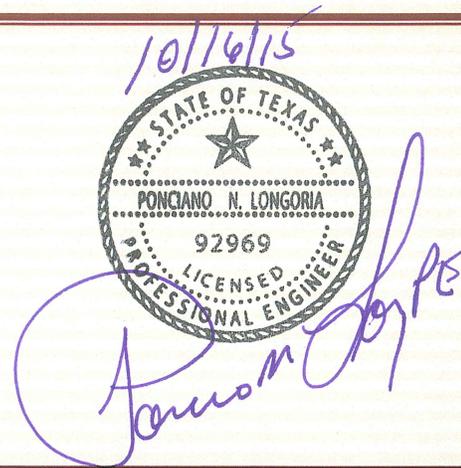


Contract Documents and Specifications

Bid Number 2016-19

**2015-2016 CAPITAL
IMPROVEMENT PROJECTS
SECTION 3 STREET
IMPROVEMENTS**

**Bid Opening: November 2,
2015 @ 3:00PM**



Prepared By:



**2015-2016
City Officials**

Richard H. Garcia, Mayor
Homer Jasso Jr, Mayor Pro-Tem
J.R. Betancourt., Councilmember
Richard Molina., Councilmember
David Torres, Councilmember
Ramiro Garza Jr., City Manager

415 W. University Dr. • P.O. Box 1079 • Edinburg, Texas 78540

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SECTION A

NOTICE TO BIDDERS



NOTICE TO BIDDERS

The City of Edinburg is soliciting sealed bids to be received by the City Secretary's Office located at 415 W. University Drive, Edinburg, Texas 78541. City of Edinburg normal business days are Monday through Friday between the hours of 8:00 a.m. to 5:00 p.m. and shall be closed on recognized holidays.

Bids will be received until **3:00 p.m. Central Time**, on **Monday, November 2, 2015**, shortly thereafter all submitted bids will be gathered and taken to the Edinburg City Hall Community Room, 1st Floor, to be publicly opened and read aloud. Any bid received after the closing time will not be accepted and will be returned to the bidder unopened. It is the responsibility of the bidder to see that any bid submitted shall have sufficient time to be received by the City Secretary's Office prior to the bid opening date and time. The receiving time in the City Secretary's Office will be the governing time for acceptability of the bids. Bids will not be accepted by telephone or facsimile machine. All bids must bear original signatures and figures. The Bid shall be for:

BID NO. 2016-19

2015-2016 CAPITAL IMPROVEMENT PROJECT SECTION 3 STREET IMPROVEMENTS

Bidders receiving a "NOTICE TO BIDDERS" and/or "REQUEST FOR PROPOSALS" notice in the mail or reading same in the newspaper are advised that the bidding documents may be downloaded from the City of Edinburg web page address: www.cityofedinburg.com, or may obtain copies of same by contacting the office of:

LORENA FUENTES, PURCHASING AGENT, LOCATED AT 415 W. UNIVERSITY DRIVE, Edinburg, TX 78541 by calling (956) 388-8972 or by e-mailing your request to the following e-mail address: lfuentes@cityofedinburg.com

If Hand-delivering Bids: 415 West University Drive,
c/o City Secretary Department (1st Floor)

If using Land Courier (i.e., FedEx, UPS): City of Edinburg
c/o City Secretary
415 West University Drive
Edinburg, Texas 78541

If Mailing Bids: City of Edinburg
c/o City Secretary
P.O. Box 1079
Edinburg, TX 78540-1079

The City of Edinburg reserves the right to refuse and reject any or all bids and to waive any or all formalities or technicalities and to accept the bid deemed most advantageous to the City, and hold the bids for a period of **60** days without taking action.

Bids must be submitted in an envelope sealed with tape and prominently marked on the lower left hand corner of the bid envelope with corresponding bid number and title.

CITY OF EDINBURG INSTRUCTIONS TO BIDDERS

DEVIATION FROM SPECIFICATION

Please read your specifications/requirements thoroughly and be sure that the SERVICES offered comply with all specifications/requirements. Any variation from the specifications/requirements must be clearly indicated by letter attached to your bid referencing variations on a point-by-point basis. If no exceptions are noted, and you are the successful bidder, it will be required that the SERVICES be provided as specified.

PURPOSE

1. The purpose of these specifications/requirements and bidding documents is for the 2015-2016 Capital Improvement Project Section 3 Street Improvements for the City of Edinburg.

2. The SERVICES to be furnished under this bid shall be as specified in these bid documents. All specifications/requirements shown are minimum. There is no intention to disqualify any bidder who can meet these specifications/requirements.

SUBMITTAL OF BID

Bids will be submitted in sealed envelopes upon the blank bid form attached hereto. Each bid must be completely filled out and SUBMITTED IN ORIGINAL FORM, complete with all supporting documentation. Bids submitted by facsimile (fax) or electronically will **NOT** be accepted. Submittal of a bid in response to this solicitation for Bids constitutes an offer by the Bidder. Bids which do not comply with these specifications/requirements may be rejected at the option of the City. Bids must be filed with the City of Edinburg, before opening day and hour. No late Bids will be accepted. They will be returned to Bidder unopened (if properly identified).

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If Mailing Bids: P.O. Box 1079, Edinburg, TX 78540-1079

A pre-bid conference will be held at 2:00 p.m., Monday, October 26, 2015 at the City of Edinburg Dustin Michael Sekula Memorial Library 1st Floor, located at 1906 S Closner Blvd., Edinburg, Texas. All prospective bidders are encouraged to attend. If you have any questions or require additional information regarding this bid, please contact, Mr. Ponciano Longoria, P.E., CFM at (956) 388-8210. Plans and Specifications will be available for pick up on CD or view on Friday, October 16, 2015 after 1:00 PM at the Edinburg City Hall, Department of Public Works 415 W. University Dr., Edinburg, Texas 78541 or available online on the City's website www.cityofedinburg.com.

PREPARATION OF BID

Bids **MUST** give full firm name and address of bidder, and be manually signed. Failure to do so will disqualify your bid. Person signing bid must show title or AUTHORITY TO BIND HIS/HER FIRM IN A CONTRACT.

Firm name and authorized signature must appear on each page that calls for this information. The legal status of the Respondent/Bidder whether corporation, partnership, or individual, shall also be stated in the bid. A corporation shall execute the bid by its duly authorized officers in accordance with its corporate by-laws and shall also list the state in which it is incorporated. A partnership Respondent/Bidder shall give full names and addresses of all partners. All partners shall execute the bid. Partnership and Individual Respondent/Bidder shall state in the bid the names and addresses of all persons with a vested interest therein. The place of residence of each Respondent/Bidder, or the office

INSTRUCTIONS TO BIDDERS (Continued):

address in the case of a firm or company, with county and state and telephone number, shall be given after the signature.

ALTERATIONS/AMENDMENTS TO BID

Bids **CANNOT** be altered or amended after opening time. Alterations made before opening time must be initialed by bidder guaranteeing authenticity. No bid may be withdrawn after opening time without acceptable reason in writing and only after approval by the City of Edinburg.

SALES TAX

State sales tax must not be included in the bid.

SUBSTITUTIONS

No substitutions or cancellations will be permitted without written approval of City of Edinburg.

NO BID RESPONSE

If unable to submit a bid, bidder should return inquiry giving reasons.

EXCEPTIONS

Any additions, deletions, or variations from the following specifications/requirements must be noted. The bidder shall attach to his/her bid sheet a list of any exceptions to the specifications/requirements if unable to do so, on specification sheet.

BRAND OR MANUFACTURER REFERENCE

Unless otherwise specified, any catalog or manufacturer's reference or brand name used in describing an item is merely descriptive, and not restrictive, and is used only to indicate type and style of product desired. Bids on alternate brands will be considered if they meet specification requirements. If a bidder quotes on equipment other than the one(s) specified in the bid, sufficient specifications and descriptive (pictured literature) data must accompany same to permit thorough evaluation. In the absence of these qualifications, he/she will be expected to furnish the product called for.

DELIVERY

Number of days required to deliver SERVICES after receiving order must be stated in the bid. Failure to so state will obligate bidder to complete service delivery within ONE day. Delivery time may be considered as basis of award.

DELAY IN SERVICE DELIVERY

When delay can be foreseen, Bidder shall give prior notice to City of Edinburg. Bidder must keep City of Edinburg advised at all times of status of order. Default in promised service delivery (without acceptable reasons) or failure to meet specifications/requirements, authorizes the City of Edinburg to purchase such SERVICES elsewhere and charge increase in cost to defaulting vendor. Acceptable reasons for delayed delivery are as follows: Acts of God (floods, tornadoes, hurricanes, etc.), acts of government, fire, strikes, war; Actions beyond the control of the successful bidder.

SERVICE DELIVERED PRICING

Bids in units of quantity specified - extend and show total. In the event of discrepancies in extension, unit prices will govern. Bids subject to unlimited price increase will not be considered.

VALID BID TIME FRAME

The City may hold bids 60 days after bid opening without taking action. BIDDERS shall be required to hold their Bids firm for the same period of time.

INSTRUCTIONS TO BIDDERS (Continued):

RIGHT TO REJECT/AWARD

The City of Edinburg reserves the right to refuse and reject any or all Bids, and to waive any or all formalities or technicalities, and to make such awards of contract as may be deemed to be the best and most advantageous to the City of Edinburg.

MULTIPLE VENDOR CONTRACTS

Bidders are advised that the City of Edinburg may award Contracts to multiple vendors based on low bid per item basis. All items specified on the "Bid Form" **must** reflect the individual unit prices. The City of Edinburg reserves the right to award all items individually or in any combination thereof.

INDEMNIFICATION CLAUSE

The Bidder agrees to indemnify and save harmless the City, from all suits and actions of every nature and description brought against them or any of them, for or on account of the use of patented appliances, products or processes, and he shall pay all royalties and charges which are legal and equitable. Evidence of such payment or satisfaction shall be submitted upon request of the Purchasing Agent, as a necessary requirement in connection with the final estimate for payment in which such patented appliance, products or processes are used.

ADDENDA

Bidder shall carefully examine the bid forms, specifications/requirements, and instructions to Bidders. Should the bidder find discrepancies in, or omissions from bid forms, specifications/requirements, or other documents, or should he/she be in doubt as to their meaning, he/she should at once notify the Purchasing Agent (Edinburg City Hall, 956-388-8972) and obtain clarification by addendum prior to submitting any bid. Explanations, interpretations, and supplemental instructions shall be in the form of written Addenda which shall become a part of the Contract documents. Said Addenda shall be mailed, e-mailed, hand delivered and/or faxed, to all prospective Bidders. All Addenda issued in respect to this project shall be considered official changes to the original bid documents. Verbal statements in response to inquiries and/or requests for explanations shall not be authoritative or binding. It shall be the Bidder(s) responsibility to ensure that they have received all Addenda in respect to this project. Furthermore, Bidders are advised that they must recognize, comply with, and attach a signed copy of each Addendum which shall be made part of their Bid Submittal. Bidder(s) signature on Addenda shall be interpreted as the bidder's "recognition and compliance to" official changes as outlined by the City of Edinburg and as such are made part of the original solicitation documents. Failure of any bidder to receive any such addendum or interpretation shall not relieve such Bidder from its terms and requirements. Addendums are available online at www.cityofedinburg.com.

