

CITY OF GALVESTON

**CONTRACT DOCUMENTS, TECHNICAL
SPECIFICATIONS AND DETAILS FOR**

**GALVESTON CIP
ROADWAY RECONSTRUCTION PROJECT**

19TH STREET – AVENUE J TO HARBORSIDE DR.



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Texas Firm Registration
F-1386



2014

TABLE OF CONTENTS

TABLE OF CONTENTS		
<u>Document</u>	<u>Title</u>	<u>No. of Pages</u>
DIVISION	REQUIREMENTS	
	Table of Contents.....	2
	Invitation to Bid and Instruction to Bidders.....	13
	Attachment A- Property Taxes Statement.....	1
	Attachment B- Nepotism Statement.....	1
	Attachment C- Non- Collusion Statement.....	1
	Bidder’s Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion (CFR Part 29).....	1
	Bid Proposal.....	9
	Bid Bond.....	2
	Payment Bond.....	2
	Performance Bond.....	2
	Certificate of Insurance.....	1
	Standard Form of Agreement for Owner-Contractor Projects.....	1
	General Conditions of the Agreement.....	33
	Special Conditions of the Agreement.....	6
	Contract Documents - Wage Scale Provisions.....	8
	TECHNICAL SPECIFICATIONS	
	Scope of Work.....	2
	General Notes and Specifications.....	4
Sec. 1300	Contractor Submittals.....	7
Sec. 1350	Reference Standards and Abbreviations.....	3
Sec. 1400	Quality Control	2
Sec. 1450	Protection of Existing Facilities	4
Sec. 1460	Temporary Utilities	2
Sec. 1480	Temporary Environmental Controls	2
Sec. 1500	Summary of Work	3
Sec. 1550	Site Access and Storage	2
Sec. 1600	Materials and Equipment	3
Sec. 1700	Project Closeout	3
Item List	Governing Construction Specifications.....	1
Item 356	Fabric Underseal	3
Item 666	Reflectorized Pavement Markings	4
Item 1122	Special Specification	16
Item 1420	Construction Inspection Services.....	3
Sec. 01505	Mobilization	1
Sec. 01526	Trench Safety.....	4
Sec 01563	Dewatering for Storm Sewer Construction.....	9
Sec. 01570	Traffic Control and Regulation	6
Sec. 02076	Remove Existing pavement and Structures.....	3
Sec. 02238	Hot Mix Asphaltic Base Course.....	6

City of Galveston
Galveston CIP Roadway Reconstruction Project
19th Street – Avenue J to Harborside Dr.
41st Street – Avenue U to Avenue L

2014

TABLE OF CONTENTS

Sec. 02238	Hot Mix Asphaltic Base Course.....	6
Sec. 02510	Asphaltic Concrete Pavement	8
Sec. 02511	Prime Coat	5
Sec. 02570	Pavement Repair and Resurfacing.....	3
Sec. 02590	Temp/Removable Reflectorized Pavement Markings	4
Item 2601	Precast Concrete Manholes.....	5
Sec. 02605	Cast-In-Place Inlets.....	3
Item 2720	Storm Sewers.....	4



**Invitation to Bid
Roadway Reconstruction
19th Street Ave J to Harborside
City of Galveston, Texas**

Bid #16-04 B

Date: February 18, 2016

Open: March 10, 2016 @ 10 am

Sealed bids shall be prepared with **one original, one duplicate and one electronic media or the bid will be non-responsive.** Sealed bids shall be addressed to the Purchasing Department, City Hall, Room 306, 823 Rosenberg, Galveston, Texas 77550, and will be received until **10:00 AM March 10, 2016** and opened immediately in that office in the presence of the City's auditor or a witness from the Finance Department and the Purchasing Department. Any bid received after **10:00 AM** on the date specified will be returned unopened, for the following project.

BID 16-04 B

The City of Galveston is accepting sealed bids for Roadway Reconstruction
19th Street Ave J to Harborside

Bid package

The Invitation to Bid or Request for Proposals, Specifications/line Item Details, and the Bid Sheet are all considered part of the bid package. Bids must be submitted in duplicate on the forms provided by the City, including the Bid Sheet completed in its entirety and signed by an authorized representative by original signature. Failure to complete and sign the bid sheet/contract page(s) will disqualify the bid from being considered by City Council. Any individual signing in behalf of the bidder expressly affirms that he/she is duly authorized to tender this bid and to sign the Bid Sheet/contract under the terms and conditions in this bid. Bidder further understands that the signing of the contract shall be of no consequence unless the bid is subsequently awarded and the contract properly executed by City Council. All figures must be hand written in ink or typed. Figures written in pencil or with erasures are not acceptable; however, mistakes may be crossed out, corrections inserted, and initialed in ink by the individual signing the bid. If there are discrepancies between unit prices quoted and extensions, the unit price will prevail.

Note: bidder must submit his/her bid proposal on the forms provided herein. The bid sheet, tax statement, nepotism statement, non-collusion statement, and any other forms marked as needing to be returned must be completed, signed and witnessed as required or the bid will be non-responsive.

Envelopes will be sealed and marked with the bid number and opening time on the outside bottom left corner to avoid the opening of any bid before the prescribed time.

Bids sent by facsimile (fax) machine shall be rejected as being non-responsive specifications.

In an effort to maintain fairness in the process, inquiries concerning this procurement, including questions related to technical issues are to be directed to:

Purchasing Department
E-mail address: purchasing@cityofgalveston.org
****The Subject Line should read: BID 16-04 B****

Pre-bid construction conference

The City of Galveston will be conducting a pre-bid construction conference for all contractors planning to bid on the project; attendance is highly recommended but not required. Location will be: **City Hall, 823 Rosenberg, Galveston, Texas, Room #306, Date and Time: Wednesday March 2, 2016, 1:00 pm.**

Bid Bonds*

Each bid must be accompanied by a certified cashiers check or acceptable bidders bond in the amount of 5% of the base bid as a guarantee that if awarded the contract, the Bidder will within thirty days from the date of the bid opening, enter into a contract and execute any required performance and payment bonds.

Bid bonds will be held up to ninety days during any discussion prior to award. Should discussions require additional time, Bidders will approve in writing an additional thirty days, not to exceed one hundred twenty days.

Restrictive or ambiguous specifications

It is the responsibility of the prospective bidder to review the entire bid packet and to notify the Purchasing

Office if the specifications are formulated in a manner that would restrict competition or appear ambiguous. Any such protest or question(s) regarding the specifications or bidding procedures must be received in the Purchasing Office not less than seventy-two hours prior to the time set for bid opening. Vendors are to bid as specified herein or bid an approved equal. The mention of any brand name in the specifications is not intended to be restrictive, but is intended to describe the general features and requirements (or equivalent) that the City of Galveston is seeking.

Pricing

Bids will be either lump sum or unit prices as shown on the bid sheet. The net price will be that which reflects the goods to be delivered to the City of Galveston, including all freight or shipping charges. The City is tax exempt and no taxes should be included in your bid.

Pass-through cost adjustments

Except in instances of extreme extenuating circumstances, vendor prices shall remain firm throughout the contract period and any renewal period(s). Examples of extreme extenuating circumstances include such situations as a nationwide rail strike, oil shortage, oil embargo or war.

In extreme extenuating circumstances vendors may be allowed to temporarily "pass-through" additional costs that they are forced to incur through no fault of their own. A request for a pass through cost increase will not be considered unless a vendor's cost for his product exceeds 10% over the original cost of the product. Also, the increase in cost must be nationwide and consistent for a minimum period of sixty (60) days. If a vendor thinks he/she will be asking for a pass through cost adjustment during the term of his/her contract, then the original cost of his/her product to him/her must be stated in the vendor's original bid.

Modification of bids

A bidder may modify a bid by letter at any time prior to the submission deadline for receipt of bids. The modification letter must be received prior to the submission deadline. Alterations made before opening time must be initialed by the bidder guaranteeing authenticity. Bids may not be amended or altered after the official opening with the single exception that any product literature and/or supporting data required by the actual specifications will be accepted at any time prior to City Council's consideration of the bid.

Award of contract

In accordance with State law, if the competitive sealed bidding requirement applies to the contract for goods or services, the contract must be awarded to the lowest most responsive and responsible bidder or to the bidder who provides goods or services at the best value for the municipality.

Each bidder/proposer by submitting a bid/proposal agrees that if their bid/proposal is accepted by City Council, such bidder/proposer will furnish all items and services upon which prices have been tendered and upon the terms and conditions in this bid/proposal and contract.

Contractor shall submit to the City, for approval, within ten (10) days from notice of contract award, all Certificates of Insurance evidencing the required coverage as described under the required insurance schedule of the (Invitation to Bid or Request for Proposal).

The contractor shall not commence work under these terms and conditions of the contract until all applicable Certificates of Insurance, Performance and Payment Bonds and Irrevocable Letters of Credit (if required) have been approved by the City of Galveston and he/she has received notice to proceed in writing and an executed copy of the contract from the City of Galveston.

Best and final offers

In determining and evaluating the best bid/proposal, the pricing may not necessarily be controlling, but quality, equality, efficiency, utility, general terms, delivery, suitability of service offered and the reputation of the service in general use will also be considered with any other relevant items. The City Council shall be sole judge in the determination of these matters.

Per Local Government Code 252.043(b):

In determining the best value for the municipality, the municipality may consider:

- (1) the purchase price;
- (2) the reputation of the bidder's goods or services;
- (3) the quality of the bidder's goods or services;
- (4) the extent to which the goods or services meet the municipality's needs;
- (5) the bidder's past relationship with the municipality;
- (6) the impact on the ability of the municipality to comply with laws and rules relating to contracting with historically underutilized businesses (HUB) and non-profit organizations employing persons with disabilities;
- (7) the total long-term cost to the municipality to acquire the bidder's goods or services;
and
- (8) any relevant criteria specifically listed in the request for bids or proposals.

Evaluation Process

Bids that do not conform to the instructions given or which do not address all the services as specified may be eliminated from consideration. The City of Galveston, however, reserves the right to accept such bid if it is determined to be in the City's best interest to do so.

The City of Galveston may initiate discussions with vendors. Discussions may not be initiated by vendors. The City of Galveston expects to conduct discussions with vendor personnel authorized to contractually obligate the vendor with an offer. Vendors shall not contact any City of Galveston personnel during the bid process without the express permission from the city's Purchasing Agent. The City of Galveston Purchasing Agent may disqualify any vendor who has made site visits, contacted City of Galveston personnel or distributed any literature without authorization from this office.

All correspondence relating to this bid, from advertisement to award, shall be sent to the City of Galveston's Purchasing Department. All presentations and/or meetings between the City of Galveston and the vendor relating to this bid shall be coordinated by the City of Galveston Purchasing Department.

No award can be made until the City of Galveston City Council approves such action.

Single bid/proposal response

If only one proposal or bid is received in response to the Request for Proposals/Bids, a detailed cost proposal may be requested of the single contractor. A cost/price analysis and evaluation and/or audit may be performed of the cost proposal in order to determine if the price is fair and reasonable.

Non-discrimination:

During the performance of this contract, the contractor agrees as follows:

(1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of this nondiscrimination clause.

(2) The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex or national origin.

Responsibility

The City must decide whether or not the supplier has the strengths to be granted an award. Certain criteria must be met such as: financial stability, capability and capacity. History of past litigation due to lack of performance may be considered but not necessarily used as a determining factor.

The award will be made to the bidder who is determined to be the lowest bidder demonstrating the best ability to fulfill the requirements of the bid. The prices proposed will be considered firm and cannot be altered after the submission deadline. The City of Galveston reserves the right to award this bid on a per line item basis or in its entirety, whichever is in the best interest of the City.

Contract term

The term of the resultant contract will begin on the date of execution by City Council and will terminate on the date specified in the resultant contract unless terminated earlier as herein set forth.

Termination for default

Failure of either party in the performance of any of the provisions of this contract shall constitute a breach of contract, in which case, either party may require corrective action within ten (10) days from date of receipt of notice citing the exact nature of such breach. Failure of the party being notified to take corrective action within the prescribed ten (10) days, or failure to provide written reply of why no breach has occurred, shall constitute a Default of Contract.

In the event of Termination for Default, the City of Galveston, its agents or representatives shall not be liable for loss of any profits anticipated to be made by contractor.

No waiver by either party of any event of default under this agreement shall operate as a waiver of any subsequent default under the terms of this agreement.

The City of Galveston reserves the right to terminate this contract immediately in the event

contractor:

1. Fails to meet delivery or completion schedules;
2. Fails to otherwise perform in accordance with the accepted (bid, proposal) and the contract.

Termination for convenience

The City of Galveston may terminate this contract upon at least thirty (30) days prior written notice for its convenience or for any reason deemed by the City to serve the public interest; and/or the City of Galveston may terminate this contract upon thirty (30) days prior written notice for any reason resulting from any governmental law, order, ordinance, regulations, or court order. In no event shall the City be liable for any profits anticipated to be made hereunder by the contractor should this contract be terminated early.

Re-appropriation of Budget Items

The City may reduce the funds allocated and the services required under this Agreement at its discretion. The City shall notify Contractor in writing of this reduction. Contractor shall not perform any services subtracted from this Agreement. The de-obligation of funds does not require any formal amendment of this Agreement but shall be evidenced by a revised budget approved by City Council.

Force Majeure

If by reason of Force Majeure either party shall be rendered unable, wholly or in part, to carry out its responsibilities under this contract by any occurrence by reason of Force Majeure, then the party unable to carry out its responsibility shall give the other party notice and full particulars of such Force Majeure in writing within a reasonable time after the occurrence of the event, and such notice shall suspend the party's responsibility for the continuance of the Forced Majeure claimed, but for no longer period.

Force Majeure means acts of God, floods, hurricanes, tropical storms, tornadoes, earthquakes, or other natural disasters, acts of public enemy, acts of terrorism, sovereign conduct, riots, civil commotion, strikes or lockouts, and other causes that are not occasioned by either Party's conduct which by the exercise of due diligence the party is unable to overcome and which substantially interferes with operations.

No commitment by the City of Galveston

This (Invitation to Bid or Request for Proposal) does not commit the City of Galveston to award any costs or pay any costs, or to award any contract, or to pay any costs associated with or incurred in the preparation of a (bid/proposal) to this request, or to procure or contract for services or supplies.

Wage Rates

In conformance with applicable statutes, the general prevailing wage rates determined by the United States Department of Labor in accordance with the Davis-Bacon Act, in the locality in which the work is to be performed have been asserted and such rates shall be the minimum paid for labor employed on this project. If, however, Federal funds are used, specified wage decisions will be listed as part of the overall bid document.

Change Orders, as per Texas Local Government Code section 252.048

- (a) If Changes in plans or specifications are necessary after the performance of the contract is begun or if it is necessary to decrease or increase the quantity of work to be performed or of materials, equipment or supplies to be furnished, the governing body of the municipality may approve change orders making the changes.
- (b) The total contract price may not be increased because of the changes unless additional

money for increased costs is appropriated for that purpose from available funds or is provided for by the authorization of the issuance of time warrants.

- (c) If a change order involves a decrease or an increase of \$15,000 or less, the governing body may grant general authority to an administrative official of the municipality to approve the change order.
- (d) The original contract price may not be increased under this section by more than 25 percent. The original contract price may not be decreased under this section by more than 25 percent without the consent of the contractor.

Appropriation of Funds

The City of Galveston has established an appropriation (allocation) of funds for this project, if in the event that appropriated (allocated) funds are exhausted, the contractor's only remedy shall be suspension or termination of its performance under this contract and shall have no other remedy in law or in equity against the City and no right to damages of any kind.

Confidentiality of information in bids and proposals

Pursuant to State law, bids/proposals shall be opened in a manner that avoids disclosure of the contents to competing offerors and keeps the bids/proposals secret during negotiations. All bids/proposals are open for public inspection after the contract is awarded, but trade secrets and confidential information in the bids/proposals are not open for public inspection.

Exception to bid

The bidder will list on a separate sheet of paper any exceptions to the conditions of the bid. This sheet will be labeled, "Exceptions to bid conditions", and will be attached to the bid proposal. If no exceptions are stated, it will be understood that all general and specific conditions will be complied with, without exception.

Changes in specifications

If it becomes necessary to revise any part of this bid, a written notice of such revision will be provided to all bidders. The City is not bound by any oral representation(s), clarification(s), or changes made in the written specifications by the City's employees, unless such clarification or change is provided to bidders in a written addendum from the Purchasing Supervisor.

Protest

Any actual or prospective bidder/proposer who is allegedly involved with the solicitation or award of bid/proposal may protest. The protest must be submitted in writing to the City of Galveston's Purchasing Supervisor within three working days after such aggrieved person knows of, or should have known of the facts giving rise thereto. If the protest is not resolved by mutual agreement, the Purchasing Supervisor will promptly issue a decision in writing to the protesting party.

All protest lodged by potential or actual bidders, contractors or proposers must be made in writing and contain the following information.

1. Name, address and telephone number of the protestor.
2. Identification of the solicitation or contract number and time.
3. A detailed statement of the protest's legal and factual grounds, including copies of relevant documents.
4. Identification of the issue (s) to be resolved and statement of what relief is requested.
5. Arguments and authorities in support of the protest.
6. A statement that copies of the protest have been mailed or delivered to all interested parties in the invitation to bid or request for proposals process. In the case of request for proposals, the City of Galveston Purchasing Supervisor shall ask the protestor to mail or deliver the protest to relevant parties.

The City of Galveston's City Manager has the authority to render the final determination regarding the protest. Any determination rendered by the City of Galveston will be final.

Proof of insurance

The successful bidder agrees to maintain certain types of insurance and bond protection throughout the duration of the project. All insurance policies and bonds are to be issued by an insurance company authorized to do business in the State of Texas, using an insurance company with an A.M. Best rating of a B+ or better. All subcontractors utilized must also comply with these specifications as if they were the winning bidder. Specific details of coverage limits and conditions are to be followed as listed below. Any variance from these requirements must be denoted in writing and included as exceptions to the bid specifications.

Required insurance

Commercial general liability insurance, naming the City of Galveston as an additional insured and as certificate holder, and waiving subrogation per the contractual requirements of this project. Limits are to be equal to or greater than:

- \$2,000,000** general liability (includes products and personal, etc.)
- \$1,000,000** automobile damage
- \$500,000** workers compensation employers' liability
- Statutory limits** for workers compensation

Insurance coverage shall be on an "occurrence basis"

Workers Compensation

The successful bidder/proposer (as required by State of Texas Workers Compensations law) shall carry in full force workers compensation policy (ies) for all employees, including but not limited to full-time, part-time, and emergency employees employed by the successful bidder/proposer. Current insurance certificates, certifying that such policies as specified above are in full force, shall be presented to the City of Galveston by the successful bidder/proposer.

Definitions: workers compensation insurance coverage

1. Certificate of coverage - a copy of a certificate of insurance, a certificate of authority to self-insure issued by the State, or a coverage agreement showing statutory workers' compensation insurance coverage for the person's or entity's employees providing services on a project, for the duration of the project.
2. Duration of the project - includes the time from the beginning of the work on the project until the contractor's / person's work on the project has been completed and accepted by the governmental entity.
3. Persons providing services on the project.
Includes all persons or entities performing all or part of the services the contractor has undertaken to perform on the project, regardless of whether that person contracted directly with the contractor and regardless of whether that person has employees. This includes, with limitation, independent contractors, subcontractors, leasing companies, motor carriers, owner-operators, employees of any such entity, or employees of any such entity, which furnishes persons to provide services on the project. "Services" include, without limitation, providing, hauling or delivering equipment or materials, or providing labor, transportation, or other service related to a project. "Services" does not include activities unrelated to the project, such as food/beverage vendors, office supply deliveries, and delivery of portable toilets.

The contractor shall provide coverage, based on proper reporting of classification code and payroll amounts and filing of any coverage agreements, which meets the statutory requirements

of Texas, for all employees of the contractor providing services on the project, for the duration of the project. The contractor must provide a certificate of coverage to the governmental entity prior to being award the contract.

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

The contractor shall obtain from each person providing services on a project, and provide to the City:

1. A certificate of coverage, prior to that person beginning work on the project, so the governmental entity will have on file certificates of coverage showing coverage for all persons providing services on the project; and
2. No later than seven days after receipt by the contractor, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate ends during the duration of the project.

The contractor shall retain all required certificates of coverage for the duration of the project and for one year thereafter.

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

The contractor shall post on each project site a notice, in the text, form and manner prescribed by the Texas Department of Insurance, Commissioner of the Division of Workers' Compensation informing all persons providing services on the project that they are required to be covered, and stating how a person may verify coverage and report lack of coverage.

The contractor shall contractually require each person with whom it contracts to provide services on a project, to:

1. Provide coverage, based on proper reporting of classification codes and payroll amounts and filling of any coverage agreements, which meets the statutory requirements of Texas, for all of its employees providing services on the project, for the duration of the project:
2. Provide to the contractor, prior to that person beginning work on the project a certificate showing that coverage is being provided for all employees of the person providing services on the project, for the duration of the project:
3. Provide to the contractor, prior to the end of the coverage, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate ends during the duration of the project:
4. Obtain from each other person with whom it contracts, and to provide to the contractor;
 - A. A certificate of coverage, prior to the other person beginning work on the project; and
 - B. The coverage period, if the coverage period shown on the current certificate of a new certificate of coverage showing extension of coverage, prior to the end of coverage ends during the duration of the project;

5. Retain all required certificates of coverage on file for the duration of the project and for one year thereafter;
6. Notify the governmental entity in writing by certified mail or personal delivery, within days after the person knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the project; and
7. Require each person / firm with whom it contracts to perform as required by this invitation to bid, conform to project specifications, and abide by any/all requirements placed on the contractor, and to provide any certificates of coverage to the person/firm for whom they are providing services.

By signing this contract or providing or causing to be provided a certificate of coverage, the contractor is representing to the governmental entity that all employees of the contractor who will provide services on the project will be covered by workers' compensation coverage for the duration of the project, that the coverage will be based on proper reporting of classification codes and payroll amounts, and that all coverage agreements will be filed with the appropriate insurance carrier or, in the case of a self - insured, with the commission's division of self insurance regulation. Providing false or misleading information may subject the contractor to administrative penalties, criminal penalties, or other civil actions.

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

Pursuant to Sec. 2-341 of the City Code, the City has made the following Declaration of policy

It is the policy of the City of Galveston to stimulate growth of local minority and women-owned business enterprise (M/WBE) by encouraging their participation in all phases of its contract and procurement activity and by affording them the opportunity to compete for all City of Galveston contracts. The purpose and objectives of this article are to:

1. Increase the capacity of local M/WBE's to provide products and services.
2. Increase the opportunities for local M/WBE's to expand their business with the city and other public and private sector business entities.

Provided, however, nothing herein shall require the city to award contracts for services or procurements to a M/WBE which is not also the lowest responsive and responsible bidder and otherwise qualified unless the city may otherwise lawfully award the contract to someone other than the lowest responsive, responsible bidder.

Additionally The City of Galveston has a Disadvantaged Business Enterprise, (DBE) program mandated by the US Department of Transportation, which is part of its M/WBE program.

Laws

Contractors must comply with all Federal, State, and local laws and regulations.

Withdrawal of bid

Bidders may request withdrawal of a sealed bid prior to the scheduled bid opening time provided the request for withdrawal is submitted to the Purchasing Supervisor in writing. No bids may be withdrawn for a period of sixty calendar days after the opening of bids.

The City of Galveston reserves the right to reject any and all bids, in whole or in part; to waive any informality in any bid, and to accept the bid, which, in its discretion, is in the best interest of the City of Galveston. In case of ambiguity or lack of completeness in stating the prices in any

bid, the City reserves the right to consider the most advantageous bid thereof.

The City Manager is the only person authorized to execute contracts on behalf of the City. All signature pages must include "approved as to form" and be signed by the City Attorney before the City Manager will execute the contract.

Neither department heads nor elected officials are authorized to sign any binding contracts or agreements prior to being properly placed on the City Councils agenda and approved in an open meeting. Department heads and other elected officials are not authorized to enter into any type of agreement or contract on behalf of the City of Galveston. Only the City Manager may enter into a contract on behalf of the City of Galveston as authorized by City Council and the City Charter. Additionally, department heads and other elected officials are not authorized to agree to any type of supplemental agreements or contracts for goods or services. Supplemental agreements are subject to review by the City's Legal Department prior to being signed by the City Manager, (City's authorized representative).

Local Bidder Options

Texas Local Govt. Code 271.905 states that municipalities with a population under 200,000 may utilize a local bidder preference when a bidder whose principal place of business is in the municipality. The local bidder preference is a 3% allowance against a non-resident bidder. This is able to be used for bids dealing with the purchase of goods only. There is not a limited dollar amount for the purchase.

Texas Local Govt. Code 271.9051 states that municipalities with a population under 250,000 may utilize a local bidder preference when a bidder whose principal place of business is in the municipality. The local bidder preference is a 5% allowance against a non-resident bidder. This is able to be used for bids dealing with the purchase of goods and services for an amount less than \$100,000.

Indemnity clause

IN ACCORDANCE WITH STATE LAW, THE CONTRACTOR AGREES TO INDEMNIFY, SAVE, AND HOLD HARMLESS THE CITY OF GALVESTON, TEXAS, ITS EMPLOYEES, OFFICIALS, AND AGENTS FROM ANY AND ALL CLAIMS, ACTIONS, DAMAGES, LAWSUITS, PROCEEDINGS, JUDGMENTS, OR LIABILITIES, FOR PERSONAL INJURY, DEATH, OR PROPERTY DAMAGE RESULTING FROM THE ACTS OR OMISSIONS OF ANYONE UNDER THE CONTRACTOR'S SUPERVISION OR CONTROL.

IN THE EVENT OF ANY CAUSE OF ACTION OR CLAIM ASSERTED BY A PARTY TO THIS AGREEMENT OR ANY THIRD PARTY, THE CITY WILL PROVIDE THE CONTRACTOR WITH TIMELY NOTICE OF SUCH CLAIM, DISPUTE OR NOTICE. THEREAFTER, THE CONTRACTOR SHALL AT ITS OWN EXPENSE, FAITHFULLY AND COMPLETELY DEFEND AND PROTECT THE CITY AGAINST ANY AND ALL LIABILITIES ARISING FROM THIS CLAIM, CAUSE OF ACTION, OR NOTICE.

IF THE CONTRACTOR SHOULD FAIL TO SO SUCCESSFULLY DEFEND, THE CITY MAY DEFEND, PAY OR SETTLE THE CLAIM OR OTHER CAUSE OF ACTION WITH FULL RIGHTS OF RECOURSE AGAINST THE CONTRACTOR FOR ANY AND ALL FEES, COSTS, EXPENSES, AND PAYMENTS, INCLUDING BUT NOT LIMITED TO ATTORNEY FEES AND SETTLEMENT PAYMENTS, MADE OR AGREED TO BE PAID IN ORDER TO DISCHARGE THE CLAIM, CAUSE OF ACTION, DISPUTE OR LITIGATION.

IT IS THE EXPRESS INTENTION OF THE PARTIES HERETO, BOTH CONTRACTOR AND CITY OF GALVESTON, THAT THE INDEMNITY PROVIDED FOR IN THIS PARAGRAPH IS AN AGREEMENT BY CONTRACTOR TO INDEMNIFY AND PROTECT CITY OF GALVESTON FROM CONSEQUENCES OF CITY OF GALVESTON'S OWN NEGLIGENCE, WHEN THAT NEGLIGENCE IS A CONCURRING CAUSE OF THE INJURY, DEATH, OR DAMAGE. FURTHERMORE, THE INDEMNITY PROVIDED FOR IN THIS PARAGRAPH SHALL HAVE NO APPLICATION TO ANY CLAIM, LOSS, DAMAGE, CAUSE OF ACTION, SUIT, OR LIABILITY WHERE THE INJURY, DEATH, OR DAMAGE RESULTS FROM THE SOLE NEGLIGENCE OF THE CITY OF GALVESTON UNMIXED WITH THE FAULT OF ANY OTHER PERSON OR ENTITY. CONTRACTOR ASSUMES NO LIABILITY FOR THE SOLE NEGLIGENCE OF CITY OF GALVESTON, ITS OFFICERS, AGENTS, OR EMPLOYEES.

Provision to be applied if Indemnity is Void

If the foregoing indemnity provision is found void for any reason, and only in that case, then the parties agree that if any claim or suit for damages of any nature arising out of or occasioned by Contractor's breach of any of the terms or provisions of this Contract or by any negligent act or omission of Contractor, its officers, agents, associates, employees or subcontractors, then Contractor will be obligated to pay for the legal defense of the City, its officers, agents and employees against such claim or suit (including the costs and expenses associated with that defense). It is additionally expressly agreed that any payment due as a result of any successful claim or lawsuit shall be paid by the party or parties found liable in the proportion of liability found against that party after the matter has been finally litigated or, alternatively, in the proportion agreed upon by the parties if the matter is settled. This provision does not waive any immunity or defense available to either party under Texas law. The provisions of this Paragraph are solely for the benefit of the parties hereto and not intended to create or grant any rights, contractual or otherwise, to any other person or entity.

This agreement is binding upon and is to inure to the benefit of the parties, their successors, assigns, and personal representatives.

City of Galveston
Department of Finance
Purchasing Division

**INVITATION TO BID SHEET
BID #16-04 B
CITY OF GALVESTON, TEXAS**

Having read and understood the instructions, terms, conditions and specifications, we submit the following:

Total: \$ _____

Witness

Company Name

Date

Authorized Representative Signature

Printed Name

Title

Correspondence Address

Remit Address

City, State, Zip Code

City, State, Zip Code

Tax Identification Number (Tin/Fien/Ssn)

Telephone Number

Fax Number

Email address

THIS DOCUMENT MUST BE COMPLETED AND SUBMITTED

ATTACHMENT A – “PROPERTY TAXES STATEMENT”

**FAILURE TO COMPLETE THIS ATTACHMENT SHALL RESULT IN THE PURCHASING
SUPERVISOR DEEMING YOUR BID OR PROPOSAL
“NON-RESPONSIVE.”**

The City of Galveston, Texas has adopted the following policy:

The City of Galveston will not do business with any person or business that owes delinquent property taxes to the City.

Please indicate whether you or your company, owe delinquent property taxes to the City whether an assumed name, partnership, corporation, or any other legal form.

_____ I do not owe the City property taxes that are delinquent.

_____ I owe City property taxes that are delinquent on property located at

Bidder's Printed or Typed Name

Bidder's Signature

Date

THIS DOCUMENT MUST BE COMPLETED AND SUBMITTED

ATTACHMENT B – “NEPOTISM STATEMENT”

FAILURE TO COMPLETE THIS ATTACHMENT SHALL RESULT IN THE PURCHASING SUPERVISOR DEEMING YOUR BID OR PROPOSAL “NON-RESPONSIVE.”

The Bidder or Proposer or any officer, if the Bidder or Proposer is other than an individual, shall state whether Bidder or Proposer has a relationship, either by blood or marriage, with any official or employee of the City of Galveston by completing the following:

If the Bidder or Proposer is an individual:

_____ I am not related by blood or marriage to any official or employee of the City of Galveston

_____ I am related by blood or marriage to the following official(s) or employee(s) of the City of Galveston

Name and title of City Official

Or employee: _____

Relationship: _____

If the Bidder or Proposer is **NOT** an individual:

_____ The officers of the company submitting this bid or proposal are not related by blood or marriage to any official or employee of the City of Galveston.

_____ The officers of the company submitting this bid are related by blood or marriage to the following official(s) or employee(s) of the City of Galveston.

Name and title of officer: _____

Employee and title of City Official or Employee: _____

Relationship: _____

THIS DOCUMENT MUST BE COMPLETED AND SUBMITTED

ATTACHMENT C – “NON-COLLUSION STATEMENT”

THE UNDERSIGNED AFFIRM THAT THEY ARE DULY AUTHORIZED TO EXECUTE THIS CONTRACT, THAT THIS COMPANY, FIRM, PARTNERSHIP OR INDIVIDUAL HAS NOT PREPARED THIS BID IN COLLUSION WITH ANY OTHER BIDDER, AND THAT THE CONTENTS OF THIS BID AS TO PRICES, TERMS OR CONDITIONS OF SAID BID HAVE NOT BEEN COMMUNICATED BY THE UNDERSIGNED NOR BY ANY EMPLOYEE OR AGENT TO ANY OTHER PERSON ENGAGED IN THIS TYPE OF BUSINESS PRIOR TO THE OFFICIAL OPENING OF THIS BID.

VENDOR _____

ADDRESS _____

PHONE _____

FAX _____

BIDDER (SIGNATURE) _____

BIDDER (PRINTED NAME) _____

POSITION WITH COMPANY _____

**SIGNATURE OF COMPANY OFFICIAL
AUTHORIZING THIS BID** _____

**COMPANY OFFICIAL
(PRINTED NAME)** _____

OFFICIAL POSITION _____

THIS DOCUMENT MUST BE COMPLETED AND SUBMITTED

THE CITY OF GALVESTON, TEXAS

DOCUMENT 00435, REQUIRED BY ALL BIDDERS WHO WILL RECEIVE FEDERAL FUNDS IN PAYMENT OF PROCUREMENT.

BIDDER'S CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION (49 CFR PART 29)

The undersigned certifies, by submission of this proposal or acceptance of this contract, that neither Contractor nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntary excluded from participation in this transaction by any Federal department or agency. Bidder agrees that by submitting this proposal that Bidder will include this clause without modification in all lower tier transactions, solicitations, proposals, contracts, and subcontracts. Where the Bidder or any lower tier participant is unable to certify to this statement, that participant shall attach an explanation to this document.

Certification-the above information is true and complete to the best of my knowledge and belief.

(Printed or typed Name of Signatory)

(Signature)

(Date)

NOTE: The penalty for making false statements in offers is prescribed in **18 U.S.C. 1001**

END OF DOCUMENT 00435-FAA

THIS DOCUMENT MUST BE COMPLETED AND SUBMITTED

BID PROPOSAL

GALVESTON, TEXAS

DATE _____
PROJECT NO. _____

Proposal of _____
(hereinafter called "Bidder")

To the Honorable Mayor and City Council of the City of Galveston, Texas
(hereinafter called "Owner")

Gentlemen:

The bidder, in compliance with your invitation for bids for the project of:

**Galveston CIP Roadway Reconstruction Project
19th Street – Avenue J to Harborside Dr.**

having carefully examined the plans, specifications, instructions to bidders, notice to bidders and all other related contract documents and the site of the proposed work, and being familiar with all of the conditions relevant to the proposed project, including the availability of materials and labor, hereby proposes to furnish all labor, materials, and supplies; and to complete the project in accordance with the plans, specifications and contract documents, within the time set forth therein at the prices stated in Exhibit "A".

Upon the Owner's acceptance of a bid, the bidder shall be bound to execute a contract and any required bonds, according to the accompanying forms, to perform and complete the said work within 120 calendar days after proper notice to proceed has been given to bidder by the City. Bidder further agrees to pay to Owner as liquidated damages the sum stated in the Special Conditions of the Agreement, paragraph 18, for each consecutive calendar day in excess of the time set forth hereinabove for completion of this project, all as more fully set forth in the general conditions of the contract document.

Bidder understands and agrees that this bid proposal shall be completed and submitted in accordance with instruction number 20 of the General Instructions to Bidders. Bidder also understands that the Owner reserves the right to reject any or all bids and to waive any informality in the bidding.

The bidder agrees that this bid shall be good and may not be withdrawn for a period of sixty (60) calendar days after the scheduled closing time for receiving bids.

Successful bidder shall have General Liability Insurance and Workers Compensation Insurance in force at the limits required by State law and/or City regulations prior to award of contract to successful bidder. A current certificate of insurance shall be included with your bid proposal.

The undersigned Bidder declares that Bidder has visited the site of the work and has carefully examined the plans, specifications, and contract documents pertaining to the work covered by this bid, and Bidder further agrees to commence work on or before the date specified in the written notice to proceed, and to substantially complete the work as provided in the contract documents.

Enclosed with this proposal is a Cashier's Check or Certified Check for _____ Dollars (\$ _____) or a Proposal Bond in amount of _____ Dollars (\$ _____), which it is agreed shall be collected and retained by the Owner as liquidated damages in the event the proposal is accepted by the Owner and the undersigned fails to execute the necessary contract documents and the required bonds (if any) with the Owner within ten (10) days after the date of receipt of written notification of acceptance of said proposal; otherwise said check or bond shall be returned to the undersigned upon demand.

Bidder understands and agrees that the contract to be executed on this project shall be bound and will include all contract documents made available to the Bidder for Bidder's inspection in accordance with the Notice to Bidders.

Contractor

By: _____

Address: _____

Phone: _____

(Seal if Bidder is a Corporation)

ATTEST:

CIP ROADWAY RECONSTRUCTION ESTIMATE
19th STREET

ITEM NO.	DESCR	ITEM	UNIT	UNIT COST	QUANTITY	TOTAL
356	001	FABRIC UNDERSEAL	SY		14,422.00	
529	6008	CONCRETE CURB & GUTTER (TY II)	LF		240.00	
666	001	REFL PAV MRK TY I (W)(WORD) (100 MIL)	EA		2.00	
666	002	REFL PAV MRK TY I (ACC PARK)(BLU & WHT)	EA		4.00	
666	003	REFL PAV MRK TY I (W) 24" SLD (100 MIL)	LF		759.00	
666	004	REFL PAV MRK TY I (Y) 4" SLD (090 MIL)	LF		870.00	
666	005	REFL PAV MRK TY I (Y) 4" BRK (090 MIL)	LF		680.00	
1045	001	CUT & PATCH PIPE & FITTINGS (CONTR. TO SIZE)	LF		240.00	
1122	001	BIOGRD EROSION CONT. LOG (8")(INSTALL)	LF		196.00	
1122	002	BIOGRD EROSION CONT. LOG (8")(REMOVE)	LF		196.00	
1505	001	MOBILIZATION	LS		1.00	
1526	001	TRENCH SAFETY for STORM SEWER CONSTRUCTION	LF		662.00	
1563	001	DEWATERING FOR STORM SEWER CONSTRUCTION	LF		662.00	
1570	001	BARRICADES, SIGNS & TRAFFIC HANDLING	MO		1.00	
2076	001	REMOVE STRUCTURE (PIPE)	LF		342.00	
2076	002	REMOVE STRUCTURE (INLET)	EA		21.00	
2076	003	REMOVE STRUCTURE (CONCRETE CURB)	LF		340.00	
2076	004	PLANE ASPHALT CONCRETE PAVEMENT	SY		14,422.00	
2238	001	D-GR HMA (TY B) PG64-22	TN		140.00	
2252	001	CEMENT STABILIZED BACKFILL (SAND CEMENT 7%)	CY		228.00	
2510	001	D-GR HMA (TY D) PG64-22	TN		1,204.00	
2511	001	ASPHALT MATERIAL (CRS-2)	GAL		4,330.00	
2570	001	FLEXIBLE PAVEMENT REPAIR	CY		50.00	
2590	001	WK ZN PAV MRK (SHT TERM) TAB (Y)	EA		223.00	
2605	001	CURB INLET	EA		20.00	
2605	002	GRATE INLET	EA		2.00	
2605	003	JUNCTION BOX (LG)	EA		1.00	
2615	001	REINFORCED CONCRETE PIPE (18")	LF		662.00	
					TOTAL	

Name of Contracting Firm: _____
Address & Phone Number: _____
Authorized Signature: _____
Printed Name / Email Address: _____

BID BOND

THE STATE OF TEXAS

SURETY'S NO. _____

KNOWN ALL MEN BY THESE PRESENT, THAT _____

_____ of the City of

_____, County of _____, and State of _____

as Principal, and _____, as Surety,

Are held and firmly bound unto the City of Galveston, Texas, a home rule municipal corporation of Galveston County, Texas, as Obligee, in the amount of:

_____ (written amount); (\$ _____),

DOLLARS for payment whereof the said Principal and Surety bind themselves, and their heirs, administrators, executors, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted a bid to enter into a certain written contract with the Obligee for:

ROADWAY RECONSTRUCTION – 19TH STREET FROM AVE J – HARBORSIDE

NOW, THEREFORE, the condition of the obligation is such that if the Principal shall faithfully enter into such written contract, then this bid bond shall be void; otherwise this bid bond shall remain in full force and effect.

IT IS EXPRESSLY UNDERSTOOD AND AGREED that if the Principal withdraws its Bid any time after such Bid is opened and before official rejection of such Bid by Obligee or, if the Principal is successful in securing the award of the contract, and fails to enter into the Contract or furnish satisfactory Performance and Payment Bonds (if required), the Obligee, in either of such events, shall be entitled and is hereby given the right to collect the full amount of this Bid Bond as liquidated damages.

PROVIDED, further that if any legal action is filed upon this Bond, venue shall lie in Galveston County, State of Texas.

IN WITNESS THEREOF, the Principal and Surety does sign and seal this instrument.

This _____ day of _____ 2016.

Principal

Surety

By _____

By _____

Address _____

Address _____

APPROVED AS TO FORM:

Office of the City Attorney

NOTE: Attach Power of Attorney

PAYMENT BOND

THE STATE OF TEXAS

SURETY'S NO. _____

KNOWN ALL MEN BY THESE PRESENT, THAT _____

_____ of the City of

_____, County of _____, and State of _____

as Principal, and _____, as Surety,

Are held and firmly bound unto the City of Galveston, Texas, a home rule municipal corporation of Galveston County, Texas, as Obligee, in the amount of:

_____ (written amount); (\$ _____),

DOLLARS for payment whereof the said Principal and Surety bind themselves, and their heirs, administrators, executors, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written contract with the

Obligee, dated the _____ day of _____, 2016 for:

ROADWAY RECONSTRUCTION – 19TH STREET FROM AVE J - HARBORSIDE

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

NOW, THEREFORE, the condition of the obligation is that if the Principal shall pay all claimants supplying labor and material to Principal or a subcontractor in the prosecution of the work provided for in said contract, then this obligation shall be null and void; otherwise, it is to remain in full force and effect.

PROVIDED, further that if any legal action is filed upon this Bond, venue shall lie in Galveston County, State of Texas.

SURETY, for value received, stipulated 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, or any assignment of the contract as may be provided for in the Instruction to Bidders, shall in anyway affect its obligation on this Bond and does waive notice of any such change, extension of time, alteration or additions to the terms of the contract, assignment thereof, or the work performed thereunder.

IN WITNESS THEREOF, the Principal and Surety does sign and seal this instrument.

This _____ day of _____ 2016.

