapers (Over 17 CY)	8.30
Carpenter Helper, Rough	7.10	Self-Propelled Hammer	6.00
Concrete Finisher (Pav)	9.20	Side Boom	6.00
Concrete Finisher Hlpr. (Pav)	7.40	Tractor (Crawler) 150HP &	8.00
Concrete Finisher (Strs)	8.90	Less	
Concrete Finisher Hlpr. (Strs)	6.90	Tractor (Crawler) Over 150HP	8.30
Concrete Rubber	7.00	Tractor (Pneumatic) 80HP &	7.35
Electrician	12.25	Less	
Electrician Helper (Sr.)	10.20	Tractor (Pneumatic) Over	7.40
Electrician Helper (Jr.)	8.75	80 HP	
Form Builder (Strs)	8.20	Traveling Mixer	7.25
Form Builder Helper (Strs)	6.90	Trenching Machine, Light	7.80
Form Liner (Pav & Curb)	8.50	Trenching Machine, Heavy	8.00
Form Setter (Pav & Curb)	8.55	Reinforcing Steel Setter	7.00
Form Setter Hlpr. (Pav & Curb)	7.50	(Paving)	
Form Setter (Strs)	8.10	Reinforcing Steel Setter	9.60
Form Setter Helper (Strs)	6.80	(Strs)	
Laborer, Common	6.10	Reinforcing Steel Setter	7.20
Laborer, Utility	7.05	Helper	
Mechanic	10.00	Sign Erector	8.30
Mechanic Helper	8.90	Sign Erector Helper	7.10
Oiler	8.50	Spreader Box Operator	7.30
Servicer	7.55		
Painter (Strs)	10.00	<u>TRUCK DRIVERS.</u>	
Pipelayer	7.45	Single Axle, Light	7.15
Pipelayer Helper	6.50	Single Axle, Heavy	7.40
Pneumatic Mortar Operator	6.80	Tandem Axle or Scmitrailer	7.15
		Lowboy-Float	7.90
<u>POWER EQUIPMENT OPERATORS.</u>		Transit Mix	7.20
Asphalt Distributor	7.85	Winch	7.00
Asphalt Paving Machine	8.95		
Broom or Sweeper Oper	8.75	Welder	9.85
Bulldozer, 150 HP & less	8.05	Flagger	5.75
Bulldozer, Over 150 HP	9.05	Milling Machine Operator	8.05
Concrete Pav. Curing Machine	8.40		
Concrete Pav. Finishing Mach.	9.05		
Concrete Pav. Form Grader	9.75		
Concrete Pav. Joint Machine	8.00		
Concrete Paving Saw	8.30		
Concrete Paving Spreader	8.60		
Crane, Clamshell, Backhoe,	9.10		
Derrick, Dragline, Shovel			
(less than 1 1/2 CY)			
Crane, Clamshell, Backhoe,	9.80		
Derrick, Dragline, Shovel			
(1 1/2 CY & over)			
Crusher or Scrm'g Plant Oper.	6.00		
Form Loader	6.40		
Foundation Drill Operator	10.05		
(Truck Mounted)			
Front End Loader	8.30		
(2 1/2 CY & less)			
Front End Loader	8.95		
(Over 2 1/2 CY)			
Mixer (16 CF & Less)	6.60		
Motor Grade Operator, Fine	9.75		

Contractor shall comply with State and Federal laws applicable to such work.

The above are minimum rates. Bidders shall base their bids on rates they expect to pay if in excess of those listed. The owner will not consider claims for extra payment to the Contractor on account of payment of wages higher than above specified.

Any work performed by any laborer, workman or mechanic in excess of forty (40) hours per week or who work on legal holidays shall be paid for at one and one-half (1-1/2) times the regular rate.

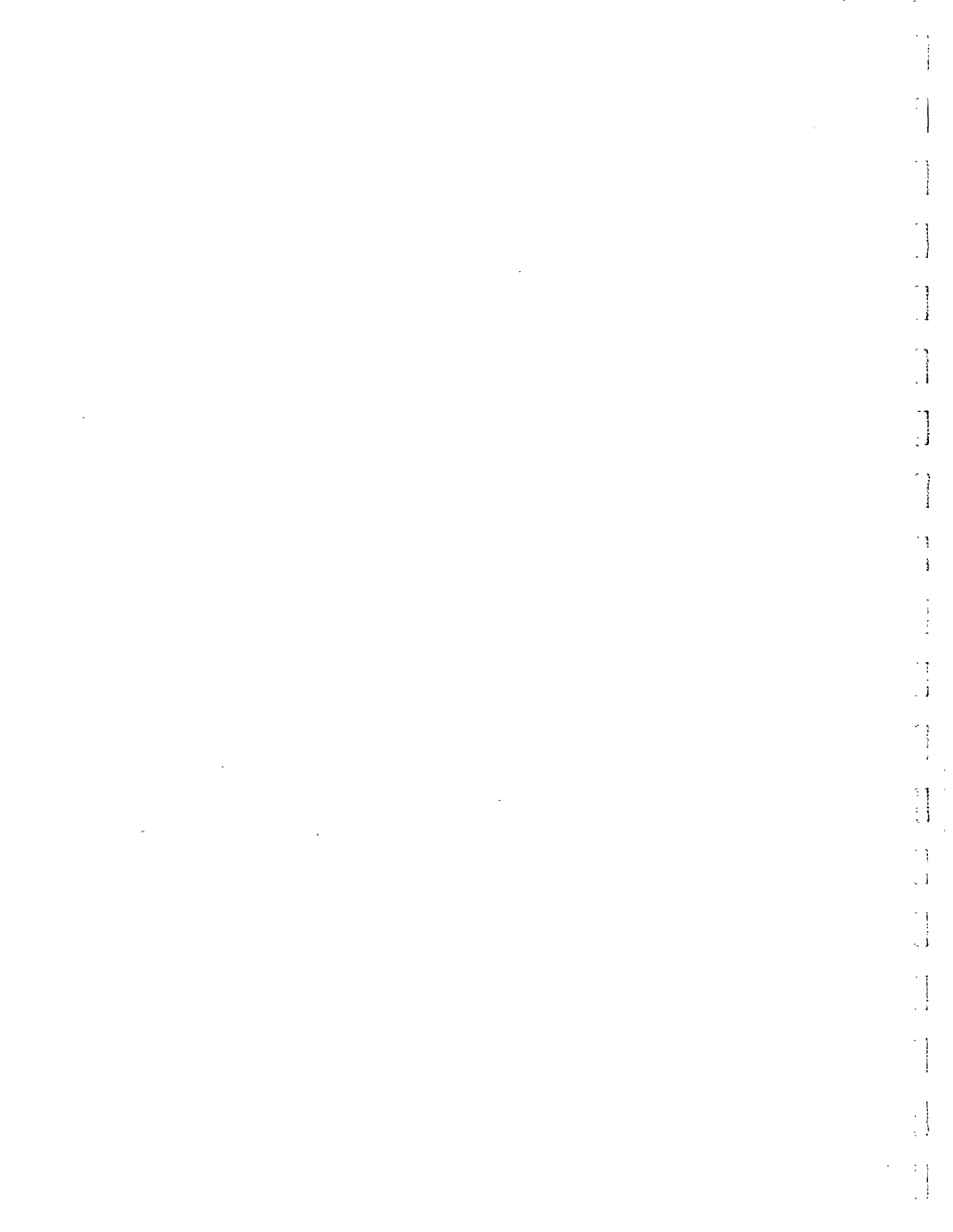


APPENDIX D

**ORDINANCE NO. 084-051
REGULATING HOURS OF CONSTRUCTION
RESIDENTIAL AREAS**

**GINN, INC. - CONSULTING ENGINEERS
17103 PRESTON ROAD SUITE 100 LB118
DALLAS, TEXAS PROJECT NO. 439**

**MILDRED STREET IMPROVEMENTS
SANITARY SEWER IMPROVEMENTS
TOWN OF ADDISON, TEXAS**



ORDINANCE NO. 084-051

AN ORDINANCE OF THE TOWN OF ADDISON, TEXAS, AMENDING CHAPTER 5 OF THE CODE OF ORDINANCE BOOK OF THE TOWN OF ADDISON, TEXAS, PROVIDING FOR INTENT AND PURPOSE; PROVIDING FOR PROHIBITING EXCAVATION, ERECTION, CONSTRUCTION OR DEMOLITION AT NIGHT; PROVIDING FOR AN EXCEPTION; PROVIDING FOR A PERMIT; PROVIDING FOR PENALTIES; PROVIDING FOR CONFLICTING SECTIONS; PROVIDING FOR A REPEAL CLAUSE; PROVIDING FOR SEVERABILITY; AND DECLARING AN EMERGENCY.