PAYMENT

The City of Edinburg will execute payment by mail in accordance with the State of Texas Pay Law after SERVICES have been provided and invoiced. No other method of payment will be considered.

SYNONYM

Where in this bid package ITEMS OR SERVICES is used its meaning shall refer to the 2015-2016 Capital Improvement Project Section 3 Street Improvements as specified.

ASSIGNMENT

Neither the Bidder's contract nor payment due to an awarded vendor may be assigned to a third party without the written approval of the Purchasing Department for the City of Edinburg.

INSTRUCTIONS TO BIDDERS (Continued):

INTERPRETATIONS

Any questions concerning the conditions and/or specifications/requirements with regards to this solicitation for Bids shall be directed to the designated individuals as outlined in the Request for Bids. Such interpretations, which may affect the eventual outcome of this request for Bids, shall be furnished in writing to all prospective Bidders via Addendum. No interpretation shall be considered binding unless provided in writing by the City of Edinburg in accordance with paragraph entitled "Addenda".

STATUTORY REQUIREMENTS

It shall be the responsibility of the successful Bidder to comply with all applicable State & Federal laws, Executive Orders and Municipal Ordinances, and the Rules and Regulations of all authorities having jurisdiction over the work to be performed hereunder and such shall apply to the contract throughout, and that they will be deemed to be included in the contract as though written out in full in the contract documents. (To include issues related to health, environmental, and safety to name a few.)

BIDDER'S EMPLOYEES

Neither the Bidder nor his/her employees engaged in fulfilling the terms and conditions of this Purchase Contract shall be considered employees of the City. The method and manner of performance of such undertakings shall be under the exclusive control of the vendor on contract. The City shall have the right of inspection of said undertakings at any time.

RIGHT TO WAIVE

City of Edinburg reserves the right to waive or take exception to any part of these specifications/requirements when in the best interest of the City of Edinburg.

COOPERATIVE PRICING

Bidders are advised that in addition to responding to our "local" solicitation for bids/Bids with Dealer pricing, vendors/contractors are encouraged to provide pricing on the below referenced items/products/services based on BuyBoard, TX-MAS, H-GAC and/or any other State of Texas recognized and approved cooperative which has complied with the bidding requirements for the State of Texas. If bidding other than or in addition to "dealer" pricing, kindly duplicate the bid forms for each bid being provided from a cooperative contract. Any and all applicable fees must be included. All cooperative pricing must be submitted on or before bid opening date and hour.

TIME ALLOWED FOR ACTION TAKEN

The City of Edinburg may hold bids 60 days after the opening of Bids without taking action. Bidders are required to hold their Bids firm for same period of time.

PREPARATION OF BID

The City of Edinburg shall not be held liable for any costs incurred by any bidder for work performed in the preparation of and production of a bid or for any work performed prior to execution of contract.

CONFIDENTIAL INFORMATION

Any information deemed to be confidential by the bidder should be clearly noted on the pages where confidential information is contained; however, the City cannot guarantee that it will not be compelled to disclose all or part of any public record under Texas Public Information Act, since information deemed to be confidential by the bidder may not be considered confidential under Texas Law, or pursuant to a Court order.

INSTRUCTIONS TO BIDDERS (Continued):

VERBAL THREATS

Any threats made to any employee of the City, be it verbal or written, to discontinue the providing of item/material/services for whatever reason and/or reasons shall be considered a breach of contract and the City will immediately sever the contract with the Vendor on contract.

MATHEMATICAL ERRORS

In the event that mathematical errors exist in any bid, unit prices/rates -v- totals, unit prices/rates will govern.

AUDIT

The City of Edinburg reserves the right to audit the vendor's books and records relating to the performance of this contract. The City of Edinburg, at its own expense, shall have the right at all reasonable times during normal business hours and upon at least twenty-four (24) hours' advance notice, to audit, to examine, and to make copies of or extracts from the books of account and records maintained by the vendor(s) with respect to the Supply/Service and/or Purchase Contract. If such audit shall disclose overpayment by City to vendor, written notice of such overpayment shall be provided to the vendor and the amount of overpayment shall be promptly reimbursed by vendor to the City. In the event any such overpayment is not paid within ten (10) business days after receipt of such notice, the unpaid amount of such overpayment shall bear interest at the rate of one percent (1%) per month from the date of such notice until paid.

PAST PERFORMANCE

Vendor's past performance shall be taken into consideration in the evaluation and award of Service Contract for the Purchase of SERVICES.

JURISDICTION

Contract(s) executed as part of this solicitation shall be subject to and governed under the laws of the State of Texas. Any and all obligations and payments are due and performable and payable in Hidalgo County, Texas.

VENUE

The parties agree that venue for purposes of any and all lawsuits, cause of action, arbitration, and/or any other dispute(s) shall be in Hidalgo County, Texas.

CONFLICT OF INTEREST

CHAPTER 176 OF THE TEXAS LOCAL GOVERNMENT CODE

Effective January 1, 2006, Chapter 176 of the Texas Local Government Code requires that any vendor or person considering doing business with a local government entity disclose in the Questionnaire Form CIQ, the vendor or person's affiliation or business relationship that might cause a conflict of interest with a local government entity. By law, this questionnaire must be filed with the records administrator of the City of Edinburg not later than the 7th business day after the date the person becomes aware of facts that require the statement be filed. See Section 176.006, Local Government Code. A person commits an offense if the person violates Section 176.006, Local Government Code. An offense under this section is a Class C misdemeanor. For more information or to obtain Questionnaire CIQ go to the Texas Ethics Commission web page at www.ethics.state.tx.us/forms/CIQ.pdf.

IF YOU HAVE ANY QUESTIONS ABOUT COMPLIANCE, PLEASE CONSULT YOUR OWN LEGAL COUNSEL. COMPLIANCE IS THE INDIVIDUAL RESPONSIBILITY OF EACH PERSON OR AGENT OF A PERSON WHO IS SUBJECT TO THE FILING REQUIREMENT. AN OFFENSE UNDER CHAPTER 176 IS A CLASS "C" MISDEMEANOR.

INSTRUCTIONS TO BIDDERS (Continued):

AWARD

For purposes of this project, award will be contingent on approval of budget.

SPECIAL CIRCUMSTANCES

In the event that the City of Edinburg has an immediate need for a particular service(s) that is/are on contract and the successful vendor on contract is not able to meet the special service delivery needs of the City of Edinburg, the City of Edinburg reserves the right to purchase such services elsewhere to fulfill its' immediate need.

TERMINATION OF CONTRACT

The City of Edinburg reserves the right to terminate the contract if, in the opinion of the City of Edinburg, the successful vendor's performance is not acceptable, if the City is being repeatedly over charged, improperly charged, no funds are available, or if the City wishes, without cause, to discontinue this contract. Termination will be in written form allowing a 30-day notice. The bidder shall be afforded the same right to terminate this contract in the same manner.

INSURANCE REQUIREMENTS: Staff may waive insurance requirements for contracts \$0 - \$4,999.99, including but not limited to contracts for food, materials, supplies, and construction. Workers' Compensation in amounts which satisfy statutory coverage shall be required for construction projects.

The following insurance requirements will be included in all City contracts of \$5,000 - \$14,999.99. In contracts not involving building and construction projects, as that activity is defined in TEX. LABOR CODE §406.096, contractors may obtain alternative form of worker accident insurance with minimum limits of liability of \$100,000 per claim.

Minimum Insurance Requirements	
Type of Coverage	Limits of Liability
Worker's Compensation	Statutory Coverage
Comprehensive General Liability (City named as additional insured) Bodily Injury	\$250,000 each person/\$500,000 each occurrence
Property Damage	\$100,000 each occurrence/\$100,000 aggregate or \$500,000 combined single limits

The following insurance requirements will be included in all City contracts of \$15,000 or more.

(1) The successful bidder will be required to carry the following insurance coverage and limits of coverage, as well as list the City as an additional insured to liability coverage as requested by the City. In addition, the successful bidder shall provide the City with evidence of coverage and furnish acceptable proof of payment of insurance premiums.

(2) The successful bidder will be required to secure and/or have insurance coverage in force with an admitted property and casualty insurance company licensed by the State of Texas to conduct business in the State of Texas.

INSTRUCTIONS TO BIDDERS (Continued):

(3) In contracts not involving building and construction projects, as that activity is defined in TEX. LABOR CODE §406.096, contractors may obtain alternative form of worker accident insurance with minimum limits of liability of \$100,000 per claim.

Minimum Insurance Requirements	
Type of Coverage	Limits of Liability
Worker's Compensation	Statutory Coverage
Employer's Liability	Bodily Injury by Accident: \$100,000 each accident Bodily Injury by Disease: \$100,000 each employee/\$500,000 policy limit
Comprehensive General Liability Bodily Injury	\$250,000 each person/\$500,000 each occurrence
Property Damage	\$100,000 each occurrence/\$100,000 aggregate or \$500,000 combined single limits
Comprehensive Auto Liability Bodily Injury	\$100,000 each person/\$500,000 each occurrence
Property Damage	\$100,000 each occurrence/\$100,000 aggregate or \$500,000 combined single limits
City's Protective Liability Bodily Injury	\$250,000 each person/\$500,000 each occurrence
Property Damage	\$100,000 each occurrence/\$100,000 aggregate or \$500,000 combined single limits

Policies must name the City of Edinburg as an Additional Insured.

Certificates of insurance naming the CITY as an additional insured shall be submitted to the CITY for approval prior to any services being performed by Contractor. Each policy of insurance required hereunder shall extend for a period equivalent to, or longer than the term of the Contract, and any insurer hereunder shall be required to give at least thirty (30) days written notice to the CITY prior to the cancellation of any such coverage on the termination date, or otherwise. This Contract shall be automatically suspended upon the cancellation, or other termination, of any required policy of insurance hereunder, and such suspension shall continue until evidence that adequate replacement coverage is provided to the CITY. If replacement coverage is not provided within thirty (30) days following suspension of the Contract, the Contract shall automatically terminate.

BID BOND REQUIREMENTS

If the contract amount is over twenty-five-thousand dollars (\$25,000) for construction of the project, the successful bidder shall provide a bid guarantee, give a good and sufficient bond in the full amount of the contract price for the faithful performance of such contract, executed by a surety company authorized to do business in the State of Texas, in accordance with Article 5160, Vernon's Texas Civil Statutes, and amendments thereto. A payment bond in the full

INSTRUCTIONS TO BIDDERS (Continued):

amount of the contract price to assure payment shall be required by law of all persons supplying labor and material in the execution of the project provided for in the contract documents.