Principal

Surety

By _____

By _____

Address _____

Address _____

APPROVED AS TO FORM:

Office of the City Attorney

NOTE: Attach Power of Attorney

PERFORMANCE BOND

THE STATE OF TEXAS

SURETY'S NO. _____

KNOWN ALL MEN BY THESE PRESENTS, THAT _____

As Principal and _____

_____ **As**

Surety, are held and firmly bound unto the City of Galveston, Texas a home rule municipal corporation of Galveston County, Texas as Obligee in the amount of:

_____ **(written amount); (\$** _____ **),**

DOLLARS, for the payment whereas the Principal and Surety bind themselves and their heirs, administrators, executors, successors and assigns jointly and severally firmly by these presents.

WHEREAS, the Principal has entered into a certain written contract with the Obligee for:

ROADWAY RECONSTRUCTION – 19TH STREET FROM AVE J - HARBORSIDE

Specifically including in the scope of this work and bond, the additional maintenance guaranty provisions set forth in the contract conditions, which contract is referred to and made a part hereof as fully and to the same extent as if copied at length herein, as well as the Principal's primary obligation to perform according to plans and specifications.

NOW THEREFORE THE CONDITION OF THIS OBLIGATION IS SUCH, that if the Principal shall faithfully perform the work in accordance with the plans, specifications, instructions to bidders, general and special conditions, and other contract documents including any addenda, then this performance bond shall be void; otherwise this performance bond shall remain in full force and effect.

PROVIDED, further that if any legal action to be filed upon the Bond, venue shall lie in Galveston County, State of Texas.

SURETY, for value received, stipulated 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, or any assignment of the contract as may be provided for in the Instruction to Bidders, shall in anyway affect its obligation on this Bond and does waive notice of any such change, extension of time, alteration or additions to the terms of the contract, assignment thereof, or the work performed.

IN WITNESS THEREOF, the Principal and Surety does sign and seal this instrument.

This _____ day of _____ 2016.

Principal

Surety

By _____

By _____

Address _____

Address _____

APPROVED AS TO FORM:

City Attorney

NOTE: Attach Power of Attorney

CERTIFICATE OF INSURANCE

TO: CITY OF GALVESTON

DATE: _____

GALVESTON, TEXAS

Type of

Project: _____

THIS CERTIFIES THAT _____

(Name and Address of Insured)

and the City of Galveston, Texas, are, on the date of this certificate, insured by this Company, with respect to the business operations hereinafter described, for the types of insurance and in accordance with the provisions of the standard policies used by this Company, and further hereinafter described. Exceptions to standard policy noted hereon.

Policy No.	TYPE OF INSURANCE		Limits	of	Liability
	Effective	Expires			
Workmen's Compensation					
Owner's Protective or Contingent Liability		Per Person	_____		
		Per Occurrence	_____		
		Property Damage	_____		
Automobile		Per Person	_____		
		Per Occurrence	_____		
		Property Damage	_____		

The foregoing Policies (do) (do not) cover all sub-contractors.

Locations Covered: _____

DESCRIPTION of Operations Covered: _____

The above policies either in the body thereof or by appropriate endorsement provide that they may not be changed or cancelled by the insurer in less than the legal time required after the insured has received written notice of such change or cancellation, or in case there is no legal requirement, in less ten days in advance of cancellation.

**TWO COPIES OF THIS CERTIFICATE
MUST BE SENT TO THE OWNER.**

(Name of insurer)

By _____

Title _____

STANDARD FORM OF AGREEMENT FOR OWNER-CONTRACTOR PROJECTS

STATE of TEXAS}

GALVESTON COUNTY}

THIS AGREEMENT, made and entered into this ____ day of _____, 2016, by and between the City of Galveston of the COUNTY of Galveston, TEXAS, hereinafter termed OWNER, and _____ of the City of _____ County of _____, Texas, hereinafter termed CONTRACTOR.

WITNESSETH: That for and in consideration of the payments and agreements hereinafter mentioned, the CONTRACTOR, and OWNER mutually agree to commence and complete the construction of certain improvements described as follows: **ROADWAY RECONSTRUCTION PROJECT
19TH STREET FROM AVE J - HARBORSIDE**

WHEREAS, performance of the Owner and Contractor are under the conditions expressed in the Notice to Contractors and Contractor's written proposal, the General and Special Conditions of this Agreement, Plans and other drawings and printed or written explanatory matter thereof, the Specifications and addenda as prepared (LJA Engineering), Performance and Payment Bonds hereto attached, and any other contract documents identified therein; all of which are made a part hereof and collectively evidence and constitute the entire contract.

The CONTRACTOR hereby agrees to commence work within ten (10) calendar days after the date written notice to do so shall have been given to him, and to reach Substantial Completion within _____ calendar days and **Final Completion within thirty (30) calendar days from the date of Substantial Completion**, subject to such extensions of time as are provided by the General and Special Conditions.

The obligations of the Owner to make payment under this Agreement are expressly subject to appropriations by the City of funds that are lawfully available to be applied to such purpose. The OWNER agrees to pay the CONTRACTOR, the price or prices shown in the proposal, which form a part of this contract, such payments to be subject to the General and Special Conditions of the contract.

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

City of Galveston (OWNER)

(CONTRACTOR)

By: _____

By: _____

Title: _____

Title: _____

ATTEST: _____

ATTEST: _____

Approved As To Form

City Attorney's Form

INDEX TO
GENERAL CONDITIONS OF THE AGREEMENT

Title:	Paragraph:
Abandonment by Contractor	48
Abandonment by Owner	49
Agreement of Workers	18
Assignment and Subletting	32
Bonds	50
Changes and Alterations	23
Cleaning Up	54
Contract Documents	4
Contractor	2
Contractor's Duty and Superintendence	16
Contractor's Insurance	28
Contractor's Right to Terminate	55
Contractor's Understanding	17
Construction Plant	19
Correction of Work after Final Payment	45
Correction of Work Before Final Payment for Work	44
Defects and Their Remedies	22
Discrepancies and Omissions	25
Entire Agreement	58
Extension of Time	35
Extra Work	24
Final Completion and Acceptance	42
Final Payment	43
Hindrances and Delays	36
Indemnification: Protection Against Accident to Employees and Equipment	27
Independent Contractor	53
Interpretation of Phrases	5
Keeping of Plans and Specifications Accessible	11
Layout of Work	10
Laws and Ordinances	31
Lines and Grades	13
Losses from Natural Causes	52
Observation and Testing	21
Owner	1
Owner's Representative	3
Owner's Representative's Authority and Duty	14
Owner's Right to Terminate Contract	56
Payments	40
Partial Payments	41
Payment Withheld	46

Price for Work	39
Protection Against Claims of Subcontractors, Laborers, Materialmen, and Furnishers of Machinery, Equipment and Supplies	29
Protection Against Royalties or Patent Invention	30
Protection of Adjoining Property	38
Quantities and Measurements	37
Right of Entry	12
Right of Owner to Modify Methods and Equipment	26
Sanitation	20
Severability Clause	57
Special Conditions	51
Subcontractors	6
Substantially Completed	9
Superintendence and Inspection	15
Time for Completion and Liquidated Damages	33
Time and Order of Completion	34
Time of Filing Claims	47
Work	8
Written Notice	7

GENERAL CONDITIONS OF THE AGREEMENT

1. **OWNER:** Whenever the word "Owner" is used in this contract, it shall be understood as referring to the City of Galveston, Texas. The City acts through its City Manager when he has been authorized by City Council, otherwise the City acts through City Council.

2. **CONTRACTOR:** Whenever the word "Contractor" is used, it shall be understood to mean the person, persons, co-partnership or corporation, to-wit: _____ who has agreed to perform the work embraced in this contract.

3. **OWNER'S REPRESENTATIVE:** Whenever the word Owner's Representative or representative is used in this contract, it shall be understood to mean: _____, who offices at: _____ Galveston, Texas, under whose supervision these contract documents, including the plans and specifications, were prepared, and who will inspect construction; or to such other representative, supervisor, or inspector as may be authorized by the Owner to act under this Agreement. Engineers, supervisors or inspectors will act for the Owner under the direction of Owner's Representative, but shall not directly supervise the Contractor or employees acting in behalf of the Contractor.

4. **CONTRACT DOCUMENTS:** The contract documents shall consist of the Notice to Bidder, Invitation to Bid, General Instructions to Bidders, Bid Proposal, Signed

Contract, Statutory Bonds (if required), General Conditions of the Agreement, Special Conditions of the Agreement, Specifications, Plans, Insurance Certificates, Notice of Acceptance, Notice to Proceed, Advertisement for bids, and all other documents made available to Bidder for his inspection in accordance with the Notice to Bidders. The Contract Documents shall be bound together, and every document included in the binding is part of the contract. Additionally, oversized plans and specifications shall be considered part of the Contract Documents even if not so bound.

The Contract Documents are complimentary 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 unless otherwise provided: Signed Agreement, Performance & Payment Bonds, Special Bonds (if any), Proposal, Special Conditions of Agreement, Notice to Contractors, Technical Specifications, Plans, and General Conditions of Agreement.

5. **INTERPRETATION OF PHRASES:** Whenever the words "Directed", "Required", "Permitted", "Designated", "Considered Necessary", "Prescribed", or words of like import are used, it shall be understood that the direction, requirement, permission, order, designation or prescription of the Owner's Representative is intended; and similarly, the words "Approval", "Acceptable", "Satisfactory", or words of like import shall mean approval by or acceptable or satisfactory to the Owner's Representative.

Whenever in the Specifications or Plans accompanying this Agreement, the terms or description of various qualities, relative finish, workmanship, or other qualities of similar kind which cannot from their nature be specifically and clearly described and specified, are necessarily described in general terms, the fulfillment of which must depend on individual judgment, then, in all such cases, any questions of the fulfillment of said Specifications or Plans shall be decided by the Owner's Representative and said work shall be done in accordance with the Owner's interpretations of the meaning of the words, terms, or clauses defining the character of the work.

6. **SUBCONTRACTOR:** The term "Subcontractor", includes only those having a direct contract with the Contractor for performance of work on the project contemplated by these documents. Contractor shall submit the names and addresses of all proposed subcontractors to the Owner. Subcontractors may be disqualified by Owner for the same reason that a Contractor may be disqualified. Owner shall have no responsibility to any Subcontractor employed by Contractor for performance of work on the project contemplated by these contract documents, but Subcontractors will look exclusively to Contractor for any payments due to the Subcontractor.
7. **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 an officer of the corporation for whom it is intended, or if delivered at or sent certified mail to the last business address known to the Party who gives the notice.

8. **WORK:** Unless otherwise stipulated, the Contractor shall provide and pay for all materials, supplies, machinery, equipment, tools, superintendence, labor, insurance, and all water, light, power, fuel, transportation and all other facilities necessary for the execution and completion of the work covered by the contract documents. Unless otherwise specified, all material shall be new and both workmanship and materials shall be of 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 well known, technical or trade meaning shall be held to refer to such recognized standards. All work shall be done and all materials furnished in strict conformity with the contract documents.
9. **SUBSTANTIALLY COMPLETED:** The term “Substantially Completed” means that the structure or project contemplated by the contract documents has been made suitable for use or occupancy, or the facility is in a condition to serve its intended purpose but still may require minor miscellaneous work and adjustment. The Engineer, or his designee, shall certify whether the project is substantially completed.
10. **LAYOUT OF WORK:** Except as specifically provided, the Contractor shall be responsible for laying out all work and shall accomplish this work in a manner acceptable to the Owner's Representative. The Owner's Representative will check the Contractor's layout of all major structures and other layout work done by the Contractor at Contractor's request, but this check does not relieve the Contractor of the responsibility of correctly locating all work in accordance with the Plans and Specifications.
11. **KEEPING OF PLANS AND SPECIFICATIONS ACCESSIBLE:** The Contractor shall be furnished with Five (5) copies, of all Plans, Profiles and Specifications without expense to Contractor and shall keep one copy of the same consistently accessible on the job site.
12. **RIGHT OF ENTRY:** The Owner's Representative may make periodic visits to the site to observe the progress and quality of the executed work and to determine, in general, if the work is proceeding in accordance with the contract documents. The Owner's Representative will not be required to make exhaustive or continuous on-site inspection to check the quality or quantity of the work, nor will the Owner's Representative be responsible for the construction means, methods, techniques, sequences or procedures, or the safety precautions. The Representative's efforts will be directed toward providing assurances for the Owner that the completed project will conform to the requirements of the contract documents, but the Representative will not be responsible for the Contractor's failure to perform the work in accordance with the contract documents. On the basis of on-site observations, the Representative will keep the Owner informed of the progress of the work and will endeavor to guard the Owner against defects and deficiencies in the work of the Contractor.
13. **LINES & GRADES:** The construction plans include a horizontal control line (baseline) and vertical control points (bench marks). These will be established or

shown to the Contractor prior to commencing construction. After construction has started, the Contractor shall be responsible for protecting and preserving these controls. From these controls the Contractor shall stake all alignments for the work and will be responsible for all horizontal and vertical construction staking.

14. **OWNER'S REPRESENTATIVE'S AUTHORITY AND DUTY:** Unless otherwise specified, it is mutually agreed between the Parties to this Agreement that the Owner's Representative shall review all work. The Representative has the authority to stop work whenever, in his/her opinion, such stoppage may be necessary to ensure the proper execution of the contract.

In order to prevent delays and disputes and to discourage litigation, it is further agreed that the Owner's Representative shall, in all cases, determine the amounts and quantities of the several kinds of work that are to be paid for under this contract. The Owner's Representative shall also determine all questions in relation to said work and the construction, and shall in all cases decide questions concerning the contract raised by the Contractor in consultation with the project's design professional where the Representative deems such consultation appropriate.

The Owner's Representative shall, within ten (10) business days of the date of the Contractor's question(s)/claim, render and deliver to both the Owner and the Contractor a written decision on all claims and on all questions which may arise relative to the execution of the work or the interpretation of the contract, specifications and plans. This includes determinations with regard to whether a Change Order should issue. Should the Owner's Representative fail to make such decision within the above stated time, the failure shall be considered a denial of Contractor's request.

Should Owner's Representative render any decision or give any direction, which in the opinion of the Contractor, is not in accordance with the meaning and intent of this contract, Contractor may file with Owner (with a copy to the City Manager) written objections to and appeal of the decision or direction within ten (10) business days. The Objection and Appeal to the Owner is a condition precedent to and shall reserve the Party's right to submit the question to mediation and litigation and to any rights of the Contractor to receive any additional money or time under this contract.

However, because it is the intent of this Agreement that there shall be no delay in the execution of the work, decisions or directions of the Owner's Representative, as rendered, shall at all times be promptly carried out, and any claim/objection arising from such decision or direction shall be submitted to the Owner prior to mediation which is a condition precedent to any litigation that may be initiated.

No person, including the Owner's Representative, has authority to increase the cost of this project to more than the amount authorized by City Council without obtaining a Change Order from City Council.

15. **SUPERINTENDENCE AND INSPECTION:** The Contractor agrees that the Owner's Representative shall be and is authorized to appoint from time to time such subordinate engineers, supervisors, or inspectors as the Owner's Representative deems proper to determine if the materials furnished and the work done under this Agreement is done in accordance with the Specifications.

The Contractor shall furnish all reasonable aid and assistance required by the subordinate engineers, supervisors, or inspectors for the proper observation and examination of the work. The Contractor shall regard and obey the written instructions of any subordinate engineer, supervisor, or inspectors so appointed. However, should the Contractor object to any written instruction by any subordinate engineer, supervisor or inspector, the Contractor may, within ten (10) business days of the instruction, make written appeal to the Owner's Representative in the manner set out above. However, no observation by the Owner's Representative shall affect Contractor's responsibility for proper construction in accordance with the plans and specifications furnished by Owner nor shall it affect Contractor's liability for failure to do so.

16. **CONTRACTOR'S DUTY AND SUPERINTENDENCE:** The Contractor shall give personal attention to the faithful prosecution and completion of this contract. The Contractor shall have on the jobsite a competent superintendent and any necessary assistants having good communication skills, all satisfactory to Owner's Representative. The superintendent shall represent the Contractor in the Contractor's absence and all directions given to the superintendent shall be binding as if given to the Contractor. Adequate supervision by competent and reasonable representatives of the Contractor is essential to the proper performance of the work; lack of such supervision shall be grounds for suspending operations of the Contractor.

The work, from its commencement to completion, shall be under the exclusive charge and control of the Contractor and all risk shall be borne by the Contractor.

The Owner or Owner's Representatives shall not be responsible for the acts or omissions of the Contractor, or any subcontractors, or any of the Contractor's agents or employees, or any other persons performing any of the work.

17. **CONTRACTOR'S UNDERSTANDING:** It is understood and agreed that the Contractor, after careful examination, is satisfied as to the nature and location of the work, the confirmation of the ground, the character, quality and quantity of materials to be encountered, the character of equipment and facilities needed before and during the work, and the general and local conditions, and all other matters which in any way affect the work under this contract.

No verbal agreement or conversation with any officer, agent, representative or employee of the Owner, either before or after the execution of this contract, shall effect or modify any of the terms or obligations herein contained.

18. **AGREEMENT OF WORKERS:** The Contractor agrees to employ only orderly and competent workers, skillful in the performance in the type of work required under this contract. Contractor agrees that whenever the Owner's Representative shall inform the Contractor in writing that any workers are incompetent, unfaithful, or disorderly, such worker or workers shall be discharged from the work and shall not again be employed on the work without the Owner's Representative's written consent.
19. **CONSTRUCTION PLANT:** The Contractor shall provide all labor, tools, equipment, machinery and materials necessary in the prosecution and completion of this contract where it is not otherwise specifically provided that Owner shall furnish same, and it is also understood that Owner shall not be held responsible for the care, preservation, conservation, or protection of any materials, tools, equipment or machinery or any part of work until the work is finally completed and accepted.

The building of structures for the housing of workers or equipment will be permitted only at such places as the Owner's Representative shall designate, and the sanitary conditions of the grounds in or about such structure shall at all times be maintained in a manner satisfactory to the Owner's Representative.

20. **SANITATION:** Necessary sanitary conveniences for the use of laborers on the work site, properly screened from public observation, shall be provided, constructed and maintained by the Contractor in such manner and at such points as shall be approved by the Owner's Representative. Contractor shall strictly enforce use of sanitary conveniences.
21. **OBSERVATION AND TESTING:** The Owner or Owner's Representative shall have the right at all reasonable times to observe and test the work. Contractor shall make necessary arrangements and provide proper facilities and access for such observation and testing at any location wherever work is in preparation or progress. Contractor shall ascertain the scope of any observation which may be contemplated by Owner or Owner's Representative and shall give ample notice as to the time each part of the work will be ready for such observation. Owner or Owner's Representative may reject any work found to be defective or not in accordance with the contract documents, regardless of the stage of its completion or the time or place of discovery of such errors, and regardless of whether Owner's Representative has previously accepted the work through oversight or otherwise. In the event that any part of the work is being fabricated or manufactured at a location where it is not convenient for Owner or Owner's Representative to make observations of such work or require testing of said work, then in such event Owner or Owner's Representative may require Contractor to furnish Owner or Owner's Representative certificates of inspection, testing or approval made by persons competent to perform such tasks at the location where that part of the work is being manufactured or fabricated. All such tests will be in accordance with the methods prescribed by the American Society for Testing and Materials or such other applicable organization as may be required by law, good practice, or the contract documents.

If any work which is required to be inspected, tested, or approved, is covered up without written approval or consent of the Owner or Owner's Representative, it must, if requested by the Owner or Owner's Representative, be uncovered for observation and testing at the Contractor's expense. The cost of all such inspections, tests, and approvals shall be borne by the Contractor unless otherwise provided. Any work which fails to meet the requirements of such tests, inspections or approval, and any work which meets the requirements of any such tests or approval but does not meet the requirements of the contract documents shall be considered defective. Such defective work shall be corrected at the Contractor's expense.

Neither observations by the Owner or Owner's Representative, nor inspections, tests, or approvals made by Owner, Owner's Representative, or other persons authorized under this agreement to make such inspections, tests, or approvals, shall relieve the Contractor from his obligation to perform the work in accordance with the requirements of the contract documents.

22. **DEFECTS AND THEIR REMEDIES:** It is further agreed that if any part of the work or any material brought on the site for use in the work, is deemed by the Owner or Owner's Representative as unsuitable or not in conformity with plans, specifications, and contract documents, the Contractor shall, after receipt of written notice from the Owner's Representative, immediately remove such material and rebuild or otherwise remedy such work so that it shall be in full accordance with this contract. It is further agreed that any remedial action shall be at Contractor's expense.

23. **CHANGES AND ALTERATIONS:** The Contractor further agrees that the Owner may make such changes and alterations as the Owner deems necessary, in the line, grade, form, dimensions, plans or materials for the work, either before or after the beginning of the construction, without affecting the validity of this contract and the accompanying bond.

If such changes or alterations diminish the quantity of the work to be done, they shall not constitute the basis for Contractor's claim for damages, or anticipated profits on the work that has been accepted. If the changes or alterations increase the amount of work, and the increased work can fairly be classified within the specifications, such increase shall be paid according to the quantity actually done and at the unit price established for such work under this contract; otherwise such additional work may be paid for as provided under Extra Work *if* the Contractor Obtains a Change Order. In case the Owner shall make changes or alterations that makes useless any work already done or material already furnished or used, then the Owner shall still be required to compensate the Contractor for any material or labor so used.

24. **EXTRA WORK:** The term "Extra Work" shall mean and include all work that may be required in writing by the Owner to be done by the Contractor to accomplish any change, alteration or addition to the work shown on the plans, and specifications or

contract documents, and not covered by the Contractor's Proposal, except as provided under "Changes and Alterations."

The Contractor shall perform all Extra Work under the direction of the Owner when presented with a Written Extra Work Order signed by the Owner. The compensation to be paid the Contractor for performing said Extra Work 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) or Method (B) is 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 Extra Work is performed and paid for under Method (C), the provisions of this paragraph shall apply. "Actual cost" is defined to include the cost of all workmen, such as foremen, timekeepers, mechanics and laborers; and materials, supplies, teams, trucks, rentals or machinery and equipment, for the time actually employed or used on such Extra Work; actual transportation charges necessarily incurred if the kind of equipment or machinery is not already on the job, together with all power, fuel, lubricants, water and similar operating expenses. Also, all necessary incidental expenses incurred directly on the account of Such Extra Work, like Social Security, Old Age Benefits, Compensation, and all insurance as may be required by any law or ordinance, or directed by the Owner, Owner may direct the form in which account of actual field cost shall be kept and records of these accounts shall be made available to Owner. The 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 percent of the latest of Equipment Expense adopted by the Associated General Contractors of America for this region. 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%) percent of the "actual field cost" to be paid the Contractor shall cover and compensate the Contractor for profits, overhead, general superintendence and field office expense, and all other elements of cost and expense not embraced with the "actual field cost" as defined, unless 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 the work is ordered in writing by the Owner's Representative and Contractor has requested a written

Change Order which is denied by Owner In case any orders or instructions, either oral or written, appear to the Contractor to involve Extra Work for which the Contractors should receive additional compensation, or cause the Contractor to need more time, notwithstanding any other provision of this contract, the Contractor must do the following to preserve his right to additional compensation/: a) if the original order was oral, the Contractor shall immediately request a written order, and b) *regardless of whether the request was oral or written*, the Contractor shall within ten (10) business days of the date of the order make a written request to the Owner's Representative for written Change Order authorizing such "Extra Work" or granting Contractor additional time. Contractor shall provide copies of the request to the Owner. Should the Contractor delay more than ten (10) business days from the date of the order before requesting the Change Order after being directed to do any work for which it believes it is entitled to additional compensation/additional construction time, the Contractor waives all right to additional compensation/time.

Should a disagreement between the Owner's Representative and the Contractor arise as to what does or does not constitute Extra Work, or as to the payment for what Contractor believes is Extra Work, or the need for additional time, and the Contractor has also made a request for a written Change Order that was not granted, then the Contractor shall keep an accurate account of the "actual field cost", as provided in Method (C) above, and then within ten (10) business days file a written Objection and Appeal of the disputed directly with the Owner (with a copy to the City Manager) explaining his objection to the decision. It is intended that the Contractor follow these instructions and the instructions regarding disputes found in sections 14 and 47. The Parties agree that this is the only way the Contractor can preserve the right to submit the matter of payment/time to mediation and (only if mediation does not resolve the dispute) to litigation. This procedure must be followed in all Extra Work disputes, and is a condition precedent for both mediation and litigation.

25. **DISCREPANCIES AND OMISSIONS:** It is further agreed that it is the intent of this contract that all work described in the proposal, the specifications, plans and other contract documents, shall be done for the prices quoted by the Contractor and that such price shall include all appurtenances necessary to complete the work in accordance with these contract documents as interpreted by Owner's Representative.

If the Contractor finds any discrepancies, omissions, or ambiguities in the plans, specifications, or contract documents, the Contractor should notify the Owner's Representative and obtain clarification and/or correction to such discrepancies, omissions, or ambiguities *before* the bid opening time. It shall be considered that the Contractor fully understands the work to be performed and has provided sufficient sums in the proposal to complete the work in accordance with these plans. It is further understood that any request for clarification must have been submitted no later than five (5) business days prior to opening of bids.

26. **RIGHT OF OWNER TO MODIFY METHODS AND EQUIPMENT:** If, at any time, the methods or equipment used by the Contractor are found to be inadequate to

secure the quality of work or the rate of progress required under this contract, the Owner or Owner's Representative may order the Contractor, in writing, to increase safety or improve character and efficiency, and the Contractor shall comply with such order.

If at any time the work force of the Contractor is inadequate for securing the progress of the contract, as determined by the Owner's Representative or Engineer, the Contractor shall, if so ordered in writing, increase the workforce or equipment, at Contractor's sole expense, to such extent as to give reasonable assurance of compliance with the schedule of progress.

27. **INDEMNIFICATION; PROTECTION AGAINST ACCIDENT TO EMPLOYEES AND PUBLIC:** The Contractor shall procure Workmen's Compensation Insurance with an insurance company licensed to transact business in the State of Texas. Such policy shall comply with the Workmen's Compensation laws of the State of Texas. The Contractor shall at all times exercise reasonable precaution for the safety of employees and others on or near the work site and shall comply with all applicable provisions of federal, state, and municipal 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 Associated General Contractors of America, except where incompatible with federal, state or municipal laws or regulations.

INDEMNITY CLAUSE: THE CONTRACTOR, SURETIES, AND INSURANCE CARRIERS SHALL DEFEND, INDEMNIFY AND SAVE HARMLESS THE OWNER AND ALL OF ITS OFFICERS, AGENTS AND EMPLOYEES FROM AND AGAINST ANY CLAIMS, LOSSES, DAMAGES, CAUSES OF ACTION, SUITS AND LIABILITY OF EVERY KIND, INCLUDING ALL EXPENSES ASSOCIATED WITH DEFENSE AGAINST THE CLAIM, WHERE THE CLAIM/LOSS/DAMAGE/CAUSE OF ACTION/SUIT/LIABILITY IS BASED ON ANY TORTIOUS OR NEGLIGENT ACT, OMISSION OR FAULT OF THE CONTRACTOR OR ANY SUBCONTRACTOR, THEIR AGENTS OR EMPLOYEES.

The Contractor or any subcontractor shall provide necessary barricades, warning lights, or signs. Contractor shall forfeit to Owner an amount equal to any assessment against the Owner or any of its officers, agents, or employees for the payment of any judgment, including attorney fees, or portion thereof, resulting to Contractor's negligence. The safety precautions taken shall be the sole responsibility of the Contractor. Inclusion of this paragraph in the Agreement, as well as any notice which may be given by the Owner or the Owner's Representative concerning omissions under this paragraph as the work progresses, are intended as reminders to the Contractor of the Contractor's duty and shall not be construed as any assumption of duty to supervise safety precautions by either the Owner or Owners Representative.

Note that there are several indemnity clauses throughout the Contract Documents.

Notwithstanding any provision to the contrary, if there are conflicting enforceable indemnity provisions, then the clause that provides the most favorable indemnification to the Owner shall prevail.

28. **CONTRACTOR'S INSURANCE:** The Contractor shall refer to Invitation to Bid for required insurance.
29. **PROTECTION AGAINST CLAIM OF SUBCONTRACTORS, LABORERS, MATERIALMEN, AND FURNISHERS OF MACHINERY, EQUIPMENT AND SUPPLIES:** THE CONTRACTOR AGREES TO INDEMNIFY AND SAVE THE OWNER HARMLESS FROM ALL CLAIMS ARISING OUT OF ANY DEMANDS OF SUBCONTRACTORS, LABORERS, WORKERS, MECHANICS, MATERIALMEN, AND FURNISHERS OF MACHINERY AND PARTS THEREOF; ANY EQUIPMENT, POWER TOOLS, ALL SUPPLIERS, INCLUDING COMMISSARY, INCURRED IN THE FURTHERANCE OF THE PERFORMANCE OF THIS CONTRACT. When Owner so desires, and along with demand for final payment, the Contractor shall furnish satisfactory evidence that all obligations to third parties set forth above have been paid, discharged or waived.

If during the progress of the work, Contractor shall allow any indebtedness to accrue for work furnished by any of those designated in the preceding paragraph and shall fail to pay and discharge any such indebtedness within five (5) days after demand is made, then Owner may, during the period for which such indebtedness shall remain unpaid, withhold from the unpaid portion of this contract, a sum equal to the amount of such unpaid indebtedness or may apply the sum so withheld to discharge any such indebtedness at Owner's option.

30. **PROTECTION AGAINST ROYALTIES OR PATENTED INVENTION:** The Contractor shall pay all royalties and license fees. Contractor shall provide for the use of any design, device, material or process covered by patents or copyrights by suitable legal agreement with the Patentee or Owner thereof.

The Contractor shall defend all suits or claims for infringement of any patent or copyrights and shall indemnify, defend and save the Owner harmless from any loss on account thereof. Owner shall defend all such suits and claims and shall be responsible for all such loss when a particular manufacturer or manufacturers is specified or required in these contract documents by Owner; provided, however, if choice of alternate design, device, material or process is allowed to the Contractor, then Contractor shall indemnify, defend, and save Owner harmless from any loss on account thereof.

If the material or process specified or required by Owner is a patent infringement, the Contractor shall be responsible for such loss if the Contractor had the option to use other materials or processes and did not

promptly gives written notice to the Owner prior to such infringement.

31. **LAWS AND ORDINANCES:** The Contractor shall at all times observe and comply with all Federal, State and local laws, codes, ordinances, rules and regulations. Contractor shall indemnify, defend, and save harmless the Owner against any claims arising from the violation of any such laws and ordinances, codes and regulations, whether by the Contractor, Contractor's employees or third parties. If the Contractor observes that the plans and specifications are at variance with a law, ordinance, code, rule or regulation, Contractor shall promptly notify the Owner's Representative in writing and request the necessary changes with adjustments as provided in the contract for changes in the work. If the Contractor performs any work contrary to such laws, ordinances, rules, codes and regulations, and without such notice to the Owner's Representative, Contractor shall bear all costs of remediation. This paragraph additionally requires Contractor to obtain all necessary permits at Contractor's expense.

The Owner is a municipal corporation of the State of Texas. All laws applicable to municipal corporations, or the conditions or manner under which the Owner may enter into contracts, shall be controlling and shall be considered part of this contract to the same effect as though embodied herein. Provisions in violation of applicable laws are void.

32. **ASSIGNMENT AND SUBLETTING:** The Contractor agrees to retain personal control and give personal attention to the fulfillment of this contract. The Contractor further agrees that subletting of any portion or feature of the work, or materials required in the performance of this contract shall not relieve the Contractor from the Contractor's full obligation to the Owner.
33. **TIME FOR COMPLETION AND LIQUIDATED DAMAGES:** Time for completion is set out in the Invitation to Bid for this project, usually in the paragraph concerning "Liquidated damages". It is hereby understood and mutually agreed by and between the Contractor and the Owner, that the date of beginning and time for completion as specified in the Contract of work to be done hereunder are essential conditions of this contract; and it is further mutually understood and agreed that the work embraced in this contract shall be commenced on a date to be specified in the Notice to Proceed.

If the Contractor should neglect, fail, or refuse to complete the work within the time specified, or any proper extension of time granted by the Owner, then Contractor agrees that the Owner may withhold permanently from Contractor's total compensation, the sum stated in the Special Conditions of the Agreement Paragraph 18, not as a penalty, but as liquidated damages for the breach of the contract as set forth for each and every calendar day that the Contractor is in default after the time stipulated for completing the work.

It is expressly understood and agreed, by and between Contractor and the Owner, that the time for the completion of the work described is a reasonable time for the completion of the same, taking into consideration the average climatic change and conditions and usual industrial conditions prevailing in this locality.

The amount for liquidated damages is fixed and agreed upon by and between the Contractor and the Owner because of the impracticability and extreme difficulty in fixing and ascertaining actual damages the Owner would in such event sustain. The amount is agreed to be damages the Owner would sustain and shall be retained by the Owner from current periodical estimates for payments or from final payment.

It is further agreed and understood between the Contractor and Owner that time is of the essence of this contract.

34. **TIME AND ORDER OF COMPLETION:** It is the meaning and intent of this contract, unless otherwise specifically provided, that the Contractor shall be allowed to prosecute the work at such time and sessions, in such order of precedence, and in such manner as shall be most conducive to economy of construction. However, the order and 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 Invitation to Bid and or proposals. When the Owner is having other work done, the Owner's Representative may direct the time and order of work done under this contract, so that conflicts will be avoided and the construction of the various jobs shall be harmonized.

The Contractor shall submit, along with the first request for payment, and at such other times as requested by the Owner's Representative, schedules that 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.

35. **EXTENSION OF TIME:** The Contractor agrees that the Contractor's proposal has been submitted in full recognition of the time required for the completion of this project, taking into consideration the average climatic range, possible rain days, and industrial conditions prevailing in this locality, and has considered the liquidated damage provisions of paragraph 33. Contractor shall not be entitled to an extension of time on this contract, except when the work has been delayed by an act or neglect of the Owner, Owner's Representative, employees of the Owner or other Contractors employed by the Owner; by changes ordered in the work; by strike, walk-outs, acts of God, or public enemies, fire or flood. Contractor may request extensions of time to complete the contract if he does so in writing to the Owner's Representative within ten (10) business days after the event causing the delay. Untimely requests for

extensions of time shall be denied and the Contractor's right, if any, to payment and or extra time is waived. Additionally, Contractor shall notify Owner promptly whenever there is reason to believe that Contractor may be unable to complete the project timely.

The Owner's Representative decide the request for additional time, and notify the Contractor. Should the Contractor disagree with the action of the Owner's Representative denying or reducing the Contractor's request for additional time, the Contractor shall present the matter by certified mail to the Owner with a copy to the City Manager within ten (10) business days. Denied requests not timely submitted for review as set out herein are waived. It shall be a condition precedent for mediation and then litigation if necessary, that the Owner denied or reduced Contractor's request for additional time. To the extent the extension is Granted, the Contractor must promptly make a written request for a Change Order.

36. **HINDRANCES AND DELAYS:** In executing the contract agreement, the Contractor agrees that in undertaking to complete the work within the required time, the Contractor has taken into consideration and made allowances for all hindrances and delays incident to such work, whether arising out of delays in securing material or workers or otherwise. No charge shall be made by the Contractor for hindrances or delays from any cause during the progress of any part of the work embraced in this contract except if *a Change Order has been obtained* because the work was stopped by order of the Owner or Owner's Representative for the Owner's convenience, in which event such expense as in the judgment of the Owner's Representative and the Owner that is caused by such stoppage shall be paid by Owner to Contractor. Costs caused by delays or activities of a subcontractor or other third parties under the supervision of the Contractor, shall be the responsibility of the Contractor.

Force Majeure: If by reason of Force Majeure either party shall be rendered unable, wholly or in part, to carry out its responsibilities under this contract by any occurrence by reason of Force Majeure, then the party unable to carry out its responsibility shall give the other party notice and full particulars of such Force Majeure in writing within a reasonable time after the occurrence of the event, and such notice shall suspend the party's responsibility for the continuance of the Forced Majeure claimed, but for no longer period.

Force Majeure means acts of God, floods, hurricanes, tropical storms, tornadoes, earthquakes, or other natural disasters, acts of public enemy, acts of terrorism, sovereign conduct, riots, civil commotion, strikes or lockouts, and other causes that are not occasioned by either Party's conduct which by the exercise of due diligence the party is unable to overcome and which substantially interferes with operations.

37. **QUANTITIES AND MEASUREMENTS:** No extra or customary

measurements of any kind will be allowed, but the actual measured or computed length, area, solid contents, number and weight only shall be considered, unless otherwise specifically provided.

In the event this contract is let on a unit price basis, then Owner and Contractor agree that this contract, including the specifications, plans and other contract documents are 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 their proposals offered for the work. It is understood and agreed that the actual amount of work to be done and the materials 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 work done and materials furnished on the project. *Notwithstanding the foregoing, however, the Contractor must notify the Owner's Representative in writing (with a copy to the City Manager) as soon as the Contractor is within \$15,000 of the amount authorized for the entire project by City Council less retainage. The Contractor will not be paid more than the amount authorized by City Council unless the City Council approves a Change Order increasing the total contract amount. Should the Contractor fail to give this advance notice and continue to work on the project so that the total payment due would exceed the amount authorized by City Council, the Contractor waives any and all rights to payment for the work exceeding the authorized sum.*

38. **PROTECTION OF ADJOINING PROPERTY:** The Contractor shall take proper measures to protect the adjacent or adjoining property or properties which may be injured or seriously affected by any process of construction. Contractor shall be liable for any and all claims for such damage resulting from the Contractor's failure to fully protect all adjacent property. **THE CONTRACTOR AGREES TO INDEMNIFY, DEFEND, SAVE AND HOLD HARMLESS THE OWNER AGAINST ANY CLAIMS FOR DAMAGES (AND EXPENSES FOR DEFENDING SAME) DUE TO ANY INJURY TO ANY ADJACENT OR ADJOINING PROPERTY, ARISING OR GROWING OUT OF CONTRACTOR'S PERFORMANCE OF THIS CONTRACT.** Such indemnity shall not apply to any claim arising out of the mere existence or character of the work.
39. **PRICE FOR WORK:** In consideration of the furnishing all necessary labor, equipment and material, and the completion of all work by the Contractor, and on the delivery of all material embraced in this contract in full conformity with the specifications and stipulations, the Owner agrees to pay the Contractor the prices set forth in the attached proposal, which has been made a part of this contract. The Contractor agrees to receive such prices as full compensation, including but not limited to furnishing all materials and all

labor required for the work, and for all expenses incurred by the Contractor, in performing the same, in the manner and according to this Agreement, the attached specifications, plans, contract documents and requirements of Owner's Representative.

40. **PAYMENTS:** No payments made or certificates given shall be considered as conclusive evidence of the performance of the contract, either wholly or in part. No payments made or certificates given shall be considered as acceptance of defective work. Contractor shall, at any time requested during the progress of the work, furnish the Owner or Owner's Representative with a verifying certificate showing the Contractor's total outstanding indebtedness in connection with the work. Before final payment is made, Contractor shall satisfy Owner, by affidavit or otherwise, that there are no outstanding claims for payment, or liens against Owner's premises, by reason of any work under the contract.

Acceptance by Contractor of final payment of the contract price shall constitute a waiver of all Contractor's claims against Owner which have not been timely filed as provided in this contract.

41. **PARTIAL PAYMENTS:** On or before the 5th day of each month the Contractor shall submit to Owner's Representative an application for partial payment. Owner's Representative shall review the application for partial payment and the progress of the work made by the Contractor. If Owner's Representative finds Contractor's application to be in order, Owner's Representative shall prepare a certificate for partial payment showing as completely as practical the total value of the work done by the Contractor up to and including the last day of the preceding month and the value of all sound materials delivered on site of the work that are to be fabricated into the work.

The Owner shall then pay the Contractor on or before the fifteenth day of the current month the total amount of the Owner's Representative Certificate of Partial Payment, less a percentage retained until final payment. The percentage of payment retained is determined by the contract amount. Five (5) percent shall be retained, if total contract award is \$400,000 or more. If total contract award is less than \$400,000, 10% will be retained. Such 5 or 10 percent shall be retained until final payment is made. However, it is understood that in case the whole work is near to completion and some unexpected and unusual delay occurs due to no fault or negligence on the part of the Contractor, the Owner *may* upon written recommendation of Owner's Representative pay a reasonable and equitable portion of the retained percentage due Contractor.

42. **FINAL COMPLETION AND ACCEPTANCE:** Within thirty-one (31) days after the Contractor has given the Owner's Representative written notice that

the work has been completed, or substantially completed, the Owner's Representative and the Owner shall inspect the work. If

- (a) the work is found completed or substantially completed in accordance with the contract documents, and
- (b) the Contractor has provided the Owner's Representative a set of "as built" drawings, the Owner's Representative shall issue to the Owner and Contractor a certificate of completion. The work shall not be considered "completed" or "substantially completed" in accordance with the contract until such time as the certificate has been issued; and no certificate shall be issued until the Owner has been given "as-built" drawings of the project by the Contractor.

43. **FINAL PAYMENT:** Upon the issuance of the Certificate of Completion the Engineer shall make final measurements and prepare a final statement of the value of all work performed and materials furnished under the terms of the Agreement plus a statement of all outstanding and unsettled claims and a list of any work that Contractor must correct or complete and shall certify this statement to the Owner. The Owner shall pay to the Contractor on or before the 31st day after the date of the Certificate of Completion the balance due the Contractor under the terms of the Agreement, provided the Contractor has fully performed all contractual obligations under the terms of this Contract. The payment shall become due in any event upon performance by the Contractor. Neither the Certificate of Completion, the final payment, nor any provision in the Contract Documents, shall relieve the Contractor of any obligation under this contract, or of the obligation for fulfillment of any warranty which may be required in the Special Conditions of this contract or required in specifications made a part of this contract. Acceptance of final payment by the Contractor, a subcontractor, or a material supplier shall constitute a waiver of claims by that payee, except for those claims previously made in writing and identified in writing by that payee as unsettled at the time of final application for payment.

44. **CORRECTION OF WORK BEFORE FINAL PAYMENT FOR WORK:** Contractor shall promptly remove from Owner's premises all materials whether actually incorporated in the work or not, condemned by the Owner's Representative. Contractor shall at Contractor's own expense promptly replace such condemned materials with other materials conforming to the requirements of the contract. Contractor shall also bear the expense of restoring all work of other Contractors damaged by any such removal or replacement. If Contractor does not remove and replace any such condemned work within a reasonable time after a written notice by the Owner or the Owner's Representative, Owner may remove and replace the materials at Contractor's expense.

45. **CORRECTION OF WORK AFTER FINAL PAYMENT:** Neither the final

payment nor certificate of completion nor any provision in this contract shall relieve the Contractor of responsibility for faulty materials or workmanship. Contractor shall immediately remedy any defects and pay for any damage to other work resulting from any defects that appear within a period of one (1) year from the date of final completion. The Owner or Owner's Representative shall give notice of observed defects with reasonable promptness.