BE IT ORDAINED BY THE CITY COUNCIL OF THE TOWN OF ADDISON, TEXAS:

SECTION 1. That the Code of Ordinance Book of the Town of Addison, Texas, is hereby amended by adding Section 5-37.5 to read as follows:

Sec. 5-37.5. Prohibiting excavation, construction or demolition at night.

- (a) Intent and purpose. The City Council of the Town of Addison finds and declares that:
1. The uncontrolled excavation, erection, construction or demolition at night upon buildings or structures presents an inconvenience or danger to the welfare and safety of those persons residing within or near the buildings or structures worked upon.
 2. Such nocturnal activity causes inconvenience or danger to those persons residing within or near the buildings or structures worked upon so as to constitute a public nuisance.
 3. It is matter of public necessity that the Town of Addison protect those persons residing within or near the buildings or structures worked upon from the danger posed by such nocturnal activity.
 4. The provisions and prohibitions hereinafter contained

and enacted are in pursuance of and for the morals and general welfare of persons in the Town of Addison.

5. There is an immediate and present danger presented by the above described uncontrolled nocturnal activity, creating an emergency.

- (b) Unlawful activity. It shall be unlawful for a person, firm or corporation to excavate, erect, build, construct, alter, repair or demolish any building or structure between the hours of 7:00 p.m. and 7:00 a.m., Monday through Friday, and between the hours of 7:00 p.m. and 8:00 a.m. on Saturday and Sunday, if such activity is performed within a residential, apartment or townhouse zoned area, or within 300 feet of an occupied residence, except in cases of urgent necessity or in the interest of public safety and convenience, and then only by permit of the City Manager.
- (c) The provisions of this section shall not apply to city and utility company when engaged in the installation or repair of utility lines situated within such buildings or structures.

SECTION 2. That any person, firm, or corporation violating any of the provisions of this ordinance shall upon commission be deemed guilty of a misdemeanor, and shall be subject to a fine not to exceed the sum of Two Hundred Dollars (\$200.00) for each offense, and each day such violation continues shall constitute a separate offense. Further more, the construction or building permit of a person, firm or corporation may be revoked if said person, firm or corporation continues violating any of the provisions of this ordinance.

SECTION 3. That all ordinances of the City in conflict with the provisions of this ordinance be, and the same are hereby repealed and all other ordinances of the city not in conflict with the provisions of this ordinance shall remain in full force and effect.

SECTION 4. That should any paragraph, sentence, subdivision, clause, phrase or section of this ordinance be adjudged or be held to be unconstitutional, illegal or invalid, the same shall not affect the validity of this ordinance as a whole or any part or provision thereof other than the part so decided to be invalid, illegal, or unconstitutional.

SECTION 5. The importance of this ordinance creates an emergency and an imperative public necessity, and the ordinance shall take effect and be in force from and after its adoption.

DULY PASSED BY THE CITY COUNCIL OF THE TOWN OF ADDISON,
TEXAS, on this the 24th day of July, 1984.


MAYOR

ATTEST:


ASSISTANT CITY SECRETARY

rs

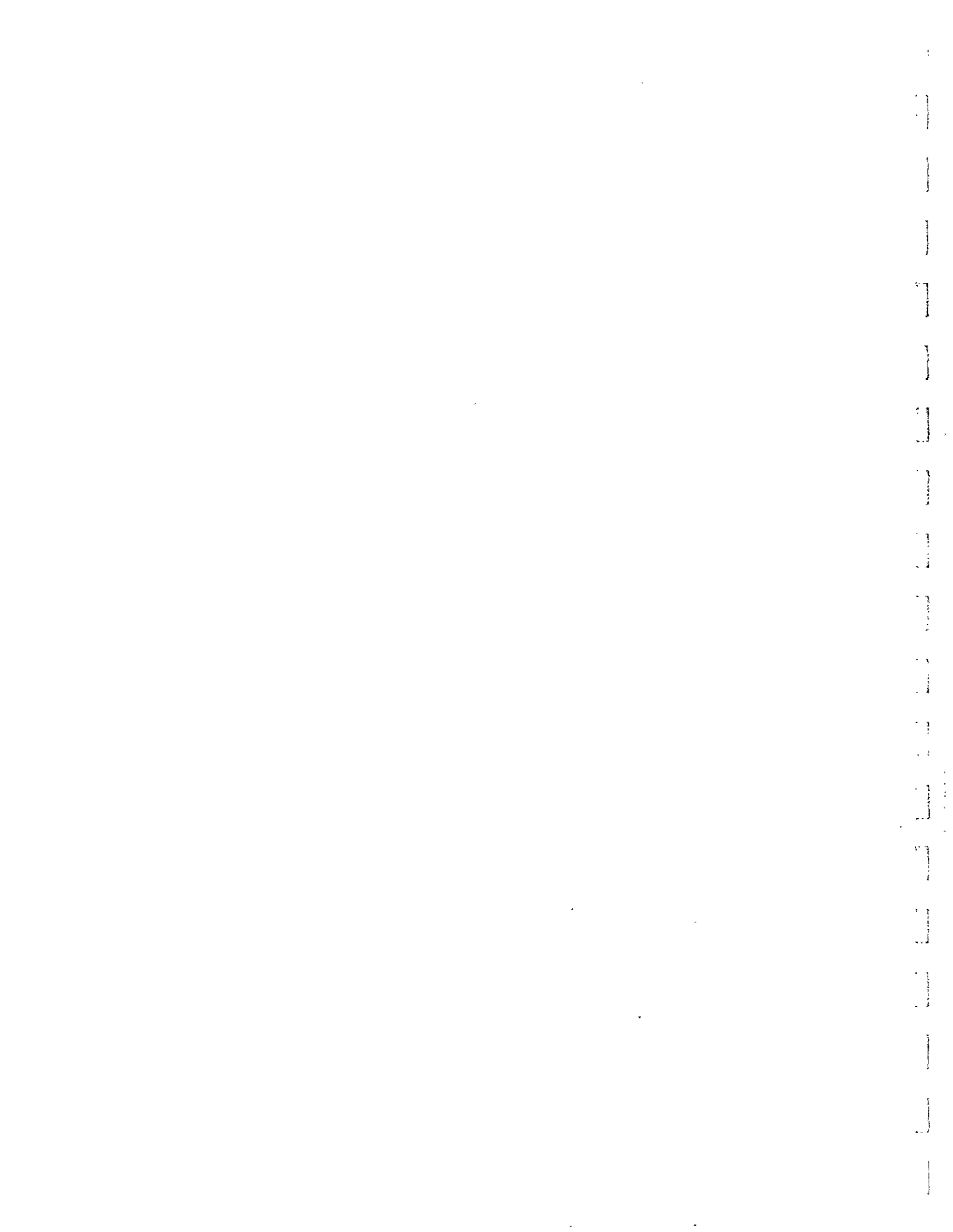


APPENDIX E

**SPECIAL PROVISIONS AND SPECIFICATIONS FOR SOLID INTERLOCKING
CONCRETE PAVING STONE INSTALLATION AND REPAIR**

**GINN, INC. - CONSULTING ENGINEERS
17103 PRESTON ROAD SUITE 100 LB118
DALLAS, TEXAS PROJECT NO. 439**

**MILDRED STREET IMPROVEMENTS
SANITARY SEWER IMPROVEMENTS
TOWN OF ADDISON, TEXAS**



SPECIAL PROVISIONS AND SPECIFICATIONS
SOLID INTERLOCKING CONCRETE PAVING STONE
INSTALLATION AND REPAIR

PART I - GENERAL

1.1 RELATED WORK IN OTHER SECTIONS OF THESE SPECIFICATIONS

The general and special conditions of the contract shall apply to all work of this section with the same force and effect.

1.2 SCOPE OF WORK

The Contractor shall be responsible for furnishing all materials, equipment, tools, supervision, labor, appliances and services necessary for and incidental to completing all operations in connection with these specifications and applicable drawings, subject to the terms of the contract.

1.3 PRODUCT HANDLING

All Paving Stones shall be delivered and unloaded at the jobsite at a location(s) approved by the Director of Parks. All pallets shall be bound in such a manner that no damage occurs to the product or any public or private property during handling, hauling, and unloading.

