

CITY OF MARSHALL, TEXAS

300 and 400 BLOCKS OF NORTH WASHINGTON AVE.
REDEVELOPMENT

OCTOBER, 2023



HAYES ENGINEERING, INC.
Texas Registered Engineering Firm F-1465
2126 Alpine Road
Longview, TX 75601
(903) 758-2010

CITY OF MARSHALL
300 and 400 Blocks of North Washington Redevelopment

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NOTICE TO BIDDERS

CITY OF MARSHALL 300 and 400 Blocks of North Washington Redevelopment

SEALED PROPOSALS addressed to City of Marshall, City Manager, P.O. Box 698, Marshall, TX 75671 (delivery: 401 S. Alamo Blvd.), Marshall, TX 75671 will be received until **2:00 p.m., Wednesday, November 15, 2023** for furnishing all labor, equipment, materials, supplies, and supervision necessary for constructing approximately 13,155 SF of concrete sidewalk with brick accents, lighting, landscaping, and related appurtenances in accordance with the plans and specifications on file at the City Manager's office. At the date and time stated, bids will be publicly opened and read aloud in the City of Marshall City Hall, Second Floor Conference Room.

PLANS AND SPECIFICATIONS may be examined at the Marshall City Manager's office or obtained electronically without charge or be obtained for \$50.00 at the office of Hayes Engineering, Inc., 2126 Alpine St., Longview, Texas 75601, (903) 758-2010.

ALL BID PROPOSALS submitted should be marked clearly on the outside of the sealed envelope with the project name and bid opening time and date.

A CERTIFIED OR CASHIER'S CHECK, or an acceptable **Bid Bond** in an amount not less than **five percent (5%)** of the total bid shall accompany each bid as a guaranty that, if awarded the contract, the bidder will promptly enter into contract with the City of Marshall and furnish all required bonds and certificates of insurance on the forms provided.

THE SUCCESSFUL BIDDER OR BIDDERS will be required to furnish **Performance, Payment, and Maintenance Bonds**, each in the amount of the contract, written by a responsible surety company authorized to do business in the State of Texas, and satisfactory to the Owner as required by Article 5160 V.A.T.C.S.

BIDDERS SHALL INSPECT the site of the work and inform themselves of all local conditions. Time of completion shall be **two hundred forty (240) calendar days**, including Saturdays, Sundays, and legal holidays.

NO BID may be withdrawn after the scheduled closing time for receipt of bids for at least 60 calendar days after opening of bids, to allow review of bids and investigation of bidder's qualifications prior to award.

IN CASE of ambiguity or lack of clearness stating the price in the bids, the City of Marshall reserves the right to consider the most advantageous construction thereof, or to reject the bid. The Owner reserves the right to reject any or all bids, waive any or all informalities, and to award the contract to the bidder or bidders who, in the opinion of the City of Marshall, offers the proposal to the best interest of same.

ALL CONTRACTORS/SUBCONTRACTORS, which are debarred, suspended or otherwise excluded from or ineligible for participation on Federal Assistance programs may not undertake any activity in part or in full under this project.

Eric Powell, P.E., Director of Public Works/City Engineer
City of Marshall, Texas

Advertising Dates: Sunday's October 22nd and October 29th, 2023

INFORMATION FOR BIDDERS

1. **RECEIPT AND OPENING OF PROPOSALS:** The City of Marshall (Owner) invites Proposals to be submitted on the forms provided. Proposals will be received by the Owner in the City Manager's Office, P.O. Box 698, Marshall, TX 75671 (delivery: 401 S. Alamo Blvd.), Marshall, Texas 75671, until the time and date specified in the Advertisement of Bids, and then at the stated time in the Second Floor Conference Room publicly opened and read aloud. Only the total amount of the bid will be read aloud, however, the Proposals will be open for public inspection immediately following the opening.

The Owner reserves the right to waive any informality and to reject any or all bids. Any Proposal received after the specified time will be returned to the Bidder unopened. No Proposal may be withdrawn within 60 days from the opening date. Conditional bids will not be considered.

2. **EXAMINATION OF PLANS, SPECIFICATIONS AND SITE OF THE WORK:** Bidders are advised that the plans, specifications, and other documents on file with the City, shall constitute all the information which the City will furnish. Bidders are required, prior to submitting any proposal, to read the specifications, proposal, Contract and bond forms carefully, to visit the site of the work, to examine carefully local conditions, to inform themselves by their independent research, tests, and investigations of the difficulties to be encountered and judge for themselves the accessibility of the work and all attending circumstances affecting the cost of doing the work and time required for its completion, and obtain all information required to make an intelligent proposal. No information given by the City or any officials thereof, other than that shown on plans and contained in the specifications, proposals and other documents, shall be binding upon the City. Bidders shall rely exclusively upon their own estimates, investigations, tests, and other data which are necessary for full and complete information upon which the proposal may be based. It is mutually agreed that submission of a proposal is evidence that the bidder has made the examinations, investigations, and tests required herein. Claims for additional compensation due to variations between conditions actually encountered in construction and as indicated by the plans may not be allowed.

3. **PREPARATION OF PROPOSAL:** The bidder shall submit his proposal on the forms furnished by the City. All blank spaces in the form shall be correctly filled in and the bidder shall state the prices, written in ink, both in words and numerals, for which he proposes to do the work contemplated or furnish the material required. Such prices shall be written legibly. In case of discrepancy between the price written in words and the price written in figures, the price written in words shall govern.

If proposal is submitted by an individual, his name must be signed by him or his duly authorized agent. If the proposal is submitted by a firm, association, or partnership, the name and address of each member must be given and the proposal signed by a member of the firm, association or partnership, or person duly authorized. If proposal is submitted by a company or corporation, the company or corporate name and address must be given and the

proposal signed by an official or duly authorized agent and sealed with the corporate seal. Powers of attorney authorizing agents or others to sign proposals must be properly certified and must be in writing and submitted with the proposal.

Each Proposal must be submitted to the City in the designated location within the time limit as set forth in the Advertisement for Bids, in a sealed envelope bearing on the outside the name of the bidder, his address, and the name of the project for which the Proposal is submitted. If forwarded by mail, the sealed envelope containing the Proposal must be enclosed in another envelope addressed as specified.

4. **QUANTITIES IN PROPOSAL FORM:** The quantities of the work and materials set forth in the proposal form or on the plans approximately represents the work to be performed and materials to be furnished, and are for the purpose of comparing the bids on a uniform basis. Payment will be made by the City to the Contractor only for the actual quantities of work performed or materials furnished in accordance with the plans and specifications, and it is understood that the quantities may be increased or decreased as hereinafter provided, without in any way invalidating the bid prices.
5. **WITHDRAWAL OR MODIFICATION OF BID:** Prior to the bid opening, no Proposal may be withdrawn after 48 hours before the time of the bid opening. Any modification of any bid may be made under the same conditions as set forth for submitting a Proposal.
6. **IRREGULAR PROPOSALS:** Proposals will be considered irregular if they show any omissions, alterations of form, additions, or conditions not called for, unauthorized alternate bids, or irregularities of any kind. However, the City reserves the right to waive any irregularities and to make the award in the best interests of the City.
7. **PROPOSAL GUARANTY** No proposal will be considered unless it is accompanied by an acceptable Cashier's Check or acceptable Bidder's Bond from a reliable surety company registered by the State Board of Insurance to conduct business in the State of Texas and acceptable according to the latest list of the companies holding Certificates of Authority from the Secretary of the Treasury of the United States, shown on the U.S. Treasury List, and payable unconditionally to the City of Marshall, Texas. The Cashier's Check or Bidder's Bond shall be in the amount of 5% of the bid. The proposal guaranty is required by the City as evidence of good faith and as a guarantee that if awarded the contract, the bidder will execute the Contract and furnish the required bonds within fifteen (15) calendar days after the award of Contract.

Such cash, checks or bid bonds will be returned to all except the three lowest Bidders within three days after the opening of bids, and the remaining cash, checks, or bid bonds will be returned promptly after the Owner and the accepted Bidder have executed the contract, or if no award has been made within 60 days after the date of the opening of bids, upon demand of the Bidder at any time thereafter, so long as he has not been notified of the acceptance of his proposal.

8. **ADDENDA AND INTERPRETATION:** No interpretation of the meaning of the plans, specifications or other pre-bid documents will be made to any Bidder orally. Every request for such interpretation should be in writing addressed to the City Engineer, P.O. Box 698, Marshall, Texas, 75671-0698, and to be given consideration must be received at least five days prior to the date fixed for the opening of Proposals. Any and all such interpretations and any supplemental instructions will be in the form of written addenda to the specifications which, if issued, will be mailed by regular mail to all prospective bidders not later than three days prior to the date fixed for the opening of Proposals. Failure of any Bidder to receive any such addendum or interpretation shall not relieve such Bidder from any obligation under his bid as submitted. Each Bidder shall check with the City Engineer at an appropriate time to determine that he or she has received all Addenda, failure to do so shall be the complete responsibility of the Bidder. All addenda so issued shall become a part of the contract documents. Receipt of all addenda must be acknowledged by so noting the Addendum Number, time and date of receipt of said Addendum in the space provided on the Proposal Form, in the Contract Documents.
9. **QUALIFICATIONS OF BIDDERS:** The Owner may make such investigations as he deems necessary to determine the ability of the Bidder to perform the work, and the Bidder shall furnish to the Owner all such information and data for this purpose as the Owner may request. The Owner reserves the right to reject any Proposal if the evidence submitted by, or investigation of, such Bidder fails to satisfy the Owner that the Bidder is properly qualified to carry out the obligations of the contract and to complete the work contemplated therein.
10. **DISQUALIFICATION OF BIDDERS:** Bidders may be disqualified and their Proposal not considered for any of the following specific reasons:
- (1) Reason for believing collusion exists among the bidders.
 - (2) The bidder being in arrears on any existing contract or having defaulted on a previous contract.
 - (3) The bidder being interested in any litigation against the City.
 - (4) Uncompleted work which in the judgment of the City will prevent or hinder the prompt completion of additional work if awarded.
 - (5) Poor performance in the execution of work under previous contracts.
 - (6) Proposals in which prices are obviously unbalanced. The unit prices shown in bid tabulations shall be balanced. Each unit price shall reflect actual cost of the unit including profit. Unit prices are used by the City in allocating costs among participating developers and in scheduling interim payments to the Contractor. If the unit price does not fairly reflect the cost and profit associated with said item, the City reserves the right to reject the entire bid or require the bidder to balance the unit prices.

- (7) The bidder being determined to have an unacceptable safety record.
- (8) Proposals which are irregular.
11. **CONSIDERATION OF BIDS:** After proposals are opened, the proposals will be tabulated for comparison on the basis of the bid prices and quantities shown in the proposal. Until final award of the Contract, the City reserves the right to reject any or all proposals, to waive technicalities, and to re-advertise for new bids, or proceed to do the work otherwise in the best interests of the City. If required, a bidder shall submit a properly executed Contractors' qualification statement within ten (10) calendar days after bids are opened, on a form to be provided by the City.
12. **AWARD OF CONTRACT:** The award of the Contract, if it is awarded, will be to the lowest responsible bidder. If award of Contract is made to other than the lowest bidder, the bidder review before the governing body, as required in local Government Code 271.027, will be conducted by the city Commission at the time of Contract award. The City reserves the right to withhold the award of the Contract for a period of time not to exceed sixty (60) days from the date of opening proposals.
13. **CONTRACT BONDS:** Within fifteen (15) calendar days after written notification of the award of the Contract, the Contractor shall execute the Contract and file with the City a good and sufficient Statutory Performance/Maintenance and Payment Bond in the amount equal to one hundred percent (100%) of the total amount of the Contract, as evidenced by the proposal. Prior to final acceptance, the Contractor will furnish an Affidavit of Bills Paid and Certificate of Completion. The bonds shall be for the purposes of (1) guaranteeing the full and faithful execution of the work and performance of the contract (2) guaranteeing the full work against faulty workmanship and/or materials for a period of two (2) years from the date of the City's written acceptance of the work, and (3) guaranteeing payment of all bills for materials and labor for work provided for in said Contract. Should the contractor fail to correct defective work within five (5) days of receipt of written notice of such work, the City reserves the right to cause repairs to be made and to hold the Contractor liable for the cost thereof.

Sureties may not be accepted by the City who are now in default or delinquent on any bonds or who are interested in any litigation against the City. All bonds shall be made on appropriate forms and shall be executed by an approved surety company authorized to do business in the State of Texas and registered by the State Board of Insurance to conduct business in the State of Texas and acceptable according to the latest list of the companies holding Certificates of Authority from the Secretary of the Treasury of the United States, shown on the Treasury List, payable to the City of Marshall, Texas. Each bond shall be executed by the Contractor and the sureties.

Should any surety on the Contract be determined unsatisfactory at any time by the City Commission, notice will be given the Contractor to that effect, and the Contractor shall expeditiously provide a new surety satisfactory to the City. Payments may be withheld until

the new surety or sureties, as required, have qualified and been accepted by the City.

14. **FORM 1295:** Form 1295 must be completed online by the successful bidder, printed, signed by an authorized agent of the business entity and filed with the city. Form 1295 and the instructions for completing the form can be found on The Texas Ethics Commission website at www.ethics.state.tx.us/File.

Do NOT submit Form 1295 with bid. Form 1295 is **not** a bid packet document. It is required only from the business entity that ultimately enters a contract with the city.

15. **EXECUTION OF CONTRACT:** The person or persons, partnership, company, firm, association, or corporation to whom a Contract is awarded shall within fifteen (15) calendar days after such award sign the necessary agreements entering into the required Contract with the City and submit to the City a completed Form 1295. No Contract shall be binding on the City until it has been approved by the City Attorney, executed by the City Manager, attested by the City Secretary, and delivered to the Contractor.
16. **FAILURE TO EXECUTE CONTRACT:** The failure of the bidder to execute the required bonds or to sign the required Contract and submit Form 1295 within fifteen (15) calendar days after Contract is awarded shall be considered by the City as an abandonment of his proposal and the City may annul the award. By reason of the uncertainty of the market prices of materials and labor, and its being impracticable and difficult to determine accurately the amount of damages accruing to the City by reason of said bidder's failure to execute said bonds and Contract within said fifteen calendar days, the proposal guaranty accompanying the proposal shall be the agreed amount of damages which the City will suffer by reason of such failure on the part of the bidder, and shall thereupon immediately be forfeited to the City. The filing of a proposal will be considered as an acceptance of this provision.
17. **SUBCONTRACTING:** The Contractor may utilize the services of specialty subcontractors on those parts of the work which, under normal contracting practices, are performed by specialty subcontractors. The Contractor shall perform with his own forces as least thirty (30) percent of the total Contract, based on unit bid prices, unless this requirement is waived by the City.

The contractor- shall be fully responsible to the City for the acts and omission of his subcontractors, and of person either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by him.

Nothing contained in the Contract shall create any contractual relation between any subcontractor and the City.

18. **SUBMISSION OF POST BID INFORMATION:** Upon request by the City, the selected bidder shall, within seven (7) calendar days thereafter, submit the following:
 - (1) A designation of the work to be performed by the bidder with his own forces.

- (2) A list of names of the subcontractors or other persons or organizations (including those who are to furnish materials or equipment fabricated to a special design) proposed for such portions of the work as may be designated in the bidding documents or, if no portions are so designated, the names of the subcontractors proposed for stated portions of the work. The bidder will be required to establish to the satisfaction of the Engineer and the City the reliability and responsibility of the proposed subcontractors to furnish and perform such portions of the work. Prior to the award of the Contract, the Engineer will notify the bidder in writing if either the City or the Engineer, after due investigation, has reasonable and substantial objection to any person or organization on such list. Subcontractors and other persons and organizations proposed by the bidder and accepted by the City and the Engineer must be used on the work for which they were proposed and accepted and shall not be changed except with the written approval of the City and the Engineer.
19. **TIME OF COMPLETION AND LIQUIDATED DAMAGES:** Bidder must agree to commence work on or before a date to be specified in a written "Notice to Proceed" by the Owner and to fully complete the project within the time stated in the Proposal. The bidder must agree to pay, as liquidated damages, the amount noted in the proposal for each consecutive calendar day thereafter as hereinafter provided for in the General Conditions.
20. **POWER OF ATTORNEY:** Attorneys-in-fact who sign bid bonds or contract bonds must file with each bond a certified and effectively dated copy of their power of attorney.
21. **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 the same as though herein written out in full.
22. **OBLIGATION OF BIDDER:** At the time of the opening of Proposals each Bidder will presumed to have inspected the site and to have read and to be thoroughly familiar with the plans and contract documents, including all addenda. The failure or omission of any Bidder to examine any form, instrument or document shall in no way relieve any Bidder from any obligation in respect of his bid.

CERTIFICATE OF INTERESTED PARTIES

FORM 1295

1 of 1

Complete Nos. 1 - 4 and 6 if there are interested parties.
Complete Nos. 1, 2, 3, 5, and 6 if there are no interested parties.

OFFICE USE ONLY CERTIFICATION OF FILING

1 Name of business entity filing form, and the city, state and country of the business entity's place of business.

Casey Slone Construction
Marshall, TX United States

Certificate Number:
2023-1105147

Date Filed:
12/18/2023

Date Acknowledged:

2 Name of governmental entity or state agency that is a party to the contract for which the form is being filed.

City of Marshall, Texas

3 Provide the identification number used by the governmental entity or state agency to track or identify the contract, and provide a description of the services, goods, or other property to be provided under the contract.

300-400 N. Washington Sidewalk
Redevelopment of sidewalks for the 300-400 Blocks of North Washington Avenue

4	Name of Interested Party	City, State, Country (place of business)	Nature of interest (check applicable)	
			Controlling	Intermediary

5 Check only if there is NO Interested Party.




6 UNSWORN DECLARATION

My name is Casey Slone, and my date of birth is May 12, 1971

My address is PO Box 1614, Marshall, TX, 75671, USA
(street) (city) (state) (zip code) (country)

I declare under penalty of perjury that the foregoing is true and correct.

Executed in Harrison County, State of TX, on the 18th day of December, 2023
(month) (year)



Signature of authorized agent of contracting business entity
(Declarant)

FORM 1295

**OFFICE USE ONLY
CERTIFICATION OF FILING**

2 Name of governmental entity or state agency that is a party to the contract for which the form is being filed.

3 Provide the identification number used by the governmental entity or state agency to track or identify the contract, and provide a description of the services, goods, or other property to be provided under the contract.

[illegible]

5 Check only if there is NO Interested Party.

6 UNSWORN DECLARATION

My name is _____, and my date of birth is _____.

My address is _____, _____, _____, _____, _____
(street) (city) (state) (zip code) (country)

I declare under penalty of perjury that the foregoing is true and correct.

Executed in _____ County, State of _____, on the _____ day of _____, 20_____
(month) (year)

Signature of authorized agent of contracting business entity
(Declarant)

CITY OF MARSHALL
House Bill 89 Verification

I, Casey Slone (Person name), the undersigned

representative of Casey Slone Construction
(hereafter referred to as company) being an adult over the age of eighteen (18) years of age, after being duly sworn by the undersigned notary, do hereby depose and verify under oath that the company named-above, under the provisions of Subtitle F, Title 10, Government Code Chapter 2270:

1. Does not boycott Israel currently; and
2. Will not boycott Israel during the term of the contract.

Pursuant to Section 2270.001, Texas Government Code:

1. "Boycott Israel" means refusing to deal with, terminating business activities with, or otherwise taking any action that is intended to penalize, inflict economic harm on, or limit commercial relations specifically with Israel, or with a person or entity doing business in Israel or in an Israeli-controlled territory, but does not include an action made for ordinary business purposes; and
2. "Company" means a for-profit sole proprietorship, organization, association, corporation, partnership, joint venture, limited partnership, limited liability partnership, or any limited liability company, including a wholly owned subsidiary, majority-owned subsidiary, parent company or affiliate of those entities or business associations that exist to make a profit.

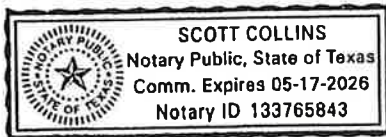
11/15/2023

DATE


SIGNATURE OF COMPANY REPRESENTATIVE

On this the 15th day of November, 2023, personally appeared
Casey Slone, the above-named person, who after
by me being duly sworn, did swear and confirm that the above is true and correct.

NOTARY SEAL




NOTARY SIGNATURE

11-15-23
Date

STATEMENT OF QUALIFICATIONS

CONTRACTOR: Casey Slone Construction

ADDRESS: PO Box 1614, Marshall, TX 75671

1. Name of Project: 4th Street Sidewalk Improvements - TxCDBG #7220262

Owner: City of Wills Point, TX

Address: 518 Houston Street
Wills Point, TX 75169

Phone: 903-560-8146

Value of Contract: \$404,951

Date Started: May 31, 2022

Date Completed: October 20, 2022

Approximate Quantities of Major Items: 405 SY of new concrete sidewalk, concrete steps,
1200 LF of pedestrian handrailing, concrete curb and gutter, ADA Pedestrian ramps

2. Name of Project: Downtown Redevelopment - Phase 1 (100 Block of East Houston)

Owner: City of Marshall, TX

Address: 401 S. Alamo
Marshall, TX 75670

Phone: 903-935-4421

Value of Contract: \$ 470,998

Date Started: January 3, 2022

Date Completed: May 5, 2022

Approximate Quantities of Major Items: Replacement of approx 795 SY of concrete paving,
brick paver inlay, ornamental site furnishings, storm sewer.

3. Name of Project: 200 Block of North Washington Redevelopment

Owner: City of Marshall

Address: 401 S. Alamo
Marshall, TX 75670

Phone: _____

Value of Contract: \$ 365,093

Date Started: December 28, 2021

Date Completed: May 9, 2022

Approximate Quantities of Major Items: 5000 SF of concrete sidewalk replacement, brick
paver inlay, ornamental site furnishings, 12 street light foundations

4. Other Project References: Harrison County Road & Bridge Facility, Fire Marshal Office &
AG Extension Office - Judge Chad Simms - 903-935-8401
Marshall ISD - Cocurricular Pavilion, New Agriscience Building, Auditorium Renovations -
Andy Chilcoat (Assistant Superintendent) 903-927-8700 ext. 1010

PROPOSAL

TO: City of Marshall, Texas

FOR: 300 and 400 Blocks of North Washington Redevelopment

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, Notice to Bidders, and Specifications herein referred to, and has carefully examined the locations, conditions and classes of materials of the proposed work; and agrees that he will provide all the necessary labor, machinery, tools, apparatus, and other items incidental to construction, and will do all the work and furnish all the materials called for in the Contract and Specifications in the manner prescribed therein and according to the requirements of the Engineer as therein set forth.

It is further agreed that the quantities of work to be done at unit prices and materials to be furnished may be increased or diminished as may be considered necessary, in the opinion of the Engineer, to complete the work fully as planned and contemplated, and that all quantities of work, whether increased or decreased, are to be performed at the unit prices set forth below except as provided for in the Specifications.

It is further agreed that lump sum prices may be increased to cover additional work ordered by the Engineer and agreed to by Owner, but not required by the Specifications, in accordance with the provisions of the General Conditions. Similarly, they may be decreased to cover deletion of work so ordered.

It is understood and agreed that the work is to be completed in full within two hundred forty (240) calendar days beginning on the date stated in the work order on which work is to be commenced. Bidder further agrees to pay as liquidated damages, the sum of \$500.00 for each consecutive calendar day thereafter as provided in the General Conditions.

Accompanying this proposal is a certified or cashier's check or bid bond (5% of largest amount bid), payable to the City of Marshall, Texas for:

Eight hundred ninety thousand dollars and zero cents Dollars
(\$ 890,000.00).

The bid security accompanying this proposal shall be returned to the bidder, unless in case of the acceptance of the proposal the bidder shall fail to execute a Contract and to file a Performance, Payment, and Maintenance Bond within fifteen (15) days after its acceptance, in which case the bid security shall become the property of the City of Marshall, and shall be considered as payment for damages due to delay and other inconvenience suffered by the Owner on account of such failure of the bidder. It is understood that the City of Marshall reserves the right to reject any and all bids and to waive any informalities in the bidding.

CITY OF MARSHALL, TEXAS
300 & 400 BLOCKS NORTH WASHINGTON AVENUE REDEVELOPMENT
BID PROPOSAL

<u>ITEM DESCRIPTION</u>	<u>QTY</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>TOTAL PRICE</u>
<u>General Items</u>				
1 Mobilization, Bonds, Insurance	1	LS	\$ XXXXXXXX	\$ 48,000.00
2 Traffic Control and Barricades	1	LS	\$ XXXXXXXX	\$ 2,000.00
3 Storm Water Pollution Prevention	1	LS	\$ XXXXXXXX	\$ 1,000.00
4 Project Sign	2	EA	\$ 600.00	\$ 1,200.00
Subtotal General Items			\$ 52,200.00	
<u>300 Block North Washington Ave</u>				
<u>Demolition</u>				
5 Remove existing concrete curb and gutter	634	LF	\$ 9.87	\$ 6,257.58
6 Remove existing brick pavers, mortar and concrete base along store fronts & islands	7442	SF	\$ 1.73	\$ 12,874.66
7 Remove existing trees including stump and roots and concrete planter box	4	EA	\$ 1,462.50	\$ 5,850.00
8 Remove existing concrete handicap ramps	8	EA	\$ 526.50	\$ 4,212.00
9 Remove and salvage existing pedestrian lights including remove foundation	2	EA	\$ 1,657.31	\$ 3,314.62
10 Remove and salvage existing street traffic lights including remove foundation	1	EA	\$ 1,998.36	\$ 1,998.36
11 Remove and salvage existing ornamental street lights including remove foundation	12	EA	\$ 266.47	\$ 3,197.64
12 Remove existing pull boxes	2	EA	\$ 250.00	\$ 500.00
13 Remove existing asphalt as needed to construct new curb, gutter and storm sewer	161	SY	\$ 87.20	\$ 14,039.20
14 Remove existing concrete flume with plate cover	33	LF	\$ 15.15	\$ 499.95
15 Remove existing 12" clay drainage pipe and plug ends	140	LF	\$ 10.03	\$ 1,404.20
16 Obliterate existing cross walk, remove 4" white solid lines	380	LF	\$ 1.00	\$ 380.00
<u>New Construction</u>				
17 Flatwork earthwork including cut and fills, subgrade compaction, and finish grading	1	LS	\$ XXXXXXXX	\$ 10,000.00
18 Construct reinforced concrete flatwork including portion under brick inlay sections	7050	SF	\$ 7.96	\$ 56,118.00
19 Furnish and Install brick paver inlay on sand cushion (ACME Brick Pathway Red)	1970	SF	\$ 12.11	\$ 23,856.70
20 Construct ADA Type 1 pedestrian curb ramp	8	EA	\$ 2,639.81	\$ 21,118.48
21 Construct 24" concrete curb and gutter	532	LF	\$ 37.44	\$ 19,918.08
22 Furnish and install asphalt paving (Type "D") repair	161	SY	\$ 50.02	\$ 8,053.22
23 Furnish and install 12" storm sewer	168	LF	\$ 92.03	\$ 15,461.04
24 Construct 5' storm sewer inlet with gutter transitions and box extension	1	EA	\$ 7,674.03	\$ 7,674.03
25 Connect 12" storm sewer to existing inlet box	2	EA	\$ 2,047.50	\$ 4,095.00
26 Construct curb inlet top and throat opening on ex inlet, including demo ex inlet top	1	LS	\$ XXXXXXXX	\$ 3,500.00
27 Extend and connect existing building drainage laterals to new 12" RCP drainage pipe	4	EA	\$ 877.50	\$ 3,510.00
28 Adjust Existing 6" water main at storm sewer crossing	1	EA	\$ 5,500.00	\$ 5,500.00
29 Furnish and install 1" water meter and service with quick coupler valve	2	EA	\$ 1,755.00	\$ 3,510.00
30 Adjust existing water service	2	EA	\$ 1,462.50	\$ 2,925.00
31 Adjust existing gas service	1	EA	\$ 150.00	\$ 150.00

CITY OF MARSHALL, TEXAS
300 & 400 BLOCKS NORTH WASHINGTON AVENUE REDEVELOPMENT
BID PROPOSAL

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>QTY</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>TOTAL PRICE</u>
32	Adjust water meter box to grade	14	EA	\$ 100.00	\$ 1,400.00
33	Adjust Gas meter box to grade	3	EA	\$ 50.00	\$ 150.00
34	Install existing modified ornamental street light with foundation	12	EA	\$ 1,287.00	\$ 15,444.00
35	Furnish and Install 6' ornamental benches (58-60 Dumor) w/anchors	6	EA	\$ 2,262.20	\$ 13,573.20
36	Furnish and Install ornamental trash cans (32 Gal. Dumor)	6	EA	\$ 2,771.93	\$ 16,631.58
37	Furnish and Install ornamental planters (22-00SH Dumor)	6	EA	\$ 2,243.09	\$ 13,458.54
38	Furnish and Install Stop/ One Way Sign with post and break away post base	2	EA	\$ 760.50	\$ 1,521.00
39	Furnish and Install 8" white cross walk stripe Item 666 Type II	380	LF	\$ 1.17	\$ 444.60
40	Furnish and Install 6" yellow pedestrian ramp curb stripe Item 666 Type II	89	LF	\$ 0.99	\$ 88.11
41	Furnish and install Merlot Redbud trees (3"-4" caliper) with root barrier surround, concrete border, tree grates and all elements necessary to install as detailed.	10	EA	\$ 3,835.38	\$ 38,353.80
42	Electrical systems installation and modifications including wiring, conduit, panels, pull boxes, rack and service modifications, relocations, pavement repair, etc. to provide complete , functional lighting systems as shown and detailed.	1	LS	\$ XXXXXXXX	\$ 106,760.50
300 Block North Washington Subtotal				\$	447,743.09

400 Block North Washington Ave

Demolition

43	Remove existing concrete curb and gutter	551	LF	\$ 10.35	\$ 5,702.85
44	Remove ex brick pavers, mortar and concrete base along store fronts and islands	5882	SF	\$ 1.79	\$ 10,528.78
45	Remove existing trees including stump and roots and concrete planter box	4	EA	\$ 1,462.50	\$ 5,850.00
46	Remove existing concrete handicap ramps	4	EA	\$ 526.50	\$ 2,106.00
47	Remove and salvage existing ornamental street lights include remove foundation	12	EA	\$ 266.47	\$ 3,197.64
48	Remove existing asphalt as needed to construct new curb and gutter	124	SY	\$ 114.17	\$ 14,157.08
49	Remove existing concrete flume with plate cover	13	LF	\$ 19.23	\$ 249.99
50	Obliterate existing crosswalk, remove 4" white solid lines	55	LF	\$ 1.17	\$ 64.35

New Construction

51	Flatwork earthwork including cut and fills, subgrade compaction, and finish grading	1	LS	\$ XXXXXXXX	\$ 7,500.00
52	Construct reinforced concrete flatwork including portion under brick inlay sections	5987	SF	\$ 7.38	\$ 44,184.06
53	Furnish and Install brick paver inlay on sand cushion (ACME Brick Pathway Red)	1650	SF	\$ 12.27	\$ 20,245.50
54	Construct ADA Type 1 pedestrian curb ramp	4	EA	\$ 2,661.75	\$ 10,647.00
55	Construct ADA Type 3 pedestrian curb ramp	1	EA	\$ 2,720.25	\$ 2,720.25
56	Construct 24" concrete curb and gutter	483	LF	\$ 37.44	\$ 18,083.52
57	Furnish and install asphalt paving (Type "D") repair	124	SY	\$ 50.02	\$ 6,202.48
58	Furnish and install 12" storm sewer	93	LF	\$ 92.03	\$ 8,558.79
59	Connect 12" storm sewer to existing inlet box	1	EA	\$ 2,281.50	\$ 2,281.50
60	Construct 5' storm sewer inlet with gutter transitions and box extension	1	EA	\$ 6,961.50	\$ 6,961.50

CITY OF MARSHALL, TEXAS
300 & 400 BLOCKS NORTH WASHINGTON AVENUE REDEVELOPMENT
BID PROPOSAL

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>QTY</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>TOTAL PRICE</u>
61	Construct 3'x3' inlet box with opening in back, including existing flume modifications	1	EA	\$ 6,254.82	\$ 6,254.82
62	Adjust existing water service	2	EA	\$ 1,228.50	\$ 2,457.00
63	Furnish and install 1" water meter and service with quick coupler valve	2	EA	\$ 2,047.50	\$ 4,095.00
64	Adjust water meter box to grade	10	EA	\$ 100.00	\$ 1,000.00
65	Adjust cleanout box to grade	1	EA	\$ 250.00	\$ 250.00
66	Install existing modified ornamental street light with foundation	12	EA	\$ 1,287.00	\$ 15,444.00
67	Furnish and Install 6' ornamental benches (58-60 Dumor) w/anchors	6	EA	\$ 2,262.20	\$ 13,573.20
68	Furnish and Install ornamental trash cans (32 Gal. Dumor)	6	EA	\$ 2,771.93	\$ 16,631.58
69	Furnish and Install ornamental planters (22-00SH Dumor)	6	EA	\$ 2,243.09	\$ 13,458.54
70	Furnish and Install Stop/ One Way Sign with post and break away post base	2	EA	\$ 760.50	\$ 1,521.00
71	Furnish and Install 8" white cross walk stripe Item 666 Type II	55	LF	\$ 0.99	\$ 54.45
72	Furnish and Install 6" yellow pedestrian curb stripe Item 666 Type II	62	LF	\$ 0.99	\$ 61.38
73	Salvage existing sign and mount on new post and breakaway post base	2	EA	\$ 450.00	\$ 900.00
74	Furnish and install Merlot Redbud trees (3"-4" caliper) with root barrier surround, concrete border, tree grates and all elements necessary to install as detailed.	10	EA	\$ 3,835.38	\$ 38,353.80
75	Electrical systems installation and modifications including wiring, conduit, panels, pull boxes, rack and service modifications, relocations, pavement repair, etc. to provide complete , functional lighting systems as shown and detailed.	1	LS	\$ XXXXXXXX	\$ 106,760.85
400 Block North Washington Subtotal				\$	390,056.91
300 & 400 Blocks North Washington TOTAL AMOUNT BID				\$	890,000.00

In the event of the award of a Contract to the undersigned, the undersigned will furnish a Performance and Payment Bond and Maintenance Bond for the full amount of the Contract to secure proper compliance with the terms and provisions of the contract, to insure and guarantee the work until final completion and acceptance, and to guarantee Payment of all lawful claims for labor performed and materials furnished in the fulfillment of the Contract.

The undersigned certifies that the bid prices contained in this proposal have been carefully checked and are submitted as correct and final.

NOTE: Should bid prices on any items be omitted, the right is reserved to apply the lowest prices submitted by any other bidders for the omitted items in payment for work done under this Proposal. In the event of discrepancies, the Owner reserves the right to accept or reject informalities.