46. **PAYMENT WITHHELD:** The Owner may, upon subsequently discovering defects in the work, withhold payment if any monies remain and/or nullify the whole or part of any certificate to such extent as may be necessary to protect the Owner from loss caused by:

- (a) Defective work not remedied.
- (b) Claims filed or reasonable evidence indicating possible filing of claims.
- (c) Failure of the Contractor to make payments promptly to sub-Contractors or to pay for material or labor; or
- (d) Damage to another Contractor.

When the above are cured, or the Contractor provides a surety bond protecting the amounts withheld, satisfactory to the Owner, payment shall be made.

47. **TIME OF FILING CLAIMS:** It is further agreed by both parties that all questions of dispute or adjustment presented by the Contractor shall be in writing and filed with the Owner's Representative within ten (10) business days after the disputed action is known to Contractor or could have been known if Contractor had been diligent, Contractor must obtain a written denial from the Owner's Representative to proceed further with any claim. Contractor must then (within 10 business days) file a written objection and appeal of the disputed decision, to the Owner (with copy to the City Manager in the same time period), fully explaining the disputed matter.

In case the Contractor does not agree with the Owner's decision and wishes to litigate that decision, Contractor shall—within 10 days of the Owner's decision-- first file a written demand for mediation with the Owner's Representative with a copy to the City Manager, Mediation is a condition precedent to litigation. It is further agreed that acceptance by the Contractor of the final payment shall be a bar to any claim by Contractor, except as noted otherwise in the contract documents. See also section 14.

48. **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 Owner's Representative, or if the Contractor fails to comply with the orders of the Owner's Representative, when such orders are consistent with this contract, the Owner shall notify the Surety on the bond, in writing. The Owner shall direct the Surety to complete the work and a copy of said notice shall be delivered to the Contractor.

After receiving a copy of Owner's notice to the Surety, the Contractor shall not remove from the job site any machinery, equipment, tools, materials, or supplies, materials and equipment for use on the job, by the Owner, the Surety of the Contractor, or another Contractor, for completion of the work. The Contractor shall not receive any rental or credit for such use. Contractor agrees and understands that the use of such equipment and materials will ultimately reduce the cost to complete the work and be reflected in the final settlement.

In case the Surety should fail to commence compliance with Owner's notice for completion, within ten (10) days after receipt of such notice, then the Owner may provide for completion of the work in either of the following manners:

- (a) The Owner may employ such force of workers, use of machinery, equipment, tools, materials and supplies as Owner may deem necessary to complete the work. Owner may charge the expense of such labor, machinery, equipment, tools, materials and supplies to Contractor, and the expense so charged shall be deducted and paid by the Owner out of monies as may be due, or that may become due to the Contractor under and by virtue of this agreement. If such expense is less than the sum which would have been payable to Contractor under this contract, if the same had been completed by the Contractor, then Owner shall pay the difference to the Contractor. In case such expense is greater than the sum which would have been payable under this contract, if the same had been completed by the Contractor, then the Contractor or the Contractor's Surety shall pay the amount of such excess to the Owner;
or
- (b) The Owner, under sealed bids, after notice published as required by law, at least twice in a newspaper having a general circulation in the County of 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 of 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 that which would have been the cost to complete the work under this contract, the Contractor and Contractor's Surety shall be credited with the difference between the new contract and this contract.

When the work has been completed or substantially completed, the Contractor and Surety shall be so notified and a certificate of completion issued, as provided in paragraph 42.

A complete itemized statement of the contract accounts, certified to by the

Owner's Representative as being correct shall be prepared and delivered to Contractor and Contractor's Surety. Upon delivery to the Contractor or Contractor's Surety, the Contractor or Surety shall pay the balance due, if any, as reflected by the statement, within thirty (30) days after the date of certificates of completion. Contractor and Surety shall be held jointly and severally liable for any balance due.

In the event the statement of accounts shows that the cost to complete the work is less than the cost to the Owner had the work been completed by the Contractor under the terms of this contract, or when the Contractor and 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 released to the Contractor and/or its Surety. Should the cost to complete the work exceed the contract price, and amount due the Owner within the time designated, and there remains any machinery, equipment, tools, materials or supplies on the site of the work, Owner shall mail notice of amounts due, together with an itemized list of such equipment and materials to the Contractor and its Surety. After mailing such notice, such property shall be held at the risk of the Contractor and its 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 receipt of notice, the Owner may sell all machinery, equipment, tools, materials or supplies and apply the proceeds, less costs and expense of the sale to the credit of the Contractor and its 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 job site that belong to persons other than the Contractor or its Surety, to their lawful owners.

49. **ABANDONMENT BY OWNER:** If the Owner shall fail to comply with the terms of this contract and refuses to comply with such terms within ten (10) days after the receipt of written notification by the Contractor, then the Contractor may suspend or wholly abandon the work, and may remove all machinery, tools and equipment and all materials on the ground that have not been included in the payments to the Contractor or incorporated into the work.

The Owner's Representative 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, the value of all partially completed work, at fair and equitable price, and the amount of all authorized Extra Work performed at the prices agreed upon or as provided for by the terms of this contract, and a reasonable sum to cover the cost of any provisions made by the Contractor to complete the work, and which cannot be utilized. The Owner's Representative shall then make a final statement of the balance due the Contractor by deducting from the above

estimate all previous payments by the Owner and all other sums that may be retained by the Owner under the terms of this Agreement. Owner's Representative shall certify the final statement to the Owner who shall pay to the Contractor on or before thirty (30) days after the date of Owner's receipt of certification, the balance shown by the final statement. In no event shall Owner owe more than the amount authorized by City Council.

50. **BONDS:** The successful bidder shall be required to furnish a performance bond and payment bond, in accordance with Tex. Gov't. Code, section 2253.001, et seq., in the amount of 100% of the total contract price, in the event the contract price exceeds \$25,000.00. If the contract price does not exceed \$25,000.00 and payment for work shall be made in one lump sum payment after completion and final acceptance of the work, the Owner shall not require the statutory bonds.

All bonds, if required, shall be submitted on forms supplied by the Owner, and executed by an approved surety company authorized to do business in the State of Texas. It is further agreed that this contract shall not be in effect until such bonds are so furnished and accepted by the Owner.

51. **SPECIAL CONDITIONS:** In the event special conditions are contained in these contract documents and such special conditions conflict with any of the general conditions contained in these documents, the special conditions shall control.
52. **LOSSES FROM NATURAL CAUSES:** Unless otherwise stated, all loss or damage to the Contractor arising out of the nature of the work to be done 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 Contractor's own cost and expense.
53. **INDEPENDENT CONTRACTOR:** Contractor is and shall remain an independent Contractor, with full, complete and exclusive power and authority to direct, supervise, and control Contractor's own employees and to determine the method of the performance of the work covered by this contract.

The fact that the Owner or Owner's Representative shall have the right to observe Contractor's work during Contractor's performance and to carry out the other prerogatives which are expressly reserved to and vested in the Owner or Owner's Representative, is not intended to and shall not at any time change or affect the status of the Contractor as an independent Contractor, with respect to either the Owner or Owner's Representative or to the Contractor's own employees or to any other person, firm or corporation.

54. **CLEANING UP:** The Contractor shall at all times keep the premises free from accumulations of debris and at the completion of the work, shall remove all

such debris and all tools, scaffolding and surplus materials and shall leave the worksite broom clean or its equivalent. The work shall be left in good order and condition. In case of dispute or should Contractor fail to clean the premises, Owner may remove the debris and charge the cost to the Contractor.

55. **CONTRACTOR'S RIGHT TO TERMINATE:** The Contractor shall have the right to terminate the contract at any time when, through no fault of the Contractor, circumstances beyond the Contractor's control, such as a declared emergency, occur which prohibit the completion of the agreement as contemplated by the parties at the time of execution. Should the Contractor choose to terminate this agreement, except as set forth above, Contractor shall accrue no rights to full payment and shall receive only a pro rata payment for the work actually performed and accepted by Owner, and the amount of such payment shall be assessed by Owner. Should the Contractor choose not to terminate even though cause exists under this provision, liquidated damages, as set forth in these documents shall remain in full force and effect.
56. **OWNER'S RIGHT TO TERMINATE CONTRACT:** In the event any of the provisions of this contract are violated by the Contractor, or by any of his subcontractors, the Owner may serve written notice upon the Contractor and the Surety of its intention to terminate this contract. Such notices shall contain the reasons for such intention to terminate the contract. Unless within ten (10) days after the serving of such notice upon the Contractor, the violation or delay ceases and satisfactory arrangements for correction of any violation are made, the contract shall, upon the expiration of the ten (10) days, cease and terminate. In exceptional cases where life or property is in danger, Owner may terminate the Contract immediately. In the event of any termination, the Owner shall immediately serve notice of termination upon the Surety and Contractor. The Surety shall have the right to perform the contract. If the Surety does not commence performance of the contract within ten (10) days from the date of the receipt of Owner's notice of termination, the Owner may assume the work and prosecute the same at the expense of the Contractor and its Surety. The Contractor and its Surety shall be liable to the Owner for any excess cost occasioned by the Owner. In such event, the Owner may take possession of and utilize, in completing the work, such materials, appliances, and plant as may be on the site of the work and necessary. The Owner may also terminate as set out in the bid documents.
57. **SEVERABILITY CLAUSE:** The phrases, clauses, sentences, paragraphs or sections of these conditions are severable. If any phrase, clause, sentence, paragraph, or section of these conditions should be declared invalid by the final decree or judgment of any court of competent jurisdiction, such invalidity shall not affect any of the remaining phrases, clauses, sentences, paragraphs and sections of these conditions.
58. **ENTIRE AGREEMENT:** The contract between the parties includes these

General Conditions, No modifications of, or waiver of any right under, the contract will be effective unless it is evidenced in writing executed by an authorized representative of each Party to the contract.

- 59. The parties agree that if there is litigation concerning this Contract, jurisdiction shall be in Texas state courts, and venue shall be in Galveston, County. Texas state law shall apply.**

SPECIAL CONDITIONS OF THE AGREEMENT

1. **ABBREVIATIONS DEFINED:** Abbreviations, wherever used in the various documents of the contract, are defined as follows:

Abbreviation:	Definition:
AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AIEE	American Institute of Electrical Engineers
AISC	American institute of Steel Construction
API	American Petroleum Institute
AREA	American Railway Engineers Association
ASA	American Standards Association
Asph.	Asphalt
ASTM	American Society of Testing and Materials
AT&SF	Atchinson, Topeka and Santa Fe Railroad
Ave.	Avenue
AWS	American Welding Society
AWWA	American Waterworks Association
Blvd.	Boulevard
CI	Cast Iron
CL	Center Line
cm	Centimeter
CO	Cleanout
Conc.	Concrete
CGMP	Corrugated Galvanized Metal Pipe
Cu.	Cubic
Culv.	Culvert
CY	Cubic Yard
Dia.	Diameter
Dr.	Driveway
Elev.	Elevation
F	Fahrenheit
FS	Federal Specifications
Ft.	Foot or Feet
'	Foot or Feet
Gal.	Gallon
HL&P	Houston Lighting & Power Co.
HP	Horsepower
Hr.	Hour
ID	Inside Diameter
In.	Inch or Inches
"	Inch or Inches
IPCEA	Insulated Power Cable Engineers Association
Kg.	Kilogram
Lb.	Pound
LF	Linear Foot or feet
M	Meter

Max.	Maximum
MH	Manhole
Min.	Minute
mm	Millimeter
No.	Number
OD	Outside Diameter
%	Percent
PI	Plasticity Index
psi	Pounds per Inch
Sq In	Square Inch
PVC	Polyvinyl Chloride
R	Radius
Reinf.	Reinforce or Reinforcing
R/W	Right of Way
R of W	Right of Way
ROW	Right of Way
San.	Sanitary
Sec.	Second
Sq.	Square
St.	Street
Std.	Standard
SWBT	Southwestern Bell Telephone Co.
SY	Square Yard
SUG	Southern Union Gas
TXDOT	Texas Department of Transportation
Vert.	Vertical
Vol.	Volume
WUT	Western Union Telegraph Company
yd.	Yard

2. **MEASUREMENT:** Measurements required for construction or for determination of pay quantities shall be in accordance with the United States Standards Measurements and Weights.
3. **DATE OF SPECIFICATIONS:** All reference to standard specifications or manufacturer's installation directions shall mean the latest edition.
4. **FIGURED DIMENSIONS TO GOVERN:** Dimensions and elevations indicated on the drawings shall be accurately followed even though different from scaled measurements. No work indicated on the drawings, the dimensions of which are not indicated, shall be executed until dimensions have been obtained from the Engineer.
5. **CONTRACTOR TO CHECK DRAWINGS AND SCHEDULES:** The Contractor shall check all dimensions, elevations, and quantities indicated on the drawings and schedules furnished by the Engineer. The Contractor shall promptly notify the Engineer of any discrepancy between the drawings and the conditions on the ground, or any error or omission in drawings, or in the layouts as given by stakes, points, or instructions which the Contractor may discover in the course of the work. The Contractor will not be allowed to take advantage of any error or omission in the

drawings or contract documents.

Full instructions will be furnished by the Engineer should such an error or omission be discovered and the Contractor shall carry out such instructions as if originally specified.

6. **SHOP DRAWINGS, PRODUCT DATA AND SAMPLES:** Shop drawings are drawings, diagrams, schedules and other data specifically prepared for the work by the Contractor or any subcontractor, manufacturer, supplier or distributor to illustrate some portion of the work.

Product data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate a material, product or system for some portion of the work.

Samples are physical examples which illustrate materials, equipment or workmanship and establish standards by which the work shall be judged.

The Contractor shall provide, review, approve, and submit, with reasonable promptness and in such sequence as to cause no delay in the work or in the work of the Owner or any separate Contractor, all shop drawings, product data and samples required by the contract documents.

By approving and submitting shop drawings, product data, and samples, the Contractor represents that the Contractor has determined and verified all materials, field measurements, and field construction criteria related thereto, or shall do so, and that the Contractor has checked and coordinated the information contained within such submittal with the requirements of the work and of the contract documents.

As the Engineer's review is only for general conformance with the requirements of the contract documents, the Contractor shall not be relieved of responsibility for any deviation from the requirements of the contract documents by the Engineer's approval of shop drawings, product data or samples, unless the Contractor has specifically informed the Engineer, in writing, of such deviation at the time of submission and the Engineer has given written approval to the specific deviation. The Contractor shall not be relieved from responsibility for errors or omissions in the shop drawings, product data or samples by the Engineer's approval. The Contractor shall direct specific attention, in writing or on resubmitted shop drawings, product data or samples, to revisions other than those requested by the Engineer on previous submittal.

The Contractor shall be responsible for delays caused by rejection of the submittal of inadequate or incorrect shop drawings, product data or samples. The Contractor shall be responsible for ensuring that any "approved" copies of shop drawings bearing the approval of the Engineer are on the job site. The Contractor shall be responsible for providing all copies of approved shop drawings necessary for the construction operation.

The Contractor shall keep adequate records of submittal and approvals so that an accurate up-to-date record file is maintained at the job site at all times.

No portion of the work requiring submission of a shop drawing, product data, or sample shall be commenced until the submittal has been approved by the Engineer. All such portions of the work shall be in accordance with approved submittal.

7. **PRODUCTION OF WORK:** Before beginning construction operations, the Contractor shall submit to the Engineer for approval a chart or brief outlining the manner of prosecution of the work that the Contractor intends to follow in order to complete the contract within the allotted time.
8. **NOTIFICATION OF ENGINEER PRIOR TO START OF WORK:** The Contractor shall notify the Engineer at least twenty-four (24) hours before beginning work at any point. The Contractor shall not open up new work to the detriment of work already begun. The beginning, sequence, and prosecuting of the work shall be governed by the approval of the Engineer.
9. **MATERIALS AND EQUIPMENT:** Unless specifically provided in each case, all materials and equipment furnished for permanent installation in the work shall conform to applicable standard specifications and shall be new, unused and undamaged, when installed or otherwise incorporated in the work. No such material or equipment shall be used by the Contractor for any purpose other than that intended or specified, unless such use is specifically authorized by the Owner.
10. **EQUIVALENT MATERIALS AND EQUIPMENT:** Whenever a material or article is specified or described by using the name of a proprietary product or the name of a particular manufacturer or vendor, the specific item mentioned shall be understood as establishing the type, function, and quality desired. Other manufacturer's products will be accepted provided sufficient information is submitted to allow the Engineer to determine that the products proposed are equivalent to those named. Such items shall be submitted for review by the procedure set forth above. Contractor shall not use such items unless written approval by the Engineer is obtained.

Request for review of equivalency will not be accepted from anyone except the Contractor and such request will not be considered until after the contract has been awarded.

11. **UTILITY SERVICE FOR CONSTRUCTION:** Contractor shall contract for all utility service required for the construction of this project. Contractor shall pay all charges for same directly to the utility company involved. Contractor shall not operate any fire hydrants without first having a meter from the City of Galveston and having placed this meter on the hydrant. The Contractor shall operate fire hydrant(s) only with an approved hydrant wrench.
12. **RIGHTS OF WAY AND EASEMENTS:** The Owner will furnish all right-of-way easements required for the proposed work.
13. **LOCATION OF AND DAMAGE TO EXISTING UTILITIES:** The Contractor shall exercise caution to prevent damage to existing utilities during the progress of the construction work, taking care to locate same, where possible, in advance of the actual work. Upon written request by the Contractor, the Engineer will render assistance to

the Contractor in determining the location of existing utilities by making such maps, records and other information as may be accessible to the Engineer. The accuracy of such information will not be guaranteed. The Contractor shall make good all damage to existing utilities resulting from Contractor's operations.

Where a pipe, duct or other structure of a utility is exposed, which in the opinion of the Engineer requires strengthening, altering or moving, the Contractor shall perform such work as the Owner may order, which may be paid for as extra work in accordance with the terms of the contract relating to extra work.

Should the Contractor, in the laying out of the work, encounter any pipe, underground utility, or structure, the location of which has not been furnished to him by the Engineer, the Contractor shall bring such conditions to the attention of the Engineer for a determination of the method to be used to remove or bypass obstructions.

14. **PROTECTION AND REPLACEMENT OF PROPERTY:** Where necessary, Contractor shall remove signs or other obstructions, and replace all signs in their original condition and restore damaged property or make satisfactory restitution to the Owner.
15. **SIGNS AND BARRICADES:** All signs, barricades and other warning devices used to guide, warn or protect traffic in, around and through the construction area shall be provided and maintained by the Contractor in a manner suitable to and/or as directed by the Engineer. All such signs, barricades and warning devices shall conform to the Texas Manual on Uniform Traffic Control Devices, Part VI.
16. **USE OF STREETS:**
 - (a) The Contractor will be permitted to erect such barricades as the Contractor deems necessary to prohibit the encroachment of vehicular or pedestrian travel within the work area or storage area. However, no barricades shall be erected to obstruct the free passage to traffic in any highway, alley or street without the approval of the Director of Traffic and Transportation.
 - (b) Contractor shall not block ditches, inlets, fire hydrants, driveways, etc., without obtaining advance approval from the appropriate authorities. Where necessary, Contractor shall provide temporary drainage.
17. **CONTRACTOR WARRANTY:** The Contractor warrants that materials and equipment furnished under the contract will be of good quality and new, unless otherwise required or permitted by the contract documents. The Contractor warrants the work will be free from defects not inherent in the quality required or permitted, and the work will conform with the requirements of the contract documents. Work not conforming to the contract documents, including substitutions not properly authorized and approved, may be considered defective. Upon demand, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment. This warranty shall apply to any extra work and corrective work, as well as the original work specified in the contract documents.
18. **LIQUIDATED DAMAGES:** Contractor shall be liable for liquidated damages in the amount specified in the Invitation to Bid for this project should the work not be

completed within the period specified for completion of the project. Additionally, Contractor may be liable for the loss of any grant moneys associated with this project due to Contractor's delay.

19. **GENERAL PREVAILING WAGE RATES:** The City of Galveston has adopted the following schedule of general prevailing rate of per diem wages which establish the minimum wages which may be paid for labor on this contract. That schedule is shown in the General Decision Number provided within these documents.

The bidder's attention is directed to the provisions of Ch. 2258 of the Texas Government Code, and the requirements concerning such wage scales and payments by the Contractor of the prevailing rates of wages as established by the City of Galveston.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29 CFR 5.5 (a) (1) (ii)).

These prevailing wage rates are subject to change by the City prior to bid opening date. Any changes shall be issued by addenda.

20. **COMPLIANCE WITH AIR AND WATER ACTS:**

- (a) In compliance with the Clean Air Act, as amended, 41 U.S.C. Sec. 7401 et. seq., and the regulations of the Environmental Protection Agency with respect thereto, the Contractor agrees that:
- 1) Any facility to be utilized in the performance of this contract or any subcontract shall not be a facility listed on the EPA List of Violating Facilities pursuant to 40 CFR 15.20.
 - 2) Contractor shall comply with all requirements of Section 114 of the Clean Air Act, as amended.
- (b) Materials utilized in the project shall be free of any hazardous materials, except as may be specifically provided for in the specifications.

If the Contractor encounters existing material on sites owned or controlled by the Owner or in material sources that are suspected by visual observation or smell to contain hazardous materials, the Contractor shall immediately notify the Engineer and the Owner. The Owner will be responsible for testing for and removal or disposition of hazardous materials on sites owned or controlled by the Owner. The Owner may suspend the work, wholly or in part during the testing, removal or disposition of hazardous materials on sites owned or controlled by the Owner.

21. **EQUAL EMPLOYMENT OPPORTUNITY**

- (a) The Contractor will not discriminate against any employee or the applicant for employment because of race, color, religion, sex, gender, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, gender, or national origin. Such action shall include, but not be limited to the following: employment, promotion, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training,

including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the owner.

- (b) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.
- (c) The Contractor will cause the foregoing provisions to be inserted in all subcontracts for any work covered by this project so that such provisions will be binding upon each subcontractor, provided that the foregoing provisions shall not apply to contracts or subcontracts for standard commercial supplies or raw materials.
- (d) The Contractor shall take affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions.
- (e) The Contractor and all subcontractors are encouraged to participate in voluntary associations which assist in fulfilling their affirmative action obligations.
- (f) The Contractor is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority.
- (g) The Contractor shall not use the affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.
- (h) The Contractor shall not enter into any Subcontract with any person or firm debarred from Government contracts.
- (i) Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents.

22. AFFIRMATIVE ACTION FOR WORKERS WITH DISABILITIES:

The Contractor will not discriminate against any employee or applicant for employment because of disability in regard to any position for which the employee or applicant for employment is qualified. The Contractor agrees to take affirmative action to employ, advance in employment and otherwise treat qualified individuals with disabilities without discrimination based upon their disability in all employment practices such as the following: employment, promotion, demotion or transfer, recruitment, advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeship.

23. DUTIES IMPOSED BY SECTION 109 OF THE HOUSING AND COMMUNITY DEVELOPMENT ACT OF 1974: Contractor shall comply with Section 109 of the

Housing and Community Development Act of 1974, as amended, which provides that: No person in the United States shall on the ground of race, color, national origin, or sex be excluded from participation in, be denied the benefits of, or be subjected to discrimination under this program or activity which is funded in whole or in part with funds made available under this act.

24. **THE PROVISION OF LOCAL TRAINING, EMPLOYMENT, AND BUSINESS OPPORTUNITIES:**

- (a) To the greatest extent feasible opportunities for training and employment shall be given by Contractor (and its subcontractors) to lower income residents of the project area, and contracts for work in connection with the project shall to the greatest extent feasible be awarded to business concerns that are located in, or owned in substantial part by persons residing in the area of the project.
- (b) The Contractor shall include this section in every subcontract for work in connection with the project.

25. **NON SEGREGATED FACILITIES:** By entering this Contract, the Contractor certifies that he does not and will not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not and will not permit his employees any segregated facilities at any of his establishments, or permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. As used in this paragraph the term "segregated facilities" means any waiting rooms, work areas, rest rooms and washrooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, creed, color, or national origin, because of habit, local custom, or otherwise.

26. **JOB OFFICES:**

- (a) The Contractor and his subcontractors may maintain such office and storage facilities on the site as are necessary for the proper conduct of the work. These shall be located so as to cause no interference to any work to be performed on the site. The Owner shall be consulted with regard to locations.
- (b) Upon completion of the improvements, or as directed by the Owner, the Contractors shall remove all such temporary structures and facilities from the site, and leave the site of the work in the condition required by the Contract.

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**SPECIAL
CONDITIONS
OF THE
AGREEMENT**

SPECIAL CONDITIONS OF THE AGREEMENT

1. ABBREVIATIONS DEFINED: Abbreviations, wherever used in the various documents of the contract, are defined as follows:

AASHTO	American Association of State Highway and Transportation Officials	Lb.	Pound
		Kg.	Kilogram
		LF	Linear Foot or feet
ACI	American Concrete Institute	M	Meter
AIEE	American Institute of Electrical Engineers	Max.	Maximum
		MH	Manhole
AISC	American institute of Steel Construction	Min.	Minute
		mm	Millimeter
API	American Petroleum Institute		
AREA	American Railway Engineers Association		
ASA	American Standards Association	No.	Number
Asph.	Asphalt	OD	Outside Diameter
ASTM	American Society of Testing and Materials	%	Percent
		PI	Plasticity Index
AT&SF	Atchinson, Topeka and Santa Fe Railroad	psi	Pounds per Square Inch
Ave.	Avenue	PVC	Polyvinyl Chloride
AWS	American Welding Society	R	Radius
AWWA	American Waterworks Assoc.	Reinf.	Reinforce or Reinforcing
Blvd.	Boulevard	{R/W	
CI	Cast Iron	R of WR	Right of Way
CL	Center Line	ROW	
cm	Centimeter		
CO	Cleanout	San.	Sanitary
Conc.	Concrete	Sec.	Second
CGMP	Corrugated Galvanized Metal Pipe	Sq.	Square
Cu.	Cubic	St.	Street
Culv.	Culvert	Std.	Standard
CY	Cubic Yard	SWBT	Southwestern Bell Telephone Co.
Dia.	Diameter		
Dr.	Driveway	SY	Square Yard
Elev.	Elevation	SUG	Southern Union Gas
F	Fahrenheit	TXDOT	Texas Department of Transportation
FS	Federal Specifications		
Ft.	Foot or Feet		
'	Foot or Feet		
Gal.	Gallon	Vert.	Vertical
HL&P	Houston Lighting & Power Co.	Vol.	Volume
HP	Horsepower	WUT	Western Union Telegraph Company
Hr.	Hour		
ID	Inside Diameter	yd.	Yard
In.	Inch or Inches		
"	Inch or Inches		
IPCEA	Insulated Power Cable Engineers Association		

2. **MEASUREMENT:** Measurements required for construction or for determination of pay quantities shall be in accordance with the United States Standards Measurements and Weights.
3. **DATE OF SPECIFICATIONS:** All reference to standard specifications or manufacturer's installation directions shall mean the latest edition.
4. **FIGURED DIMENSIONS TO GOVERN:** Dimensions and elevations indicated on the drawings shall be accurately followed even though different from scaled measurements. No work indicated on the drawings, the dimensions of which are not indicated, shall be executed until dimensions have been obtained from the Engineer.
5. **CONTRACTOR TO CHECK DRAWINGS AND SCHEDULES:** The Contractor shall check all dimensions, elevations, and quantities indicated on the drawings and schedules furnished by the Engineer. The Contractor shall notify the Engineer of any discrepancy between the drawings and the conditions on the ground, or any error or omission in drawings, or in the layouts as given by stakes, points, or instructions which the Contractor may discover in the course of the work. The Contractor will not be allowed to take advantage of any error or omission in the drawings or contract documents.

Full instructions will be furnished by the Engineer should such an error or omission be discovered and the Contractor shall carry out such instructions as if originally specified.

6. **SHOP DRAWINGS, PRODUCT DATA AND SAMPLES:** Shop drawings are drawings, diagrams, schedules and other data specifically prepared for the work by the Contractor or any subcontractor, manufacturer, supplier or distributor to illustrate some portion of the work.

Product data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate a material, product or system for some portion of the work.

Samples are physical examples which illustrate materials, equipment or workmanship and establish standards by which the work shall be judged.

The Contractor shall provide, review, approve, and submit, with reasonable promptness and in such sequence as to cause no delay in

the work or in the work of the Owner or any separate Contractor, all shop drawings, product data and samples required by the contract documents.

By approving and submitting shop drawings, product data, and samples, the Contractor represents that the Contractor has determined and verified all materials, field measurements, and field construction criteria related thereto, or shall do so, and that the Contractor has checked and coordinated the information contained within such submittal with the requirements of the work and of the contract documents.

As the Engineer's review is only for general conformance with the requirements of the contract documents, the Contractor shall not be relieved of responsibility for any deviation from the requirements of the contract documents by the Engineer's approval of shop drawings, product data or samples, unless the Contractor has specifically informed the Engineer, in writing, of such deviation at the time of submission and the Engineer has given written approval to the specific deviation. The Contractor shall not be relieved from responsibility for errors or omissions in the shop drawings, product data or samples by the Engineer's approval. The Contractor shall direct specific attention, in writing or on resubmitted shop drawings, product data or samples, to revisions other than those requested by the Engineer on previous submittal.

The Contractor shall be responsible for delays caused by rejection of the submittal of inadequate or incorrect shop drawings, product data or samples. The Contractor shall be responsible for ensuring that any "approved" copies of shop drawings bearing the approval of the Engineer are on the job site. The Contractor shall be responsible for providing all copies of approved shop drawings necessary for the construction operation.

The Contractor shall keep adequate records of submittal and approvals so that an accurate up-to-date record file is maintained at the job site at all times.

No portion of the work requiring submission of a shop drawing, product data, or sample shall be commenced until the submittal has been approved by the Engineer. All such portions of the work shall be in accordance with approved submittal.

7. **PRODUCTION OF WORK:** Before beginning construction operations, the Contractor shall submit to the Engineer a chart or

brief outlining the manner of prosecution of the work that the Contractor intends to follow in order to complete the contract within the allotted time.

8. **NOTIFICATION OF ENGINEER PRIOR TO START OF WORK:**

The Contractor shall notify the Engineer at least twenty-four (24) hours before beginning work at any point. The Contractor shall not open up new work to the detriment of work already begun. The beginning, sequence, and prosecuting of the work shall be governed by the orders of the Engineer.

9. **MATERIALS AND EQUIPMENT:**

Unless specifically provided in each case, all materials and equipment furnished for permanent installation in the work shall conform to applicable standard specifications and shall be new, unused and undamaged, when installed or otherwise incorporated in the work. No such material or equipment shall be used by the Contractor for any purpose other than that intended or specified, unless such use is specifically authorized by the Owner.

10. **EQUIVALENT MATERIALS AND EQUIPMENT:**

Whenever a material or article is specified or described by using the name of a proprietary product or the name of a particular manufacturer or vendor, the specific item mentioned shall be understood as establishing the type, function, and quality desired. Other manufacturer's products will be accepted provided sufficient information is submitted to allow the Engineer to determine that the products proposed are equivalent to those named. Such items shall be submitted for review by the procedure set forth above. Contractor shall not use such items unless written approval by the Engineer is obtained.

Request for review of equivalency will not be accepted from anyone except the Contractor and such request will not be considered until after the contract has been awarded.

11. **UTILITY SERVICE FOR CONSTRUCTION:**

Contractor shall contract for all utility service required for the construction of this project. Contractor shall pay all charges for same directly to the utility company involved. Contractor shall not operate any fire hydrants without first having a meter from the City of Galveston and having placed this meter on the hydrant. The Contractor shall operate fire hydrant(s) only with an approved hydrant wrench.

12. **RIGHTS OF WAY AND EASEMENTS:**

The Owner will furnish all right-of-way easements required for the proposed work.

13. **LOCATION OF AND DAMAGE TO EXISTING UTILITIES:** The Contractor shall exercise caution to prevent damage to existing utilities during the progress of the construction work, taking care to locate same, where possible, in advance of the actual work. Upon written request by the Contractor, the Engineer will render assistance to the Contractor in determining the location of existing utilities by making such maps, records and other information as may be accessible to the Engineer. The accuracy of such information will not be guaranteed. The Contractor shall make good all damage to existing utilities resulting from Contractor's operations.

Where a pipe, duct or other structure of a utility is exposed, which in the opinion of the Engineer requires strengthening, altering or moving, the Contractor shall perform such work as the Engineer may order, which will be paid for as extra work in accordance with the terms of the contract relating to extra work.

Should the Contractor, in the laying out of the work, encounter any pipe, underground utility, or structure, the location of which has not been furnished to him by the Engineer, the Contractor shall bring such conditions to the attention of the Engineer for a determination of the method to be used to remove or bypass obstructions.

14. **PROTECTION AND REPLACEMENT OF PROPERTY:** Where necessary, Contractor shall remove signs or other obstructions, and replace all signs in their original condition and restore damaged property or make satisfactory restitution to the Owner.
15. **SIGNS AND BARRICADES:** All signs, barricades and other warning devices used to guide, warn or protect traffic in, around and through the construction area shall be provided and maintained by the Contractor in a manner suitable to and/or as directed by the Engineer. All such signs, barricades and warning devices shall conform to the Texas Manual on Uniform Traffic Control Devices, Part VI.
16. **USE OF STREETS:**
- A. The Contractor will be permitted to erect such barricades as the Contractor deems necessary to prohibit the encroachment of vehicular, or pedestrian travel within the work area or storage area. However, no barricades shall be erected to obstruct the free passage to traffic in any alley or street without the approval of the Director of Traffic and Transportation.

- B. Contractor shall not block ditches, inlets, fire hydrants, driveways, etc., without obtaining advance approval from the appropriate authorities. Where necessary, Contractor shall provide temporary drainage.
17. **CONTRACTOR WARRANTY:** The Contractor warrants that materials and equipment furnished under the contract will be of good quality and new, unless otherwise required or permitted by the contract documents. The Contractor warrants the work will be free from defects not inherent in the quality required or permitted, and the work will conform with the requirements of the contract documents. Work not conforming to the contract documents, including substitutions not properly authorized and approved, may be considered defective. Upon demand, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment. This warranty shall apply to any extra work and corrective work, as well as the original work specified in the contract documents.
18. **LIQUIDATED DAMAGES:** Contractor shall refer to Invitation to Bid for liquidated damages should the work not be completed within the specified period.
19. **GENERAL PREVAILING WAGE RATES:** The City of Galveston has adopted the following schedule of general prevailing rate of per diem wages which establish the minimum wages which may be paid for labor on this contract. That schedule is shown in the General Decision Number provided within these documents.

The bidder's attention is directed to the provisions of Ch. 2258 of the Texas Government Code, and the requirements concerning such wage scales and payments by the Contractor of the prevailing rates of wages as established by the City of Galveston.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29 CFR 5.5 (a) (1) (11)).

These prevailing wage rates are subject to change by the City prior to bid opening date. Any changes shall be issued by addenda.

**WAGE
SCALE
DECISION**

General Decision Number: TX160056 01/08/2016 TX56

Superseded General Decision Number: TX20150056

State: Texas

Construction Type: Highway

Counties: Austin, Brazoria, Chambers, Fort Bend, Galveston, Hardin, Harris, Jefferson, Liberty, Montgomery, Orange, San Jacinto and Waller Counties in Texas.

HIGHWAY CONSTRUCTION PROJECTS (excluding tunnels, building structures in rest area projects & railroad construction; bascule, suspension & spandrel arch bridges designed for commercial navigation, bridges involving marine construction; and other major bridges).

Note: Under Executive Order (EO) 13658, an hourly minimum wage of \$10.15 for calendar year 2016 applies to all contracts subject to the Davis-Bacon Act for which the solicitation was issued on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least \$10.15 (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2016. The EO minimum wage rate will be adjusted annually. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/08/2016

* SUTX2011-013 08/10/2011

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER (Paving and Structures).....	\$ 12.98	
ELECTRICIAN.....	\$ 27.11	
FORM BUILDER/FORM SETTER		
Paving & Curb.....	\$ 12.34	
Structures.....	\$ 12.23	
LABORER		
Asphalt Raker.....	\$ 12.36	
Flagger.....	\$ 10.33	
Laborer, Common.....	\$ 11.02	
Laborer, Utility.....	\$ 11.73	
Pipelayer.....	\$ 12.12	
Work Zone Barricade Servicer.....	\$ 11.67	

PAINTER (Structures).....\$ 18.62

POWER EQUIPMENT OPERATOR:

Asphalt Distributor.....\$ 14.06
 Asphalt Paving Machine.....\$ 14.32
 Broom or Sweeper.....\$ 12.68
 Concrete Pavement
 Finishing Machine.....\$ 13.07
 Concrete Paving, Curing,
 Float, Texturing Machine....\$ 11.71
 Concrete Saw.....\$ 13.99
 Crane, Hydraulic 80 Tons
 or less.....\$ 13.86
 Crane, Lattice boom 80
 tons or less.....\$ 14.97
 Crane, Lattice boom over
 80 Tons.....\$ 15.80
 Crawler Tractor.....\$ 13.68
 Excavator, 50,000 pounds
 or less.....\$ 12.71
 Excavator, Over 50,000
 pounds.....\$ 14.53
 Foundation Drill, Crawler
 Mounted.....\$ 17.43
 Foundation Drill, Truck
 Mounted.....\$ 15.89
 Front End Loader 3 CY or
 Less.....\$ 13.32
 Front End Loader, Over 3 CY.\$ 13.17
 Loader/Backhoe.....\$ 14.29
 Mechanic.....\$ 16.96
 Milling Machine.....\$ 13.53
 Motor Grader, Fine Grade...\$ 15.69
 Motor Grader, Rough.....\$ 14.23
 Off Road Hauler.....\$ 14.60
 Pavement Marking Machine...\$ 11.18
 Piledriver.....\$ 14.95
 Roller, Asphalt.....\$ 11.95
 Roller, Other.....\$ 11.57
 Scraper.....\$ 13.47
 Spreader Box.....\$ 13.58

Servicer.....\$ 13.97

Steel Worker

Reinforcing Steel.....\$ 15.15
 Structural Steel Welder.....\$ 12.85
 Structural Steel.....\$ 14.39

TRUCK DRIVER

Low Boy Float.....\$ 16.03
 Single Axle.....\$ 11.46
 Single or Tandem Axle Dump..\$ 11.48
 Tandem Axle Tractor w/Semi
 Trailer.....\$ 12.27

WELDERS - Receive rate prescribed for craft performing
 operation to which welding is incidental.

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Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

 WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

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TECHNICAL SPECIFICATIONS

SCOPE OF WORK
General Considerations:

The Contractor will perform all aspects of the project considering safety of and continued movement of the traveling public.

1. Set up traffic control on all projects before any work is started. Make sure erosion logs are in place where necessary before construction begins.
2. Complete all Drainage work first..
3. Mill roadway to depth called for in plans using caution to go around any utility covers encountered in the roadway. Remove material around these covers by hand and broom entire roadway removing all loose debris.
4. During ACP operations adjust manholes, and any other utility covers if necessary in paving areas to match the new surface elevations created by the ACP overlay.
5. Place new striping and pavement markings according to TxDOT Standards. Clean the project site before considering the construction site complete.

It is the intent of these Contract Documents to provide for the complete removal (except as noted on the plans) of all existing asphalt pavement, adjustment of any manholes and utility covers, as necessary, and replacement with new Asphalt Concrete Paving and striping as per the Plans. The Project will be constructed in strict compliance with and will adhere to all requirements as specified in and by construction specifications as adopted by the City of Galveston and the Texas Department of Transportation (TxDOT), by manufacturers specifications and by standard engineering practice. Successful completion of the project will be judged on the basis of technological correctness of construction, aesthetics or finish and vehicular ride performance.

Special Considerations:

The work required by these Contract Documents will occur within the boundaries of a business and light commercial area. It is the intent of the City of Galveston that unfavorable impact by the Contract work, on said businesses shall be minimized. The Contractor shall notify in writing, at least forty-eight (48) hours prior to beginning work, all businesses which are expected to be affected by said work. Ingress and egress to affected businesses shall be maintained at all times by the Contractor as provided in the plans and Contract Documents.

Traffic flow through and around the construction area(s) shall be in accordance with the approved traffic control plan and shall be maintained with as little disruption as possible. Barricades, lights, signs and other traffic control devices shall, on a timely basis, be installed and maintained in accordance with the Texas MUTCD and provisions of these Contract Documents as approved by the Engineer.

The Contractor shall work closely with the various utility owners and assure prompt access to their equipment for service or adjustment. The Contractor shall be solely responsible for coordinating the work with any utility owner which may be affected by the work.

Additionally, forces of the City of Galveston, in order to secure the safety, welfare and convenience of the citizens of Galveston, must provide services on both emergency and normal, continuing basis. Provision of these services may require City forces to work within or around the construction area prescribed by this project. While it is anticipated that the construction impact induced by the work of City and utility crews will be minimal, the Contractor, by affixing proper signature to these Contract Documents, agrees to indemnify and hold harmless the City of Galveston from any and all claims of damage or delay, incurred or alleged to have incurred, in connection with the work of said crews.

General Notes and Specifications

Unless specified as a pay item in the Bid Estimate structural excavation and common backfill will not be paid for directly but shall be subsidiary to pertinent items.

All authorized waste material shall become the property of the Contractor and shall be properly disposed of at a location appropriate/permitted for the waste material.

The Contractor shall allow City forces to enter this project to accomplish such work as shown in the plans (by others) and as may be deemed necessary by the City.

Ingress and egress to the adjacent property shall be maintained by the Contractor at all times.

The City will provide a Testing Agency that will sample and test all necessary materials incorporated into the project in accordance with the test methods provided for under the appropriate standard specifications for the various items.

The approximate location of the known underground utility installations is shown on the plans. The Contractor shall be responsible for confirming the location of these utility lines and the exact location of any others which may exist. It shall be the Contractor's responsibility to notify the utility involved in case of conflict or damage and the Contractor shall be responsible for damage that occurs due to negligence. Where the Contractor encounters abandoned lines and they interfere with the construction of this project, Contractor will verify with City Staff and if confirmed to be inactive, they shall be removed and disposed of. There will be no direct payment for this work and it shall be considered subsidiary to the various Bid Items of the Contract.

All materials, labor and incidentals required for the Contractor to provide for traffic across the streets, dewatering, trench safety, etc. and for temporary ingress and egress to private property shall be furnished by the Contractor at no additional cost to the City, with appropriate advanced notification (72 Hours), and shall be considered as incidental to the Bid Items of this project.

Jobs shall be constructed in this order unless approved by the Engineer and the City:

41st Street
19th Street

Contractor shall arrange that the parking area on each side of streets be clear when Construction work is to begin in those areas.