A bid guarantee equivalent to **five percent (5%)** of the bid price will be required from each bidder. The "bid guarantee" shall consist of a firm commitment, such as a bid bond, certified check or other negotiable instrument accompanying a bid as assurance that the bidder will upon acceptance of his/her bid, execute such contractual documents as may be required within the time specified.

A performance bond on the part of the contractor for one-hundred percent (100%) of the contract price will be required. A "performance bond" is one executed in connection with a contract to secure fulfillment of all the contractor's obligations under such contract.

A payment bond on the part of the contractor for one-hundred percent (100%) of the contract price will be required. A "payment bond" is one executed in connection with a contract to assure payment, as required by law, of all persons supplying labor and material in execution of the work provided for in the contract documents.

Bidders are expressly advised to review the contract documents fully and insurance requirements of the proposed contract as to their legal requirements and the causes which may lead to the disqualification of a bidder and/or rejection of a bid proposal. No bid may be withdrawn within a period of sixty (60) days after the date fixed for opening the bids. Unless all bids are rejected, the Owner will give Notice of Award of Contract to the successful bidder as soon as possible consistent with the time for a thorough analysis of bids submitted. Bidders are expected to inspect the site of work and to inform themselves regarding all local conditions which may affect their bid.

A bid guarantee, performance and payment bond will not be required for contracts zero to \$25,000. The City will specify in the contract that no money will be paid to the contractor until the project has been completed and final acceptance has been made by the City.

SECTION B

INSTRUCTIONS TO

BIDDERS



INSTRUCTIONS TO BIDDERS

DEVIATION FROM SPECIFICATION

Please read your specifications/requirements thoroughly and be sure that the SERVICES offered comply with all specifications/requirements. Any variation from the specifications/requirements must be clearly indicated by letter attached to your bid referencing variations on a point-by-point basis. If no exceptions are noted, and you are the successful bidder, it will be required that the SERVICES be provided as specified.

PURPOSE

1. The purpose of these specifications/requirements and bidding documents is for the **Bid 2016-19 Capital Improvements Projects Section 3 Street Improvements** for the City of Edinburg.
2. The SERVICES to be furnished under this bid shall be as specified in these bid documents. All specifications/requirements shown are minimum. There is no intention to disqualify any bidder who can meet these specifications/requirements.

SUBMITTAL OF BID

Bids will be submitted in sealed envelopes upon the blank bid form attached hereto. Each bid must be completely filled out and SUBMITTED IN ORIGINAL FORM, complete with all supporting documentation. Bids submitted by facsimile (fax) or electronically will **NOT** be accepted. Submittal of a bid in response to this solicitation for Bids constitutes an offer by the Bidder. Bids which do not comply with these specifications/requirements may be rejected at the option of the City. Bids must be filed with the City of Edinburg, before opening day and hour. No late Bids will be accepted. They will be returned to Bidder unopened (if properly identified).

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PREPARATION OF BID

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Firm name and authorized signature must appear on each page that calls for this information. The legal status of the Respondent/Bidder whether corporation, partnership, or individual, shall also be stated in the bid. A corporation shall execute the bid by its duly authorized officers in accordance with its corporate by-laws and shall also list the state in which it is incorporated. A partnership Respondent/Bidder shall give full names and addresses of all partners. All partners shall execute the bid. Partnership and Individual Respondent/Bidder shall state in the bid the names and addresses of all persons with a vested interest therein. The place of residence of each Respondent/Bidder, or the office address in the case of a firm or company, with county and state and telephone number, shall be given after the signature.

ALTERATIONS/AMENDMENTS TO BID

Bids **CANNOT** be altered or amended after opening time. Alterations made before opening time must be initialed by bidder guaranteeing authenticity. No bid may be withdrawn after opening time without acceptable reason in writing and only after approval by the City of Edinburg.

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State sales tax must not be included in the bid.

SUBSTITUTIONS

No substitutions or cancellations will be permitted without written approval of City of Edinburg.

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If unable to submit a bid, bidder should return inquiry giving reasons.

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DELIVERY

Number of days required to deliver SERVICES after receiving order must be stated in the bid. Failure to so state will obligate bidder to complete service delivery within ONE day. Delivery time may be considered as basis of award.

DELAY IN SERVICE DELIVERY

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VALID BID TIME FRAME

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RIGHT TO REJECT/AWARD

The City of Edinburg reserves the right to refuse and reject any or all Bids, and to waive any or all formalities or technicalities, and to make such awards of contract as may be deemed to be the best and most advantageous to the City of Edinburg.

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INDEMNIFICATION CLAUSE

The Bidder agrees to indemnify and save harmless the City, from all suits and actions of every nature and description brought against them or any of them, for or on account of the use of patented appliances, products or processes, and he shall pay all royalties and charges which are legal and equitable. Evidence of such payment or satisfaction shall be submitted upon request of the Purchasing Agent, as a necessary requirement in connection with the final estimate for payment in which such patented appliance, products or processes are used.

ADDENDA

Bidder shall carefully examine the bid forms, specifications/requirements, and instructions to Bidders. Should the bidder find discrepancies in, or omissions from bid forms, specifications/requirements, or other documents, or should he/she be in doubt as to their meaning, he/she should at once notify the Purchasing Agent (Edinburg City Hall, 956-388-8972) and obtain clarification by addendum prior to submitting any bid. Explanations, interpretations, and supplemental instructions shall be in the form of written Addenda which shall become a part of the Contract documents. Said Addenda shall be mailed, e-mailed, hand delivered and/or faxed, to all prospective Bidders. All Addenda issued in respect to this project shall be considered official changes to the original bid documents. Verbal statements in response to inquiries and/or requests for explanations shall not be authoritative or binding. It shall be the Bidder(s) responsibility to ensure that they have received all Addenda in respect to this project. Furthermore, Bidders are advised that they must recognize, comply with, and attach a signed copy of each Addendum which shall be made part of their Bid Submittal. Bidder(s) signature on Addenda shall be interpreted as the bidder's "recognition and compliance to" official changes as outlined by the City of Edinburg and as such are made part of the original solicitation documents. Failure of any bidder to receive any such addendum or interpretation shall not relieve such Bidder from its terms and requirements. Addendums are available online at www.cityofedinburg.com.

PAYMENT

The City of Edinburg will execute payment by mail in accordance with the State of Texas Pay Law after SERVICES have been provided and invoiced. No other method of payment will be considered.

SYNONYM

Where in this bid package ITEMS OR SERVICES is used its meaning shall refer to the **Bid 2016-19 Capital Improvements Projects Section 3 Street Improvements** as specified.

ASSIGNMENT

Neither the Bidder's contract nor payment due to an awarded vendor may be assigned to a third party without the written approval of the Purchasing Department for the City of Edinburg.

INTERPRETATIONS

Any questions concerning the conditions and/or specifications/requirements with regards to this solicitation for Bids shall be directed to the designated individuals as outlined in the Request for Bids. Such interpretations, which may affect the eventual outcome of this request for Bids, shall be furnished in writing to all prospective Bidders via Addendum. No interpretation shall be considered binding unless provided in writing by the City of Edinburg in accordance with paragraph entitled "Addenda".

STATUTORY REQUIREMENTS

It shall be the responsibility of the successful Bidder to comply with all applicable State & Federal laws, Executive Orders and Municipal Ordinances, and the Rules and Regulations of all authorities having jurisdiction over the work to be performed hereunder and such shall apply to the contract throughout, and that they will be deemed to be included in

the contract as though written out in full in the contract documents. (To include issues related to health, environmental, and safety to name a few.)

BIDDER'S EMPLOYEES

Neither the Bidder nor his/her employees engaged in fulfilling the terms and conditions of this Purchase Contract shall be considered employees of the City. The method and manner of performance of such undertakings shall be under the exclusive control of the vendor on contract. The City shall have the right of inspection of said undertakings at any time.

RIGHT TO WAIVE

City of Edinburg reserves the right to waive or take exception to any part of these specifications/requirements when in the best interest of the City of Edinburg.

COOPERATIVE PRICING

Bidders are advised that in addition to responding to our "local" solicitation for bids/Bids with Dealer pricing, vendors/contractors are encouraged to provide pricing on the below referenced items/products/services based on BuyBoard, TX-MAS, H-GAC and/or any other State of Texas recognized and approved cooperative which has complied with the bidding requirements for the State of Texas. If bidding other than or in addition to "dealer" pricing, kindly duplicate the bid forms for each bid being provided from a cooperative contract. Any and all applicable fees must be included. All cooperative pricing must be submitted on or before bid opening date and hour.

TIME ALLOWED FOR ACTION TAKEN

The City of Edinburg may hold bids 60 days after the opening of Bids without taking action. Bidders are required to hold their Bids firm for same period of time.

PREPARATION OF BID

The City of Edinburg shall not be held liable for any costs incurred by any bidder for work performed in the preparation of and production of a bid or for any work performed prior to execution of contract.

CONFIDENTIAL INFORMATION

Any information deemed to be confidential by the bidder should be clearly noted on the pages where confidential information is contained; however, the City cannot guarantee that it will not be compelled to disclose all or part of any public record under Texas Public Information Act, since information deemed to be confidential by the bidder may not be considered confidential under Texas Law, or pursuant to a Court order.

VERBAL THREATS

Any threats made to any employee of the City, be it verbal or written, to discontinue the providing of item/material/services for whatever reason and/or reasons shall be considered a breach of contract and the City will immediately sever the contract with the Vendor on contract.

MATHEMATICAL ERRORS

In the event that mathematical errors exist in any bid, unit prices/rates -v- totals, unit prices/rates will govern.

AUDIT

The City of Edinburg reserves the right to audit the vendor's books and records relating to the performance of this contract. The City of Edinburg, at its own expense, shall have the right at all reasonable times during normal business hours and upon at least twenty-four (24) hours' advance notice, to audit, to examine, and to make copies of or extracts from the books of account and records maintained by the vendor(s) with respect to the Supply/Service and/or Purchase Contract. If such audit shall disclose overpayment by City to vendor, written notice of such overpayment shall be provided to the vendor and the amount of overpayment shall be promptly reimbursed by vendor to the City. In the event any such overpayment is not paid within ten (10) business days after receipt of such notice, the unpaid amount of such

overpayment shall bear interest at the rate of one percent (1%) per month from the date of such notice until paid.

PAST PERFORMANCE

Vendor's past performance shall be taken into consideration in the evaluation and award of Service Contract for the Purchase of SERVICES.