1.4 EXPLANATION OF DRAWINGS

The Contractor shall not willfully install the concrete pavers as shown on the drawings when it is obvious in the field that obstruction or differences in the area dimensions exist that might not have been considered in preparation of the plans. Such obstructions or differences should be brought to the Owner's authorized representative. In the event this notification is not performed, the Contractor shall assume full responsibility for any revision necessary. (See also 3.3 LAYING OF THE CONCRETE PAVING STONES)

PART 2 MATERIALS

The Contractor shall furnish a complete materials list prior to performing any work. The material list shall include the manufacturer and description of all materials used. Equipment or materials installed or furnished without prior approval of the Director of Parks may be rejected and the Contractor required to remove such materials from the site at his own expense.

2.1 SOLID CONCRETE INTERLOCKING PAVING STONES

The solid interlocking concrete paving stones shall conform to ASTM C936-82. The paving stones shall be Unistone as manufactured by Pavestone Co., Grapevine, Texas or equivalent. Paving stones shall be 6 (6cm) centimeter (2-3/8") in the color blend "antique red" or equivalent.

2.1.1 CEMENTIOUS MATERIALS

Portland Cements shall conform to ASTM Specification C-150.

2.1.2 Aggregates shall conform to ASTM Specification C-33 for Normal Weight Concrete Aggregate (no expanded shale or lightweight aggregates).

2.1.3 OTHER CONSTITUENTS

Coloring pigments, air-intraining agents, integral water repellents, finely ground silica, etc., shall conform to ASTM standards where applicable, or shall be previously established as suitable for use in concrete.

2.1.4 PHYSICAL REQUIREMENTS

1. Compressive Strength - At the time of delivery to the work site, the average compressive strength shall not be less than 8,000 psi with no individual unit strength less than 7,200 psi, with testing procedures in accordance with ASTM Standard C-140.
2. Absorption - The average absorption shall not be greater than 5% with no individual unit absorption greater than 7%.

2.1.5 VISUAL INSPECTION

All units shall be sound and free of defects that would interfere with the proper placing of unit or impair the strength or permanence of the construction.

2.1.6 TESTING

Testing of concrete paver material to be in accordance with ASTM Method C-140.

2.2 SAND LAYING COURSE

1. The sand laying course shall be a well graded clean washed sharp sand with 100% passing a 3/8 " sieve size and a maximum of 3% passing a No. 200 sieve size, this is commonly known as manufactured concrete sand, limestone screening, or similar. Do not use mason sand.
2. The Contractor must furnish test results of the sand particle sizes prior to delivery and installation to the Director of Parks at least two (2) days prior to commencement of work.

2.3 EDGE RESTRAINT

1. All edges of the installed paving stone shall be restrained. The type of edge restraint shall be curbstone (pre-cast).
2. All curbstone (Pre-cast) shall be manufactured out of the same material and standards as the interlocking concrete pavers. The curbstone shall be pewter gray unless otherwise designated by the Director of Parks.

2.4 BASE MATERIAL

The base material shall be 3" of C.T.B. (Cement Treated Base) which meets or exceeds the recommended specifications of Texas Industries, Arlington, Texas.

3.0 EXECUTION

1. The paving stone installer/contractor must have related experience in the installation of inter-locking concrete paving stones. Evidence of appropriate experience must be furnished if requested by the Owner or Director of Parks.

3.1 PREPARATION OF THE BASE COURSE

1. Existing dirt shall be excavated from the area below the installation site for the interlocking concrete paving stones. The remaining sub-grade must be graded, shaped and compacted prior to installation of the base material. The allowance for a 1" crown shall be made in the sub-base and base courses. The finished sub-base shall be approved by the Director of Parks prior to base placement.
2. The C.T.B. (Cement Treated Base) shall be installed according to the specifications and recommendations of Texas Industries, Arlington, Texas.

3.2 CONSTRUCTION OF THE SAND LAYING COURSE

1. The finished base course shall be approved by the Director of Parks before the placement of the sand laying course.
2. The uncompacted sand laying course shall be spread evenly over the area to be paved and then screened to the appropriate level. The allowance for the 1" crown must be maintained by the Contractor.

3.3 LAYING OF CONCRETE PAVING STONES

1. The paving stones shall be laid in a herringbone pattern as shown on the drawings. Edgestones (half and full edgers) may be used to reduce the amount of stones to be cut as long as the pattern is not significantly effected or skewed as determined by the Director of Parks.
2. The paving stones shall be laid in such a manner that the desired pattern is maintained and the joints between the pavers are as tight as possible. Joints between pavers, and joints between pavers and curbstones (pre-cast) and poured in place curbs shall not exceed 1/8". This tolerance must be maintained throughout the project.
3. String lines should be used to hold all pattern lines true.
4. Pavers cut to fit must be cut with the same 1/8" tolerance around light standards, valve boxes, etc. Cutting shall be accomplished to leave a clean edge using a masonry saw. Whenever possible, no cuts should result with a paver less than 1/3 of original dimension.
5. Paving stones shall be vibrated in the sand laying course using a vibrator capable of 3,000 to 5,000 pounds compaction force with the surface clean and joints open.
6. After vibration, clean masonry type sand containing at least 30% of 1/8" (3mm) particles shall be spread over the paving stone surface, allowed to dry, and vibrated into joints with additional vibrator passes and brushing so as to completely fill joints.

7. After final vibration all edge stones must be flush with curbs or curbstones.
8. Upon completion of work covered in the Section, the Contractor shall clean up all work areas by removing all debris, surplus material and equipment from the site.

SOILS INVESTIGATION REPORT

GINN, INC. - CONSULTING ENGINEERS
17103 PRESTON ROAD SUITE 100 LB118
DALLAS, TEXAS PROJECT NO. 439

MILDRED STREET IMPROVEMENTS
SANITARY SEWER IMPROVEMENTS
TOWN OF ADDISON, TEXAS

SUBSURFACE EXPLORATION

FOR

ADDISON THEATRE

ADDISON, TEXAS

Prepared For

City of Addison
Addison, Texas

May 30, 1990

SWL Report No. 90-367



SOUTHWESTERN LABORATORIES



Materials, environmental and geotechnical engineering, nondestructive, metallurgical and analytical services

2575 Lona Star Drive • P. O. Box 224227, Dallas, Texas 75222 • 214/631-2700

May 30, 1990

City of Addison
c/o Cunningham Architects
2700 Fairmount, Suite 200
Dallas, Texas 75201

Attention: Mr. Gary Cunningham

Re: Subsurface Exploration
Addison Theatre
Addison, Texas
SwL Report No. 90-367

Gentlemen:

Attached is our geotechnical report for the above referenced project.

It has been a pleasure to perform this work for you. If, during the course of this project we can be of further assistance, please do not hesitate to call on us.

Sincerely,

SOUTHWESTERN LABORATORIES, INC.

Clement B. Bommarito, P.E.
Geotechnical Division

Ralph B. Barnes, Jr., P.E.
Manager
Geotechnical Division

CBB/RBB/jf
Attachment

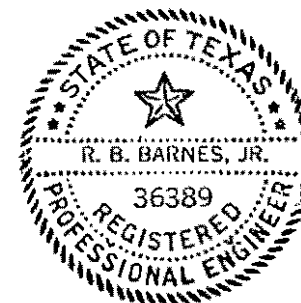
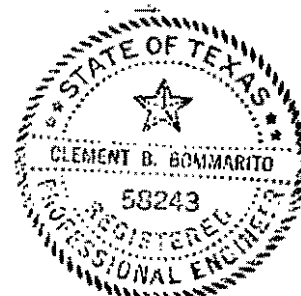


TABLE OF CONTENTS

	Page
Authorization.....	1
Scope of Investigation.....	1
Project Information.....	1
Field Operations.....	2
Laboratory Testing.....	3
Subsurface Conditions.....	4
Analysis and Recommendations	
Foundation System.....	6
Grade Beams.....	8
Floor Slabs.....	8
Basement Areas.....	11
Site Grading.....	15
Area Paving.....	18
Limitations and Reproductions.....	21

A P P E N D I X

Summary of Tests.....	A-1
Boring Location Diagram.....	A-5
Logs of Boring.....	A-6
Symbol Key Sheet.....	A-19

PROPOSED THEATRE

ADDISON, TEXAS

AUTHORIZATION

This study was authorized by Mr. Gary Cunningham of Cunningham Architects on April 10, 1990.