Receipt is hereby acknowledged of the following addenda to the contract Documents:

Addendum No. 1 dated	11-9-2023	Rec.	<u>CS</u>
Addendum No. 2 dated	_____	Rec.	<u>NA</u>
Addendum No. 3 dated	_____	Rec.	<u>✓</u>
Addendum No. 4 dated	_____	Rec.	<u>✓</u>
Addendum No. 5 dated	_____	Rec.	<u>✓</u>

CONTRACTOR: Casey Slone Construction

BY: 

(Authorized Signature)

PRINT NAME: Casey Slone

TITLE: Casey Slone

ADDRESS: PO Box 1614

COUNTY: Harrison

CITY & STATE: Marshall, TX

ZIP: 75671

TELEPHONE: 903-503-3733

DATE: November 15, 2023

SALES TAX EXEMPTION

House Bill 11 (HB 11) enacted by the Legislature provides that contractors may no longer issue an exemption certificate when purchasing materials for use of a new construction project for exempt organizations other than school districts and non-profit hospitals, unless the project qualifies for the prior contract exemption.

Separated contracts, which separate charges for materials from charges for labor may still be used performing new construction projects for all other exempt organizations. (Example: cities, counties, churches, etc.) The separate charges for materials and labor must be included in the executed contract.

Under a separated contract, the contractor becomes a seller of materials incorporated into the project (Example: bricks, lumber, concrete, paint, etc.) As a seller, the contractor may issue a resale certificate in lieu of paying the sales tax at the time of purchase. The contractor must then receive an exemption certificate from the exempt organization for the materials. This procedure may not be used for materials which do not become a part of the finished project. (Example: equipment rentals, form materials, etc.)

To use this procedure, the contractor must have a sales tax permit issued by the Comptroller.

The statement of the separate charges must be a part of the contract and shall be in the following form:

Materials:	\$ 498,400.00
Services:	\$ 391,600.00
Total:	\$ 890,000.00

Bond

of Marshall, TX

Travelers Casualty and Surety Company of America

(hereinafter called the Surety),

(hereinafter called the Obligee) in the penal sum of Five Percent of Greatest Amount Bid

Dollars(\$ 5% GAB)

THE CONDITION OF THIS OBLIGATION IS SUCH, That WHEREAS, the Principal has submitted or is about to submit a proposal to the Obligee on a contract for

300 and 400 BLOCKS OF NORTH WASHINGTON AVE. REDEVELOPMENT

Signed and sealed this 15th day of November, 2023

Shirley K. Kistner

Witness

Casey Slone Construction, LLC


(Seal)
Principal

C. J. Inc.

Title

Travelers Casualty and Surety Company of America

By


Cindy Rodriguez

Attorney-in-Fact



**Travelers Casualty and Surety Company of America
Travelers Casualty and Surety Company
St. Paul Fire and Marine Insurance Company**

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS: That Travelers Casualty and Surety Company of America, Travelers Casualty and Surety Company, and St. Paul Fire and Marine Insurance Company are corporations duly organized under the laws of the State of Connecticut (herein collectively called the "Companies"), and that the Companies do hereby make, constitute and appoint **Cindy Rodriguez** of **ROCKWALL**, Texas, their true and lawful Attorney-in-Fact to sign, execute, seal and acknowledge any and all bonds, recognizances, conditional undertakings and other writings obligatory in the nature thereof on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

IN WITNESS WHEREOF, the Companies have caused this instrument to be signed, and their corporate seals to be hereto affixed, this 17th day of January, 2019.



State of Connecticut

City of Hartford ss.

By: _____

Robert L. Raney
Robert L. Raney, Senior Vice President

On this the 17th day of January, 2019, before me personally appeared **Robert L. Raney**, who acknowledged himself to be the Senior Vice President of Travelers Casualty and Surety Company of America, Travelers Casualty and Surety Company, and St. Paul Fire and Marine Insurance Company, and that he, as such, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing on behalf of said Companies by himself as a duly authorized officer.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

My Commission expires the 30th day of June, 2021



Anna P. Nowik
Anna P. Nowik, Notary Public

This Power of Attorney is granted under and by the authority of the following resolutions adopted by the Boards of Directors of Travelers Casualty and Surety Company of America, Travelers Casualty and Surety Company, and St. Paul Fire and Marine Insurance Company, which resolutions are now in full force and effect, reading as follows:

RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President, any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary may appoint Attorneys-in-Fact and Agents to act for and on behalf of the Company and may give such appointee such authority as his or her certificate of authority may prescribe to sign with the Company's name and seal with the Company's seal bonds, recognizances, contracts of indemnity, and other writings obligatory in the nature of a bond, recognizance, or conditional undertaking, and any of said officers or the Board of Directors at any time may remove any such appointee and revoke the power given him or her; and it is

FURTHER RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President may delegate all or any part of the foregoing authority to one or more officers or employees of this Company, provided that each such delegation is in writing and a copy thereof is filed in the office of the Secretary; and it is

FURTHER RESOLVED, that any bond, recognizance, contract of indemnity, or writing obligatory in the nature of a bond, recognizance, or conditional undertaking shall be valid and binding upon the Company when (a) signed by the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary and duly attested and sealed with the Company's seal by a Secretary or Assistant Secretary; or (b) duly executed (under seal, if required) by one or more Attorneys-in-Fact and Agents pursuant to the power prescribed in his or her certificate or their certificates of authority or by one or more Company officers pursuant to a written delegation of authority; and it is

FURTHER RESOLVED, that the signature of each of the following officers: President, any Executive Vice President, any Senior Vice President, any Vice President, any Assistant Vice President, any Secretary, any Assistant Secretary, and the seal of the Company may be affixed by facsimile to any Power of Attorney or to any certificate relating thereto appointing Resident Vice Presidents, Resident Assistant Secretaries or Attorneys-in-Fact for purposes only of executing and attesting bonds and undertakings and other writings obligatory in the nature thereof, and any such Power of Attorney or certificate bearing such facsimile signature or facsimile seal shall be valid and binding upon the Company and any such power so executed and certified by such facsimile signature and facsimile seal shall be valid and binding on the Company in the future with respect to any bond or understanding to which it is attached.

I, **Kevin E. Hughes**, the undersigned, Assistant Secretary of Travelers Casualty and Surety Company of America, Travelers Casualty and Surety Company, and St. Paul Fire and Marine Insurance Company, do hereby certify that the above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies, which remains in full force and effect.

Dated this 15th day of November, 2023



Kevin E. Hughes
Kevin E. Hughes, Assistant Secretary

To verify the authenticity of this Power of Attorney, please call us at 1-800-421-3880.
Please refer to the above-named Attorney-in-Fact and the details of the bond to which this Power of Attorney is attached.

IMPORTANT NOTICE

To obtain information or make a complaint:

You may call Travelers Casualty and Surety Company of America and its affiliates' toll-free telephone number for information or to make a complaint at:

1-800-328-2189

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

1-800-252-3439

You may write the Texas Department of Insurance:

P. O. Box 149104
Austin, TX 78714-9104
Fax: (512) 475-1771
Web: <http://www.tdi.state.tx.us>
E-mail: ConsumerProtection@tdi.state.tx.us

PREMIUM OR CLAIM DISPUTES:

Should you have a dispute concerning your premium or about a claim you should contact your Agent or Travelers first. If the dispute is not resolved, you may contact the Texas Department of Insurance.

ATTACH THIS NOTICE TO YOUR BOND:

This notice is for information only and does not become a part or condition of the attached document and is given to comply with Texas legal and regulatory requirements.

CONFLICT OF INTEREST QUESTIONNAIRE**FORM CIQ**

For vendor doing business with local governmental entity

This questionnaire reflects changes made to the law by H.B. 23, 84th Leg., Regular Session.

This questionnaire is being filed in accordance with Chapter 176, Local Government Code, by a vendor who has a business relationship as defined by Section 176.001(1-a) with a local governmental entity and the vendor meets requirements under Section 176.006(a).

By law this questionnaire must be filed with the records administrator of the local governmental entity not later than the 7th business day after the date the vendor becomes aware of facts that require the statement to be filed. See Section 176.006(a-1), Local Government Code.

A vendor commits an offense if the vendor knowingly violates Section 176.006, Local Government Code. An offense under this section is a misdemeanor.

OFFICE USE ONLY

Date Received

1 Name of vendor who has a business relationship with local governmental entity.

Casey Slone Construction

2 ☐ Check this box if you are filing an update to a previously filed questionnaire. (The law requires that you file an updated completed questionnaire with the appropriate filing authority not later than the 7th business day after the date on which you became aware that the originally filed questionnaire was incomplete or inaccurate.)**3** Name of local government officer about whom the information is being disclosed.

N/A

Name of Officer

4 Describe each employment or other business relationship with the local government officer, or a family member of the officer, as described by Section 176.003(a)(2)(A). Also describe any family relationship with the local government officer. Complete subparts A and B for each employment or business relationship described. Attach additional pages to this Form CIQ as necessary.

N/A

A. Is the local government officer or a family member of the officer receiving or likely to receive taxable income, other than investment income, from the vendor?

☐

Yes

☐

No

N/A

B. Is the vendor receiving or likely to receive taxable income, other than investment income, from or at the direction of the local government officer or a family member of the officer AND the taxable income is not received from the local governmental entity?

☐

Yes

☐

No

N/A

5 Describe each employment or business relationship that the vendor named in Section 1 maintains with a corporation or other business entity with respect to which the local government officer serves as an officer or director, or holds an ownership interest of one percent or more.

N/A

6 ☐ Check this box if the vendor has given the local government officer or a family member of the officer one or more gifts as described in Section 176.003(a)(2)(B), excluding gifts described in Section 176.003(a-1).**7**

Signature of vendor doing business with the governmental entity

11-15-2023

Date

CONFLICT OF INTEREST QUESTIONNAIRE

For vendor doing business with local governmental entity

A complete copy of Chapter 176 of the Local Government Code may be found at <http://www.statutes.legis.state.tx.us/Docs/LG/htm/LG.176.htm>. For easy reference, below are some of the sections cited on this form.

Local Government Code § 176.001(1-a): "Business relationship" means a connection between two or more parties based on commercial activity of one of the parties. The term does not include a connection based on:

- (A) a transaction that is subject to rate or fee regulation by a federal, state, or local governmental entity or an agency of a federal, state, or local governmental entity;
- (B) a transaction conducted at a price and subject to terms available to the public; or
- (C) a purchase or lease of goods or services from a person that is chartered by a state or federal agency and that is subject to regular examination by, and reporting to, that agency.

Local Government Code § 176.003(a)(2)(A) and (B):

- (a) A local government officer shall file a conflicts disclosure statement with respect to a vendor if:

- (2) the vendor:

(A) has an employment or other business relationship with the local government officer or a family member of the officer that results in the officer or family member receiving taxable income, other than investment income, that exceeds \$2,500 during the 12-month period preceding the date that the officer becomes aware that

(i) a contract between the local governmental entity and vendor has been executed; or

(ii) the local governmental entity is considering entering into a contract with the vendor;

(B) has given to the local government officer or a family member of the officer one or more gifts that have an aggregate value of more than \$100 in the 12-month period preceding the date the officer becomes aware that:

(i) a contract between the local governmental entity and vendor has been executed; or

(ii) the local governmental entity is considering entering into a contract with the vendor.

Local Government Code § 176.006(a) and (a-1)

- (a) A vendor shall file a completed conflict of interest questionnaire if the vendor has a business relationship with a local governmental entity and:

(1) has an employment or other business relationship with a local government officer of that local governmental entity, or a family member of the officer, described by Section 176.003(a)(2)(A);

(2) has given a local government officer of that local governmental entity, or a family member of the officer, one or more gifts with the aggregate value specified by Section 176.003(a)(2)(B), excluding any gift described by Section 176.003(a-1); or

(3) has a family relationship with a local government officer of that local governmental entity.

- (a-1) The completed conflict of interest questionnaire must be filed with the appropriate records administrator not later than the seventh business day after the later of:

- (1) the date that the vendor:

(A) begins discussions or negotiations to enter into a contract with the local governmental entity; or

(B) submits to the local governmental entity an application, response to a request for proposals or bids, correspondence, or another writing related to a potential contract with the local governmental entity; or

- (2) the date the vendor becomes aware:

(A) of an employment or other business relationship with a local government officer, or a family member of the officer, described by Subsection (a);

(B) that the vendor has given one or more gifts described by Subsection (a); or

(C) of a family relationship with a local government officer.

CONTRACT AGREEMENT

STATE OF TEXAS

KNOW ALL THESE PRESENTS

COUNTY OF HARRISON:

THIS CONTRACT is made and entered into on this the 15th day

Of December 2023, by and between the City of Marshall, (hereinafter referred to as

"OWNER") and Casey Slone Construction, LLC (hereinafter referred to as "CONTRACTOR").

In consideration of the mutual covenants hereinafter set forth, the OWNER and

CONTRACTOR agree as follows:

ARTICLE I. WORK

The CONTRACTOR shall perform all of the work as specified in the Contract

Documents. The work is generally described as follows:

300 and 400 Blocks of North Washington Avenue Redevelopment

Plans and Specifications prepared by: Hayes Engineering, Inc.

All extra work shall be performed as specified or indicated in the Contract Documents, and, at the CONTRACTOR'S own cost and expense, the CONTRACTOR shall furnish all the materials, supplies, machinery, equipment, tools, superintendence, labor, insurance, and other accessories and services as may be necessary in order to complete the construction as described above and in accordance with the Contract Documents unless otherwise agreed to by the OWNER.

ARTICLE II. CONTRACT DOCUMENTS

The Contract Documents may only be altered, amended or modified as provided in the General Conditions. The Contract Documents consist of: this written agreement setting forth the work to be performed; advertisement, if any; instructions to bidders, *if* any; proposal; addendum; specifications, including the general, special, and technical conditions, provisions, plans, or working drawings; any supplemental changes or agreements pertaining to the work or materials therefor; bonds, the Standard Specifications for Public Works Construction published by the

North Central Texas Council of Governments, as amended; and any additional documents incorporated by reference. These form the Contract Documents and all are as fully a part of the Contract as if attached to this agreement or repeated herein.

Article III. Contract Time

The CONTRACTOR shall perform and complete all the items of work listed and referred to in the Contract Documents within 240 calendar days. All limitations of time set forth herein are material and are of the essence of this Contract.

Article IV. Contract Price

The OWNER shall pay the CONTRACTOR for completion of the work in accordance with the Contract Documents using current funds. Such payments shall be subject to the General and Special Conditions to the Contract, as contained in the Contract Documents.

Article V. Debts

The OWNER may, at its option, offset any amounts due and payable under this contract against and debt (including taxes) lawfully due to OWNER from CONTRACTOR, regardless of whether the amount due arises pursuant to the terms of this Contract or otherwise and regardless of whether or not the debt due to OWNER has been reduced to judgement by a court.

Article VI. Miscellaneous Provisions

The terms used in this Contract shall have the same meaning as designated in the General Provisions. The Contract Documents, which constitute the entire agreement between the OWNER and CONTRACTOR, are listed in Article II. No assignment by either party hereto of any rights under or interests in the Contract Documents will be binding on the other party hereto without the written consent of the party sought to be bound. The OWNER and CONTRACTOR each binds itself, its partners, successors, assigns, and legal representatives hereto to the covenants, agreements, and obligations contained in the Contract Documents.

IN WITNESS WHEREOF, the OWNER and CONTRACTOR have executed this Contract in duplicate and on the date aforementioned. All portions of the Contract Documents have been signed or identified by the OWNER and CONTRACTOR.

CONTRACTOR:

Casey Slone Construction, LLC

BY: Casey Slone
Title: _____

ATTEST:

BY: Dustin Cobbitt
Printed Name: Dustin Cobbitt

OWNER:

CITY OF MARSHALL, TEXAS

BY: Terrell Smith 01-02-2024
Title: City Manager

ATTEST:

BY: Eric Powell 1/2/24
Printed Name: Eric Powell

SEPARATION OF MATERIALS FORM

STATE SALES TAX. The Contractor's attention is directed to paragraph No. 3 of Ruling No. 9 by obtaining the necessary permit or permits from the State Comptroller allowing the purchase of materials for incorporation in this project without having to pay the Limited Sales, Excise and Use Tax at the time of purchase. Such bidders must submit segregated prices for the total cost of materials and total cost of services, and the successful bidder must require his sub-contractors to obtain such permits and to sign written sub-contracts in which the prices are segregated for the total cost of materials and the total cost of services. Total materials cost should not include materials which are used or consumed in performing the work, but do not become a part of the completed installation.

After the bid opening and prior to execution of contract, the low bidder will be required to provide a separation of materials costs and labor costs for the amounts of the base bid and any alternatives. The following form shall be used to provide this information. This form shall be submitted with the executed contract and such statement will become a part of the contract:

STATEMENT OF MATERIALS AND SERVICES

City of Marshall, Texas

Project Name: 300 and 400 Blocks of North Washington Ave. Redevelopment

Total Materials Cost: \$ 498,400
Total Service Cost: \$ 391,600

TOTAL CONTRACT PRICE: \$ 890,000

Note: The total materials cost plus the total services cost must equal the amount shown of the total contract price.

PERFORMANCE BOND

Bond No. 107880222

KNOW ALL MEN BY THESE PRESENTS:

That Casey Slone Construction, LLC

(Name of Contractor or Company)

whose address is P. O. Box 1614, Marshall, TX 75671

a Limited Liability Comany (LLC) hereinafter called **Principal**,

(Corporation/Partnership/Sole Proprietor)

and Travelers Casualty and Surety Company of America

(Name of Surety Company)

whose address is 1 Tower Square, Hartford, CT 06183

a corporation hereinafter referred to as **Surety** organized and existing under the laws of the State of Connecticut, and fully authorized to transact business in the State of Texas, and authorized under the laws of the State of Texas to act as Surety on bonds for Principals, are held and firmly bound unto the **City of Marshall, Texas** hereinafter referred to as **Owner** in the penal sum of Eight Hundred Ninety Thousand and 00/100 dollars (\$ 890,000.00), being 100% of the total amount of the Contract as evidenced in the proposal, in lawful money of the United States, for the payment of which sum well and truly to be made we bind ourselves, our heirs, administrators, executors, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal has entered into a certain written contract with the Owner, dated the 15th day of December, 2023, for 300 and 400 Blocks of North Washington Redevelopment to which contract is hereby referred to and made a part hereof as fully and to the same extent as if copied in length herein.

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties in all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term thereof, and any extensions thereof which may be granted by the Owner, with or without notice to Surety, and during the life of any guaranty period required under the Contract, and according to the true intent and meaning of said Contract and the plans and specifications hereto annexed, and if the Principal shall satisfy all claims and demands incurred under such Contract, and shall fully indemnify and save harmless the Owner from all costs and damages which Owner may suffer by reason of failure to do so, and shall reimburse and repay the Owner all outlay and expense which the Owner may incur in making good any default, then this obligation shall be void, otherwise to remain in full force and effect.

PROVIDED FURTHER, that if any legal action be filed on this Bond, venue shall lie in Harrison County, Texas.

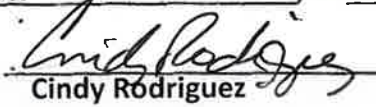
PROVIDED FURTHER, that this bond is executed pursuant to the provisions of Texas Government Code, Chapter 2253, as amended and Article 7.19-1 of the Insurance Code as amended, and all liabilities on this bond shall be determined in accordance with the provisions of said articles to the same extent as if they were fully copied at length herein.

PROVIDED FURTHER, that the said Surety, for value received hereby stipulates and agrees that the bond shall automatically be increased by the amount of any change order or supplemental agreement which increases the Contract price with or without notice to the Surety, but in no event shall a Change Order or Supplemental Agreement which reduces the Contract price decrease the penal sum of this Bond. And further 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 any way 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.

PROVIDED FURTHER, that no final settlement between the Owner and the Principal shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, the said Principal and Surety have signed and sealed this instrument this 20th day of December, 2023.

Principal -By: 

Surety -By: 

Title: President

Title: Attorney-in-Fact

Company: Casey Slone Construction, LLC

Company: Travelers Casualty and Surety Company of America

Address: P. O. Box 1614

Address: 1 Tower Square

Marshall, TX 75671

Hartford, CT 06183

Attest: 
(Seal) (Principal Secretary)

Attest: 
Witness

The Resident Agent below is hereby designated by Surety as the agent resident to whom any requisite notice may be delivered and on whom service of process may be had in matters arising out of such suretyship. The name and address of the Resident Agent of Surety is:

Name: Keystone Southwest Insurance Agency, Inc. Notes: Date of Bond must NOT be

prior to date of contract.

Address: 941 West Ralph Hall Pkwy

If Principal is a partnership, all partners should execute bond.

Rockwall, TX 75032

Surety company must appear on Treasury Department's current approved list (Circular 570 as amended).

Phone Number: 972-771-3861

PAYMENT BOND

Bond No. 107880222

KNOW ALL MEN BY THESE PRESENTS:

That Casey Slone Construction, LLC

(Name of Contractor or Company)

whose address is P. O. Box 1614, Marshall, TX 75671

a Limited Liability Company (LLC) hereinafter called **Principal**,

(Corporation/Partnership/Sole Proprietor)

and Travelers Casualty and Surety Company of America

(Name of Surety Company)

whose address is 1 Tower Square, Hartford, CT 06183

a corporation hereinafter referred to as **Surety** organized and existing under the laws of the State of Connecticut, and fully authorized to transact business in the State of Texas, and authorized under the laws of the State of Texas to act as Surety on bonds for Principals, are held and firmly bound unto the **City of Marshall, Texas** hereinafter referred to as **Owner** in the penal sum of Eight Hundred Ninety Thousand and 00/100 dollars (\$ 890,000.00), being 100% of the total amount of the Contract as evidenced in the proposal, in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, administrators, executors, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal has entered into a certain written contract with the Owner, dated the 15th day of December, 2023, for 300 and 400 Blocks of North Washington Redevelopment, to which contract is hereby referred to and made a part hereof as fully and to the same extent as if copied in length herein.

NOW, THEREFORE, if the Principal shall promptly make payment to all persons, firms, sub-contractors, and corporations furnishing materials for or performing labor in the prosecution of the Work provided for in such Contract, and any authorized extensions or modifications thereof, including all amounts due for materials, lubricants, oil, gasoline, repairs on machinery, equipment and tools, consumed or used in connection with the construction of such work, and all insurance premiums on said Work, and for all labor performed in such Work whether by sub-contractor or otherwise, then this obligation shall be void, otherwise to remain in full force and effect.

PROVIDED FURTHER, that if any legal action be filed on this Bond, venue shall lie in Harrison County, Texas.

PROVIDED FURTHER, that this bond is executed pursuant to the provisions of Texas Government Code, Chapter 2253, as amended and Article 7.19-1 of the Insurance Code as amended, and all liabilities on this bond shall be determined in accordance with the provisions of said articles to the same extent as if they were fully copied at length herein.

PROVIDED FURTHER, that the said Surety, for value received hereby 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 any way 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, or to the Specifications.

PROVIDED FURTHER, that no final settlement between the Owner and the Principal shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, the said Principal and Surety have signed and sealed this instrument this 20th day of December, 2023.

Principal -By: Cy Slone
Title: President

Company: Casey Slone Construction, LLC
Address: P. O. Box 1614
Marshall, TX 75671

Attest: [Signature]
(Seal) (Principal Secretary)

Surety -By: Cindy Rodriguez
Title: Attorney-in-Fact

Company: Travelers Casualty and Surety Company of America
Address: 1 Tower Square
Hartford, CT 06183

Attest: Alexandra Beane
Witness

The Resident Agent below is hereby designated by Surety as the agent resident to whom any requisite notice may be delivered and on whom service of process may be had in matters arising out of such suretyship. The name and address of the Resident Agent of Surety is:

Name: Keystone Southwest Insurance Agency, Inc. Notes: Date of Bond must NOT be

Address: 941 West Ralph Hall Pkwy
Rockwall, TX 75032

Phone Number: 972-771-3861

prior to date of contract.

If Principal is a partnership, all partners should execute bond.

Surety company must appear on Treasury Department's current approved list (Circular 570 as amended).

MAINTENANCE BOND

STATE OF TEXAS

Bond No. 107880222

COUNTY OF Harrison :

KNOW ALL MEN BY THESE PRESENTS: Casey Slone Construction, LLC (name of contractor) as principal and Travelers Casualty and Surety Company of America (name of surety) a corporation organized under the laws of Connecticut and Texas as Surety, do hereby expressly acknowledge themselves to be held and bound to pay unto the City of Marshall, Texas as Obligee, a municipal corporation hereinafter called OWNER, the sum of Eight Hundred Ninety Thousand and 00/100 Dollars (\$ 890,000.00) for the payment of which sum well and truly to be made unto said OWNER and its successors, said principal and sureties do hereby bind themselves, their assigns, and successors jointly and severally.

This obligation is conditioned, however, that, whereas said CONTRACTOR has by written Agreement dated December 15, 2023, entered into a contract with said OWNER to build and construct the 300 and 400 blocks of North Washington Redevelopment which contract and the plans and specifications therein mentioned and adopted by the OWNER are hereby expressly made a part thereof as though the same were written and embodied herein.

WHEREAS, under ITEM (8) Supplementary Conditions 28. Guaranty
Against Defective Work

of the specifications and other contract documents, it is provided that the CONTRACTOR shall maintain and keep in good repair the work constructed and/or equipment furnished by him as contemplated by the plan drawings, specifications, and other Contract Documents, and perform for a period of two (2) year(s) (NOTE: Period to be as stated in Information For Bidders) from the date of acceptance as shown on the "Certificate of Completion" issued by the Engineer, or the date of Final Payment by the OWNER if a separate Certificate of Completion is not issued, all necessary repairs, reconstruction and renewal of any part of said construction, and to furnish the labor and materials to make good and to repair any defective condition growing out of or on account of the breakage or failure of any substance or the improper function of any part of the construction work. The CONTRACTOR shall reimburse the OWNER for the costs of all Engineering and special services required to be furnished by the owner which are directly attributable to the restoration of the constructed work. Said maintenance contemplates the complete restoration of the constructed work to a functional use during the said period as set forth above. It is the intended purpose of this section to require the correction of all defective conditions resulting from materials furnished or work and labor performed by the CONTRACTOR under the conditions prescribed by the plans and specifications; and in case the CONTRACTOR shall fail or refuse to commence and actively pursue such corrections within ten (10) days after proper written notifications have been furnished to him by the owner, it is agreed that the OWNER may do said work and supply such materials and said CONTRACTOR and SURETY herein shall be liable for the payment of all costs thereby incurred.

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

IN WITNESS WHEREOF, this instrument is executed this 20th day of December A.D., 2023.

Casey Slone Construction, LLC

PRINCIPAL

BY

Cydon
President

TITLE

Wanda B. Ballester

WITNESS OR ATTEST TO SEAL

Travelers Casualty and Surety
Company of America

(SEAL)

SURETY

BY

Cindy Rodriguez

Cindy Rodriguez

Attorney-in-Fact

TITLE

Alessa Beane

WITNESS OR ATTEST TO SEAL

-END OF MAINTENANCE BOND-



Travelers Casualty and Surety Company of America
Travelers Casualty and Surety Company
St. Paul Fire and Marine Insurance Company

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS: That Travelers Casualty and Surety Company of America, Travelers Casualty and Surety Company, and St. Paul Fire and Marine Insurance Company are corporations duly organized under the laws of the State of Connecticut (herein collectively called the "Companies"), and that the Companies do hereby make, constitute and appoint **Cindy Rodriguez** of **ROCKWALL**, **Texas**, their true and lawful Attorney-in-Fact to sign, execute, seal and acknowledge any and all bonds, recognizances, conditional undertakings and other writings obligatory in the nature thereof on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

IN WITNESS WHEREOF, the Companies have caused this instrument to be signed, and their corporate seals to be hereto affixed, this **17th** day of **January**, **2019**.



State of Connecticut

City of Hartford ss.

By: _____

Robert L. Raney
 Robert L. Raney, Senior Vice President

On this the **17th** day of **January**, **2019**, before me personally appeared **Robert L. Raney**, who acknowledged himself to be the Senior Vice President of Travelers Casualty and Surety Company of America, Travelers Casualty and Surety Company, and St. Paul Fire and Marine Insurance Company, and that he, as such, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing on behalf of said Companies by himself as a duly authorized officer.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

My Commission expires the **30th** day of **June**, **2021**



Anna P. Nowik
 Anna P. Nowik, Notary Public

This Power of Attorney is granted under and by the authority of the following resolutions adopted by the Boards of Directors of Travelers Casualty and Surety Company of America, Travelers Casualty and Surety Company, and St. Paul Fire and Marine Insurance Company, which resolutions are now in full force and effect, reading as follows:

RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President, any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary may appoint Attorneys-in-Fact and Agents to act for and on behalf of the Company and may give such appointee such authority as his or her certificate of authority may prescribe to sign with the Company's name and seal with the Company's seal bonds, recognizances, contracts of indemnity, and other writings obligatory in the nature of a bond, recognizance, or conditional undertaking, and any of said officers or the Board of Directors at any time may remove any such appointee and revoke the power given him or her; and it is

FURTHER RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President may delegate all or any part of the foregoing authority to one or more officers or employees of this Company, provided that each such delegation is in writing and a copy thereof is filed in the office of the Secretary; and it is

FURTHER RESOLVED, that any bond, recognizance, contract of indemnity, or writing obligatory in the nature of a bond, recognizance, or conditional undertaking shall be valid and binding upon the Company when (a) signed by the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary and duly attested and sealed with the Company's seal by a Secretary or Assistant Secretary; or (b) duly executed (under seal, if required) by one or more Attorneys-in-Fact and Agents pursuant to the power prescribed in his or her certificate or their certificates of authority or by one or more Company officers pursuant to a written delegation of authority; and it is

FURTHER RESOLVED, that the signature of each of the following officers: President, any Executive Vice President, any Senior Vice President, any Vice President, any Assistant Vice President, any Secretary, any Assistant Secretary, and the seal of the Company may be affixed by facsimile to any Power of Attorney or to any certificate relating thereto appointing Resident Vice Presidents, Resident Assistant Secretaries or Attorneys-in-Fact for purposes only of executing and attesting bonds and undertakings and other writings obligatory in the nature thereof, and any such Power of Attorney or certificate bearing such facsimile signature or facsimile seal shall be valid and binding upon the Company and any such power so executed and certified by such facsimile signature and facsimile seal shall be valid and binding on the Company in the future with respect to any bond or understanding to which it is attached.

I, **Kevin E. Hughes**, the undersigned, Assistant Secretary of Travelers Casualty and Surety Company of America, Travelers Casualty and Surety Company, and St. Paul Fire and Marine Insurance Company, do hereby certify that the above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies, which remains in full force and effect.

Dated this **20th** day of **December**, **2023**



Kevin E. Hughes
 Kevin E. Hughes, Assistant Secretary

To verify the authenticity of this Power of Attorney, please call us at 1-800-421-3880.
Please refer to the above-named Attorney-in-Fact and the details of the bond to which this Power of Attorney is attached.

IMPORTANT NOTICE

To obtain information or make a complaint:

You may call Travelers Casualty and Surety Company of America and its affiliates' toll-free telephone number for information or to make a complaint at:

1-800-328-2189

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

1-800-252-3439

You may write the Texas Department of Insurance:

P. O. Box 149104

Austin, TX 78714-9104

Fax: (512) 475-1771

Web: <http://www.tdi.state.tx.us>

E-mail: ConsumerProtection@tdi.state.tx.us

PREMIUM OR CLAIM DISPUTES:

Should you have a dispute concerning your premium or about a claim you should contact your Agent or Travelers first. If the dispute is not resolved, you may contact the Texas Department of Insurance.

ATTACH THIS NOTICE TO YOUR BOND:

This notice is for information only and does not become a part or condition of the attached document and is given to comply with Texas legal and regulatory requirements.

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS:

That _____
(Name of Contractor or Company)
whose address is _____
a _____ hereinafter called **Principal**,
(Corporation/Partnership/Sole Proprietor)
and _____
(Name of Surety Company)
whose address is _____

a corporation hereinafter referred to as **Surety** organized and existing under the laws of the State of TEXAS, and fully authorized to transact business in the State of Texas, and authorized under the laws of the State of Texas to act as Surety on bonds for Principals, are held and firmly bound unto the **City of Marshall, Texas** hereinafter referred to as **Owner** in the penal sum of _____ dollars (\$ _____), being 100% of the total amount of the Contract as evidenced in the proposal, in lawful money of the United States, for the payment of which sum well and truly to be made we bind ourselves, our heirs, administrators, executors, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal has entered into a certain written contract with the Owner, dated the _____ day of _____, 20____, for 300 and 400 Blocks of North Washington Redevelopment to which contract is hereby referred to and made a part hereof as fully and to the same extent as if copied in length herein.

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties in all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term thereof, and any extensions thereof which may be granted by the Owner, with or without notice to Surety, and during the life of any guaranty period required under the Contract, and according to the true intent and meaning of said Contract and the plans and specifications hereto annexed, and if the Principal shall satisfy all claims and demands incurred under such Contract, and shall fully indemnify and save harmless the Owner from all costs and damages which Owner may suffer by reason of failure to do so, and shall reimburse and repay the Owner all outlay and expense which the Owner may incur in making good any default, then this obligation shall be void, otherwise to remain in full force and effect.

PROVIDED FURTHER, that if any legal action be filed on this Bond, venue shall lie in Harrison County, Texas.

PROVIDED FURTHER, that this bond is executed pursuant to the provisions of Texas Government Code, Chapter 2253, as amended and Article 7.19-1 of the Insurance Code as amended, and all liabilities on this bond shall be determined in accordance with the provisions of said articles to the same extent as if they were fully copied at length herein.

PROVIDED FURTHER, that the said Surety, for value received hereby stipulates and agrees that the bond shall automatically be increased by the amount of any change order or supplemental agreement which increases the Contract price with or without notice to the Surety, but in no event shall a Change Order or Supplemental Agreement which reduces the Contract price decrease the penal sum of this Bond. And further 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 any way 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.

PROVIDED FURTHER, that no final settlement between the Owner and the Principal shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, the said Principal and Surety have signed and sealed this instrument this _____ day of _____, 20__.

Principal -By: _____

Surety -By: _____

Title: _____

Title: _____

Company: _____

Company: _____

Address: _____

Address: _____

Attest:
(Seal) _____
(Principal Secretary)

Attest: _____
(Attorney in Fact)

The Resident Agent below is hereby designated by Surety as the agent resident to whom any requisite notice may be delivered and on whom service of process may be had in matters arising out of such suretyship. The name and address of the Resident Agent of Surety is:

Name: _____

Notes: Date of Bond must NOT be prior to date of contract.