All work, unless specified otherwise, shall be done in accordance with Galveston City Specifications and any work not covered by the Galveston City Specifications will be done in accordance with the Texas Department of Transportation's, Standard Specifications for Construction of Highways, Streets and Bridges, adopted March 1, 2004.

Construction of the Project shall be accomplished in the construction sequence as follows:

1. Install traffic control per Standard TCP sheets.
Detours must be established when intersections are closed for drainage work.
Set up detours according to the "Texas Manual of Uniform Control Devices".
2. Perform all the drainage work first.
3. Mill the roadway to the required depth avoiding all utility covers.
4. Remove all Asphalt Concrete Pavement from around any existing covers and broom all loose particles from the roadway.
5. Adjust any manholes or other utility covers if needed before placing ACP around them. Use a small vibrating tamp to compact areas around covers. The grade of the covers shall match the grade of the surrounding ACP.
6. Tack the roadway and place ACP to the depth called for in the plans. Care shall be taken that ACP shall be placed at the exact depth called for on the plans. No over-runs shall be paid for without approval of the Engineer.
7. Complete all striping and Project clean up as soon as ACP pavement has been placed.

If the Contractor has a need to open or remove the top of manholes belonging to any utility other than the City, the Contractor shall first contact the utility for direction, instruction and coordination. No manhole shall be opened without explicit approval of the utility involved.

There are approximately 17 conflicts with city utilities in doing the inlet work. The Contractor shall verify all conflicts and determine the type, size, and amount of material to re-route the utility around the work area. The work shall be paid by the linear foot and all fittings, connections, etc. shall be subsidiary to Item 1045.

Item 356:

Fabric underseal shall be placed as per manufacturers specifications.
Fabric shall be a minimum weight of 9 oz./sy.
Asphalt material and rate provided under Item 2511.

Item 585:

Use surface test "A" to evaluate ride quality of travel lanes in accordance with Item 585 "Ride Quality for Pavement Surfaces."

Item 666:

Air blowing is subsidiary to this item.
Place pavement markings within 7 calendar days after elimination of the existing striping and placement of short term striping. If it is not possible to place the standard pavement markings due to inclement weather, maintain the short-term pavement markings in accordance with Item 662, "Work Zone Pavement Markings" until placement of the standard markings is possible.

Item 1122: Temporary Erosion, Sedimentation, and Environmental Controls

When specified by the engineer, the Contractor will implement storm water pollution prevention plan measures using the items listed below:

Temporary Erosion Control Logs

Item 1570: Traffic Control and Regulation

The traffic control plan (TCP) shall conform to the Barricade Construction (1)-(12)-(13) Standards and Part VI of the Texas Manual of Uniform Traffic Control Devices as shown on the plans. Contractor shall implement proper detours when closing intersections for drainage work.

Channelizing devices for lane closures shall be drums with vertical panels per BC (8)-13 or portable vertical panels per BC (9)-13.

Remove all traffic control devices from the roadway, off of the right of way, when they are not in use.

The Contractor shall submit to the City for approval any TCP change prior to implementation. The Contractor shall provide and place temporary stop signs, and flagmen as needed for traffic control when traffic signals are not operational. This work will be subsidiary to item 1570.

The approval by the Engineer of the method and procedure the contractor plans to use to handle or detour traffic will not relieve the contractor of his responsibility for the protection, and unhindered expeditious commute of the traveling public.

Item 2076: Planing & Texturing Pavement

All milling materials resulting from planing of the pavement shall be disposed of at a place off the project, as directed by the Engineer. Hauling will not be paid for directly, but shall be considered subsidiary to unit bid price for Item 2076.

Item 2238: Asphaltic Base Course

Provide mixture Type B using Performance Graded binder 64-22.

Item 2510: Asphaltic Concrete Pavement

Provide mixture Type D using Performance Graded binder 64-22.

Use tack coat/ asphalt binder compatible with type of mix required.

Target laboratory molded density shall be a minimum of 96 %.

Certified job mix formula must be submitted with the bid.

Siliceous granite or gravel, iron ore or lightweight material, or Recycled Asphalt Pavement materials will not be used on this project.

Asphalt Concrete will be tested for density control and comparison to the job mix formula for final acceptance.

Asphalt will be tested at each 500 tons or one day production.

The vertical surface exposed when taking the core sample will be completely coated with epoxy and repaired to the satisfaction of the Engineer. These extra works (testing and repair) will not be paid for directly, but shall be considered subsidiary to the various bid items.

**The coarse aggregate used on the project shall have a combined polish value of not less than 30 and none of the individual aggregate that compose the coarse aggregate shall have a polish value of less than 29.

All asphalt courses shall be placed with an approved spreading and finishing machine equipped with an automatic screed control in accordance with the Texas Department of Transportation Standard Specification, Item 320.

If the existing surface to be overlaid contains holes or depressions exceeding three-quarters (3/4) inch in depth, it shall be repaired by removal of all loose and defective materials to a depth of a minimum of eight (8) inches and replaced with equal amount of Asphalt Stabilized Base Gr. 1 material in accordance with TXDOT Specification Item 345. Removal of loose and defective materials (regardless of nature) will be paid under related item.

Trucks hauling bituminous mixtures shall have tight, clean and smooth metal beds to prevent the mixture from adhering to them. The beds shall be lightly coated with a minimum amount of paraffin oil and lime solution. Under no circumstances shall the use of diesel fuel be permitted for this purpose. Each truck shall have a suitable cover to protect the mixture from adverse weather. Any mixture arriving at the paver with a temperature of less than 275 degrees Fahrenheit will be rejected.

The formation of joints (particularly centerline joints) shall be made in such a manner as to ensure a continuous bond between old and new sections of the course. All joints shall present the same texture, density, and smoothness as the other sections of the course. Transverse and longitudinal joints shall have straight vertical face and shall be given a tack coat before placement of any fresh mixture against the joint.

Item 2511: Prime Coat

Use asphalt type: Cationic Rapid Set-2 .

Apply asphaltic material at the rate of: 0.30 gal/sy.

Item 2570: Flexible Pavement Repair

This item is to be used to repair any base failures found to exist within the limits of these Projects. The underlying subgrade shall attain proper compaction and no more than 12" of flexible base shall be used for the repair unless approved by the Engineer.

Item 2590: Work Zone Pavement Markings

Place Short Term Pavement Markings as detailed on sheet Work Zone(Short Term Pavement Markings)-13 for ACP placement.

Item 2605: Type II Curb Inlet

All materials used for installation of proposed Inlets will be subsidiary to Item 2605, except CSB & concrete curb replacement.

If precast inlets or manholes are used the Contractor shall be responsible for determining all sizes prior to construction. Grates in the travelway shall be traffic rated. The Contractor shall submit specifications and details of the grates to the Project Engineer for approval.

Item 2607: Adjusting Manholes

Manholes encountered in the construction shall be adjusted as necessary to conform to the new surface contour. Adjustment shall not be paid for directly but shall be subsidiary to the Item 2607.

SECTION 1300

CONTRACTOR SUBMITTALS

1.01 GENERAL

- A. Wherever submittals are required hereunder, all such submittals by the Contractor shall be submitted to the Engineer.
- B. Within seven (7) calendar days after the date of commencement as stated in the Notice to Proceed, the Contractor shall submit the following items to the Engineer for review:
 - 1. A Preliminary CPM Construction Schedule indicating the starting and completion dates of the various stages of the work.
 - 2. A preliminary schedule of Shop Drawing, Sample and proposed Substitutes or "Or Equal" submittals.
 - 3. A list of all permits and licenses the Contractor shall obtain indicating the agency required to grant the permit and the expected date of submittal for the permit and required date for receipt of the permit.

1.02 SHOP DRAWINGS

- A. Wherever called for in the Contract Documents, or where required by the Engineer, the Contractor shall furnish to the Engineer for review, 3 copies of each submittal. The term "Shop Drawings" as used herein shall be understood to include detail design calculations, shop drawings, fabrication and installation drawings, erection drawings, lists, graphs, operating instructions, catalog sheets, data sheets, and similar items. Said Shop Drawings shall be submitted to the Engineer at a time early enough to allow review of same by the Engineer, and to accommodate the rate of construction progress required under the Contract.
- B. Except as may otherwise be provided herein, the Engineer will return prints of each submittal to the Contractor with its comments noted thereon, within 14 calendar days following their receipt by the Engineer. The Contractor shall make a complete and acceptable submittal to the Engineer by the second submission of a submittal item. The Owner reserves the right to withhold monies due the Contractor to cover additional cost of the Engineer's review beyond the second submittal.
- C. If one copy of a submittal is returned to the Contractor marked "NO EXCEPTIONS TAKEN," formal revision and resubmission of said submittal will not be required.

- D. If one copy of the submittal is returned to the Contractor marked "AMEND-RESUBMIT," the Contractor shall revise said submittal and shall resubmit 3 copies of said revised submittal to the Engineer.
- E. If one copy of the submittal is returned to the Contractor marked "REJECTED-RESUBMIT," the Contractor shall revise said submittal and shall resubmit 3 copies of said revised submittal to the Engineer.
- F. Fabrication of an item may be commenced only after the Engineer has reviewed the pertinent submittals and returned copies to the Contractor marked either "NO EXCEPTIONS TAKEN" or "MAKE CORRECTIONS NOTED." Corrections indicated on submittals shall be considered as changes necessary to meet the requirements of the Contract Documents and shall not be taken as the basis of claims for extra work.
- G. All Contractor submittals shall be carefully reviewed by an authorized representative of the Contractor, prior to submission to the Engineer. Each submittal shall be dated, signed, and certified by the Contractor, as being correct and in strict conformance with the Contract Documents. In the case of shop drawings, each sheet shall be so dated, signed, and certified. No consideration for review by the Engineer of any Contractor submittals will be made for any items which have not been so certified by the Contractor. All non-certified submittals will be returned to the Contractor without action taken by the Engineer, and any delays caused thereby shall be the total responsibility of the Contractor.
- H. The Engineer's review of Contractor submittals shall not relieve the contractor of the entire responsibility for the correctness of details and dimensions. The Contractor shall assume all responsibility and risk for any misfits due to any errors in Contractor submittals. The Contractor shall be responsible for the dimensions and the design of adequate connections and details.

1.03 CONTRACTOR'S SCHEDULES

- A. The successful Bidder shall, within seven (7) calendar days of the date of the Notice of Award and prior to issuance of the Notice to Proceed, submit a detailed Critical Path Method (CPM) Construction Schedule, hereinafter called "Schedule". The Schedule shall follow the "Sequence of Work" which is listed in the Scope of Work section of these Contract Documents. The Schedule shall consist of the following:
 - 1. A logic network CPM arrow or precedence diagram of sufficient detail to construct each segment of the project and to construct the total project.
 - 2. A detailed activities list which includes the following information in tabular form:

- a. A listing of all submittal, production, procurement and construction management activities;
 - b. The expected duration (in days) of each activity listed;
 - c. The activities upon which the start of each activity depends;
 - d. The resource requirements (manpower, material and equipment) for each activity; and
 - e. An estimated dollar value of each activity such that the sum total value of all activities equals the total dollar value of the Bid.
- B. The Owner will review with the Contractor the proposed CPM schedule submitted by the Contractor. The purpose of this review is to assure adequate planning for the proper and timely execution of the Work and to assist the Owner in appraising the suitability of the proposed network Schedule for construction of the project.
- C. Upon acceptance by the Owner the Schedule will become the basis for monitoring and measuring the progress of the Work. To assure proper tracking of progress throughout the performance of the Work, the Contractor shall maintain and continuously update his detailed network Schedule. The Contractor shall, during the first week of each month and at other times as the Owner may request, furnish to the Owner an updated schedule which is clearly marked to show the actual percent completion of each activity as of the date of the Schedule update. The Contractor shall submit with the Schedule update, a narrative report of the progress made during the period covered by the Schedule update. This report shall outline accomplishments during the reporting period and shall include a discussion of problems encountered and of how those problems have been or will be dealt with. The narrative report shall also include a discussion of changes or other items encountered which, in the opinion of the Contractor, may cause problems to the future progress of the Work. The Contractor shall include in the report a plan of action for overcoming the potential problems stated.
- D. The Owner retains the right to withhold progress payments until the Contractor's updated schedule has been accepted by the Owner.
- E. During the course of the Work the Schedule may be revised by agreement of the Owner and the Contractor. Each revision of the Schedule shall supercede and replace all previous versions of the Schedule.

The revised Schedule shall include the following information:

1. Date of revision.
2. Identification of all changes made to the original schedule, including the incorporation of anticipated Change Orders.

3. Narrative explanation of the reasons for each change.
- F. The Contractor may request Schedule revisions by submitting a revised Schedule in the form outlined above, however, if the Owner cannot agree to the suggested revisions, the Contractor shall make those adjustments as may be required to maintain the original Schedule.
 - G. Responsibility for the Contractor's Schedule(s) in all aspects, assumptions and implications, either known or unknown, made or assumed, by the Contractor in the preparation of his Schedule(s), is entirely that of the Contractor. Acceptance of the Contractor's schedule(s) by the Owner shall in no way make the Owner responsible for the execution or non-execution of the Contractor's schedule nor is the Owner responsible or liable in any way for any acts, errors, omissions or negligence of the Contractor or any sub-contractor or any of the Contractor's or sub-contractor's agents, assigns, servants or employees or any other person, firm or corporation performing or attempting to perform the Work.

1.04 PROPOSED SUBSTITUTES OR "OR EQUAL" ITEMS

- A. For convenience of designation in the Contract Documents, any material, product, or equipment to be incorporated in the Work may be designated under a brand or trade name or the name of a manufacturer and its catalog information. The use of any substitute material, product, or equipment which is equal in quality and utility and possesses the required characteristics for the purpose intended will be permitted, subject to the following requirements:
 1. The burden of proof as to the quality and utility of any such substitute material, product, or equipment shall be upon the Contractor.
 2. The Engineer will be the sole judge as to the quality and utility of any such substitute material, product, or equipment and its decision shall be final.
- B. Wherever in the Contract Documents the name or the name and address of a manufacturer or supplier is given for material, a product, or equipment, or if any other source of a material, product, or equipment is indicated therefore, such information is given for the convenience of the Contractor only, and no limit, restriction, or direction is indicated or intended thereby, nor is the accuracy or reliability of such information guaranteed. It shall be the responsibility of the Contractor to determine the accurate identity and location of any such manufacturer, supplier, or other source of any material, product, or equipment called for in the Contract Documents.
- C. The Contractor may offer any material, product, or equipment which it considers equal to those specified. Unless otherwise provided by law or authorized in writing by the Engineer, the substantiation of any proposed substitute or "or-equal" material, product, or equipment must be submitted within 30 calendar days after the execution of the Agreement. The Contractor, at its sole expense, shall furnish data

concerning items it has offered as substitute or "or-equal" to those specified. The Contractor shall provide the data required by the Engineer to determine that the quality, strength, physical, chemical, or other characteristics, including durability, finish, efficiency, dimensions, service, and suitability are such that the substitute or "or-equal" item will fulfill its intended function.

- D. The Contractor's attention is further directed to the requirement that its failure to submit data substantiating a request for a substitution of an "or equal" item within said 30-day period shall be deemed to mean that the Contractor intends to furnish one of the specific brand or trade-named materials, products, or equipment specified in the Contract Documents and the Contractor does hereby waive all rights to offer or use substitute materials, products, or equipment in each such case. Wherever a proposed substitute material, product, or equipment has not been submitted within said 30-day period, or wherever the submission of a proposed substitute material, product, or equipment fails to meet the requirements of the Specifications and an acceptable resubmittal is not received by the Engineer within said 30-day period, the Contractor shall furnish only one of the materials, products, or equipment originally-named in the Contract Documents. Approval by the Engineer of a substitute item proposed by the Contractor shall not relieve Contractor of the responsibility for full compliance with the Contract Documents and for adequacy of the substituted item. The Contractor shall also be responsible for resultant changes and all additional costs which the substitution requires in its work, the work of its subcontractors and of other contractors and shall effect such changes without cost to Owner.

1.05 SAMPLES

- A. Unless otherwise specified, whenever in the Specifications samples are required, the Contractor shall submit not less than 3 samples of each such item or material to the Engineer for approval at no additional cost to the Owner.
- B. Samples, as required herein, shall be submitted for approval a minimum of 14 calendar days prior to ordering such material for delivery to the job-site, and shall be submitted in an orderly sequence so that dependent materials or equipment can be assembled and reviewed without causing delays in the Work.
- C. All samples shall be individually and indelibly labeled or tagged, indicating thereon all specified physical characteristics and manufacturer's names for identification and submittal to the Engineer for approval. Upon receiving approval of the Engineer, one set of the samples will be stamped and dated by the Engineer and returned to the Contractor, one set will be retained by the Engineer, and one set of samples shall remain at the job site until completion of the Work.
- D. Unless otherwise specified, all colors and textures of specified items will be selected by the Engineer from the manufacturer's standard colors and standard materials, products, or equipment lines.

1.06 SPARE PARTS LISTS

- A. The Contractor shall furnish to the Engineer 5 identical sets of spare parts information for all mechanical, electrical, and instrumentation equipment. The spare parts list shall include the current list price of each spare part.
- B. The spare parts list shall be limited to those spare parts which each manufacturer recommends be maintained by the Owner in inventory at the plant site. Each manufacturer or supplier shall indicate the name, address, and telephone number of its nearest outlet of spare parts to facilitate the Owner in ordering. The Contractor shall cross-reference all spare parts lists to the equipment numbers designated in the Contract Documents. The spare parts lists shall be bound in standard size, 3-ring, loose-leaf, vinyl plastic hard cover binders suitable for bookshelf storage.

1.07 RECORD DRAWINGS

- A. The Contractor shall keep and maintain, at the job site, one record set of Drawings. On these, it shall mark all project conditions, locations, configurations, and any other changes or deviations which may vary from the details represented on the original Contract Drawings, including buried or concealed construction and utility features which are revealed during the course of construction. Special attention shall be given to recording the horizontal and vertical location of all buried utilities that differ from the locations indicated, or which were not indicated on the Contract Drawings. Said record drawings shall be supplemented by any detailed sketches as necessary or directed to indicate, fully, the Work as actually constructed. These master record drawings of the Contractor's representation of as-built conditions, including all revisions made necessary by addenda, change orders, and the like shall be maintained up-to-date during the progress of the Work.
- B. In the case of those drawings which depict the detail requirement for equipment to be assembled and wired in the factory, such as motor control centers and the like, the record drawings shall be updated by indicating those portions which are superseded by change order drawings or final shop drawings, and by including appropriate reference information describing the change orders by number and the shop drawings by manufacturer, drawing, and revision numbers.
- C. Record drawings shall be accessible to the Engineer at all times during the construction period and shall be delivered to the Engineer upon completion of the work.
- D. Requests for partial payments will not be approved if the record drawings are not kept current, and not until the completed record drawings, showing all variations between the Work as actually constructed and as originally shown on the Contract Drawings or other Contract Documents, have been inspected by the Engineer.
- E. Final payment will not be approved until the Contractor-prepared record drawings have been delivered to the Engineer. Said up-to-date, record drawings may be in the form of a set of prints with carefully plotted information overlaid in pencil.

- F. Upon substantial completion of the Work and prior to final acceptance, the Contractor shall complete and deliver a complete set of record drawings to the Engineer for transmittal to the Owner, conforming to the construction records of the Contractor. This set of drawings shall consist of corrected plans showing the reported location of the Work. The information submitted by the Contractor and incorporated by the Engineer into the Record Drawings will be assumed to be reliable, and the Engineer will not be responsible for the accuracy of such information, nor for any errors or omissions which may appear on the Record Drawings as a result.

- END OF SECTION -

SECTION 1350

REFERENCE STANDARDS AND ABBREVIATIONS

1.01 GENERAL

- A. Titles of Sections and Paragraphs: Captions accompanying specification sections and paragraphs are for convenience of reference only, and do not form a part of the Specifications.
- B. Applicable Publications: Whenever in these specifications references are made to published specifications, codes, standards, or other requirements, it shall be understood that wherever no date is specified, only the latest specifications, standards, or requirements of the respective issuing agencies which have been published as of the date that the Work is advertised for bids, shall apply; except to the extent that said standards or requirements may be in conflict with applicable laws, ordinances, or governing codes. No requirements set forth herein or shown on the drawings shall be waived because of any provision of, or omission from, said standards or requirements.

1.02 REFERENCE CODES

- A. Without limiting the generality of other requirements of the specifications, all work specified herein shall conform to or exceed the requirements of all applicable codes and the applicable requirements of the following documents to the extent that the provisions of such documents are not in conflict with the requirements of these Specifications nor the applicable codes.
- B. References herein to "Building Code" or "IBC" shall mean the International Building Code. The latest edition of the code as approved and used by the local agency as of the date of award, as adopted by the agency having jurisdiction, shall apply to the Work herein, including all addenda, modifications, amendments, or other lawful changes thereto.
- C. In case of conflict between codes, reference standards, drawings and the other Contract Documents, the most stringent requirements shall govern. All conflicts shall be brought to the attention of the Engineer for clarification and directions prior to ordering or providing any materials or labor. The Contractor shall bid the most stringent requirements.

1.03 REFERENCE STANDARD SPECIFICATIONS AND DRAWINGS

- A. Applicable Standard Specifications: The Contractor shall construct the Work specified herein in accordance with the requirements of the Contract Documents and the referenced portions of those referenced codes, standards, and specifications listed herein; except, that whenever references to "Standard Specifications" are made, the provisions therein for measurement and payment shall not apply.

- B. References in the Contract Documents to "Standard Specifications" shall mean the City of Galveston Street Construction Standards and/or the Texas Department of Transportation (TxDOT) 2004 Standard Specifications for construction of highways, streets, and bridges, including all current supplements, addenda, and revisions thereof.
- C. Applicable Standard Drawings: References herein to "Standard Drawings" shall mean the Street Construction Standards of the City of Galveston which drawings are hereby incorporated in and made a part of these Contract Documents, by reference.

1.04 SAFETY STANDARDS

References herein to "OSHA Standards" shall mean Title 29, Part 1910, Occupational Safety and Health Standard, (OSHA), Code of Federal Regulations (CFR), including all changes and amendments thereto.

1.05 ABBREVIATIONS AND ACRONYMS USED IN THE CONTRACT DOCUMENTS

Wherever in these Specifications references are made to the standards, specifications, or other published data of the various national, regional, or local organizations, such organizations may be referred to by their acronym or abbreviation only. As a guide to the user of these specifications, the following acronyms or abbreviations which may appear in these specifications shall have the meanings indicated herein.

AAMA	Architectural Aluminum Manufacturer's Association
AASHTO	American Association of the State Highway and Transportation Officials
ACI	American Concrete Institute
AGA	American Gas Association
AGC	Associated General Contractors
AI	The Asphalt Institute
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
ANSI	American National Standards Institute, Inc.
APA	American Plywood Association
APWA	American Public Works Association
ASME	American Society of Mechanical Engineers
ASQC	American Society for Quality Control
ASTM	American Society for Testing and Materials
AWPA	American Wood Preservers Association
AWPI	American Wood Preservers Institute
AWS	American Welding Society
AWWA	American Water Works Association
BBC	Basic Building Code, Building Officials and Code Administrators International

CBM	Certified Ballast Manufacturer's
CLFMI	Chain Link Fence Manufacturer's Institute
CMA	Concrete Masonry Association
CRSI	Concrete Reinforcing Steel Institute
ETL	Electrical Test Laboratories
IBC	International Building Code
ICBO	International Conference of Building Officials
IEEE	Institute of Electrical and Electronics Engineers
IES	Illuminating Engineering Society
IPCEA	Insulated Power Cable Engineers Association
ISA	Instrument Society of America
ITE	Institute of Traffic Engineers
MBMA	Metal Building Manufacturer's Association
NACE	National Association of Corrosion Engineers
NBS	National Bureau of Standards
NEC	National Electrical Code
NEMA	National Electrical Manufacturer's Association
NFPA	National Fire Protection Association
NFPA	National Forest Products Association
OSHA	Occupational Safety and Health Administration
PCA	Portland Cement Association
RIS	Redwood Inspection Service
SAE	Society of Automotive Engineers
SSPC	Steel Structures Painting Council
SSPWC	Standard Specifications for Public Works Construction
UBC	Uniform Building Code
UL	Underwriters Laboratories, Inc. WCLIB
West Coast Lumber Inspection Bureau	WCRSI
Western Concrete Reinforcing Steel Institute	WRI
Wire Reinforcement Institute, Inc.	
WWPA	Western Wood Products Association

END OF SECTION

SECTION 1400

QUALITY CONTROL

1.01 SITE INVESTIGATION AND CONTROL

A. The Contractor shall verify all dimensions in the field and shall check all field conditions continuously during construction. The Contractor shall be solely responsible for any inaccuracies built into the Work.

B. The Contractor shall inspect related and appurtenant work and shall report in writing to the Engineer any conditions which will prevent proper completion of the Work. Any required removal, repair, or replacement caused by unsuitable conditions shall be done by the Contractor at its sole cost and expense.

1.02 INSPECTION OF THE WORK

A. General: The Work shall be conducted under the general observation of the Engineer and shall be subject to inspection by representatives of the Owner to assure strict compliance with the requirements of the Contract Documents

B. The presence of the inspector(s) however shall not relieve the Contractor of the responsibility for the proper execution of the Work in accordance with all requirements of the Contract Documents. Compliance is distinctly a duty of the Contractor, and said duty shall not be avoided by any act or omission on the part of the inspector(s).

C. All materials and articles furnished by the Contractor shall be subject to rigid inspection, and no material or article shall be used in the Work until it has been inspected and accepted by the Engineer or the Owner.

D. Inspection at Place of Manufacture: Unless otherwise specified, all products, materials, and equipment shall be subject to inspection by the Engineer at the place of manufacture.

E. The presence of the Engineer at the place of manufacture however, shall not relieve the Contractor of the responsibility for furnishing products, materials, and equipment which comply with all requirements of the Contract Documents.

1.03 SAMPLING AND TESTING

A. Unless otherwise specified, all sampling and testing shall be in accordance with the

methods prescribed in the current standards of the ASTM, applicable to the class nature of the article or materials considered; however, the Owner reserves the right to use any generally-accepted system of sampling and testing which, in the opinion of the Engineer, will insure the Owner that the quality of the workmanship is in full accord with the Contract Documents.

- B. Any waiver by the Owner of any specific testing or other quality assurance measures, whether or not such waiver is accompanied by a guarantee of substantial performance as a relief from the specified testing or other quality assurance requirements as originally specified, and whether or not such guarantee is accompanied by a performance bid to assure execution of any necessary corrective or remedial Work, shall not be construed as a waiver or any requirements of the Contract Document.

1.04 TIME OF INSPECTIONS AND TESTS

- A. Samples and test specimens required under the Contract Documents shall be furnished by the contractor and prepared for testing in ample time for the completion of the necessary tests and analyses before the subject materials or articles are to be used. The Contractor shall furnish all required test specimens at its own expense. Except as otherwise provided in the contract Documents, performance of the required tests will be by the Owner; except, that the cost of any test which shows unsatisfactory results shall be borne by the Contractor.
- B. Whenever the Contractor is ready to backfill, bury, cast in concrete, hide, or otherwise cover or make inaccessible any work under the Contract, the Contractor shall notify the engineer not less than 24 hours in advance of beginning any such work of backfilling, burying, casting in concrete, hiding, covering, or making inaccessible any portion of the Work to be inspected, so that the required inspection can be scheduled and performed. Failure of the contractor to notify the engineer at least 24 hours in advance of any such inspections shall be reasonable cause for the Engineer to require sufficient delay in the Contractor's schedule to allow time for such inspections and any remedial or corrective work required, and all costs of such delays, including its effect upon other portions of the work shall be borne by the contractor.

-END OF SECTION-

SECTION 1450

PROTECTION OF EXISTING FACILITIES

1.01 GENERAL

- A. The Contractor shall protect all existing utilities and improvements not designated for removal and shall restore damaged or temporarily relocated utilities and improvements to a condition equal to or better than they were prior to such damage or temporary relocation, all in accordance with requirements of the Contract Documents.
- B. The Contractor shall verify the exact locations and depths of all utilities shown and the Contractor shall make exploratory excavations of all utilities that may interfere with the Work. All such exploratory excavations shall be performed as soon as practicable after award of contract and, in any event, a sufficient time in advance of construction to avoid possible delays to the Contractor's work. When such exploratory excavations show the utility location as shown to be in error, the Contractor shall so notify the Engineer.
- C. The number of exploratory excavations required shall be that number which is sufficient to determine the alignment and grade of the utility.

1.02 RIGHTS-OF-WAY

The Contractor shall not do any work that would affect any oil, gas, sewer, or water pipeline; any telephone, telegraph, or electric transmission line; any fence; or any other structure, nor shall the Contractor enter upon the rights-of-way involved until notified by the Engineer that the Owner has secured authority therefore from the proper party. After authority has been obtained, the Contractor shall give said party due notice of its intention to begin work, and shall give said party convenient access and every facility for removing, shoring, supporting, or otherwise protecting such pipeline, transmission line, ditch, fence, or structure, and for replacing same. When 2 or more contracts are being executed at one time on the same or adjacent land in such manner that work on one contract may interfere with that on another, the Owner shall determine the sequence and order of the Work. When the territory of one contract is the necessary or convenient means of access for the execution of another contract, such privilege of access or any other reasonable privilege may be granted by the Owner to the Contractor so desiring, to the extent, amount, in the manner, and at the times permitted. No such decision as to the method or time of conducting the Work or the use of territory shall be made the basis of any claim for delay or damage, except as provided for temporary suspension of the Work in Article 15 of the General Conditions of the Contract.

1.03 PROTECTION OF STREET OR ROADWAY MARKERS

The Contractor shall not destroy, remove, or otherwise disturb any existing survey markers or other existing street or roadway markers without proper authorization. No pavement breaking or excavation shall be started until all survey or other permanent marker points that will be disturbed by the construction operations have been properly referenced for easy and accurate restoration. It shall be the Contractor's responsibility to notify the proper representatives of the Owner of the time and location that work will be done. Such notification shall be sufficiently in advance of construction so that there will be no delay due to waiting for survey points to be satisfactorily referenced for restoration. All survey markers or points disturbed by the Contractor without proper authorization by the Engineer, will be accurately restored by the Owner at the Contractor's expense after all street or roadway resurfacing has been completed.

1.04 RESTORATION OF PAVEMENT

- A. General: All paved areas including asphaltic concrete beams cut or damaged during construction shall be replaced with similar materials and of equal thickness to match the existing adjacent undisturbed areas, except where specific resurfacing requirements have been called for in the Contract Documents or in the requirements of the agency issuing the permit. All temporary and permanent pavement shall conform to the requirements of the affected pavement owner. All pavements which are subject to partial removal shall be neatly saw cut in straight lines.
- B. Temporary Resurfacing: Wherever required by the public authorities having jurisdiction, the Contractor shall place temporary surfacing promptly after backfilling and shall maintain such surfacing for the period of time fixed by said authorities before proceeding with the final restoration of improvements.
- C. Permanent Resurfacing: In order to obtain a satisfactory junction with adjacent surfaces, the Contractor shall saw cut back and trim the edge so as to provide a clean, sound, vertical joint before permanent replacement of an excavated or damaged portion of pavement. Damaged edges of pavement along excavations and elsewhere shall be trimmed back by saw cutting in straight lines. All pavement restoration and other facilities restoration shall be constructed to finish grades compatible with adjacent undisturbed pavement.
- D. Restoration of Sidewalks or Private Driveways: Wherever sidewalks or private roads have been removed for purposes of construction, the Contractor shall place suitable temporary sidewalks or roadways promptly after backfilling and shall maintain them in satisfactory condition for the period of time fixed by the authorities having jurisdiction over the affected portions before proceeding with the final restoration or, if no such period of time is so fixed, the Contractor shall maintain said temporary sidewalks or roadways until the final restoration thereof has been made.

1.05 EXISTING UTILITIES AND IMPROVEMENTS

- A. General: The Contractor shall protect all Underground Utilities and other improvements which may be impaired during construction operations. It shall be the Contractor's responsibility to coordinate with utility owners to ascertain the actual location of all existing utilities and other improvements that will be encountered in its construction operations, and to see that such utilities or other improvements are adequately protected from damage due to such operations. The Contractor shall take all possible precautions for the protection of unforeseen utility lines to provide for uninterrupted service and to provide such special protection as may be necessary.
- B. Utilities to be Moved: In case it shall be necessary to move the property of any public utility or franchise holder, such utility company or franchise holder will be notified by the Contractor to move such property within a specified reasonable time. When utility lines that are to be removed are encountered within the area of operations, the Contractor shall notify the utility company a sufficient time in advance for the necessary measures to be taken to prevent interruption of service.
- C. Owner's Right of Access: The right is reserved to the Owner and to the owners of public utilities and franchises to enter at any time upon any public street, alley, right-of-way, or easement for the purpose of making changes in their property made necessary by the Work of this Contract.
- D. Underground Utilities Shown or Indicated: Existing utility lines that are shown or the locations of which are made known to the Contractor prior to excavation and that are to be retained, and all utility lines that are constructed during excavation operations shall be protected from damage during excavation and backfilling and, if damaged, shall be immediately repaired at the Contractor's expense.
- E. Underground Utilities Not Shown or Indicated: In the event that the Contractor damages any existing utility lines that are not shown or the locations of which are not made known to the Contractor prior to excavation, a written report thereof shall be made immediately to the Engineer. Damage should also be immediately reported to the utility owner so that emergency repairs, if required, can be accomplished without delay. Payment for repairs to damaged utilities shall be the sole responsibility of the Contractor.
- F. Maintaining in Service: All oil and gasoline pipelines, power, and telephone or other communication cable ducts, gas and water mains, irrigation lines, sewer lines, storm drain lines, poles, and overhead power and communication wires and cables encountered along the line of the Work shall remain continuously in service during all the operations under the Contract, unless other arrangements satisfactory to the Engineer are made with the owner of said pipelines, duct, main, irrigation line, sewer, storm drain, pole, or wire or cable. The Contractor shall be responsible for repair of all damage due to its operations, and the provisions of this Section shall not be abated even in the event such damage occurs after backfilling or is not discovered until after completion of the backfilling.

1.06 TREES WITHIN STREET RIGHTS-OF-WAY AND PROJECT LIMITS

- A. General: The Contractor shall exercise all necessary precautions so as not to damage or destroy any trees or shrubs, including those lying within street rights-of-way and project limits, and shall not trim or remove any trees unless such trees have been approved for trimming or removal by the jurisdictional agency or Owner. All existing trees and shrubs which are damaged during construction shall be trimmed or replaced by the Contractor or a certified tree company under permit from the jurisdictional agency or Owner and to the satisfaction of said agency and/or the Owner. Tree trimming and replacement shall be accomplished in accordance with the following paragraphs.
- B. Trimming: Symmetry of the tree shall be preserved; no stubs or splits or torn branches left; clean cuts shall be made close to trunk or large branch. Spikes shall not be used for climbing live trees. All cuts over 1-1/2 inches in diameter shall be coated with an asphaltic emulsion material.
- C. Replacement: The Contractor shall immediately notify the jurisdictional agency and/or the Owner if any tree is damaged by the Contractor's operations. If, in the opinion of said agency or the Owner, the damage is such that replacement is necessary, the Contractor shall replace the tree at its own expense. The tree shall be of a like size and variety as the tree damaged, or, if of a smaller size, the Contractor shall pay to the owner of said tree a compensatory payment acceptable to the tree owner, subject to the approval of the jurisdictional agency or owner. The size of the trees shall be not less than 1-inch diameter nor less than 6 feet in height.

1.07 NOTIFICATION BY THE CONTRACTOR

Prior to any excavation in the vicinity of any existing underground facilities, including all water, sewer, storm drain, gas, petroleum products, or other pipelines; all buried electric power, communications, or television cables; all traffic signal and street lighting facilities; and all roadway and state highway rights-of-way the Contractor shall notify the respective authorities representing the owners or agencies responsible for such facilities not less than 2 days nor more than 7 days prior to excavation so that a representative of said owners or agencies can mark, on the ground, the location and routing of said facilities and may, if they so choose, be present during excavation and backfill.

END OF SECTION

SECTION 1460

TEMPORARY UTILITIES

1.01 GENERAL

The Contractor shall provide plant and equipment that is adequate for the performance of the Work under this Contract within the time specified. All plant and equipment shall be kept in satisfactory operating condition, shall be capable of safely and efficiently performing the required work, and shall be subject to inspection and approval by the Owner's representative at any time within the duration of the Contract. All work hereunder shall conform to the applicable requirements of the OSHA Standards for Construction.

1.02 POWER AND LIGHTING

- A. Power: The Contractor shall provide all necessary power required for its operations under the Contract, and shall provide and maintain all temporary power lines required to perform the Work in a safe and satisfactory manner.
- B. Construction Lighting: All Work conducted at night or under conditions of deficient daylight shall be suitably lighted to insure proper Work and to afford adequate facilities for inspection and safe working conditions.
- C. Approval of Electrical Connections: All temporary connections for electricity shall be subject to approval of the City of Galveston/Code Enforcement Division, the Engineer and the power company representative, and shall be removed in like manner at the Contractor's expense prior to final acceptance of the Work.
- D. Separation of Circuits: Unless otherwise permitted by the Engineer, circuits separate from lighting circuits shall be used for all power purposes.
- E. Construction Wiring: All wiring for temporary electric light and power shall be properly installed and maintained and shall be securely fastened in place. All electrical facilities shall conform to the requirements of Subpart K of the OSHA Safety and Health Standards for Construction.

1.03 WATER SUPPLY

- A. General: The Contractor shall provide an adequate supply of water of a quality suitable for all domestic and construction purposes.
- B. The Contractor shall provide and operate all pumping facilities, pipelines, valves, hydrants, storage tanks, and all other equipment necessary for the adequate

development and operation of the water supply system. Water used for domestic purposes shall be free of contamination and shall conform to the requirements of the State and local authorities for potable water. The Contractor shall be solely responsible for the adequate functioning of its water supply system and shall be solely liable for any claims arising from the use of same, including discharge of waste or water there from.

- C. Potable Water: All drinking water on the site during construction shall be furnished by the Contractor and shall be bottled water or water furnished in approved dispensers. Notices shall be posted conspicuously throughout the site warning the Contractor's personnel that piped water may be contaminated.
- D. Water Connections: The Contractor shall not make connection to, or draw water from, any fire hydrant or pipeline without first obtaining permission of the Galveston Public Utilities Department. For each such connection to be made City personnel will attach to the fire hydrant or pipeline a valve and a meter through which all water to be used by the Contractor shall be drawn.
- E. Removal of Water Connections: Before final acceptance of the Work on the project, all temporary connections and piping installed at the request of the Contractor shall be entirely removed, and all affected improvements shall be restored by the Contractor to their original condition, or better, to the satisfaction of the Engineer and to the agency owning the affected utility.
- F. Fire Protection: The Contractor's fire protection program shall conform to the requirements of Subpart F of the OSHA Standards for Construction. Responsible persons shall be designated and instructed in the operation of such fire apparatus necessary to prevent or minimize the hazard of fire.

1.04 SANITATION

- A. Toilet Facilities: Fixed or portable chemical toilets shall be provided, at Contractor's expense, wherever needed for the use of its employees. Toilets at construction job sites shall conform to the requirements of Subpart D. Section 1926.51 of the OSHA Standards for Construction.
- B. Sanitary and Other Organic Wastes: The Contractor shall establish a regular daily collection of all sanitary and organic wastes. All wastes and refuse from sanitary facilities provided by the Contractor or organic material wastes from any other source related to the Contractor's operations shall be disposed of away from the site in a manner satisfactory to the Engineer and in accordance with all laws and regulations pertaining thereto.

END OF SECTION

SECTION 1480

TEMPORARY ENVIRONMENTAL CONTROLS

1.01 EXPLOSIVES AND BLASTING

- A. The use of explosives on the Work will be subject to the approval of the Engineer. All operations involving the handling, storage, and use of explosives shall be conducted in accordance with the requirements of Subpart U of the OSHA Standards for Construction, and in accordance with all local laws and regulation.
- B. Only skilled workers under experienced supervision shall be permitted to use explosives. The Contractor will be held responsible for and shall make good any damage caused by blasting or otherwise resulting from its possession or use of explosives on the work.

1.02 DUST ABATEMENT

The Contractor shall furnish all labor, equipment, and means required and shall carry out effective measures wherever and as often as necessary to prevent its operation from producing dust in amounts damaging to property, cultivated vegetation, or domestic animals, or causing a nuisance to persons living in or occupying buildings in the vicinity. The Contractor shall be responsible for any damage resulting from any dust originating from its operations. The dust abatement measures shall be continued until the Contractor is relieved of further responsibility by the Engineer.

1.03 RUBBISH CONTROL

During the progress of the Work, the Contractor shall keep the site of the Work and other areas used by it in a neat and clean condition, and free from any accumulation of rubbish. The Contractor shall dispose of all rubbish and waste materials of any nature occurring at the Work site, and shall establish regular intervals of collection and disposal of such materials and waste. The Contractor shall also keep its haul roads free from dirt, rubbish, and unnecessary obstructions resulting from its operations. Disposal of all rubbish and surplus materials shall be off the site of construction in accordance with local codes and ordinances governing locations and methods of disposal, and in conformance with all applicable safety laws, and to the particular requirements of Part 1926 of the OSHA Safety and Health Standards for Construction.

1.04 FEDERAL WATER POLLUTION CONTROL ACT

The Contractor's attention is directed to the Federal Water Pollution Control Act Amendments of 1972 (Public Law 92-500) which requires a Corps of Engineers permit under Section 404 of the Act, for the discharge of one cubic yard or more of any dredged or fill material into "navigable waters" as defined in "Permits for Activities in

Navigable Waters or Ocean Waters", paragraph (d)(2), Federal Register of 25 July 1975, page 3134.

1.05 CHEMICALS

All chemicals used during project construction or furnished for project operation, whether defoliant, soil sterilant, herbicide, pesticide, disinfectant, polymer, reactant or of other classification, shall show approval of either the U.S. Environmental Protection Agency or the U.S. Department of Agriculture. Use of all such chemicals and disposal of residues shall be in strict accordance with the printed instructions of the manufacturer.

1.06 SOIL EROSION AND TRACKING CONTROL

- A. Throughout the entire course of construction of the Work as described in these Contract Documents, the provisions of the Code of Ordinances of the City of Galveston, Section 28-20.9, Subparagraphs (b) and (c) shall apply, to wit:
- (b) Loose dirt, mud, clay, rocks, construction materials and other debris deposited upon any public highway, street and sidewalk or private property as a result of construction or demolition operations shall be immediately removed by the Contractor. Construction and demolition sites shall be kept clean and orderly at all times.
 - (c) The prime Contractor or Developer of a construction or demolition site shall be responsible for maintaining the site as required by this section (Ord. No. 88-97, Section 1, 11-22-99)"

As pertains to these Contract Documents, the term "deposited", above, shall be construed to include dropping, tracking, silting, eroding or any other method of transport by which, as a result of this Work, any foreign material is placed intentionally, unintentionally, carelessly or otherwise on any public way. The removal of such materials shall be at the sole cost and responsibility of the Contractor.