SCOPE OF INVESTIGATION

The purposes of the study were to (1) explore the subsurface conditions at the site (2) evaluate the pertinent engineering properties of the subsurface materials (3) provide recommendations concerning suitable types of foundation systems for the proposed structure (4) provide recommendations for proposed basement areas, and (5) provide recommendations for site grading and area paving.

PROJECT INFORMATION

The site of this investigation is located on the northeast corner of the intersection of Addison Road and

Mildred Street in Addison, Texas This area is generally open with scattered trees and bushes and small structures existing on the eastern and western most boundaries.

There are three proposed structures at the site. These structures include a theatre, conference center, and conference building. There will be a small basement area beneath a portion of the theatre. Column loads are anticipated to be a maximum of about 100 kips.

FIELD OPERATIONS

Thirteen test borings were made at the site on April 30 and May 8, 1990, at the approximate locations shown on the Boring Location Diagram in the Appendix. Field work was delayed due to extended rains. A truck mounted rotary drilling rig was used to advance these borings and to obtain samples for laboratory evaluation.

Undisturbed specimens of cohesive soils were obtained at intermittent intervals with standard, thin-walled, seamless Shelby tube samplers. These specimens were extruded in the field, logged, sealed and packaged to protect them from disturbance and maintain their in situ moisture content during transportation to our laboratories.

Double-tube core barrels and hard formation drilling bits were used to sample the primary formation of Austin Chalk limestone. These samples were also extruded, logged and packaged in the field, prior to transporting them to our laboratories.

Foundation bearing properties of bluish-gray limestone were also evaluated by the Texas Highway Department (THD) Cone Penetrometer Test.

The results of the boring program are presented on the Logs of Boring in the Appendix.

LABORATORY TESTING

Samples were examined at our laboratories by a geotechnical engineer. Selected samples were subjected to laboratory tests under the supervision of this engineer.

The "in situ" unit weight and moisture content of the samples were determined and used in conjunction with the Atterberg Limits and linear shrinkage tests to evaluate the potential volumetric change of the different strata, and as an indication of the uniformity of the material.

Unconfined compression tests were performed on selected undisturbed samples of the tan and bluish-gray limestone to evaluate the strength of these materials.

Absorption swell tests were performed using selected undisturbed samples of the surficial silty clays. These tests were performed for the purpose of evaluating the swell potential of these soils at their in situ moisture contents.

SUBSURFACE CONDITIONS

The subsurface conditions encountered in the borings are presented on the Logs of Boring in the Appendix. Detailed descriptions of the various strata and their depths and thicknesses are given. A brief summary of the stratigraphy indicated by the borings is given below.

Existing fill soils consisting of gravels and tan to brown clays were encountered at the ground surface in several boring locations extending to depths of six inches to two feet. Ten inches of asphaltic concrete paving was present at the ground surface in Boring No. 2. Beneath this fill and at the ground surface in the

remaining boring locations, dark brown to brown clays were present, typically containing limestone pebbles.

Tan limy clay was encountered below the brown to dark brown surficial clays at depths ranging from one to five feet. Tan limestone with occasional thin clay layers was then present at depths ranging from two to six feet. Bluish-gray limestone was encountered seven to sixteen feet below the existing ground surface. Boring Nos. 1 through 9 were terminated in this stratum at depths of 13 to 25 feet. Boring Nos. 10 through 13, made in proposed parking areas, were terminated at a depth of five feet in the surficial clays and tan limestones.

Atterberg limit and linear shrinkage tests results indicate surficial clays encountered at this site are active to highly active. These soils are subject to significant volume changes (expansion or contraction) with fluctuations in their moisture content.

Rotary drilling techniques, using compressed air to remove the cuttings, were utilized to advance the borings. Seepage was encountered at depths of three to 11 feet while advancing Boring Nos. 4 through 9. Water

was measured at depths of 15 and 22 feet in boring Nos. 4 and 8, the remaining borings were dry at completion. Water levels were rechecked 10 minutes to five hours after completion and measured at depths varying from one foot to 21.5 feet.

Groundwater can often be encountered in/and above the tan limestones, particularly during wet periods of the year. Groundwater levels and seepage rates can fluctuate due to seasonal variations in rainfall.

ANALYSIS AND RECOMMENDATIONS

Foundation Systems

The moisture induced volume changes associated with the clay soils present at this site could result in significant movement in any shallow foundation system. We recommend that the structure be supported by straight drilled, reinforced concrete shafts situated in the bluish-gray limestone. This stratum was encountered at depths of five to 13 feet below existing grade.

The shafts will develop their load carrying capacity by utilizing a combination of end bearing and skin friction. Allowable values of 45,000 pounds per square foot (psf) in end bearing and 7000 psf in skin friction

are recommended for shafts penetrating the bearing stratum a minimum of two feet. Skin friction should only be considered for that portion of the shaft embedded in the bluish-gray limestone below any temporary casing.

The shafts could experience tensile loads as a result of post construction heave in the clay soils and must contain sufficient vertical reinforcing to resist these forces. The magnitude of the loads is rather indeterminate and will vary with the in-situ moisture levels at the time of construction. They can be approximated at this site by assuming a uniform uplift of 1200 psf over the shaft perimeter for a depth of six feet.

Groundwater seepage may be encountered during installation of some of the shafts, particularly if construction proceeds during a wet period of the year. In some cases, rapid placement of concrete and steel will permit shaft installation to proceed; however, we anticipate that some shafts will most likely require the use of temporary casing. The casing should be seated in the bluish-gray limestone with all water removed prior to beginning the design penetration. Care should then

be taken that a sufficient head of plastic concrete is maintained within the casing during extraction. Complete installation of individual shafts should be accomplished in one days operation.

It is recommended that representatives of SwL observe the installation of foundations at the site. These personnel will identify the bearing stratum, design penetration's and installation procedures.

Grade Beams

All grade beams, should be supported by the shafts and a minimum void space of six inches provided between the bottom of these members and the subgrade. This void will serve to minimize distress resulting from swell pressures generated by the clays.

Structural cardboard forms are one acceptable means of providing this void beneath cast-in-place beams.

Floor Slabs

Any lightly loaded interior floor slabs placed on-grade will be subject to movement as a result of moisture induced volume changes in the surficial clays. These movements will vary with the depth of clays present above the limestones. We estimate the potential

magnitude of these movements to be on the order of two three inches for slabs placed on-grade near the existing ground surface. This movement will tend to occur as heave, lifting the slab.

The only method of assuring the absence of distress as a result of such movements is to structurally suspend the floor system above the subgrade. A minimum void, or crawl space, of eight inches should be provided. This space should be shaped or drained to prevent the ponding of water.

If movement can be tolerated, the relatively shallow depth of the limestones indicates that the installation of select fill material would be the most effective method of reducing the potential slab movements. This select fill should be a very sandy clay to clayey sand with a liquid limit of less than 30 and a plasticity index of four to 12.

The actual reduction in the potential movements will depend on the thickness of select fill installed and the depth of clay remaining in the building area. Removal of the surficial dark brown to brown clays and/or fill soils to tan silty clay or tan limestone and installation of two or more feet of select fill should

result in movements on the order of one inch, or less. If the slabs will be elevated above the existing grade, installation of three and one-half feet of select fill without removing any of the on-site clays could reduce potential movements by up to 50 percent.

Prior to placing the select fill the clay subgrade should be scarified to a depth of six inches and recompacted to a minimum of 90 percent of Standard Proctor Density at or above its optimum moisture content as determined by that test (ASTM D698). The select fill should then be spread in loose lifts, six to nine inches thick, and uniformly compacted to a minimum of 95 percent of ASTM D-698.

Where existing fills will remain in the proposed building area to support slab on grade construction, some measures should be taken to improve the condition of the fill materials. The most positive means of reducing potential settlement associated with these fills would be to remove them to natural soil and replace them in a controlled manner as described under Site Grading.

A less positive means of assuring compaction of these fill materials would be to proof roll them with heavy

compaction equipment to attempt to detect any soft compressible materials. Any soft or spongy soils encountered should be removed to firm ground and properly backfilled.

When installing select fill below existing grades, positive drainage must be provided away from the structure to prevent the ponding of water in the select fill. Care must be taken that backfill against the exterior face of grade beams is properly compacted on-site clay. Preferably, the select fill should not extend outside the limits of the structure. The predictions of moisture induced movements discussed above assume the absence of any unusual sources of water which could pond in the select fill beneath the slab.