JURISDICTION

Contract(s) executed as part of this solicitation shall be subject to and governed under the laws of the State of Texas. Any and all obligations and payments are due and performable and payable in Hidalgo County, Texas.

VENUE

The parties agree that venue for purposes of any and all lawsuits, cause of action, arbitration, and/or any other dispute(s) shall be in Hidalgo County, Texas.

CONFLICT OF INTEREST

CHAPTER 176 OF THE TEXAS LOCAL GOVERNMENT CODE

Effective January 1, 2006, Chapter 176 of the Texas Local Government Code requires that any vendor or person considering doing business with a local government entity disclose in the Questionnaire Form CIQ, the vendor or person's affiliation or business relationship that might cause a conflict of interest with a local government entity. By law, this questionnaire must be filed with the records administrator of the City of Edinburg not later than the 7th business day after the date the person becomes aware of facts that require the statement be filed. See Section 176.006, Local Government Code. A person commits an offense if the person violates Section 176.006, Local Government Code. An offense under this section is a Class C misdemeanor. For more information or to obtain Questionnaire CIQ go to the Texas Ethics Commission web page at www.ethics.state.tx.us/forms/CIQ.pdf.

IF YOU HAVE ANY QUESTIONS ABOUT COMPLIANCE, PLEASE CONSULT YOUR OWN LEGAL COUNSEL. COMPLIANCE IS THE INDIVIDUAL RESPONSIBILITY OF EACH PERSON OR AGENT OF A PERSON WHO IS SUBJECT TO THE FILING REQUIREMENT. AN OFFENSE UNDER CHAPTER 176 IS A CLASS "C" MISDEMEANOR.

AWARD

For purposes of this project, award will be contingent on approval of budget.

SPECIAL CIRCUMSTANCES

In the event that the City of Edinburg has an immediate need for a particular service(s) that is/are on contract and the successful vendor on contract is not able to meet the special service delivery needs of the City of Edinburg, the City of Edinburg reserves the right to purchase such services elsewhere to fulfill its' immediate need.

TERMINATION OF CONTRACT

The City of Edinburg reserves the right to terminate the contract if, in the opinion of the City of Edinburg, the successful vendor's performance is not acceptable, if the City is being repeatedly over charged, improperly charged, no funds are available, or if the City wishes, without cause, to discontinue this contract. Termination will be in written form allowing a 30-day notice. The bidder shall be afforded the same right to terminate this contract in the same manner.

INSURANCE REQUIREMENTS: Staff may waive insurance requirements for contracts \$0 - \$4,999.99, including but not limited to contracts for food, materials, supplies, and construction. Workers' Compensation in amounts which satisfy statutory coverage shall be required for construction projects.

The following insurance requirements will be included in all City contracts of \$5,000 - \$14,999.99. In contracts not involving building and construction projects, as that activity is defined in TEX. LABOR CODE §406.096, contractors may obtain alternative form of worker accident insurance with minimum limits of liability of \$100,000 per claim.

Minimum Insurance Requirements	
Type of Coverage	Limits of Liability
Worker's Compensation	Statutory Coverage
Comprehensive General Liability (City named as additional insured) Bodily Injury	\$250,000 each person/\$500,000 each occurrence
Property Damage	\$100,000 each occurrence/\$100,000 aggregate or \$500,000 combined single limits

The following insurance requirements will be included in all City contracts of \$15,000 or more.

- (1) The successful bidder will be required to carry the following insurance coverage and limits of coverage, as well as list the City as an additional insured to liability coverage as requested by the City. In addition, the successful bidder shall provide the City with evidence of coverage and furnish acceptable proof of payment of insurance premiums.
- (2) The successful bidder will be required to secure and/or have insurance coverage in force with an admitted property and casualty insurance company licensed by the State of Texas to conduct business in the State of Texas.
- (3) In contracts not involving building and construction projects, as that activity is defined in TEX. LABOR CODE §406.096, contractors may obtain alternative form of worker accident insurance with minimum limits of liability of \$100,000 per claim.

Minimum Insurance Requirements	
Type of Coverage	Limits of Liability
Worker's Compensation	Statutory Coverage
Employer's Liability	Bodily Injury by Accident: \$100,000 each accident Bodily Injury by Disease: \$100,000 each employee/\$500,000 policy limit
Comprehensive General Liability Bodily Injury	\$250,000 each person/\$500,000 each occurrence

Property Damage	\$100,000 each occurrence/\$100,000 aggregate or \$500,000 combined single limits
Comprehensive Auto Liability Bodily Injury	\$100,000 each person/\$500,000 each occurrence
Property Damage	\$100,000 each occurrence/\$100,000 aggregate or \$500,000 combined single limits
City's Protective Liability Bodily Injury	\$250,000 each person/\$500,000 each occurrence
Property Damage	\$100,000 each occurrence/\$100,000 aggregate or \$500,000 combined single limits

Policies must name the City of Edinburg as an Additional Insured.

Certificates of insurance naming the CITY as an additional insured shall be submitted to the CITY for approval prior to any services being performed by Contractor. Each policy of insurance required hereunder shall extend for a period equivalent to, or longer than the term of the Contract, and any insurer hereunder shall be required to give at least thirty (30) days written notice to the CITY prior to the cancellation of any such coverage on the termination date, or otherwise.

This Contract shall be automatically suspended upon the cancellation, or other termination, of any required policy of insurance hereunder, and such suspension shall continue until evidence that adequate replacement coverage is provided to the CITY. If replacement coverage is not provided within thirty (30) days following suspension of the Contract, the Contract shall automatically terminate.

BID BOND REQUIREMENTS

If the contract amount is over twenty-five-thousand dollars (\$25,000) for construction of the project, the successful bidder shall provide a bid guarantee, give a good and sufficient bond in the full amount of the contract price for the faithful performance of such contract, executed by a surety company authorized to do business in the State of Texas, in accordance with Article 5160, Vernon's Texas Civil Statutes, and amendments thereto. A payment bond in the full amount of the contract price to assure payment shall be required by law of all persons supplying labor and material in the execution of the project provided for in the contract documents.

A bid guarantee equivalent to five percent (5%) of the bid price will be required from each bidder. The "bid guarantee" shall consist of a firm commitment, such as a bid bond, certified check or other negotiable instrument accompanying a bid as assurance that the bidder will upon acceptance of his/her bid, execute such contractual documents as may be required within the time specified.

A performance bond on the part of the contractor for one-hundred percent (100%) of the contract price will be required. A "performance bond" is one executed in connection with a contract to secure fulfillment of all the contractor's obligations under such contract.

A payment bond on the part of the contractor for one-hundred percent (100%) of the contract price will be required. A "payment bond" is one executed in connection with a contract to assure payment, as required by law, of all persons supplying labor and material in execution of the work provided for in the contract documents.

Bidders are expressly advised to review the contract documents fully and insurance requirements of the proposed contract as to their legal requirements and the causes which may lead to the disqualification of a bidder and/or rejection of a bid proposal. No bid may be withdrawn within a period of sixty (60) days after the dated fixed for opening the bids. Unless all bids are rejected, the Owner will give Notice of Award of Contract to the successful bidder as soon as

possible consistent with the time for a thorough analysis of bids submitted. Bidders are expected to inspect the site of work and to inform themselves regarding all local conditions which may affect their bid.

A bid guarantee, performance and payment bond will not be required for contracts zero to \$25,000. The City will specify in the contract that no money will be paid to the contractor until the project has been completed and final acceptance has been made by the City.

SECTION C BID PROPOSAL FORM

BID PROPOSAL FORM :

BID PROPOSAL FORM MUST BE SUBMITTED IN DUPLICATE FORM

BIDDERS BOND in the amount of _____, (5%) of the greatest amount bid in compliance with the INSTRUCTION TO BIDDER.

The above Bank Certificate Check or Bidder's Bond is to become the property of the City of Edinburg, Texas, in the event the construction contract (when offered by the Owner) and bonds are not executed within the time set forth.

BASE BID : CAPITAL IMPROVEMENT PROJECT SECTION 3 STREET IMPROVEMENT

ENGINEER ESTIMATE OF QUANTITIES - APPROXIMATE ONLY

VETERANS BLVD - SH 107 TO CANTON						
Item No.	Spec Item	Estimated Quantity	Unit	Item Description	Unit Cost	Total Amount
TRAFFIC CONTROL						
1	502	1	LS	BARRICADES, SIGNS & TRAFFIC HANDLING, All complete in place until the final completion of the project	\$ _____	\$ _____
ROADWAY IMPROVEMENT						
2	533	3,995	TON	HOT MIX ASPHALT Includes installation, tack coat and compaction in place as per specification.	\$ _____	\$ _____
3	760	19,644	LF	6' SHOULDER TEXTURING (MILLED) (ASPHALT) Includes clean, reshape and proper disposal of excavated material as per specification.	\$ _____	\$ _____
PAVEMENT MARKINGS						
4	666	600	LF	REFL PAV MARK TY (Y) 4" (SLD)(100MIL)	\$ _____	\$ _____
5	666	5,557	LF	REFL PAV MARK TY (Y) 4" (BRK)(100MIL)	\$ _____	\$ _____
6	666	7,769	LF	REFL PAV MARK TY (W) 4" (SLD)(100MIL)	\$ _____	\$ _____
7	666	228	LF	REFL PAV MARK TY (W) 24" (SLD)(100MIL)	\$ _____	\$ _____
8	666	3,963	LF	REFL PAV MARK TY (Y) 4" (DBL SLD)(100MIL)	\$ _____	\$ _____
9	666	826	LF	REFL PAV MARK TY (W) 12" (SLD)(100MIL)	\$ _____	\$ _____
10	666	466	LF	REFL PAV MARK TY (W) 8" (SLD)(100MIL)	\$ _____	\$ _____
11	666	15,331	LF	REFL PAV MARK TY (W) 6" (SLD)(100MIL)	\$ _____	\$ _____
12	666	17	EA	REFL PAV MARK TY (W) (ARROW) (100MIL)	\$ _____	\$ _____
13	666	1	EA	REFL PAV MARK TY (W) (WORD) (100MIL)	\$ _____	\$ _____
14	666	20	EA	REFL PAV MARK TY (W) (BIKE/ARROW) (100MIL)	\$ _____	\$ _____
Subtotal					\$ _____	\$ _____