Address: _____

If Principal is a partnership, all partners should execute bond.

Phone Number: _____

Surety company must appear on Treasury Department's current approved list (Circular 570 as amended).

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS:

That _____
(Name of Contractor or Company)

whose address is _____

a _____ hereinafter called **Principal**,
(Corporation/Partnership/Sole Proprietor)

and _____
(Name of Surety Company)

whose address is _____

a corporation hereinafter referred to as **Surety** organized and existing under the laws of the State of Texas, and fully authorized to transact business in the State of Texas, and authorized under the laws of the State of Texas to act as Surety on bonds for Principals, are held and firmly bound unto the **City of Marshall, Texas** hereinafter referred to as **Owner** in the penal sum of _____ dollars (\$ _____), being 100% of the total amount of the Contract as evidenced in the proposal, in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, administrators, executors, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal has entered into a certain written contract with the Owner, dated the _____ day of _____, 20____, for 300 and 400 Blocks of North Washington Redevelopment. to which contract is hereby referred to and made a part hereof as fully and to the same extent as if copied in length herein.

NOW, THEREFORE, if the Principal shall promptly make payment to all persons, firms, sub-contractors, and corporations furnishing materials for or performing labor in the prosecution of the Work provided for in such Contract, and any authorized extensions or modifications thereof, including all amounts due for materials, lubricants, oil, gasoline, repairs on machinery, equipment and tools, consumed or used in connection with the construction of such work, and all insurance premiums on said Work, and for all labor performed in such Work whether by sub-contractor or otherwise, then this obligation shall be void, otherwise to remain in full force and effect.

PROVIDED FURTHER, that if any legal action be filed on this Bond, venue shall lie in Harrison County, Texas.

PROVIDED FURTHER, that this bond is executed pursuant to the provisions of Texas Government Code, Chapter 2253, as amended and Article 7.19-1 of the Insurance Code as amended, and all liabilities on this bond shall be determined in accordance with the provisions of said articles to the same extent as if they were fully copied at length herein.

PROVIDED FURTHER, that the said Surety, for value received hereby 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 any way 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, or to the Specifications.

PROVIDED FURTHER, that no final settlement between the Owner and the Principal shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, the said Principal and Surety have signed and sealed this instrument this _____ day of _____, 20__.

Principal -By: _____

Surety -By: _____

Title: _____

Title: _____

Company: _____

Company: _____

Address: _____

Address: _____

Attest: _____
(Seal) (Principal Secretary)

Attest: _____
(Attorney in Fact)

The Resident Agent below is hereby designated by Surety as the agent resident to whom any requisite notice may be delivered and on whom service of process may be had in matters arising out of such suretyship. The name and address of the Resident Agent of Surety is:

Name: _____

Address: _____

Phone Number: _____

Notes: Date of Bond must NOT be prior to date of contract.

If Principal is a partnership, all partners should execute bond.

Surety company must appear on Treasury Department's current approved list (Circular 570 as amended).

MAINTENANCE BOND

STATE OF TEXAS :

COUNTY OF _____:

KNOW ALL MEN BY THESE PRESENTS: _____ (name of contractor) as principal and _____ (name of surety) a corporation organized under the laws of Texas and _____ as Surety, do hereby expressly acknowledge themselves to be held and bound to pay unto the City of Marshall, Texas as Oblige, a municipal corporation hereinafter called OWNER, the sum of _____ Dollars (\$ _____) for the payment of which sum well and truly to be made unto said OWNER and its successors, said principal and sureties do hereby bind themselves, their assigns, and successors jointly and severally.

This obligation is conditioned, however, that, whereas said CONTRACTOR has by written Agreement dated _____, entered into a contract with said OWNER to build and construct the 300 and 400 blocks of North Washington Redevelopemnt which contract and the plans and specifications therein mentioned and adopted by the OWNER are hereby expressly made a part thereof as though the same were written and embodied herein.

WHEREAS, under ITEM(§) Supplementary Conditions 28. Guaranty
Against Defective Work

of the specifications and other contract documents, it is provided that the CONTRACTOR shall maintain and keep in good repair the work constructed and/or equipment furnished by him as contemplated by the plan drawings, specifications, and other Contract Documents, and perform for a period of two (2) year(s) (NOTE: Period to be as stated in Information For Bidders) from the date of acceptance as shown on the "Certificate of Completion" issued by the Engineer, or the date of Final Payment by the OWNER if a separate Certificate of Completion is not issued, all necessary repairs, reconstruction and renewal of any part of said construction, and to furnish the labor and materials to make good and to repair any defective condition growing out of or on account of the breakage or failure of any substance or the improper function of any part of the construction work. The CONTRACTOR shall reimburse the OWNER for the costs of all Engineering and special services required to be furnished by the owner which are directly attributable to the restoration of the constructed work. Said maintenance contemplates the complete restoration of the constructed work to a functional use during the said period as set forth above. It is the intended purpose of this section to require the correction of all defective conditions resulting from materials furnished or work and labor performed by the CONTRACTOR under the conditions prescribed by the plans and specifications; and in case the CONTRACTOR shall fail or refuse to commence and actively pursue such corrections within ten (10) days after proper written notifications have been furnished to him by the owner, it is agreed that the OWNER may do said work and supply such materials and said CONTRACTOR and SURETY herein shall be liable for the payment of all costs thereby incurred.

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

IN WITNESS WHEREOF, this instrument is executed this ____ day of _____ A.D.,
20__.

PRINCIPAL

BY _____

TITLE

WITNESS OR ATTEST TO SEAL

SURETY (SEAL)

BY _____

TITLE

WITNESS OR ATTEST TO SEAL

-END OF MAINTENANCE BOND-



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

11/09/2023

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	Bockmon, Knight & Traylor Insurance Agency 450 E Loop 281 Ste C-1	CONTACT NAME: Kelly Lester PHONE (A/C, No, Ext): (903) 234-8505 E-MAIL ADDRESS: kellylester@bockmoninsurance.com	FAX (A/C, No): (903) 234-8717
Longview	TX 75605	INSURER(S) AFFORDING COVERAGE	NAIC #
INSURED	Casey Slone Construction, LLC P O Box 1614 Marshall TX 75671	INSURER A: Continental Casualty Company INSURER B: Continental Insurance Company INSURER C: Texas Mutual Insurance Company INSURER D: INSURER E: INSURER F:	

COVERAGES

CERTIFICATE NUMBER: CL2311915926

REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC OTHER:			6079700932	01/13/2023	01/13/2024	EACH OCCURRENCE \$ 1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 1,000,000 MED EXP (Any one person) \$ 15,000 PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COMP/OP AGG \$ 2,000,000 \$
B	AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> OWNED AUTOS ONLY <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS ONLY <input type="checkbox"/> NON-OWNED AUTOS ONLY			BUA 6079700929	01/13/2023	01/13/2024	COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$
B	<input checked="" type="checkbox"/> UMBRELLA LIAB <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE DED <input checked="" type="checkbox"/> RETENTION \$ 10,000			6079700915	01/13/2023	01/13/2024	EACH OCCURRENCE \$ 5,000,000 AGGREGATE \$ 5,000,000 \$
C	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N N	N/A	0001206261	11/10/2023	11/10/2024	<input checked="" type="checkbox"/> PER STATUTE <input type="checkbox"/> OTH-ER E.L. EACH ACCIDENT \$ 1,000,000 E.L. DISEASE - EA EMPLOYEE \$ 1,000,000 E.L. DISEASE - POLICY LIMIT \$ 1,000,000
A	Contractor's Equipment - Leased/Rented Equipment			6079700932	01/13/2023	01/13/2024	\$50,000 \$50,000 \$1,000 Limit Per Occ Limit Per Item Deductible

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

Blanket Additional Insured and Waiver of Subrogation are included on the General Liability & Auto Liability policies when required by written contract between the Insured and the certificate holder.

CERTIFICATE HOLDER

CANCELLATION

For Information Purposes Only

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

© 1988-2015 ACORD CORPORATION. All rights reserved.

**CITY OF MARSHALL
PURCHASING DEPARTMENT**

SENATE BILL 252 CERTIFICATION

On this day, I, _____, the
Purchasing Representative for City of Marshall in Harrison County,
Texas, pursuant to Texas Government Code, Chapter 2252, Section 2252.152 and
Section 2252.153, certify that I did review the website of the Comptroller of the State of
Texas concerning the listing of companies that is identified under Section 806.051,
Section 807.051 or Section 2253.253 and I have ascertained that the below-named
company is not contained on said listing of companies which do business with Iran,
Sudan or any Foreign Terrorist Organization.

Company Name

RFP or Vendor number

CERTIFICATION CHECK PERFORMED BY:

Purchasing Representative

Date

ATTORNEY'S REVIEW CERTIFICATION

I, the undersigned, _____, the duly authorized and
acting legal representative of the City of Marshall, Texas
do hereby certify as follows:

I have examined the attached contract(s) and surety bonds and am of the opinion that each of the agreements may be duly executed by the proper parties, acting through their duly authorized representatives; that said representatives have full power and authority to execute said agreements on behalf of the respective parties; and that the agreements shall constitute valid and legally binding obligations upon the parties executing the same in accordance with terms, conditions and provisions thereof.

Attorney's signature: _____ Date: _____

Print Attorney's name: _____

CITY OF MARSHALL, TEXAS
GENERAL CONDITIONS
OF
AGREEMENT

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FOR
GENERAL CONDITIONS OF AGREEMENT

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GENERAL CONDITION

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), 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 furnished material worked to a special design according to the plans and 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 that 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 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 therefore. The CONTRACTOR shall give the ENGINEER ample notice of the time and place where line 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 BUILDING. 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 sanitation 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; files 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 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 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, herin contemplated, or any part hereof, 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 engineer 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 to 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 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, MATERIAL MEN 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, material men 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 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.

3.18.1 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 coverage's 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 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 speculations 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 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 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 before 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 or the final payment, nor any provision in the Contract Documents shall relieve the CONTRACTOR of the obligation for fulfillment of any warranty that 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 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.

6.01 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 ratable proportion of premiums on Performance and Payment Bonds and Maintenance Bonds, Public Liability and Property Damage and Worker'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 not constitute Extra Work, or as to the payment therefore, 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" thereto; 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 therefore (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 therefore. 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, 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 owner. 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 deduction 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.

CITY OF MARSHALL, TEXAS
SUPPLEMENTARY CONDITIONS
OF
AGREEMENT

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SUPPLEMENTARY CONDITIONS

1. OWNER. Whenever the term "Owner" appears in these specifications, it shall be understood to mean THE CITY OF MARSHALL, TEXAS.
2. ENGINEER. The word "Engineer" in these specifications shall be understood as referring to The City Engineer of the City of Marshall, Texas, or such other Engineer, Supervisor or Inspector as may be authorized by said Owner to act in any particular position.
3. STANDARD SPECIFICATIONS: The Standard Specifications for this project are as follows:
 - A) For Utility Related Work - The City of Marshall Standard Specifications, 1980 Edition, As Amended.
 - B) For Street Related Work- The Texas Department of Transportation Standard Specifications for Construction of Highways, Streets, and Bridges, 1993 Edition, As Amended
4. EXAMINATION OF SITE OF PROJECT. Prospective bidders shall make a careful examination of the site of the project, soil and water conditions to be encountered, improvements to be protected, disposal sites for surplus materials not designated to be salvaged materials, and methods of providing ingress and egress to private properties and of handling traffic during construction of the entire project.
5. QUALIFICATION OF LOW BIDDER. Before being awarded a contract, the low bidder shall submit such evidence as the Engineer may require to establish his financial responsibility, experience, and possession of such equipment as may be needed to prosecute the work in an expeditious, safe, and satisfactory manner.

Should the low bidder fail to produce evidence satisfactory to the Engineer on any of the foregoing points, he may be disqualified and the work awarded to the next low bidder so qualifying.
6. AWARD OF THE CONTRACT. The Owner, acting through its authorized representatives, will notify the successful bidder, in writing, within ninety (90) days after the date of receiving bids of its acceptance of this proposal. The Contractor shall complete the execution of the required Bond and Contract within fifteen (15) days of such notice.
7. ADDENDA. Bidders desiring further information or interpretation of the Plans or Specifications must make request for such information to the Engineer, prior to 48 hours before the bid opening. Answers to all such requests will be given in writing to all bidders in Addendum form, and all Addenda will be bound with, and made a part of, the Contract Documents. No other explanation or interpretation will be considered official or binding. Should a bidder find discrepancies in or omission from the Plans, Specifications, or other Contract Documents, or should he be in doubt as to their meaning, he should at once notify the Engineer in order that a written Addendum may be sent to all bidders. Any addenda issued prior to 24 hours of the opening of bids will be mailed or delivered to each Contractor contemplating the submission of a proposal on this work. The proposal as submitted by the Contractor will be so constructed as to include any addenda if such are issued by the Engineer prior to 24 hours of the opening of bids.

8. **BASIS FOR BID AWARD.** If no alternates are specified in the bid proposal, award will be made to the lowest responsible, responsive bidder. However, the Owner reserves the right to reject any and all bids and to waive any irregularities as may be deemed best and in the Owner's interest.

9. **TIME FOR COMPLETION.** The time allowed for completion of all items of work shall be 240 consecutive calendar days, which time shall begin the tenth (10th) day after issuance of the Work Order. The Work Order shall consist of a written request by the Engineer for the Contractor to proceed with the construction of the project.

10. **LIQUIDATED DAMAGES FOR DELAY.** The Contractor agrees that time is the essence of this Contract, and that for each day of delay beyond the number of calendar days herein agreed upon for the completion of the work herein specified and contracted for (after due allowance for such extension of time as is provided for in the General Conditions of Agreement) the Owner may withhold, permanently from the Contractor's total compensation, the sum of FIVE Hundred Dollars (\$500.00) per calendar day or an amount equal to actual damages incurred by the Owner, whichever is greater, as stipulated damages for such delay.

11. **RIGHTS OF VARIOUS INTERESTS.** Wherever work being done by the Owner's employees or by other Contractors is contiguous to work covered by this contract, the respective rights of the various interests involved shall be established by the Engineer to secure the completion of the various portions of the work in general harmony.

12. **CORPORATE CONTRACTS.** Corporate contractors to be eligible to enter into contract with the Owner shall be qualified to do business in the State or States where the work is to be performed. All licensing requirements shall be complied with. Foreign corporations which have not domesticated or otherwise become licensed in the State or States where work will be performed shall obtain a permit to do business in such State or States pursuant to the State's requirements.

13. **PROPOSALS.** Proposals must be submitted on forms furnished by the Owner, and endorsed as provided in the Contract Documents.

Proposals must be submitted filled out with ink or typewriter and without erasure, interlineation or changes, and if not made in accordance with the General Conditions and other contract documents, will be subject to rejection as irregular, yet the Owner reserves the right to waive any irregularities.

Proposals will be made in the name of the principal and, in a co-partnership, the names of all partners shall be given. Exact post office address shall be given in all cases. If proposals are submitted by an agent, satisfactory evidence of agency authority must accompany the proposal.

14. **IRREGULAR PROPOSALS.** Proposals shall be considered irregular and may be rejected for the following reasons unless otherwise provided by law:

- a. If the proposal form furnished to the Contractor by the Owner or the Owner's Engineer is not used or is altered;
- b. If there are unauthorized additions or conditional bids, or irregularities of any kind which may tend to make the proposal incomplete, indefinite, or ambiguous as to its meaning;
- c. If the bidder adds any provisions reserving the right to accept or reject any award, or to enter into a contract pursuant to an award;
- d. If the unit or lump sum prices contained in the bid schedule are obviously unbalanced either in excess or below the reasonable cost analysis values;
- e. If the bidder fails to insert a unit price for every pay item indicated except in the case of authorized alternate pay items;
- f. If the bidder fails to complete the proposal in any other particulars where information is requested so bidder's proposal may be properly evaluated.

The Owner reserves the right to reject any or all bids and to waive irregularities as may be deemed best and in the Owner's interest.

15. **RETURN OF BID SECURITY.** Bid security of the lowest two or more bidders may be retained until a contract is executed or rejection made by the Owner. Other bid security will be returned only after the canvass and tabulation of bids is completed.

16. **FAILURE TO EXECUTE CONTRACT.** Should the successful bidder fail to execute the contract and furnish bonds satisfactory to the Owner to validate the same within ten (10) days after award of contract, his bid security shall be forfeited to the Owner as liquidated damages.

17. **RIGHT-OF-ENTRY.** Contractor shall provide the Owner, the Owner's Architect or Engineer, or representative of the Federal, State, County, District and Municipal governmental services proper facilities for access to the work wherever it is in preparation or progress.

18. **PERMITS AND RIGHT-OF-WAY.** The Owner will provide rights-of-way for the purpose of construction without cost to the Contractor by securing permits in areas of public dedication or by obtaining easements across privately owned property. It shall be the responsibility of the Contractor, forty-eight (48) hours prior to the initiation of construction on easements through private property, to inform the property owner of his intent to begin construction. Before beginning construction in areas of public dedication, the Contractor shall inform the agency having jurisdiction in the areas forty-eight (48) hours prior to initiation of the work.

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

The Contractor shall make every effort to complete construction and allow immediate access to adjacent property at all driveway entrances located along the roads. Owners or tenants of improvements where access and/or entrance drives are located shall be notified at least eight (8) hours prior to the time the construction will be started at their drive-ins or entrances and informed as to the length of time driveways will be closed, which period shall not exceed six (6) hours.

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

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

20. **REFERENCE SPECIFICATIONS.** Where reference is made in these specifications to specifications compiled by other agencies, organizations or departments, such reference is made for expediency and standardization from the material supplier's point of view, and such specifications referred to are hereby made a part of these specifications. Any reference to standard specifications in any of the Contract Documents shall always imply the latest edition of said standard specification or specifications available at time notice inviting Contractors to bid is published unless otherwise stated.

21. **TRADE NAMES AND MATERIALS.** No material which has been used by the Contractor for any temporary purpose whatever is to be incorporated in the permanent structure without written consent of the Engineer.

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

22. **QUALITY OF MATERIALS.** In the absence of detailed specifications in other sections, all materials shall conform to the latest standards of the American Society for Testing Materials.

23. **MATERIALS, SERVICES, AND FACILITIES.** It is understood that except as otherwise specifically stated in the Contract Documents, the Contractor shall provide and pay for all materials, labor, tools, equipment, equipment rental, water, heat, light, fuel, power, transportation, superintendence, temporary construction of every nature and all other services and facilities of every nature whatsoever necessary to execute, complete and deliver the work within the specified time.

24. **WORKMANSHIP, MATERIALS, EQUIPMENT, AND STORAGE.** All work done and all materials and equipment furnished by the Contractor shall strictly conform to the plans, drawings, and specifications. Competent labor, mechanics, and tradesmen shall be used to supervise the installation of equipment as may be required by the Engineer. Any special tools or equipment which may be required for first class work shall be provided by the Contractor.

The acceptance at any time of materials by or in behalf of the Owner shall not be a bar to future rejection if they are subsequently found to be defective or inferior in quality or uniformity to the material specified, or are not as represented to the Engineer or Owner.

Contractor shall be responsible for the care and storage of materials delivered on the work site or purchased for use thereon. Stored materials shall be carefully and continuously protected from damage or deterioration and so located as to facilitate inspection by the Owner and Engineer. This responsibility for the care and storage of materials shall be with the Contractor whether such materials are furnished by the Contractor or by the Owner.

25. **INSPECTION AND TESTING OF MATERIALS.**

- a. During the progress of the work, it shall be subject to the inspection and observance of the Engineer, and the contractor shall afford every reasonable facility and assistance to the Engineer to make such inspection thorough and intelligent. If any work is covered up without approval or consent of the Engineer, it must, if required by the Engineer, be uncovered for examination at the Contractor's expense.
- b. The fact that the Engineer is on the job site shall not be taken as an acceptance of the Contractor's work or any part of it. Contractor shall notify the Engineer upon completion of his contract and the work shall be given final inspection by the Engineer and any tests shall be witnessed by the Engineer. If all parts of the work are acceptable and substantially comply with the intent of the plans, drawings, and specifications, a recommendation of final acceptance will be made by the Engineer to the Owner. If parts of the work are not acceptable and require additional work by the Contractor to complete the project, necessitating additional inspection by the Engineer, the cost of such additional inspections including time, travel, and lodging, shall be paid for by the Contractor to the Owner who will reimburse the Engineer.
- c. Contractor shall submit to the Engineer seven (7) days in advance of construction, and without charge, samples or specifications of materials he proposes to use and shall not use these materials until he has received approval from the Engineer.
- d. The Owner shall direct and furnish all items necessary for the testing of all materials called for in the specifications. The Owner shall pay the cost of the tests, including all transportation charges unless otherwise noted in the specifications. The cost of re-testing any failed specimens shall be paid by the Contractor.

- e. All tests, unless otherwise provided, shall be in accordance with the pertinent sections of the latest edition of the standards applicable to the material or devices to be tested. A partial list of the principal societies referred to and their abbreviations follows:

ASTM	American Society for Testing Materials
AISC	American Institute of Steel Construction
ACI	American Concrete Institute
FS	Federal Specifications
AASHTO	American Association of State Highway Officials
AWWA	American Water Works Association

- f. All parts of the improvements shall conform to the standard of construction as given in detail under the various items, and in general to the intent thereof, and if they do not conform, shall be made to do so by rebuilding or replacing or otherwise as directed by the Engineer or Owner before acceptance shall be made.

26. **BARRICADES, LIGHTS, AND WATCHMEN.** Where the work is carried on in or adjacent to any street, alley or public place, the Contractor shall at his own cost and expense furnish and erect such barricades, fences, lights, and danger signals, shall provide such watchmen, and shall provide such other precautionary measures for the protection of persons or property and of the work as are necessary. Barricades shall be painted in a color that will be visible at night. From sunset to sunrise the Contractor shall furnish and maintain at least one light at each barricade and sufficient number of barricades shall be erected to keep vehicles from being driven on or into any work under construction. The Contractor shall furnish watchmen in sufficient numbers to protect the work.

The Contractor will be held responsible for all damage to the work due to failure of barricades, signs, lights, and watchmen to protect it, and whenever evidence is found of such damage, the Engineer may order the damaged portion immediately removed and replaced by the Contractor at his cost and expense. The Contractor's responsibility for the maintenance of barricades, signs, and lights, and for providing watchmen shall not cease until the project shall have been accepted by the Owner.

The Contractor shall use only battery-powered lights, enclosed lanterns or other lights satisfactory to the Engineer. Smudge pots or other lights, which have an open flame, will not be permitted.

27. **DISPOSAL OF WASTE AND SURPLUS EXCAVATION.** All trees, stumps, slashings, brush or other debris removed from the job site as a preliminary to the construction of the work or its appurtenances shall be removed from the property and disposed of in a manner approved by the Engineer.

All excavated earth in excess of that required for backfilling shall be removed from the job site and disposed of in a satisfactory manner except in locations where, in the judgment of the Engineer, it can be neatly spread over and along the right-of-way.

28. **GUARANTY AGAINST DEFECTIVE WORK.** The Contractor shall indemnify the Owner against any repairs which may become necessary to any part of the work performed under the contract, arising from defective workmanship or materials used therein, for a period of two (2) years from the date of final acceptance of the work.

29. **RESTORATION OF SITE & CLEANUP.** Upon completion of the project (or major portions thereof) the Contractor shall restore the site to its original condition or better. Driveways and streets shall be compacted and resurfaced as originally found. All private property disrupted during construction including fences, patios, retaining walls, sidewalks, wooden decks, etc. shall be mended or repaired to their original condition. At the conclusion of the work, all tools temporary structures and materials belonging to the Contractor shall be promptly removed, and all dirt, rubbish and other foreign substances shall be disposed of.

The Contractor shall thoroughly clean all equipment and materials installed by him and shall deliver over such materials and equipment in an undamaged, clean condition.

30. **CONTRACTOR'S AND SUBCONTRACTOR'S INSURANCE.** The Contractor shall not commence work under this contract until he has obtained at his expense all insurance required under this section of the General Conditions and by the Contract Documents, and such insurance has been approved by the Owner, nor shall the Contractor allow any subcontractor to commence work on any subcontract until all similar insurance required of the subcontractor has been so obtained and approved. Such insurance shall remain in full force and effect on all phases of the work, whether or not the work is occupied or utilized by the Owner, until all work under the Contract is completed and has been accepted by the Owner.

Nothing contained in the insurance requirements shall be construed as limiting the extent of the Contractor's responsibility for payment of damages resulting from his operations under the Contract.

Any insurance bearing an adequacy of performance will be maintained after completion of the project for the full guarantee period.

The Contractor shall obtain and maintain for the full period of the Contract the following types of insurance in the form, minimum limits and amounts herein specified or as may be otherwise required in the Contract Documents. The Contractor shall automatically renew any policy which expires during the performance of his Contract and notify the Owner and Engineer of such a renewal prior to expiration date.

A. **Workmen's Compensation including Occupational Disease and Employer's Liability Insurance.** Before commencement of the work, the Contractor shall take out and maintain during the life of this contract Statutory Workmen's Compensation Insurance and Occupational Disease Disability Insurance for all of his employees to be engaged in work under this Contract, and in case any work is sublet, the Contractor shall require the subcontractor similarly to provide Workmen's Compensation and occupational Disease Disability Insurance for the latter's employees engaged in such work unless such employees are covered by the protection afforded by the Contractor's insurance. In case any class of employees engaged in hazardous work under the Contractor is not protected under the Workmen's Compensation statute, or in case there is no applicable Workmen's Compensation Statute, the Contractor shall provide, and shall cause each subcontractor to provide adequate insurance for the protection of his employees not otherwise protected.

B. **Public Liability and Property Damage Insurance:** (Note "Indemnity" clause hereinafter). Before commencement of the work, the Contractor shall submit written evidence that he and all his subcontractors have obtained for the period of the Contract full Comprehensive General Liability and Property Damage Insurance coverage. This coverage shall protect the Contractor; the Owner; the Engineer, its architects and engineers; and each of their officers, agents and employees; from claims for damages for bodily or personal injury, sickness or disease, including death, and from claims for damages to property, which may arise directly or indirectly out of, or in connection with the performance of work under this Contract by the Contractor, by any of his Subcontractors, or by anyone directly or indirectly employed of either of them, or under the control of either of them, and the minimum amount of such insurance shall be as follows unless higher minimum amounts are otherwise required in the Contract Documents:

Public Liability Insurance in an amount not less than One Million Dollars (\$1,000,000) for damages arising out of bodily or personal injury, sickness or disease, or death of one person and subject to the same limit for each person and in an amount not less than One Million Dollars (\$1,000,000) in any one occurrence; and Property Damage Insurance in an amount not less than Five Hundred Thousand Dollars (\$500,000) for all damages arising out of injury to or destruction of property of others in any one occurrence with an aggregate limit in the same amount.

The Property Damage portion of this coverage shall include where applicable explosion, collapse and underground exposure coverage. In addition, where Completed Operation Insurance coverage is applicable, such coverage will be maintained after completion and acceptance of the project for the full guarantee period.

C. **Automobile Liability and Property Damage Insurance:** Before commencement of the work, the Contractor shall submit written evidence that he and all his subcontractors have obtained Automobile Liability and Property Damage Insurance coverage on all self-propelled vehicles used in connection with the Contract, whether owned, non-owned, or hired. The liability limits shall be not less than One Million Dollars (\$1,000,000) for injury or death of one person and in an amount not less than One Million Dollars (\$1,000,000) in any one occurrence; and Property Damage limits of not less than Five Hundred Thousand Dollars (\$500,000) in any one occurrence.

D. **Contractual Liability Coverage:** Each and every policy for Liability Insurance carried by each Contractor and Subcontractor will include a "Contractual Liability Coverage" endorsement sufficiently broad to insure the provision titled "Indemnity" hereinafter set forth.

E. **Indemnity:** The Contractor shall defend, indemnify and hold harmless the Owner; the Engineer, its Engineers; and each of their officers, agents, servants and employees; from any and all suits, actions, claims, losses or damage of any character and from all expenses incidental to the defense of such suits, actions or claims, based upon or arising out of or alleged to be based upon or arising out of (1) any injury, disease, sickness or death of any person or persons, (2) any damages to any property including in part loss of use thereof, caused by any act or omission of the Contractor, of any Subcontractor of the Contractor, or by their officers, agents, servants, employees, or anyone else under the Contractor's direction and control, and arising out of, occurring in connection with, resulting from, or caused by the performance or failure of performance of any work or services called for by the Contract or from conditions created by the performance or non-performance of said work or services, but not including the sole negligence of any party herein indemnified.

F. **Builder's Risk "All-Risk" Insurance:** In addition to such Fire and extended Insurance coverage which the Contractor or his Subcontractors elect to carry for their own protection, the Contractor, before commencement of the work, shall effect and maintain for the life of his Contract Builder's Risk "All-Risk" Completed Value Insurance coverage upon the full insurable value of all portions of the project which is the subject of this Contract and subject to a loss for which Builder's Risk "All-Risk" Insurance coverage gives protection, and shall include completed work and work in progress. This coverage shall be with an insurance company or companies acceptable to the Owner.

Such insurance shall include as Additional Named Insureds: the Owner; The Engineer, its architects and engineers; and each of their officers, agents, and employees; and any other persons with an insurable interest designated by the Owner as an Additional Named Insured.

Duplicate originals of the policy of insurance required herein shall be furnished to the Engineer as provided under "Evidence of Insurance Coverage" hereinafter.

G. **Evidence of Insurance Coverage:** Before commencement of any work, the Contractor shall submit written evidence that he and all his Subcontractors have obtained the minimum insurance required by the Contract Documents. Such written evidence shall be in the form of a Certificate of Insurance (see attached form) executed by the Contractor's insurance carrier showing such policies in force for the specified period or by furnishing a copy of the actual policy or policies. Each policy or certificate will bear an endorsement or statement waiving right of cancellation or reduction in coverage without ten (10) days notice in writing to be delivered by registered mail to the owner.

The Contractor shall furnish duplicate originals of Builders' Risk "All-Risk" Completed Value Insurance coverage to the Engineer, one copy of which shall be for the Owner and one copy for the Engineer.

31. SAFETY.

- a. In accordance with generally accepted construction practices, the Contractor alone will be solely and completely responsible for conditions of the job site, including safety of all persons and property during performance of the work. This requirement will apply continuously and not be limited to normal working hours.
- b. The duty of the Engineer or Architect to conduct construction review of the Contractor's performance is not intended to include review of the adequacy of the Contractor's safety measures, in, on, or near the construction site.

32. **EXISTING UTILITIES AND SERVICE LINES.** The Contractor shall be responsible for the protection of all existing utilities or service lines crossed or exposed by his construction operations. Where existing utilities or service lines are cut, broken or damaged, the Contractor shall replace or repair the utilities or service lines with the same type of original material and construction, or better, at his own cost and expense.

33. **DURING CONSTRUCTION.** During construction of the work, the Contractor shall, at all times, keep the site of the work and adjacent premises as free from material, debris, and rubbish as is practicable and shall remove same from any portion of the site, if in the opinion of the Engineer, such material, debris, or rubbish constitutes a nuisance or is objectionable.

The Contractor shall remove from the site all of his surplus materials and temporary structures when no further need therefore develops.

34. **COPIES OF PLANS AND SPECIFICATIONS FURNISHED.** Three (3) sets of plans and specifications shall be furnished to the Contractor, at no charge, for construction purposes. Additional copies may be obtained at cost of reproduction upon request.

35. **LIGHT AND POWER.** The Contractor shall provide, at his own expense, temporary lighting and facilities required for the proper prosecution and inspection of the work.

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

37. **USE OF EXPLOSIVES.** Use of explosives will be allowed only upon written approval of their use by the Engineer.

Should the Contractor elect to use explosives in the prosecution of the work, the utmost care shall be exercised so as not to endanger life or property. The Owner shall not be held liable for damages done by the Contractor in the use of explosives. The Contractor shall notify the proper representatives of any public service corporation, any company, or any individual, not less than eight (8) hours in advance of the use of explosives which might endanger or damage their or his property along or adjacent to the work. Whenever explosives are stored or kept, they shall be stored in a safe and secure manner and all storage places be plainly marked "DANGER EXPLOSIVES", and shall be under the care of a competent watchman at all times.

38. **SUNDAYS, HOLIDAYS, AND OVERTIME.** Any work necessary to be performed after regular working hours, on Sundays, or legal holidays, shall be performed without additional expense to the Owner. The Contractor shall notify the Engineer if any work is to be performed on Sundays or holidays.

39. **PAYMENTS NO EVIDENCE OF PERFORMANCE.** No progress or final estimate certificate given or payment made under this contract shall be evidence of the performance of this contract or construed to be acceptance of defective work or improper materials, either wholly or in part.

40. **TEMPORARY SUSPENSION OF THE WORK.** The Engineer shall have authority to suspend the work wholly or in part for such period or periods of time as he may deem necessary due to unsuitable weather or other conditions considered unfavorable for the suitable prosecution of the work; or for the failure of the Contractor to carry out instructions or to perform any provisions of the contract. During periods of suspension, the Contractor shall properly protect the work from possible injury.

41. **OWNER'S RIGHT TO DO WORK.** If the Contractor should neglect to prosecute the work properly or fail to perform any provision of this contract, the Owner, after seven (7) days written notice to the Contractor, may, without prejudice to any other remedy the Owner may have, make good such deficiency and may deduct the cost thereof from the payment then or thereafter due the Contractor. Any money due the Owner after such deduction shall be paid by the Contractor or his sureties who hereby agree to these provisions.

42. **RIGHT OF OWNER TO TERMINATE CONTRACT.** Should it appear at any time that the work is not being prosecuted with sufficient competence or rapidity to insure the proper completion of the work within the stipulated time, and, if upon seven (7) days written notice to the Contractor, he fails to increase the quality or the quantity of his work, or both, the Owner reserves the right to annul and cancel this contract and relent the work or any part thereof, or at the Owner's option to complete it by day labor. The Contractor shall not be entitled to any claims for damages on account of such annulment, and he will be held liable for costs and expenses incurred in relenting or completing the work under this contract. All money due the Contractor will be retained until the work is completed and all expenses and costs have been deducted and any money due the Owner, after such deductions have been made, shall be paid by the Contractor or his Sureties who hereby agree to these provisions.

43. **TERMINOLOGY.** Throughout these specifications, the word "shall" denotes mandatory. The word "may" implies only permission. All other "terms" or "word phrases" shall be interpreted as having the meaning customarily ascribed to them by the several building trades of the United States.

44. **CERTIFICATES AND GUARANTEES.** Four (4) copies of any manufacturer's guaranty or certificate as may be required by the Contract Documents shall be submitted to the Owner prior to the acceptance of the work by the Owner.