- B. Drainage facilities, including storm drains, catch basins, manholes, lines and ditches, and including existing facilities and those being constructed, shall be protected during the construction of this work from the incursion of silt, rubble, lumber or other such construction or natural materials, on or adjacent to the site of the work, which may be washed, pushed, dropped or otherwise deposited in a drainage facility. Applicable provisions of Regulations of the U.S. Environmental Protection Agency (EPA), the Texas Natural Resource Conservation Commission (TNRCC) and other such agencies as may have interest in this area shall govern.

END OF SECTION

SECTION 1500

SUMMARY OF WORK

1.01 GENERAL

The Work to be performed under this Contract shall consist of furnishing all plant, tools, equipment, materials, supplies, and manufactured articles and for furnishing all transportation and services, including fuel, power, water, and essential communications, and for the performance of all labor, work, or other operations required for the fulfillment of the Contract in strict accordance with the Contract Documents. The Work shall be complete, and all work, materials, and services not expressly shown or called for in the Contract Documents which may be necessary for the complete and proper construction of the Work in good faith shall be performed, furnished, and installed by the Contractor as though originally so specified or shown, at no increase in cost to the Owner.

1.02 SCOPE OF WORK COVERED BY THESE CONTRACT DOCUMENTS

A. The Work of this Contract comprises the construction of:

CIP ROADWAY RECONSTRUCTION PROJECTS

B. The Work is located within the corporate City limits of Galveston, Texas.

1.03 BEGINNING AND COMPLETION OF THE WORK

Time is the essence of the Contract. In accordance with the provisions of Article 2 of the Agreement, the Contractor shall begin the Work on the date specified in the written Notice to Proceed from the Owner, and shall complete all of the Work included in the Contract within the time specified in said Notice. Time stated for completion shall include final cleanup of the premises.

1.04 CONTRACT METHOD

- A. The Work, hereunder, will be constructed under a single unit-price contract.
- B. The Contractor shall include the requirements of the General Conditions and Supplementary General Conditions of this Contract as a part of all of its subcontract agreements.

1.05 ORDER OF THE WORK

The Work shall be carried on at such places on the project and also in such order of precedence as may be found necessary by the Engineer to expedite completion of the Project. After work has begun on any portion of a designated part of the Project, it shall

be carried forward to its final completion as rapidly as practicable. The order and time to complete shall conform to the requirements of the approved Contractor's schedule as submitted under the provisions for "Contractor's Schedules" in Section entitled, "Contractor Submittals."

1.06 WORK BY OTHERS

- A. Concurrent Work: The Contractor's attention is directed to the fact that work may be conducted at or adjacent to the site by the Owner and/or by other contractors during the performance of the Work under this contract. The Contractor shall conduct its operations so as to cause a minimum of interference with the Work of such other contractors, or Owner, and shall cooperate fully with such contractors to provide continued safe access to their respective portions of the site, as required to perform their respective contracts or work.
- B. Interference With Work on Utilities: The Contractor shall cooperate fully with all utility forces of the Owner or forces of other public or private agencies engaged in the relocation, altering, or otherwise rearranging of any facilities which interfere with the progress of the Work, and shall schedule the Work so as to minimize interference with said relocation, altering, or other rearranging of facilities.

1.07 WORK SEQUENCE

- A. The Contractor's attention is directed to the fact that during the period of time identified for this contract, no interruption in infrastructure system can be accommodated, and the Contractor shall so schedule its construction operations that no interference with the operation of the system will occur during this critical period.
- B. Access to the site is limited to the hours of 7:00 a.m. to 5:00 p.m. on normal work days, unless otherwise authorized by the Engineer.

1.08 BASE LINES AND GRADES

- A. General: The Engineer will establish points of curvature, points of tangency, one bench mark near the beginning of project and center line offsets at the point of beginning of project and at the first point of curvature occurring thereafter. Any of the above controls which are disturbed during construction will be reset by the Contractor.
- B. When required by these Contract Documents, the Contractor shall provide the services of a Professional Surveyor, registered with the State of Texas, to verify, layout and maintain all lines, grades and controls necessary for the successful and proper completion of the work, based on those controls established by the Engineer. Services shall include, at no extra cost to Owner, those revisions to the original plans layout which the Engineer determines necessary to the successful and proper completion of the work. The services of a Registered Professional Surveyor shall be bid as a Pay Item within the standard base contract bid amount to be paid on a station to station basis concurrent with right-of-way preparation.

1.09 CONTRACTOR USE OF PROJECT SITE

The Contractor's use of the project site shall be limited to its construction operations, including on-site storage of materials, on-site fabrication facilities, and field offices.

1.10 OWNER USE OF THE PROJECT SITE

When the Contractor's work involves rehabilitation of or extension to the existing facilities, the Owner may utilize all or part of the existing site during the entire period of the construction for the conduct of the Owner's normal operations. The Contractor shall cooperate with the Owner and Engineer to minimize interference with the Contractor's operations and to facilitate the Owner's operations. In any event, the Owner shall be allowed access to the project site during the period of construction.

1.11 PARTIAL UTILIZATION OF THE WORK BY OWNER

- A. The Owner will take partial utilization of the Work upon completion of the portion of the work. Partial utilization will involve the placing into service of completed section during the period when ordered by the Engineer.
- B. The Contractor is hereby advised that the Owner will accept the responsibility for the maintenance and protection of the specific portion of the project so used. The Contractor shall retain full responsibility for satisfactory operation of the total project, however.

1.12 PROJECT MEETINGS

- A. Mandatory Preconstruction Conference: Prior to the commencement of Work at the site, a mandatory preconstruction conference will be held at a mutually agreed time and place which shall be attended by the Contractor, its on-site superintendent, and its subcontractors as appropriate. Other attendees will include representatives of the Engineer and the Owner.
- B. Unless previously submitted to the Engineer, the Contractor shall bring to the preconstruction conference one copy each of the CPM progress schedule and the Shop Drawing/Sample/Substitute or "Or Equal" submittal schedule.

END OF SECTION

SECTION 1550

SITE ACCESS AND STORAGE

1.01 TRANSPORTATION FACILITIES

- A. General: The Contractor shall investigate the availability of sidings and shall make all arrangements with the railroad company for any siding or other facilities necessary for the delivery of materials to be used on the Work.
- B. Highway Limitations: The Contractor shall make its own investigation of the condition of available public and private roads and of clearances, restrictions, bridge load limits, and other limitations affecting transportation and ingress and egress to and from the site of the Work. It shall be the Contractor's responsibility to construct and maintain any access or haul roads required for its construction operations.

1.02 CONTRACTOR'S WORK AND STORAGE AREA

The Contractor shall make its own arrangements for any required off-site storage or shop areas necessary for the proper execution of the Work.

1.03 TEMPORARY STREET USE

- A. Street Use: Nothing herein shall be construed to entitle the Contractor to the exclusive use of any public street, alleyway, or parking area during the performance of the Work hereunder, and it shall so conduct its operations as not to interfere unnecessarily with the authorized work of utility companies or other agencies in such streets, alleyways, or parking areas.
- B. No street shall be closed to the public without first obtaining the permission of the Engineer and the proper governmental authority. Where excavation is being performed in primary streets or highways, one lane of traffic shall be kept open in each direction at all times unless otherwise provided in the Contract Documents or under the terms of public agency permits.
- C. Toe boards shall be provided to restrict movement of excavated material if required by the Engineer or the Agency having jurisdiction over the street or highway.
- D. Fire hydrants on or adjacent to the Work shall be kept accessible to fire-fighting equipment at all times.
- E. Temporary provisions shall be made by the Contractor to assure the continuous, safe use of sidewalks and the proper functioning of all gutters, sewers, inlets, and other drainage facilities.

- F. Wherever necessary or required for the convenience of the public or individual residents or business places at street or highway crossings, private driveways, or elsewhere, the Contractor shall provide suitable temporary bridges or steel plates over unfilled excavations, except in such cases as the Contractor shall secure the written consent of the individuals or authorities concerned to omit such temporary bridges or steel plates, which written consent shall be delivered to the Engineer prior to beginning the excavation. All such bridges or steel plates shall be maintained in service until access is provided across the backfilled excavation. Temporary bridges or steel plates for street and highway crossings shall conform to the requirements of the authority having jurisdiction in each case, and the Contractor shall adopt designs furnished by said authority for such bridges or steel plates, or shall submit designs to said authority for approval, as may be required.
- G. Traffic Control: For the protection of traffic in public or private streets and ways, the Contractor shall provide, place, and maintain all necessary barricades, traffic cones, warning signs, lights, and other safety devices in accordance with the requirements of the "Texas Manual of Uniform Traffic Control Devices, Part VI - Traffic Controls for Street and Highway Construction and Maintenance Operations", published by the Texas Department of Transportation (TxDOT).
- H. The Contractor shall take all necessary precautions for the protection of the Work and the safety of the public. All barricades and obstructions shall be illuminated at night, and all lights shall be kept burning from sunset until sunrise. The Contractor shall station such guards or flaggers and shall conform to such special safety regulations relating to traffic control as may be required by the public authorities within their respective jurisdictions. All signs, signals, and barricades shall conform to the requirements of Subpart G of the OSHA Safety and Health Standards.

1.04 TEMPORARY STREET CLOSURE

If closure of any street is required during construction, a formal application for a street closure shall be made to the authority having jurisdiction at least 7 calendar days prior to the required street closure in order for the agency having jurisdiction to determine the necessary signing and detour requirements to be provided by the Contractor.

END OF SECTION

SECTION 1600

MATERIALS AND EQUIPMENT

1.01 GENERAL

The word "Products", as used herein, is defined to include purchased items for incorporation into the Work, regardless of whether specifically purchased for the Project or taken from Contractor's stock of previously purchased products. The word "Materials" is defined as products which must be substantially cut, shaped, worked, mixed, finished, refined, or otherwise fabricated, processed, installed, or applied to form units of work. The word "Equipment" is defined as products with operational parts, regardless of whether motorized or manually operated, and particularly including products with service connections (wiring, piping, etc.). Definitions in this paragraph are not intended to negate the meaning of other terms used in Contract Documents, including "specialities", "systems", "structure", "finishes", "accessories", "furnishings", "special construction", and similar terms, which are self-explanatory and have recognized meanings in the construction industry.

1.02 QUALITY ASSURANCE

- A. Source Limitations: To the greatest extent possible for each unit of work, the Contractor shall provide products, materials, or equipment of a singular generic kind from a single source.
- B. Compatibility of Options: Where more than one choice is available as options for Contractor's selection of a product, material, or equipment, the Contractor shall select an option which is compatible with other products, materials, or equipment already selected. Compatibility is a basic general requirement of product/material selections.

1.03 PRODUCT DELIVERY-STORAGE-HANDLING

The Contractor shall deliver, handle, and store products in accordance with manufacturer's written recommendations and by methods and means which will prevent damage, deterioration, and loss including theft. Delivery schedules shall be controlled to minimize long-term storage of products at site and overcrowding of construction spaces. In particular, the Contractor shall provide delivery/installation coordination to ensure minimum holding or storage times for products recognized to be flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other sources of loss.

1.04 TRANSPORTATION AND HANDLING

- A. Products shall be transported by methods suitable to avoid product damage and shall be delivered in undamaged condition in manufacturer's unopened containers or packaging, dry.
- B. The Contractor shall provide equipment and personnel to handle products, materials, and equipment, including those provided by Owner, by methods to prevent soiling and damage.
- C. The Contractor shall provide additional protection during handling to prevent marring and otherwise damaging products, packaging, and surrounding surfaces.

1.05 STORAGE AND PROTECTION

- A. Products shall be stored in accordance with manufacturer's written instructions, with seals and labels intact and legible. Sensitive products shall be stored in weather-tight enclosures and temperature and humidity ranges shall be maintained as required by manufacturer's written instructions.
- B. For exterior storage, fabricated products shall be placed on sloped supports above ground. Products subject to deterioration shall be covered with impervious sheet covering with ventilation provided to avoid condensation.
- C. Loose granular materials shall be stored on solid surfaces in a well-drained area and shall be prevented from mixing with foreign matter.
- D. Storage shall be arranged to provide access for inspection. The Contractor shall periodically inspect to assure products are undamaged and are maintained under required conditions.
- E. Storage shall be arranged in a manner to provide access for inspection and maintenance of stored items.

1.06 ENCLOSED STORAGE

- A. Products subject to damage by the elements shall be stored in substantial, weathertight enclosures.
- B. Temperature and humidity shall be maintained within ranges stated in manufacturer's written instructions.
- C. The Contractor shall provide humidity control and ventilation for sensitive products as required by manufacturer's written instructions.
- D. Unpacked and loose products shall be stored on shelves, in bins, or in neat groups of like items.

1.07 EXTERIOR STORAGE

- A. The Contractor shall provide substantial platforms, blocking, or skids to support fabricated products above ground and shall slope the storage area to provide drainage. Products shall be protected from soiling and staining.
- B. Products subject to discoloration or deterioration from exposure to the elements shall be covered with impervious sheet material. Ventilation shall be provided to avoid condensation.
- C. Loose granular materials shall be stored on clean, solid surfaces such as pavement, or on rigid sheet materials to prevent mixing with foreign matter.
- D. Surface drainage shall be provided to prevent erosion and ponding of water.
- E. The Contractor shall prevent mixing of refuse or chemically injurious materials or liquids.

END OF SECTION

SECTION 1700

PROJECT CLOSEOUT

1.01 FINAL CLEANUP

The Contractor shall promptly remove from the vicinity of the completed work, all rubbish, unused materials, concrete forms, construction equipment, and temporary structures and facilities used during construction. Final acceptance of the Work by the Owner will be withheld until the Contractor has satisfactorily complied with the foregoing requirements for final cleanup of the project site.

1.02 CLOSEOUT TIMETABLE

The Contractor shall establish dates for equipment testing, acceptance periods, and on-site instructional periods (as required under the Contract). Such dates shall be established not less than one week prior to beginning any of the foregoing items, to allow the Owner, the Engineer, and their authorized representatives and consultants sufficient time to schedule attendance at such activities.

1.03 FINAL SUBMITTALS

The Contractor, prior to requesting its final progress payment, shall submit the following items to the Engineer for transmittal to the Owner:

1. Written guarantees or warranties, where required;
2. Maintenance stock items, spare parts, special tools;
3. Completed Record Drawings;
4. Bonds for roofing, maintenance, etc, as required hereunder;
5. Certificates of inspection and acceptance by local governing agencies having jurisdiction; and
6. Releases from all parties who are entitled to claims against the subject project, property, or improvement pursuant to the provisions of law.

1.04 COMPLETION OF THE WORK

A. Completion of the Work, as the term is used in this Contract shall mean substantial completion of the Work. Substantial completion shall exist where there has been no

willful departure from the terms of the Contract, and no omission in essential points, and the Contract has been honestly and faithfully performed in its material

and substantial particulars, and the only variance consists of relatively unimportant omissions or defects, and the Work can be used or occupied for the purpose for which it was intended.

- B. The date of substantial completion of the Project shall be the date when the construction is sufficiently completed, in accordance with the Contract Documents, as modified by any change orders agreed to by the parties, so that the Owner can occupy or utilize the project for the use for which it was intended and the legislative body of the Owner has accepted the Project as evidenced by execution and recording of a Notice of Substantial Completion/Notice of Completion.

1.05 REMAINING PUNCH LIST ITEMS

- A. Upon attaining substantial completion as defined in Paragraph 1.04, above, and upon acceptance of the Work by the Owner, by agreement between the parties some small outstanding punch list items may remain to be completed by the Contractor. As provided in Article 14.7 of the General Conditions, the Owner shall have the right to retain an amount of money from the final progress payment due the Contractor, equal to 2 times the estimated value of such outstanding punch list items. The Contractor hereby agrees to complete all such outstanding punch list items within 30 calendar days following the date of the Notice of Substantial Completion.
- B. As provided in Article 14.7 of the General Conditions, failure of the Contractor to complete or correct all such outstanding punch list work to the satisfaction of the Engineer within 30 calendar days following acceptance and Notice of Substantial Completion, shall constitute a waiver by the Contractor of all rights to any and all claims it may have to all monies withheld by the Owner under the Contract to cover the value of such uncompleted or uncorrected items.

1.06 MAINTENANCE AND GUARANTY

- A. The Contractor shall comply with the maintenance and guarantee requirements contained in Article 13 of the General Conditions.
- B. Replacement of earthfill or backfill, where it has settled below the required finish elevations, shall be considered as a part of such required repair work, and any repair or resurfacing constructed by the Contractor which becomes necessary by reason of such settlement shall likewise be considered as a part of such required repair work.
- C. The Contractor shall make all repairs and replacements promptly upon receipt of written order from the Owner. If the Contractor fails to make such repairs or replacements promptly, the Owner reserves the right to do the work or to have the work done by others and the Contractor and its Surety shall be liable to the Owner for the cost thereof.

1.07 EXTENSION OF PERFORMANCE BOND

The Contractor shall provide a bond to guarantee performance of the provision contained in Paragraph entitled "Maintenance and Guarantee", Article 1.06 and Article 13 of the General Conditions.

END OF SECTION

GOVERNING CONSTRUCTION SPECIFICATIONS

The governing construction specifications applicable to this work are a combination of the Texas Department of Transportation (TXDOT) 2004 Standard Specifications and the City of Galveston Construction Specifications.

These items which are listed below are hereby adopted and made part of the Contract Documents to the same extent as if they were herein reproduced in full subject to such modifications, revisions or supplements as may appear in the section entitled Special Provisions in these Contract Documents to follow:

Standard Specifications:

- Item 356 Fabric Underseal
- Item 529 Concrete Curb & Gutter
- Item 666 Reflectorized Pavement Markings
- Item 1045 Cutting and Patching
- Item 1122 Temporary Erosion, Sedimentation and Environmental Controls
- Item 01420 Construction Inspection Services
- Item 01505 Mobilization
- Item 01526 Trench Safety Systems
- Item 01563 Dewatering for Storm Sewer Construction
- Item 01570 Traffic Control and Regulation
- Item 02076 Remove Existing Pavements and Structures
- Item 02238 Hot Mix Asphaltic Base Course
- Item 02252 Cement Stabilized Backfill
- Item 02510 Asphaltic Concrete Pavement
- Item 02511 Prime Coat
- Item 02570 Pavement Repair and Resurfacing
- Item 02590 Temporary and Removable Reflectorized Pavement Markings
- Item 02605 Cast-in-Place Inlets, Headwalls, and Junction Boxes
- Item 02615 Reinforced Concrete Pipe
- Item 02620 PVC Pipe
- Item 02720 Storm Sewers

Special Provisions:

Special Provisions will govern and take precedence over the specifications enumerated hereon wherever in conflict therewith.

Wage Rates:

Special Provision "Important Notice to Contractor"

ITEM 356
FABRIC UNDERSEAL

356.1. Description. Furnish and place fabric underseal in a longitudinal, full-road-width application or over pavement joints.

356.2. Materials.

A. Longitudinal, Full-Width Underseal.

1. **Fabric.** Provide fabric meeting DMS-6220, "Fabric for Underseals." Use roll widths shown on the plans or as approved.
2. **Asphalt.** Provide the grade of asphalt shown on the plans and in accordance with Item 300, "Asphalts, Oils, and Emulsions."
3. **Blotter.** Provide screenings, natural sand, or other materials as approved.

B. Pavement Joint Underseal. Provide material in accordance with DMS-6260, "Reinforced Fabric Joint Underseal." Use roll widths as shown on the plans or as approved.

356.3. Equipment. For longitudinal, full-width underseal, provide applicable equipment in accordance with Item 316, "Surface Treatments."

356.4. Construction. Apply fabric underseal when the air temperature is 60°F and above, or above 50°F and rising. In all cases, do not apply when surface temperature is below 50°F. Do not apply when, according to the Engineer, weather conditions are not suitable. Measure air temperature in the shade and away from artificial heat.

A. Longitudinal, Full-Width Underseal.

1. **Surface Preparation.** Prepare the surface by cleaning off dirt, dust, or other debris. Set string lines for alignment if required. Remove existing raised pavement markers in accordance with the plans. When shown on the plans, remove vegetation and blade pavement edges.
2. **Asphalt Binder Application.** Apply asphalt binder:
 - with an asphalt distributor unless otherwise approved,
 - at the rate shown on the plans or as directed,
 - within 15°F of the temperature selected by the Engineer,
 - approximately 6 in. outside the fabric width, and
 - with paper or other approved material at the beginning and end of each shot to construct a straight transverse joint and to prevent overlapping of the asphalt.

Unless otherwise approved, match longitudinal joints with the lane lines. The Engineer may require a string line if necessary to keep joints straight with no overlapping. Do not contaminate asphalt binder.

3. **Fabric Placement.** Immediately after asphalt binder application, align the fabric and broom or roll it in place. If skewed alignment occurs, cut the fabric, overlap the cut fabric to create a transverse joint, and begin application again. Roll or broom fabric onto the asphalt binder in a manner that prevents air bubbles from forming under the fabric. If wind prevents proper adherence of the fabric to the asphalt binder, especially at the edges, provide an alternate means of securing the edges to the pavement. Cease underseal application if the Engineer determines that wind conditions prevent proper placement.
 - a. **Transverse Joints.** Overlap transverse joints by a minimum of 6 in. If traffic is allowed directly on the underseal, make all transverse joints with the top layer in the direction of traffic. At transverse joints, secure ends of overlapping fabric layer by nailing or other approved means.

- b. Longitudinal Joints.** Overlap longitudinal joints by a minimum of 4 in. Apply additional asphalt binder to secure longitudinal fabric joints.
- 4. Blotter.** Apply blotter as directed to the top of the underseal to absorb excess asphalt binder. Remove any excess blotter as directed.

B. Pavement Joint Underseal.

- 1. Surface Preparation.** Remove dirt, dust, or other debris from all joints and from the area on both sides of the joint that will be in contact with the installed underseal. Other preparation for proper adherence may be required as shown on the plans.
- 2. Fabric Placement.** For transverse pavement joints, do not allow joints or laps in the underseal material. Minimize underseal material joints in longitudinal pavement joints, and do not allow overlap. Remove any protective coatings from the self-adhering layer of the fabric underseal. Center the fabric width over the joint. Apply fabric to the joint with a minimum of 5 in. on each side or as specified on the plans. Roll fabric in place to ensure adherence of the self-adhering binder. Do not allow air bubbles under the fabric.

356.5. Measurement.

A. Longitudinal, Full-Width Underseal.

- 1. Asphalt Binder.** Asphalt binder will be measured as follows.
 - a. Volume.** Volume measurements will be made at the point of application on the road as gallons used at the application temperature, as directed, in the accepted fabric underseal.
 - b. Weight.** Weight measurements will be by the ton in accordance with Item 520, "Weighing and Measuring Equipment." At the end of the project, deduct any remaining material from quantities delivered to determine pay quantities.
- 2. Fabric.** Fabric will be measured by the square yard based on the widths shown on the plans and the lengths measured at placement with no allowance for overlapping at transverse and longitudinal joints.

B. Pavement Joint Underseal. Pavement joint underseal will be measured by the foot.

356.6. Payment. The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" are paid for at the unit prices bid for "Asphalt Binder" of the type and grade specified and for "Fabric" for full-width underseals and "Pavement Joint Underseal" of the product width specified for pavement joint underseals. These prices are full compensation for cleaning and preparing the existing pavement, including removal of raised pavement markers; furnishing, preparing, hauling, and placing materials, including blotter; manipulation, including rolling and brooming; and equipment, labor, tools, and incidentals.

ITEM 529
**CONCRETE CURB, GUTTER, AND COMBINED CURB
AND GUTTER**

529.1. Description. Construct hydraulic cement concrete curb, gutter, and combined curb and gutter.

529.2. Materials. Furnish materials conforming to:

- Item 360, "Concrete Pavement"
- Item 420, "Concrete Structures"
- Item 421, "Hydraulic Cement Concrete"
- Item 440, "Reinforcing Steel."

Use Class A concrete or material specified in the plans. Use Grade 8 coarse aggregate for extruded Class A concrete. Use other grades if approved by the Engineer.

529.3. Construction. Provide finished work with a well-compacted mass and a surface free from voids and honeycomb, in the required shape, line, and grade. Round exposed edges with an edging tool of the radius shown on the plans. Mix, place, and cure concrete in accordance with Item 420, "Concrete Structures." Construct joints at locations shown on the plans. Cure for at least 72 hr.

Furnish and place reinforcing steel in accordance with Item 440, "Reinforcing Steel."

Set and maintain a guideline that conforms to alignment data shown on the plans, with an outline that conforms to the details shown on the plans.

A. Conventionally Formed Concrete. Shape and compact subgrade, foundation, or pavement surface to the line, grade, and cross section shown on the plans. Lightly sprinkle subgrade or foundation material immediately before concrete placement.

Pour concrete into forms, and strike off with a template 1/4 to 3/8 in. less than the dimensions of the finished curb unless otherwise approved. After initial set, plaster surface with mortar consisting of 1 part hydraulic cement and 2 parts fine aggregate. Brush exposed surfaces to a uniform texture.

Place curbs, gutters, and combined curb and gutters in 50-ft. maximum sections unless otherwise approved.

B. Extruded or Slipformed Concrete. Hand-tamp and sprinkle subgrade or foundation material before concrete placement. Provide clean surfaces for concrete placement. If required, coat cleaned surfaces with approved adhesive or coating at the rate of application shown on the plans or as directed. Place concrete with approved self-propelled equipment.

The forming tube of the extrusion machine or the form of the slipform machine must be easily adjustable vertically during the forward motion of the machine to provide variable heights necessary to conform to the established gradeline.

Attach a pointer or gauge to the machine so that a continual comparison can be made between the extruded or slipform work and the grade guideline. Other methods may be used when approved.

Finish surfaces immediately after extrusion or slipforming.

529.4. Measurement. This Item will be measured by the foot.

529.5. Payment. The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Concrete Curb," "Concrete Curb (Mono)," or "Concrete Curb and Gutter" of the type specified. This price is full compensation for surface preparation of base, equipment, labor, materials, tools, and incidentals.

ITEM 666
REFLECTORIZED PAVEMENT MARKINGS

666.1. Description. Furnish and place reflectorized pavement markings.

666.2. Materials.

- A. Type I Marking Materials.** Furnish in accordance with DMS-8220, “Hot Applied Thermoplastic.”
- B. Type II Marking Materials.** Furnish in accordance with DMS-8200, “Traffic Paint.”
- C. Glass Traffic Beads.** Furnish drop-on glass beads conforming to DMS-8290, “Glass Traffic Beads.”
- 1. Type I Markings.** Furnish Type III drop-on glass beads. Furnish Type II or double-drop of Type II and Type III drop-on glass beads where each type bead is applied separately in equal portions (by weight), only when specified in the plans. When furnishing a double-drop system, apply the Type III beads before applying the Type II beads.
 - 2. Type II Markings.** Furnish Type III drop-on glass beads or other beads specified on the plans.
- D. Labeling.** Use clearly marked containers that indicate color, mass, material type, manufacturer, and batch number.

666.3. Equipment.

- A. General Requirements.** Use equipment that:
- is maintained in satisfactory condition,
 - meets or exceeds the requirements of the National Board of Fire Underwriters and the RRC for this application,
 - uses an automatic bead dispenser attached to the pavement marking equipment, and
 - can provide continuous mixing and agitation of the pavement marking material.

Provide a hand-held thermometer capable of measuring the temperature of the marking material when applying Type I material.

- B. Material Placement Requirements.** Use equipment that can place:
- at least 40,000 ft. of 4-in. solid or broken markings per day at the specified thickness;
 - linear markings up to 8 in. wide in a single pass;
 - markings other than solid or broken lines;
 - a center-line and no-passing barrier-line configuration consisting of 1 broken line with 2 solid lines at the same time to the alignment, spacing, and thickness shown on the plans, for 3-line application;
 - white line from both sides;
 - lines with clean edges, uniform cross section and thickness, and reasonably square ends;

- skip lines between 10 and 10-1/2 ft., an approximate stripe-to-gap ratio of 1 to 3, and a stripe-gap cycle between 39-1/2 ft. and 40-1/2 ft., automatically;
- beads uniformly and almost instantly on the marking as the marking is being applied;
- beads uniformly during the application of all lines (each line must have an equivalent bead yield rate and embedment); and
- double-drop bead applications using both Type II and Type III beads from separate independent bead applicators, if double-drop bead application is used.

666.4. Construction. Place markings before opening to traffic unless short-term or work zone markings are allowed.

A. General. Obtain approval for the sequence of work and estimated daily production. On roadways already open to traffic, place markings with minimal interference to the operations of that roadway. Use traffic control as shown on the plans or as approved. Protect all markings placed under open-traffic conditions from traffic damage and disfigurement.

Establish guides to mark the lateral location of pavement markings as shown on the plans or as directed, and have guide locations verified. Use material for guides that will not leave a permanent mark on the roadway.

Apply markings on pavement that is completely dry and passes the following tests:

- Type I Marking Application—Place a sample of Type I marking material on a piece of tarpaper placed on the pavement. Allow the material to cool to ambient temperature, and then inspect the underside of the tarpaper in contact with the pavement. Pavement will be considered dry if there is no condensation on the tarpaper.
- Type II Marking Application—Place a 1-sq. ft. piece of clear plastic on the pavement, and weight down the edges. The pavement is considered dry if, when inspected after 15 min., no condensation has occurred on the underside of the plastic.

Apply markings:

- that meet the requirements of Tex-828-B,
- using widths and colors shown on the plans,
- at locations shown on the plans,
- in proper alignment with the guides without deviating from the alignment more than 1 in. per 200 ft. of roadway or more than 2 in. maximum,
- without abrupt deviations,
- free of blisters and with no more than 5% by area of holes or voids,
- with uniform cross section and thickness,
- with clean and reasonably square ends,
- that are reflectorized, and
- using personnel skilled and experienced with installation of pavement markings.

Remove all applied markings that are not in alignment or sequence as stated in the plans or as stated in the specifications at the Contractor's expense in accordance with

Item 677, "Eliminating Existing Pavement Markings and Markers," except for measurement and payment.

- B. Surface Preparation.** Unless otherwise shown on the plans, prepare surfaces in accordance with this section.
- 1. Cleaning for New Asphalt Surfaces and Retracing of All Surfaces.** For new asphalt surfaces (less than 3 years old) and retracing of all surfaces, air-blast or broom the pavement surface to remove loose material, unless otherwise shown on the plans. A sealer for Type I markings is not required unless otherwise shown on the plans.
 - 2. Cleaning for Old Asphalt and Concrete Surfaces (Excludes Retracing).** For old asphalt surfaces (more than 3 years old) and all concrete surfaces, clean in accordance with Item 678, "Pavement Surface Preparation for Markings," to remove curing membrane, dirt, grease, loose and flaking existing construction markings, and other forms of contamination.
 - 3. Sealer for Type I Markings.** For asphalt surfaces more than 3 years old or for concrete, apply a pavement sealer before placing Type I markings on locations that do not have existing markings, unless otherwise approved. The pavement sealer may be either a Type II marking or an acrylic or epoxy sealer unless otherwise shown on the plans. Follow the manufacturer's directions for application of acrylic or epoxy sealers. When the sealer becomes dirty after placement, clean by washing or in accordance with Section 666.4.B.1, "Cleaning for New Asphalt Surfaces and Retracing of All Surfaces," as directed. Place the sealer in the same configuration and color (unless clear) as the Type I markings unless otherwise shown on the plans.
- C. Application.** Apply markings during good weather unless otherwise directed. If markings are placed at Contractor option when inclement weather is impending and the markings are damaged by subsequent precipitation, the Contractor is responsible for all costs associated with replacing the markings if required.
- 1. Type I Markings.** Place the Type I marking after the sealer cures. Apply within the temperature limits recommended by the material manufacturer. If during a spray application, operations cease for 5 min. or longer, flush the spray head by spraying marking material into a pan or similar container until the material being applied is at the recommended temperature.

Apply on clean, dry pavements passing the moisture test described in Section 666.4.A, "General," and with a surface temperature above 50°F when measured in accordance with Tex-829-B.

Apply Type I markings with a minimum thickness of:
 - 0.100 in. (100 mils) for new markings and retracing water-based markings on surface treatments involving Item 316, "Surface Treatments," or Item 318, "Hot Asphalt-Rubber Surface Treatments,"
 - 0.060 in. (60 mils) for retracing on thermoplastic pavement markings, or
 - 0.090 in. (90 mils) for all other Type I markings.The maximum thickness for Type I markings is 0.180 in. (180 mils). Measure thickness for markings in accordance with Tex-854-B using the tape method.

2. Type II Markings. Apply on surfaces with a minimum surface temperature of 50°F. Apply at least 20 gal. per mile on concrete and asphalt surfaces and at least 22 gal. per mile on surface treatments for a solid 4-in. line. Adjust application rates proportionally for other widths. When Type II markings are used as a sealer for Type I markings, apply at least 15 gal. per mile using Type II drop-on beads.

3. Bead Coverage. For Type I and Type II markings, provide a uniform distribution of beads across the surface of the stripe, with 40 to 60% bead embedment.

D. Performance Period. All markings and replacement markings must meet the requirements of Tex-828-B for at least 30 calendar days after installation. Unless otherwise directed, remove pavement markings that fail to meet requirements, and replace at the Contractor's expense. Replace failing markings within 30 days of notification.

666.5. Measurement. This Item will be measured by the foot; by each word, symbol, or shape; or by any other unit shown on the plans. Each stripe will be measured separately.

This is a plans quantity measurement Item. The quantity to be paid is the quantity shown in the proposal unless modified by Article 9.2, "Plans Quantity Measurement." Additional measurements or calculations will be made if adjustments of quantities are required.

Acrylic or epoxy sealer, or Type II markings when used as a sealer for Type I markings, will be measured by the foot; by each word, symbol, or shape; or by any other unit shown on the plans.

666.6. Payment. The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Pavement Sealer" of the size specified or "Reflectorized Pavement Markings" of the type and color specified and the shape, width, size, and thickness (Type I markings only) specified as applicable. This price is full compensation for materials, application of pavement markings, equipment, labor, tools, and incidentals.

Surface preparation of new concrete and asphalt concrete pavements more than 3 years old, where no stripe exists, will be paid for under Item 678, "Pavement Surface Preparation for Markings." Surface preparation of all other asphalt and old concrete pavement, except for sealing, will not be paid for directly but is subsidiary to this Item.

Work-zone pavement markings (Type II, paint and beads) used as a sealer for Type I markings (thermoplastic) will be paid for under Item 662, "Work Zone Pavement Markings."

If the Engineer requires that markings be placed in inclement weather, repair or replacement of markings damaged by the inclement weather will be paid for in addition to the original plans quantity.

SECTION 01045

CUTTING AND PATCHING

PART I GENERAL

1.01 SECTION INCLUDES

- A. Cutting, patching and fitting of Work to existing facilities, or to accommodate installation or connection of Work with existing facilities, or to uncover work for access, inspection or testing.

1.02 CUTTING AND PATCHING

- A. Perform activities to avoid interference with facility operations and the Work of others in accordance with all provisions and sections of these specifications.
- B. Execute cutting and patching, including excavation, backfill and fitting to:
 - 1. Remove and replace defective Work or Work not conforming to the Drawings and Specifications.
 - 2. Take samples of installed Work as required for testing.
 - 3. Remove construction required to provide for specified alteration or addition to existing work.
 - 4. Uncover Work to provide for inspection or reinspection of covered Work by the Owner Representative or regulatory agencies having jurisdiction.
 - 5. Connect any Work that was not accomplished in the proper sequence to completed Work.
 - 6. Remove or relocate existing utilities and pipes which obstruct Work to which connections must be made.
 - 7. Make connections or alterations to existing or new facilities.
 - 8. Provide openings, channels, chases and flues, if any, and do cutting, patching and finishing.
- C. Restore existing work to a state equal to or better than that prior to cutting and patching. Restore new Work to standards of these Specifications.

- D. Support, anchor, attach, match, trim and seal materials to the Work of others. Unless otherwise specified, furnish and install sleeves, inserts, hangers, required for the execution of the Work.
- E. Provide shoring, bracing and support as required to maintain structural integrity and protect adjacent Work from damage during cutting and patching. Before cutting beams or other structural members, anchors, lintels or other supports, request written instructions from the Owner Representative. Follow such instructions, as applicable.

1.03 SUBMITTALS

- A. Submit written notice to the Owner Representative requesting consent to proceed prior to cutting which may affect structural integrity or design function, Owner operations, or work of another contractor.
- B. Include the following in submittal:
 - 1. Identification of project.
 - 2. Description of affected Work.
 - 3. Necessity for cutting.
 - 4. Effect on other work and on structural integrity.
 - 5. Include description of proposed Work:
 - a. Scope of cutting and patching.
 - b. Contractor, subcontractor or trade to execute Work.
 - c. Products proposed to be used.
 - d. Extent of refinishing.
 - e. Schedule of operations.
 - 6. Alternatives to cutting and patching, if any.
- C. Should conditions of Work or schedule indicate change of materials or methods, submit a written recommendation to the Owner Representative including:
 - 1. Conditions indicating change.
 - 2. Recommendations for alternative materials or methods.

3. Submittals as required for substitutions.
- D. Submit written notice to the Owner Representative designating time Work will be uncovered for observation. Do not begin cutting or patching operations until authorized by the Owner Representative.

1.04 CONNECTIONS TO EXISTING FACILITIES

- A. Perform construction necessary to complete connections and tie-ins to existing facilities. Keep all existing facilities in continuous operation unless otherwise specifically permitted in these Specifications or approved by the Owner Representative.
- B. Coordinate with the Owner Representative, interruption of service requiring connection into existing facilities. Bypassing of wastewater or sludge to waterways is not permitted. Provide temporary pumping facilities to handle wastewater if necessary. Use temporary bulkheads (e.g., inflatable plugs) to minimize disruption. Provide temporary power supply and piping to facilitate construction where necessary.
- C. Submit a detailed schedule of proposed connections, including shut-downs and tie-ins. Include in the submittal the proposed time and date as well as the anticipated duration of the Work. Submit the detailed schedule coordinated with the construction schedule.
 1. Provide specific time and date information to the Owner Representative 48 hours in advance of proposed Work.
- D. Procedures and Operations:
 1. Only city personnel shall operate any valve, gate or other item of equipment without authorization of the Owner.
 2. Insofar as possible, equipment shall be tested and in operating condition before final tie-ins are made to connect equipment to the existing facility.
 3. Carefully coordinate Work and schedules. Provide written notice to the Owner Representative at least 48 hours before shut-downs or by-passes are required.

PART 2 PRODUCTS - NOT USED.

PART 3 EXECUTION - NOT USED.

END OF SECTION

SPECIAL SPECIFICATION

1122

Temporary Erosion, Sedimentation, and Environmental Controls

- 1. Description.** Install, maintain, and remove erosion, sedimentation, and environmental control measures to prevent or reduce the discharge of pollutants in accordance with the Storm Water Pollution Prevention Plan (SWP3) as provided in the plans and the Texas Pollutant Discharge Elimination System (TPDES) General Permit TXR150000. Control measures are defined as Best Management Practices used to prevent or reduce the discharge of pollutants. Control measures include but are not limited to rock filter dams, temporary pipe slope drains, temporary paved flumes, construction exits, earthwork for erosion control, pipe, construction perimeter fence, sandbags, temporary sediment control fence, biodegradable erosion control logs, vertical tracking, temporary or permanent seeding, and other measures. Perform work in a manner to prevent degradation of receiving waters, facilitate project construction, and comply with applicable federal, state, and local regulations. Ensure the installation and maintenance of control measures is performed in accordance with the manufacturer's or designer's specifications.

By signing the Contractor Certification of Compliance, the Contractor certifies they have read and understand the requirements applicable to this project pertaining to the SWP3, the plans, and the TPDES General Permit TXR150000. The Contractor is responsible for any penalties associated with non-performance of installation or maintenance activities required for compliance. Provide the Contractor Certification of Compliance to the Engineer prior to performing earthwork operations. The most current version of the Contractor Certification of Compliance can be found at:

<http://www.txdot.gov/inside-txdot/division/environmental/ems-courses.html>.

A sample of the language has been attached to this specification. Ensure the most current version of the certificate is executed for this project.

- 2. Materials.** Furnish materials in accordance with the following:
 - Item 161, "Compost"
 - Item 432, "Riprap"
 - Item 556, "Pipe Underdrains"
- A. Rock Filter Dams.**
 - 1. Aggregate.** Furnish aggregate with hardness, durability, cleanliness, and resistance to crumbling, flaking, and eroding acceptable to the Engineer. Provide the following:
 - **Types 1, 2, and 4 Rock Filter Dams.** Use 3 to 6 in. aggregate.
 - **Type 3 Rock Filter Dams.** Use 4 to 8 in. aggregate.
 - 2. Wire.** Provide minimum 20 gauge galvanized wire for the steel wire mesh and tie wires for Types 2 and 3 rock filter dams. Type 4 dams require:

- A double-twisted, hexagonal weave with a nominal mesh opening of 2-1/2 in. x 3-1/4 in.;
- Minimum 0.0866 in. steel wire for netting;
- Minimum 0.1063 in. steel wire for selvages and corners; and minimum 0.0866 in. for binding or tie wire.

3. Sandbag Material. Furnish sandbags meeting “Sandbags for Erosion Control,” except that any gradation of aggregate may be used to fill the sandbags.

B. Temporary Pipe Slope Drains. Provide corrugated metal pipe, polyvinyl chloride (PVC) pipe, flexible tubing, watertight connection bands, grommet materials, prefabricated fittings, and flared entrance sections that conform to the plans. Recycled and other materials meeting these requirements are allowed if approved.

Furnish concrete in accordance with Item 432, “Riprap.”

C. Temporary Paved Flumes. Furnish asphalt concrete, hydraulic cement concrete, or other comparable non-erodible material that conforms to the plans. Provide rock or rubble with a minimum diameter of 6 in. and a maximum volume of 1/2 cu. ft. for the construction of energy dissipaters.

D. Construction Exits. Provide materials that meet the details shown on the plans and this Section.

1. Rock Construction Exit. Provide crushed aggregate for long and short-term construction exits. Furnish aggregates that are clean, hard, durable, and free from adherent coatings such as salt, alkali, dirt, clay, loam, shale, soft or flaky materials and organic and injurious matter. Use 4- to 8-in. aggregate for Type 1 and 2- to 4-in. aggregate for Type 3.