A vapor barrier should be provided beneath those portions of the slabs which are to be covered, carpeted, or sealed.

Basement Area

It is our understanding that a proposed basement is planned beneath the theatre building in the area of Boring No. 7. This basement area will extend 10 to 12 feet below existing grade. Excavations will encounter

clay soils (with some fill materials) and extend into the underlying tan and possibly bluish-gray limestones. The soils and more weathered rock are subject to caving and should be sloped or braced in the interest of safety.

Excavations for the basement may approach the existing elevated water tank at the site. Prior to final design and construction the proximity of the excavation to the water tank foundation should be examined.

Groundwater could be encountered, particularly if construction proceeds during wet periods of the year. The water will most likely occur as seepage above the limestones and is generally collected and removed by perimeter ditches within the excavation and pumps during construction.

In the basement area consideration can be given to the use of individual or strip footings in lieu of drilled shaft foundations. The footings should extend a minimum of two feet below the level of the general excavation and a minimum of one foot into the bluish gray limestones. Individual footings should be a minimum of two feet wide and exert a maximum bearing pressure of

40,000 psf. Wall or strip footings should exert a maximum bearing pressure of 30,000 psf.

The lateral pressure appropriate for the design of below grade walls will be a function of the backfill material used. The use of a free draining coarse sand or small gravel would permit an equivalent fluid pressure of 45 pounds per square foot per foot of depth. This material should be placed, spread in lifts up to 12 inches thick, and compacted to a minimum 92 percent density as determined by ASTM D-698.

Use of the excavated on-site clays would require an equivalent fluid pressure of 100 pounds per square foot per foot of depth. This soil should be spread in lifts less than 10 inches and uniformly compacted to approximately 95 percent of ASTM D-698.

If select fill materials, as described under floor slabs are used as backfill, the materials should be placed as described above for on-site materials. A design lateral pressure of 65 pounds per square foot is then recommended.

Care should be taken that either type of backfill is not overcompacted, which could increase the lateral pressures on the walls.

The top of the backfill should be protected by flatwork, paving or a minimum of two feet of sandy clay fill to prevent surface infiltration.

A perimeter drainage system will be required to prevent hydrostatic pressures on the below-grade walls. This drain should be situated a minimum of 12 inches lower than the adjacent basement slab.

The only method of preventing hydrostatic pressures and wet spots on the below-grade slabs is to provide a subfloor drainage system. The drains should be situated a minimum of 18 inches lower than the slab. This can be accomplished by placing the drains near the bottom of a uniform bed of gravel, or by placing the drain lines in trenches connected by a gravel bed at least six inches thick.

As previously indicated, excavations for the basement level will extend near, or into the tan limestone strata. Any remaining clays in the basement area should

be removed to tan limestone and fill materials used to establish finished grades should be select fill as described under Floor Slabs. Slabs situated on grade in these areas will be subject to negligible movements.

Site Grading

The on-site surficial clays may be used beneath area paving and in open areas to establish finished grades across the site. Excavated limestones may also be used as fill provided they are properly pulverized to a maximum size of four inches and includes sufficient fines to permit compaction and prevent voids. Imported fill materials should preferably have a liquid limit less than 50.

The subgrade in fill areas should be stripped of vegetation, debris, large rocks, etc. It should be scarified to a depth of some six inches and recompactd to a minimum of 90 percent of Standard Proctor Density at (-0 to +4 per cent) optimum moisture content as determined by that test (ASTM D-698). In any areas where fill will exceed three feet, the subgrade should be compacted to not less than 95 percent of maximum density (ASTM D-698).

The fill materials should be spread in loose, relatively horizontal lifts, less than nine inches thick and compacted at the optimum moisture content as determined by ASTM D-698. Minimum compaction should be 90 percent of ASTM D-698 for fills of three feet or less. In any areas where fill heights exceed three feet, compaction of layers below this depth shall be a minimum of 95 percent of ASTM D-698.

Cuts should generally be avoided at the site. The possibility of experiencing seasonal water seeps increases as the limestones are approached or exposed by cuts or natural outcrops. Groundwater observations made during this investigation indicate shallow groundwater conditions, increasing the chance that water seeps will occur. Provisions should be made to intercept this seepage in areas where it is objectionable.

Site grading can affect the movements beneath slabs on grade. Fills constructed using the surficial clays can increase the potential movements. Any fills used to establish the desired subgrade elevation in the building area should be select fill materials as described under Floor Slabs.

All grades must be adjusted to provide positive drainage away from the structures. Water permitted to pond in planters, open areas, or areas with unsealed joints next to structures can result in on-grade slab or pavement movements which exceed those indicated in this report. Predictions of moisture related movements in this report are based on empirical calculations and previous experience. In some cases movements can exceed those predicted, particularly when unusual sources of water become available to the underlying clays.

It is desirable that area paving and concrete flatwork extend to the building lines rather than have planters or other open areas adjacent to the structure. If planters are located adjacent to the building, they should be self-contained to eliminate a possible source of moisture beneath the adjacent slab.

Joints next to buildings should be thoroughly sealed to prevent the infiltration of surface water. Where concrete pavement is used, joints should also be sealed to prevent the infiltration of water. Since some post construction movement of pavement and flatwork may occur, joints particularly around the building should be periodically inspected and resealed where necessary.

Roof drains should be discharged well away from structures, preferably by closed pipe systems. Where roof drains are allowed to discharge on concrete flatwork or pavement areas next to the structure, care should be taken to insure the area is as water tight as practical to eliminate the infiltration of this water next to the building.

Area Paving

Typical flexible and rigid pavement sections for off street use are discussed below. It is our understanding that alternate sections are being considered for these facilities and it is anticipated that these will be discussed in a future supplement to this report.

The surficial clays present at this site are subject to losses in shear strength with the increases in moisture content which normally occur beneath area paving. They react with hydrated lime which serves to improve their support value at higher moisture levels and provides a firm, uniform subgrade beneath the paving. We recommend that consideration be given to stabilizing the subgrade beneath flexible (asphalt) paving.

Based on the Atterberg Limits Series, a minimum of eight percent hydrated lime (THD Item 264) should be used. This lime should be thoroughly mixed and blended with the top six inches of the subgrade (THD Item 260) and the mixture compacted to a minimum of 95 percent of ASTM D-698 near its optimum moisture content. We suggest that this lime stabilization extend beyond exposed pavement edges, in order to reduce the effects of shrinkage during extended dry periods.

Any fill soils encountered in proposed paving areas should be proof rolled with heavy compaction equipment to check for any soft compressible soils. Where soft spongy soils or deleterious materials are encountered, they should be removed to firm ground and properly backfilled as described under Site Grading.

In parking lots and drives serving primarily automobile traffic, five inches of asphaltic concrete should provide adequate service. This should be increased to a minimum of six inches in areas subject to more frequent traffic. Thicker sections will be necessary in areas subject to frequent heavy wheel loads associated with large trucks. This section should consist of a two inch surface course similar to THD Type D with one or more

base courses similar to THD Type B. This coarse aggregate in the surface layer should be crushed limestone rather than gravel.

Portland Cement concrete paving is recommended in any areas subject to truck traffic and should also provide excellent service for general area paving. Where Portland Cement concrete pavement is used, consideration is often given to deletion of lime stabilizing the subgrade with generally satisfactory performance.

The subgrade should be uniformly compacted to a minimum of 95 percent of ASTM D-698, at, or slightly above, the optimum moisture determined by that test and maintained in a moist condition until the pavement is placed.

Consideration can be given to the use of four and one-half inches of Portland Cement concrete in parking stalls for passenger vehicles (no trucks). We recommend the use of five inches of concrete for general area paving with six or more inches in areas subject to truck traffic. The concrete should have a minimum 28 day compressive strength of 3,000 pounds per square inch.

Volume changes in the clay soils will also affect area paving. Flat grades should be avoided. Water must not be permitted to pond on the paving or behind curbs.

LIMITATIONS AND REPRODUCTIONS

The foregoing recommendations are based on analyses of the soils from each of the indicated borings with the assumption of uniform variation in the soil properties between borings.

Should any conditions at variance with this report be encountered during construction, this office should be notified immediately so further investigations can be made and supplemental recommendations can be given.

The reproduction of this report, or any part thereof, supplied to persons other than the owner, should indicate that this study was made for foundation design purposes only and that verification of the subsurface conditions for purposes of determining difficulty of excavation, trafficability, etc., are responsibilities of others.

Analysis performed by: Clement B. Bommarito, P.E.