45. **STATE SALES TAX.** This Contract is issued by an organization which qualifies for exemption pursuant to the provisions of Article 20.04 (F) of the Texas Limited Sales, Excise and Use Tax Act. The Contractor performing this contract may purchase, rent or lease all materials, supplies, equipment used or consumed in the performance of this contract by issuing to his suppliers an exemption certificate.

46. **COORDINATION WITH OTHERS.** In the event other contractors are doing work in the same area simultaneously with this project, the Contractor shall coordinate his proposed construction with that of the other contractors.

47. **DE-WATERING EXCAVATION.** The prospective bidders shall make sufficient subsurface explorations to determine the location of groundwater which might be encountered. The Contractor shall, at his own expense, utilize a pumping system in order to place materials in dewatered excavations.

48. **PUBLIC UTILITIES AND OTHER PROPERTY TO BE CHANGED.** In case it is necessary to change or move the property of any owner or of a public utility, such property shall not be moved or interfered with until ordered to do so by the Engineer. The right is reserved to the owner of public utilities to enter upon the limits of the project for the purpose of making such changes or repairs of their property that may be made necessary by performance of this Contract.

Any time the Contractor intends to expose, cross, or otherwise work in the area of the existing petroleum pipelines, telephone lines, water lines, etc., the Contractor shall notify the Owner(s) of the respective facilities forty-eight (48) hours in advance.

49. **PAY ITEMS.** Pay items are listed in the Proposal. All other items necessary to complete the work as shown and specified shall be considered subsidiary obligations of the Contractor.

50. **MUTUAL RESPONSIBILITY OF CONTRACTORS.** If, through acts or neglect on the part of the Contractor, any other Contractor or Subcontractor shall suffer loss or damage to his work, the Contractor agrees to settle with such other Contractor or Subcontractor by agreement or arbitration, if such other Contractor or Subcontractor will so settle. If such other Contractor or Subcontractor asserts been so sustained, the Owner shall notify the Contractor, who shall indemnify and save harmless the Owner against such claims and for any costs in connection with such claims.

51. **PROTECTION OF PROPERTY.** The Contractor shall, at no additional expense to the Owner, protect by false work, braces, shoring or other property along his line of work or affected directly by his work, against damage and shall repair the damages or repay the injured Owners if such damage occurs.

The Contractor shall exercise care to protect from injury all water pipes, sanitary sewer pipes, gas mains, telephone cables, electric cables, service pipes, and other utilities or fixtures which may be encountered during the progress of the work. All utilities and other service facilities or fixtures if damaged, shall be repaired by the Contractor without additional compensation.

The Contractor shall personally check and verify utility information on the plans. Where existing utilities or structures are shown on the plans or drawings, they are believed to be accurate but are not guaranteed to such or that these are the only utilities or structures in the construction area. Protection is Contractor's responsibility and he must satisfy himself as to the existence and location of all utilities and structures.

The Contractor shall give notice in writing at least 48 hours before breaking ground, to all persons, superintendents, inspectors, or those otherwise in charge of property, streets, water pipes, gas pipes, sewer pipes, telephone cables, electric cables, railroads or otherwise, who may be affected by the Contractor's operation, in order that they may remove any obstruction for which they are responsible and have a representative on the ground to see that their property is properly protected.

52. **EXTENSION OF CONTRACT PERIOD.** The Contractor may be granted an extension of time due to Acts of God, Acts of War, Strikes, or non-delivery of materials provided he submits a request in writing to the Engineer not later than ten (10) days from the date of such occurrence. A separate request must be made for each occurrence.

53. **FAILURE TO COMPLETE WORK WITHIN CONTRACT PERIOD.** If the Contractor fails to complete his work within the contract period, or any extension thereof, as provided in the "Extension of Contract Period" said contract shall upon written notice to the Contractor and Surety be in default.

The Owner may, at its (his) option, permit the Contractor or his surety to complete the work included in the contract, or may proceed to complete the work in accordance with "Completion of Contract in Default". In either event, the Contractor or his Surety shall be responsible for all costs incidental to the completion of the work and also for the liquidated damages stipulated in the proposal form. The Owner may waive such portion of the liquidated damages as may occur after the work is in condition for the safe and convenient use by the Owner.

54. **CONTRACTS IN DEFAULT.** The Owner may declare a contract in default for any one or more of the following reasons:

- a. Failure to complete the work within the contract period or any extension thereof.
- b. Failure or refusal to comply with an order of the Engineer or Architect within a reasonable time.
- c. Failure or refusal to remove rejected materials.
- d. Failure or refusal to perform anew any defective or unacceptable work.
- e. Bankruptcy or insolvency, or the making of an assignment for the benefit of creditors.
- f. Failure to provide a qualified superintendent, competent workmen or subcontractors to carry on the work in an acceptable manner or failure to prosecute the work according to the agreed schedule of completion.
- g. Disregard or violation of any other important provisions of the Contract Documents as determined by the Engineer.

55. **COMPLETION OF CONTRACTS IN DEFAULT.** If for any reason, a contract is declared in default, the Owner shall have the right, without process or action at law to take over all or any portion of the work and complete it at its (his) option, either by day labor or by relending same. Written notice shall be given the Contractor by the Owner that his contract has been declared in default and upon receiving such notice, the Contractor shall peaceably relinquish possession of said work or the parts thereof specified in the notice.

The Owner may, at its (his) option and at a rental, which it considers reasonable, retain all materials, equipment, and tools on the work until the work is complete.

Neither the Owner nor the Owner's officers, agents, or employees shall be in any way liable or accountable to the Contractor or his Surety for the method by which the completion of the said work, or any portion thereof, may be accomplished, or for the price paid therefor. Should the cost of completing the work be in excess of the original contract price, the Contractor and his Surety shall be held responsible for such excess cost. Should the cost of such completion including all proper charges, be less than the original contract price, the amount so saved shall be paid to the Contractor. Neither by taking over the work nor by declaring the contract in default shall the Owner forfeit the right to recover damages from the Contractor or his Surety for failure to complete the entire contract. Maintenance of the work shall continue to be the Contractor's and Surety responsibilities as provided for in the Bond and Guaranty of the Contractor.

56. **EXCAVATION IN HIGHWAY RIGHTS-OF-WAY.** No trench excavation within a highway right-of-way shall be carried closer than 10 feet of all pavement edges. No dirt from trench excavation shall be piled on roadway shoulders; slopes, ditches, and berms shall be restored to their original condition.

The Contractor shall notify the Highway Department of his construction schedule not less than five (5) days prior to commencing the work within the right-of-way. The Contractor shall conform to the requirements of the Texas Highway Department as to details of construction methods and time of construction.

57. **PROVISIONS FOR REROUTING AND DETOUR OF TRAFFIC.** The Contractor will be required to furnish all barricades, lights, signs, and flagmen where it becomes necessary to reroute traffic during the time construction is in progress in the City streets or highways. The detour will be determined by the Engineer and approved by the Owner and the Texas Highway Department.

58. **REMOVAL AND REPLACEMENT OF EXISTING PIPE CULVERTS.** Existing pipe culverts in conflict with the proposed construction shall be unearthed carefully, disjointed, and stockpiled adjacent to the right-of-way. The pipe culverts shall be cleaned and replaced immediately after the sewer line construction is clear so as to cause no serious inconveniences to the property owners and to allow access to their property as quickly as possible. Pipe culverts shall be laid to grade on firm bedding and shall be back filled and mechanically tamped to a density such that settlement will not occur. Where existing rubble or concrete headwalls are cut, damaged, or removed, they shall be replaced in an equal or better condition as determined by the Engineer.

Removal and replacement of existing pipe culverts will not be measured and paid for each. No separate payments will be made for removing and replacing headwalls on culverts and all costs in connection therewith shall be included in other items listed in the Proposal.

59. **SCHEDULE OF WORK SEQUENCE.** Upon award and prior to any construction, it shall be the responsibility of the Contractor to present, to the Owner and Engineer for approval, a tentative schedule of the sequence in which the work will be performed. The schedule should include the following information:

- a. The sequence of work in which the construction will be done.
- b. The approximate period of time in constructing and testing of the facilities.
- c. Coordination of work using two (2) or more crews.
- d. Schedule of possible night work in making tie-ins and road crossings.

60. **COST BREAKDOWN.** Immediately after being awarded a contract for the work, the Contractor shall furnish the Engineer with a cost breakdown of each lump sum bid. Such a breakdown shall be in sufficient detail to permit its use in the preparation of progress estimates by the Engineer. Progress payments for materials and equipment on hand shall be based on invoice prices and invoice copies must be presented to the Engineer.

61. **FINAL FIELD-TESTS.** Upon completion of the work and prior to final payment, all equipment and appliances installed under this Contract shall be subjected to acceptance tests as specified or required to prove compliance with the Contract Documents.

The Contractor shall furnish labor, fuel, energy, water and all other material, equipment, and instrument necessary for all acceptance tests, at no additional cost to the Owner.

62. **WATER FOR CONSTRUCTION.** Water used for testing and flushing of the pipeline or any other purpose incidental to this project will be furnished by the Contractor. The Contractor shall make the necessary arrangements for securing and/or transporting such water and shall take such water in a manner and at such times that will not produce a harmful drain on the source of water. The Contractor shall be fully responsible for the draining and disposal of all water used in flushing and testing. The Contractor shall obtain approval of the Owner and Engineer of the manner in which the water will be drained and disposed of.

63. **ELECTRICITY FOR CONSTRUCTION.** Except as provided elsewhere in these specifications, the Contractor shall provide all electricity required.

64. **SPECIAL CONSTRUCTION REQUIREMENTS IN STATE HIGHWAY RIGHT-OF-WAY.**

- a. All Highway signs removed or disturbed shall be restored to original condition.
- b. All surplus material shall be removed from right-of-way and the excavation finished flush with surrounding natural ground.
- c. Operation along highways shall be performed in such a manner that all excavated materials be kept off the pavements at all times as well as all operating equipment.
- d. Barricades, warning signs and flagmen shall be provided by the Contractor.

65. **CONTRACT DOCUMENTS.** The Contract Documents shall consist of all documents contained herein as stated in the Table of Contents including the Notice to Bidders (Advertisement), Special Conditions, Instructions to Bidders, Proposal, signed Agreement, Performance and Payment Bonds (when required), Special Bonds (when required), General Conditions of Agreement, Technical Specifications, Plans, and all modifications thereof incorporated in any of the documents before the execution of the Agreement.

66. **POLES, SIGNS, GUY WIRES, ETC.** All utility poles, guy wires, private sign posts, signs, and similar private obstructions which interfere with the construction of this project will be removed and replaced by the Contractor at his own expense.

The removal and replacement of City Street signposts and signs are the responsibility of the Contractor. The Contractor shall be responsible for all damage to street signposts and signs within the limits of his operations that remain in place or are removed and replaced.

In event street sign posts and signs are injured or destroyed by the Contractor's operations, they shall be replaced by the Contractor. No separate compensation will be paid for this work, but the costs thereof shall be included in such contract pay items as are provided.

67. **PROTECTION OF TREES, PLANTS AND SHRUBS.** The Contractor shall make every effort to protect all trees, plants, and shrubs encountered during construction and shall notify property owners, as specified above, before removal of any such item. In all cases where questions arise, the Contractor shall request clarification from the Engineer.

68. **PROPERTY LINES AND MONUMENTS.** The Contractor shall protect all property lines, monuments and stakes encountered in his work. All monuments, and stakes for later use, that are disturbed or destroyed by the Contractor shall be replaced at his expense.
69. **HORIZONTAL AND VERTICAL CONTROL POINTS.** Location of the centerlines and grades will be determined and staked by the Contractor. The Contractor shall assume full responsibility for construction in accordance with the approved lines and grades.
70. **CONFINED SPACE ENTRY.** The Contractor shall be responsible for compliance with any and all Federal and State confined space entry and permitting requirements.
71. **ALLOWANCE FOR MISCELLANEOUS EXTRA WORK.** A discretionary allowance may have been established in the Bid Proposal for miscellaneous extra work which may arise during the construction phase of the project due to the discovery of unknown obstructions or other unexpected project conditions for which a method of payment, such as individual bid items, is not established. This allowance, if established in the Bid Proposal, is not intended to be used to procure payment for items specifically named as subsidiary to other bid items within the contract documents. Prior to initiating any item of extra work under this bid item, the Owner, Engineer, and Contractor will agree as to the scope of extra work to be performed and the amount of payment to be made for the particular item of extra work under consideration. A written field order for the extra work will be approved by all parties before commencing with extra work. Expenditure of the allowance funds is at the sole discretion of the Owner. The allowance may be used in full or in part, as the Owner deems necessary. If no extra work is identified and approved by the Owner, the allowance funds will not be expended.

TECHNICAL SPECIFICATIONS

TECHNICAL SPECIFICATIONS

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The Texas Department of Transportation 2014 Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges shall govern the following Items and any other Items of work required to complete the work as shown or specified. These Items shall be considered included in these Specifications in their entirety with the exception of the Measurement and Payment sections:

Item 310	Prime Coat
Item 340	Dense-Graded Hot-Mix Asphalt Pavement (Small Quantity)
Item 360	Concrete Pavement (All concrete sidewalk pavement shall have light broom finish.)
Item 438	Cleaning and Sealing Joints
Item 440	Reinforcement for Concrete
Item 529	Concrete Curb, Gutter, and Combined Curb & Gutter
Item 531	Sidewalks

SECTION G
GENERAL REQUIREMENTS

TECHNICAL SPECIFICATIONS

SECTION G1 - GENERAL INFORMATION

- G1.1. **PERMITS AND RIGHT-OF-WAY:** The Owner will provide rights-of-way for the purpose of construction without cost to the Contractor by securing permits in areas of public dedication or by obtaining easements across privately owned property. It shall be the responsibility of the Contractor, five (5) days prior to the initiation of construction on easements through private property, to inform the Owner's Representative of his intent to begin construction. The Contractor shall notify property owners of intent to begin construction. Before beginning construction in areas of public dedication, the Contractor shall inform the agency having jurisdiction in the area forty-eight (48) hours prior to initiation of the work. Contractors shall notify RR representatives in accordance with the permit.
- G1.2. **CONSTRUCTION IN PUBLIC ROADWAYS AND PRIVATE DRIVEWAYS:** No public road shall be entirely closed overnight. It shall be the responsibility of the Contractor to build and maintain by-passes and detours, if necessary, and to properly light, barricade and mark all by-passes and detours that might be required on and across the road involved in the work included in this contract.

The Contractor shall make every effort to complete construction and allow immediate access to adjacent property at all driveway entrances located along the roads. Owners and tenants of improvements where access and/or entrance drives are located shall be notified at least twenty-four (24) hours prior to the time the construction will be started at their drive-ins or entrances and informed as to the length of time driveways will be closed, which period shall not exceed ten (10) hours.

The Contractor shall be responsible for all road and entrance reconstruction, and repairs and maintenance of same, for a period of one (1) year from the date of acceptance. In the event the repairs and maintenance are not made immediately to the satisfaction of the Engineer, and it becomes necessary for the Owner to make such repairs, the Contractor shall reimburse the Owner for the cost of such repairs.

Where sufficient right-of-way is not available and prior approval is obtained from the Engineer, dirt from the excavation may be temporarily placed on city streets. Where this is necessary, the Contractor shall provide proper barricading and other traffic control measures to provide at least one lane of open traffic. Where prior approval of the Engineer is obtained, the roadway may be completely closed, provided alternate routes for traffic are available and detour routings clearly marked by the Contractor.

Where construction alongside roadways is required, it shall be the Contractor's responsibility to insure that precautions are taken to avoid damage to the roadway surface. Damages to the roadway from the Contractor's construction activities shall be repaired by the Contractor to return the roadway to its original condition prior to construction.

The Contractor is responsible for traffic handling and safety in the construction area during the construction period. Signs, barricades and other necessary devices shall be furnished and maintained by the Contractor in compliance with Part IV of the Texas Manual of Uniform Traffic Control Devices, current edition.

- G1.3. **PUBLIC UTILITIES AND OTHER PROPERTY TO BE CHANGED:** In case it is necessary to change or move the property of any owner or of a public utility, such property shall not be moved or interfered with until ordered to do so by the Engineer. The right is reserved to the owner of public utilities to enter upon the limits of the project for the purpose of making such changes or repairs of their property that may be made necessary by performance of this Contract.

Any time the Contractor intends to expose, cross, or otherwise work in the area of the existing petroleum pipelines, telephone lines, water lines, etc. the Contractor shall notify the Owner's Representative five (5) days in advance. The Owner's Representative will notify the utility or pipeline owner.

- G1.4. POLES, GUY WIRES, ETC.: All utility poles, guy wires, private sign posts, signs and similar private obstructions which interfere with the construction of this project will be removed and replaced by the Contractor at his own expense.
- G1.5. PROTECTION OF TREES, PLANTS AND SHRUBS: The Contractor shall make every effort to protect all trees, plants, and shrubs encountered during construction outside of the construction area. Where Owner-planted shrubbery must be removed for construction, it shall be stored by the Contractor and replaced in good condition. In all cases where questions arise, the Contractor shall request clarification from the Engineer.
- Contractor shall not cut down, remove or trim existing trees without prior approval from the Engineer. Trees noted as "DO NOT DISTURB" on the plans shall be protected from construction activity by construction of a barrier fence at a minimum of 5 ft. radius around the trunk of the trees. The barrier fence shall be constructed a minimum of 4 ft. high with polyethylene/polypropylene grid safety barricade fencing supported by steel t-posts or approved equivalent. Payment for tree protection shall be considered subsidiary to various items of work within the contract. The alignment of the storm sewer pipe may need to be slightly adjusted in the field to avoid significant root damage to the trees. Field alignment adjustments shall have prior approval of the Engineer.
- G1.6. ARCHEOLOGICAL DISCOVERIES: The Contractor may encounter unanticipated cultural or archaeological deposits during construction. If archeological sites or historic structures are discovered after construction operations are begun, the Contractor shall immediately cease operations in that particular area and notify the Owner. The Contractor shall take reasonable steps to protect and preserve the discoveries until they have been inspected by the Owner's Representative. The Owner will promptly coordinate with the Texas Historical Commission and any other appropriate agencies to obtain any necessary approvals or permits to enable the work to continue. The Contractor shall not resume work in the area of the discovery until authorized to do so by the Owner.
- G1.7. CONSTRUCTION STAKING: The Contractor shall provide for his own horizontal and vertical construction staking as a subsidiary cost to his bid. The plans include locations and elevations of temporary bench markers along the right-of-way.

TECHNICAL SPECIFICATIONS
SECTION G2 - EXISTING UTILITIES

- G2.1. DESCRIPTION: This section covers the requirements with respect to existing public or private utilities.
- G2.2. PROXIMITY TO WATER MAINS: All plans are drawn in such manner that all known utilities are shown using the best available information including utility maps, field surveys, or other sources of information. A minimum distance of 9' clear horizontally shall be maintained between water and sanitary sewer lines where possible. Where this separation distance cannot be achieved, clearance shall be provided in accordance with TCEQ rules contained in Chapter 290 and 317, the following procedures of which are summarized below:
- A. Where a new sanitary sewer parallels the new water main, the sanitary sewer shall be constructed of cast iron, ductile iron, or PVC pipe meeting AWWA Specifications, having a minimum working pressure rating of 150 psi or greater, and equipped with pressure type joints. The water main and sanitary sewer shall be separated by a minimum vertical distance of two feet, and a minimum horizontal distance of four feet, measured between the nearest outside diameters of the pipes, and the water main shall be located above the sewer.
 - B. Where a new sanitary sewer crosses the new water main, and that portion of the sewer within 10 feet of the water is constructed as described in G2.2.(A) above, an absolute minimum distance of 6 inches between outside diameters shall be maintained. In addition the sewer shall be located below the water line where possible and one length of the sewer pipe must be centered on the water line.
- G2.3. DAMAGE TO EXISTING UTILITIES:
- Approximate locations and depths of all known utilities are shown using the best available information. The Contractor is responsible for verifying the existence and location of all utilities shown or not shown on the plans. The Contractor shall hold the Owner harmless from damages to existing utilities arising from the Contractor's operations. Repair expense and any damages suffered by the utility owner shall be at the Contractor's expense.
- G2.4. RELATIONSHIP WITH EXISTING FACILITIES: The Contractor is advised that, unless otherwise indicated, existing utilities must be available at all times for use. The Contractor, therefore, shall at all times take particular care to avoid needless confusion, clutter and debris at the site of the work. At no time shall the Contractor's personnel, equipment, or material prevent the normal conveyance of water and wastewater flows. If it is necessary to request the Contractor to move his equipment, materials, or any material included in the work, he shall do so promptly and place said equipment or material in an area which does not interfere with proper service. The Contractor is further cautioned against adjusting or altering any private property without the written consent of the Owner.
- G2.5. PROTECTION OF EXISTING INSTALLATIONS: The Contractor shall correct or replace, without delay any and all damage to existing structures, surfaces, equipment, controls or systems resulting from his operations.
- The Contractor's attention is particularly directed to the dust, abrasive particles, debris and dirt generated by the placement, chipping, cutting, finishing and grinding of new or existing concrete, and the dust debris and dirt generated by excavation and backfill operations; and the filters, protective shieldings, and other dust suppression methods at all times to adequately protect private property.
- G2.6. PERMANENT UTILITIES: The existing site is presently served with utilities. The utilities to be modified by the Contractor are as shown on the plans.

G2.7. **CLEANING UP:** The Contractor shall not allow the site of the work to become littered with trash and waste material but shall maintain the site of the work in a neat and orderly condition throughout the construction period. On or before the completion of the work, the Contractor shall carefully clean out all pits, drain lines and drains, chambers or conduits and shall remove all temporary structures built by him and rubbish of all kinds from any of the grounds which he has occupied and leave them in first-class condition to the satisfaction of the Engineer.

TECHNICAL SPECIFICATIONS

SECTION G3 - FINISH GRADING, REPLACEMENT OF TOPSOIL, SODDING OR HYDROMULCHING

- G3.1 GENERAL: The work to be performed under this section of the Specifications shall consist of the removal and disposal of excess excavation, construction of finished grading, replacement of previously stripped topsoil and providing ground cover by hydromulching or sodding.
- G3.2 FINISH GRADING: Excess excavation from all sources shall be placed in accordance with the site grading plans. Materials placed under access roads and parking areas shall be compacted according to the applicable Specifications. Excavated material in excess of the requirements of the grading plan shall be disposed of off-site at the Contractor's expense.
- G3.3 REPLACEMENT OF TOPSOIL AND GROUND COVER: The work to be performed under this section of the Specifications shall consist of replacement of topsoil previously stockpiled to conform to the finish grades as indicated on the Plans, and providing ground cover by hydromulching.
- A. Topsoil: The topsoil shall consist of material previously stockpiled. Topsoil shall be placed at a depth of 4" over all disturbed areas prior to placing ground cover.
- B. Hydromulching: This item shall consist of furnishing and applying fertilizer, seed, mulch cover, and water on all areas disturbed by construction except within residential lots as noted on the Plans.

Application of ground cover shall be by hydromulching. The mulch, fertilizer, and seed may be incorporated into one operation, or if the Contractor so elects, the fertilizer may be applied during preparation of the seedbed. Water used in hydromulching shall be of drinking water quality.

After application of the mulch cover, water shall be applied as necessary at the direction of the Engineer for a period of at least three (3) weeks. The time required for application of water will not be included in the computations of contract time for completion of the project provided all other work under the Contract has been completed. Fertilizer shall be a commercial grade, uniform in composition, free flowing, and suitable for application with mechanical equipment, delivered to the site in labeled containers, to current State Fertilizer Laws and bearing the name, trademark, and warranty of the producer.

All seed shall be labeled in accordance with the current rules and regulations of State law and shall be free of noxious weeds. Seed shall be furnished in sealed, standard containers unless otherwise authorized by the Engineer in writing. Seed which has become wet, moldy, or otherwise damaged in transit or storage will not be acceptable. The minimum percentage by weight of pure live seed shall not be less than 85 when tested according to current regulations under the Federal Seed Act. All legumes must be inoculated with an approved culture as per the manufacturer's recommendations.

Seed shall be composed of the varieties and amounts by weight as shown below.

<u>VARIETY</u>	<u>WEIGHT, LBS. PER ACRE</u>
Rye Grass (Gulf Coast or Italian)	50
Crimson Clover	2
Bermuda (Common)	10

The Common Bermuda seed shall be applied during the months of March, April and May only. Rye Grass and Crimson Clover shall be applied with hydromulch and fertilizer immediately upon completion of finish grading. The Contractor shall be responsible for all seeding at the specified times, whether accomplished in single or multiple applications.

For maximum soil holding ability the mulch shall be a wood cellulose fiber. This mulch shall be applied at the rate of 1200 lbs. per acre on 4:1 slopes or flatter or at 1500 lbs. per acre on slopes steeper than 4:1.

Fertilizer shall be composed of 16% nitrogen, 8% phosphorous, and 8% potash and applied at a minimum rate of 400 lbs./acre.

- C. Sod: Slab sod shall be provided where indicated on the Plans. Slab sod shall be approved nursery grown grass. Nursery grown grass sod shall be centipede or St. Augustine. Sod shall be free from noxious weeds or other vegetation. Water shall be of drinking water quality.

Slab sod shall be cut with approved mechanical or manual sod cutters. The designated area shall be mowed when necessary, and sod shall be cut to a minimum depth of 1 inch for nursery grown grass, and to a uniform width and in convenient lengths for handling. Care shall be exercised to retain soil on roots of sod during excavating, hauling and planting.

Sod cut more than 48 hours before placing shall not be used unless authorized. Sod taken from bare areas that may produce inferior growth will not be accepted. Watering required in connection with digging, storing or hauling sod will not be paid for.

Areas to receive slab sod shall be thoroughly pulverized to a depth of approximately 3 inches and dressed to a reasonable grade. Slab sod shall receive fertilizer as specified for hydromulching with 90% broadcast over the area to receive slab sodding, and the remaining 10% shall be broadcast over sod after placing and rolling. Upon delivery to the planting site, slab sod shall be transferred onto the surface of the soil. Areas to be sodded shall be watered as directed. Slabs of sod shall be placed with a minimum amount of space between slabs. Slabs which do not fit closely shall be pulled together with suitable tools and pegged when necessary.

Slab sod shall be rolled as soon after planting as practicable with plain rollers or cultipackers. Where rolling is impracticable, sod shall be tamped by approved hand methods.

Slab sodding shall be watered as directed. If nursery grown grass sod is used, particular attention shall be paid to watering per the supplier's recommendations.

- D. Construction Methods: The area to receive hydromulch shall be brought to a smooth and uniform surface to conform to an elevation 4" below the finished grade indicated on the Plans. The surface of the topsoil stockpile shall be thoroughly disced to a depth of 6" prior to loading. The topsoil shall then be dumped upon the prepared area and spread to a uniform depth of 4". Ground cover shall then be applied by hydromulching as described above.

- E. Maintenance of Ground Cover: Areas which have been sodded or hydromulched shall be maintained by the Contractor in a manner to insure that grass cover is established. The Contractor shall further maintain areas to specified grades for a period of one year from the date of receiving the Notice of Substantial Completion on the project. Final payment will not be made until ground cover is established in accordance with these Specifications.

TECHNICAL SPECIFICATIONS

SECTION G4 - BARRICADES AND WARNING DEVICES

G4.1. DESCRIPTION: This Item shall consist of the construction, maintenance and removal, if required, of detours of the type and length, and to the lines, grades and typical cross sections shown on the plans. The work shall be done in accordance with the provisions of this specification.

- A. Prior to closing any section of the project to traffic, the Contractor shall furnish, erect, and maintain barricades, warning signs and devices, temporary suitable removable lane delineation striping and all other applicable requirements at and in the vicinity of all road and bridge construction projects at all times; both day and night during the construction period of the contract. The Texas Manual on Uniform Traffic Control Devices (TMUTCD) shall serve as a guideline for the installation and maintenance of barricades and warning devices. All of the above does not preclude the requirements of the City of Marshall.
- B. Responsibility for damage or claims: The Contractor shall hold harmless the Owner, the City of Marshall, and Hayes Engineering, Inc. and all its representatives from all suits, actions or claims of any damages sustained by any person or property in consequence of any neglect in safeguarding the work or through the use of unacceptable materials in the construction of the improvement, or on account of any act of omission by said Contractor. He shall not be released from said responsibility until the roadway shall have been completed and accepted, and so much of the money due the said Contractor under and by virtue of his contract may be retained by the Owner, the City of Marshall and Hayes Engineering, Inc., or his surety may be held until such claims have been settled and suitable evidence to that effect furnished to the Engineer.
- C. In areas where traffic re-alignment is required, all conflicting existing lane lines shall be obliterated and re-alignment made by use of temporary, removable lane delineation striping until construction is completed and then the temporary striping is removed and permanent striping applied in accordance with the TMUTCD specifications for traffic lane striping or buttons.

Whenever temporary pavement marking is required either for re-aligning existing traffic lane striping or for new temporary locations it shall be provided in accordance with TMUTCD requirements.

TECHNICAL SPECIFICATIONS

SECTION G5 – STORM WATER POLLUTION PREVENTION

G5.1. DESCRIPTION: This item shall consist of the work required to provide storm water pollution prevention meeting the requirements of the Texas Commission on Environmental Quality (TCEQ). The TCEQ requirements are specified in the Texas Pollutant Discharge Elimination System (TPDES) Construction General Permit (CGP) No. TXR150000.

1. REQUIREMENTS – 5 OR MORE ACRES DISTURBED. For construction activities that will disturb 5 or more acres, the Contractor shall perform all activities required by TCEQ. TCEQ requirements include, but are not limited to the following tasks:
 - a. Obtain a copy of the TCEQ CGP (TPDES Permit No. TXR150000).
 - b. Develop a storm water pollution prevention plan (SWP3) meeting the requirements of the TCEQ General Permit.
 - c. Complete and submit a Notice of Intent (NOI) to the TCEQ using the TCEQ form. Include all necessary fees with the NOI submittal. The NOI and all fees must be submitted at least two (2) days prior to commencement of construction.
 - d. Provide the Owner and the Engineer with a copy of the NOI and a copy of the check to the TCEQ and a written notice indicating the date that the NOI was submitted to the TCEQ.
 - e. Implement the SWP3. Perform maintenance and inspection as required by the SWP3.
 - f. Continue to submit the annual project fee as the project continues.
 - g. Modify the SWP3 during construction as necessary.
 - h. Complete and submit a Notice of Termination (NOT) to the TCEQ once the site has reached final stabilization.
2. REQUIREMENTS – 1 OR MORE ACRES BUT LESS THAN 5 ACRES DISTURBED. For construction activities that will disturb 1 or more acres, but less than 5 acres, the Contractor shall perform all activities required by TCEQ. TCEQ requirements include, but are not limited to the following tasks:
 - a. Obtain a copy of the TCEQ CGP (TPDES Permit No. TXR150000).
 - b. Develop a storm water pollution prevention plan (SWP3) meeting the requirements of the TCEQ General Permit.
 - c. Complete and post a Construction Site Notice (CSN) on the job site at least two (2) days prior to commencement of construction.
 - d. Send a copy of a completed Construction Site Notice Application to the MS4.
 - e. Implement the SWP3. Perform maintenance and inspection as required by the SWP3.
 - f. Modify the SWP3 during construction as necessary.
3. REQUIREMENTS – LESS THAN 1 ACRE DISTURBED. For construction activities that will disturb less than one acre, coverage under the TCEQ permit is not required. If construction activity increases and the disturbed area increases to 1 or more acres, the Contractor will be required to comply with the applicable sections above.

TECHNICAL SPECIFICATIONS

SECTION G6 – Interlocking Unit Paving Set on Concrete Base

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes
 - 1. Concrete pavers and joint sand.
 - 2. Bitumen setting bed.
 - 3. Asphalt tack coat
 - 4. [Cleaning and Sealing].
- B. Related Sections
 - 1. Section C3 - Cast-in-Place Concrete Slab.

1.02 REFERENCES

- A. American Society for Testing and Materials (ASTM)
 - 1. C 33, Specification for Concrete Aggregates.
 - 2. C 136, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - 3. C 140, Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units.
 - 4. C 144, Standard Specification for Aggregate for Masonry Mortar.
 - 5. C 920, Specification for Elastomeric Joint Sealants.
 - 6. C 979, Standard Specification for Pigments for Integrally Colored Concrete.
 - 7. D 977, Standard Specification for Emulsified Asphalt.
 - 8. D1073, Standard Specification for Fine Aggregate for Bituminous Paving Mixtures
 - 9. C 1645, Standard Test Method for Freeze-thaw and De-icing Salt Durability of Solid Concrete Interlocking Paving Units.
 - 10. D 3381, Standard Specification for Viscosity-Graded Asphalt Cement for Use in Pavement Construction.
- B. Interlocking Concrete Pavement Institute (ICPI):
 - 1. ICPI Tech Spec Technical Bulletins

1.03 SUBMITTALS

- A. Contractor shall provide submittals prior to ordering materials.
- B. Manufacturer's drawings and details: Indicate perimeter conditions, relationship to adjoining materials and assemblies, expansion and control joints, concrete paver layout, patterns, color arrangement, installation and setting details.
- C. Neoprene modified asphalt adhesive product catalog sheets with specifications.
- D. Bituminous setting bed: asphalt cement mix design to be used in the bituminous setting bed conforming to ASTM D 3381.
- E. Sieve analysis per C 136 for sand mixed with bitumen and sand for joints between concrete pavers.
- F. Concrete pavers:
 - 1. Two representative full-size samples of each paver type, thickness, color, finish that indicate the range of color variation and texture expected in the finished installation. Color(s) selected by Engineer and Owner from manufacturer's available colors.
 - 2. Accepted samples become the standard of acceptance for the work.
 - 3. Test results from an independent testing laboratory for compliance of concrete pavers with ASTM C 936.
 - 4. Manufacturer's catalog product data, installation instructions, and material safety data sheets for the safe handling of the specified materials and products.

1.04 QUALITY ASSURANCE

- A. Mock-Ups:
 - 1. Install a 3 ft x 3 ft paver area.
 - 2. Use this area to determine surcharge of the sand layer, joint sizes, lines, laying

- pattern(s), color(s) and texture of the job.
- 3. This area will be used as the standard by which the work will be judged.
- 4. Subject to acceptance by owner, mock-up may be retained as part of finished work.
- 5. If mock-up is not retained, remove and properly dispose of mock-up.

1.06 PROJECT/SITE CONDITIONS

- A. Environmental Requirements:
 - 1. Do not install setting bed or pavers during heavy rain or snowfall.
 - 2. Do not install setting bed and pavers over frozen base materials.
 - 3. Do not install frozen setting bed materials.
 - 4. Do not install concrete pavers on frozen setting bed materials.

1.07 MAINTENANCE

- A. Extra Materials: Provide 100 SF additional material for use by owner for maintenance and repair.
- B. Pavers shall be from the same production run as installed materials.