2. Timber Construction Exit. Furnish No. 2 quality or better railroad ties and timbers for long-term construction exits, free of large and loose knots and treated to control rot. Fasten timbers with nuts and bolts or lag bolts, of at least 1/2 in. diameter, unless otherwise shown on the plans or allowed. For short-term exits, provide plywood or pressed wafer board at least 1/2 in. thick.

3. Foundation Course. Provide a foundation course consisting of flexible base, bituminous concrete, hydraulic cement concrete, or other materials as shown on the plans or directed.

E. Embankment for Erosion Control. Provide rock, loam, clay, topsoil, or other earth materials that will form a stable embankment to meet the intended use.

F. Pipe. Provide pipe outlet material in accordance with Item 556, “Pipe Underdrains,” and details shown on the plans.

G. Construction Perimeter Fence.

- 1. Posts.** Provide essentially straight wood or steel posts that are at least 60 in. long. Furnish soft wood posts with a minimum diameter of 3 in. or use 2 x 4 boards. Furnish hardwood posts with a minimum cross-section of 1-1/2 x 1-1/5 in. Furnish T- or L-shaped steel posts with a minimum weight of 1.3 lb. per foot.
- 2. Fence.** Provide orange construction fencing as approved by the Engineer.
- 3. Fence Wire.** Provide 12-1/2 gauge or larger galvanized smooth or twisted wire. Provide 16 gauge or larger tie wire.
- 4. Flagging.** Provide brightly-colored flagging that is fade-resistant and at least 3/4 in. wide to provide maximum visibility both day and night.
- 5. Staples.** Provide staples with a crown at least 1/2 in. wide and legs at least 1/2 in. long.
- 6. Used Materials.** Previously used materials meeting the applicable requirements may be used if accepted by the Engineer.

H. Sandbags. Provide sandbag material of polypropylene, polyethylene, or polyamide woven fabric with a minimum unit weight of 4 oz. per square yard, a Mullen burst-strength exceeding 300 psi, and an ultraviolet stability exceeding 70%.

Use natural coarse sand or manufactured sand meeting the gradation given in Table 1 to fill sandbags. Filled sandbags must be 24 to 30 in. long, 16 to 18 in. wide, and 6 to 8 in. thick.

**Table 1
Sand Gradation**

Sieve #	Retained (% by Weight)
4	MAXIMUM 3%
100	MINIMUM 80%
200	MINIMUM 95%

Aggregate may be used in lieu of sand for situations where sandbags are not adjacent to traffic. The aggregate size shall not exceed 3/8 in.

I. Temporary Sediment Control Fence. Provide a net-reinforced fence using woven geotextile fabric. Logos visible to the traveling public will not be allowed.

- 1. Fabric.** Provide fabric materials in accordance with DMS-6230, "Temporary Sediment Control Fence Fabric."
- 2. Posts.** Provide essentially straight wood or steel posts with a minimum length of 48 in., unless otherwise shown on the plans. Soft wood posts must be at least 3 in. in diameter or nominal 2 x 4in. Hardwood posts must have a minimum cross-section of 1-1/2 x 1-1/2 in. T- or L-shaped steel posts must have a minimum weight of 1.3 lb. per foot.

3. **Net Reinforcement.** Provide net reinforcement of at least 12-1/2 gauge galvanized welded wire mesh, with a maximum opening size of 2 x 4 in., at least 24 in. wide, unless otherwise shown on the plans.
4. **Staples.** Provide staples with a crown at least 3/4 in. wide and legs 1/2 in. long.
5. **Used Materials.** Use recycled material meeting the applicable requirements if accepted by the Engineer.

J. Biodegradable Erosion Control Logs.

1. **Core Material.** Furnish core material that is biodegradable or recyclable. Except where specifically called out in plans, material may be compost, mulch, aspen excelsior wood fibers, chipped site vegetation, agricultural rice or wheat straw, coconut fiber, 100% recyclable fibers, or any other acceptable material. No more than 5% of the material is permitted to escape from the containment mesh. Furnish compost meeting the requirements of Item 161, "Compost."
2. **Containment Mesh.** Furnish containment mesh that is 100% biodegradable, photodegradable or recyclable such as burlap, twine, UV photodegradable plastic, polyester, or any other acceptable material.
 - a. Furnish biodegradable or photodegradable containment mesh when log will remain in place as part of a vegetative system.
 - b. Furnish recyclable containment mesh for temporary installations.
3. **Size.** Furnish biodegradable erosion control logs with diameters shown on the plans or as directed. Stuff containment mesh densely so logs do not deform.

3. Qualifications, Training, and Employee Requirements.

- A. Contractor Responsible Person Environmental (CRPe) Qualifications and Responsibilities.** Provide and designate in writing at the preconstruction conference a CRPe who has overall responsibility for the storm water management program. The CRPe will identify and implement storm water and erosion control practices; will oversee and observe storm water control measure monitoring and management; will monitor the project site daily to ensure compliance with the SWP3 and TPDES General Permit TXR150000; and will document daily monitoring reports and provide the reports to the Department within 48 hours. The CRPe will provide recommendations to the Engineer on how to improve the effectiveness of control measures. Attend the Department's preconstruction conference for the project. Administer the training identified in Article 3.C. *Training*. Document and submit a list to the Engineer of employees who have completed the training. The list should include the employee's name, the training course name, and date the employee completed the training. Provide the most current list to the Engineer at the preconstruction conference or prior to earth disturbing activities. Maintain the list as needed and make available for inspection.

B. Contractor Superintendent Qualifications and Responsibilities. Provide a superintendent that is competent and has experience with and knowledge of storm water management and is knowledgeable of the requirements and the conditions of the TPDES General Permit TXR150000. The superintendent is responsible for managing and overseeing the day to day operations and activities at the project site; working with the CRPe to provide effective storm water management at the project site; representing and acting on-behalf of the Contractor; and attending the Department's preconstruction conference for the project.

C. Training. All Contractor and subcontractor employees directly involved in the earthwork activities, small or large structures, storm water control measures, and seeding activities are required to complete the training identified by the Department prior to working in the right of way. Training may take place at a location at the discretion of the Contractor.

4. Construction.

A. Contractor Responsibilities. Implement the SWP3 for the project site in accordance with in accordance with the plans and specifications, TPDES General Permit TXR150000, and as directed by the Engineer. Coordinate storm water management with all other work on the project. Develop and implement an SWP3 for project-specific material supply plants within and outside of the Department's right of way in accordance with the specific or general storm water permit requirements. Prevent water pollution from storm water associated with construction activity from entering any surface water or private property on or adjacent to the project site.

B. Implementation. The CRPe, or an alternate, must be accessible by phone and able to respond to storm water management emergencies 24 hours per day.

1. Commencement. Implement the SWP3 as shown and as directed. Contractor proposed recommendations for changes will be allowed as approved. Conform to the established guidelines in the TPDES General Permit TXR150000 to make changes. Do not implement changes until approval has been received and changes have been incorporated into the plans by the Engineer. Minor adjustments to meet field conditions are allowed and will be recorded by the Engineer in the SWP3.

2. Phasing. Implement control measures prior to the commencement of activities that result in soil disturbance. Phase and minimize the soil disturbance to the areas shown on the plans. Coordinate temporary control measures with permanent control measures and all other work activities on the project to assure economical, effective, safe, continuous water pollution prevention. Provide control measures that are appropriate to the construction means, methods, and sequencing allowed by the Contract. Exercise precaution throughout the life of the project to prevent pollution of ground waters and surface waters. Schedule and perform clearing and grubbing operations so that stabilization measures will follow immediately thereafter if project conditions permit. Bring all grading sections to final grade as soon as possible and implement temporary and permanent control measures at the earliest time possible. Implement temporary control measures when required by the TPDES General Permit TXR150000 or otherwise necessitated by project conditions.

Do not prolong final grading and shaping. Preserve vegetation where possible throughout the project and minimize clearing, grubbing, and excavation within stream banks, bed, and approach sections.

C. General.

1. **Temporary Alterations or Control Measure Removal.** Altering or removal of control measures is allowed when control measures are restored within the same working day.
 2. **Stabilization.** Initiate stabilization for disturbed areas no more than 14 days after the construction activities in that portion of the site has temporarily or permanently ceased. Establish a uniform vegetative cover or utilize another stabilization practice in accordance with the TPDES General Permit TXR150000.
 3. **Finished Work.** Upon the Engineer's acceptance of vegetative cover or other stabilization practice, remove and dispose of all temporary control measures unless otherwise directed. Complete soil disturbing activities and establish a uniform perennial vegetative cover. A project will not be considered for acceptance until a vegetative cover of 70% density of existing adjacent undisturbed areas is obtained or equivalent permanent stabilization is obtained in accordance with the TPDES General Permit TXR150000. An exception will be allowed in arid areas as defined in the TPDES General Permit TXR150000.
 4. **Restricted Activities and Required Precautions.** Do not discharge onto the ground or surface waters any pollutants such as chemicals, raw sewage, fuels, lubricants, coolants, hydraulic fluids, bitumens, or any other petroleum product. Operate and maintain equipment on site in a manner as to prevent actual or potential water pollution. Manage, control, and dispose of litter on site such that no adverse impacts to water quality occur. Prevent dust from creating a potential or actual unsafe condition, public nuisance, or condition endangering the value, utility, or appearance of any property. Wash out concrete trucks only as described in the TPDES General Permit TXR150000. Utilize appropriate controls to minimize the offsite transport of suspended sediments and other pollutants if it is necessary to pump or channel standing water (i.e. dewatering). Prevent discharges that would contribute to a violation of Edwards Aquifer Rules, water quality standards, the impairment of a listed water body, or other state or federal law.
- D. Installation, Maintenance, and Removal Work.** Perform work in accordance with the SWP3, according to manufacturers' guidelines, and in accordance with the TPDES General Permit TXR150000. Install and maintain the integrity of temporary erosion and sedimentation control devices to accumulate silt and debris until earthwork construction and permanent erosion control features are in place or the disturbed area has been adequately stabilized as determined by the Engineer.

The Department will inspect and document the condition of the control measures at the frequency shown on the plans and will provide the Construction SWP3 Field Inspection and Maintenance Reports to the Contractor. Make corrections as soon as possible before the next anticipated rain event or within 7 calendar days after being able to enter the work site for each control measure.

The only acceptable reason for not accomplishing the corrections with the time frame specified is when site conditions are "Too Wet to Work". If a correction is deemed critical by the Engineer, immediate action is required. When corrections are not made within the established time frame, all work will cease on the project and time charges will continue while the control measures are brought into compliance. Once the Engineer reviews and documents the project is in compliance, work may commence. Commencing work does not release the contractor of the liability for noncompliance of the SWP3, plans, or TPDES General Permit TXR150000.

The Engineer may limit the disturbed area if in the opinion of the Engineer the Contractor cannot control soil erosion and sedimentation resulting from the Contractor's operations. Implement additional controls as directed.

Remove devices upon approval or as directed. Upon removal, finish-grade and dress the area. Stabilize disturbed areas in accordance with the permit, and as shown on the plans or directed. The Contractor retains ownership of stockpiled material and must remove it from the project when new installations or replacements are no longer required.

- 1. Rock Filter Dams for Erosion Control.** Remove trees, brush, stumps, and other objectionable material that may interfere with the construction of rock filter dams. Place sandbags as a foundation when required or at the Contractor's option.

For Types 1, 2, 3, and 5, place the aggregate to the lines, height, and slopes specified, without undue voids. For Types 2 and 3, place the aggregate on the mesh and then fold the mesh at the upstream side over the aggregate and secure it to itself on the downstream side with wire ties, or hog rings, or as directed. Place rock filter dams perpendicular to the flow of the stream or channel unless otherwise directed. Construct filter dams according to the following criteria, unless otherwise shown on the plans:

- a. Type 1 (Non-reinforced).**

- (1) Height.** At least 18 in. measured vertically from existing ground to top of filter dam.

- (2) Top Width.** At least 2 ft.

- (3) Slopes.** At most 2:1.

- b. Type 2 (Reinforced).**

- (1) Height.** At least 18 in. measured vertically from existing ground to top of filter dam.

- (2) Top Width.** At least 2 ft.

- (3) Slopes.** At most 2:1.

c. Type 3 (Reinforced).

(1) **Height.** At least 36 in. measured vertically from existing ground to top of filter dam.

(2) **Top Width.** At least 2 ft.

(3) **Slopes.** At most 2:1.

d. Type 4 (Sack Gabions). Unfold sack gabions and smooth out kinks and bends. For vertical filling, connect the sides by lacing in a single loop–double loop pattern on 4- to 5-in. spacing. At one end, pull the end lacing rod until tight, wrap around the end, and twist 4 times. At the filling end, fill with stone, pull the rod tight, cut the wire with approximately 6 in. remaining, and twist wires 4 times.

For horizontal filling, place sack flat in a filling trough, fill with stone, and connect sides and secure ends as described above.

Lift and place without damaging the gabion. Shape sack gabions to existing contours.

e. Type 5. Provide rock filter dams as shown on the plans.

- 2. Temporary Pipe Slope Drains.** Install pipe with a slope as shown on the plans or as directed. Construct embankment for the drainage system in 8-in. lifts to the required elevations. Hand-tamp the soil around and under the entrance section to the top of the embankment as shown on the plans or as directed. Form the top of the embankment or earth dike over the pipe slope drain at least 1 ft. higher than the top of the inlet pipe at all points. Secure the pipe with hold-downs or hold-down grommets spaced a maximum of 10 ft. on center. Construct the energy dissipaters or sediment traps as shown on the plans or as directed. Construct the sediment trap using concrete or rubble riprap in accordance with Item 432, "Riprap," when designated on the plans.
- 3. Temporary Paved Flumes.** Construct paved flumes as shown on the plans or as directed. Provide excavation and embankment (including compaction of the subgrade) of material to the dimensions shown on the plans, unless otherwise indicated. Install a rock or rubble riprap energy dissipater, constructed from the materials specified above to a minimum depth of 9 in. at the flume outlet to the limits shown on the plans or as directed.
- 4. Construction Exits.** When tracking conditions exist, prevent traffic from crossing or exiting the construction site or moving directly onto a public roadway, alley, sidewalk, parking area, or other right of way areas other than at the location of construction exits. Construct exits for either long or short-term use.
 - a. Long-Term.** Place the exit over a foundation course, if necessary. Grade the foundation course or compacted subgrade to direct runoff from the construction exits to a sediment trap as shown on the plans or as directed. Construct exits with a

width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed.

(1) **Type 1.** Construct to a depth of at least 8 in. using crushed aggregate as shown on the plans or as directed.

(2) **Type 2.** Construct using railroad ties and timbers as shown on the plans or as directed.

b. Short-Term.

(1) **Type 3.** Construct using crushed aggregate, plywood, or wafer board. This type of exit may be used for daily operations where long-term exits are not practical.

(2) **Type 4.** Construct as shown on the plans or as directed.

5. **Earthwork for Erosion Control.** Perform excavation and embankment operations to minimize erosion and to remove collected sediments from other erosion control devices.

a. Excavation and Embankment for Erosion Control Features. Place earth dikes, swales, or combinations of both along the low crown of daily lift placement, or as directed, to prevent runoff spillover. Place swales and dikes at other locations as shown on the plans or as directed to prevent runoff spillover or to divert runoff. Construct cuts with the low end blocked with undisturbed earth to prevent erosion of hillsides. Construct sediment traps at drainage structures in conjunction with other erosion control measures as shown on the plans or as directed.

Where required, create a sediment basin providing 3,600 cu. ft. of storage per acre drained, or equivalent control measures for drainage locations that serve an area with 10 or more disturbed acres at one time, not including offsite areas.

b. Excavation of Sediment and Debris. Remove sediment and debris when accumulation affects the performance of the devices, after a rain, and when directed.

6. **Construction Perimeter Fence.** Construct, align, and locate fencing as shown on the plans or as directed.

a. Installation of Posts. Embed posts 18 in. deep or adequately anchor in rock, with a spacing of 8 to 10 ft.

b. Wire Attachment. Attach the top wire to the posts at least 3 ft. from the ground. Attach the lower wire midway between the ground and the top wire.

c. Flag Attachment. Attach flagging to both wire strands midway between each post. Use flagging at least 18 in. long. Tie flagging to the wire using a square knot.

7. **Sandbags for Erosion Control.** Construct a berm or dam of sandbags that will intercept sediment-laden storm water runoff from disturbed areas, create a retention pond, detain

sediment, and release water in sheet flow. Fill each bag with sand so that at least the top 6 in. of the bag is unfilled to allow for proper tying of the open end. Place the sandbags with their tied ends in the same direction. Offset subsequent rows of sandbags 1/2 the length of the preceding row. Place a single layer of sandbags downstream as a secondary debris trap. Place additional sandbags as necessary or as directed for supplementary support to berms or dams of sandbags or earth.

- 8. Temporary Sediment-Control Fence.** Provide temporary sediment-control fence near the downstream perimeter of a disturbed area to intercept sediment from sheet flow. Incorporate the fence into erosion-control measures used to control sediment in areas of higher flow. Install the fence as shown on the plans, as specified in this Section, or as directed.
 - a. Installation of Posts.** Embed posts at least 18 in. deep, or adequately anchor, if in rock, with a spacing of 6 to 8 ft. and install on a slight angle toward the run-off source.
 - b. Fabric Anchoring.** Dig trenches along the uphill side of the fence to anchor 6 to 8 in. of fabric. Provide a minimum trench cross-section of 6 x 6 in. Place the fabric against the side of the trench and align approximately 2 in of fabric along the bottom in the upstream direction. Backfill the trench, then hand-tamp.
 - c. Fabric and Net Reinforcement Attachment.** Unless otherwise shown under the plans, attach the reinforcement to wooden posts with staples, or to steel posts with T-clips, in at least 4 places equally spaced. Sewn vertical pockets may be used to attach reinforcement to end posts. Fasten the fabric to the top strand of reinforcement by hog rings or cord every 15 in. or less.
 - d. Fabric and Net Splices.** Locate splices at a fence post with a minimum lap of 6 in. attached in at least 6 places equally spaced, unless otherwise shown under the plans. Do not locate splices in concentrated flow areas.

Requirements for installation of used temporary sediment-control fence include the following:

- fabric with minimal or no visible signs of biodegradation (weak fibers),
- fabric without excessive patching (more than 1 patch every 15 to 20 ft.),
- posts without bends, and
- backing without holes.

- 9. Biodegradable Erosion Control Logs.** Install biodegradable erosion control logs near the downstream perimeter of a disturbed area to intercept sediment from sheet flow. Incorporate the biodegradable erosion control logs into the erosion measures used to control sediment in areas of higher flow. Install, align and locate the biodegradable erosion control logs as specified below, as shown in plans or as directed.

Secure biodegradable erosion control logs in a method adequate to prevent displacement as a result of normal rain events, prevent damage to the logs, and to the satisfaction of the Engineer such that flow is not allowed under the logs. Temporarily removing and replacing biodegradable erosion logs as to facilitate daily work is allowed at the Contractor's expense.

10. Vertical Tracking. Perform vertical tracking on slopes to temporarily stabilize soil. Provide equipment with a track undercarriage capable of producing a linear soil impression measuring a minimum of 12 inches in length by 2 to 4 inches in width by 1/2 to 2 inches in depth. Do not exceed 12 inches between track impressions. Install continuous linear track impressions where the 12 inch length impressions are perpendicular to the slope.

E. Monitoring and Documentation. Monitor the control measures on a daily basis. Monitoring will consist of, but is not limited to, observing, inspecting, and documenting site locations with control measures and discharge points to provide maintenance and inspection of controls as described in the SWP3. Keep written records of daily monitoring. Document in the daily monitoring report the control measure condition, the date of inspection, required corrective actions, responsible person for making the corrections, and the date corrective actions were completed. Maintain records of all monitoring reports at the project site or at a place approved by the Engineer. Provide copies to the Engineer. Together, the CRPe and an Engineer's representative will complete the Construction Stage Gate Checklist on a periodic basis as determined by the Engineer.

5. Measurement.

A. Rock Filter Dams. Installation or removal of rock filter dams will be measured by the foot or by the cubic yard. The measured volume will include sandbags, when used.

1. Linear Measurement. When rock filter dams are measured by the foot, measurement will be along the centerline of the top of the dam.

2. Volume Measurement. When rock filter dams are measured by the cubic yard, measurement will be based on the volume of rock computed by the method of average end areas.

a. Installation. Measurement will be made in final position.

b. Removal. Measurement will be made at the point of removal.

B. Temporary Pipe Slope Drains. Temporary pipe slope drains will be measured by the foot.

C. Temporary Paved Flumes. Temporary paved flumes will be measured by the square yard of surface area. The measured area will include the energy dissipater at the flume outlet.

D. Construction Exits. Construction exits will be measured by the square yard of surface area.

E. Earthwork for Erosion and Sediment Control.

1. Equipment and Labor Measurement. Equipment and labor used will be measured by the actual number of hours the equipment is operated and the labor is engaged in the work.

2. Volume Measurement.

a. In Place.

(1) Excavation. Excavation will be measured by the cubic yard in its original position and the volume computed by the method of average end areas.

(2) Embankment. Embankment will be measured by the cubic yard in its final position by the method of average end areas. The volume of embankment will be determined between:

- the original ground surfaces or the surface upon that the embankment is to be constructed for the feature and
- the lines, grades and slopes of the accepted embankment for the feature.

b. In Vehicles. Excavation and embankment quantities will be combined and paid for under “Earthwork (Erosion and Sediment Control, In Vehicle).” Excavation will be measured by the cubic yard in vehicles at the point of removal. Embankment will be measured by the cubic yard in vehicles measured at the point of delivery. Shrinkage or swelling factors will not be considered in determining the calculated quantities.

F. Construction Perimeter Fence. Construction perimeter fence will be measured by the foot.

G. Sandbags for Erosion Control. Sandbags will be measured as each sandbag or by the foot along the top of sandbag berms or dams.

H. Temporary Sediment-Control Fence. Installation or removal of temporary sediment-control fence will be measured by the foot.

I. Biodegradable Erosion Control Logs. Installation or removal of biodegradable erosion control logs will be measured by the linear foot along the centerline of the top of the control logs.

J. Vertical Tracking. Vertical tracking will not be measured or paid for directly but is considered subsidiary to this Item.

6. Payment. The following will not be paid for directly but are subsidiary to pertinent Items:

- erosion-control measures for Contractor project-specific locations (PSLs) inside and outside the right of way (such as construction and haul roads, field offices, equipment and supply areas, plants, and material sources);

- removal of litter; unless a separate pay item is shown in the plans.
- repair to devices and features damaged by Contractor operations;
- added measures and maintenance needed due to negligence, carelessness, lack of maintenance, and failure to install permanent controls;
- removal and reinstallation of devices and features needed for the convenience of the Contractor;
- finish grading and dressing upon removal of the device; and
- minor adjustments including but not limited to plumbing posts, reattaching fabric, minor grading to maintain slopes on an erosion embankment feature, or moving small numbers of sandbags.

Stabilization of disturbed areas will be paid for under pertinent Items.

Furnishing and installing pipe for outfalls associated with sediment traps and ponds will not be paid for directly but is subsidiary to the excavation and embankment under this Item.

A. Rock Filter Dams. The work performed and materials furnished in accordance with this Item and measured as provided under “Measurement” will be paid for at the unit price bid as follows:

- 1. Installation.** Installation will be paid for as “Rock Filter Dams (Install)” of the type specified. This price is full compensation for furnishing and operating equipment, finish backfill and grading, lacing, proper disposal, labor, materials, tools, and incidentals.
- 2. Removal.** Removal will be paid for as “Rock Filter Dams (Remove).” This price is full compensation for furnishing and operating equipment, proper disposal, labor, materials, tools, and incidentals.

When the Engineer directs that the rock filter dam installation or portions thereof be replaced, payment will be made at the unit price bid for “Rock Filter Dams (Remove)” and for “Rock Filter Dams (Install)” of the type specified. This price is full compensation for furnishing and operating equipment, finish backfill and grading, lacing, proper disposal, labor, materials, tools, and incidentals.

B. Temporary Pipe Slope Drains. The work performed and materials furnished in accordance with this Item and measured as provided under “Measurement” will be paid for at the unit price bid for “Temporary Pipe Slope Drains” of the size specified. This price is full compensation for furnishing materials, removal and disposal, furnishing and operating equipment, labor, tools, and incidentals.

Removal of temporary pipe slope drains will not be paid for directly but is subsidiary to the installation Item. When the Engineer directs that the pipe slope drain installation or portions thereof be replaced, payment will be made at the unit price bid for “Temporary Pipe Slope Drains” of the size specified, which is full compensation for the removal and reinstallation of the pipe drain.

Earthwork required for the pipe slope drain installation, including construction of the sediment trap, will be measured and paid for under “Earthwork for Erosion and Sediment Control.”

Riprap concrete or stone, when used as an energy dissipater or as a stabilized sediment trap, will be measured and paid for in accordance with Item 432, “Riprap.”

- C. Temporary Paved Flumes.** The work performed and materials furnished in accordance with this Item and measured as provided under “Measurement” will be paid for at the unit price bid for “Temporary Paved Flume (Install)” or “Temporary Paved Flume (Remove).” This price is full compensation for furnishing and placing materials, removal and disposal, equipment, labor, tools, and incidentals.

When the Engineer directs that the paved flume installation or portions thereof be replaced, payment will be made at the unit prices bid for “Temporary Paved Flume (Remove)” and “Temporary Paved Flume (Install).” These prices are full compensation for the removal and replacement of the paved flume and for equipment, labor, tools, and incidentals.

Earthwork required for the paved flume installation, including construction of a sediment trap, will be measured and paid for under “Earthwork for Erosion and Sediment Control.”

- D. Construction Exits.** Contractor-required construction exits from off right of way locations or on-right of way PSLs will not be paid for directly but are subsidiary to pertinent Items.

The work performed and materials furnished in accordance with this Item and measured as provided under “Measurement” for construction exits needed on right of way access to work areas required by the Department will be paid for at the unit price bid for “Construction Exits (Install)” of the type specified or “Construction Exits (Remove).” This price is full compensation for furnishing and placing materials, excavating, removal and disposal, cleaning vehicles, labor, tools, and incidentals.

When the Engineer directs that a construction exit or portion thereof be removed and replaced, payment will be made at the unit prices bid for “Construction Exit (Remove)” and “Construction Exit (Install)” of the type specified. These prices are full compensation for the removal and replacement of the construction exit and for equipment, labor, tools, and incidentals.

Construction of sediment traps used in conjunction with the construction exit will be measured and paid for under “Earthwork for Erosion and Sediment Control.”

- E. Earthwork for Erosion and Sediment Control.**

- 1. Initial Earthwork for Erosion and Sediment Control.** The work performed and materials furnished in accordance with this Item and measured as provided under “Measurement” will be paid for at the unit price bid for “Excavation (Erosion and Sediment Control, In Place)”, “Embankment (Erosion and Sediment Control, In Place)”, “Excavation (Erosion and Sediment Control, In Vehicle)”, “Embankment (Erosion and

Sediment Control, In Vehicle)”, or “Earthwork (Erosion and Sediment Control, In Vehicle)”.

This price is full compensation for excavation and embankment including hauling, disposal of material not used elsewhere on the project; embankments including furnishing material from approved sources and construction of erosion-control features; equipment, labor; tools, and incidentals.

Sprinkling and rolling required by this Item will not be paid for directly, but will be subsidiary to this Item.

- 2. Maintenance Earthwork for Erosion and Sediment Control for Cleaning and/or Restoring Control Measures.** The work performed and materials furnished in accordance with this Item and measured as provided under “Measurement” will be paid for by a Contractor Force Account Item.

This price is full compensation for excavation, embankment, and re-grading including removal of accumulated sediment in various erosion control installations as directed, hauling, and disposal of material not used elsewhere on the project; excavation for construction of erosion-control features; embankments including furnishing material from approved sources and construction of erosion-control features; and equipment, labor; tools, and incidentals.

Earthwork needed to remove and obliterate of erosion-control features will not be paid for directly but is subsidiary to pertinent Items unless otherwise shown on the plans.

Sprinkling and rolling required by this Item will not be paid for directly, but will be subsidiary to this Item.

- F. Construction Perimeter Fence.** The work performed and materials furnished in accordance with this Item and measured as provided under “Measurement” will be paid for at the unit price bid for “Construction Perimeter Fence.” This price is full compensation for furnishing and placing the fence; digging, fence posts, wire, and flagging; removal and disposal; and materials, equipment, labor, tools, and incidentals.

Removal of construction perimeter fence will be not be paid for directly but is subsidiary to the installation Item. When the Engineer directs that the perimeter fence installation or portions thereof be removed and replaced, payment will be made at the unit price bid for “Construction Perimeter Fence,” which is full compensation for the removal and reinstallation of the construction perimeter fence.

- G. Sandbags for Erosion Control.** Sandbags will be paid for at the unit price bid for “Sandbags for Erosion Control” (of the height specified when measurement is by the foot). This price is full compensation for materials, placing sandbags, removal and disposal, equipment, labor, tools, and incidentals.

Removal of sandbags will not be paid for directly but is subsidiary to the installation Item. When the Engineer directs that the sandbag installation or portions thereof be replaced,

payment will be made at the unit price bid for “Sandbags for Erosion Control,” which is full compensation for the reinstallation of the sandbags.

H. Temporary Sediment-Control Fence. The work performed and materials furnished in accordance with this Item and measured as provided under “Measurement” will be paid for at the unit price bid as follows:

- 1. Installation.** Installation will be paid for as “Temporary Sediment-Control Fence (Install).” This price is full compensation for furnishing and operating equipment finish backfill and grading, lacing, proper disposal, labor, materials, tools, and incidentals.
- 2. Removal.** Removal will be paid for as “Temporary Sediment-Control Fence (Remove).” This price is full compensation for furnishing and operating equipment, proper disposal, labor, materials, tools, and incidentals.

I. Biodegradable Erosion Control Logs. The work performed and materials furnished in accordance with this Item and measured as provided under “Measurement” will be paid for at the unit price bid as follows:

- 1. Installation.** Installation will be paid for as “Biodegradable Erosion Control Logs (Install)” of the size specified. This price is full compensation for furnishing and operating equipment finish backfill and grading, staking, proper disposal, labor, materials, tools, and incidentals.
- 2. Removal.** Removal will be paid for as “Biodegradable Erosion Control Logs (Remove).” This price is full compensation for furnishing and operating equipment, proper disposal, labor, materials, tools, and incidentals.

J. Vertical Tracking. Vertical tracking will not be measured or paid for directly but is considered subsidiary to this Item.

CONTRACTOR CERTIFICATION OF COMPLIANCE
WITH STORM WATER REQUIREMENTS

I, _____ certify that I am the duly appointed representative of the Contractor with authority to make this Contractor certification. I have read and understand the requirements applicable to this project pertaining to storm water discharge authorization under Texas Pollutant Discharge Elimination System (TPDES) General Permit (GP) TXR150000. The Contractor agrees to comply with the terms of the permit that are expressly stated in the contract documents as being the responsibility of the Contractor. I have read and understand the Storm Water Pollution Prevention Plan (SWP3) developed by the Department for this project. The Contractor agrees it will be implemented prior to construction according to permit requirements and the contract documents. I understand that failure to comply with the terms of the permit that are expressly stated in the contract documents, plans, and specifications as being the responsibility of the Contractor may result in civil penalties.

The Contractor acknowledges its responsibility to satisfy the following requirements:

- Implement the SWP3 for the project in accordance with the plans and specifications and the TPDES GP TXR150000.
- Install and maintain control measures on the project in accordance with the manufacturer's or designer's specifications.
- Collaborate with the Department for joint monitoring of best management practices (BMPs) on a regular basis to verify that BMPs are performing as intended in accordance with the plans and specifications and with TPDES GP TXR150000.
- Collaborate with the Department for joint identification of BMP maintenance needs and carry out such maintenance in accordance with the plans and specifications, TPDES GP TXR150000 and as directed by the Engineer.
- Repair the integrity of any BMP as directed by the Engineer as soon as reasonably possible.
- If appropriate, recommend changes needed in the SWP3 to the Engineer in order to prevent, to the extent practicable, water pollution associated with construction activities from entering any surface water or private property on or adjacent to the project site by storm water discharges.
- Stabilize disturbed areas, as soon as practicable, in accordance with the TPDES GP TXR150000 and as directed by the Engineer.
- If applicable, obtain appropriate authorizations for activities associated with any Project Specific Location under the authority of the Contractor and provide appropriate documentation of compliance to the Engineer.
- Satisfy any other responsibility indicated in the contract documents that are expressly stated as the responsibility of the Contractor.

Signature and Title: _____

Date: _____

SECTION 01420

CONSTRUCTION INSPECTION SERVICES

1.0 GENERAL

1.1 SECTION INCLUDES

- A. Inspection services and references

1.2 CONDITIONS

- A. Owner reserves right to observe and inspect samples and specimens to be tested, and observe tests on material and work provided by Contractor to assure quality control.
- B. Inspection level of service may be increased or decreased by the Owner or Owner's Representative as deemed necessary for quality control of materials and work.
- C. Owner's Representative will appoint an Inspector as a representative of the Owner. Alternately, Owner's Representative may appoint, employ, and pay an independent firm to provide and/or supplement inspection services.
- D. Reports and commentaries by Inspector shall in no way relieve Contractor of his obligation to perform work in full compliance with standards and provisions of the Contract Documents.
- E. The Contractor shall not be relieved of his obligation to perform work in full compliance with the standards and provisions of the Contract Documents by reason of the Owner's performance in inspection or refraining from inspecting the work.

- F. The Contractor shall not be relieved of his obligation to perform the work safely and with all safety requirements by reason of the owner's performance of inspection or refraining from inspections of the work.

1.3 INSPECTORS DUTIES AND LIMITATIONS OF AUTHORITY

- A. Perform inspections, observe tests, and provide other services specified in individual Technical Specifications.
- B. Ascertain Contractor's compliance with specifically named standards of the Contract Documents.
- C. Produce reports to be submitted to Owner, Owner's Representative, and Contractor, indicating observations and compliance or non-compliance with Contract Documents and quantities installed.
- D. Perform additional services as required by Owner.
- E. Inspector is not authorized, without approval of Owner's Representative, to:
 - 1. Revoke, alter, enlarge, or waive requirements of the Contract Documents.
 - 2. Approve or accept any portion of work.
 - 3. Perform any duties of Contractor.
- F. Inspector has the authority to stop work when work is being performed in an unsafe manner or if other issues arise that he deems necessitate stopping work.

1.4 CONTRACTOR'S RESPONSIBILITIES

- A. Cooperate with Inspector, provide access to work and to construction and fabrication operations.
- B. Furnish copies of mill test reports for the materials being used on the job when requested by Owner's Representative or Inspector.
 - 1. Mill certificates will be acceptable when it is definite that certified mill test sheets apply to the material being supplied.

- C. Furnish labor to provide access to work to be inspected, to obtain and handle samples at site, and to facilitate inspections and tests.
- D. Contractor shall sign and acknowledge reports for Inspector.
- E. Notify Owner's Representative 24 hrs. prior to expected time for operations requiring services. Notify independent firm when noted.
- F. Arrange with Inspector and pay for:
 - 1. Re-inspecting nonconforming Work.
 - 2. Insufficient notification of cancelation of work scheduled but not performed if such work required increase inspection services.
 - 3. Inspection services for work on weekends, City Holidays and after hours that has been approved at the request of the contractor.

END OF SECTION

SECTION 01505

MOBILIZATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Mobilization of construction equipment and facilities onto the site.

1.02 UNIT PRICES

- A. Measurement for mobilization is on a lump sum basis.
- B. Mobilization payments will be included in monthly payment estimates upon written application by Contractor subject to the following provisions:
 - 1. Authorization for payment of 50 percent of the contract price for mobilization will be made upon receipt and approval by Owner's Representative of the following items, as applicable:
 - a. Schedule of values, if required
 - b. Trench safety program
 - c. Construction schedule
 - d. Pre-construction Photographs, if required
 - 2. Authorization for payment of the remaining 50 percent of the Contract Price for mobilization will be made upon completion of Work amounting to 5 percent of the Contract Price less the mobilization unit price.
- C. Mobilization payments will be subject to retainage amounts stipulated in the General Conditions.
- D. De-mobilization costs are incidental and the Contractor is responsible for de-mobilization from the site in conformance with the requirements of these contract documents.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01526

TRENCH SAFETY SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Trench safety system for the construction of trench excavations.
- B. Trench safety system for structural excavations which fall under provisions of State and Federal trench safety laws.

1.02 UNIT PRICES

- A. Measurement for trench safety systems used on trench excavations is on a linear foot basis, when listed as a separate unit price within the bid proposal, measured along the centerline of the trench, including manholes and other line structures. If no trench safety unit price is listed within the bid proposal, any trench safety required for the work will be considered incidental to the work performed. No separate measurement will be made of shoring systems used by the Contractor for protection unless identified as Special Shoring on the Drawings. Shoring, other than Special shoring, will be included in the trench safety system measurements.
- B. Measurement for Special Shoring system installations shown on the Drawings and included in the bid schedule for trench excavations, is on a square foot basis, or lump sum basis, as specified in the bid proposal.
- C. No payment will be made for trench safety systems for structural excavations under this section. Include payment for trench safety system in applicable structure installation sections.

1.03 DEFINITIONS

- A. A trench is defined as a narrow excavation (in relation to its depth) made below the surface of the ground. In general, the depth is greater than the width, but the width of a trench (measured at the bottom) is not greater than 15 feet.
- B. The trench safety system requirements apply to larger open excavations if the erection of structures or other installations limits the space between the excavation slope and the installation to dimensions equivalent to a trench as defined.
- C. Competent Person is one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous,

or dangerous to employees, and who has authorization to take prompt corrective measure to eliminate them.

- D. Trench Safety Systems include both Protective Systems and Shoring Systems but are not limited to sloping, sheeting, trench boxes or trench shields, slide rail systems, sheet piling, cribbing, bracing, shoring, dewatering or diversion of water to provide adequate drainage.
1. Protective Systems: A method of protecting employees from cave-ins, from material that could fall or roll from an excavation face or into an excavation, or from the collapse of an adjacent structure.
 2. Shoring System: A structure that supports the sides of an excavation and which is designed to prevent cave-ins, or to prevent movements of the ground affecting adjacent installations or improvements.
 3. Special Shoring: A shoring system meeting Special Shoring Requirements for locations identified on the Drawings.

1.04 SUBMITTALS

- A. Submittals shall conform to requirements of sections and provisions of these specifications.
- B. Submit a safety program specifically for the construction of trench excavation. Design the trench safety program to be in accordance with OSHA 29CFR standards governing the presence and activities of individuals working in and around trench excavations, and in accordance with any Special Shoring requirements at locations shown on the Drawings.
- C. Have construction and shop drawings for trench safety systems sealed as required by OSHA by a licensed Professional Engineer retained and paid by the Contractor.
- D. Review of the safety program by the Owner Representative will only be in regard to compliance with the Contract Documents and will not constitute approval by the Owner or the Owner Representative nor relieve Contractor of obligations under State and Federal trench safety laws.

1.05 REGULATORY REQUIREMENTS

- A. Install and maintain trench safety systems in accordance with the provision of Excavations, Trenching, and Shoring, Federal Occupation Safety and Health Administration (OSHA) Standards, 29CFR, Part 1926, Subpart P, as amended, including Final Rule, published in the Federal Register Vol. 54, No. 209 on Tuesday, October 31, 1989 and subsequent updates. The sections that are incorporated into

these specifications by reference include Sections 1926-650 through 1926-652 and additional sections that may be adopted subsequent to the adoption of this specification.

- B. The Contractor can locate a copy of the OSHA standards included in "Subpart P - Excavations" from the Federal Register Vol. 54, No. 209 is available upon request to Contractors bidding on Owner's projects. The Owner assumes no responsibility for the accuracy of the reproduction. The Contractor is responsible for obtaining a copy of this section of the Federal Register.
- C. The Contractor must comply with any legislation that has been enacted by the Texas Legislature with regard to Trench Safety Systems, is hereby incorporated, by reference, into these specifications. Refer to Texas Health and Safety Code Ann., §756.021 (Vernon 1991).
- D. Reference materials, if developed for a specific project, will be issued with the Bid Documents, including the following:
 - 1. Geotechnical information obtained for use in design of the trench safety system.
 - 2. Special Shoring Requirements, if applicable.

1.06 INDEMNIFICATION

- A. Contractor shall indemnify and hold harmless the Owner, its employees, and agents, from any and all damages, costs (including, without limitation, legal fees, court costs, and the cost of investigation), judgments or claims by anyone for injury or death of persons resulting from the collapse or failure of trenches constructed under this Contract.
- B. Contractor acknowledges and agrees that this indemnity provision provides indemnity for the Owner in case the Owner is negligent either by act or omission in providing for trench safety, including, but not limited to safety program and design reviews, inspections, failures to issue stop work orders, and the hiring of the Contractor.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install and maintain trench safety systems in accordance with provisions of OSHA 29CFR.

- B. Install specially designed trench safety systems shall be installed in accordance with the Contractor's trench excavation safety program for the locations and conditions identified in the program. Install Special Shoring at the locations shown on the Drawings.
- C. Obtain verification from a competent person, as identified in the Contractor's trench excavation safety program, that trench boxes and other pre-manufactured systems are certified for the actual installation conditions.

3.02 INSPECTION

- A. Conduct daily inspections by Contractor or Contractor's independently retained consultant, of the trench safety systems to ensure that the installed systems and operations meet OSHA 29CFR and other personnel protection regulations requirements.
- B. If evidence of possible cave-ins or slides is apparent, Contractor shall immediately stop work in the trench and move personnel to safe locations until necessary precautions have been taken to safeguard personnel.
- C. Contractor shall maintain a permanent record of daily inspections. Upon request, the Contractor shall supply to Owner a copy of these records.

3.03 FIELD QUALITY CONTROL

- A. Verify specific applicability of the selected or specially designed trench safety systems to each field condition encountered on the project.

END OF SECTION

SECTION 01563

CONTROL OF GROUND WATER AND SURFACE WATER

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Dewatering, depressurizing, draining, and maintaining trench and structure excavations and foundation beds in dry and stable condition.
- B. Protecting work against surface runoff and rising flood waters.
- C. Disposing of removed water.

1.02 METHOD OF PAYMENT

- A. Subsurface investigation and groundwater control plan preparation and monitoring shall be incidental to the project and shall include subsurface investigation to identify groundwater conditions, design, install, operate, maintain, and monitor ground water control systems.
- B. No separate payment will be made for control of ground water and surface water except for well pointing and piezometer. Include the cost to control ground water and surface water in unit price for work requiring such controls. Dewatering required for the removal of standing water, surface drainage seepage, or to protect against rising waters or floods shall be considered incidental to work.
- C. No separate payment will be made for well pointing unless it is listed as a pay item on the bid documents. If the well pointing is denoted on the bid documents, well pointing shall be paid by the linear foot and measured along the centerline of the utility installed regardless if well pointing is required on one or both sides of the trench.
- D. Piezometers and environmental monitoring wells, if required, shall be paid for by the unit of each.