A P P E N D I X

SOUTHWESTERN LABORATORIES

SUMMARY OF TESTS

SwL Report No. 90-367

PROJECT: Addison Theatre

CLIENT: City of Addison

DATE: 5/3/90

BORING NUMBER	DEPTH (FEET)	TYPE OF MATERIAL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	ATTERBERG LIMITS			LINEAR SHRINKAGE (%)	COMPRESSIVE STRENGTH (psf)	CONFINING PRESSURE (psi)	STRAIN (%)
					LL	PL	PI				
1	3-4	Tan silty clay w/limestone pebbles	16	115	40	18	22	9			
	18	Bluish-gray limestone							149,231		
2	2-3	Dark brown clay w/limestone pebbles	33	85	50	20	30	13			
	18	Bluish-gray limestone							310,062		
3	7	Tan limestone							85,655		
	13	Bluish-gray limestone							268,025		
4	1-2	Tan and brown clay	26		53	21	32	14	6,400*		
	18	Bluish-gray limestone							143,243		
5	2-3	Light brown silty clay	23	97	45	18	27	13			
	13	Bluish-gray limestone							122,911		
6	1-2	Dark brown clay w/limestone pebbles	31	86	47	24	43	19			
	10	Tan limestone w/clay layers							40,333		
	17	Bluish-gray limestone							208,233		

SOUTHWESTERN LABORATORIES

SUMMARY OF TESTS

SwL Report No. 90-367

PROJECT: Addison Theatre

CLIENT: City of Addison

DATE: 5/3/90

BORING NUMBER	DEPTH (FEET)	TYPE OF MATERIAL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	ATTERBERG LIMITS			LINEAR SHRINKAGE (%)	COMPRESSION STRENGTH (psf)	CONFINING PRESSURE (psf)	STRAIN (%)
					LL	PL	PI				
7	1-2	Dark brown sandy clay w/embedded gravel/asphalt	6		29	17	12	5			
	3-4	Dark brown clay w/limestone pebbles	32	86	58	23	35	16			
	7-8	Tan sandy clay w/limestone pebbles	16		35	17	18	7			
	13	Bluish-gray limestone							306,195		
	15	Bluish-gray limestone							178,503		
8	1-2	Brown clay w/limestone pebbles	31	86	62	24	38	18			
	9	Tan limestone w/clay layers							133,670		
9	1-2	Brown clay	31		69	25	44	19			
	12	Bluish-gray limestone							262,744		
10	2-3	Tan clay w/limestone pebbles	32	81	60	24	36	17			
11	2-4	Brown clay w/limestone pebbles			69	25	44	19			
12	1-2	Brown clay w/limestone pebbles	33	88	70	25	45	19			
13	1-2	Brown clay	32	89	64	24	40	18			

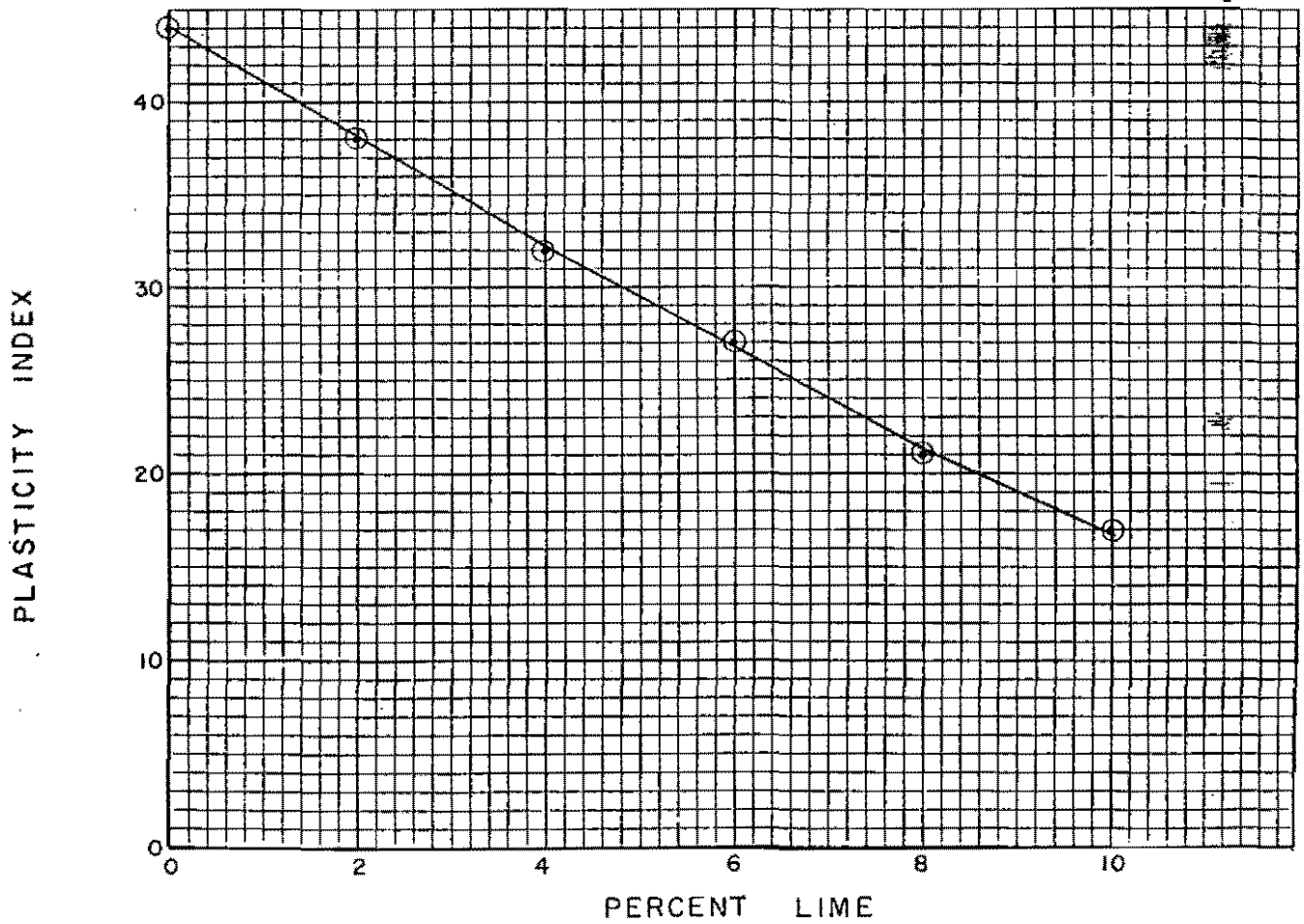
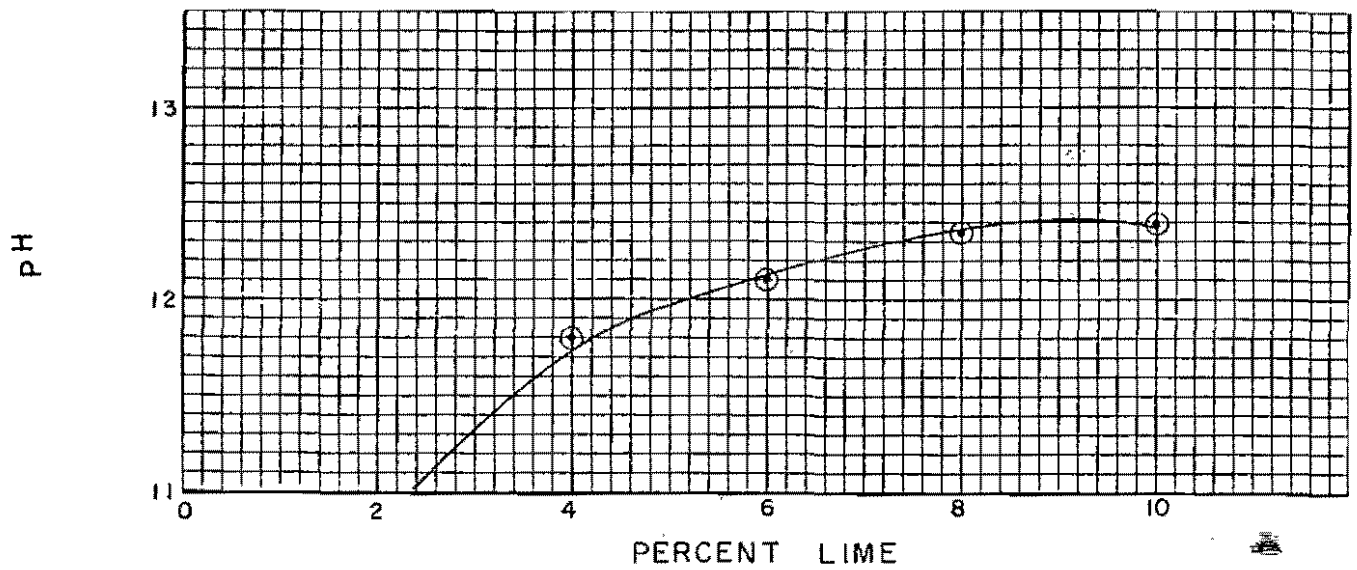
SWELL TEST RESULTS