PART 2 PRODUCTS

2.01 INTERLOCKING CONCRETE PAVERS

- A. Manufacturers: ACME Brick, Keystone Hardscapes.
- B. Interlocking Concrete Paver Units, including the following:
 - 1. Paver Type: [Specify name of product group, family, series, etc.].
 - a. Material Standard: Comply with material standards set forth in ASTM C 936.
 - b. Color: Pathway Red .
 - c. Color Pigment Material Standard: Comply with ASTM C 979.
 - d. Size: 8 inches x 4 inches x 2-1/4 inches minimum thickness.
 - e. Average Compressive Strength (ASTM C 140): 8000 psi with no individual unit under 7200 psi.
 - f. Average Water Absorption (ASTM C 140): 5% with no unit greater than 7%.
 - g. Freeze/Thaw Resistance (ASTM C 1645): 28 freeze-thaw cycles with no greater loss than 225 g/m² of paver surface area or no greater loss than 500 g/m² of paver surface area after 49 freeze-thaw cycles.

2.02 PRODUCT SUBSTITUTIONS

Product substitutions shall be submitted and approved in writing.

2.03 SETTING BED MATERIALS

- A. Sand for asphalt bed
 - 1. Clean, non-plastic, free from deleterious or foreign matter, symmetrically shaped, natural or manufactured from crushed rock.
 - 2. Do not use limestone screenings, stone dust, or sand in the bedding material that does not conform to the grading requirements.
 - 3. Graded according to ASTM C 136.
 - 4. Bedding Sand Material Requirements: Conform to the grading requirements of ASTM C 33 with modifications as shown in Table 1.

Table 1
Grading Requirements for Bedding Sand
ASTM C 33

<u>Sieve Size</u>	<u>Percent Passing</u>
No. 4 (4.75 mm)	100
No. 8 (2.36 mm)	85 to 100
No. 16 (1.18 mm)	50 to 85
No. 30 (0.600 mm)	25 to 60
No. 50 (0.300 mm)	10 to 30
No. 100 (0.150 mm)	2 to 10
No. 200 (0.075 mm)	0 to 5

2.04 JOINT MATERIALS

- A. Joint sand: grading for conforming to ASTM C 144.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Acceptance of Site Verification of Conditions:

1. Contractor shall inspect, accept and certify in writing that site conditions meet specifications for the following items prior to installation of interlocking concrete pavers:
 - a. Verify that concrete base materials, thickness, surface tolerances and elevations conform to specified requirements.
 - b. Verify that concrete surfaces to receive the bedding material are free of dust, oil, grease, paint, wax, curing compounds, primer, sealers, form release agents, from cracks over 3/16 in. in width, or any deleterious substances and debris.
 - c. Conduct moisture tests to verify that concrete surfaces are cured, free from hydrostatic pressure and having a moisture content of less than 5%.
 - d. Verify location, type, and elevations of edge restraints, utility structures, and drainage inlets.
 - e. Do not proceed with installation of bedding sand and interlocking concrete pavers until base conditions are corrected.

3.03 PREPARATION

- A. Verify base is dry, certified as meeting material, installation and grade specifications.
B. Verify that base is clean, dry, and ready to accept setting bed, pavers, and imposed loads.

3.04 INSTALLATION

- A. Concrete base preparation
1. Fill any cracks under 3/16 in. (5 mm) wide with mortar.
 2. Sweep the surface clean.
- B. Setting bed
1. Use screed rails to achieve a level setting bed conforming to elevations and slope shown on the drawings. After one panel is complete, advance screed rails to the next position in readiness for screeding adjacent panels with strike board. Fill depressions left from removed screed rails and smooth to height consistent with panel.
 3. Compact the setting bed with a powered roller compactor to an even, nominal thickness of 1 in. after compaction.
 4. Fill and compact low areas with setting bed materials to conform to slope and elevation shown on the drawings.
 5. Remove, level, and compact setting bed in high areas to conform to slope and elevation shown on the drawings.
 6. Irregularities or evenness in the grade of the concrete base surface may be corrected with setting bed materials only with approval by the Engineer.

- C. Concrete pavers
 - 1. Free from dust, dirt, and stains. Do not use soiled, cracked, or broken units.
 - 2. Place paving units firmly with joints not to exceed 1/8 in., or as recommended in manufacturer's literature. Maintain straight pattern lines, joint lines and coursing per the drawings.
 - 3. Cut pavers to fit edges with a masonry saw. No cut paver shall be smaller than 1/3 of a whole unit if exposed to vehicular traffic. Firmly place all edge units.
- D. Joint filler and sealant
 - 1. Extend control and structural joints through full depth of paving units. Do not extend joints through bedding materials from joints in concrete base that control shrinkage cracking.
 - 2. Install joints at all building facades or other vertical surfaces.
 - 3. Install pre-molded joint filler as units are set in bed. Maintain top of filler 3/8 in. below exposed faces of paving units for insertion of sealant.
 - 4. Install joint sealant per manufacturer's recommendations.
- E. Joint sand
 - 1. After the pavers, joint filler, and sealant are installed, spread dry joint sand and fill joints between the slabs.
 - 2. Sweep surface clean.

3.05 FIELD QUALITY CONTROL

- A. The final surface tolerance from grade elevations shall not deviate more than $\pm 3/8$ in. under a 10 ft straightedge. All surfaces in ADA accessible aisles shall be in compliance with ADA and TAS requirements.
- B. Check final surface elevations for conformance to drawings.
- C. The surface elevation of pavers shall be flush to 1/8" above adjacent surfaces.
- D. Lippage: No greater than 1/8 in. difference in height between adjacent pavers.

3.06 CLEANING, SEALING, JOINT SAND STABILIZATION]

- A. Apply joint sand stabilization materials between pavers and seal in accordance with the manufacturer's written recommendations.

3.07 PROTECTION

- A. After work in this section is complete, the General Contractor shall be responsible for protecting work from damage due to subsequent construction activity on the site.

END OF SECTION

SECTION C
CONCRETE

TECHNICAL SPECIFICATIONS

SECTION C1 - CONCRETE FORMWORK

C1.1. SCOPE: Work in this section includes all labor, plant and material necessary to furnish and install all concrete formwork required by the project. Concrete formwork shall conform to all requirements of ACI 301 "Specifications for Structural Concrete for Buildings" and ACI 318 "Building Code Requirements for Reinforced Concrete" and ACI 347 "Recommended Practice for Concrete Formwork" except as modified herein.

C1.2. MATERIALS:

A. Forms shall be of wood, metal, highly water resistant plywood, or other material approved by the Engineer. Forms for sections greater than 18" thick shall be of wood. Form surfaces shall be smooth and free from irregularities, dents, sags, or holes when used for permanently exposed surfaces. Bolts and rods used for internal ties shall be so arranged that, when the forms are removed, all metal will not be less than two (2) inches from any concrete surface. Wire ties will not be permitted where concrete surface will be exposed to weathering, and discoloration would be objectionable. Exposed concrete shall have approved form liners of Masonite or plywood, or shall be constructed of smooth surfaced plywood.

B. Corner forms forming ½ inch chamfers or as otherwise specified on plans, shall be used on all outside corners that are to be exposed in the finished structure. Chamfer forms shall be molded plastic or polyvinyl chloride radius of chamfer strips. Use one style of form throughout the project.

C. Rustication and Score Line Strips shall be a non-absorbent material such as extruded polyvinyl chloride, plastic, fiberglass or metal or they may be milled from good quality lumber and well sealed to prevent moisture absorption, wood strips may not have protruding splinters which may become embedded in the concrete. Sealing wood shall be accomplished by immersion or brushing on two coats of form coating.

D. Form ties for concrete shall have an approved waterstop barrier to prevent seepage of moisture along the ties. The ends of the tie metal after breaking off shall be minimum of 1½ inches from the finished wall face. Submit samples to the Engineer for review.

C1.3. EXECUTION: Forms shall be built true to line and grade, and be mortartight and sufficiently rigid to prevent displacement or sagging between supports. All formwork and shoring shall be designed for the construction loads to be placed on them, and the design and construction of said forms shall be in accordance with ACI Standard "Recommended Practice for Concrete Formwork (ACI 347)". The structural adequacy of the formwork shall rest with the Contractor. All forms shall be so constructed that they can be removed without hammering or prying against the concrete. Forms shall not be removed without approval of the Engineer. Forms shall not be removed before the minimum times given below, or longer if job control tests indicate the concrete has not attained strength specified below, except when specifically authorized by the Engineer.

Beams and Slabs	14 days
Walls up to 12" Thick and Vertical Surfaces	3 days
Columns	5 days
Walls greater than 12" Thick	7 days

In general, forms or shores for supported slabs and beams shall not be removed until the concrete, so supported, has acquired 70% of its design strength; except where loads other than the dead weight of the concrete are added, the shores shall not be removed until 24 hours after the concrete has obtained 90% of its design strength. Forms shall be removed immediately after expiration of the lapsed time specified above or sooner, if required by the Engineer, where concrete is to receive a rubbed finish.

TECHNICAL SPECIFICATIONS

SECTION C2 - STEEL REINFORCEMENT

- C2.1. MATERIAL: Steel reinforcement shall conform to the "Specification for Deformed Billet Steel Bars for Concrete Reinforcement" ASTM A615, Grade 40 or Grade 60. Grade 60 shall be used for all reinforcing except for #3 and #4 Bars bent as stirrups or ties which shall be Grade 40.

Wire fabric reinforcement shall conform to the current "Specifications for Welded Steel Wire Fabric for Concrete Reinforcement", ASTM A-185, or "Specifications for Welded Deformed Steel Wire Fabric for Concrete Reinforcement", ASTM A-497.

- C2.2. 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.

- C2.3. SPLICES: No splices of bars, except when shown on the Plans, will be permitted without the approval of the Engineer. Bars shall be rigidly clamped or wired at all splices in a manner approved by the Engineer. Welding may not be used except with the specific approval of the Engineer. Welding, when approved, shall conform to the American Welding Society's "Recommended Practices for Welding Reinforcing Steel, Metal Inserts and Connections in Reinforced Concrete Construction" (AWS D12.1). Welded wire fabric shall be lap spliced a minimum of 2 inches plus the bar spacing.

- C2.4. DETAILING & FABRICATION: Furnish Shop Detail and Field Placing Drawings for all reinforcing steel for approval of the Engineer. Shop Drawings shall include reinforcing, placing plans and details indicating size, location, arrangement, splice locations, bending diagrams, placing sequence, etc. Placing Drawings shall be in sufficient detail to allow field personnel to accurately place reinforcing. Shop and Placing Drawings shall be prepared in accordance with "Manual of Standard Practice for Detailing Reinforced Concrete Structures" ACI 315-65, current edition.

Reinforcement bars shall be bent cold to the shapes indicated on the Plans. Fabrication tolerances, fabrication, and detailing of steel reinforcement shall conform to the "Manual of Standard Practice for Detailing Reinforced Concrete Structures" (ACI-315).

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, embedment lengths, and other details of reinforcement shall be provided as set forth in the ACI Building Code (ACI-318) to develop the full tensile strength of the bar.

- C2.5. PLACING REINFORCEMENT: Metal reinforcement at the time concrete is placed shall be free from mud, oil, paint, excessive rust and excessive mill scale or any other coating that would destroy or reduce its bond with the concrete.

Metal reinforcement shall be accurately positioned and dimensioned in accordance with the Plans and Specifications. The bars and mesh shall be tightly secured against displacement by ties of annealed wire, 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. Placing tolerances shall conform to ACI-318.

Nails shall not be driven into the wall forms to support reinforcement nor shall any other device used for this purpose come into contact with the form on the waterside of any water containing structure. Metal devices used to provide the required clear distances from reinforcing steel to waterside of concrete

surfaces shall be galvanized or shall be as approved by the Engineer.

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, of approved dimensions, resting on the slabs' subbase. Such precast blocks shall be made of mortar composed of 1 part cement to 2 parts sand. 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.

Bending of bars embedded in hardened concrete will not be permitted except when specifically approved by the Engineer for the field condition encountered.

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 galvanized or shall have plastic protective covering over portions in contact with forms.

C2.6. 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 the following, except as otherwise shown, specified, or directed:

Slabs:

- 1½ inches, in general, top and bottom.
- 1½ inches at surfaces troweled as floor finish, walkway, or driveway.
- 2 inches on bottom for slabs over water and where exposed to the weather.

Footings:

- 2 inches at top of footings.
- 3 inches at bottom, sides, and end of footings.

Walls:

- 2 inches on surfaces against earth.
- 1 inch on interior surfaces.
- 2 inches on interior surfaces contacting water.

Beams and Girders in Contact with Water:

- 2 inch minimum to stirrup steel.
- 2½ inch minimum to main longitudinal steel.

Columns:

- 2 inches, in general, to main vertical reinforcement.
- 2½ inches, to main reinforcement on surfaces in contact with water.

Beams and Girders:

- 1½ inch minimum to stirrup steel.
- 2 inches minimum to longitudinal.

SECTION C3
CAST-IN-PLACE CONCRETE

C3.1. GENERAL:

- A. Standards: Concrete work shall conform to all requirements of ACI-301 "Specifications for Structural Concrete for Buildings" and ACI-318 "Building Code Requirements for Reinforced Concrete" except as modified herein.
- B. Scope: Work consists of furnishing all plant, labor, materials, equipment, and appliances, and performing all operations in connection with installation of the concrete work, complete, in strict accordance with the Specifications and Drawings.
- C. Inspection: Embedded items must be inspected and tests for concrete and other materials shall have been completed and approved by the Engineer before concrete is placed.
- D. Slab on Earth: Before proceeding to construct concrete slabs on earth, all pipes under concrete floor on earth shall have received the required tests. All backfill and fill material under slabs on grade shall be compacted in 6" layers to 95% maximum density as measured by AASHTO T99 test method. Unsuitable material encountered in subgrade shall be removed and replaced with material approved by the Engineer. Subgrade shall be brought to true, even plane, and compacted to solid bearing. Gravel drainage fill shall be placed and compacted where shown on Drawings.

C3.2. MATERIALS: All concrete materials shall conform to the latest revised ASTM Designations listed below:

- A. Coarse Aggregate shall be crushed stone conforming to ASTM C-33 with a maximum size of 1½".
- B. Fine Aggregate shall conform to ASTM C-33 and shall be washed river sand composed of clean, uncoated grains of strong materials.
- C. Cement shall be Portland cement conforming to ASTM Specification C-150, Type I, Type IA, Type III, or Type IIIA. Only one brand of cement shall be used for exposed concrete.
- D. Water: Clean, fresh and free from oil, acids, alkali, vegetable, sewage, organic or other deleterious matter.
- E. Admixtures: A cement reducing admixture conforming to ASTM C-618 will be used for all concrete at the Contractor's option. Concrete mix designs shall include the admixture, should this option be exercised. Admixture shall be a cement dispersing agent used in conformance with manufacturer's directions. The dispersing agent used shall be subject to the approval of the Engineer. Contractor shall notify Engineer in writing that he is taking this option.

A retarding admixture, conforming to ASTM C-494, pretested with job materials under job conditions, shall be used, if approved, whenever necessary to prevent cold joints due to the quantity of concrete placed, to permit revibration of the concrete, to offset the effects of high concrete temperature, or to reduce the maximum temperature and rate of temperature rise.
- F. Premolded Expansion Joint Filler Strips shall be non-extruding type conforming to the current AASHTO Designation M153.
- G. Non-Shrink Grout: Pre-mixed "Embeco" as manufactured by Master Builder's, or "Ferrolith G" as manufactured by Sonneborn-Contech or approved equal. Type as recommended by the manufacturer for the particular applications.

- H. Abrasive Aggregate shall be equal to fine (c.f.) "Alundum" aggregate as manufactured by Norton Company, Worcester, Mass. or "Frictex NS" as manufactured by Sonneborn-Contech.
- I. Liquid Curing Compound/Sealer shall be "Master-Seal" as manufactured by Master Builder's, "Kure-N-Seal" as manufactured by Sonneborn-Contech or approved equal.

C3.3. QUALITY AND CONTROL

- A. Design: Concrete shall be composed of Portland cement, fine aggregate, coarse aggregate and water. All concrete shall be designed by an approved testing laboratory in accordance with the ACI Standard Recommended Practice for Selecting Proportions for Concrete (ACI-211) to produce the strength for each class of concrete specified, and with slumps and maximum sizes of coarse aggregate in accordance with the requirements outlined below. The concrete shall be so designed that the concrete materials will not segregate and excessive bleeding will not occur. Any costs to the testing laboratory for designing concrete mixes shall be borne by the Contractor. Concrete batch designs shall be submitted to and approved by the Engineer prior to placement of any concrete.

Concrete strengths shall be as follows:

- Class A Concrete - 3500 psi @ 28 days; minimum 5½ sack mix
(To be used for all work unless otherwise specified)
4000 psi @ 28 days; minimum 6 sack mix for all vertical wall sections or in pavements
- Class B Concrete - 2000 psi @ 28 days; minimum 4 sack mix (To be used only as concrete fill)

MAXIMUM SLUMPS FOR VARIOUS TYPES OF CONSTRUCTION

<u>Types of Construction</u>	<u>Hand Placed Maximum</u>	<u>High Frequency Vibrator Used Maximum</u>
Reinforced Foundation Walls and Footings	5"	2"
Slabs, Beams, and Reinforced Walls	6"	3"
Building Columns	5"	3"
Pavements	3"	2"

The slump shall not exceed the maximum specified above for the type of construction for which it is to be used. The 28-day compressive strength determined in accordance with current ASTM Specifications C-39 and C-31 and with specimens cured in accordance with C-31 shall not be less than that shown above for the specified class of concrete. No water will be added after the amount specified by the mix design.

- B. Production of Concrete: All ready-mixed concrete shall be batched, mixed and transported in accordance with "Specifications for Ready-Mixed Concrete (ASTM C-94)". Plant equipment and facilities shall conform to the "Check List for Certification of Ready-Mixed Concrete Production Facilities" of the National Ready-Mixed Concrete Association. Site mixed concrete shall conform to the requirements of "Specifications for Structural Concrete" (ACI-301). The Contractor may elect to use either ready-mixed or site mixed concrete for this project provided he informs the Engineer of his choice.

- C. Laboratory Testing: The Owner shall engage an independent testing laboratory to conduct concrete tests. Unless otherwise informed, the Contractor will be responsible for sampling concrete for test cylinders, recording, and delivering them to the laboratory, providing all materials required, and for making all slump tests in the field directed by the Engineer. All costs in connection with work performed by the laboratory will be paid by the Owner. The Contractor shall be responsible for the costs of work performed by the laboratory required for redesign of concrete proportions and retesting of in place concrete when cylinders indicate low strength concrete has occurred.

At least one test shall be made on fresh concrete for each sixty (60) cu. yds. of each class of concrete (or fraction thereof) placed on any one day and in any event, not less than one test for each class of concrete each day it is used. Testing shall be done in accordance with the following ASTM Specifications, latest edition:

C172,	Standard Method of Sampling Fresh Concrete
C31,	Standard Method of Making and Curing Concrete Compression & Flexure Test Specimens in the Field
C39,	Standard Method of Test of Compressive Strength of Molded Concrete Cylinders
C143,	Standard Method of Slump Test for Consistency of Portland Cement Concrete

Before any concrete is poured, the Contractor shall construct a storage box in accordance with ASTM Specification C31. Each set of tests shall consist of one slump test and three compression test cylinders. All cylinders shall be kept in the storage box for the first 24 hours. The three cylinders shall be laboratory cured and tested for adequacy of the design for strength of the concrete in accordance with ASTM Specification C31. One cylinder shall be tested at 7 days and two at 28 days.

- D. Failure of Concrete to Meet Strength Requirements: The concrete shall be considered acceptable if, for any one class of concrete, the average of all tests or any five consecutive tests is equal to or greater than the specified strength, provided that no more than one test of the five falls between 90% and 100% of the specified strength. The only cylinders to be used for determination of concrete acceptability will be those laboratory cured and tested at 28 days. When it appears the tests of laboratory-cured cylinders will fail to meet these requirements, the Engineer may require changes in the proportions of concrete for the remainder of the work in order to meet the strength requirements. In addition, the Engineer may also require additional curing not to exceed a total of 21 days on portions of the concrete already poured.

The Engineer may also require tests in accordance with Methods of Securing, Preparing and Testing Specimen from Hardened Concrete for Compressive and Flexural Strengths (ASTM Specifications C42) when the concrete cylinder tests fail to meet strength requirements. In the event there still is questions as to the quality of the concrete in the structure, the Engineer may require load tests for that portion where the questionable concrete has been placed. Such load tests will be made as outlined in Chapter 20 of American Concrete Institute Building Code. (ACI 318-71), and shall be at the expense of the Contractor.

- E. Removal of Under Strength Concrete: If the above tests indicate that a particular batch of previously placed concrete is under strength, the Engineer may direct that the under strength batch be removed and replaced. The removal of the under strength concrete shall also include the removal of concrete that has obtained the required strength if the Engineer deems this necessary to obtain structural or visible continuity when the concrete is replaced.

The removal, and replacement of any under strength concrete, shall be made at no additional cost to the Owner. This shall include any new formwork required or any reinforcing steel that may be required. The Owner shall not be charged any additional costs for any extra work that is required because of the failure of any concrete to meet the minimum test requirements.

C3.4. INSTALLATION:

- A. Preparation Before Placing: Water shall be removed from excavations before concrete is deposited. Hardened concrete, wood chips, shavings, and other debris shall be removed from interior of forms and inner surfaces of mixing and conveying equipment. Wood forms shall be oiled or, except in freezing weather, wetted with water in advance of pouring. Reinforcement shall be secured in position, inspected and approved by the Engineer before starting pouring of concrete.
- B. Conveying: Concrete shall be conveyed from mixer to forms as rapidly as practicable and by methods which will prevent segregation or loss of ingredients. It shall be deposited as nearly as practicable in its final position. Chutes used shall be such that concrete slides in them and does not flow. Chutes, if permitted, shall have a slope of less than 1 on 2. Where a vertical drop greater than five (5) feet is necessary, placement shall be through elephant trunks or similar devices to prevent segregation.
- C. Placing: Concrete shall be placed before initial set has occurred and in no event after it has contained its water content for more than 30 minutes. Unless otherwise specified, all concrete shall be placed upon clean, damp surfaces free from running water, or upon properly consolidated fills, but never upon soft mud or dry, porous earth. The concrete shall be compacted and worked in an approved manner into all corners and angles of the forms and around reinforcement and embedded fixtures as to prevent segregation of the coarse aggregate. Construction of forms for the lifts of vertical walls shall be such as to make all parts of the walls easily accessible for the placement, spading, and consolidation of the concrete as specified herein.
- D. Vibration: All concrete shall be placed with the aid of mechanical vibration equipment as approved by the Engineer. Vibration shall be transmitted directly to the concrete; in no case shall it be transmitted through forms. The duration of vibration at any location in the forms shall be held to the minimum necessary to produce thorough compaction. Vibrations shall be supplemented by forking or spading by hand, and adjacent to the forms on exposed faces in order to secure smooth, dense and even surfaces, with particular care being taken to prevent coarse aggregate from becoming set too near any surfaces that are to receive rubbed finish.
- E. Construction Joints: Construction joints shall be formed as indicated on the Drawings or as approved or directed by the Engineer. In vertical wall sections, construction joints shall be formed at a maximum spacing of 40 ft. Where indicated or required, dowel rods shall be used. All concrete at the joints shall have been in place not less than 12 hours, and longer if so directed by the Engineer, before concrete resting thereon is placed. Before placing is resumed, or commenced, excess water and laitance shall be removed, and concrete shall be cut away, where necessary, to insure a strong dense concrete at the joint. In order to secure adequate bond, the surface of concrete already in place shall be cleaned, roughened, and then spread with a one-half (½) inch layer of mortar of the same cement-sand ratio as is used in the concrete, immediately before the new concrete is deposited. The unit of operation is not to exceed 100 feet in any horizontal direction, unless otherwise required by the Drawings. Construction joints, if required, shall be located near the mid-point spans for slabs, beams or girders. Joints in columns or piers shall be made at the underside of the deepest beam or girder at least five (5) hours before any overhead work is placed thereon. Joints not shown or specified shall be so located as to least impair strength and appearance of work. Vertical joints in wall footings shall be reduced to a minimum. Placement of concrete shall be at such a rate that surfaces of concrete not carried to joint levels will not have attained initial set before additional concrete is placed thereon. Girders, beams and slabs shall be placed in one operation. To ensure a level straight joint in exposed vertical surfaces, a strip of dressed lumber may be tacked to the inside of the forms at the construction joint. The concrete shall be poured to a point one (1) inch above the underside of the strip. The strip shall be removed one (1) hour after concrete has been placed and any

irregularities in the joint line leveled off with a wood float and all laitance removed. Waterstops shall be installed in all construction joints below grade or in liquid containing structures as noted on the Plans. Install as per SECTION C4 - CONSTRUCTION JOINTS & WATERSTOPS.

- F. Patching: Any concrete which is not formed as shown on the Plans, or for any reason is out of alignment or level or shows a defective surface shall be considered as not conforming with the intent of these Specifications and shall be removed from job by Contractor at his expense, unless the Engineer grants permission to patch defective area, which shall be done in accordance with the following procedure. Permission to patch any such area shall not be considered a waiver of the Engineer's right to require complete removal of defective work if patching does not, in his opinion, satisfactorily restore quality and appearance of surface. Suitable non-shrink, latex or epoxy mortar shall be used for patching and repairing defective surface if directed by the Engineer.

After removing forms, all concrete surfaces shall be inspected and any poor joints, voids, stone pockets, all tie holes, or other defective areas shall be patched, if permitted by the Engineer. Where necessary, defective areas shall be chipped away to a depth of not less than one (1) inch with edges perpendicular to the surface. Area to be patched and a space at least six (6) inches wide entirely surrounding it shall be wetted to prevent absorption of water from the patching mortar. A grout of equal parts Portland cement and sand, with sufficient water to produce a brushing consistency, shall then be well brushed into the surface followed immediately by the patching mortar. The patch shall be made of the same material and of approximately the same proportions and shall not be richer than 1 part cement to 2 parts sand. White Portland cement shall be substituted for a part of the gray Portland cement to match color of the surrounding concrete. The proportion of white and gray cements shall be determined by making a trial patch. The amount of mixing water shall be as little as consistent with the requirements of handling and placing. The mortar shall be retempered without the addition of water by allowing it to stand for a period of one (1) hour during which time it shall be mixed occasionally with a trowel to prevent setting.

The mortar shall be thoroughly compacted into place and screeded off so as to leave patch slightly higher than surrounding surface. It shall then be left undisturbed for a period of 1 to 2 hours to permit initial shrinkage before being finally finished. the patch shall be finished in such a manner as to match the adjoining surface. On exposed surfaces where unlined forms have been used, the final finish shall be obtained by striking off the surface with a straightedge spanning the patch and held parallel to the direction of the form marks.

Tie holes left by withdrawal of rods or the holes left by removal of ends of ties shall be filled solid with mortar after first being thoroughly wetted.

C3.5. SLAB FINISHES:

- A. Exterior Walks & Paving: The top surface shall be "slip-resistant" as follows:

Steel troweled as noted in SECTION C3.5B and have a final finish applied in brushing lightly with a soft bristle brush to form a slightly roughed surface.

- B. Interior slabs that are to receive a finish floor covering (this does not include ceramic tile covering) shall be finished by tamping the concrete with special tools to force the coarse aggregate below the surface, then screeding and floating with straightedges to bring the surface to the required finish level. While the concrete is still green but sufficiently hardened to bear a man's weight without deep imprint, it shall be wood floated to a true and even plane with no coarse aggregate visible. Sufficient pressure shall be used on the wood floats to bring moisture to the surface. After surface moisture has disappeared, surfaces shall be steel-trowelled to a smooth, even, impervious finish, free from trowel marks. After cement has set enough to ring the trowel, surface of all slabs shall be given a second steel trowelling to a burnished finish.

- C. Interior slabs to receive fill or mortar setting bed shall be finished by tamping concrete with special tools to force coarse aggregate below the surface, and screeded with straightedges to bring surface to required finish plane. Surface shall be left roughened sufficiently to produce good bond with topping material.
- D. Top and bottom slabs of all structures and water carrying conduits except as noted otherwise on the Plans shall be finished as follows: The top of the slab shall be screeded to grade and cross section; lightly tamped as required to bring up a good bed of mortar for finishing and re-screeded as necessary. The surface shall then be finished with a wood float and leveling darby. No further finish will be required on top slabs of structures or conduits which are to be buried. In the case of all exposed top slabs of structures and conduits, they shall be given a final wood float and a light broomed, slip resistant finish to a uniform surface which conforms with accuracy to required shape, slope and grade. Slabs shall be edged as appropriate.
- E. Interior floor slabs that are not to receive any finish floor covering shall be "slip resistant finish" as follows: The top surface shall be steel trowelled as noted in C3.5B above and have a final finish applied by brushing lightly with a soft bristle brush to form a slightly roughed surface.
- F. Concrete Hardener shall be applied to the floors where scheduled to be exposed concrete. Concrete surfaces to be treated must be thoroughly set and dry, clean and free of dust. Three applications of "lapidolith", "saniseal", "hornolith", "vitrox", or approved equal liquid are required, using one gallon per 100 square feet for the complete treatment. Apply hardener strictly according to the manufacturer's printed instructions. Any substitution for the specified hardeners must be of the magnesium fluosilicate or zinc fluosilicate types.

C3.6. FINISH OTHER THAN FLOORS:

- A. All top surfaces, other than slabs, not covered by forms, and which are not to be covered by additional concrete or fill shall receive a wood float finish without additional mortar. Care shall be taken that no excess water is present when the finish is made. Other surfaces shall be brought to finished elevations and left true and regular. All exposed interior concrete shall be grouted smooth and give a cement wash of one part light colored Portland cement and two parts fine aggregate mixed with water to consistency of thick paint. Grout shall be cork or wood floated to fill all pits, air bubbles, and surface holes. Excess grout shall be scraped off with a trowel and rubbed with burlap to remove any visible grout film. Surface shall be kept damp during setting period. The finish for any area shall be completed in same day and the limits of a finished area shall be made at natural breaks in finished surface.
- B. Rubbed Finish Unless otherwise indicated, all faces (except top surfaces of slabs) exposed to view, such as walls, grade beams, columns, beams, canopy soffits and fascias, etc. shall be finished as follows:

Forms shall be removed, as specified in SECTION C1 - CONCRETE FORMWORK, and all fins removed, offsets leveled, damaged places and depressions resulting from the removal of metal ties or other causes shall be carefully pointed with a mortar of sand and cement in the proportion which has been employed for the particular class of concrete treated. The surface film of all such pointed places shall be carefully removed before setting occurs. After the point has set sufficiently to permit it, all exposed surfaces shall be dampened and rubbed with a No. 16 carborundum stone, to a smooth even plane. Final rubbing shall be done with a No. 30 carborundum stone, or an abrasive of equal quality, to obtain an entire surface of a smooth texture and uniformity in color. Mortar or grout worked up during rubbing shall be promptly removed by sacking with burlap or other suitable means so that no visible grout film or paste will remain. A cement wash or plaster coat shall not be used. All surfaces shall be finished uniformly smooth and washed clean. The rubbed finish for any area shall be completed in the same day and the limits of a finished area shall be made at natural breaks in the finished surface. If the

Contractor does not provide suitable surface finish using carborundum stones specified above, the Engineer, without additional cost to the Owner, may require the use of a power operated grinding machine to produce the desired finish.

C3.7. CURING:

- A. In all concrete structures, Class A concrete made with normal Portland cement shall be prevented from drying for at least the first seven (7) days after placing. Whenever the temperature of the surrounding air is between 40 deg. and 60 deg. F., adequate provision shall be made for maintaining the temperature of concrete above 60 deg. F. or the moist curing period shall be extended to insure a compressive strength corresponding to that which would be secured under provisions of the previous part of this paragraph.
- B. Whenever the temperature of surrounding air is below 40 deg. F., all Class A concrete shall be maintained at a temperature of not less than 50 deg. F. for at least 72 hours for normal concrete or for as much more time as is necessary to insure proper rate of curing of the concrete. The housing, covering or other protection used in connection with curing shall remain in place and intact at least 24 hours after the artificial heating is discontinued. No salt or other chlorides shall be used for prevention of freezing.
- C. Curing compound of satisfactory composition and characteristics may be used except on surfaces to which new concrete is to be bonded and provided such compound does not stain or discolor any surface which will be exposed. Curing compound shall be applied in strict accordance with manufacturer's directions.
- D. Protection from the Sun: All concrete shall be adequately protected from injurious action of sun in a manner satisfactory to the Engineer.
- E. Temperature Control: During and at the conclusion of the specified curing period, means shall be provided to insure that the temperature of the air immediately adjacent to the concrete does not fall more than 3 deg. F. in any 1 hour nor more than 30 deg. F. in any 24 hours.

C3.8. EMBEDDED ITEMS: Before placing concrete, care shall be taken to determine that any embedded metal or wood parts are firmly and securely fastened in place as indicated. They shall be thoroughly clear and free from coating, rust, scale, oil, or any foreign matter. Embedding of wood in concrete shall be avoided whenever possible, metal being used instead. If wood is allowed, it shall be thoroughly wetted before concrete is placed.

Dovetail Anchor Slots shall be installed in all concrete which is to be faced with brick or other masonry material and at other locations shown on the Drawings. Slots shall be installed vertically, spaced not over 24" o.c. measured horizontally.

C3.9. NON-SHRINKAGE GROUT: Where non-shrinkage grout is called for on the Plans, it shall be mixed in strict accordance with the manufacturer's directions. It shall be of a type as recommended by the manufacturer for the particular application.

C3.10. PRE-CAST CONCRETE SPECIALITY ITEMS:

- A. Splash Blocks: Furnish and install precast concrete splash blocks reinforced with welded wire mesh. Splash blocks shall have smooth, even surface and may be job or plant cast units.
- B. Parking Stops: Furnish and install precast parking stops suitably reinforced with welded wire mesh and/or steel reinforcing bars. Parking stops shall have smooth, even surfaces and may be job or plant cast units. Parking stops shall have holes for installing anchoring after placement.

C3.11. INSERTS: Where pipes, castings or conduits are to pass through the walls, the Contractor shall place such pipes or castings in the forms before pouring the concrete, or in special cases, with the express

consent of the Engineer or as specified, he shall build accepted boxes in the forms to make openings for subsequent insertion of such pipes, castings or conduits as required by the Engineer. To withstand water pressure and to insure watertightness around the openings so formed, the boxes shall be provided with continuous keyways and waterstops all the way around, and they shall have a slight flare to facilitate grouting and the escape of entrained air during grouting. Before placing the grout, the concrete surfaces and the surfaces of the insert shall be coated with an epoxy bonding compound. Mixing and application of the bonding agent and time of placement of the grout shall be in accordance with the manufacturer's directions.