1.03 DEFINITIONS

- A. Ground water control includes both dewatering and depressurization of water-bearing soil layers.
 - 1. Dewatering includes lowering the water table and intercepting seepage which would otherwise emerge from slopes or bottoms of excavations and disposing

of removed water. The intent of dewatering is to increase stability of excavated slopes; prevent dislocation of material from slopes or bottoms of excavations; reduce lateral loads on sheeting and bracing; improve excavating and hauling characteristics of excavated material; prevent failure or heaving of the bottom of excavations; and to provide suitable conditions for placement of backfill materials and construction of structures and other installations.

2. Depressurization includes reduction in piezometric pressure within strata not controlled by dewatering alone, as required to prevent failure or heaving of excavation bottom.
- B. Excavation drainage includes keeping excavations free of surface and seepage water.
 - C. Surface drainage includes use of temporary drainage ditches and dikes and installation of temporary culverts and sump pumps with discharge lines as required to protect the Work from any source of surface water.
 - D. Equipment and instrumentation for monitoring and control of the ground water control system includes piezometers and monitoring wells, and devices, such as flow meters, for observing and recording flow rates.

1.04 PERFORMANCE REQUIREMENTS

- A. Conduct subsurface investigations to identify groundwater conditions and to provide parameters for design, installation, and operation of groundwater control systems.
- B. Design a ground water control system, compatible with requirements of Federal Regulations 29 CFR Part 1926 and Section 01526 - Trench Safety Systems, to produce the following results:
 1. Effectively reduce the hydrostatic pressure affecting excavations.
 2. Develop a substantially dry and stable subgrade for subsequent construction operations.
 3. Preclude damage to adjacent properties, buildings, structures, utilities, installed facilities, and other work.
 4. Prevent the loss of fines, seepage, boils, quick condition, or softening of the foundation strata.
 5. Maintain stability of sides and bottom of excavations.

- C. Ground water control systems may include single-stage or multiple-stage well point systems, eductor and ejector-type systems, deep wells, or combinations of these equipment types.
- D. Provide drainage of seepage water and surface water, as well as water from any other source entering the excavation. Excavation drainage may include placement of drainage materials, such as crushed stone and filter fabric, together with sump pumping.
- E. Provide ditches, berms, pumps and other methods necessary to divert and drain surface water from excavation and other work areas.
- F. Locate ground water control and drainage systems so as not to interfere with utilities, construction operations, adjacent properties, or adjacent water wells.
- G. Assume sole responsibility for ground water control systems and for any loss or damage resulting from partial or complete failure of protective measures and any settlement or resultant damage caused by the ground water control operations. Modify ground water control systems or operations if they cause or threaten to cause damage to new construction, existing site improvements, adjacent property, or adjacent water wells, or affect potentially contaminated areas. Repair damage caused by ground water control systems or resulting from failure of the system to protect property as required.
- H. Provide an adequate number of piezometers installed at the proper locations and depths as required to provide meaningful observations of the conditions affecting the excavation, adjacent structures, and water wells.
- I. Provide environmental monitoring wells installed at the proper locations and depths as required to provide adequate observations of hydrostatic conditions and possible contaminant transport from contamination sources into the work area or into the ground water control system.
- J. Decommission piezometers and monitoring wells installed during design phase studies and left for Contractors monitoring and use.
- K. Contractor is responsible for determining the path for the flow of the diverted water. Further, Contractor shall obtain any easements and permits required for the path and follow all local, state and federal requirements, including requirements for erosion control. Path shall direct water to the bay if possible instead of ocean side of the island.

1.05 SUBMITTALS

- A. Submittals shall conform to all sections and provisions of these contract documents.

- B. Submit a Ground Water and Surface Water Control Plan for review by the Owner's Representative prior to start of any field work. Submit a plan to include the following:
1. Results of subsurface investigation and description of the extent and characteristics of water bearing layers subject to ground water control.
 2. Names of equipment suppliers and installation subcontractors.
 3. A description of proposed ground water control systems indicating arrangement, location, depth and capacities of system components, installation details and criteria, and operation and maintenance procedures.
 4. A description of proposed monitoring and control system indicating depths and locations of piezometers and monitoring wells, monitoring installation details and criteria, type of equipment and instrumentation with pertinent data and characteristics.
 5. A description of proposed filters including types, sizes, capacities and manufacturer's application recommendations.
 6. Design calculations demonstrating adequacy of proposed systems for intended applications. Define potential area of influence of ground water control operation near contaminated areas.
 7. Operating requirements, including piezometric control elevations for dewatering and depressurization.
 8. Excavation drainage methods including typical drainage layers, sump pump application and other necessary means.
 9. Surface water control and drainage installations.
 10. Proposed methods and locations for disposing of removed water.
- C. Submit the following records upon completed initial installation:
1. Installation and development reports for well points, eductors, and deep wells.
 2. Installation reports and baseline readings for piezometers and monitoring wells.
 3. Baseline analytical test data of water from monitoring wells.
 4. Initial flow rates.

- D. Submit the following records on a weekly basis during operations:
 - 1. Records of flow rates and piezometric elevations obtained during monitoring of dewatering and depressurization. Refer to Paragraph 3.02, Requirements for Eductor, Well Points, or Deep Wells.
 - 2. Maintenance records for ground water control installations, piezometers, and monitoring wells.
- E. Submit the following records at end of work. Decommissioning (abandonment) reports for monitoring wells and piezometers installed by other during the design phase and left for Contractor's monitoring and use.

1.06 ENVIRONMENTAL REQUIREMENTS

- A. Comply with requirements of agencies having jurisdiction.
- B. Comply with Texas Commission on Environmental Quality regulations and Texas Water Well Drillers Association for development, drilling, and abandonment of wells used in dewatering system.
- C. Obtain permit from EPA under the Texas Pollutant Discharge Elimination System (TPDES), for storm water discharge from construction sites. Refer to Section 01565 TPDES Permit Requirements.
- D. Obtain all necessary permits from agencies with control over the use of groundwater and matters affecting well installation, water discharge, and use of existing storm drains and natural water sources. Because the review and permitting process may be lengthy, take early action to pursue and submit for the required approvals.
- E. Monitor ground water discharge for contamination while performing pumping in the vicinity of potentially contaminated sites.
- F. Discharge with high levels of salinity shall be discharge directly to salt water body and shall not be conveyed by surface drainage or open ditch that may kill vegetation.

PART 2 PRODUCTS

2.01 EQUIPMENT AND MATERIALS

- A. Equipment and materials are at the option of Contractor as necessary to achieve desired results for dewatering. Selected equipment and materials are subject to review of the Owner's Representative through submittals.

- B. Eductors, well points, or deep wells, where used, must be furnished, installed and operated by an experienced contractor regularly engaged in ground water control system design, installation, and operation.
- C. All equipment must be in good repair and operating order.
- D. Sufficient standby equipment and materials shall be kept available to ensure continuous operation, where required.
- E. When well-pointing in residential areas, utilize noise reducing pumps and said pumps must be approved by the Owner.

PART 3 EXECUTION

3.01 GROUND WATER CONTROL

- A. Perform a subsurface investigation by borings as necessary to identify water bearing layers, piezometric pressures, and soil parameters for design and installation of ground water control systems. Perform pump tests, if necessary to determine the drawdown characteristics of the water bearing layers. The results shall be presented in the Ground Water and Surface Water Control Plan (See Paragraph 1.05B.1).
- B. Provide labor, material, equipment, techniques and methods to lower, control and handle ground water in a manner compatible with construction methods and site conditions. Monitor effectiveness of the installed system and its effect on adjacent property.
- C. Install, operate, and maintain ground water control systems in accordance with the Ground Water and Surface Water Control Plan. Notify Owner's Representative in writing of any changes made to accommodate field conditions and changes to the Work. Provide revised drawings and calculations with such notification.
- D. Provide for continuous system operation, including nights, weekends, and holidays. Arrange for appropriate backup if electrical power is primary energy source for dewatering system.
- E. Monitor operations to verify that the system lowers ground water piezometric levels at a rate required to maintain a dry excavation resulting in a stable subgrade for prosecution of subsequent operations.
- F. Where hydrostatic pressures in confined water bearing layers exist below excavation, depressurize those zones to eliminate risk of uplift or other instability of excavation or installed works. Allowable piezometric elevations shall be defined in the Ground Water and Surface Water Control Plan.

- G. Maintain water level below subgrade elevation. Do not allow levels to rise until foundation concrete has achieved design strength.
- H. During backfilling, dewatering may be reduced to maintain water level a minimum of 5 feet below prevailing level of backfill. However, do not allow that water level to result in uplift pressures in excess of 80 percent of downward pressure produced by weight of structure or backfill in place. Do not allow water levels to rise into cement stabilized sand until at least 48 hours after placement.
- I. Provide a uniform diameter for each pipe drain run constructed for dewatering.
- J. Extent of construction ground water control for structures with a permanent perforated underground drainage system may be reduced, such as for units designed to withstand hydrostatic uplift pressure. Provide a means of draining the affected portion of underground system, including standby equipment. Maintain drainage system during operations and remove it when no longer required.
- K. Remove system upon completion of construction or when dewatering and control of surface or ground water is no longer required.
- L. Backfill all well-pointed holes.
- M. Compact backfill to not less than 95 percent of the maximum dry density in accordance with ASTM D698.

3.02 REQUIREMENTS FOR EDUCTOR, WELL POINTS, OR DEEP WELLS

- A. For aboveground piping in ground water control system, include a 12-inch minimum length of clear, transparent piping between every eductor well or well point and discharge header so that discharge from each installation can be visually monitored.
- B. Install sufficient piezometers or monitoring wells to show that all trench or shaft excavations in water bearing materials are predrained prior to excavation. Provide separate piezometers for monitoring of dewatering and for monitoring of depressurization. Install piezometers and monitoring wells for tunneling as appropriate for Contractor's selected method of work.
- C. Install piezometers or monitoring wells not less than one week in advance of beginning the associated excavation as required in Contractor's best judgment.
- D. Dewatering may be omitted for portions of underdrains or other excavations, but only where auger borings and piezometers or monitoring wells show that soil is predrained by an existing system such that the criteria of the ground water control plan are satisfied.

- E. Replace installations that produce noticeable amounts of sediments after development.
- F. Provide additional ground water control installations, or change the methods, in the event that the installations according to the ground water control plan does not provide satisfactory results based on the performance criteria defined by the plan and by the specification. Submit a revised plan. No separate pay for the additional plan.

3.03 MAINTENANCE AND OBSERVATION

- A. Conduct daily maintenance and observation of piezometers or monitoring wells while the ground water control installations or excavation drainage are operating in an area. Keep system in good condition.
- B. Replace damaged and destroyed piezometers or monitoring wells with new piezometers or wells as necessary to meet observation schedule.
- C. Cut off piezometers or monitoring wells in excavation areas where piping is exposed, only as necessary to perform observation as excavation proceeds. Continue to maintain and make observations, as specified.
- D. Remove and grout piezometers inside or outside the excavation area when ground water control operations are complete. Remove and grout monitoring wells when directed by the Owner's Representative.

3.04 MONITORING AND RECORDING

- A. Monitor and record average flow rate of operation for each deep well, or for each well point or eductor header used in dewatering system. Also monitor and record water level and ground water recovery. These records shall be obtained daily until steady conditions are achieved, and twice weekly thereafter.
- B. Observe and record elevation of water level daily as long as ground water control system is in operation, and weekly thereafter until the Work is completed or piezometers or wells are removed, except when Owner's Representative determines that more frequent monitoring and recording are required. Comply with Owner's Representative's direction for increased monitoring and recording and take measures as necessary to ensure effective dewatering for intended purpose.

3.05 SURFACE WATER CONTROL

- A. Intercept surface water and divert it away from excavations through use of dikes, ditches, curb walls, pipes, sumps or other approved means. The requirement includes temporary works required to protect adjoining properties from surface drainage caused by construction operations.

- B. Divert surface water and seepage water into sumps and pump it into drainage channels or storm drains, when approved by agencies having jurisdiction. Provide settling basins when required by such agencies.

END OF SECTION

SECTION 01570

TRAFFIC CONTROL AND REGULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Requirements for signs, signals, control devices, flares, lights and traffic signals, as well as construction parking control, designated haul routes and bridging of trenches and excavations.
- B. Qualifications and requirements for use of flagmen.

1.02 SUBMITTALS

- A. Make submittals in accordance with Section 01300 - Submittals

1.03 UNIT PRICES

- A. Measurement and payment is on a unit of time or lump sum basis for traffic control and regulation, including obtaining approvals by governing authorities, preparation and submittal of traffic control plan if different than shown on Drawings, and subsequent approval from Owner and any other entity prior to commencing work in their right-of-way, provision of traffic control devices, barrels, barricades, control panels, signage including arrow boards as necessary for the project, relocation of traffic signs and control devices as necessary, relocating and replacing existing signs and provision of equipment and personnel as necessary to protect the work and the public in accordance with the Texas Manual of Uniform Traffic Control Devices (TxMUTCD). The amount invoiced shall be determined based on the approved schedule of values for traffic control and regulation.
- B. No separate measurement will be made for flaggers as required for the Project. Flaggers shall be considered incidental to the traffic control and regulation bid item.

1.04 FLAGMEN

- A. Use only flagmen who are off-duty, regularly employed, uniformed peace officers when specified in the Special Conditions. The Contractor shall also utilize certified flagmen at locations approved by the Owner or Owner's Representative.
- B. Use flagmen to control, regulate and direct an even flow and movement of vehicular and pedestrian traffic, for periods of time as may be required to provide for public safety and convenience, where:

1. Where multi-lane vehicular traffic must be diverted into single-lane vehicular traffic.
 2. Where vehicular traffic must change lanes abruptly.
 3. Where construction equipment either enters or crosses vehicular traffic lanes and walks.
 4. Where construction equipment may intermittently encroach on vehicular traffic lanes and unprotected walks and crosswalks.
 5. Where traffic regulation is needed due to rerouting of vehicular traffic around the work site.
 6. Where construction activities might affect public safety and convenience.
- C. The use of flagmen is for the purpose of assisting in the regulation of traffic flow and movement, and does not in any way relieve the contractor of full responsibility for taking such other steps and provide such other flagmen or personnel as the Contractor may deem necessary to protect the work and the public, and does not in any way relieve the Contractor of his responsibility for any damage for which he would otherwise be liable.

Flagmen shall be used and maintained at such points for such periods of time as may be required to provide for the public safety and convenience of travel.

PART 2 PRODUCTS

2.01 SIGNS, SIGNALS, AND DEVICES

- A. Comply with Texas State Manual on Uniform Traffic Control Devices (latest revision).
- B. Traffic Cones and Drums, Flares and Lights: As approved by local jurisdictions.

PART 3 EXECUTION

3.01 PUBLIC ROADS

- A. Abide by laws and regulations of governing authorities when using public roads. If the Contractor's work requires that public roads be temporarily impeded or closed, approvals shall be obtained from governing authorities and permits paid for before starting any work. Coordinate activities with the Owner's Representative.

- B. Give Owner's Representative one-week notice before implementing approved traffic control phases. Inform local businesses of impending traffic control activities.
- C. Notify police department, fire department, and local schools, churches, and businesses in writing a minimum of five business days prior to beginning work.
- D. Contractor shall maintain at all times a 10-foot-wide all-weather lane adjacent to work areas which shall be kept free of construction equipment and debris and shall be for the use of emergency vehicles, or as otherwise provided in the traffic control plan.
- E. Contractor shall not obstruct the normal flow of traffic from 7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m. on designated major arterials or as directed by the Owner's Representative.
- F. Contractor shall maintain local driveway access to residential and commercial properties adjacent to work areas at all times unless approved. Use all-weather materials approved by Owner's Representative to maintain temporary driveway access to commercial and residential driveways. The Contractor shall also give special consideration to maintain access by constructing temporary driveway pavement for schools, apartment complex, day care facilities, hospitals, clinics, retirement and assisted living facilities.
- G. Cleanliness of Surrounding Streets:
 - 1. Keep streets used for entering or leaving the job area free of excavated material, debris, and any foreign material resulting from construction operations in compliance with applicable ordinances.
- H. Remove existing signage and striping that conflict with construction activities or that may cause driver confusion.
- I. Provide safe access for pedestrians along major cross streets.
- J. Alternate closures of cross streets so that two adjacent cross streets are not closed simultaneously.
- K. Do not close more than two consecutive esplanade openings at a time without prior approval from Owner's Representative.

3.02 CONSTRUCTION PARKING CONTROL

- A. Control vehicular parking to prevent interference with public traffic and parking, access by emergency vehicles, and the Owner's operations.

- B. Monitor parking of construction personnel's vehicles in existing facilities. Maintain vehicular access to and through parking areas.
- C. Prevent parking on or adjacent to access roads or in non-designated areas.

3.03 FLARES AND LIGHTS

- A. Provide lights during hours of low visibility to delineate traffic lanes and to guide traffic.

3.04 HAUL ROUTES

- A. Utilize haul routes designated by owner, authorities or shown on the Drawings for construction traffic.
- B. Confine construction traffic to designated haul routes.
- C. Provide traffic control at critical areas of haul routes to regulate traffic and minimize interference with public traffic.

3.05 TRAFFIC SIGNS AND SIGNALS

- A. Construct all necessary traffic control devices including but not limited to loop detectors, traffic signal conduits, traffic signal wiring and cross walk signals as shown on the plan drawings.
- B. Install traffic control devices at approaches to the site and on site, at crossroads, detours, parking areas, and elsewhere as needed to direct construction and affected public traffic.
- C. Relocate traffic signs and appurtenances as Work progresses to maintain effective traffic control.
- D. Unless otherwise approved by Owner's Representative, provide driveway signs with the name of business that can be accessed from the particular cross-over. Two signs will be required for each cross-over.
- E. Replace existing traffic control devices in the project area.
- F. Owner's Representative may direct Contractor to make adjustments to traffic control signage to eliminate driver confusion and maintain orderly traffic flow during construction at no additional cost to the Owner.

- G. Repair or replace signal control devices, detectors or cables where damage occurred due to Contractors construction efforts or operation of equipment related to paving repairs or removal.

3.06 BRIDGING TRENCHES AND EXCAVATIONS

- A. Whenever necessary, bridge trenches and excavation to permit an unobstructed flow of traffic. Provide steel plates that can be laid across construction areas and major drives of commercial businesses.
- B. Secure bridging against displacement by using adjustable cleats, angles, bolts or other devices whenever bridge is installed:
 - 1. On an existing bus route;
 - 2. When more than five percent of daily traffic is comprised of commercial or truck traffic;
 - 3. When more than two separate plates are used for the bridge; or
 - 4. When bridge is to be used for more than five consecutive days.
- C. Install bridging to operate with minimum noise.
- D. Adequately shore the trench or excavation to support bridge and traffic.
- E. Extend steel plates used for bridging a minimum of one foot beyond edges of trench or excavation. Use temporary paving materials (premix) to feather edges of plates to minimize wheel impact on secured bridging.
- F. Use steel plates of sufficient thickness to support H-20 loading, truck or lane, which produces maximum stress.

3.07 REMOVAL

- A. Remove equipment and devices when no longer required.
- B. Repair damage caused by installation.
- C. Remove post settings to a depth of 2 feet.

3.08 MAINTENANCE OF EQUIPMENT AND MATERIAL

- A. Designate individual to be responsible for maintenance of traffic handling around construction area. This individual must be accessible at all times to immediately correct any deficiencies in equipment and materials used to handle traffic, such as

missing, damaged, or obscured signs, drums, barricades, or pavement markings. Give name, address and telephone number of designated individual to the Owner's Representative.

- B. Make daily inspections of signs, barricades, drums, lamps and temporary pavement markings to verify that these are visible, and in good working order, and in conformance with TxDOT or any other entity. When not in conformance immediately bring equipment and materials into conformance by replacement, repair, cleaning, relocation, and/or realignment.
- C. Keep all equipment and materials, especially signs and pavement markings, clean and free of dust, dirt, grime, oil, mud or debris.

END OF SECTION

SECTION 02076

REMOVE EXISTING PAVEMENTS AND STRUCTURES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Removing concrete paving, asphaltic concrete pavement, and base courses.
- B. Removing concrete curbs, concrete curb and gutters, sidewalks and driveways.
- C. Removing pipe culverts and sewers.
- D. Removing miscellaneous structures of concrete, masonry, or combination of concrete and masonry.

1.02 UNIT PRICES

- A. No separate payment will be made for removing existing pavements and structures under this Section unless included in bid documents. Include payment in unit price for work in appropriate sections.
- B. Measurement, when included in bid documents, will be as follows:
 - 1. Measurement for removing and disposing of concrete base and surfacing, and removing asphaltic surfacing, is on a square yard basis measured between lips of gutters.
 - 2. Measurement for removing and disposing of cement stabilized shell base course, with or without asphalt surfacing, is on a square yard basis.
 - 3. Measurement for removing and disposing of concrete base and surfacing with curbs is on a square yard basis measured from back to back of curbs. Payment includes removal of all base, asphaltic surfacing, concrete pavement, esplanade curbs, curb and gutters, and paving headers.
 - 4. Measurement for removing and disposing of concrete pavement is on a square yard basis measured from back to back of curbs.
 - 5. Measurement for removing and disposing of monolithic curb and gutter, removing monolithic concrete curb, and removing concrete curb is on a linear foot basis measured along the face of the curb.

6. Measurement for removing and disposing of concrete sidewalk and driveway is on a square yard basis.
 7. Measurement for removing and disposing of miscellaneous concrete and masonry items is on a cubic yard basis of the structure in place.
 8. Measurement for removing and disposing of pipe culverts and sewers is on a linear foot basis for each diameter of type of pipe removed.
- C. No payment will be made for work outside maximum payment limits indicated on Drawings, or in areas removed for Contractor's convenience.

1.03 REGULATORY REQUIREMENTS

- A. Conform to applicable codes for disposal of debris.
- B. Coordinate removal work with utility companies.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PREPARATION

- A. Obtain advance approval from Owner's Representative for dimensions and limits of removal work.
- B. Identify known utilities below grade. Stake and flag locations.

3.02 PROTECTION

- A. Protect utilities that remain from damage.
- B. Protect trees, other plant growth, and features designated to remain.
- C. Protect adjacent public and private property from damage.
- D. Protect bench marks, monuments, and existing structures designated to remain from damage or displacement.

3.03 REMOVALS

- A. Remove by methods that will not damage underground utilities. Do not use a drop hammer near existing underground utilities.
- B. Minimize amount of earth loaded during removal operations.

- C. Where existing pavement is to remain, make straight saw cuts in existing pavement to provide clean breaks prior to removal. Do not break concrete pavement or base with drop hammer unless concrete or base has been saw cut a minimum depth of 2 inches.
- D. Where street and driveway saw cut locations coincide or fall within three feet of existing construction or expansion joints, break-out to existing joint.
- E. Remove sidewalks and curbs to nearest existing dummy, expansion, or construction joint.

3.04 DISPOSAL

- A. Inlet frames, grates, and plates; and manhole frames and covers, may remain Owner property. Disposal shall be in accordance with requirements of Section 01564 - Waste Material Disposal.
- B. Remove debris resulting from Work under this section from site in accordance with requirements of Section 01564 - Waste Material Disposal.

END OF SECTION

SECTION 02238

HOT MIX ASPHALTIC BASE COURSE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Foundation course of compacted mixture of coarse and fine aggregates, and asphaltic material.

1.02 UNIT PRICES

- A. Measurement for hot mix asphaltic base is on square yard basis. Separate measurement will be made for each different required thickness of base course. All load tickets shall be submitted before payment is processed.
- B. Refer to Section 01025 - Measurement and Payment for unit price procedures.
- C. Refer to paragraph 3.10 for unit price adjustments.

1.03 SUBMITTALS

- A. Submittals shall conform to requirements of all provisions and sections of these specifications.
- B. Submit certificates that asphaltic materials and aggregates meet requirements of paragraph 2.01.
- C. Submit proposed design mix and test data for each type and strength of base course in Work.
- D. Submit manufacturer's description and characteristics of mixing plant for approval.
- E. Submit manufacturer's description and characteristics of spreading and finishing machine for approval.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Coarse Aggregate: Gravel or crushed stone, or combination thereof that is retained on No. 10 sieve, uniform in quality throughout and free from dirt, organic, or other injurious matter occurring either free or as coating on aggregate. Aggregate shall conform to ASTM C33 except for gradation. Furnish rock or gravel with Los Angeles abrasion loss not to exceed 40 percent by weight when tested in accordance with ASTM C131.

- B. Fine Aggregate: Sand or stone screenings, or combination thereof, passing No. 10 sieve. Aggregate shall conform to ASTM C33 except for gradation. Use sand composed of sound, durable stone particles free from loams or other injurious foreign matter. Furnish screenings of same or similar material as specified for coarse aggregate. Plasticity index of that part of fine aggregate passing No. 40 sieve shall be not more than 6 when tested by Tex-106-E. Sand equivalent shall have a minimum value of 45 when tested by Tex-203-F.
- C. Composite Aggregate: Conform to the grading limits of TxDOT Item 340 for the paving type indicated on the Drawings.
- D. Asphaltic Material: Moisture-free homogeneous material which will not foam when heated to 347 degrees F, meeting the following requirements:

VISCOSITY GRADE				
TEST	AC-10		AC-20	
	MIN	MAX	MIN	MAX
Viscosity, 140°F stokes	1000	1200	2000	-
Viscosity, 275°F stokes	1.9	-	2.5	-
Penetration, 77°F, 100 g, 5 sec.	85	-	55	-
Flash Point, C.E.C., F.	450	-	450	-
Solubility in trichloroethylene, percent	99.0	-	99.0	-
Tests on residues from thin film oven tests:				
Viscosity, 140°F stokes	-	3000	-	6000
Ductility, 77°F, 5 cms per min., cms	100	-		
Spot tests	Negative for all grades			

1. Material shall not be cracked.
2. Owner’s Representative will designate grade of asphalt to use after design tests have been made. Use only one grade of asphalt after grade is determined by test design for project.

2.02 EQUIPMENT

- A. Mixing Plant: Weight-batching or drum mix plant with capacity for producing continuously mixtures meeting specifications. Plant shall have satisfactory conveyors, power units, aggregate handling equipment, hot aggregate screens and bins, and dust collectors.

Provide equipment to supply materials adequately in accordance with rated capacity of plant and produce finished material within specified tolerances. Following equipment is essential:

1. Cold aggregate bins and proportioning device
 2. Dryer
 3. Screens
 4. Aggregate weight box and batching scales
 5. Mixer
 6. Asphalt storage and heating devices
 7. Asphalt measuring devices
 8. Truck scales
- B. Bins: Separate aggregate into minimum of four bins to produce consistently uniform grading and asphalt content in completed mix.

2.03 MIXES

- A. Employ and pay certified testing laboratory to prepare design mixes. Test in accordance with Tex-126-E, Tex-204-F, Tex-208-F, and Tex-227-F.
- B. Density and Stability Requirements:

Percent Density		Percent	HVEEM Stability Percent
Min	Max	Optimum	Not Less Than
95	99	97	35

- C. Proportions for Asphaltic Material: As specified in TxDOT Item 340 for the mix type shown on the Drawings.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify compacted subgrade is ready to support imposed loads.
- B. Verify lines and grades are correct.

3.02 PREPARATION

- A. Complete backfill of new utilities below future grade.
- B. Prepare subgrade in accordance with requirements of Section 02221 and Section 02225 or Section 02241.
- C. Correct subgrade deviations in excess of plus or minus 1/2 inch in cross section, or in 16-foot length by loosening, adding or removing material, reshaping and recompacting by sprinkling and rolling.
- D. Prepare sufficient subgrade in advance of base course for efficient operations.

3.03 PRIME COAT

- A. Conform to requirements of Section 02511.

3.04 TACK COAT

- A. Conform to requirements of Section 02512.

3.05 PLACEMENT

- A. Do not place asphaltic base when air temperature is below 50 degrees F and falling. Base may be placed when air temperature taken in shade and away from artificial heat is above 40 degrees F and rising.
- B. Haul prepared and heated asphaltic concrete mixture to project in tight vehicles previously cleaned of foreign material. Mixture shall be at temperature between 250 degrees F and 325 degrees F when laid.
- C. Spread material into place with approved mechanical spreading and finishing machine of screening or tamping type. Use track-mounted finish machine to place base course directly on earth subgrade.
- D. Place base courses 4 inches or greater in thickness in two or more layers, each having compacted thickness of not greater than 4 inches. Spread all lifts. Attain smooth course of uniform density to section, line and grades as indicated on Drawings.
- E. Place courses as nearly continuously as possible. Pass roller over unprotected ends of freshly laid mixture only when mixture has become cooled. When work is resumed, cut back laid material to produce slightly beveled edge for full thickness of course. Remove old material which has been cut away and lay new mix against fresh cut.
- F. When new asphalt is laid against existing asphalt, existing asphalt shall be saw cut full depth to provide straight smooth joint. Clean joint and apply tack coat before placement.

- G. In restricted areas where use of paver is impractical, spread and finish asphalt by mechanical compactor. Use wood or steel forms, rigidly supported to assure correct grade and cross section. Carefully place materials to avoid segregation of mix. Do not broadcast material. Remove any lumps that do not break down readily. Place asphalt courses in same sequence as if placed by machine.

3.06 COMPACTION

- A. Begin rolling while pavement is still hot and as soon as it will bear roller without undue displacement or hair cracking. Keep wheels properly moistened with water to prevent adhesion of surface mixture. Do not use excessive water.
- B. Compress surface thoroughly and uniformly, first with power-driven, 3-wheel, or tandem rollers weighing from 8 to 10 tons. Obtain subsequent compression by starting at side and rolling longitudinally toward center of pavement, overlapping on successive trips by at least one-half width of rear wheels. Make alternate trips slightly different in length. Continue rolling until no further compression can be obtained and all rolling marks are eliminated. Complete all rolling before mixture temperature drops below 175 degrees F.
- C. Along walls, curbs, headers and similar structures, and in all locations not accessible to rollers, compact mixture thoroughly with lightly oiled tamps.
- D. Compact base course to density not less than 92 percent of maximum possible density of voidless mixture composed of same materials in like proportions.

3.07 TOLERANCES

- A. Furnish templates for checking surface of finished sections. Maximum deflection of templates, when supported at center, shall not exceed 1/8 inch.
- B. Completed surface, when tested with 10-foot straightedge laid parallel to center line of pavement, shall show no deviation in excess of 1/8 inch in 10 feet. Correct any surface not meeting this requirement.

3.08 FIELD QUALITY CONTROL

- A. Testing will be performed under provisions of Section 01410 - Testing Laboratory Services.
- B. Minimum of one core will be taken at random locations per 1000 feet per lane of roadway or 1000 square yards of base to determine in-place depth and density.
- C. In-place density will be determined in accordance with Tex-207-F and Tex-227-F from cores or sections of asphaltic base located near each core. Other methods of determining in-place density, which correlate satisfactorily with results obtained from roadway specimens, may be used when approved by the Owner's Representative.

D. Contractor may, at his own expense, request three additional cores in vicinity of cores indicating nonconforming in-place depths to determine limits of nonconformity.

E. Fill cores and density test sections with new compacted asphaltic base.

3.09 NONCONFORMING PAVEMENT

A. Recompact pavement sections not meeting specified densities or replace them with new asphaltic concrete material. Patch asphalt pavement sections in accordance with procedures established by Asphalt Institute.

B. Remove and replace areas of asphaltic base found deficient in thickness by more than 10 percent. Use new asphaltic base of thickness shown on Drawings.

C. Nonconforming pavement sections shall be replaced at no additional cost to Owner.

3.10 UNIT PRICE ADJUSTMENT

A. Unit price adjustments shall be made for in-place depth determined by cores as follows:

1. Adjusted Unit Price shall be ratio of average thickness determined by cores to thickness bid upon, times unit price bid.
2. Adjustment shall apply to lower limit of 90 percent of unit price bid.
3. Average depth below 90 percent may be rejected by the Owner's Representative.

3.11 PROTECTION

A. Do not open base to traffic until 12 hours after completion of rolling, or as shown on Drawings.

B. Maintain asphalt base in good condition until completion of Work.

C. Repair defects immediately by replacing base to full depth.

END OF SECTION

SECTION 02252

CEMENT STABILIZED SAND

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Cement stabilized sand for backfill and bedding.

1.02 UNIT PRICES

- A. No payment will be made for cement stabilized sand under this Section unless an extra unit price item is included in the Bid Proposal and the application of the pay item is approved by the Owner's Representative. Include payment for cement stabilized sand in unit price for applicable bid items.
- B. If use of cement stabilized sand is allowed based on the Owner's Representative's direction the extra unit price item will be paid on a per ton basis. A conversion between volume calculated based on theoretical limits and total weight will be made based on a ratio of 1.64 tons per cubic yard.

1.03 SUBMITTALS

- A. Submittals shall conform to requirements of all sections and provisions of these specifications.
- B. Submit material qualification and mix design tests to include:
 - 1. Three series of tests of sand or fine aggregate material from the proposed source. Tests shall include procedures defined in Paragraph 2.01.
 - 2. Three moisture-density relationship tests prepared using the material qualified by the tests of Paragraph 1.03B.1. Blends of fine aggregate from crushed concrete and bank run sand shall be tested at the ratio to be used for the mix design testing.
 - 3. Mix design report to meet the design requirements of Paragraph 1.04. The mix design shall include compressive strength tests after 48-hours and 7 days curing.
- C. Submit stamped load tickets with time of loading directly after mixing.

1.04 DESIGN REQUIREMENTS

- A. Design sand-cement mixture to produce a minimum unconfined compressive strength of 100 pounds per square inch in 48 hours when compacted to 95 percent in accordance with ASTM D558 and when cured in accordance with ASTM D1632, and tested in accordance with ASTM D1633. Mix for general use shall contain a minimum of 1-1/2 sacks of cement per cubic yard. Mix for use as sanitary sewer embedment within 9 feet of waterlines shall contain 2 sacks of cement per cubic yard. Compact mix with a moisture content on the dry side of optimum.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Cement: Type 1 Portland cement conforming to ASTM C150.
- B. Sand: Clean, durable sand meeting grading requirements for fine aggregates of ASTM C33, or requirements for Bank Run Sand of Section 02229 - Utility Backfill Materials, and the following requirements:
1. Classified as SW, SP or SM by the United Soil Classification System of ASTM D2487.
 2. Deleterious materials:
 - a. Clay lumps, ASTM C142; less than 0.5 percent.
 - b. Lightweight pieces, ASTM C123; less than 5.0 percent.
 - c. Organic impurities, ASTM C40; color no darker than the standard color.
 3. Plasticity index of 4 or less when tested in accordance with ASTM D4318.
- C. Fine aggregate manufactured from crushed concrete meeting the quality requirements for crushed rock material of Section 02229 - Utility Backfill Materials, may be used as a complete or partial substitute for bank run sand. The blending ratio of fine aggregate from crushed concrete and bank run sand shall be defined in the mix design report.
- D. Water: Potable water, free of oils, acids, alkalis, organic matter or other deleterious substances, meeting requirements of ASTM C94.

2.02 MIXING MATERIALS

- A. Thoroughly mix sand, cement and water in proportions of the mix design using a pugmill-type mixer. The plant shall be equipped with automatic weight controls to ensure correct mix proportions.

B. Stamp batch ticket at plant with time of loading directly after mixing. Material not placed and compacted within 4 hours after mixing shall be rejected.

C. No hand mixing is allowed on site.

PART 3 EXECUTION

3.01 PLACING

A. Place sand-cement mixture in 8-inch-thick loose lifts and compact to 95 percent of ASTM D558, unless otherwise specified. The moisture content during compaction shall be on the dry side of optimum but sufficient for hydration. Perform and complete compaction of sand-cement mixture within 4 hours after addition of water to mix at the plant.

B. Do not place or compact sand-cement mixture in standing or free water.

3.02 FIELD QUALITY CONTROL

A. Testing will be performed under provisions of Section 01410 - Testing Laboratory Services.

B. One sample of cement stabilized sand shall be obtained for each 150 tons of material placed per day with no less than one sample per day of production. Random samples of delivered cement stabilized sand shall be taken in the field at point of delivery in accordance with ASTM 3665. Obtain three individual samples of approximately 12 to 15 lb each from the first, middle, and last third of the truck and composite them into one sample for test purpose.

C. Prepare and mold four specimens (for each sample obtained) in accordance with ASTM D 558, Method A, without adjusting moisture content. Samples will be molded at approximately same time material is being used, but no later than 4 hours after water is added to mix.

D. After molding, specimens will be removed from molds and cured in accordance with ASTM D 1632.

E. Specimens will be tested for compressive strength in accordance with ASTM D 1633, Method A. Two specimens will be tested at 48 hours plus or minus 2 hours and two specimens will be tested at 7 days plus or minus 4 hours.

F. A strength test will be average of strengths of two specimens molded from same sample of material and tested at same age. Average daily strength will be average of strengths of all specimens molded during one day's production and tested at same age.

- G. Precision and Bias: Test results shall meet recommended guideline for precision in ASTM D 1633 Section 9.
- H. Reporting: Test reports shall contain, as a minimum, the following information:
1. Supplier and plant number
 2. Time material was batched
 3. Time material was sampled
 4. Test age (exact hours)
 5. Average 48-hour strength
 6. Average 7-day strength
 7. Specification section number
 8. Indication of compliance / non-compliance
 9. Mixture identification
 10. Truck and ticket numbers
 11. The time of molding
 12. Moisture content at time of molding
 13. Required strength
 14. Test method designations
 15. Compressive strength data as required by ASTM D 1633
 16. Supplier mixture identification
 17. Specimen diameter and height, in.
 18. Specimen cross-sectional area, sq. in.

3.03 ACCEPTANCE

- A. Strength level of material will be considered satisfactory if:
1. The average 48-hour strength is greater than 100 psi with no individual strength test below 70 psi.
 2. All 7-day individual strength tests (average of two specimens) are greater than or equal to 100 psi.
- B. Material will be considered deficient when 7-day individual strength test (average of two specimens) is less than 100 psi but greater than 70 psi. See Paragraph 3.04 Adjustment for Deficient Strength.
- C. The material will be considered unacceptable and subject to removal and replacement at Contractor's expense when individual strength test (average of two specimens) has 7-day strength less than 70 psi.
- D. When moving average of three daily 48-hour averages falls below 100 psi, discontinue shipment to project until plant is capable of producing material, which

exceeds 100 psi at 48 hours. Five 48-hour strength tests shall be made in this determination with no individual strength tests less than 100 psi.

Testing laboratory shall notify Contractor, Project Manager, and material supplier by facsimile of tests indicating results falling below specified strength requirements within 24 hours.

- E. If any strength test of laboratory cured specimens falls below the specified strength, Contractor may, at his own expense, request test of cores drilled from the area in question in accordance with ASTM C42. In such cases, three (3) cores shall be taken for each strength test that falls below the values given in 3.03.A.
- F. Cement stabilized sand in an area represented by core tests shall be considered satisfactory if the average of three (3) cores is equal to at least 100 psi and if no single core is less than 70 psi. Additional testing of cores extracted from locations represented by erratic core strength results will be permitted.

3.04 ADJUSTMENT FOR DEFICIENT STRENGTH

- A. When mixture produces 7-day compressive strength greater than or equal to 100 psi, then material will be considered satisfactory and bid price will be paid in full.
- B. When mixture produces 7-day compressive strength less than 100 psi and greater than or equal to 70 psi, material shall be accepted contingent on credit in payment. Compute credit by the following formula:

$$\text{Credit per Cubic Yard} = \frac{\$30.00 \times 2 (100 \text{ psi} - \text{actual psi})}{100}$$

100

- C. When mixture produces 7-day compressive strength less than 70 pounds per square inch, then remove and replace cement-sand mixture and paving and other necessary work at no cost to City.

END OF SECTION

SECTION 02510

ASPHALTIC CONCRETE PAVEMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Surface courses of compacted mixture of coarse and fine aggregates and asphaltic material.

1.02 UNIT PRICES

- A. Measurement for asphaltic concrete pavement is on square yard basis. Separate measurement will be made for each different required thickness of pavement.
- B. Payment for asphaltic concrete pavement includes payment for associated work performed in accordance with Section 02512.
- C. Refer to paragraph 3.08 for unit price adjustments.

1.03 SUBMITTALS

- A. Submittals shall conform to requirements of all sections and provisions of these specifications.
- B. Submit certificates that asphaltic materials and aggregates meet requirements of Article 2.01, Materials, of this Specification Section.
- C. Submit proposed design mix and test data for each type and strength of surface course in Work.
- D. Submit manufacturer's description and characteristics of mixing plant for approval.
- E. Submit manufacturer's description and characteristics of spreading and finishing machine for approval.
- F. Submit batch plant tickets for each truck load delivery of hot mix asphalt. Tickets should be delivered to Owner's Representative.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Coarse Aggregate: Gravel or crushed stone, or combination thereof, that is retained on No. 10 sieve, uniform in quality throughout and free from dirt, organic or other

injurious matter occurring either free or as coating on aggregate. Aggregate shall conform to ASTM C33 except for gradation. Furnish rock or gravel with Los Angeles abrasion loss not to exceed 40 percent by weight when tested in accordance with ASTM C131.

- B. Fine Aggregate: Sand or stone screenings or combination of both passing No. 10 sieve. Aggregate shall conform to ASTM C33 except for gradation. Use sand composed of sound, durable stone particles free from loams or other injurious foreign matter. Furnish screenings of same or similar material as specified for coarse aggregate. Plasticity index of that part of fine aggregate passing No. 40 sieve shall be not more than 6 when tested by Tex-106-E. Sand equivalent shall have a minimum value of 45 when tested by Tex-203-F.
- C. Composite Aggregate: Conform to the grading limits of TxDOT Item 340 for the paving type indicated on the drawings.
- D. Asphaltic Material: Moisture-free homogeneous material which will not foam when heated to 347 degrees F, meeting following requirements:

VISCOSITY GRADE

<u>Test</u>	AC-10		AC-20	
	<u>Min.</u>	<u>Max.</u>	<u>Min.</u>	<u>Max.</u>
Viscosity, 140E strokes	1000	±200	2000	±400
Viscosity, 275E strokes	1.9	-	2.5	-
Penetration, 77E, 100 g, 5 sec.	85	-	55	-
Flash Point, C.O.C., F.	450	-	450	-
Solubility in trichloroethkene	99.0	-	99.0	-
Tests on residues from thin film oven tests:				
Viscosity, 140E strokes	-	3000	-	6000
Ductility, 77E, 5 cms per min., cms	70	-	50	-
Spot tests	Negative for all grades			

1. Material shall not be cracked
2. The Owner Representative will designate grade of asphalt to use after design tests have been made. Use only one grade of asphalt after grade is determined by test design for the project.