BORING NUMBER	DEPTH (FEET)	ATTERBERG LIMITS			PRE-SWELL MOISTURE CONTENT	FINAL MOISTURE CONTENT	LOAD (PSF)	% VERTICAL SWELL
		LL	PL	PI				
1	3-4	40	18	22	16	19	500	0.9
7	7-8	35	17	18	18	20	500	0.5

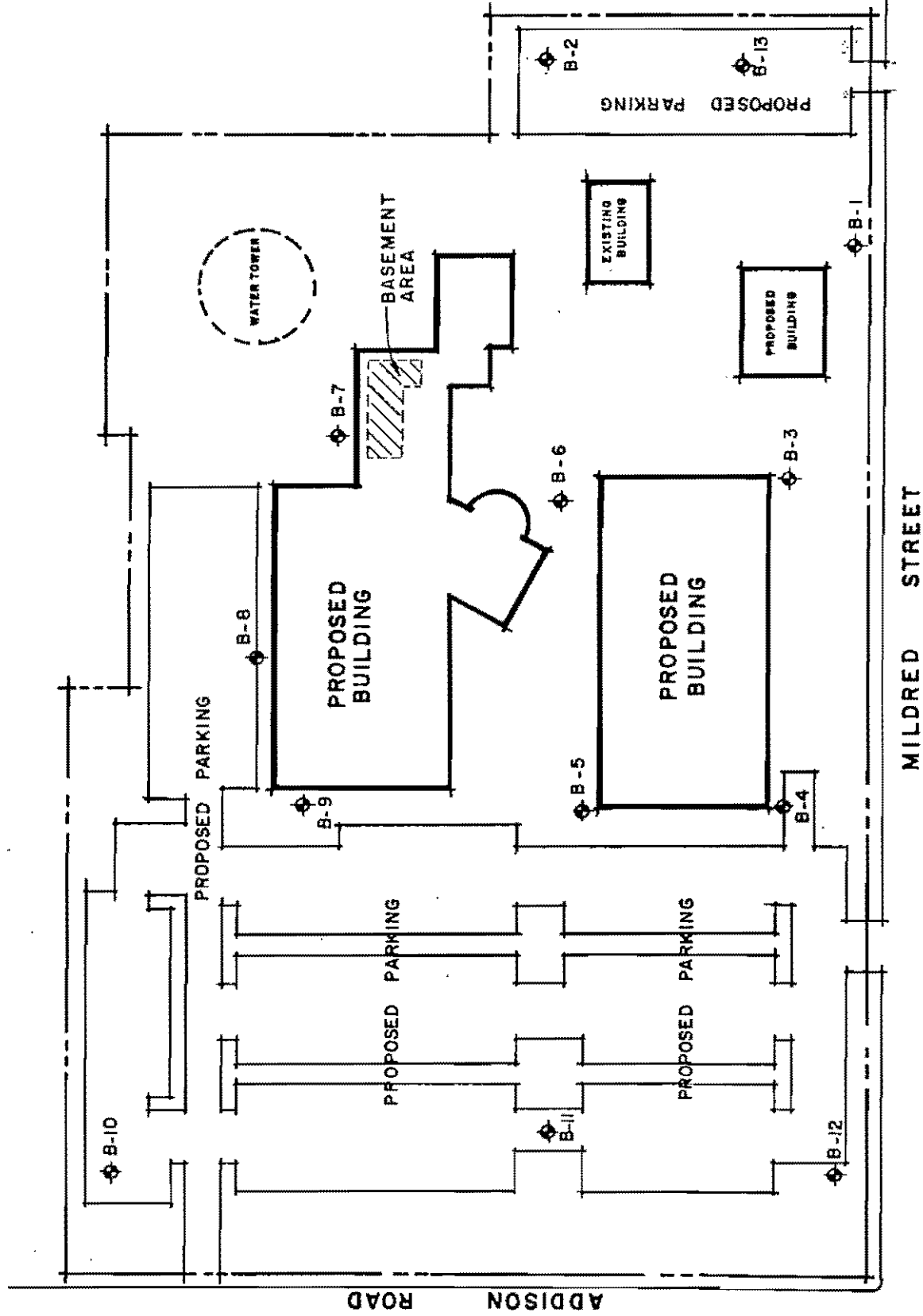
PROCEDURE:

1. SAMPLE PLACED IN CONFINING RING, DESIGN LOAD (INCLUDING OVERBURDEN) APPLIED, FREE WATER WITH SURFACTANT MADE AVAILABLE, AND SAMPLE ALLOWED TO SWELL COMPLETELY.
2. LOAD REMOVED AND FINAL MOISTURE CONTENT DETERMINED.

SWL REPORT NO. ___ 90-367



MATERIAL DESCRIPTION:	Brown clay with limestone pebbles
SAMPLE LOCATION:	B-11; 2'-4'



PROPOSED ADDISON THEATER

PROJECT/TITLE

PROPOSED ADDISON THEATER

SITE LOCATION

ADDISON, TEXAS

BORING LOCATION DIAGRAM

SWL

90 - 367

SCALE: 1" = 80'

DATE: 5/24/90

DRAWN BY:

SwL Report No. 90-367

LOG OF BORING

PROJECT: Addison Theatre
CLIENT: City of Addison

BORING NO.: 1
LOCATION: Addison, Texas

DATE: 4/30/90

TYPE: Core

CASED TO:

GROUND ELEVATION:

DEPTH IN FEET	SYMBOL	SAMPLE	STANDARD PENETRATION BLOWS/ft.	HAND PEN. tsf.	LEGEND:	WATER INFORMATION
					■ SAMPLE X STANDARD PENETRATION ▼ WATER	Dry at completion; water at 21.5' in 2 hours.
DESCRIPTION OF STRATUM						
						6" gravel (fill)
						Dark brown clay w/limestone pebbles
- 5 -						Tan silty clay w/limestone pebbles
						Tan limestone w/clay layers
- 10 -						Tan limestone w/bluish-gray limestone layers
						Bluish-gray limestone w/fossil seams
- 15 -						
- 20 -						
- 25 -						Boring terminated at 23'
- 30 -						
- 35 -						
- 40 -						
- 45 -						
- 50 -						

SWL Report No. 90-367

LOG OF BORING

PROJECT: Addison Theatre

BORING NO.: 2

CLIENT: City of Addison

LOCATION: Addison, Texas

DATE: 4/30/90

TYPE: Core

CASED TO:

GROUND ELEVATION:

DEPTH IN FEET	SYMBOL	SAMPLE	STANDARD PENETRATION BLOWS / ft.	HAND PEN. tsf.	LEGEND: ■ SAMPLE X STANDARD PENETRATION ▼ WATER	WATER INFORMATION
						Dry at completion; water at 4' in 3 hours.
DESCRIPTION OF STRATUM						
						10" Asphalt/2" gravel (fill)
5						Dark brown clay w/limestone pebbles 10" asphalt/2" gravel
						Tan limy clay w/limestone pebbles
10						Tan limestone w/clay layers
						Bluish-gray limestone
15						-tan limestone layer 6" thick at 11.5 feet
20						
25						Boring terminated at 25'
30						
35						
40						
45						
50						

SwL Report No. 90-367

LOG OF BORING

PROJECT: Addison Theatre
CLIENT: City of Addison

BORING NO.: 3
LOCATION: Addison, Texas

DATE: 4/30/90 TYPE: Core CASED TO: GROUND ELEVATION:

DEPTH IN FEET	SYMBOL	SAMPLE	STANDARD PENETRATION PENETRATION BLOWS / ft.	HAND PEN. 1st.	LEGEND: ■ SAMPLE X STANDARD PENETRATION ▼ WATER	WATER INFORMATION	
						Dry at completion; dry 40 minutes after completion.	
DESCRIPTION OF STRATUM							
						Dark brown clay w/limestone pebbles	
						Tan limy clay w/limestone pebbles	
5						Tan limestone w/clay layers	
						Blue limestone	
10						-tan limestone seam at 6.0'	
						Tan limestone w/clay layers	
15						Bluish-gray limestone	
20						Boring terminated at 15'	
25							
30							
35							
40							
45							
50							

SwL Report No. 90-367

LOG OF BORING

PROJECT: Addison Theatre
CLIENT: City of Addison

BORING NO.: 4
LOCATION: Addison, Texas

DATE: 4/30/90 TYPE: Core CASED TO: GROUND ELEVATION:

DEPTH IN FEET	SYMBOL	SAMPLE	STANDARD PENETRATION BLOWS/ft.	HAND PEN. tsf.	LEGEND: ■ SAMPLE X STANDARD PENETRATION ▼ WATER	WATER INFORMATION
						Seepage at 3'; water at 15' at completion; water at 2.8' in 1 hour.
DESCRIPTION OF STRATUM						
						4" gravel - (fill)
						Brown and tan clay - (fill)
5						Brown sandy clay - (fill)
						Gravel (fill)
10						Tan limy clay
						Tan limestone w/occasional bluish-gray limestone layers
15						Bluish-gray limestone
20						
25						Boring terminated at 21'
30						
35						
40						
45						
50						

SwL Report No. 90-367

LOG OF BORING

PROJECT: Addison Theatre

BORING NO.: 5

CLIENT: City of Addison

LOCATION: Addison, Texas

DATE: 4/30/90

TYPE: Core

CASED TO:

GROUND ELEVATION:

DEPTH IN FEET	SYMBOL	SAMPLE	STANDARD PENETRATION BLOWS/ft.	HAND PEN. tsf.	LEGEND: ■ SAMPLE X STANDARD PENETRATION ▼ WATER	WATER INFORMATION
						Seepage at 11'; dry at completion; water at 13' in 5 hours.
DESCRIPTION OF STRATUM						
						4" gravel- (fill)
						Brown clay
5						Light brown silty clay
						Tan limy clay
10						Tan limestone w/clay layers
						Bluish-gray limestone
15						Boring terminated at 15'
20						
25						
30						
35						
40						
45						
50						

SwL Report No. 90-367

LOG OF BORING

PROJECT: Addison Theatre

BORING NO.: 6

CLIENT: City of Addison

LOCATION: Addison, Texas

DATE: 4/30/90

TYPE: Core

CASED TO:

GROUND ELEVATION:

DEPTH IN FEET	SYMBOL	SAMPLE	STANDARD PENETRATION BLOWS / ft.	HAND PEN. tsf.	LEGEND: ■ SAMPLE X STANDARD PENETRATION ▼ WATER	WATER INFORMATION	
						DESCRIPTION OF STRATUM	
						Seepage at 7'; dry at completion; water at 17.5' in 15 minutes.	
						Dark brown clay w/limestone pebbles	
5						Tan limy clay w/limestone pebbles	
						Tan limestone w/clay layers	
10							
						Bluish-gray limestone	
15							
20						Boring terminated at 18'	
25							
30							
35							
40							
45							
50							

SwL Report No. 90-367

LOG OF BORING

PROJECT: Addison Theatre
 CLIENT: City of Addison

BORING NO.: 7
 LOCATION: Addison, Texas

DATE: 4/30/90 TYPE: Core CASED TO: GROUND ELEVATION:

DEPTH IN FEET	SYMBOL	SAMPLE	STANDARD PENETRATION PENETRATION BLOWS/ft.	HAND PEN. 1st.	LEGEND:	WATER INFORMATION
					■ SAMPLE X STANDARD PENETRATION ▼ WATER	Seepage at 7'; dry at completion; water at 8.5' in 10 min.
DESCRIPTION OF STRATUM						
						Dark brown clay w/gravel - Asphalt mixed - (fill)
						Dark brown clay w/limestone pebbles
- 5 -						Tan clay (limy) w/limestone pebbles
- 10 -						Tan limestone w/clay layers
- 15 -						Bluish-gray limestone
- 20 -						
- 25 -						Boring terminated at 25'
- 30 -						
- 35 -						
- 40 -						
- 45 -						
- 50 -						

SwL Report No. 90-367

LOG OF BORING

PROJECT: Addison Theatre
 CLIENT: City of Addison

BORING NO.: 8
 LOCATION: Addison, Texas

DATE: 5/8/90 TYPE: Core CASED TO: GROUND ELEVATION:

DEPTH IN FEET	SYMBOL	SAMPLE	STANDARD PENETRATION BLOWS / ft.	HAND PEN. tsf.	LEGEND:	WATER INFORMATION
					■ SAMPLE X STANDARD PENETRATION ▼ WATER	Seepage at 11'; water at 22' at completion; water at 2.5' in 10 minutes
DESCRIPTION OF STRATUM						
						Brown clay w/limestone pebbles
5						Tan limy clay w/limestone pebbles
10						Tan limestone w/clay layers
15						-blue limestone layer 1' thick at 12.5'
20						Bluish-gray limestone
		X	100/4*			
25						Boring terminated at 22'
30						*THD - Cone Penetrometer Test
35						
40						
45						
50						

SwL Report No. 90-367

LOG OF BORING

PROJECT: Addison Theatre
CLIENT: City of Addison

BORING NO.: 11
LOCATION: Addison, Texas

DATE: 5/8/90.

TYPE: Core

CASED TO:

GROUND ELEVATION:

DEPTH IN FEET	SYMBOL	SAMPLE	STANDARD PENETRATION BLOWS/ft.	HAND PEN. 1st.	LEGEND:	WATER INFORMATION
					■ SAMPLE X STANDARD PENETRATION ▼ WATER	Dry at completion
DESCRIPTION OF STRATUM						
5						Brown clay w/limestone pebbles
10						Boring terminated at 5'
15						
20						
25						
30						
35						
40						
45						
50						

SwL Report No. 90-367

LOG OF BORING

PROJECT: Addison Theatre

BORING NO.: 12

CLIENT: City of Addison

LOCATION: Addison, Texas

DATE: 5/8/90

TYPE: Core

CASED TO:

GROUND ELEVATION:

DEPTH IN FEET	SYMBOL	SAMPLE	STANDARD PENETRATION BLOWS /ft.	HAND PEN. tsf.	LEGEND:	WATER INFORMATION
					■ SAMPLE X STANDARD PENETRATION ▼ WATER	Dry at completion
DESCRIPTION OF STRATUM						
						Brown clay w/limestone pebbles
5		X	100/3**			Tan limestone w/clay layers
10						Boring terminated at 5'
15						*THD - Cone Penetrometer Test
20						
25						
30						
35						
40						
45						
50						

SwL Report No. 90-367

LOG OF BORING

PROJECT: Addison Theatre

BORING NO.: 13

CLIENT: City of Addison

LOCATION: Addison, Texas

DATE: 4/30/90

TYPE: Core

CASED TO:

GROUND ELEVATION:

DEPTH IN FEET	SYMBOL	SAMPLE	STANDARD PENETRATION BLOWS / ft.	HAND PEN. tsf.	LEGEND:	WATER INFORMATION
					■ SAMPLE X STANDARD PENETRATION ▼ WATER	Dry at completion
DESCRIPTION OF STRATUM						
5						
10						
15						
20						
25						
30						
35						
40						
45						
50						

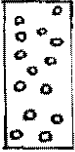





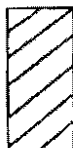

Tan limy clay - (fill)

Brown clay

Tan limestone w/clay layers

Boring terminated at 5'

KEY TO SOIL SYMBOLS AND DESCRIPTIONS
USED ON LOGS OF BORING

	GRAVEL		SILT		ROCK		LIMY
	SAND		CLAY		SHALE		ORGANIC

COLOR

In color descriptions of soil, the predominating color is stated first.

CONSISTENCY OF COHESIVE SOILS

CLASSIFICATION

Compressive Strength, psf

Very Soft	Less than - 500
Soft	500 - 1000
Plastic	1000 - 2000
Stiff	2000 - 4000
Very Stiff	4000 - 8000
Hard	More than - 8000

SOIL STRUCTURE

- Jointed - Cut by old shrinkage planes
- Fractured - Containing old cracks, frequently filled with sand, silt or clay of differing color
- Interbedded - Composed of alternate layers of different soil types
- Limy - Contains deposits of calcium carbonate