Additional reinforcement shall be provided around large openings, as shown on the drawings. The pipes, castings or conduits as specified shall be grouted in place by pouring in grout under a head of at least 4 inches. The grout shall be poured or rammed or joggled into place to fill completely the space between pipes, castings or conduits, and the sides of the openings so as to obtain the same watertightness as the wall itself. The grouted castings shall then be water cured as specified herein. The grouting material so placed shall be surfaced when the forms are removed to give a uniform appearance to the wall if such wall be exposed to view.

C3.12. PLASTER MIX COATING: Furnish and install plaster mix coating as finish for concrete surfaces. Plaster mix coating shall be as manufactured by Thoro System Products, or approved equal, for all outside wall sections down to a minimum of six (6) inches below proposed finished ground elevations.

- A. **Surface Preparation:** Concrete to receive plaster mix should be carefully formed to provide a smooth surface, free of form marks, and in good condition to receive a coating of approximately 1/4" in thickness. Form treatments or curing compounds must not contain any ingredients which might stain through or otherwise injure the concrete or prevent a good bond for subsequent coatings or finishes. Repair all honeycombed areas that are 3/8" (9.5 mm) or more in depth. Remove all concrete appurtenances that extend above the level of the surface. The surface to be coated must be clean, free of all laitance, dirt, dust, grease, form oil, efflorescence, paint, and foreign material.

Masonry walls to receive plaster mix should be structurally sound, properly cured, laid true, and free of efflorescence.

- B. **Application:** Mix plaster mix with clean water and bonding agent for all applications, following the manufacturer's recommendations for the textured finish desired.

Apply a light trowel coat of plaster mix over entire surface to be treated. The workman should make sure the material is firmly pressed into all voids and leveled. Allow this coat to cure thoroughly before applying the regular trowel application. When surface is set so it will not roll or lift, float uniformly using a sponge. Cure for period recommended by manufacturer before applying subsequent coats.

Apply second coat of plaster mix in accordance with manufacturer's recommendations. Finish to obtain uniform texture and appearance. Cure for 5 to 7 days.

- C. **Limitations:** Do not apply when temperature is below 40 deg. F. (4.4 deg. C) or due to fall below 40 deg. F. (4.4 deg. C.) within 24 hours or to frozen or frost-filled surfaces.
- D. **Color:** Supplier shall provide small sample of plaster mixture for Contractor to install for Engineers approval.

C3.13. CONCRETE ROOF SEALER: All concrete roof sections shall be sealed with Weather Worker S-40 (J-29) penetrating silane sealer or approved equal. Application shall be at 1.0 gallon per 100 sq. ft.

Application Instructions:

- (1) **Preparation:** New concrete must be cured a minimum of 28 days. Use a wet burlap cure or cure with Dayton Superior's Day-Chem Sil-Cure (J-13). Other curing compounds may not be compatible. Tuckpointing must cure a minimum of 3 days and caulking should be fully cured before application. Concrete surfaces should be clean and free of dirt, oil, grease and other contaminants. New concrete surfaces may only require sweeping, however, if construction traffic has been excessive, washing with 2,000 psi pressure cold water may be necessary. The surface pores must be opened up sufficiently to allow immediate penetration of Weather Worker. A good test is to place a few drops of Weather Worker onto the clean surface. Weather Worker should be immediately absorbed into the surface or else additional cleaning may be necessary.
- (2) **Installation:** Before application, the surface should be completely dry. Allow at least 24 hours with sunshine for drying if the surface was wet. Do not apply before 32°F. or above 400°F. temperature. Do not apply if rain is expected within 3 hours. Do not apply during very windy conditions, high winds could cause an excessive application rate. Protect all asphalt based materials and painted surfaces, the solvent in Weather Worker may affect it.
- Apply a single application of Weather Worker with low pressure spray equipment (15 psi), roller or broom. Use a fan type spray nozzle for greatest efficiency, mist spraying will only waste material. On vertical surfaces, spray Weather Worker so that it will run down the surface at least six inches below the spray pattern.
- On horizontal surfaces, material should be sufficiently applied to completely flood the surface, approximately 125 ft²/gallon depending on the porosity of the surface. Typically, the surface can be reopened to traffic in one hour if the temperature is at 72°F. or above. Opened containers of Weather Worker should be tightly resealed when not in use. The full chemical reaction of the silane will take five days. Do not expect a water beading effect until after five days.
- (3) **Limitations:** Apply only between 32°F. and 100°F. Do not apply to a damp or wet surface. Cover and protect all grass, shrubs, plants, etc. from overspray. Do not spray onto plastic or specialty coated glass, the solvent in Weather Worker may have an effect on it. The shelf life for an unopened container is one year. Keep containers tightly sealed when not in use. Store in a dry location with a temperature range between 0°F. and 110°F. Not for use on porous concrete block.

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION C4 - CONSTRUCTION JOINTS AND WATERSTOPS

C4.1. GENERAL: This section covers construction joints, expansion joints, and the placing of waterstops where such are indicated on the Plans.

Construction joints shall be of the type indicated on the Drawings and shall be located as shown on the Plans unless otherwise approved by the Engineer.

C4.2. POLYVINYL PLASTIC WATERSTOP: Waterstops shall be installed in all construction joints with water or other liquid on one side of joint and at other locations as required by the Plans. All waterstops shall be continuous throughout their length.

The waterstops shall be heavy duty polyvinyl waterstop conforming to Corps of Engineers Specification CRD-C-572, latest edition, as manufactured by Serviced Products Division of W.R. Grace and Company; Vinylstops by Sonneborn-Contech; W.R. Meadows, Inc.; Vinylex Corporation; or an approved equal of the same type and material and approximately equal in dimensions and weight but not necessarily of exactly the same shape. Waterstops shall be "Rib Type" with a center bulb, 4" wide, capable of resisting a maximum pressure load of 65 feet of water, unless otherwise shown on Plans.

"Expansion Type" waterstops shall be of ribbed construction, 6" wide, with a capacity for 1" of movement.

All waterstops shall be installed so that one-half its width will be embedded on one side of the joint and one-half on the other. The Contractor shall employ a method of holding the waterstop in position for the first pour that is satisfactory to the Engineer. The method selected must insure that the waterstop will be held securely in true vertical or horizontal position and in straight alignment in the joint.

Care shall be exercised to ensure that the waterstop is completely encompassed in good mortar.

C4.3. JOINTS IN WATERSTOPS: All waterstops shall be continuous and so joined at all points of contact in the same plane, or at intersections with waterstops in different planes, as to form a complete barrier to the passage of water through any construction, contraction, or expansion joint.

Joints in the waterstops, whether made for the purpose of continuity in a straight strip or for the purpose of securing a watertight junction between strips in different planes, shall be made by heat welding as hereinafter specified.

Joints in PVC waterstops shall be made by heating the two surfaces to be jointed until the material has softened to the point where it is just short of being fluid and then bringing the two softened surfaces together with a slight rubbing motion followed by firmly pressing them together so that a solid and tight bond is made.

The joints in strips of waterstop made in the above manner shall be such that the entire cross section of the joint shall be dense, homogeneous and free of all porosity. All finished joints shall have a tensile strength of not less than 75 percent of the material of the strip as extruded.

The heating of the surfaces to be joined shall be done by means of an electric splicing iron designed for the specified purpose and controlled by means of a voltage regulator.

In use, the heat of the hot plate shall be so regulated as to prevent too rapid melting and accompanying charring of the waterstop material.

The use of makeshift hot plates will not be permitted nor will other means of heating the strips to be joined be allowed except in a case of emergency, as determined by the Engineer.

The Contractor shall provide such jigs as will assist in making the joints in a proper and workmanlike manner and in holding the strips so that the alignment of jointed strips is correct and angles are true to those required.

Prior to embedment, all joints in the waterstop strips will be inspected by the Engineer and any found defective shall be remedied without delay.

C4.4. PROTECTION OF WATERSTOP BETWEEN POURS: The Contractor shall take such steps as are necessary to protect exposed waterstops in the interim period between concrete pours.

C4.5. EXPANSION JOINTS: Expansion joints of the size and type shown on the Plans, or specified herein, shall be placed in concrete pavement or structure as shown on the Plans.

- A. **Preformed Asphalt Fiber Joint Material:** Asphalt fiber sheet filler shall consist of preformed strips of inert material impregnated with asphalt. It shall be of the thickness shown on the Plans or indicated in these Specifications.

The sheet filler shall conform to the requirements of AASHTO Specification M-59 with the following additional provisions.

The sheet filler shall be of such character that it will not be deformed by ordinary handling during hot weather nor become hard and brittle in cold weather. It shall be of a tough, resilient, durable material not affected by weathering.

- B. **Hot Poured Rubberized Tar Joint Sealer:** Hot poured rubberized mastic sealer shall consist of a mixture of durable, elastic rubber, coal tar pitch, and other materials which will form a resilient and adhesive compound capable of effectively sealing concrete joint surfaces against repeated expansion and contraction. The material shall be installed in accordance with the manufacturer's directions.

TECHNICAL SPECIFICATIONS

SECTION C5 - STRUCTURAL STEEL AND MISCELLANEOUS METALS

C5.1. GENERAL: This section shall cover all ferrous and non-ferrous metals, except castings and sheet metal, whether wrought, rolled, fabricated, or assembled.

Included are beams, columns, lintels, miscellaneous angles, supports for pipe, handrails, embedded items, bolts, nuts, washers, fittings, grates, and similar work.

C5.2. MATERIALS: Except as otherwise specified herein or noted on the Plans, structural steel and wrought metals shall meet the requirements of the following standards (current edition):

Structural Steel	ASTM Designation A-36	
Standard Bolts	ASTM Designation A-307	
High Strength Bolts	ASTM Designation A-325	
Stainless Steel Bolts	ASTM Designation A-320-65-B8 (AISI 304)	
Mild Steel Plates	ASTM Designation A-283	
Cold Rolled Steel	ASTM Designation A-108	
Aluminum Structural Shapes	ASTM Designation 6061-T6, 6063-T6	Grate Material

C5.3. WORKMANSHIP: Unless otherwise shown, specified, or required, the design, workmanship and erection of structural steel shall conform to the requirements of AISC "Specification for the Design, Fabrication, and Erection of Structural Steel for Buildings," as last revised. The Contractor shall be solely responsible for the correctness of all shop and field fabrication and fit.

Members shall be straight, shall fit closely together and the finished work shall be free from burrs, twist, bends, and open joints. Holes, connecting angles, supports, braces, handers, and other incidentals appurtenant to the structural steel work shall be provided as required or as indicated on the Plans.

C5.4. DETAILING: The Contractor shall submit five (5) sets of completely detailed Shop and Erection Drawings to the Engineer for approval. The approval of Shop Drawings shall be the responsibility of the Contractor.

C5.5. GRATING: Floor grating shall be aluminum and shall be installed where noted on the Drawings. Installation shall be in a neat and workmanlike manner.

A. **Aluminum Grating:** All aluminum bar grating shall be type 1R4 Double-Lok joint as manufactured by Reliance Steel Products Co., Gary Galok type GAL as manufactured by IKG Industries, or approved equal. Size of bearing bars to be as shown on the Drawings. Provide standard clips to make all grating sections fully removable. Edge banding will be required only where noted on Drawings. Coat surfaces in contact with concrete or steel with asphaltic paint or aluminum impregnated caulking compound or other approved permanent insulation.

To be considered equal, a grating must have the same load capacity as the size grating noted on the Drawings. The depth may vary from that shown on the Drawings, provided adequate provisions are made to make modifications to the bearing and anchorage details.

C5.6. WELDING: All welding operations, processes, equipment, materials, workmanship, and inspection shall conform to the requirements of the latest revision of the "Structural Welding Code" of the American Welding Society (AWS D1.1).

Welds shall be thoroughly washed to remove any alkaline residue and the washed surface allowed to dry

before application of paint. After cleaning and inspection and within 24 hours after depositing, welds shall be spot painted with approved metal primer as specified below.

Welds shall be made only by welding operators who have been previously qualified in the last 90 days by tests as prescribed by the American Welding Society "Standard Qualification Procedure", to perform the work required.

C5.7. PAINTING: All steel surfaces shall be painted in accordance with the schedule shown in SECTION A1 - PAINTING. Surface preparation shall be in accordance with Steel Structures Painting Council Guides for the exposure zone in the final structure.

All steel items that are not galvanized or to be embedded in concrete or noted to be unpainted in SECTION A1 - PAINTING shall be given one (1) shop coat of metal primer, compatible with the finish coating. Finish painting shall be as specified in SECTION A1 - PAINTING.

All aluminum surfaces that will be in contact with concrete, steel or other dissimilar material shall be coated with asphaltic paint or aluminum impregnated caulking compound or other approved permanent insulation.

C5.8. STAIR NOSINGS: Provide cast aluminum abrasive nosings for all exterior concrete stairs. All nosing is to be three (3) inches wide and have a one (1) inch lip. Nosings shall be the length of the tread less 3" at each end.

Abrasive is to be #20 aluminum oxide (AL203), integrally cast into the walking surface to a minimum depth of 1/32". Fastener screws shall not protrude above the tread surface.

Cross-hatching and fluting shall be 1/16" deep minimum and shall be clean, sharp, well-defined and free from washes, scabs, buckles, blow holes, knots, cuts, cracks, and pin-holes. Abrasive cast aluminum to have sand blasted finish. Abrasive cast iron to have one coat of shop black paint.

C5.9. GALVANIZING: Galvanizing shall conform to the Standard Specifications of the ASTM A-123, latest edition, for zinc (Hot-Galvanized) Coatings on Structural Steel Shapes, Plates, and Bars, and their products. Damaged areas or field-welded areas shall be repaired after erection by applying a liquid cold-galvanizing compound conforming to U.S. Navy Galvanizing Repair Specification MIL-P-21035.

C5.10. PIPE GUARDS: Furnish and install 4" diameter Schedule 40 upright pipe guards filled with concrete at locations where shown on the Drawings and installed as detailed.

C5.11. HANDRAILS:

A. Galvanized Steel Handrails: Railings shall be a welded assembly of standard 1½" Schedule 40 diameter steel pipe, with welds ground smooth before hot dip galvanizing. Galvanizing shall be shop applied and field repaired in accordance with SECTION C5.9.

B. Aluminum Handrails: Pipe handrails of aluminum shall be installed in the locations shown on the Drawings. Aluminum handrail systems shall be as manufactured by Reynolds Aluminum or Enerco Metal Products.

Aluminum handrails shall be 1½-inch schedule 40 pipe of aluminum alloy 6063-T6. Fittings shall be attached to the posts by internal welding. The various pieces of the rail shall be joined together in a manner to present a smooth surface free of ridges or depressions that would collect debris and dirt. After fabrication finish shall be a 180 grit belt grind with an Alumilite No. 204 Anodizing.

Contractor may submit, for approval, 1½-inch square tube section handrail of the same strength as the 1½-inch schedule 40 pipe. Contractor shall be responsible for design of modifications to handrail anchor details to fit tube handrail. Submit modifications for approval of the Engineer.

- C. Attachment to Structures: Unless otherwise shown on the plans, attach galvanized steel handrailing to concrete floors by inserts, or by expansion type drilled anchor bolts and base plates welded to the rail posts. Attach steel handrailings to walls with adjustable brackets.

Attach aluminum handrailing to concrete floors by embedded sleeves unless otherwise shown or approved by the Engineer. After placing and anchoring in sleeve, fill railing base with grout even with floor surface. Provide weep hole to allow drainage. Attach aluminum railings to walls with adjustable brackets.

C5.12. ANCHOR BOLTS: Anchor bolts complete with washers and nuts shall be fabricated as shown or as specified by the equipment manufacturer and, unless otherwise indicated, shall be hot-dip galvanized or stainless steel.

C5.13. EXPANSION ANCHOR BOLTS: Where expansion anchor bolts are detailed or allowed by the Engineer, they shall be stainless steel wedge type anchors as manufactured by ITT Phillips Drill Co., McCulloch Industries or equal. All components of the fastener including nuts, washer and wedges shall be Type 304 stainless steel. Minimum embedment lengths and edge distances shall be as recommended by the manufacturer.

C5.14. MISCELLANEOUS FASTENERS: All miscellaneous fasteners, unless otherwise noted, shall be hot-dip galvanized or stainless steel and shall be fitted with standard galvanized washers. All elongated or otherwise oversized holes shall be covered with suitable galvanized washers.

C5.15. MISCELLANEOUS STEEL METAL WORK: All custom-fabricated steel metalwork other than structural steel shall be considered miscellaneous steel metalwork. Miscellaneous steel metalwork including embedded and nonembedded steel metalwork, brackets, hangers, and inserts shall be fabricated as shown of A36 steel. Anchors for miscellaneous steel metalwork shall be as indicated on the drawings.

SECTION SD
STREETS and DRAINAGE

TECHNICAL SPECIFICATIONS

SECTION SD101 - ROADWAY PREPARATION

SD101.01 DESCRIPTION: Work under this section consists of roadway and sidewalk preparation and clean-up. The work shall cover but not be limited to the following areas: area to be occupied by the improvement, necessary abutting work areas, any area used for stockpiling of excavated material, and areas within the project used for storage.

SD101.02 SITE PREPARATION: The Contractor shall remove all debris, concrete, or asphalt, culverts, abandoned utilities, and any other obstructions on the site of the project which will interfere with construction of the project. Materials or obstructions removed under this item shall be disposed of by the Contractor.

The Contractor shall adjust to the finished grade of the street and sidewalk all manhole covers, cleanout covers, and valve covers. Manhole frames and covers shall be adjusted using precast concrete grade rings and mortar riser section. Cleanouts shall be adjusted by removing the casting and resetting the casting to grade on a Class C concrete foundation poured around the cleanout stack and placing Class C concrete around the adjusted casting. Valve covers shall be adjusted by adjusting the valve cover housing to the finished grade.

SD101.03 CLEAN UP: From time to time the Contractor shall clean up the site, including all areas as stipulated in Section 101.02 above, in order that the site present a neat appearance and the progress of work not be impeded. One such period of clean up shall immediately precede final inspection.

Immediately following acceptance of the work by the Owner, the Contractor shall remove all temporary equipment, surplus materials, and debris resulting from his operation, and leave the site in a condition fully acceptable to the Owner.

TECHNICAL SPECIFICATIONS

SECTION SD110 - ROADWAY EXCAVATION

SD110.01 DESCRIPTION: This section shall govern the furnishing of all labor, equipment, materials, tools and incidentals necessary to perform the required excavation within the limits of the roadway and sidewalk, the removal, proper utilization, and/or disposal of all excavated materials; and the construction, shaping, and finishing of all earthwork on the entire length and width of work and approaches to same in conformity with the required lines, grades and cross-sections (including drainage ditches) as shown on the Plans and in accordance with specification requirements herein outlined. Prior to commencing excavation all clearing and grubbing shall be complete in excavation areas.

SD110.02 CLASSIFICATION: Unless classification of roadway excavation is indicated on the Plans or so determined by the Engineer, these specifications shall include all materials encountered regardless of their nature or the manner in which they are removed.

SD110.03 CONSTRUCTION METHODS: All roadway excavation shall be performed as specified herein and the completed roadway shall conform to the established lines, grades, and cross sections.

In constructing the specified roadway sections all suitable excavated materials shall be utilized insofar as practicable. Excavated materials from the roadbed shall be removed, utilized or disposed of as follows:

- A. Excavated material, suitable and necessary for roadway fill shall be utilized in that manner.
- B. Excavated material suitable but not necessary for construction of the required section, may, at the option of the Engineer, be disposed of by depositing in or on designated "waste" areas. Or, if so authorized, the Contractor may dispose of such material to his best advantage.
- C. Excavated material unsuitable for incorporation into the required section and unsatisfactory for "waste" disposal shall be disposed of as directed by the Engineer.

During the construction period the roadbed, slopes and ditches shall be maintained in such condition as to insure proper drainage at all times.

TECHNICAL SPECIFICATIONS
SECTION SD140 - EMBANKMENT

SD140.01 DESCRIPTION: This section shall govern the placement and compaction of all materials obtained from roadway, borrow, channel and structural excavation for utilization in the construction of roadway and sidewalk embankments.

SD140.02 CONSTRUCTION METHODS:

- (1) General: Prior to placing any embankment, all "Clearing and Grubbing" operations shall 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 surface 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.

Unless otherwise indicated on plans the surface of the ground of all unpaved areas other than rock which are to receive embankment shall be loosened by scarifying or plowing to a depth of not less than four inches. The loosened material shall be recompacted with the new embankment as hereinafter specified.

Where indicated on plans or directed by the Engineer, the surface of hillsides to receive embankment shall be loosened by scarifying or plowing to a depth of not less than four inches, or cut into steps before embankment materials are placed. The embankment shall then be placed in layers, as hereinafter specified, beginning at the low side in part width layers and increasing the widths as the embankment is raised. The material which has been loosened shall be recompacted simultaneously with the embankment material placed at the same direction.

Where embankments are to be placed adjacent to or over existing roadbeds, the roadbed slopes shall be plowed or scarified to a depth of not less than six inches and the embankment built up in successive layers, as hereinafter specified, to the level of the old roadbed before its height is increased. Then, if directed, the top of the roadbed shall be scarified and recompacted with the next layer of the new embankment. The total depth of the scarified and added material shall not exceed the permissible depth of layer.

Trees, stumps, roots, vegetation or other unsuitable materials shall not be placed in embankment. Except as otherwise required by the plans, all embankment shall be constructed in layers approximately parallel to the finished grade of the roadbed and unless otherwise specified each layer shall be so constructed as to provide a uniform slope of 1/4 inch per foot from the center line of the roadbed to the outside, except that on superelevated curves each layer shall be constructed to conform to the superelevation required by the governing standard.

Embankments shall be constructed to the grade established by the Engineer and completed embankments shall correspond to the general shape of the typical sections shown on the plans and each section of the embankment shall correspond to the detailed section or slopes established by the Engineer. After completion of the roadway, it shall be continuously maintained to its finished section and grade until the project is accepted.

- (2) Earth Embankments: Earth embankments shall be defined as those composed principally of material other than rock, and shall be constructed of accepted material from approved sources.

Except as otherwise specified, earth embankments shall be constructed in successive layers for the full width of the individual roadway cross section and in such lengths as are best suited to the sprinkling and compaction methods utilized.

Layers of embankment may be formed by utilizing equipment which will spread the material as it is dumped, or they may be spread by blading or other acceptable methods from piles or windrows dumped from excavating or hauling equipment in such amounts that material is evenly distributed.

No material placed in the embankment by dumping in a pile or windrow shall be incorporated in a layer in that position, but all such piles or windrows shall be mixed by blading or similar methods. Clods or lumps of material shall be broken and the embankment material mixed by blading, harrowing, disking or similar methods.

Water required to bring the material to the moisture content necessary for maximum compaction shall be evenly applied and it shall be the responsibility of the Contractor to secure a uniform moisture content throughout the layer by such methods as may be necessary.

Compaction of embankments shall be obtained by the method described below.

- (3) Compaction: Each layer shall be compacted to the required density by suitable equipment as hereafter described. The depth of layer, prior to compaction, shall not exceed that depth which will produce six inch compacted layer. Prior to and in connection with the rolling operation each layer shall be brought to the moisture content necessary to obtain the required density and shall be kept leveled with suitable equipment to insure uniform compaction of the entire layer.

For each layer of earth embankment and select material, it is the intent of this specification to provide the density as required herein, unless otherwise shown on the plans. Embankment soils shall be sprinkled as required and compacted to the extent necessary to provide not less than 95 percent of Modified A.A.S.H.T.O. density (A.S.T.M. Method D1557). Field density determinations will be made in accordance with approved methods.

When the Contractor submits each layer of earth embankment or select material for approval prior to placement of the next layer, tests as considered necessary by the Engineer will be made by an approved testing laboratory at the expense of the City. If the material fails to meet the density specified, the course shall be reworked as necessary to obtain the specified compaction, and the compaction method shall be altered or subsequent work to obtain specified density. Such procedure shall be determined by, and subject to, the approval of the Engineer.

Should the embankment, due to any reason or cause, lose the required stability, density, or finish before the pavement structure or base is placed, it shall be recompacted and refinished at the sole expense of the Contractor. Excessive loss of moisture in the embankment shall be prevented by sprinkling, sealing or covering with a subsequent layer of granular material. Excessive loss of moisture shall be considered to exist when the soil moisture content is more than four percent below the optimum for the density specified.

- SD140.03 **SELECTION OF MATERIALS:** In addition to the requirements in the roadway excavation section of the specifications which cover the general selection and utilization of materials to improve the roadbed, embankments shall be constructed in proper sequence to receive the select material layers shown on plans, with such modifications as may be directed by the Engineer. The layer of embankment immediately preceding the upper layer of select material shall be constructed to the proper section and grade within a tolerance of not more than 0.10 foot from the established section and grade when properly compacted and finished to receive the select material layer.

TECHNICAL SPECIFICATIONS

SECTION SD204 - SPRINKLING

SD204.01 DESCRIPTION: This section shall govern the authorized application of water on those portions of roadway shown on the Plans or as directed by the Engineer.

SD204.02 CONSTRUCTION METHODS: The Contractor shall furnish and operate approved sprinklers equipped with positive and rapidly working cutoff valves and approved spray bars which will insure the distribution of water in a uniform and controllable rate of application. The Contractor shall apply the water in the required quantity where shown on the Plans and/or as directed by the Engineer.

TECHNICAL SPECIFICATIONS

SECTION SD210 - ROLLING

SD210.01 DESCRIPTION: This section shall govern the equipment used for compaction of subgrade, sub-base, base or asphaltic concrete pavements by the operation of approved power rollers, tamping rollers or pneumatic tired rollers as herein specified and/or as directed by the Engineer.

210.02 EQUIPMENT:

(1) Subgrade, Sub-base and Base:

- (a) Pneumatic Tired Rollers: Large pneumatic tired rollers shall be of a type having five or more tires, with each tire capable of being inflated to a pressure of 100 pounds per square inch. Total weight of the unit when loaded shall be not less than twenty-five tons. The load shall be equally distributed to all wheels and the tires shall be uniformly inflated.

Small pneumatic tired rollers shall consist of not less than nine pneumatic tired wheels running on axles in such a manner that the rear group of tires will not follow in the track of the forward group and mounted in a rigid frame and provided with a body suitable for ballast loading. The wheelbase of the roller shall be not less than five nor more than ten feet. The front axle shall be attached to the frame in such a manner that the roller may be turned within a minimum circle. The pneumatic tired roller under working conditions shall have an effective rolling width of approximately sixty inches and shall be so designed that by ballast loading the load may be varied uniformly from a minimum of 100 to a maximum of 400 pounds per inch of width of tire tread.

The tire pressure and compression to be provided by the pneumatic roller shall be as directed by the Engineer. Pneumatic tired rollers shall be drawn by a suitable crawler type tractor, a pneumatic tired tractor, or a truck of adequate tractive effort, or may be of the self-propelled type, and the roller when drawn or propelled by either type of equipment shall be considered a pneumatic tired roller unit.

Unless otherwise directed, pneumatic tired rollers shall be operated within a speed range from two to four miles per hour.

- (b) Tamping Rollers: Tamping rollers shall consist of two metal rollers, drums or shells of forty inches minimum diameter; each not less than forty-two inches in length and unit-mounted in a rigid frame in such a manner that each roller may oscillate independently of the other; and each roller, drum or shell shall be surmounted by metal studs with tamping feet projecting not less than seven inches from the surface and spaced not less than seven inches from the surface and spaced not less than six nor more than ten inches measured diagonally center to center; and the cross-sectional area of each tamping foot measured perpendicularly to the axis of the stud, shall be not less than five nor more than eight square inches. The roller shall be supplemented with cleaning teeth to provide self cleaning. The roller shall be so designed that by ballast loading, the load on each tamping foot may be varied uniformly from 125 to 175 pounds per square inch of cross-sectional area. The load per tamping foot will be determined by dividing the total weight of the roller by the number of tamping feet in one row parallel to (or approximately so) the axis of the roller. The compression to be provided shall be as directed by the Engineer. The tamping roller shall be drawn by suitable power equipment of adequate tractable effort. Two tamping rollers, consisting of four cylinders, drawn by approved power equipment shall be considered a roller unit. Unless otherwise directed, tamping rollers shall be operated within a speed range of two to three miles per hour.

(2) Hot Mix Asphaltic Concrete Pavement:

- (a) Power Flat Wheel Rollers: Power flat wheel rollers shall be self-propelled and shall be of the three wheel or tandem type, weighing not less than five tons nor more than twelve tons. Power flat wheel rollers shall be operated with a speed range from two to three miles per hour and/or as directed.
- (b) Pneumatic Tired Rollers: Pneumatic tired rollers for hot mix asphaltic concrete pavement shall conform to the specifications as noted above for pneumatic rollers.

SD210.03 CONSTRUCTION METHODS: The compaction shall be accomplished by the methods outlined in the specifications on Subgrade, Sub-base, Base and Flexible Pavement. Tracked or lugged equipment will not be allowed on pavements at any time. In the event the indicated rollers are not sufficiently weighted, nor have sufficient tire inflation capacity, to produce the required degree of compaction, additional larger size rollers will be required at no additional expense to the Owner.

Sufficient rollers shall be provided to compact the material in a satisfactory manner.

TECHNICAL SPECIFICATIONS

SECTION SD230 - SUBGRADE PREPARATION AND COMPACTION

SD230.01 DESCRIPTION: This section shall govern the scarifying, blading and rolling of the subgrade to obtain uniform texture and density throughout the required depth as shown on the Plans.

SD230.02 CONSTRUCTION METHODS: The roadbed and sidewalk base shall be excavated and shaped in conformity with the typical sections shown on the plans and to the lines and grades established by the Engineer. The entire roadway cross-section shall be bladed clear of vegetation and scarified as directed by the Engineer. All soft, unstable, or otherwise objectionable material and other portions of the subgrade which will not compact readily or serve the intended purpose shall be removed or broken off to a depth of not less than six inches below the surface of the subgrade. Holes or depressions resulting from the removal of such material shall be backfilled with suitable material compacted in layers not to exceed six inches. No direct payment will be made for such removal and/or replacement.

The subgrade shall be scarified then bladed and compacted in the manner directed in the paragraph on "Finishing and Compaction". The surface of the subgrade shall be finished to line and grade as established, and be in conformity with the typical sections shown on the Plans. Material excavated in the preparation of the subgrade shall be disposed of as directed by the Engineer.

SD230.03 FINISHING AND COMPACTION: The subgrade course, shall be sprinkled as required and rolled as directed until a uniform compaction and the required density is obtained. Compaction of the subgrade may be done by use of the rolling equipment outlined in the specifications on "Rolling". Rolling shall continue until the subgrade has been compacted to ninety-five percent of the Modified A.A.S.H.T.O. Density (A.S.T.M. Method D-1557) within three percent of optimum moisture content.

Rolling shall progress gradually from the sides to the center of the land under construction by lapping uniformly each proceeding tract by at least twelve inches.

After rolling and watering, the subgrade shall be checked by the use of string line or instrument and all portions that do not conform to the lines and grades as shown on the Plans shall be corrected and re-compacted to correct elevation.

Until the base course or pavement is placed, the subgrade shall be maintained free from ruts and depressions, in a smooth and compacted condition true to lines and grade and to the density requirements contained herein. All of the Contractor's hauling and other equipment used in such a way as to cause rutting and raveling of the subgrade shall either be removed from the work or suitable runways or other equivalent means shall be provided to prevent rutting.

The Contractor shall be responsible for maintaining and protecting the roadbed for the entire length of the project.

During construction, grading of the subgrade shall be conducted so that berms of earth or other material do not prevent immediate drainage of water to the side. Ditches and drains along the subgrade shall be maintained so as to drain effectively.

TECHNICAL SPECIFICATIONS

SECTION SD400 - EXCAVATION AND BACKFILL FOR STRUCTURES

SD400.01 DESCRIPTION: This section shall govern the excavation for construction to the lines, grades and extent indicated on the Plans of any and all structures and subsequent backfill of these structures.

SD400.02 CONSTRUCTION METHODS: Excavation shall extend a sufficient distance from walls and footings to allow for form, installation of services, and for inspection, except where concrete for walls and footing is authorized or required to be deposited directly against excavated surfaces. Where the excavation is made below the elevations indicated on the drawings or directed by the Engineer, the excavation shall be restored to the proper elevation with lean concrete or other selected material, at the expense of the Contractor.

In order that the Engineer may judge the adequacy of a proposed foundation, the Contractor, if requested, shall make soundings to determine the character of the subgrade materials. The maximum depth of such soundings will not be required to exceed five feet below the proposed footing grade. It is the intent of this provision that soundings shall be made at the time the excavation in each foundation is approximately complete.

The final elevation to which a foundation is to be constructed shall be as shown on the drawings or as raised or lowered by written order from the Engineer when such alterations are judged proper to satisfactorily comply with design requirements of the structure. Should it be found necessary to increase the depth of footings from that shown on the drawings the necessary alterations in the details or the structure shall be accomplished in a manner as directed by the Engineer, who shall have the right to substitute revised details if necessary.

When a structure is to rest on an excavated surface other than rock, special care shall be taken not to disturb the bottom of the excavation, and removal of the last material required to reach foundation final grade shall not be performed until just before the footing is to be placed.

All rocks or other hard foundation material shall be cleaned of all loose material and cut to a firm surface either level, stepped, or serrated, as directed by the Engineer. All seams shall be cleaned out and filled with concrete at the time the footing is placed.

Water encountered in excavations shall be attended to by the Contractor who shall do all bailing, pumping, and dewatering at his expense so that foundations and all other structures may be "constructed in the dry".

Earth from excavations shall be used to backfill around structure as required. Earth from excavation not required for backfill shall be disposed on areas within reasonable proximity to the project site. Excavated material required to be used for backfill may be deposited by the Contractor in storage piles at points convenient for rehandling the material during the backfilling operations. The location of storage pile shall be subject to the approval of the Engineer.

TECHNICAL SPECIFICATIONS

SECTION SD420 – CONCRETE (Not for Pavement Structure)

SD420.01 **GENERAL:** The work covered by this section includes furnishing all materials and equipment and performing all necessary labor to do all concrete work shown on the drawings or incidental to the proper execution of the work, as herein after specified as directed by the Engineer.

SD420.02 **COMPOSITION:** Concrete shall be composed of cement, fine aggregate, coarse aggregate and water so proportioned and mixed as to produce a plastic, workable mixture in accordance with all requirements under this section and suitable to the specific conditions or placement.

SD420.03 **CLASSIFICATION:** Except where required to meet special conditions, all concrete shall be Class "A" or Class "C", meeting the requirements of 2014 TxDOT Specification Item 421 as designated on the drawings.