SUGAR RD - CANTON TO TRENTON

Item No.	Spec Item	Estimated Quantity	Unit	Item Description	Unit Cost	Total Amount
TRAFFIC CONTROL						
1	502	1	LS	BARRICADES, SIGNS & TRAFFIC HANDLING, All complete in place until the final completion of the project	\$ _____	\$ _____
ROADWAY IMPROVEMENT						
2	340	2,620	TON	HOT MIX ASPHALT Includes installation, tack coat and compaction in place as per specification.	\$ _____	\$ _____
3	533	10,448	LF	6' SHOULDER TEXTURING (MILLED) (ASPHALT) Includes clean, reshape and proper disposal of excavated material as per specification.	\$ _____	\$ _____
PAVEMENT MARKINGS						
4	666	75	LF	REFL PAV MARK TY (W) 24" (SLD)(100MIL)	\$ _____	\$ _____
5	666	7,555	LF	REFL PAV MARK TY (Y) 4" (DBL SLD)(100MIL)	\$ _____	\$ _____
6	666	110	LF	REFL PAV MARK TY (W) 12" (SLD)(100MIL)	\$ _____	\$ _____
7	666	300	LF	REFL PAV MARK TY (W) 8" (SLD)(100MIL)	\$ _____	\$ _____
8	666	4	EA	REFL PAV MARK TY (W) (ARROW) (100MIL)	\$ _____	\$ _____
					Subtotal	\$ _____

ALBERTA RD - I69C TO SUGAR RD

Item No.	Spec Item	Estimated Quantity	Unit	Item Description	Unit Cost	Total Amount
TRAFFIC CONTROL						
1	502	1	LS	BARRICADES, SIGNS & TRAFFIC HANDLING, All complete in place until the final completion of the project	\$ _____	\$ _____
ROADWAY IMPROVEMENT						
2	340	1,103	TON	HOT MIX ASPHALT Includes installation, tack coat and compaction in place as per specification.	\$ _____	\$ _____
3	760	9,796	LF	CLEANING AND RESHAPING ROADSIDE DITCHES Includes clean, reshape and proper disposal of excavated material as per specification.	\$ _____	\$ _____
PAVEMENT MARKINGS						
5	666	116	LF	REFL PAV MARK TY (W) 24" (SLD)(100MIL)	\$ _____	\$ _____
6	666	2,050	LF	REFL PAV MARK TY (Y) 4" (DBL SLD)(100MIL)	\$ _____	\$ _____
7	666	80	LF	REFL PAV MARK TY (W) 12" (SLD)(100MIL)	\$ _____	\$ _____
8	666	35	LF	REFL PAV MARK TY (W) 8" (SLD)(100MIL)	\$ _____	\$ _____
9	666	2	EA	REFL PAV MARK TY (W) (ARROW) (100MIL)	\$ _____	\$ _____
10	666	2	EA	REFL PAV MARK TY (W) (WORD) (100MIL)	\$ _____	\$ _____
					Subtotal	\$ _____

CANTON RD - CLOSNER BLVD TO I69C

Item No.	Spec Item	Estimated Quantity	Unit	Item Description	Unit Cost	Total Amount
TRAFFIC CONTROL						
1	502	1	LS	BARRICADES, SIGNS & TRAFFIC HANDLING, All complete in place until the final completion of the project	\$ _____	\$ _____
ROADWAY IMPROVEMENT						
2	340	2,701	TON	HOT MIX ASPHALT Includes installation, tack coat and compaction in place as per specification.	\$ _____	\$ _____
3	533	10,716	LF	6' SHOULDER TEXTURING (MILLED) (ASPHALT) Includes clean, reshape and proper disposal of excavated material as per specification.	\$ _____	\$ _____
PAVEMENT MARKINGS						
4	666	2,425	LF	REFL PAV MARK TY (Y) 4" (SLD)(100MIL)	\$ _____	\$ _____
5	666	2,425	LF	REFL PAV MARK TY (Y) 4" (BRK)(100MIL)	\$ _____	\$ _____
6	666	1,265	LF	REFL PAV MARK TY (W) 4" (SLD)(100MIL)	\$ _____	\$ _____
7	666	240	LF	REFL PAV MARK TY (W) 24" (SLD)(100MIL)	\$ _____	\$ _____
8	666	3,983	LF	REFL PAV MARK TY (Y) 4" (DBL SLD)(100MIL)	\$ _____	\$ _____
9	666	90	LF	REFL PAV MARK TY (W) 12" (SLD)(100MIL)	\$ _____	\$ _____
10	666	10,078	LF	REFL PAV MARK TY (W) 4" (BRK)(100MIL)	\$ _____	\$ _____
11	666	195	LF	REFL PAV MARK TY (W) 8" (SLD)(100MIL)	\$ _____	\$ _____
12	666	21	EA	REFL PAV MARK TY (W) (ARROW) (100MIL)	\$ _____	\$ _____
13	666	2	EA	REFL PAV MARK TY (W) (WORD) (100MIL)	\$ _____	\$ _____
14	666	4	EA	REFL PAV MARK TY (W) (DBL ARROW) (100MIL)	\$ _____	\$ _____
Subtotal					\$ _____	\$ _____

TRENTON RD - CLOSNER BLVD TO I69C

Item No.	Spec Item	Estimated Quantity	Unit	Item Description	Unit Cost	Total Amount
TRAFFIC CONTROL						
1	502	1	LS	BARRICADES, SIGNS & TRAFFIC HANDLING, All complete in place until the final completion of the project	\$ _____	\$ _____
ROADWAY IMPROVEMENT						
2	340	1,993	TON	HOT MIX ASPHALT Includes installation, tack coat and compaction in place as per specification.	\$ _____	\$ _____
3	533	5,154	LF	6' SHOULDER TEXTURING (MILLED) (ASPHALT) Includes clean, reshape and proper disposal of excavated material as per specification.	\$ _____	\$ _____
PAVEMENT MARKINGS						
4	666	3,135	LF	REFL PAV MARK TY (Y) 4" (SLD)(100MIL)	\$ _____	\$ _____
5	666	1,606	LF	REFL PAV MARK TY (Y) 4" (BRK)(100MIL)	\$ _____	\$ _____
6	666	3,636	LF	REFL PAV MARK TY (W) 4" (SLD)(100MIL)	\$ _____	\$ _____
7	666	722	LF	REFL PAV MARK TY (W) 24" (SLD)(100MIL)	\$ _____	\$ _____
8	666	325	LF	REFL PAV MARK TY (Y) 4" (DBL SLD)(100MIL)	\$ _____	\$ _____
9	666	940	LF	REFL PAV MARK TY (W) 12" (SLD)(100MIL)	\$ _____	\$ _____
10	666	250	LF	REFL PAV MARK TY (W) 8" (SLD)(100MIL)	\$ _____	\$ _____
10	666	25	EA	REFL PAV MARK TY (W) (ARROW) (100MIL)	\$ _____	\$ _____
11	666	11	EA	REFL PAV MARK TY (W) (WORD) (100MIL)	\$ _____	\$ _____
Subtotal						\$ _____

WISCONSIN RD - I69C TO RAUL LONGORIA

Item No.	Spec Item	Estimated Quantity	Unit	Item Description	Unit Cost	Total Amount
TRAFFIC CONTROL						
1	502	1	LS	BARRICADES, SIGNS & TRAFFIC HANDLING, All complete in place until the final completion of the project	\$ _____	\$ _____
ROADWAY IMPROVEMENT						
2	340	982	TON	HOT MIX ASPHALT Includes installation, tack coat and compaction in place as per specification.	\$ _____	\$ _____
3	760	10,075	LF	CLEANING AND RESHAPING ROADSIDE DITCHES Includes clean, reshape and proper disposal of excavated material as per specification.	\$ _____	\$ _____
PAVEMENT MARKINGS						
4	666	3,015	LF	REFL PAV MARK TY (Y) 4" (BRK)(100MIL)	\$ _____	\$ _____
5	666	113	LF	REFL PAV MARK TY (W) 24" (SLD)(100MIL)	\$ _____	\$ _____
6	666	1,945	LF	REFL PAV MARK TY (Y) 4" (DBL SLD)(100MIL)	\$ _____	\$ _____
7	666	180	LF	REFL PAV MARK TY (W) 12" (SLD)(100MIL)	\$ _____	\$ _____
					Subtotal	\$ _____

WISCONSIN RD - I69C TO WEST CITY LIMITS

Item No.	Spec Item	Estimated Quantity	Unit	Item Description	Unit Cost	Total Amount
TRAFFIC CONTROL						
1	502	1	LS	BARRICADES, SIGNS & TRAFFIC HANDLING, All complete in place until the final completion of the project	\$ _____	\$ _____
ROADWAY IMPROVEMENT						
2	340	3,020	TON	HOT MIX ASPHALT Includes installation, tack coat and compaction in place as per specification.	\$ _____	\$ _____
3	533	800	LF	6' SHOULDER TEXTURING (MILLED) (ASPHALT) Includes clean, reshape and proper disposal of excavated material as per specification.	\$ _____	\$ _____
4	760	29,400	LF	CLEANING AND RESHAPING ROADSIDE DITCHES Includes clean, reshape and proper disposal of excavated material as per specification.	\$ _____	\$ _____
PAVEMENT MARKINGS						
5	666	10,133	LF	REFL PAV MARK TY (Y) 4" (BRK)(100MIL)	\$ _____	\$ _____
6	666	151	LF	REFL PAV MARK TY (W) 24" (SLD)(100MIL)	\$ _____	\$ _____
7	666	4,690	LF	REFL PAV MARK TY (Y) 4" (DBL SLD)(100MIL)	\$ _____	\$ _____
8	666	256	LF	REFL PAV MARK TY (W) 12" (SLD)(100MIL)	\$ _____	\$ _____
Subtotal						\$ _____
BASE BID: SECTION 3 GRAND TOTAL						\$ _____

ALTERNATE 1 TO BASE BID SECTION 3

FREDDY GONZALEZ - CLOSNER BLVD TO VETERANS						
Item No.	Spec Item	Estimated Quantity	Unit	Item Description	Unit Cost	Total Amount
TRAFFIC CONTROL						
1	502	1	LS	BARRICADES, SIGNS & TRAFFIC HANDLING, All complete in place until the final completion of the project	\$ _____	\$ _____
ROADWAY IMPROVEMENT						
2	340	1,375	TON	HOT MIX ASPHALT Includes installation, tack coat and compaction in place as per specification.	\$ _____	\$ _____
3	533	6,064	LF	6' SHOULDER TEXTURING (MILLED) (ASPHALT) Includes clean, reshape and proper disposal of excavated material as per specification.	\$ _____	\$ _____
PAVEMENT MARKINGS						
4	666	130	LF	REFL PAV MARK TY (W) 8" (SLD)(100MIL)	\$ _____	\$ _____
5	666	186	LF	REFL PAV MARK TY (W) 24" (SLD)(100MIL)	\$ _____	\$ _____
6	666	2,250	LF	REFL PAV MARK TY (Y) 4" (DBL SLD)(100MIL)	\$ _____	\$ _____
7	666	3	EA	REFL PAV MARK TY (W) (ARROW) (100MIL)	\$ _____	\$ _____
ALTERNATE 1 TOTAL					\$ _____	\$ _____