2.02 EQUIPMENT

- A. Mixing Plant: Weight-batching or drum mix plant with capacity for producing continuously mixtures meeting specifications. Plant shall have satisfactory conveyors, power units, aggregate handling equipment, hot aggregate screens and bins, and dust collectors. Provide equipment to supply materials adequately in accordance with rated capacity of plant and produce finished material within specified tolerances. Following equipment is essential:
 - 1. Cold aggregate bins and proportioning device.
 - 2. Dryer.
 - 3. Screens.
 - 4. Aggregate weight box and batching scales.
 - 5. Mixer.
 - 6. Asphalt storage and heating devices.
 - 7. Asphalt measuring devices.
 - 8. Truck scales.
- B. Bins: Separate aggregate into minimum of four bins to produce consistently uniform grading and asphalt content in completed mix.

2.03 MIXES

- A. Employ and pay certified testing laboratory to prepare design mixes. Test in accordance with Tex-126-E or Tex-204-F and Tex-208-F.
- B. Density and Stability Requirements:

Percent Density		Percent	HVEEM Stability Percent
<u>Min.</u>	<u>Max.</u>	<u>Optimum</u>	<u>Not Less Than</u>
95	99	97	35

- C. Proportions for Asphaltic Material: As specified in TxDOT Item 340 for the paving type shown on the Drawings.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify compacted base course is ready to support imposed loads.
- B. Verify lines and grades are correct.

3.02 PREPARATION

- A. Prime Coat: If indicated on the Drawings, apply a prime coat conforming to requirements of Section 02511. Do not apply a tack coat until primed base has cured to satisfaction of the Owner's Representative.
- B. Tack Coat: Conform to requirements of Section 02512.
- C. Do not use cutback asphalt during the period of April 16 to September 15 unless approved by the Owner Representative.

3.03 PLACEMENT

- A. Place asphaltic mixture when the roadway surface temperature is 60 degrees F or higher. Measure the roadway surface temperature with a handheld infrared thermometer. Unless otherwise shown on the plans, place mixtures only when weather conditions and moisture conditions of the roadway surface are suitable in the opinion of the Owner Representative.
- B. Haul prepared and heated asphaltic concrete mixture to the project in tight vehicles previously cleaned of foreign material. Mixture shall be at temperature between 250 degrees F and 325 degrees F when laid.
- C. Spread material into place with approved mechanical spreading and finishing machine of screening or tamping type.
- D. Surface Course Material: Surface course 2 inches or less in thickness may be spread in one lift. Spread all lifts in such manner that, when compacted, finished course will be smooth, of uniform density, and will be to section, line and grade as shown. Coincide construction joints on surface courses with lane lines, or as directed by the Owner's Representative.
- E. Place courses as nearly continuously as possible. Pass roller over unprotected ends of freshly laid mixture only when mixture has cooled. When work is resumed, cut back

laid material to produce slightly beveled edge for full thickness of course. Remove old material which has been cut away and lay new mix against fresh cut.

- F. When new asphalt is laid against existing or old asphalt, existing or old asphalt shall be saw cut full depth to provide straight smooth joint.
- G. In restricted areas where use of paver is impractical, spread and finish asphalt by mechanical compactor. Use wood or steel forms, rigidly supported to assure correct grade and cross section. Carefully place materials to avoid segregation of mix. Do not broadcast material. Remove any lumps that do not break down readily. Place asphalt courses in same sequence as if placed by machine.

3.04 COMPACTION

- A. Begin rolling while pavement is still hot and as soon as it will bear roller without undue displacement or hairline cracking. Keep wheels properly moistened with water to prevent adhesion of surface mixture. Do not use excessive water.
- B. Compress surface thoroughly and uniformly, first with power-driven, 3-wheel, or tandem rollers weighing from 8 to 10 tons. Obtain subsequent compression by starting at side and rolling longitudinally toward center of pavement, overlapping on successive trips by at least one-half width of rear wheels. Make alternate trips slightly different in length. Continue rolling until no further compression can be obtained and all rolling marks are eliminated. Complete all rolling before mixture temperature drops below 175 degrees F.
- C. Use tandem roller for final rolling. Double coverage with approved pneumatic roller on asphaltic concrete surface is acceptable after flat wheel and tandem rolling has been completed.
- D. Along walls, curbs, headers and similar structures, and in all locations not accessible to rollers, compact mixture thoroughly with lightly oiled tamps.
- E. Compact binder course and surface course to density not less than 93 percent of the maximum possible density of voidless mixture composed of same materials in like proportions.

3.05 TOLERANCES

- A. Furnish templates for checking surface in finished sections. Maximum deflection of templates, when supported at center, shall not exceed 1/8 inch.
- B. Completed surface, when tested with 10-foot straightedge laid parallel to center line of pavement, shall show no deviation in excess of 1/8 inch in 10 feet. Correct any surface not meeting this requirement.

3.06 FIELD QUALITY CONTROL

- A. Testing will be performed under provisions of Section 01410 - Testing Laboratory Services.
- B. Minimum of one core will be taken at random locations per 1,000 feet per lane of roadway or 1,000 square yards of asphalt concrete pavement to determine in-place depth and density.
- C. In-place density will be determined in accordance with Tex-207-F and Tex-227-F from cores or sections of asphaltic base located near each core. Other methods of determining in-place density, which correlate satisfactorily with results obtained from roadway specimens, may be used when approved by the Owner's Representative.
- D. Contractor may, at his own expense, request three additional cores in vicinity of cores indicating nonconforming in-place depths. In-place depth at these locations shall be average depth of four cores.
- E. Fill cores and density test sections with new compacted asphaltic concrete pavement.

3.07 NONCONFORMING PAVEMENT

- A. Recompact pavement sections not meeting specified densities or replace them with new asphaltic concrete material. Replace with new material sections of surface course pavement not meeting surface test requirements or having unacceptable surface texture. Patch asphalt pavement sections in accordance with procedures established by Asphalt Institute.
- B. Remove and replace areas of asphaltic concrete pavement found deficient in thickness by more than 10 percent. Use new asphaltic concrete pavement of thickness shown on Drawings.
- C. Nonconforming pavement sections shall be replaced at no cost to Owner.

3.08 UNIT PRICE ADJUSTMENT

- A. Unit price adjustments shall be made for in-place depth determined by cores as follows:
 - 1. Adjusted Unit Price shall be ratio of average thickness as determined by cores to thickness bid upon, times unit price bid.
 - 2. Adjustment shall apply to lower limit of 90 percent and upper limit of 100 percent of unit price bid.

3. Average depth below 90 percent may be rejected by the Owner's Representative.

3.09 PROTECTION

- A. Do not open pavement to traffic until 12 hours after completion of rolling, or as shown on Drawings.
- B. Maintain asphaltic concrete pavement in good condition until completion of Work.
- C. Repair defects immediately by replacing asphaltic concrete pavement to full depth.

END OF SECTION

SECTION 02511

PRIME COAT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Prime coat for asphaltic concrete paving

1.02 UNIT PRICES

- A. No separate payment will be made for prime coat under this Section. Include payment in unit price for asphaltic concrete pavement.

1.03 SUBMITTALS

- A. Submittals shall conform to requirements of all sections and provisions of these specifications.
- B. Submit product data for proposed prime coat.
- C. Submit report of recent calibration of distributor.

PART 2 PRODUCTS

2.01 CUTBACK ASPHALT

- A. Provide moisture-free homogeneous material which will not foam when heated to 347° F and which meets following requirements:
 - 1. Asphalt material for prime coat shall be MC-30 or MC-70 and shall meet following requirements:

Type-Grade	MC-30		MC-70	
<u>Properties</u>	<u>Min.</u>	<u>Max.</u>	<u>Min.</u>	<u>Max.</u>
Water, percent	0.2	---	0.2	---
Flash Point, T.O.C., °F	100	---	100	---
Kinematic Viscosity at 140°F, cst	30	60	70	140

2. Distillate shall be as follows, expressed as percent by volume of total distillate to 680° F:

	MC-30		MC-70	
	<u>Min.</u>	<u>Max.</u>	<u>Min.</u>	<u>Max.</u>
to 437°F	---	25	---	20
to 500°F	40	70	20	60
to 600°F	75	93	65	90
Residue from 680°F Distillation, Volume, percent	50	---	55	---

3. Tests on Distillation Residue:

	MC-30		MC-70	
	<u>Min.</u>	<u>Max.</u>	<u>Min.</u>	<u>Max.</u>
Penetration at 77°F, 100g, 5 sec.	120	250	120	250
Ductility at 77°F, 5 cm/min. cms	100*	---	100*	---
Solubility in trichloroethylene, %	99	---	99	---
Spot Test	All Negative			

* If penetration of residue is more than 200 and ductility at 77°F is less than 100 cm, material will be acceptable if its ductility at 60°F is more than 100.

2.02 EMULSIFIED PETROLEUM RESIN

A. EPR-1 Prime: Slow curing emulsion of petroleum resin and asphalt cement conforming to the following requirements:

<u>PROPERTIES</u>	<u>MIN</u>	<u>MAX</u>
Fural Viscosity at 77°F, sec	14	40
Residue by Evaporation, % by weight	60	-
Sieve Test, %	-	0.1
Particle Charge Test		Positive
Tests on the Distillation Residue:		
Flash Point, COC (F)	400	-
Kinematic Viscosity @ 140°F (cSt)	190	350

- B. For use, EPR-1 may be diluted with water up to a maximum of three parts water to one part EPR-1 in order to achieve the desired concentration of residual resin/asphalt and facilitate application.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify base is ready to support imposed loads.
- B. Verify lines and grades are correct.

3.02 PREPARATION

- A. Thoroughly clean base course surface of loose material by brooming prior to application of tack coat.
- B. Prepare sufficient base in advance of paving for efficient operations.

3.03 APPLICATION, GENERAL

- A. Apply prime coat with approved type of self-propelled pressure distributor. Distribute prime coat evenly and smoothly under pressure necessary for proper distribution.
- B. Keep all storage tanks, piping, retorts, booster tanks and distributors used in handling asphaltic materials clean and in good operating conditions. Conduct operations so that asphaltic material does not become contaminated.

- C. If yield of asphaltic material appears to be in error, recalibrate distributor prior to continuing Work.
- D. Maintain the surface until Work is accepted by Owner.

3.04 APPLICATION, CUTBACK ASPHALT

- A. Do not use cutback asphalt during the period of April 16 to September 15 unless approved by Owner Representative.
- B. Apply the mixture when the air temperature is 60 degrees F and above, or above 50 degrees F and rising. Measure the air temperature in the shade away from artificial heat. The Owner Representative will determine when weather conditions are suitable for application.
- C. Distribute at rate of 0.25 to 0.35 gallons per square yard.
- D. Provide all necessary facilities for determining temperature of asphaltic material in all heating equipment and in distributor, for determining rate of application, and for obtaining uniformity at junction of two distributor loads. Provide and maintain in good working order, recording thermometer at storage heating unit at all times.
- E. Temperature of application shall be based on temperature-viscosity relationship that will permit application of asphalt with viscosity of 100 to 125 centistokes. Maintain asphalt within 15° F of temperature required to meet viscosity. Selected temperature shall be within following range.

<u>Prime Coat Type</u>	<u>Minimum (° F)</u>	<u>Maximum (° F)</u>
MC-30	70	150
MC-70	125	175

- F. Do not allow temperature of MC-30 to exceed 175° F at any time.
- G. Do not allow temperature of MC-70 to exceed 200° F at any time.

3.05 APPLICATION, EMULSIFIED PETROLEUM RESIN

- A. Do not place prime coat when air temperature is below 36° F and falling.
- B. Distribute at rate of 0.15 to 0.25 gallons per square yard.

3.06 PROTECTION

- A. No traffic or placing of subsequent courses shall be permitted over freshly applied prime coat until authorized by the Owner's Representative.

END OF SECTION

SECTION 02570

PAVEMENT REPAIR AND RESURFACING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Repairing and resurfacing streets, highways, driveways, sidewalks and other pavements that have been cut, broken or otherwise damaged during construction.
- B. Repairing areas of failed paving in preparation for resurfacing

1.02 UNIT PRICES

- A. Unit Prices:
 - 1. No separate payment shall be made for pavement repair and resurfacing under this Section. Payment shall be in accordance with Measurement and Payment for work as required in appropriate sections.
- B. Stipulated Price (Lump Sum):
 - 1. If contract is a stipulated price contract, payment for work in this Section is included in the total stipulated price.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Subgrade: Provide backfill material as required by Sections 02222 – Borrow, 02221 – Embankment, 02226 – Excavation and Backfill for Structures, 02227 – Excavation and Backfill for Utilities, 02228 – Extra Unit Price Work for Excavation and Backfill, and 02225 – Roadway and Backfill for Roadways.
- B. Base: Provide base material as required by applicable portions of Section 02233 Cement Stabilized Base Course, 02231 – Crushed Stone Flexible Base Course, 02234 – Recycled Crushed Concrete Base, and 02238 – Hot Mix Asphaltic Base Course.
- C. Pavement: Provide paving materials as required by applicable portions of Section 02510 - Asphaltic Concrete Pavement, Section 02521 – Concrete Paving, Section 02530 – Concrete Sidewalks, Section 02531 – Concrete Driveways, Section 02532 – Curb, Curb and Gutter, and Headers.

PART 3 EXECUTION

3.01 PREPARATION

- A. Notify the Owner Representative prior to commencement of excavation in pavement for which an excavation in public right of way permit has been obtained. Follow directions contained in the permit.
- B. Conform to requirement of Section 02076 – Remove Existing Pavements and Structures, for removals.
- C. When removing pavement to existing deformed metal strip, saw cut pavement a minimum of two inches deep on opposite side of deformed metal strip. Place saw joint far enough behind deformed metal strip to obtain continuously straight joint. Remove damaged portion of deformed metal strip as required to provide proper joint. Saw cut and remove metal strip before placement of new concrete pavement.
- D. Protect edges of existing pavement to prevent damage during removals, utility placement, backfill and paving operations. For concrete pavement, protect undisturbed subgrade that is to remain to support replacement slab.
- E. Dowel in to existing pavement where no reinforcement is found or is broken due to construction activities. Unless otherwise directed by the Owner Representative, provide No. 6 reinforcing bars twenty four inches long, drilled and embedded twelve inches into center of existing slab with “PO-ROC” epoxy grout or approved equal. Space dowels to match new pavement reinforcement spacing.
- F. Provide transitional paving, additional base depth and undercutting of existing pavement as required to tie proposed pavement to existing pavement when unable to dowel new pavement into existing pavement.
- G. Temporarily fill hole with base material or bridge with three-quarter inch steel plates until ready to place concrete.

3.02 INSTALLATION

- A. Parking Areas, Service Drives, Driveways and Sidewalks: Replace with material equal to or better than existing or as indicated on the Drawings. Conform to applicable requirements of sections referenced in Paragraph 2.01 Materials.
- B. Street Pavements and Curbs, Curbs and Gutters: Replace subgrade, base and surface course with like materials or as indicated on the drawings and the City of Galveston Standard Details and Technical Specifications. Curbs and curbs and gutters shall match existing. Conform to requirements of sections referenced in Paragraph 2.01 Materials.
- C. For concrete pavement, install size and length of reinforcing steel and pavement thickness indicated on the Drawings and the City of Galveston Standard Details and Technical Specifications. Place types and spacing of joints to match existing joints or as indicated on the Drawings.
- D. Where existing pavement consists of concrete pavement with asphaltic surfacing, match existing thickness of the concrete pavement and asphalt surfacing.

- E. Repair TxDOT highway and county crossings in accordance with TxDOT permit or county requirements as appropriate, and within one week after pavement removal.

3.03 WASTE MATERIAL DISPOSAL

- A. Dispose of waste material in accordance with requirements of Section 01564 – Waste Material Disposal.

3.04 PROTECTION

- A. Maintain pavement in good condition until completion of the Work.
- B. Replace pavement damaged by the Contractor's operations at not cost to the Owner.

END OF SECTION

SECTION 02590

TEMPORARY AND REMOVABLE REFLECTORIZED PAVEMENT MARKINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Temporary retroreflective preformed pavement markings.
- B. Wet retroreflective markers.

1.02 UNIT PRICES

- A. Measurement for temporary pavement markings is on a linear foot basis, for each class, measured in place.

1.03 TEMPORARY PAVEMENT MARKING DEFINITIONS

- A. Class I - Temporary preformed pavement markings suitable for longitudinal and word and symbol markings where removability will be required.
- B. Class II - Temporary non-removable preformed pavement markings suitable for overlay lane lines, edge lines, and channelizing lines where pavement will be resurfaced.
- C. Class III - Class I markers with wet reflective markers added every 8 feet.
- D. Class IV - Class II markers with wet reflective markers added every 8 feet.

1.04 SUBMITTALS

- A. Submittals shall conform to requirements of all sections and provisions of these specifications.
- B. Submit manufacturer's product data for each proposed class of marking material and installation instructions for approval. Include certificate by manufacturer that each class of marking conforms to the requirements of this specification.
- C. Submit details of manufacturer's replacement policy for each class of marker.

1.05 DELIVERY AND STORAGE

- A. Deliver preformed plastic marking material in rolls or strips.
- B. Store material in cool dry conditions until application.

PART 2 PRODUCTS

2.01 PREFORMED MARKINGS

- A. Retroreflective preformed markings: White or yellow retroreflective tape on conformable backing with pigments conforming to standard highway colors. Glass beads shall be incorporated in film and a reflective layer of beads shall be bonded to the top surface of the film. Bead adhesion shall be such that beads cannot be easily removed by scratching with a thumbnail.
- B. Preformed marking shall be precoated with pressure sensitive adhesive and shall have a demonstrated ability to adhere to roadways under climatic and traffic conditions normally encountered in a construction work zone when properly applied.
- C. Class I markings shall be removable from portland cement and asphaltic concrete pavements intact, or in large pieces, at temperatures above 40 degrees F without use of heat, solvents, grinding, or blast cleaning. Marking film shall be removable after exposure to following minimum traffic exposure when tested on transverse test decks with rolling traffic:

- 1. Time in Place (days) 632
- 2. ADT per lane (23% trucks, 3.5 axles/unit) 9,000
- 3. Minimum Axle Hits 13,000,000

D. Quality performance characteristics:

	<u>CLASS I</u>		<u>CLASS II</u>		<u>TEST METHOD</u>
	<u>White</u>	<u>Yellow</u>	<u>White</u>	<u>Yellow</u>	
Init. Retroreflective (mcd ft ⁻² fc ⁻¹), min. **@86.0°, 0.2°	1770	1310	1360	820	ASTM D4061
**@86.5°, 1.0°	750	450	500	350	
Daytime Reflectance Factor "Y" %, min.	65	36	65	36	ASTM E97
Init. Skid Resistance, Avg. BPN	50		35		ASTM E303
Refractive Index of Beads, min.	1.9		1.9		LIQUID IMMERSION
Thickness, without adhesive, mils, min.	40		9		Caliper Gauge

* (Entrance Angle, Observation Angle).

2.02 RAISED WET REFLECTIVE MARKERS

**TEMPORARY AND
REMOVABLE REFLECTORIZED
PAVEMENT MARKINGS**

- A. Raised Markers: Expanded rubber extrusions capable of being elastically compressed and deflected when impacted by rotating vehicle tires. Marker body shall have the following properties when tested in accordance with ASTM D1056:
 - 1. Compression deflection - < 16 psi @ 25⁰ deflection.
 - 2. Oven aged compression deflection - % change, +18.
 - 3. Compress set low - 10%.
 - 4. Water absorption - < 9%.
 - 5. Density (lbs/ft) -24.

- B. Markers shall be precoated with pressure sensitive adhesive capable of holding markers to top of preformed marking film.

- C. Markers shall have enclosed retroreflective lens sheeting elements attached to marker bodies with pressure sensitive adhesive.

- 1. Retroreflective lenses elements shall have the following initial minimum reflectance when measured in accordance with ASTM E809:

Color:	<u>White</u>	<u>Yellow</u>	<u>White</u>	<u>Yellow</u>	<u>White</u>	<u>Yellow</u>	<u>White</u>	<u>Yellow</u>
Observation angle	0.2°		0.5°		1.0°		1.5°	
Coeff. Of Luminous Intensity , R (cd fc ⁻¹)	1.00	0.60	0.40	0.24	0.19	0.11	0.14	0.08

- Notes:
- 1. Tests at an entrance angle (Beta 2 horizontal entrance component described In ASTM E808) of -4° measured from an axis perpendicular to top edge of Marker when viewed from above.
 - 2. Angle formed by reflective surface and base of marker shall be between 75° and 90° prior to measurement.

- 2. Marker reflective elements shall be visible at night, to motorists with low beam headlights, under the following conditions:
 - a. Dry conditions - 1500 feet
 - b. Rainfall at a rate of 1" per hour - 1000 feet
 - c. Rainfall at a rate of 8" per hour - 250 feet

PART 3 EXECUTION

3.01 INSTALLATION

- A. Apply markings to clean dry surfaces in accordance with manufacturer's recommendations at locations indicated on Drawings, or as directed by the Owner Representative.
- B. Place markings on each paving lift that is to be opened to traffic prior to the end of each day's work.
- C. Maintain markings, and replace as needed, until they are covered with subsequent paving courses or replaced by permanent markings on final lifts.

3.02 REMOVAL

- A. Remove and obliterate markings on existing and final lifts used for redirecting traffic during construction. If blast cleaning is required, comply with requirements of Section 02581 – Blast Cleaning of Pavement.

END OF SECTION

SECTION 02605

CAST-IN-PLACE INLETS, HEADWALLS, AND WINGWALLS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Cast-in-place inlets for storm sewers, including cast iron frame and plate or grate.
- B. Cast-in-place headwalls and wingwalls for storm sewers.

1.02 UNIT PRICES

- A. Measurement for normal depth inlets is on a lump sum basis for each inlet installed.
- B. Measurement for extra depth inlets is on a vertical foot basis for each foot in excess of normal depth.
- C. Measurement for headwalls and wingwalls is on a lump sum basis for each headwall and wingwall installed.
- D. Payment for inlets and for culvert headwalls and wingwalls includes connection of lines and furnishing and installing frames, grates, rings and covers.

1.03 DEFINITIONS

- A. Normal Depth Type BB Inlet: Depth of 2.55 feet (2'-6 5/8") plus pipe inside diameter when measured from curb beam to flow line of inlet lead.
- B. Extra Depth Inlet: Specified depth exceeding normal depth for the type inlet used.

1.04 SUBMITTALS

- A. Submittals shall conform to requirements of all section and provisions of these specifications.
- B. Submit shop drawings for approval of design and construction details for cast-in-place units which differ from units shown on Drawings.
- C. Submit manufacturers' data and details for frames, grates, rings, and covers.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Concrete: Class A concrete with minimum compressive strength of 4000 psi conforming to requirements of Section 03305, unless otherwise indicated on Drawings or approved by the Owner's Representative.
- B. Reinforcing steel: Conform to requirements of Section 03305.
- C. Mortar: Conform to requirements of ASTM C270, Type S using Portland cement.
- D. Miscellaneous metals: Cast-iron frames, grates, rings, and covers conforming to requirements of Section 02603.
- E. Steel beams for Type BB inlets shall conform to ASTM A36.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify lines and grades are correct.
- B. Verify compacted subgrade will support loads imposed by inlets.

3.02 INSTALLATION

- A. Construct inlets, headwalls, and wingwalls complete in place to the dimensions, lines and grades as shown on Drawings.
- B. Excavate in accordance with requirements of Section 02227.
- C. The box section of inlet shall be constructed of Class A concrete.
- D. Forms will be required for both the outside and inside faces of concrete inlet walls; however, if the nature of the material excavated for the inlet is such that it can be hand trimmed to a smooth vertical face, the outside forms may be omitted with approval of the Owner's Representative.
- E. Place reinforcing steel to conform to details shown on the Drawings. Provide a positive means for holding steel cages in place during concrete placement. Welding of reinforcing steel is not permitted unless noted on the Drawings. The maximum variation in reinforcement position is plus or minus 10 percent of wall thickness or plus or minus 1/2 inch whichever is less. Regardless of variation, the minimum cover of concrete over reinforcement as shown on the Drawings shall be maintained.
- F. Chamfer exposed edges unless otherwise indicated on Drawings.

3.03 FINISHES

- A. Cut off inlet leads neatly at the inside face of inlet wall. Point up with mortar.
- B. When the box section of the inlet has been completed, shape the floor of the inlet with mortar to conform to the detailed Drawings.
- C. Finish concrete surfaces in accordance with requirements of Section 03305.

3.04 INLET WATERTIGHTNESS

- A. Test each inlet for leaks with static water test. Verify that inlets are free of visible leaks. Repair leaks in an approved manner.

3.05 BACKFILL

- A. Backfill the area of excavation surrounding each completed inlet according to the requirements of Section 02227.

END OF SECTION

SECTION 02615

REINFORCED CONCRETE PIPE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Reinforced concrete pipe for storm sewers.

1.02 UNIT PRICES

- A. No separate payment will be made for reinforced concrete pipe under this Section. Include payment in unit price for Sections 02720 - Storm Sewers.

1.03 SUBMITTALS

- A. Submittals shall conform to requirements of all sections and provisions of these specifications.
- B. Submit complete product data for pipe, fittings and gaskets for approval. Indicate conformance to appropriate reference standards.
- C. Submit certificates by a testing laboratory, hired and paid by the manufacturer, that concrete pipes meet applicable standards when tested in accordance with ASTM C497.

PART 2 PRODUCTS

2.01 REINFORCED CONCRETE PIPE

- A. Circular reinforced concrete pipe shall conform to requirements of ASTM C76, for Class III wall thickness. Joints shall be rubber gasketed conforming to ASTM C443.
- B. Reinforced concrete arch pipe shall conform to the requirements of ASTM C506 for Class A-III. Joints shall conform to ASTM C877.
- C. Reinforced concrete elliptical pipe, either vertical or horizontal, shall conform to the requirements of ASTM C507 for Class VE-III for vertical or Class HE-III for horizontal. Joints shall be rubber gaskets conforming to ASTM C877.
- D. Reinforced concrete D-load pipe shall conform to the requirements of ASTM C655.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Conform to requirements of Sections 02720 - Storm Sewers.

- B. Install reinforced concrete pipe in accordance with manufacturer's recommendations.

END OF SECTION

SECTION 02620

PVC PIPE

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Polyvinyl chloride pressure pipe for water distribution in nominal diameters 4 inches through 16 inches.
- B. Polyvinyl chloride sewer pipe for gravity sanitary sewers in nominal diameters 4 inches through 48 inches.
- C. Polyvinyl chloride pressure pipe for gravity sanitary sewers and force mains in nominal diameters 4 inches through 36 inches.

1.02 UNIT PRICES

- A. No separate payment will be made for PVC pipe under this section. Include cost in unit price for water mains, gravity sanitary sewer, and force mains.

1.03 SUBMITTALS

- A. Conform to requirements of all provisions and sections of these specifications.
- B. Submit shop drawings showing design of new pipe and fittings indicating alignment and grade, laying dimensions, fabrication, fittings, flanges, and special details.

1.04 QUALITY CONTROL

- A. Submit manufacturer's certifications that PVC pipe and fittings meet requirements of this Section and AWWA C 900 or AWWA C 905 for pressure pipe applications, or the appropriate ASTM standard specified for gravity sewer pipe.
- B. Submit manufacturer's certification that PVC pressure pipe has been hydrostatically tested at the factory in accordance with AWWA C 900 or AWWA C 905 and this Section.

PART 2 - PRODUCTS

2.01 MATERIAL

- A. Use PVC compounds in the manufacture of pipe that contain no ingredient in an amount that has been demonstrated to migrate into water in quantities considered to be toxic.
- B. Furnish PVC pressure pipe manufactured from Class 12454-A or Class 12454-B virgin PVC compounds as defined in ASTM D 1784. Use compounds qualifying for a rating of 4000 psi for water at 73.4 degrees F per requirements of PPI TR3. Provide pipe which is homogeneous throughout, free of voids, cracks, inclusions, and other defects, uniform as commercially practical in color, density, and other physical properties. Deliver pipe with surfaces free from nicks and scratches with joining surfaces of spigots and joints free from gouges and imperfections which could cause leakage.
- C. For PVC pressure pipe used for water mains, provide self-extinguishing PVC pipe that bears Underwriters' Laboratories mark of approval and is acceptable without penalty to Texas State Fire Insurance Committee for use in fire protection lines.
- D. Gaskets:
 - 1. Gaskets shall meet the requirements of ASTM F 477. Use elastomeric factory-installed gaskets to make joints flexible and watertight.
 - 2. Pipes to be installed in potentially contaminated areas, especially where free product is found near the elevation of the proposed sewer, shall have the following gasket materials for the noted contaminants.

CONTAMINANT	GASKET MATERIAL REQUIRED
Petroleum (diesel, gasoline)	Nitrile Rubber
Other Contaminants	As recommended by the pipe manufacturer

- E. Lubricant for rubber-gasketed joints: Water soluble, non-toxic, non-objectionable in taste and odor imparted to fluid, non-supporting of bacteria growth, having no deteriorating effect on PVC or rubber gaskets.

2.02 WATER SERVICE PIPE

- A. Pipe 4-inch through 12-inch: AWWA C 900, Class 150, DR 18; nominal 20-foot lengths; cast iron equivalent outside diameters.

- B. Pipe 16-inch: AWWA C 905; Class 235; DR 18; nominal 20-foot lengths; cast iron equivalent outside diameter.
- C. Joints: ASTM D 3139; push-on type joints in integral bell or separate sleeve couplings. Do not use socket type or solvent weld type joints.
- D. Make curves and bends by deflecting the joints. Do not exceed maximum deflection recommended by the pipe manufacturer. Submit details of other methods of providing curves and bends for review by the Owner Representative.
- E. Hydrostatic Test: AWWA C 900, AWWA C 905, ANSI A21.10 (AWWA C110); at point of manufacture; submit manufacturer's written certification.

2.03 BENDS AND FITTINGS FOR PVC PRESSURE PIPE

- A. Bends and Fittings: ANSI A21.10, ductile iron; ANSI A21.11 single rubber gasket push-on type joint; minimum 150 psi pressure rating.
- B. Coatings and Linings: Conform to requirements of Section 02610 - Ductile-Iron Pipe and Fittings.
- C. Restraints for large diameter PVC pipe (AWWA C905) at the bell shall be consist of the following:
 - 1. The restraint shall be manufactured of ductile iron conforming to ASTM A536.
 - 2. A backup ring shall be utilized behind the PVC bell.
 - 3. A restraint ring, incorporating a plurality or individually actuating gripping surfaces, shall used to connect the bell ring and gripping ring.
 - 4. The restraint shall be the Series 2800 as manufactured by EBAA Iron, Inc., or approved equal.

2.04 GRAVITY SANITARY SEWER PIPE

- A. PVC gravity sanitary sewer pipe shall be in accordance with the provisions in the following table:

WALL CONSTRUCTION	MANUFACTURER	PRODUCT OPTIONS	ASTM DESIGNATION	SDR (Max.)/ STIFFNESS	DIAMETER SIZE RANGE
Solid	J-M Manufacturing Co, Inc.	Approved	D3034	SDR 26 / PS 115	6" to 15"
	CertainTeed	Approved	F679 (T-1)	SDR 26 / PS 115	18" to 24"
	Can-Tex				
	Carlton Company	Approved	F679 (T-1)	SDR 35 / PS 46	27" to 36"
	Diamond Plastics Corp				
	North American Pipe Corporation (NAPCO)	Approved	AWWA C900	DR 18 / N/A	4" to 12"
		Approved	AWWA C905	DR 18 / N/A	14" to 36"

- B. When solid wall PVC pipe 18 inches to 27 inches in diameter is required in SDR 26, provide pipe conforming to ASTM F679, except provide wall thickness as required for SDR 26 and pipe strength of 115 psi.
- C. For sewers up to 12-inch-diameter crossing over waterlines, or crossing under waterlines with less than 2 feet separation, provide minimum 150 psi pressure-rated pipe conforming to ASTM D 2241 with suitable PVC adapter couplings.
- D. Joints: Spigot and integral wall section bell with solid cross section elastomeric or rubber ring gasket conforming to requirements of ASTM D 3212 and ASTM F 477, or ASTM D 3139 and ASTM F 477, shall be provided. Gaskets shall be factory-assembled and securely bonded in place to prevent displacement. The manufacturer shall test a sample from each batch conforming to requirements ASTM D2444.
- E. Fittings: Provide PVC gravity sewer sanitary bends, tee, or wye fittings for new sanitary sewer construction. PVC pipe fittings shall be full-bodied, either injection molded or factory fabricated. Saddle-type tee or wye fittings are not acceptable.

2.05 SANITARY SEWER FORCE MAIN PIPE

- A. Provide PVC pressure pipe conforming to the requirements for water service pipe, and conforming to the minimum working pressure rating specified in Section 02731 - Sanitary Sewage Force Mains.

- B. Acceptable pipe joints are integral bell-and-spigot, containing a bonded-in elastomeric sealing ring meeting the requirements of ASTM F 477. In designated areas requiring restrained joint pipe and fittings, use EBAA Iron Series 2000PV, Uniflange Series 1350 restrainer, or equal joint restraint device conforming to UNI-B-13, for PVC pipe 12-inch diameter and less.
- C. Fittings: Provide ductile iron fittings as per Paragraph 2.03, except furnish all fittings with one of the following internal linings:
 - 1. Nominal 40 mils (35 mils minimum) virgin polyethylene complying with ASTM D 1248, heat fused to the interior surface of the fitting, as manufactured by American Cast Iron Pipe "Polybond", or U.S. Pipe "Polyline".
 - 2. Nominal 40 mils (35 mils minimum) polyurethane, Corro-pipe II by Madison Chemicals, Inc.
 - 3. Nominal 40 mils (35 mils minimum) ceramic epoxy, Protecto 401 by Enduron Protective Coatings.
- D. Exterior Protection: Provide polyethylene wrapping of ductile iron fittings as required by Section 02630 - Polyethylene Wrap.
- E. Hydrostatic Tests: Hydrostatically test pressure rated pipe in accordance with Paragraph 2.02 E.

PART 3 - EXECUTION

3.01 PROTECTION

- A. Store pipe under cover out of direct sunlight and protect from excessive heat or harmful chemicals in accordance with the manufacturer's recommendations.
- B. Contractor is responsible for proper storage and protection of stored pipe.

3.02 INSTALLATION

- A. Conform to requirements of Section 02664 - Water Mains, Section 02730 - Gravity Sanitary Sewers, Section 02731 - Sanitary Sewage Force Mains, and Section 02763 - Point Repairs to Sanitary Sewers, as applicable.
- B. Install PVC pipe in accordance with Section 02227 - Excavation and Backfill for Utilities, ASTM D 2321, and manufacturer's recommendations.

- C. Water service pipe 12 inches in diameter and smaller: Installed to clear utility lines and have minimum 4 feet of cover below finished grade above the pipe, unless otherwise required by Drawings.
- D. Avoid imposing strains that will overstress or buckle the pipe when lowering pipe into trench.
- E. Hand shovel pipe bedding under the pipe haunches and along the sides of the pipe barrel and compact to eliminate voids and ensure side support.

END OF SECTION

SECTION 02720

STORM SEWERS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Storm sewers and appurtenances.

1.02 UNIT PRICES

- A. Measurement for storm sewers is on a linear foot basis for each type and size of pipe installed. Measurement will be taken along the centerline of the pipe from centerline to centerline of manholes or from end to end of culverts.
- B. No separate payment will be made for earthwork, connections to existing manholes and pipe, accessories, equipment and execution required are incidental to storm sewer work. Include payment in unit price for pipe.

1.03 SUBMITTALS

- A. Submittals shall conform to requirements of all provisions and sections of these specifications.
- B. Submit manufacturer's literature for product specifications and installation instructions.
- C. Submit test reports as specified in Part 3 of this Section.

1.04 QUALITY ASSURANCE

- A. The condition for acceptance will be a storm sewer that is watertight both in pipe-to-pipe joints and in pipe-to-manhole connections.

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Comply with manufacturer's recommendations.
- B. Handle pipe, fittings, and accessories carefully with approved handling devices. Do not drop or roll pipe off trucks or trailers. Materials cracked, gouged, chipped, dented, or otherwise damaged will not be approved for installation.
- C. Store pipe and fittings on heavy timbers or platforms to avoid contact with the ground.

- D. Unload pipe, fittings, and specials as close as practical to the location of installation to avoid unnecessary handling.
- E. Keep interiors of pipe and fittings completely free of dirt and foreign matter.

PART 2 PRODUCTS

2.01 PIPE

- A. Piping materials for storm sewers shall be of the sizes and types indicated on the Drawings.
- B. Materials for pipe and fittings, other than those specified or referenced, may be considered for use in storm sewers.
- C. For consideration of other materials, submit complete manufacturer's data including materials, sizes, flow carrying capacity, installation procedures, and history of similar installations to Engineer for pre-bid evaluations, if allowed, or as a substitution.

2.02 PIPE MATERIAL SCHEDULE

- A. Reinforced Concrete Pipe: Conform to requirement of Section 02615 - Reinforced Concrete Pipe.
- B. Monolithic Reinforced Concrete Box Sewers: Conform to requirements of Section 02616 - Monolithic Reinforced Concrete Box Sewers.
- C. Precast Reinforced Concrete Box Sewers: Conform to requirements of Section 02617 - Precast Reinforced Concrete Box Sewers.
- D. When approved by the Owner's Representative, high-density polyethylene, corrugated drainage pipe meeting requirements of AASHTO M252 or M294 and ASTM D3350, Hancor or equal.

2.03 BEDDING, BACKFILL, AND TOPSOIL MATERIAL

- A. Bedding and Backfill Material: Conform to requirements of Sections 02227 - Excavation and Backfill for Utilities, and 02229 - Utility Backfill Material.
- B. Topsoil: Conform to requirements of Section 02920 - Topsoil.

PART 3 EXECUTION

3.01 PREPARATION

- A. Set up street detours and barricades in preparation for excavation if construction will affect traffic. Conform to requirements of Section 01570 - Traffic Control and Regulation.
- B. Provide barricades and warning lights and signs, for excavations. Conform to requirements of Section 01570 - Traffic Control and Regulation. Maintain barricades and warning lights for streets and intersections where work is in progress or where affected by the work and is considered hazardous to traffic movements.
- C. Perform work in accordance with OSHA standards. Employ a Trench Safety System as specified in Section 01526 - Trench Safety Systems, for excavations over 5 feet deep.
- D. Immediately notify the agency or company owning any utility line which is damaged, broken or disturbed. Obtain approval from Owner's Representative and agency for any repairs or relocations, either temporary or permanent.
- E. Remove old pavements and structures including sidewalks and driveways in accordance with requirements of Section 02050 - Demolition and Section 02076 - Removing Existing Pavements and Structures.
- F. Install and operate necessary dewatering and surface water control measures in accordance with Section 01563 - Control of Ground Water and Surface Water.

3.02 EXCAVATION

- A. Earthwork. Refer to Section 02227 - Excavation and Backfill for Utilities and as directed on Drawings.
- B. Line and Grade. Establish the proper line and grade in the trench as shown in the drawings. Maintain this control for a minimum of 100 feet behind and ahead of the pipe-laying operation. Use appropriately sized grade boards, as necessary, which are substantially supported. Protect the boards and location stakes from damage or dislocation. Use of a laser beam equipment to establish and maintain proper line and grade of the work is acceptable.
- C. Trench Excavation. Excavate pipe trenches to a level 8-inches below the indicated invert. Backfill the excavation with the specified bedding material to the level of the lower one-third of the pipe barrel. Tamp and compact backfill to provide bedding at the indicated grade. Form the bedding foundation to a minimum depth of one-eighth of the pipe diameter, but not less than 6 inches.

3.03 PIPE INSTALLATION

- A. Install in accordance with the pipe manufacturer's recommendations and as specified in this Section.

- B. Install pipe only after excavation is completed, the bottom of the trench shaped, bedding material is installed, and the trench has been approved by the Owner's Representative.
- C. Install pipe to the line and grade indicated. Place pipe so that it has continuous bearing of barrel on bedding material and is laid in the trench so the interior surfaces of the pipe follow the grades and alignments indicated.
- D. Install pipe with the spigot ends toward the direction of flow.
- E. Form a concentric joint with each section of adjoining pipe so as to prevent offsets.
- F. Place and drive home newly laid sections with come-a-long winches so as to eliminate damage to sections. Use of backhoes or similar powered equipment will not be allowed unless protective measures are provided and approved in advance by the Owner's Representative.
- G. Keep the interior of pipe clean as the installation progresses. Where cleaning after laying the pipe is difficult because of small pipe size, use a suitable swab or drag in the pipe and pull it forward past each joint immediately after the joint has been completed.
- H. Keep excavations free of water during construction and until final inspection.
- I. When work is not in progress, cover the exposed ends of pipes with an approved plug to prevent foreign material from entering the pipe.

3.04 PIPE INSTALLATION OTHER THAN OPEN CUT

- A. For installation of pipe by augering, boring, or jacking pipe, conform to requirements of Section 02315 - Pipe and Casing Augering for Sewers.

3.05 INSTALLATION OF APPURTENANCES

- A. Construction manholes and inlets to conform to requirements of Sections 02600 - Cast-in-place Concrete Manhole and Section 02601 - Precast Concrete Manholes. Install frames, grate rings and covers to conform to requirements of Section 02603 - Frames, Grates, Rings and Covers.
- B. Install headwalls and wingwalls to conform to requirements of Section 02605 - Cast-in Place Inlets, Headwalls and Wingwalls and Section 02606 - Precast Concrete Inlets, Headwalls and Wingwalls.
- C. Rehabilitate existing manholes to conform to requirements of Section 02764 - Manhole Rehabilitation. Adjust manhole covers to grade conforming to requirements of Section 02607 - Adjusting Manholes, Inlets and Valve Boxes to Grade.

3.06 BACKFILL AND SITE CLEANUP

- A. Backfill the trench only after pipe installation is approved by the Owner's Representative.
- B. Bed pipes with materials conforming to requirements of Section 02229 - Utility Backfill Material and as indicated on Drawings.
- C. Backfill and compact soil in accordance with Section 02227 - Excavation and Backfill for Utilities.
- D. Repair and replace removed or damaged pavement and sidewalks as specified in Section 02570 - Pavement Repair and Resurfacing.
- E. In unpaved areas, grade surface as a uniform slope to natural grade as indicated on the Drawings. Provide a minimum of 4 inches of topsoil and seed according to requirements of Section 02932 - Hydromulch Seeding.
- F. Form to requirements of Section 01564 - Waste Material Disposal.

END OF SECTION