SD420.04 **STRENGTH:** The mixes will be designed to secure concrete having the following compressive strength at the age of 28 days, as determined by breaking standard 6-inch diameter by 12-inch height test specimens in accordance with the procedure set forth in ASTM Designations C31-69 and C39-66:

<u>Class</u>	<u>Minimum Average for any 5 consecutive cylinders</u>	<u>Minimum for any one cylinder</u>
A	3,000 lbs. per sq. in.	3,000 lbs. per sq. in.
C	3,600 lbs. per sq. in.	3,100 lbs. per sq. in.

SD420.05 **HIGH-EARLY STRENGTH CONCRETE:** High-early strength concrete made with high-early strength Portland cement or other special cements shall be used only when specifically authorized by the Engineer. The 7-day compressive strength of concrete of any class, when made with high-early strength cement shall be at least equal to the specified minimum 28-day compressive strengths for that class. All provisions of these specifications, except for cement, shall be applicable to such concrete. High-early strength cement shall be approved by the Engineer before use.

SD420.06 **CEMENT:**

- (1) Portland Cement: Portland cement shall conform to ASTM C-150 Type I or Type III, except as specified in subparagraph (2) below.
- (2) High-early Strength Portland Cement: Cement for high-early strength concrete shall conform to Federal Specification SS-C-201, or ASTM C-150, Type III.
- (3) Special Test Requirements: Cement shall be tested by a recognized testing laboratory or agency satisfactory to the Engineer. Samples to be tested shall be taken at the mill. The Contractor shall arrange and pay for the testing and shall furnish the Engineer certified copies of all test reports. No cement shall be used until notice has been given by the Engineer that the test results are satisfactory. Cement which has been stored for more than 4 months after being tested shall be retested by the Contractor at his own expense before use. Ordinarily, no cement shall be used until after it has satisfactorily passed both the 7 and 28-day tests, but in cases of emergency the Engineer may waive the 28-day tests and permit the use of cement which has satisfactorily passed the soundness and 7-day tests, provided it is the product of a quarry and mill having an established reputation for the production of high-grade cement.

SD420.07 **FINE AGGREGATE:**

- (1) Composition: Fine aggregate shall be natural sand.

(2) Quality: Fine aggregate shall consist of hard, strong, durable and uncoated particles.

(3) Grading: The grading shall conform to the following requirements:

<u>Sieve Size</u>	<u>Percent Retained by Weight</u>
3/8" Sieve	0
No. 4 Sieve	0-5
No. 8 Sieve	0-20
No. 16 Sieve	15-50
No. 30 Sieve	35-75
No. 50 Sieve	65-90
No. 100 Sieve	90-100
No. 200 Sieve	97-100

(4) Deleterious Substances: The substances designated below shall not be present in excess of the following amounts:

	<u>Percent by Weight</u>
Clay Lumps	0.5
Material removed by decantation from aggregates, not more than	4.0
Other deleterious substances such as coal, shale, coated grains and soft flaky particles	2.0

(5) Mortar Strength: Mortar specimens made 1 part cement to 3 parts of the fine aggregate shall have a compressive strength at 28 days of at least 90 percent of the strength of similar specimens made with Ottawa sand having a fineness modulus of 2.40 ± 0.10 .

(6) Tests: When given ASTM C-40 test for organic impurities the color shall not be darker than the standard. Mineral filler may be added to sand if approved by the Engineer.

SD420.08 COARSE AGGREGATE:

(1) Composition: Coarse aggregate shall be gravel or crushed stone suitably prepared.

(2) Quality: Coarse aggregate shall consist of hard, tough and durable particles free from adherent coating. It shall contain no vegetable matter, nor soft, friable, thin or elongated particles in quantities considered deleterious by the Engineer. The substance designated shall not be present in excess of the following amount by weight:

Deleterious substances including friable, thin, elongated or laminated pieces	3.0%
Soft fragments	3.0%
Clay lumps	1/4%
Removed by decantation	1%
The sum of all deleterious ingredients exclusive of that removed by decantation, shall not exceed	5%

When the material removed by decantation consists essentially of crusher dirt the maximum amount permitted may be raised to 1 1/2%. Aggregate which has disintegrated or weathered badly under exposure conditions similar to these which will be encountered by the work under consideration shall not be used. When crushed stone is used the crusher shall be equipped with a screening system which will entirely separate the dust from the stone and convey it to a separate bin.

- (3) Size: Coarse aggregate shall be well graded from fine to coarse so that concrete of the required workability, density and strength can be made without the use of an excess amount of sand, water or cement. When tested by approved methods, the coarse aggregate shall conform to the following grading requirements:

<u>Concrete</u>	<u>Percent passing on each Sieve</u>								
	2-1/2"	2"	1-1/2"	1"	3/4"	1/2"	3/8"	No. 4	No. 8
Class A			100	95-100		25-60		0-10	0-5
Class A (extruded curbs)						100	95-100	20-65	0-10
Class C				100		90-100	40-70	0-15	0-5

- (4) Tests: Where the concrete in the finished work will be exposed to contact with aggressive soils or waters, or other destructive agents as determined by the Engineer, the coarse aggregate shall be subjected to the sodium sulphate accelerated soundness test in accordance with ASTM Designation C 88 and failure to pass such test shall be cause for rejection of the aggregate. However, aggregate failing to pass this test may be used with the approval of the Engineer, provided it has given satisfactory service for a period of not less than five (5) years under exposure conditions similar to those to which it will be subjected in the proposed work.

SD420.09 WATER: The water used in mixing concrete shall be fresh, clean and free from injurious amounts of oil, acid, alkali or organic matter.

SD420.10 STORAGE:

- (1) Cement: Immediately upon receipt, at the site of the work, cement shall be stored in a thoroughly dry, weather tight, and properly ventilated building or barge, with adequate provisions for the prevention of the absorption of moisture. Storage shall be such as to permit easy access for inspection and definite identification of each shipment.
- (2) Aggregate: The fine aggregate and each size of the coarse aggregate shall be stored separately and in such manner as to be free to drain and to avoid the inclusion of any foreign material in the concrete. Stock piles of coarse aggregates shall be built in horizontal layers to avoid segregation. Aggregates shall be protected from freezing and the inclusion of frost, and heating of aggregates may be required as directed by the Engineer when concreting is performed in cold weather.

SD420.11 PROPORTIONING:

- (1) Control: The exact proportions of all material entering into the concrete shall be as directed by the Engineer. The Contractor shall provide all equipment necessary positively to determine and control the actual amounts of all materials entering the concrete. The proportions will be changed whenever in the opinion of the Engineer, such change becomes necessary to obtain the specified strength and the desired durability, density, uniformity, and workability, and the Contractor will not be compensated because of such change except that he will be compensated for an increase in the specified minimum unit cement content as stated in subparagraph (3) below, when such increase is authorized by the Engineer.
- (2) Measurement: All materials shall be measured by weight or volume as directed by the Engineer. One (1) bag of cement will be considered as 94 pounds in weight, or one (1) cubic foot loose, in volume, and one (1) gallon of water as 8.33 pounds.
- (3) Maximum water / cement ratio: Each cubic yard of concrete shall contain no more than the following maximum water / cement ratios by weight:

Class "A"	-	0.60
Class "C"	-	0.45

(4) Water Content:

- (a) An increase in the maximum water content to improve workability will not be permitted unless comparative tests under job conditions show conclusively that such increase in water content will not result in a decrease in concrete strength and durability and provided further that such increase does not exceed one (1) gallon per cubic yard.

(5) Aggregate Content: The total volume of aggregates to be used in each cubic yard of concrete shall be than necessary to produce a dense mixture of the required workability as determined by the Engineer.

(6) Admixtures: Admixtures may be used only with the approval of the Engineer.

SD420.12 MIXING AND PLACING:

(1) Equipment: The Contractor shall operate one or more approved batch-type mixing plants. The rating capacity of any individual mixer shall be one-half (1/2) cubic yard or more. The mixing plant or plants shall be provided with adequate equipment and facilities for accurate measurement and control of all materials and water for readily changing the proportion to conform to the varying conditions of the work, in order to produce concrete of the required uniform strength and workability. The plant or plants shall include provisions to facilitate the inspection of all operations at all times and shall be subject to the approval of the Engineer.

(2) Ready-Mixed Concrete: At the option of the Contractor, ready-mixed concrete may be used in lieu of concrete mixed at the job. All mixing requirements specified herein for concrete mixed at the site shall be enforced and the Engineer shall have free access to the mixing plant at all times.

(3) Time: The minimum time for mixing each batch, after all materials are in the mixer, shall be one and one-half (1 1/2) minutes. The mixer shall revolve a minimum of twelve (12) revolutions after all materials have been placed herein, and at a uniform speed. Neither the speed nor the volume capacity of the mixer shall exceed those recommended by the manufacturer. Excessive overmixing, requiring additions of water to preserve the required consistency, will not be permitted.

(4) Conveying: Concrete shall be conveyed from mixer to forms as rapidly as practicable and by methods which will prevent segregation or loss in ingredients. It shall be deposited as nearly as practical in its final position. Chutes used shall be such that the concrete slides in them and does not flow. Chutes, if permitted, shall have a slope of less than 1 on 2. Where a vertical drop greater than five (5) feet is necessary, placement shall be through elephant trunks or similar devices to prevent segregation.

(5) Placing: Concrete shall be placed before initial set has occurred, and in no event after it has contained its water content for more than thirty (30) minutes. Unless otherwise specified, all concrete shall be placed upon clean, damp surfaces, free from running water, or upon properly consolidated fills, but never upon soft mud or dry porous earth. The concrete shall be compacted and worked in an approved manner into all corners and angles of the forms and around reinforcement and embedded fixtures in such a manner as to prevent segregation of the coarse aggregate. Construction of forms for the lifts of vertical walls shall be such as to make all parts of the walls easily accessible for the placement, spading and consolidation of the concrete as specified herein.

(6) Vibration: All concrete shall be placed with the aid of mechanical vibrating equipment as approved by the Engineer. Vibration shall be transmitted directly to the concrete, and in no case shall it be transmitted through the forms. The duration of vibration at any location in the forms shall be held to the minimum necessary to produce thorough compaction.

- (7) Finish: All top surfaces, other than slabs, not covered by forms and which are not to be covered by additional concrete of fill shall receive a wood float finish without additional mortar. Care shall be taken that no excess water is present when this finish is made. Other surfaces shall be brought to finish elevations and left true and regular.
- (8) Construction Joints: Construction joints shall be formed as indicated in the drawings or as approved or directed by the Engineer. Where indicated or required, dowel rods shall be used. All concrete at the joint shall have been in place not less than twelve (12) hours, and longer if so directed by the Engineer, before concrete resting thereon is placed. Before placing is resumed or commenced all excessive water and laitance shall be removed and the concrete shall be cut away, where necessary, to insure a strong dense concrete at the joint. In order to secure adequate bond the surface of the concrete already in place shall be cleaned and roughened and shall then be spread with a 1/2 inch layer of mortar of the same cement sand ratio as is used in the concrete, immediately before the new concrete is deposited.
- (9) Existing Concrete Structures: In those instances where existing concrete structures are modified or extended, the concrete used in the modification shall contain an approved non-shrinkage additive. Concrete surfaces which will be in contact with new construction shall be roughened and cleaned prior to placing of the new concrete. These surfaces shall be wetted and painted with a thin coat of neat cement mortar, or cement epoxy, at the direction of the Engineer, immediately in advance of placing of concrete.

SD420.13 CURING AND PROTECTING:

- (1) Curing: All concrete shall be kept wet for a period of seven (7) days unless otherwise specifically prescribed by the Engineer, by covering with water, an approved water-saturated covering, or other approved method which will keep all surfaces continuously wet.
- (2) Membrane Curing: When, in the opinion of the Engineer, satisfactory results can be obtained by membrane curing, permission will be given to the Contractor to substitute an approved curing compound for the water curing specified. If a curing compound is used it shall be applied in two (2) coats and it shall be of such composition that it will adhere to fresh, damp concrete and form a thoroughly bonded, dense, continuous, water-tight membrane which will not run or sag and will dry satisfactorily within three hours after application. The coverage shall not exceed 300 square feet per gallon per coat and shall be applied in a uniform coat with approved pressure-spraying equipment. The compound used shall contain at least 30 percent of non-volatile solids. Samples consisting of at least one gallon, of any compound proposed for use shall be sent to a laboratory designated by the Engineer, if required, at least 30 days previous to the date upon which it is proposed to use the material. If concrete has become dry, it shall be thoroughly moistened with water, immediately previous to application of the compound. When curing compound is used on surfaces to which new concrete is to be bonded, any compound film remaining at the expiration of the curing period shall be carefully removed by sand blasting or the adequate use of steel wire brooms or brushes.
- (3) Protection from the Sun: All concrete shall be adequately protected from injurious action of the sun in a manner satisfactory to the Engineer.
- (4) Protection in Cold and Freezing Weather: In cold weather concrete shall be mixed and placed only when the temperature is at least 40 deg. F and rising, unless permission for placement of concrete is obtained from the Engineer, in which event all materials shall be heated in a manner approved by the Engineer. In freezing weather, suitable means shall be provided for maintaining the concrete at a temperature of at least 50 deg. F for not less than 72 hours after placing, or until the concrete has thoroughly hardened. The methods of heating the materials and protecting the concrete shall be subject to approval of the Engineer. Salt, chemicals or other foreign materials shall not be mixed with the concrete for the purpose of preventing freezing.

SD420.14 FORMS:

- (1) Materials: Forms shall be of wood, steel or other approved material. All exposed surfaces shall be constructed with forms lined with plyboard Masonite, steel or other smooth material specifically approved. Surfaces or not exposed may be formed with tongue-and-groove lumber or lined forms as mentioned above. The type, size, shape, quality and strength of all materials of which the forms are made shall be subject to the approval of the Engineer.
- (2) Construction: Forms shall be built true to line and grade, and shall be mortar-tight and sufficiently rigid to prevent displacement or sagging between supports. Responsibility for their adequacy shall rest with the Contractor. Form surfaces shall be smooth and free from Form surfaces shall be smooth and free from irregularities, dents, sags, or holes when used for permanently exposed faces. Bolts and rods used for internal ties shall be so arranged that, when the forms are removed, all metal will be not less than 2 inches from any concrete surface. Wire ties will not be permitted where the concrete surface will be exposed to weathering and discoloration will be objectionable. All forms will be so constructed that they can be removed without hammering or prying against the concrete. Unless otherwise indicated, suitable moulding shall be placed to bevel or round exposed edges, at expansion joints and any other points as may be required by the Engineer.
- (3) Coating: Forms, other than those having absorptive form lining for exposed surfaces shall be coated with a non-staining mineral oil which shall be applied shortly before the concrete is placed. Forms for unexposed surfaces may be thoroughly wetted in lieu of oiling, immediately before the placing of concrete except that in freezing weather oil shall be used.
- (4) Removal: Forms shall not be removed without the approval of the Engineer and all removal shall be accomplished in such manner as will prevent injury to the concrete. Forms shall not be removed before the expiration of the minimum number of days indicated below, except when specifically authorized by the Engineer. When, in the opinion of the Engineer, conditions on the work are such as to justify it, forms may be required to remain in place for longer or shorter periods.

Beams and slabs	10 days
Columns and piers	7 days
Walls and vertical faces	2 days

- (5) Form Lining for Buildings: In addition to the requirements for work specified above, the forms for walls of buildings which will be visible in the finished structure shall be lined with pressed wood sheets, absorptive form lining or approved equal. Such lining shall be applied directly to the sheeting. Forms for window and door jams, and their flat or arched soffits shall be lined also and the corner intersections chamfered. Jointing of the lining shall be neat and close and no patch pieces, cleats, nor blocking will be permitted. Overrun of lining shall be trimmed to secure proper fit to adjoining surfaces. Lining with bruises, imprints, or hammer marks shall not be used.

SD420.15 REINFORCEMENT:

- (1) General: The Contractor shall furnish and install all reinforcement, including rods, fabric and structural shapes, as indicated on the plans or otherwise required. All bar reinforcement shall be open hearth new billet steel of structural, intermediate, or hard grade or shall be rail concrete reinforcement. Billet steel shall conform to applicable ASTM Designation A615.

Rail Steel reinforcement shall conform to applicable ASTM Designation A-616 (bars produced by the piling method not acceptable) or the reinforcement may conform to the requirements of Federal Specification QQ-B71, and Amendment 1, dated December 1940. Unless otherwise indicated, all bars shall be Type B (deformed), Grade 2, 3, 4, or 5 wire mesh. All welded wire fabric reinforcement shall conform to ASTM Designation A-185-68. All reinforcement shall be

when surrounding concrete is placed, entirely free from rust, scale, grease or other coating which might destroy or reduce its bond with concrete. Shop drawings, lists and placing details shall be furnished by the Contractor when required.

- (2) Minimum Spacing of Rods: The clear distance between parallel rods shall be not less than 1 1/2 times the diameter of round rods, or twice the side dimensions of square rods unless specifically authorized, shall in no case be less than one inch. Splices may be tied together if 45 Diameters lap is provided.
- (3) Protective Covering:
 - (a) All main reinforcement in sewer conduits, culverts, wall and column footings and similar structures, embedded in earth or submerged in water shall be placed not less than 3 inches from any concrete surface, unless otherwise set forth.
 - (b) All main reinforcement in beams, slabs, and wall or culverts and bridges, and similar structures of comparatively thin sections, exposed to the weather shall be placed not less than 2 inches from any concrete surface, unless otherwise set forth.
 - (c) All main reinforcement in walls and slabs of buildings exposed to the weather and in fire-resistant construction, shall be placed not less than one inch from the surface in walls and slabs, 1 1/2" in floor beams, and 2" in girders and columns. In interior flat slab construction, the minimum cover may be reduced to 3/4 inch. For interior work where fire hazard does not exist, the main reinforcement shall be placed not less than 3/4 inch from the surface in walls and slabs, one inch on floor beams and 1 1/2 inches in girders and columns.
 - (d) The covering of stirrups, spacer-rods, and similar secondary reinforcement may be reduced by the diameter of such rods. The above dimensions shall be measured from the face of the reinforcement to the face of the forms.
- (4) Splicing: Where splices in reinforcement, in addition to those indicated, are necessary, there shall be sufficient lap to transfer the stress by bond, as may be directed. Rods shall be lapped not less than 40 diameters and splices shall be staggered. The lapped end of rods shall be separated sufficiently or connected properly to develop the full strength of the rod. Adjacent shoots of mesh reinforcement shall be spliced by lapping not less than six inches, the lapped ends being securely wired together.
- (5) Supports: All reinforcement shall be secured in place true to the lines and grades indicated, by the use of metal or concrete supports, spacers or ties as approved by the Engineer. Such supports shall be of sufficient strength to maintain the reinforcement in place throughout the concreting operation, and shall be used in such a manner that they will not be exposed on the face of, nor in any way discolor or be noticeable in the surface of the finished concrete. The costs of furnishing and placing all supports, spacers, ties and/or other devices required shall be included in the contract prices for the various types of reinforcement specified.
- (6) Protection for Future Use: Exposed reinforcement intended for bonding with future work shall be protected from corrosion by heavy wrapping of burlap saturated with bituminous material.

SD420.16 **EMBEDDED ITEMS:** Before placing concrete, care shall be taken to determine that any embedded metal or wood parts are firmly and securely fastened in place as indicated. They shall be thoroughly clean and free from coating, rust, scale, oil, or any foreign matter. The embedding of wood in concrete shall be avoided whenever possible, metal being used instead. If wood is allowed, it shall be thoroughly wetted before the concrete is placed.

SD420.17 **EXPANSION AND CONTRACTION JOINTS:** Expansion and contraction joints shall be constructed at such points and of such dimensions as may be indicated on the drawings or required by the Engineer. The method and materials used shall be subject to the approval of the Engineer. Unless otherwise indicated on the drawings, or required by the Engineer, expansion joints shall be made by the use of an approved premoulded mastic expansion joint fill or 1/2 inch in thickness and of width as shown on the drawings.

- (1) Asphalt Mastic Strips (preformed) shall be composed of approximately 75% asphalt, 15% fibre and 10% mineral matter.
- (2) Mastic for Poured Joints shall be composed of refined asphaltic pyrobitumen and natural asphalt bitumens, with or without suitable plasticisers, and volatile solvent, contain at least 2.0% inert filler and show no tendency to separate or as shown on the drawings.
- (3) Waterstops for construction joints shall consist of a durable, elastic, cured rubber compound or polyvinyl chloride capable of effectively sealing joints in concrete against the infiltration of moisture, such as "Servicised" or equal, all subject to the approval of the Engineer.

SD420.18 **SURFACE FINISH:** All exposed concrete surfaces, except floors and roof decks shall receive a first rubbing to remove all blemishes. Where necessary, a second rubbing with a finer stone will be required.

TECHNICAL SPECIFICATIONS

SECTION SD471 - FRAMES, GRATES, RINGS, AND COVERS

SD471.01 DESCRIPTION: This item shall govern for furnishing and installing frames, grates, rings and covers for inlets, manholes and other structures in accordance with the plans and this item.

SD471.02 MATERIALS: Welded steel grates and frames shall conform to the member size, dimensions and details shown on the plans and shall be welded into an assembly in accordance with those details. Steel shall conform to the requirements of ASTM A36 or equal.

Castings, whether Carbon-Steel, Gray Cast Iron or Ductile Iron shall conform to the shape and dimensions shown on the plans and shall be clean substantial castings, free from sand or blow holes or other defects. Surfaces of the castings shall be free from burnt-on sand and shall be reasonably smooth. Runners, risers, fins, and other cast-on pieces shall be removed from the castings and such areas ground smooth. Bearing surfaces between manhole rings and covers or grates and frames shall be cast or machined with such precision that uniform bearing shall be provided throughout the perimeter area of contact. Pairs of machined castings shall be matchmarked to facilitate subsequent identification at installation.

Steel castings shall conform to the requirements of the specifications for "Mild to Medium Strength Carbon Steel Castings for General Application", ASTM A27. Grade 70-36 shall be furnished unless otherwise specified.

Cast iron castings shall conform to the requirements of "Gray Iron Castings", ASTM A48, Class 30.

Ductile iron castings shall conform to the requirements of "Ductile Iron Castings", ASTM A536. Grade 60-40-18 shall be used unless otherwise specified.

Commercial type frames, rings, risers and/or appurtenances may be used with prior approval of the Engineer.

Manhole lids and covers shall be Bass & Hayes.

Mill test reports or manufacturer's certification shall be furnished to the Engineer for each lot or shipment.

SD471.03 CONSTRUCTION METHODS: Frames, grates, rings and covers shall be constructed in accordance with the details shown on the plans and shall be installed to the lines and grades indicated on the plans or as directed by the Engineer.

All welding shall conform to the requirements of Item 448, "Structural Field Welding". Grates and covers shall be tack welded to the frame or ring when directed by the Engineer.

All bolts and nuts shall be galvanized. Commercial grade galvanizing will be acceptable.

SECTION E1
ELECTRICAL BASIC MATERIALS AND METHODS

PART 1 - GENERAL

1.01 SCOPE

A. Supplementary Conditions

1. The General Conditions and Requirements, Special Provisions are hereby made a part of this section.
2. The Electrical Drawings and Specifications under this division shall be made a part of the contract documents. The drawings and specifications of other divisions of this contract, as well as supplements issued thereto, information to bidders, and other pertinent documents issued by the Owner's Representatives are a part of these drawings and specifications and shall be complied with in every respect. All the above documents will be on file at the office of the Owner's Representative and shall be examined by all bidders. Failure to examine all documents shall not relieve the bidder of any responsibility nor shall it be used as a basis for additional compensation due to omission of details of other divisions from the electrical documents.
3. Furnish all work, labor, tools, superintendence, material, equipment, and operations necessary to provide for a complete and workable electrical system as defined by the contract documents.
4. Contractor shall be responsible for visiting the site and checking the existing conditions. He shall also ascertain the conditions to be met for installing the work and adjust bid accordingly.
5. It is the intent of the contract documents that upon completion of the electrical work, the entire system shall be in a finished workable condition.
6. All work that may be called for in the specifications but not shown on the drawings, or, all work that may be shown on the drawings but not called for in the specifications, shall be performed by the Contractor as if described in both. Should work be required which is not set forth in either document, but which work is nevertheless required for the fulfilling of the intent thereof; then, the Contractor shall perform all such work as fully as if it were specifically set forth in the contract documents.
7. The use of the word "furnish" or "install" or "provide" shall be taken to mean that the item or facility is to be both furnished and installed under this section unless specifically stated to the contrary; that the item or facility is to be furnished under another section and installed under this section; furnished under this section and installed under another section; or furnished and installed under another section.
8. The use of the term "as (or where) indicated"; "as (or where) shown"; "as (or

where) specified"; or "as (or where) scheduled" shall be taken to mean that the reference is made to the contract documents, either under the drawings or the specifications, or both documents.

B. Standards

1. All materials and equipment shall conform to the requirements of the contract documents. They shall be new, free from defects, and they shall conform to the following standards where these organizations have set standards:

- a. Underwriters Laboratories, Inc. (UL)
- b. National Electrical Manufacturer's Association (NEMA)
- c. American National Standards Institute (ANSI)
- d. Insulated Power Cable Engineers Association (IPCEA)

2. The definition of terms used throughout the contract documents shall be as specified by the following agencies:

- a. Underwriters Laboratories
- b. National Electrical Manufacturer's Association
- c. American National Standards Institute
- d. Insulated Power Cable Engineers Association
- e. National Electrical code
- f. National Fire Protection Association

3. Submit copies of applicable standards with each submittal

4. All material and equipment, of the same class, shall be supplied by the same manufacturer unless specified to the contrary.

5. All materials shall bear UL labels where standards have been set for listing

C. Permits, Codes, and Utilities

1. Secure all permits, licenses, and inspections as required by all authorities having jurisdiction. Give all notices and comply with all laws, ordinances, rules, regulations, and contract requirements bearing on the work.

2. The minimum requirements of the Electrical system installation shall conform to

the latest edition of the National Fire Protection Association as well as local and state codes.

3. Codes and ordinances having jurisdiction over the work shall serve as minimum requirements, but, if the contract documents indicate requirements which are in excess of those minimum requirements, then the requirements of the contract documents shall be followed. Should there be any conflicts between the contract documents and codes, or any ordinances having jurisdiction, report these with the bid.

4. Determine the exact requirements for all utility services (telephone, power, etc.) as set by the utilities that will serve the facility, and pay for and perform all work as required by those utilities including metering. Provisions for permanent electrical power to the site shall be the responsibility of the owner.

5. The Contractor shall notify the utility companies (power companies, power providers, and telephone companies) immediately upon award of the contract. Contact AEP-SWEPCO in Marshall, TX.

6. All electrical work shall be performed by journeymen electricians and apprentice electricians under the direct supervision of a master electrician, all of which shall be licensed by the State of Texas. A copy of the licenses of the master electrician and journey electricians shall be submitted for review before any work is started.

7. All electrical construction work shall be performed by an electrical contracting firm registered with the State of Texas. A copy of the electrical contracting firm's license shall be submitted for review before any work is started.

1.02 SHOP DRAWINGS AND SUBMITTALS

A. Shop Drawings

1. Shop drawings shall be taken to mean detailed drawings with dimensions, schedules, weights, capacities, installation details, and pertinent information that will be needed to describe the Material or equipment in detail.

2. Submittals shall be taken to mean catalog cuts, general descriptive information, catalog numbers, and manufacturer's name.

3. Submit six copies for review of all shop drawings and submittals as hereinafter called for within sixty days after award of contract. If shop drawings and submittals are not received in sixty days, the Owner's representative reserves the right to go directly to the manufacturer for the information and any expense incurred shall be borne by the Contractor.

4. Review of submittals or shop drawings shall not remove the responsibility for furnishing materials or equipment of proper dimensions, quantity and quality, nor will such review remove the responsibility for error in the shop drawings or submittals.

5. Shop drawings and submittals will be returned and unchecked if the specific items proposed are not clearly marked, or if the general contractor's approval stamp is omitted.

6. When requested, furnish samples of materials for acceptance review. If a sample has been reviewed and accepted, the item of material or equipment that is installed on the job shall be equivalent in quality to the sample. If it is found that the installed item is not equivalent, the contractor shall replace all such items with acceptable equivalents.

7. Submit catalog literature for each item of material specified.

B. Operations and Maintenance Manuals

1. Six weeks prior to the completion of the project, compile an operations and maintenance manual on each item of equipment. The manuals shall include detailed instructions on operations and maintenance as well as spare parts lists.

2. Submit six copies for review.

C. Record Drawings

1. During the progression of the project, the contractor shall mark-up blueline prints with red pencil showing all deviations from the Contract Documents of all raceways, wiring, and equipment installations.

2. The contractor shall transcribe the mark-up information onto sepia prints after work has been completed. The sepia prints shall be labeled "Record Drawings" and shall be delivered to the engineer.

3. Details of control, instrumentation, and signal wiring that are not shown on the Contract Drawings, shall be included with the Record Drawings.

4. Raceway and wiring details of each pullbox and junction box larger than 100 cubic inches shall be included with the Record Drawings. The details shall show the size of each conduit penetration, wire size, wiring function, and terminus information of each raceway and wire.

1.03 QUALITY CONTROL

A. Acceptance and substitutions

1. All manufacturers that are specifically named shall be considered as a basis of standard of quality. Substitutions of any equivalent product will be considered for acceptance unless specifically noted otherwise. The judgment of equivalence of all substitutions shall be made by the Engineer.

2. Requests for substitutions after award of contract shall be made within sixty days after the award of contract. The request shall include all required supporting data. The submittal of substitutions for review shall not be cause for time extensions.

3. Where substitutions are offered, the substituted product shall meet the product performance as set forth in the specified manufacturer's current catalog literature, as well as meeting the details of the contract documents.

4. The details on the drawings and the requirements of the specifications are based on the first listed item of materials or equipment. If any other than the first listed items of materials or equipment is furnished, the contractor shall assume responsibility for the correct function, operation, and accommodation of the substituted item. In the event of misfits or changes in work required, either in this Section or other Sections of the contract, or in both; the Contractor shall bear all costs in connection with all changes arising out of the use of other than the first listed item specified.

5. Energy efficiency of each item of power consuming equipment shall be considered one of the standards for evaluation.

B. Excavation and Backfilling

1. Do all excavating and backfilling necessary for the installation of the work. This shall include shoring and pumping in ditches to keep them dry until the work in question has been installed. All shoring required to protect the excavation and safeguard employees shall be properly performed. See Contract Specification Section TRENCH SAFETY, as applicable.

2. All excavations shall be made to the proper depth, with allowances made for floor slabs, forms, beams, finished grades, etc. Ground under conduits shall be well compacted before conduits are installed.

3. All backfilling of excavations shall be made with selected soil, free of rocks and debris and shall be pneumatically tamped in six inch layers to secure a field density ratio of 90%, unless otherwise specified.

4. All excavated material not suitable and not used in the backfill shall be removed to the on-site disposal area, as applicable. The on-site area shall be as directed by the Engineer.

5. The contractor shall field check and verify the locations of all existing and proposed underground utilities prior to any excavating. The existing utilities shall remain un-disturbed, as far as possible. In the event existing utilities are broken into or damaged, they shall be repaired so as to make their operation equivalent to what existed before the trenching was started.

6. Where excavation requires the opening of existing walks, drives, or other existing pavement, the cut shall be made as required, to install the proposed utility. The size of the cut shall be held to a minimum, consistent with the work to be installed. After installation of new work is completed and the excavation has been backfilled in accordance with above, repair existing walks, drives, or other existing pavement to match existing installation.

C. Cutting and Patching

1. Cutting and patching required under this section shall be done in a neat workmanlike manner. Cutting lines shall be uniform and smooth.

2. Use concrete saws for large cuts in concrete and use core drills for small round cuts in concrete.

3. Where openings are cut through masonry walls, provide lintel or other structural supports to protect the remaining masonry. Adequate support shall be provided during the cutting operation to prevent damage to the masonry.

4. Where large openings are cut through metal surfaces, attach metal angles around the opening.

5. Patch concrete openings that are to be filled with nonmetallic, non-shrinking grout. Finished concrete patching shall be troweled smooth and shall be uniform with surrounding surfaces.

6. No cutting of structural elements shall be done without permission of the Engineer.

D. Flashing

1. Provide waterproof flashing for each penetration of exterior walls and roofs.

2. Flashing for conduit penetrations through built-up roofs shall be made with pitch panel filled full with pitch.

E. Construction Requirements

1. Except where specifically detailed or shown, the locations and elevations of equipment are approximate and are subject to small revisions as may prove necessary, or desirable, at the time the work is installed. Final locations shall be confirmed with the Engineer in advance of construction. Confirmed locations shall be made for the following:

- a. Poles
- b. Receptacles
- c. Rough-ins and connections for equipment furnished under other sections
- d. Lighting Fixtures
- e. Outlets
- f. Lighting Controllers, Panel boards, etc.

2. Where equipment is being furnished under another section, request from the Engineer an accepted drawing that will show exact dimensions of required locations of connections. Install the required facilities to the exact requirements of the approved drawings.

3. All work shall be done in the best and most workmanlike manner by qualified, careful electricians who are skilled in their trade. The standards of work required throughout shall be of the first class only and electricians whose work is unsatisfactory to the Engineer shall be instantly dismissed from the work upon written notice from the Engineer. All work must meet the approval of the Engineer.

4. Unless shown in detail, the drawings are diagrammatic and do not give exact details as to elevations and routing of conduits, nor do they show all offsets and fittings; nevertheless, install the conduit system to conform to the structural and mechanical conditions of the construction. Unless locations and routing of exposed conduits are shown, confirm locations and routing prior to installation with the Engineer.

5. Holes for raceway penetration into sheet metal cabinets and boxes shall be accurately made with a hole punch. Cutting openings with a torch or other device that produces a jagged, rough cut will not be acceptable.
6. Raceway entry into equipment shall be carefully planned. Cutting of enclosure framework to accommodate poorly planned raceway placement will not be acceptable.
7. Cabling inside equipment shall be carefully routed, trained, and laced. Cables so placed that they obstruct equipment devices shall not be acceptable.
8. Equipment shall be set level and plumb. Supporting devices installed shall be set and so braced that equipment is held in a rigid, tight fitting manner.

F. Equipment Protection

1. Provide suitable protection for all equipment, work, and property against damage during construction.
2. Assume full responsibility for material and equipment stored at the site and incorporated within the project.
3. Conduit openings shall be closed with caps or plugs during installation. All outlet boxes and cabinets shall be kept free of concrete, plaster, dirt, and debris.
4. Equipment shall be covered and tightly sealed against entrance of dust, dirt, and moisture.
5. All dry transformers prior to energizing shall be protected against moisture and dirt absorption by a suitable covering. Also, maintain heat inside the covering by means of 200 watt minimum lamps.
6. Interiors of switchgear and motor control centers shall be kept clean and dry prior to energizing. Maintain heat inside each unit with one 200 watt lamp located at bottom of each vertical section. Energizing integral condensation heaters shall be acceptable in place of lamps.