ALTERNATE 2 TO BASE BID SECTION 3

SPRAGUE - CLOSNER BLVD TO VETERANS BLVD						
Item No.	Spec Item	Estimated Quantity	Unit	Item Description	Unit Cost	Total Amount
TRAFFIC CONTROL						
1	502	1	LS	BARRICADES, SIGNS & TRAFFIC HANDLING, All complete in place until the final completion of the project	\$ _____	\$ _____
ROADWAY IMPROVEMENT						
2	340	970	TON	HOT MIX ASPHALT Includes installation, tack coat and compaction in place as per specification.	\$ _____	\$ _____
3	533	4,998	LF	6' SHOULDER TEXTURING (MILLED) (ASPHALT) Includes clean, reshape and proper disposal of excavated material as per specification.	\$ _____	\$ _____
PAVEMENT MARKINGS						
4	666	384	LF	REFL PAV MARK TY (Y) 4" (BRK)(100MIL)	\$ _____	\$ _____
5	666	80	LF	REFL PAV MARK TY (W) 8" (SLD)(100MIL)	\$ _____	\$ _____
6	666	180	LF	REFL PAV MARK TY (W) 24" (SLD)(100MIL)	\$ _____	\$ _____
7	666	1,966	LF	REFL PAV MARK TY (Y) 4" (DBL SLD)(100MIL)	\$ _____	\$ _____
8	666	731	LF	REFL PAV MARK TY (W) 12" (SLD)(100MIL)	\$ _____	\$ _____
9	666	4,406	LF	REFL PAV MARK TY (W) 6" (SLD)(100MIL)	\$ _____	\$ _____
10	666	300	LF	REFL PAV MARK TY (W) 6" (BRK)(100MIL)	\$ _____	\$ _____
11	666	2	EA	REFL PAV MARK TY (W) (ARROW) (100MIL)	\$ _____	\$ _____
ALTERNATE 2 TOTAL						\$ _____

ALTERNATE 3 TO BASE BID SECTION 3

FAY ST - 10ST TO CLOSER BLVD						
Item No.	Spec Item	Estimated Quantity	Unit	Item Description	Unit Cost	Total Amount
TRAFFIC CONTROL						
1	502	1	LS	BARRICADES, SIGNS & TRAFFIC HANDLING, All complete in place until the final completion of the project	\$ _____	\$ _____
ROADWAY IMPROVEMENT						
2	340	145	TON	HOT MIX ASPHALT Includes installation, tack coat and compaction in place as per specification.	\$ _____	\$ _____
3	533	332	LF	6' SHOULDER TEXTURING (MILLED) (ASPHALT) Includes clean, reshape and proper disposal of excavated material as per specification.	\$ _____	\$ _____
PAVEMENT MARKINGS						
4	666	390	LF	REFL PAV MARK TY (W) 4" (SLD)(100MIL)	\$ _____	\$ _____
5	666	50	LF	REFL PAV MARK TY (W) 24" (SLD)(100MIL)	\$ _____	\$ _____
6	666	305	LF	REFL PAV MARK TY (Y) 4" (DBL SLD)(100MIL)	\$ _____	\$ _____
7	666	165	LF	REFL PAV MARK TY (W) 12" (SLD)(100MIL)	\$ _____	\$ _____
ALTERNATE 3 TOTAL					\$ _____	\$ _____

ALTERNATE 4 TO BASE BID SECTION 3

LETICIA DR						
Item No.	Spec Item	Estimated Quantity	Unit	Item Description	Unit Cost	Total Amount
TRAFFIC CONTROL						
1	502	1	LS	BARRICADES, SIGNS & TRAFFIC HANDLING, All complete in place until the final completion of the project	\$ _____	\$ _____
ROADWAY IMPROVEMENT						
2	340	406	TON	HOT MIX ASPHALT Includes installation, tack coat and compaction in place as per specification.	\$ _____	\$ _____
3	533	3,000	LF	6' SHOULDER TEXTURING (MILLED) (ASPHALT) Includes clean, reshape and proper disposal of excavated material as per specification.	\$ _____	\$ _____
PAVEMENT MARKINGS						
4	666	15	LF	REFL PAV MARK TY (W) 24" (SLD)(100MIL)	\$ _____	\$ _____
ALTERNATE 3 TOTAL					\$ _____	\$ _____

BASE BID TOTAL: \$ _____

ALTERNATE 1 TOTAL: \$ _____

ALTERNATE 2 TOTAL: \$ _____

ALTERNATE 3 TOTAL: \$ _____

ALTERNATE 4 TOTAL: \$ _____

The number of Calendar Days to complete contract 120 .

The undersigned agrees, unless hereinafter stated otherwise to furnish all material as shown and specified in the Plans and Specifications.

Bidder hereby agrees to commence work under this Contract within 10 days after the "NOTICE TO PROCEED" is issued, and to complete all the work in the Contract within 120 **Calendar Days**.

ADDENDUM NO.	DATE	BY
ADDENDUM No. 1		
ADDENDUM No. 2		
ADDENDUM No. 3		
ADDENDUM No. 4		

Respectfully Submitted :

Date : _____

By : _____
(Signature)

(Type or Print Name)

(Title)

(Company)

(Address)

(City, State, Zip)

(Phone Number)

Fax Number)

(E-Mail)

(Seal - If Bidder is a Corporation)

SECTION D

MEASUREMENT AND

BASIS OF PAYMENT

MEASUREMENT AND BASIS OF PAYMENT

1.00 GENERAL

IT IS THE INTENT OF THIS CONTRACT TO COVER ALL THE WORK TO BE PERFORMED SUBSIDIARY TO ALL THE ITEMS INCLUDED IN THE BID AND SUCH PRICES SHALL BE BALANCED INDIVIDUALLY AND SHALL INCLUDE FURNISHING ALL MATERIALS, SUPERINTENDENCY, SUPERVISION, CONSTRUCTION SURVEYING AND LAYOUT, LABOR, INSURANCE, BONDS, BENEFITS, MACHINERY, FUEL, VEHICLES, SAFETY EQUIPMENT, ADMINISTRATIVE COSTS, QUALITY CONTROL, GUARANTEES AND WARRANTIES, OVERHEAD, AND ALL INCIDENTALS FOR COMPLETING THE ASSIGNED WORK IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS COMPLETE IN PLACE. ***IN CASE THE FOLLOWING MEASUREMENT AND BASIS OF PAYMENT DESCRIPTIONS CONFLICT WITH THE CORRESPONDING DESCRIPTIONS CONTAINED WITHIN THE TECHNICAL SPECIFICATIONS FOR THIS PROJECT, THE FOLLOWING DESCRIPTIONS SHALL GOVERN.***

THE FOLLOWING APPLICABLE ITEMS SHALL BE CONSIDERED AS PAY ITEMS. ALL OTHER WORK NOT SPECIFICALLY LISTED OR INDICATED BELOW SHALL BE SUBSIDIARY TO THE OVERALL COST OF THE PROJECT. ALL EXCAVATION IS UNCLASSIFIED.

1.01 PAVING IMPROVEMENTS

1. **PREPARATION OF RIGHT-OF-WAY, CLEARING AND EXCAVATION:** When called for in the proposal, shall be measured from ROW line to ROW line for the entire length and width of the roadway, calculated to the nearest SQUARE YARD (S.Y.) paid at the unit price bid and such cost shall include all clearing and grubbing, parkway grading from edge of payment or curb line to R.O.W. line (or beyond as noted), demolition, removal of existing fences at the locations indicated, removal and disposal of unsuitable material such as asphalt organic materials, and shall include stripping of underlying soil, excavation, excavation and **fine grading of adjacent swales and bar ditches, filling and compaction behind curbs**, cutting down to subgrade depth and width, disposal of debris and other material deemed not suitable for filling, hauling in fill material as required, stockpiling suitable removed base material on the site or within a 2 Mile Area, all complete in place.
2. **LIME OR PORTLAND CEMENT STABILIZED SUBGRADE:** When called for in the proposal shall be measured from BACK OF CURB (OR EDGE OF PAVEMENT) TO BACK OF CURB (OR EDGE OF PAVEMENT) per SQUARE YARD (S.Y.) for the **length and width laid in accordance with Typical Details** for the compacted thickness, and such cost shall include all necessary excavation, compaction to 95% Standard Proctor Density, lime or Portland cement material to the strength specified (Calculated from unit weight of subgrade material), all complete in place.
3. **EROSION CONTROL DEVICES:** When called for in the proposal, shall be measured and paid per LUMP SUM (L.S.) for silt fence, hay bales, construction Entrances/Exits, maintenance of all devices as specified on the plans, street sweeping, dust and debris control, watering, all to the limits and locations shown, all complete in place.
4. **HOT-MIX ASPHALT:** When called for in the proposal, shall meet specifications Section 02616 (Item 340) outlined on sheets K-39 Thru K-50 and shall be paid by the TONS (TN). Cleaning existing base course, tack

oil, level up, and prime coat will be subsidiary to Section 02616 (Item 340), as per the plans and specifications, and shall be paid for at the unit price bid in the Proposal, all complete in place.

5. **DENSED-GRADED HOT-MIX ASPHALT PROCESS OVERLAY (1½")** : When called for in the proposal, shall be measured and paid per TONS (TN.) for the constructed length and width laid in accordance with Typical Details, and shall include furnishing all MATERIAL, LABOR AND EQUIPMENT to complete the process in preparation to overlaying HMAC material to the required thickness, spreading, milling, and fine grading, compacting (rolling) **and shall include PRIME AND/OR TACK COAT** measuring asphalt thickness of 1½" as shown in the plans and specifications, all complete in place

6. **SINGLE MACHINE PROCESS** : When called for in the proposal, shall be measured and paid for SQUARE YARD (S.Y.) for the constructed length and width laid in accordance, and shall include furnishing all MATERIAL, LABOR AND EQUIPMENT to complete the process in preparation to scarified existing 1" asphalt material with a 1" virgin overlay HMAC material to the required thickness, spreading, milling, fine grading, compacting **and shall include PRIME AND/OR TACK COAT** as shown in the plans and specifications, Section 02616, all complete in place.