G. Cooperation with Work under Other Sections

1. Cooperate with all other trades so as to facilitate the general progress of the work. Allow other trades every reasonable opportunity for the installation of their work and the storage of their materials.
2. The work under this section shall follow the general building construction closely. Set all pipe sleeves, inserts, etc., and see that openings for cases, pipes, etc., are provided before concrete is placed or masonry installed.
3. Work with other trades in determining exact locations of outlets, conduits, fixtures, and pieces of equipment to avoid interference with lines as required to maintain proper installation of other work.

4. Make such progress in work that will not delay the work of other trades. Schedule the work so that completion dates as established by the Engineer are met. Furnish sufficient labor or work overtime to accomplish these requirements if directed to do so.

H. Installation and Connection of Work under another Section

1. Except as otherwise indicated, details of control wiring required for plant instrumentation are not shown; however, ascertain the requirements and install all wiring as required under those sections.

2. Verify the electrical capacities of all motors and electrical equipment furnished under other sections, or furnished by the Owner, and request wiring information from the Engineer if wiring requirements are different from that specified under this section. Do not make rough-ins until equipment verification has been received.

3. Install all motors, controllers, terminal boxes, pilot devices, and miscellaneous items of electrical equipment that are not integrally mounted with the equipment furnished under other sections. All such equipment shall be securely mounted and adequately supported in a neat workmanlike manner.

I. Cleanup and Test

1. Remove all temporary labels, dirt, paint, grease, and stains from all exposed equipment. Upon completion of work, clean equipment and the entire installation so as to present a first-class job suitable for occupancy. No loose parts or scraps of equipment shall be left on the premises.

2. Equipment paint scars shall be repaired with paint kits supplied by the equipment manufacturer, or with an approved paint.

3. Clean interiors of each item of electrical equipment. At completion of work, all equipped interiors shall be free from dust, dirt, and debris.

4. Test insulation value of each service entrance cable, each feeder cable, and each branch circuit wire. Test shall be made by means of crank-type ohmmeter that impresses 1500 volts DC across the insulation. Each ungrounded conductor shall have its insulation integrity tested after installation within its raceways from termination-to-termination. However, testing shall be made prior to connection to line and load. All such testing shall be done in the presence of the Owner's Representative and the test results shall be submitted for review. Insulation value of each installed cable and wire shall be equivalent to, or greater than 500,000 ohms. Should the test indicate an insulation value of less than 500,000 ohms, the conductor in question shall be replaced and re-tested. This procedure shall be repeated until the conductor is in compliance.

PART 2 – PRODUCTS

2.01 RACEWAYS

A. Rigid ferrous metallic conduit shall be hot-dipped galvanized steel, inside and out. Conduit couplings shall be threaded steel with hot-dipped galvanized finish. Such conduit shall be Republic, Triangle, Wheatland, or equivalent.

- B. Rigid non-metallic conduit shall be Schedule 40 PVC plastic. Couplings shall be PVC solvent-weld type. Such conduit shall be Carlon, or equivalent.
- C. Plastic jacketed rigid metallic conduit shall meet the specifications for conduit above and shall have a 40 mil minimum thickness PVC coating on exterior metallic surfaces. Couplings shall be sleeved. Such conduit shall be Calbond, or equivalent. Conduit and fitting such as OCAL "Blue", Robroy Plastibond, and Perma-cote "Supreme" shall be acceptable.
- D. Flexible liquid tight ferrous metallic conduit shall have extruded thermoplastic cover with interlocked galvanized steel core. The conduit shall be U. L. listed. Such conduit shall be Anaconda, Republic, Electri-flex, or equivalent.
- E. Flexible liquid tight non-metallic conduit shall consist of a PVC spiral encased in a flexible PVC jacket. Such conduit installations shall include non-metallic liquid tight fittings. The conduit shall be Carlon Carflex or equivalent.
- F. Rigid metallic conduit locknuts shall be galvanized steel in sizes under 2" and galvanized malleable iron on sizes 2 1/2" and larger. Sealing locknuts shall have in addition to that specified above, an integrally fused thermoplastic gasket so that the locknut is rated NEMA-4.
- G. Rigid metallic conduit insulating bushings shall be molded canvas bakelite type suitable for operation in 100 degrees C rise over 40 degrees C ambient. Polypropylene bushings shall not be acceptable.
- H. Grounding type bushings shall have threaded steel body, insulated throat, and ground lug. Insulated throat shall meet specifications under Article G above.
- I. Rigid metallic conduit expansion/deflection fittings shall be water-tight with flexible plastic sleeve that allows 3/4" movements in all directions. Hubs shall be threaded, hot dipped galvanized (HDG) malleable iron. Clamping bands shall be stainless steel. There shall be an equipment ground bonding jumper. Expansion deflection fittings shall be Crouse Hinds, OZ, or equivalent.
- J. Rigid metallic conduit hubs shall be liquid-tight type with threaded HDG malleable iron female body, with sealing ring on conduit side and threaded male tapered steel body with hardened steel locknut on box side. Plastic jacketed hubs shall have 40 mils PVC coating. Such fittings shall be T&B, Crouse Hinds, or equivalent.
- K. Chase nipples, reducers, enlargers, "Ericksons", capped els, short els, long els, split couplings and fittings shall be HDG malleable iron threaded type for use with rigid metallic conduit.
- L. Rigid metallic conduit bodies shall be HDG malleable iron type with threaded hubs, gasketed cast metal covers with stainless steel screws. All such conduit bodies shall be Crouse-Hinds, or equivalent.
- M. Liquid-tight flexible conduit fittings, 2" and larger, shall consist of HDG steel body with captive grounding ferrule and sealing ring, and compression nut. Connector body shall have nylon insulated throat. Pull-out resistance of each completed connector shall be at least 1 1/2 times U. L. minimum. Such fittings shall be T&B, Crouse-Hinds, Appleton, or equivalent. Liquid-tight flexible conduit fittings, smaller than 2", shall be non-metallic.

N. Rigid metallic conduit boxes shall be HDG cast iron, with threaded integrally-cast hubs, cast metal cover, and 316 stainless steel cover screws. Such boxes shall be Crouse-Hinds, Appleton, or equivalent. Plastic jacketed type shall have 40 mils minimum coating of PVC.

O. Cadmium and electro-galvanized plated devices and hardware shall not be acceptable.

2.02 WIRE & WIRING DEVICES

A. WIRE

1. All conductors for power and control wiring shall be stranded, soft drawn copper.
2. Insulation for Power and Control Circuitry shall be 75°C rated THHN/THWN-2 for all installations in conduits, except as specifically noted otherwise.
3. Factory pigmented insulation color for sizes #6 and smaller for power wiring shall be as follows:

- a. 150V-to ground, or less:

<u>Phase</u>	<u>Color</u>
A	Red
B	Black
C	Blue
Grounding Conductor	Green
Grounded Conductor	White

- b. Greater than 150V-to-Ground:

<u>Phase</u>	<u>Color</u>
A	Brown
B	Purple *
C	Yellow
Grounding Conductor	Green
Grounded Conductor	Gray

* Note The color orange is reserved by the NEC for the "high" leg of a 120/240V, 3-phase, 4-wire voltage classification.

4. Bare conductors for grounding purposes shall be hard-drawn stranded copper.

B. Connectors

1. Mechanical connectors shall be bolted pressure type with tin-plated bronze body and tin-plated silicon-bronze hardware.
2. Insulated spring wire connectors shall be plated spring steel with thermoplastic jacket. Connectors shall be rated at 105° C continuous. Such connectors shall be Ideal, T&B, or equivalent.

3. Insulated set-screw connectors shall consist of copper body with flame-retardant, 600 volt Class insulated shell. Such connectors shall be Ideal, T&B, or equivalent.
4. Terminal connectors for flat-head terminal screws shall be locking spade type with vinyl insulated, compression indent shaft, T&B, Ideal, Amp, or equivalent.
5. Terminal strips shall be channel-mounted type with tin-plated solderless box lugs contained with barriered nylon-insulated separable barriers. Such devices shall be Square D, Cutler-Hammer, Allen Bradley, or equivalent.

C. Insulating Products

1. General purpose electrical tape shall be 7 mil thick stretchable vinyl plastic, pressure-adhesive type, 3M "Scotch #33, or equivalent.
2. Insulation putty shall be rubber-based, non-vulcanizing, elastic-type putty in tape form; 3M "Scotchfill", or equivalent.
3. High Temperature, insulating void filling, moisture-proof tape shall be stretchable ethylene propylene rubber with high-tack, self-fusing surfaces. Tape shall be rated for 90 degree Centigrade continuous, 130 degree Centigrade overload. Such tape shall be 3M Scotch 23", or equivalent.

D. Labels, Nameplates, and Signs

1. Marking labels for wire numbering shall be type-on heat shrink plastic. Such labels shall be Raychem "Shrinkmark", or equivalent.
2. Write-on labels for conduit identification shall be weather resistant polyester with flat surface for marking pen application of usage.
3. Colored bonding tape shall be 5 mil stretchable vinyl, self-adhesive, and with permanent solid colors corresponding to here in before specified wire colors, 3M "Scotch 35", or equivalent.
4. Three layer laminated nameplates shall be 3/32" inch thick, lengths as required to accommodate lettering, and in 3/4" and 1 1/4" widths. Each plate shall have adhesive backing with pull-apart resistance of at least 100 PSI. Plates shall be laminated type with black background and white letters.
5. Signs shall be similar to nameplates in 4. above with the size, type, and wording as indicated on the contract drawings.

E. Supporting Devices

1. Solid channel supports and framing members shall be cold rolled steel. Finish for all locations shall be hot dipped galvanized after fabrication. Size of solid channels unless otherwise indicated, shall be 1-5/8"W x 1-5/8"D in cross-section. Furnish Unistrut P-1000, or equivalent.

2. Beam clamps, side-beam connectors, and one-hole clamps shall be hot dipped galvanized malleable iron, and shall be Steel City, T&B, or equivalent. Plastic coated types shall have 40 mils, minimum PVC covering.
3. Pressed steel, two-piece single bolt, solid channel conduit straps shall be stainless steel and shall be of the same manufacturer as the solid channel. Plastic coated types shall have 40 mils, minimum PVC covering and hardware shall be 316 stainless steel.
4. Solid channel hardware (nuts, bolts, washers, etc.) shall be 316 stainless steel.
5. Concrete and masonry anchors shall be 316 stainless steel type, Hilti or engineer accepted equivalent.

F. Wiring Devices

1. All wiring devices shall be specification grade, ArrowHart, or equivalent.
2. Two-pole, 3-wire grounding 20A/125V, NEMA 5-20R duplex receptacle shall be ArrowHart #5362, or equivalent.
3. GFCI devices shall be duplex 5-20R, 20 A, 125 VAC, 3-wire outlet with reset and test pushbuttons, ArrowHart, or equivalent. Dry location enclosure shall consist of nylon cover plate. Wet location enclosures shall consist of stainless steel or vinyl cover plate on an FD box. The cover shall be rated weatherproof (WP) or weatherproof-in-use (WPIU), as noted on the contract drawings.
4. Single-pole, single-throw, 20A toggle switch shall be ArrowHart #1991, or equivalent.
5. Single-pole, double throw (three way) 20A Toggle switch shall be ArrowHart #1993, or equivalent.
6. Double-pole, double throw 20A toggle switch shall be ArrowHart #1994, or equivalent.
7. Manual motor controller shall be Allen Bradley Bulletin 600, Square D Class 2510, or equivalent. Select overloads to be 1.15 times motor FLA.

2.03 DISTRIBUTION EQUIPMENT

A. Safety Switches

1. Safety switches shall be size and type as indicated. Each disconnect means shall be heavy-duty, quick-make, quick-break mechanisms.
2. Unless otherwise indicated, safety switches shall be in a NEMA-3R enclosure.

B. Fuses

1. Fuses shall be furnished for each fused over-current device and, in addition, furnish three spare fuses for each rating required shall be furnished.
2. Fuses above 600 ampere shall be constructed using silver links with a fusing alloy

soldered to the link for low temperature overload protection. The design shall provide time-delay of not less than 45 seconds at 300% of ampere rating. The interrupting rating shall be at least 200,000 amperes RMS symmetrical.

3. Fuses rated 600 amperes or less shall be dual element Class R, time-delay type. Such fuses shall incorporate separate thermal overload and short circuit elements. The design shall provide time delay of not less than ten seconds at 500% of ampere rating. The interrupting rating shall be 200,000 amperes RMS symmetrical.

4. Fuses shall be Bussman, Chase-Shewmut, or equivalent.

C. Panel boards

1. Panel boards shall be dead-front type and shall be manufactured in accordance with Underwriters' Laboratories, Inc., standard for Panel boards (UL67). Residential load centers shall not be acceptable in lieu of panel boards.

2. The panel boards shall include automatic short circuit and over-current protective devices of the molded case circuit breaker type. All multi-pole breakers shall be so designed that an overload on one pole automatically causes all poles of the circuit breaker to open. The circuit breakers shall be quick-make and quick-break on manual as well as automatic operation and shall have inverse time trips. Circuit breakers shall have the short circuit interrupting ratings indicated on the drawings.

3. Interiors shall be assembled on reinforced mounting pans or rails which provide protection against damage during handling or installation. Circuit breakers shall be assembled in accordance with the panel schedules included on the drawings. Design shall permit replacement of individual breakers without disturbing adjacent units or without disturbing main bus or branch circuit connectors. Interior design shall permit changing of branch circuits or the addition of circuit breakers to future spaces without additional machining, drilling, or tapping. Main bus bars and branch circuit connectors shall be made of copper.

In-and-out adjustments of the panel interior shall be provided.

4. Panel bussing shall be arranged to maintain sequence phasing throughout, that is, adjacent poles shall be of unlike polarity and rotated in sequence. Circuit members shall be provided for each pole space or breaker space as shown on the panel schedule.

5. Cabinets shall be manufactured in accordance with Underwriters' Laboratories, Inc., standard for Cabinets and Boxes (UL 50) and shall provide a minimum of four inches wiring gutter on all sides. Cabinet fronts shall include doors with semi-concealed hinges, combination lock-and-catch on doors, and a directory frame with circuit directory behind clear plastic, mounted on back of door. The front shall be attached to the box with suitable provision to provide proper alignment of trims.

2.04 MISCELLANEOUS

A. Grounding Devices

1. Ground rods shall be copper clad steel in lengths and diameters as indicated.

2. Ground rod connectors shall be copper alloy with silicon bronze bolts and in sizes to fit ground rod diameters. Furnish OZ, Burndy, or equivalent.
3. Pipe ground connectors shall be copper alloy with silicon bronze bolts and in sizes to fit pipe diameter. Furnish OZ, Burndy, or equivalent.
4. Thermal welding devices shall consist of correct size molds to fit application and correct amount of weld metal. Furnish Enrico "Cadweld", Burndy "Thermoweld", or equivalent.

2.05 LIGHTING FIXTURES

A. General:

1. Lighting fixtures shall be furnished as specified the LIGHTING FIXTURE SCHEDULE and as additionally described or detailed on the contract drawings and as specified under this section.
2. Fixture lamps shall be furnished as indicated per the LIGHTING FIXTURE SCHEDULE as detailed on the contract drawings.
3. Each fixture shall be complete with it appropriate hardware, finish trims, and appurtenances as required for a finished installation.
4. Fluorescent ballasts shall be Premium Class P, type "LH" (low heat rise) with two year warranty on parts and labor. Warranty shall cover either defective or noisy ballasts. Each ballast shall be CBM certified.
5. All high intensity discharge (HID) ballasts shall be constant wattage, auto-stabilized, high power factor type. Each HID ballast shall have two year warranty on parts and labor.
6. Fixtures shall be free from light leaks, exposed screws, pointed projections, sharp edges, scarred, marred, and scratched finishes.
7. All HID lamp sockets shall be mogul base, porcelain screw shell. All fluorescent sockets shall be spaced properly to allow for correct length fit and contacts shall be silver plated, edge-wiped type.
8. All fixture lenses shall be free from bubbles, cracks, warps, chips, and scratches.
9. All fixtures specified for damp or wet locations or specified for out-of-doors shall be suitable for the environment and each such fixture shall bear UL "DL" label. Such fixtures shall not rust, dis-color, or show signs of deterioration after one year's service. Each fixture shall include a gasket to prevent the entrance of moisture and shall be sealed to prevent the entrance of insects. Electrical fitments shall be so protected that continuous exposure to sunlight and moisture shall not cause failure.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Basic Materials and Methods

1. Install the conduit system to provide the facility with the utmost degree of reliability and maintenance free operation. Kinked conduit, conduit inadequately supported or carelessly installed shall not be accepted.
2. Raceways shall be installed for all wiring runs except as otherwise indicated.
3. Conduit sizes, where not indicated, shall be code-sized to accommodate the number and diameter of wires to be pulled into the conduit. Use NEC tables for sizing.
4. Exposed runs of conduit shall be installed parallel to the lines of the structure.
5. All above grade conduit and fittings (except as specifically noted otherwise) shall consist of heavy wall hot dipped galvanized rigid steel conduit and fittings. All underground raceway shall consist of direct buried schedule 40 PVC conduit and fittings, except at the transition from underground horizontal runs to above grade vertical runs. See "Typical Conduit Detail" on the contract drawings and paragraph #9 below.
6. PVC runs shall be joined with manufacturer's approved cement.
7. Finished installation of conduit runs from each terminus to each terminus shall be watertight.
8. Generally, raceways shall be installed exposed in the buildings and structures, except as otherwise specified. Horizontal runs shall be supported on 24" centers and vertical runs on 48" centers.
9. Yard runs of conduit shall be direct buried schedule 40 PVC plastic (except as specifically noted otherwise on the contract drawings). The transition from underground horizontal to above grade shall consist of schedule 40 mil PVC coated rigid steel conduit and fittings to 6" above grade, at all up-turns to structures and equipment. The up-turn shall be made with a 40 mil PVC coated rigid steel 90 degree elbow and conduit, except specifically noted otherwise on the contract drawings. Depth of lateral runs shall be 24" minimum and 36" maximum, unless otherwise indicated. Coordinate installation with site work finished grades. See "Typical Conduit Detail" on the contract drawings.
10. Conduit bodies such as "LB, "T", and condulets, or equivalent shall be installed in exposed runs of conduit wherever required to overcome obstructions, and to provide pulling access to wiring. Covers for such fittings shall be accessible and unobstructed by the adjacent construction. The use of wireways and junction boxes shall be held to a minimum. The use of wireways and junction boxes shall be coordinated with the engineer before installation.
11. Conduit shall enter all wireways, boxes, motor control centers, panel boards and other enclosures straight and true. Conduits installed cocked and not parallel to the lines of the enclosure shall not be acceptable.
12. Plastic jacketed flexible metallic (2" and larger) or non-metallic conduit (below 2") shall be used for connections to motors, electric valve operators, HVAC equipment, motorized louvers, lay-in lighting fixtures, and other devices that may need to be removed

for servicing.

13. Flexible conduit runs shall consist of liquid tight conduit only. Flexible conduit runs shall be joined with specified connectors and the connectors shall be made up tightly onto the lengths of flex and onto its connected devices. All plastic jacketed flexible conduit connections shall be watertight.
14. Cap each end of conduits as soon as placed to prevent mud, dirt, debris, and water from entering raceways. Each run shall be swabbed clean prior to wire pulling.
15. All junction and pull boxes shall be equipped with blank covers.
16. All boxes shall be installed with their axes parallel to the lines of the building structure.
17. All conductors shall be the size as indicated and where no size is given, the conductor size shall be #12 AWG, unless otherwise specified.
18. Generally, control wiring shall be #14 AWG.
19. All wiring shall be installed in raceways unless otherwise indicated.
20. All power and control wiring shall be made with insulated, stranded copper wire.
21. No wire or cable shall be drawn into a conduit, until all work of a nature which may cause injury to the wire, is completed. A cable pulling compound shall be used as a lubricant and its composition shall not affect the conductor or its insulation.
22. Do not exceed cable manufacturer's recommended pulling tensions.
23. Service and feeder wiring runs shall be made from terminus to terminus without splice except for yard runs which may be spliced in junction boxes or manholes.
24. Branch circuits shall run from supply to load without splice except where taps and splices are required for receptacle, light fixture, and small appliance loads.
25. Taps, splices, and connections in #8 AWG and larger shall be made with tinned copper alloy bolted pressure connectors. Make up connection tightly to produce as low a resistance as if the conductor were continuous. Such connectors shall be insulated with a smooth cover of void-filling insulation putty and then covered with at least four (4) half lapped layers of electrical tape. Insulated connector shall have at least 1-1/2 KV insulation value.
26. Connections in the power terminal box of a motor shall be made with 2-hole compression connectors installed on the motor leads and the incoming motor feeder. The connectors shall be bolted together using stainless steel hardware (bolts, flat washers, lock washers, and nuts). The bolts shall be tightened using a torque wrench.
27. Except as otherwise specified; taps, splices, and connections with #10 AWG and smaller shall be made with insulated spring wire connectors. Such connectors in damp or wet locations shall be further insulated with an envelope of half-lapped EPR over the wire

nut and down 1/2" over the incoming wires; prior to applying the envelope, use a stretched piece around each wire to fill the interstices between the wires; finished splices shall be waterproof.

28. Specified sizes of wire shall be installed with factory-pigmented colors. Phase label black pigmented wires with colored banding tape as specified. Install labels at each terminus.

29. Numbered marking labels shall be installed to identify circuit numbers from panel boards and to identify control wires. Install labels on each wire in each panelboard, junction and pullbox, and device and control connection.

30. Label each wiring run with write-on waterproof labels inside each motor controller panelboard, pullbox, and handhole. Wrap label ties around wire group at conduit entrance and write on label the wire size, conduit size, and service.

31. Control wiring that terminates onto flat head type terminals shall be equipped with crimp-type spade lugs. Label each wire with number to correspond with terminal strip number.

32. All wiring inside enclosures shall be neatly trained and laced with tie-wraps.

33. All raceway systems, outlets, boxes, wireways, cabinets, enclosures, lighting fixtures, transformers, and related equipment shall be adequately and safely supported with at least 3-1 safety factor.

34. Slotted channels shall be used to support equipment that is mounted free of structure. Use factor fabricated back-to-back hot-dipped galvanized members with dimension of 1-5/8" X 3-1/4" deep that have hot-dipped galvanized factory fabricated welded feet.

35. Runs of exposed conduits shall be installed as follows:

a. Single surface runs shall be attached to the structure by means of conduit clamps, except as otherwise specified. Single runs along structural members shall be supported by means of side beam clamps, or similar supporting devices.

b. Multiple surface runs shall be attached to the structure by means of slotted channels. Each conduit shall be attached to the slotted channel by means of two-piece conduit clamps.

36. Slotted channels that are field cut shall have raw edges painted with cold galvanized coating spray paint.

37. All conduits (and raceways) shall include an NEC-250 sized insulated equipment ground conductor.

B. Equipment

1. Panel boards and electrical enclosures shall be installed as follows:

a. Follow manufacturer's installation instructions. Install enclosures plumb and level. Bolt enclosures to concrete with 1/4" (minimum) diameter stainless steel bolts in Hilti type concrete anchors where applicable.

b. Conduit entries into enclosures shall be carefully arranged and equipped with insulating bushing. The use of reducing washers shall not be allowed. Conduits installed in concentric knockouts shall include insulated grounding bushings and shall be bonded to ground.

c. All cables inside enclosures shall be neatly arranged and bundled and bound with plastic tie-wraps.

d. Tighten all wire and bus-bar connectors to factory recommended torque settings using a torque wrench. Coat all wiring terminations with an ample amount of anti-corrosion compound, T & B Kopr-shield or equivalent.

3.02 DRAWINGS AND SUBMITTALS

A. Submit shop drawings for the following:

1. Wire & Cables
2. Conduit-all types
3. Safety Switches
4. Pilot Devices
5. Enclosures
6. Terminal Blocks
7. Panel boards
8. Lighting Contactors
9. Lighting Fixtures

B. Submit catalog literature of each item of material specified.

END OF SECTION

SECTION MP
MEASUREMENT AND PAYMENT

TECHNICAL SPECIFICATIONS

SECTION MP - MEASUREMENT AND PAYMENT

- MP.1. GENERAL: This section of the specifications covers the components to be a portion of each pay item as may or may not be listed in the Unit Price Schedule and is furnished to aid the Contractor in preparing his bid. Of necessity, the items described as components of the various items are discussed in a general manner only, describing the major pieces of equipment and/or materials. Failure to list all items and/or appurtenances does not relieve the Contractor from furnishing all apparatus, devices, labor, or materials of whatever nature required for a complete and operating installation in accordance with the intent of the Drawings, approved Shop Drawings, and these Specifications.
- MP.2. BID ITEM DESCRIPTION: Tabulated in the paragraphs below are descriptions of the various bid items listed in the proposal.

GENERAL ITEMS

1. MOBILIZATION, BONDS AND INSURANCE: Item shall consist of furnishing all tools, equipment, materials, and labor necessary to provide performance bonds, payment bonds, temporary water service deposits and fees, subcontractor permits, development permits, certificates of insurance, maintenance bond, and related work, and mobilization, storage, and demobilization of equipment, materials, and related items. Measurement and payment shall be lump sum as shown in the Proposal.
2. TRAFFIC CONTROL AND BARRICADES: Item shall consist of furnishing all tools, equipment, materials, and labor necessary to install and maintain traffic control and barricades in accordance with the latest revision of the Texas Manual of Uniform Traffic Control Devices. The Contractor will be responsible for preparation of the traffic control plan. Measurement and payment for this item shall be on a lump sum basis.
3. STORM WATER POLLUTION PREVENTION AND EROSION CONTROL PER TCEQ REQUIREMENTS: Item shall consist of all fees, tools, equipment, materials, and labor necessary to furnish, install, maintain, and remove all filter fabric fencing, hay bale dikes, and erosion control matting necessary to perform SWPP, to establish final stabilizing vegetation for erosion control, the development of a Storm Water Pollution Prevention Plan (SWP3) if required, submitting and posting required notices, paying all required fees, and performing maintenance and inspection per TCEQ requirements. Measurement and payment for this item shall be on a lump sum basis.

DEMOLITION

1. REMOVE TREES: Item shall consist of furnishing all tools, equipment, materials, labor and supervision necessary to remove and dispose of trees including roots and concrete planter boxes as shown on the plans and per the specifications. Measurement and payment for this item shall be on a per each basis.
2. REMOVE AND DISPOSE OF EXISTING CONCRETE, ASPHALT, CURB, GUTTER, CONCRETE FLUME AND PLATE COVER, STEPS, RETAINING WALLS, TRAFFIC POLES AND FOUNDATIONS, PEDESTRIAN LIGHT POLES, AND RELATED ITEMS: Item shall consist of removing and disposing of any and all structures and other items in the line of work including loading, hauling, disposal costs, and all related work necessary to perform the work as specified in the Contract Documents. Measurement and payment for this item shall be on a per each, square yard, square foot, or linear foot basis as shown in the bid proposal.

3. REMOVE AND SALVAGE OF EXISTING LIGHT POLES AND RELATED ITEMS: Item shall consist of removing and disposing of any and all structures and other items in the line of work including loading, hauling, disposal costs, and all related work necessary to perform the work as specified in the Contract Documents. Measurement and payment for this item shall be on a lump sum basis.

NEW CONSTRUCTION

1. EARTHWORK: Item shall consist of furnishing all tools, equipment, materials, labor and supervision necessary to prepare the subgrade section. Item shall include any and all transporting, hauling, disposal, excavation and fills, and other work necessary to remove and replace unsuitable materials in the subgrade. Item shall include all excavation, filling, dewatering, trench safety systems, shoring, sheeting, compaction, dressing, grading, protection of subgrade, and related earthwork required. Measurement and payment shall be lump sum as shown in the Proposal.
2. FURNISH AND INSTALL ADA CONCRETE SIDEWALK: Item shall consist of furnishing all materials, tools, equipment, and labor necessary to furnish and install an ADA and TAS compliant concrete sidewalk in compliance with the Construction Plans and Technical Specifications. Item shall include any and all materials, concrete, transporting, hauling, disposal, finishing, tooling, formwork, bracing, rubbing, and other work necessary. Measurement and payment shall be per square foot as shown in the Proposal.
3. CONSTRUCT CONCRETE INLET: Item shall consist of furnishing all materials, tools, equipment, and labor necessary to construct concrete drainage inlets as shown and detailed. Item shall include any and all materials, concrete, transporting, hauling, disposal, finishing, tooling, formwork, bracing, rubbing, manway, anchor bolts, and other work necessary. Measurement and payment shall be per each as shown in the Proposal.
4. FURNISH AND INSTALL ADA CONCRETE SIDEWALK WITH BRICK INLAY: Item shall consist of furnishing all materials, tools, equipment, and labor necessary to furnish and install an ADA and TAS compliant concrete sidewalk with brick inlay in compliance with the Construction Plans and Technical Specifications. Item shall include any and all materials, concrete, transporting, hauling, disposal, finishing, tooling, formwork, bracing, rubbing, and other work necessary. Measurement and payment shall be per square foot as shown in the Proposal.
5. FURNISH AND INSTALL ADA CONCRETE RAMP: Item shall consist of furnishing all materials, tools, equipment, and labor necessary to furnish and install a ADA and TAS compliant concrete sidewalk in compliance with the Construction Plans and Technical Specifications. Item shall include any and all materials, concrete, ped domes, transporting, hauling, disposal, finishing, tooling, formwork, bracing, rubbing, and other work necessary. Measurement and payment shall be per each type as shown in the Proposal.
6. FURNISH AND INSTALL STRIPING: Item shall consist of furnishing all materials, tools, equipment, and labor necessary to furnish and install striping in compliance with the Construction Plans and Technical Specifications. Item shall include any and all materials, cleaning, surface preparation, paint, disposal, finishing and other work necessary. Measurement and payment shall be per linear foot as shown in the Proposal.
7. CONSTRUCT 24" CONCRETE CURB AND GUTTER: Item shall consist of furnishing all materials, tools, equipment, labor and supervision necessary to furnish and install a concrete curb and gutter in compliance with the Construction Plans and Technical Specifications. Item shall include any and all transporting, hauling, disposal, finishing, tooling, formwork, bracing, rubbing, and other work necessary. Measurement and payment shall be per linear foot as shown in the Proposal. Measurement shall not include portions of curb in 10' gutter transitions at storm drain inlets or curbs within the limits of commercial or residential driveways.

8. CONSTRUCT ASPHALT PAVEMENT REPAIR: Item shall consist of furnishing all tools, equipment, materials, labor and supervision necessary to construct an asphalt pavement transition between the existing pavement and the proposed pavement. Item shall include all necessary subgrade preparation, compaction, proofrolling, prime coat, asphalt base, tack coat, asphalt wearing course, and related appurtenances per the Construction Plans. Measurement and payment shall be by the square yard as shown in the Proposal.
9. CONSTRUCT RAMPS: Item shall consist of furnishing all tools, equipment, materials, labor and supervision necessary to construct ramps and landings including, but not limited to, excavation, subgrade preparation, concrete, asphalt, formwork, finishing, curing, texturing, detectable warnings, handrails, and related appurtenances per the Construction Plans. Measurement and payment shall be per each as shown in the Proposal for the ramp type specified. Contractor shall provide documentation of actual cost for this item to receive partial payments. Curbs associated with this item shall be considered subsidiary and shall not be measured for separate payment.
10. FURNISH AND INSTALL CONCRETE ADA RAMP: Item shall consist of furnishing all tools, equipment, materials, labor and supervision necessary to construct concrete ADA ramp including, but not limited to, excavation, subgrade preparation, concrete, formwork, finishing, curing, texturing, detectable warnings and related appurtenances per the Construction Plans. Measurement and payment shall be per each as shown in the Proposal.
11. FURNISH AND INSTALL BENCHES, TRASH CANS, PLANTERS: Item shall consist of furnishing all tools, equipment, materials, labor and supervision necessary to furnish and install benches, trash cans, and planters where shown or as directed by the City of Marshall. Measurement and payment shall be per each as shown in the Proposal.
12. FURNISH AND INSTALL ORNAMENTAL STREETLIGHTS: Item shall consist of furnishing all tools, equipment, materials, labor and supervision necessary to furnish and install ornamental streetlights including upper and lower GFI outlets, electrical connections, grounding, banner arms, basket hanger, and other appurtenances as shown in the plans and specifications. Measurement and payment shall be per each as shown in the Proposal.
13. FURNISH AND INSTALL SIGNS AS PER PLANS: Item shall consist of furnishing all tools, equipment, materials, labor and supervision necessary to provide signs including, but not limited to, signage, markings, posts, hardware, supports, concrete, excavation, and related work. Measurement and payment shall be per each as shown in the Proposal.
14. FURNISH AND INSTALL 8" WHITE CROSSWALK STRIPE (TYPE II MARKING): Item shall consist of furnishing all tools, equipment, materials, labor and supervision necessary to provide pavement markings. Measurement and payment shall be per lineal foot for each type and color as shown in the Proposal.
15. INSTALL 1" WATER SERVICE WITH METER AND QUICK COUPLER VALVE: City of Marshall will furnish new water meter and box to be installed by Contractor. Contractor shall furnish all tools, equipment, materials, labor and supervision necessary to install a 1" water service tubing including, but not limited to, excavation, dewatering, trench safety systems, shoring, sheeting, select material backfill, corporation stop, fittings, bends, shut-off valves, quick coupler valve, and related work. Measurement and payment shall be per each as shown in the Proposal.
16. MANHOLE ADJUSTMENT TO GRADE: Item shall consist of furnishing all tools, equipment, materials, supervision and labor necessary to make manhole adjustment to grade for the size and type shown on the plans and listed in the Bid Proposal. Measurement and payment will be at the unit price per each.

17. ADJUST WATER METER BOX TO GRADE: Item shall consist of furnishing all tools, equipment, materials, and labor necessary to make existing water meter box adjustments to grade as shown on the plans. Measurement and payment shall be per each adjustment as shown in the Bid Proposal.
18. ADJUST GAS METER BOX TO GRADE: Item shall consist of furnishing all tools, equipment, materials, and labor necessary to make existing gas meter box adjustments to grade. Measurement and payment shall be per each adjustment as shown in the Bid Proposal.
19. ELECTRICAL SYSTEM MODIFICATIONS: Item shall consist of all fees, tools, equipment, materials, and labor necessary to furnish and install new electrical service to the new streetlights including identifying existing circuits, relocating existing service and panels, ground rods, bores, wiring, and junction boxes per NEC and City of Marshall Codes. Measurement and payment for this item shall be on a lump sum basis.