7. **CONCRETE CURB AND GUTTER (18")**: When called for in the proposal, shall be measured and paid along the gutter line for catch, lay-down or spills section, per LINEAR FOOT (L.F.), for the **constructed length in accordance with Typical Details**, for all Types indicated in the plans and specifications, and shall include all necessary labor, excavation, joints, backfilling, reinforcement, concrete of thickness and strength specified, as shown in the plans and specifications, all complete in place. *(Concrete Curb and Gutter shall be laid over prepared base and sub-grade as indicated in the typical sections.*

8. **CONCRETE VALLEY GUTTER (6')**: When called for in the proposal, shall be measured and paid along the gutter line for catch, lay-down or spills section, per LINEAR FOOT (L.F.), for the **constructed length in accordance with Typical Details**, for all Types indicated in the plans and specifications, and shall include all necessary labor, excavation, joints, backfilling, reinforcement, concrete of thickness and strength specified, as shown in the plans and specifications, all complete in place. *(Concrete Valley Gutter shall be laid over prepared base and sub-grade as indicated in the typical sections.*

9. **BASE FAILURE REPAIRS** : When called for in the proposal, shall be measured and paid AS MARKED ON THE GROUND (PAVEMENT) WITH WIDTH AND LENGTH AT NUMEROUS LOCATIONS per SQUARE YARD (S.Y.) for the **constructed length and width laid in accordance with Typical Details**, and shall include all necessary excavation, compaction as shown, working of lime or Portland cement material to the strength specified (Calculated from unit weight of sub-grade material) for the 6" sub-grade, 12" flexible (caliche) base, and 2" HMAC Type D as shown in the plans and specifications, all complete in place.

10. **SANITARY / STORM SEWER MANHOLE ADJUSTMENTS**: When called for in the proposal shall be measured and paid per EACH (EA.) at the unit price bid for each specified location and shall include all necessary materials to make the adjustment, as specified in the Proposal and Plans, all complete in place. If damaged, shall include new manhole lids with cast iron rings and covers and curb/grated inlets all necessary connections at contractor expenses. As specified in Section 02617.

11. **WATER VALVE / MONTORING WELLS GRADE ADJUSTMENTS** : When called for in the proposal shall be measured and paid per EACH (EA.) at the unit price bid for each specified location and shall include all necessary materials to make the adjustment, as specified in the Proposal and Plans, all complete in place. If damaged, shall include new covers with cast iron stem, all necessary connections at contractor expenses. As specified in Section 02618.

12. **CURB MILLING (6' WIDE):** When called for in the proposal, shall be measured from lip of curb to 6-feet in width along the curb line, per LINEAR FOOT (L.F.), for the constructed length in accordance with Typical Details, for all Types indicated in the plans and specifications, and shall include all necessary labor, excavation, joints, backfilling, reinforcement, concrete of thickness and strength specified, as shown in the plans and specifications, all complete in place. *(All millings for this project is property of the City of Edinburg and shall be hauled to the City of Edinburg Service Center at 1201 N. Doolittle, Edinburg, Texas 78541 and coordinated with the Department of Public Works – Street Division.)*

1.04 TRAFFIC CONTROL, SIGNING, STRIPING AND MARKINGS

1. **BARRICADES, SIGNS AND TRAFFIC CONTROL:** When called for in the proposal, shall be measured and paid per LUMP SUM (L.S.), and shall include all necessary materials, labor, barricades, flagmen and construction signs as required in the Traffic Control Plan including all necessary regular inspection and maintenance of barricades and signage all in accordance with the plans and in conformance the Texas Department of Transportation Permit Instructions as applicable and TRAFFIC CONTROL PLAN (as prepared by a Registered Professional Engineer and approved by the City of Edinburg, which cost is subsidiary to this Item), including all necessary traffic control for temporary road closures as approved by the City of Edinburg for installation of traffic control and temporary pavement markings tabs, all in accordance with the UNIFORM TRAFFIC CODE, all complete in place.
2. **STRIPING AND MARKINGS:** When called for in the proposal, shall be measured and paid per LUMP SUM (L.S.), and shall include all necessary materials, labor, barricades, flagmen and construction signs as required in the Traffic Control Plan including all necessary regular inspection and maintenance of barricades and signage all in accordance with the plans, all complete in place.
3. **TRAFFIC LOOPS:** Any traffic Loop that is damage shall be replace by the contractor and is subsidiary to Section 02616, Item 340, all in accordance with the plans and complete in place.

SECTION E SPECIAL PROVISIONS

SPECIAL PROVISIONS

IN ALL CASES WHERE THESE SPECIAL PROVISIONS CONFLICT WITH THE TECHNICAL SPECIFICATION SECTIONS, GENERAL CONDITIONS OR SUPPLEMENTARY GENERAL CONDITIONS, THESE SPECIAL PROVISIONS SHALL GOVERN.

1. The CONTRACTOR shall do all necessary excavation, trenching, demolition, grading, backfill, etc., to complete the project. All excavation is unclassified. All material removed such as concrete, broken pipe, excess backfill, etc., shall become the property of the CONTRACTOR and he shall be responsible for removing it from the site at not extra expense to the OWNER. Any existing material deemed salvageable by the ENGINEER or the OWNER shall be carefully removed and hauled to a designated location as directed by the OWNER or ENGINEER within the City at no extra expense to the OWNER.
2. The CONTRACTOR shall be limited only to existing ROW for operations and/or easements provided by the City of Edinburg. The CONTRACTOR at no extra cost to the OWNER will correct any damages done to property outside these designated work areas to its original or better conditions. It is important that the CONTRACTOR be aware of the work limits so that no damage can result to those areas outside these limits.
3. All trees, plants, grass and shrubs, except those which will be affected by construction shall be protected at all times. The areas in and adjacent to the construction site shall be restored to their original conditions after necessary fine grading is completed. The CONTRACTOR shall provide new grass of the same type removed to restore damaged areas. Only quality sandy loam topsoil shall be used for filling the top four inches of those areas damaged or filled.
4. Existing lawns are to remain intact as far as practical. The CONTRACTOR shall duly restore such areas disturbed to as good as or better than original condition using the same type of grass, shrubs, or cover as the original. The CONTRACTOR shall be responsible for correcting any erosion that occurs at his cost without claim for extra compensation.
5. Damages done to existing utilities, power poles, fences, signs, mailboxes, driveways, culverts, pavement, drainage systems, etc. shall be repaired by the CONTRACTOR at no cost to the OWNER, and such costs shall be subsidiary to the various unit items in the Proposal.
6. The City of Edinburg shall provide all testing. Testing shall be paid by the OWNER on all necessary testing selected by ENGINEER, but re-testing shall be charged to the CONTRACTOR from his monthly estimates, and no additional compensation will be made or allowed for reworking the necessary defective work not meeting the specified work of the plans and specifications. Any re-testing required by no-passing results shall be paid for by the CONTRACTOR and shall be deducted from the contract amount. The OWNER, at its sole discretion, may require the CONTRACTOR to perform any necessary uncovering of any improvements to verify compliance with specifications by either visual observation or materials testing at no extra expense to the OWNER.
7. The CONTRACTOR shall furnish the Site Inspector and Observer, OWNER, and ENGINEER the names, address and telephone numbers of all personnel responsible for the work in case of Emergencies.
8. The successful CONTRACTOR shall attend a Pre-Construction Conference with the OWNER, ENGINEER, and other ENGINEERING DEPARTMENT and Utility Department at the date and time specified.
9. The CONTRACTOR shall submit to the ENGINEER a proposed sequence of work outline with approximate completion dates to be reviewed at the pre-construction conference. During the course of construction, the ENGINEER may request updates to the schedule indicating the start of the several part of the work and the estimated dates of completion of the several parts. Unless otherwise noted on the plans, the ENGINEER may require modification of construction schedule to meet any CITY recognized or CITY sponsored events which may be affected by the CONTRACTOR'S activities without claim for extra compensation.

10. It is important that traffic be interrupted at a minimum during construction. A Traffic Control Plan (TCP), prepared by a Registered Professional Engineer, must be submitted by the CONTRACTOR and written approval must be issued by the ENGINEER and OWNER prior to any road closures. The OWNER may, at its sole discretion, require continuous operation of construction activities to minimize traffic interruption. The preparation and submittal of the TCP, its approval process, or continuous operation requirement shall not constitute a claim for additional compensation or time extension of the Project.
11. The CONTRACTOR is solely responsible for notifying the Engineering Department, Police Department, Fire Department, School District, Emergency Services, and other interested entities at least 48 hours in advance of any OWNER approved road closures or detours.
12. All traffic control devices shall be in accordance with the Texas Manual on Uniform Traffic Control Devices (TMUTCD), latest edition.
13. All work must be performed during regular business hours of 8 a.m. to 5 p.m., Monday thru Friday, except City recognized holidays. It is the CONTRACTOR'S sole responsibility to complete all work within the time specified in the Contract during the designated hours of operation. The CONTRACTOR may request work outside these hours, but will require the presence of the City's Field Inspector, the cost of which will be borne by the CONTRACTOR. No cost for the City's Field Representative will be charged should the work be requested by the CITY OF EDINBURG.
14. The CONTRACTOR shall be responsible for construction staking for the entire project and shall be done in accordance with the Specifications. The OWNER shall provide horizontal and vertical control. Staking shall be performed by a Registered Professional Land Surveyor or Professional Engineer qualified to do such construction staking at no additional cost to the OWNER. CUT SHEETS shall be submitted to the ENGINEER and OWNER for review and approval.
15. The Plans show approximate locations of existing utilities including gas lines, telephone lines, power lines, water lines, sewer lines, storm sewers and irrigation lines within the vicinity. The CONTRACTOR is responsible for locating all existing utilities and shall exercise extreme care in working in the vicinity of these lines. The CONTRACTOR shall notify the Utility Companies while working in the vicinity of the corresponding private or public utilities.
16. All existing lines, whether belonging to the City of Edinburg or Private shall remain in operation at all times. Switchover time, re-connecting new service from existing lines or services (if any) shall be kept to a minimum. Unless otherwise shown as a Bid Item, reconnections to existing water and sanitary sewer services shall be subsidiary to all items of the Bid Proposal at no additional cost to the OWNER.
17. The OWNER reserves the right to add or delete quantities of bid items in the Proposal at the Unit Prices given, provided however that such additions or reductions are within the aggregate limits specified in the General Conditions of the Agreement. No additional compensation will be made to the CONTRACTOR for increases in quantities resulting from deviations from the dimensions of the plans unless such deviation is approved in writing and in accordance with the Change Order provisions of the Contract Documents.
18. The CONTRACTOR is expected to conduct his work in such a manner as to minimize any soil erosion or sediment runoff from the construction site. CONTRACTOR shall provide ENGINEER and OWNER an Erosion Control Plan (ECP) as part of a permit application to be completed and approved by the ENGINEERING DEPARTMENT prior to commencement of work. Earth cuts and fills shall have smooth, flat side slopes, as generally indicated on the Plans, to preclude erosion of the soil. Such operations should be times consistent with the actual need for doing the work and only to leave raw, unprotected surfaces for a minimum of time. The preparation and submittal of the ECP or its approval process shall not constitute a claim for additional compensation or time extension of the Project.
19. Until acceptance by the ENGINEER of any part of all of the material, as provided for in these specifications, it shall be under the charge and care of the CONTRACTOR, and he shall take every necessary precaution against injury or

damage to any part of the material by action of the elements of the non-execution of the work. The CONTRACTOR shall rebuild, repair, restore and make good, at his own expense, all injuries or damage to any portion of the material occasioned by any of the above causes before its completion and acceptance.

20. In cases where the CONTRACTOR deems extra compensation is due him for materials not clearly covered in the contract, or not ordered by the ENGINEER as an extra item, the CONTRACTOR shall notify the ENGINEER in writing of his intention to make claim for such extra compensation before he begins the work. The CONTRACTOR shall not proceed until the OWNER, ENGINEER, and CONTRACTOR approves a written CHANGE ORDER. Failure on the part of the CONTRACTOR to give such notification or to afford the ENGINEER proper facilities for keeping strict account of actual cost shall constitute a waiver of the claim for such extra compensation. The filing of such notice by the CONTRACTOR and the keeping of costs by the ENGINEER shall not in any way be construed to prove the validity of the claim.
21. Upon the failure of the CONTRACTOR to repair satisfactorily or to remove and replace, if so directed, rejected, unauthorized, or condemned materials immediately after receiving written notice from the ENGINEER, the OWNER may recover for such defective materials on the CONTRACTOR'S bond, or by action in a court having proper jurisdiction over such matters, or may employ labor and equipment and satisfactorily repair or remove and replace such work and charge the cost of the same to the CONTRACTOR, which cost will be deducted from any money due him.
22. The CONTRACTOR shall warrant all work for a period of not less than one (1) year from the date of final acceptance of the work by the City of Edinburg. CONTRACTOR is responsible for scheduling a final inspection in the presence of the OWNER, ENGINEER, and CONTRACTOR, whereupon all items must be in accordance with plans and specifications prior to final acceptance.
23. The CONTRACTOR is solely responsible for familiarizing himself and following the 2007 Standards Manual for those items not specifically or clearly shown on the project plans or project specifications and performing the work in such a manner. The Manual can be purchased at the ENGINEERING Department or downloaded from the City's website at www.cityofedinburg.com. No additional compensation will be made for items covered in the City's Standards.
24. All asphalt pavement repairs shall be completed as per the construction plans and specifications. The CONTRACTOR shall not leave any area requiring repairs in excess of 1,300 square yards or in excess of 30 days, whichever is less. The OWNER or ENGINEER may require immediate asphalt pavement repair should traffic conditions warrant. Failure by the CONTRACTOR to make the necessary repairs within the time specified by the OWNER may result in corrective action by the OWNER including the employ of materials, labor and equipment to satisfactorily perform such work and charge the cost of the same to the CONTRACTOR, which cost will be deducted from any money due him.

SECTION F AGREEMENT

THE STATE OF TEXAS §
COUNTY OF HIDALGO §
CITY OF EDINBURG §

AGREEMENT BETWEEN THE CITY OF
EDINBURG AND NAME OF
CONTRACTOR FOR 2015-2016
CAPITAL IMPROVEMENT PROJECT
SECTION 3 STREET IMPROVEMENTS

Contract between the **City of Edinburg** (hereinafter called “City”), and **Name of Contractor**. (herein called “Contractor”), entered into an agreement for Bid 2016-19 2015-2016 Capital Improvement Projects Section 3 Street Improvement, as required by various Street improvement projects scheduled for completion.

RECITALS

WHEREAS, the City desires to engage the Contractor for certain services in connection therewith; and,

WHEREAS, Contractor represents that it has the knowledge, ability, and personnel to properly provide carious street improvement and drainage services needed by the City;

NOW, THEREFORE, the City and Contractor do mutually agree as follows:

SECTION I
EMPLOYMENT OF CONTRACTOR

City agrees to employ Contractor to provide the following basic services as stated in the following sections and upon receipt of such satisfactory services, City agrees to pay Contractor as stated in the sections to follow.

SECTION II
BASIC SERVICES OF CONTRACTOR

The Contractor agrees to perform the work in connection therewith, under the terms of this Agreement and the Bid 2016-19 the 2015-2016 Capital Improvement Projects Section 3 Street Improvements form attached as Exhibit “A”. This includes street improvements and drainage improvements at contractor’s own proper cost and expense to furnish all the labor, insurance and other accessories and services necessary to complete the said tasks in accordance with the conditions and prices stated.

SECTION III
TIME OF PERFORMANCE

The Contractor shall perform services and materials as identified in Bid 2016-19 and Statement of Work prepared for Edinburg, 2015-2016 Capital Improvement Projects Section 3 Street Improvements attached as Exhibit “A”. Work shall be completed within 120 days from the Notice to proceed, with the contract terminating on Month, Day, and Year. Contractor and City shall not be liable for any delay due to circumstance beyond

its control.

SECTION IV **STANDARD OF PERFORMANCE**

Contractor warrants to City that all labor furnished to perform the Work under the Contract Documents will be competent to perform the tasks undertaken, that the product of such labor will yield only first-class results, that materials and /or equipment furnished will be of good quality and new unless otherwise permitted by the Contract Documents, and that the Work will be of good quality, free from faults and defects, and in strict conformance with the Contract Documents. Any Work not strictly conforming to these requirements may be considered defective.

SECTION V **TERMS OF PAYMENT**

City agrees to pay Contractor for services herein contracted for as follows:

- A. Payment for basic services shall be upon receipt of invoice by City. Invoice shall be submitted to City upon completion and inspection of each project in accordance with the contract Bid 2016-19 the 2015-2016 Capital Improvement Projects Section 3 Street Improvements based on a **unit prices** for the total amount to \$000,000.00.
- B. Invoice shall be completed and processed in accordance with City regulations. Contractor shall submit Applications for Payment in accordance with the general Conditions. Application for Payment will be processed by the consulting Engineers and the Department of Public Works as provided in the General Conditions.
- C. City shall authorize all payments made for services rendered. Payment terms shall be net thirty (30) days from receipt of invoice.
- D. 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 must approve change orders before making the changes in accordance with City Code of Ordinance and applicable section of the Texas Local Government Code and Texas Government Code.
- E. 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.

SECTION VI
TIME OF COMPLETION

City and the Contractor recognize that time is of the essence of this agreement and that the City may suffer financial loss if the WORK is not completed within the time specified in Section III herein, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. Accordingly, instead of requiring any such proof, the City and the Contractor agree that not as a penalty, but as added expense for Engineering/Architectural supervision the Contractor shall pay the City for each day that expires after the time specified in Section III herein the amount corresponding below:

<u>FOR AMOUNT OF CONTRACT</u>	<u>COST PER DAY</u>
\$ 5,000.00 to \$ 25,000.00	\$100.00
\$ 25,001.00 to \$ 100,000.00	\$200.00
\$ 100,001.00 to \$ 500,000.00	\$250.00
\$ 500,001.00 to \$1,000,000.00	\$300.00
\$1,000,001.00 to \$2,000,000.00	\$400.00
\$2,000,001.00 to \$3,000,000.00	\$500.00
\$3,000,001.00 to \$4,000,000.00	\$600.00
\$4,000,001.00 to \$5,000,000.00	\$700.00
\$5,000,001.00 and over	\$800.00

SECTION VII
SCHEDULE REQUIREMENTS

Whenever, in the opinion of City, the Work falls behind schedule, the Contractor shall, to the extent necessary to meet said schedule, increase its labor force and/or provide overtime, Saturday, and Sunday and/or holiday work, and shall have each Subcontractor do likewise, all at no additional cost to or compensation from City. Further, City shall have the right to offset against any amounts then or thereafter due to the Contractor, or to be reimbursed by the Contractor for, any additional costs City may incur as a direct result of said increase in labor force or overtime, Saturday, Sunday, and/or holiday work.

SECTION VIII
WRITTEN NOTICE OF ISSUE

In the event that any issue arises relating to any of the provisions contained in this Agreement, including, but not limited to potential delays, change orders, time extensions, weather delays, etc. Contractor agrees to notify the City, in writing, immediately, relating to such issue and proposed resolution. Failure to give such notice shall constitute a waiver of any other remedies available to Contractor hereunder.

SECTION IX
NO DAMAGE FOR DELAY

In the event of any delay, not the fault of the Contractor, the Contractor shall be entitled to an extension of time for completion only, and shall not be entitled to any additional payment on account of such delay. Without limiting the foregoing, the Contractor shall not be entitled to payment or compensation of any kind from the City for direct, indirect or impact damages, and/or consequential damages, including but not limited to costs of acceleration arising because of hindrance or from any cause or whatsoever, whether such hindrances or delays be reasonable or unreasonable, foreseeable or unforeseeable, or avoidable or unavoidable; provided, however, that this provision shall not preclude recovery by the Contractor of damages for hindrances or delays due solely to fraud or bad faith on part of the City or his agents.

SECTION X
UNREASONABLE SITE INSPECTION REQUIREMENTS

The Contractor acknowledges that it has taken steps necessary to ascertain the nature and location of the Work and that it has investigated and satisfied itself as to the general and local conditions which can affect the Work and its costs. The Contractor also acknowledges that it has satisfied itself as to the character, quality, and quantity of surface and subsurface materials or obstacles to be encountered or difficulties or access insofar as this information is ascertainable from an inspection of the site, and available documents, including all information from exploratory work done by the City and its design consultants as well as from the Drawings and Specifications made a part of this Contract. The Contractor has the right to make any additional tests necessary to assure himself that the site conditions are satisfactory for the work contemplated.

SECTION XI
DUTY TO COORDINATE AMONG SEPARATE PRIME CONTRACTORS

The City reserves the right to engage separate contractors to perform aspects of the Project other than the Work under this Agreement. In such case, contractor shall coordinate sequence and schedule its work together and in cooperation with such other contractors. In the event of any difficulties caused by any such other separate contractor, this contractor shall look solely for relief to such other contractors and shall not make claim against City.

SECTION XII
CONTRACT DOCUMENTS

The Contract Documents which comprise the entire agreement between City and Contractor concerning the WORK consist of this Agreement and the following attachments to this Agreement:

- Sealed Bid Invitation including the Bid, Bid Schedule(s), Information

Required of Bidder, and all required certificates.

There are no Contract Documents other than those listed in this Section VI. The Contract Documents may only be amended by Change Order as provided in the General Conditions.

SECTION XIII ASSIGNMENT

No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and specifically but without limitation monies that may become due and monies that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

SECTION XIV NON-APPROPRIATIONS

Notwithstanding anything in the contract documents to the contrary, any and all payments which the City is required to make under this contract shall be subject to annual appropriation or other availability of funds, as certified by the Director of Finance.

If the City cannot appropriate sufficient funding, then either party has the right to terminate the contract by providing (10) ten days written notice to the other party.

Furthermore, execution of this contract does not automatically guarantee a renewal of contract upon expiration.

SECTION XV MINIMUM INSURANCE REQUIREMENTS

In accordance with City ordinances, Contractor shall be required to hold the following minimum insurance coverage throughout the duration of this Agreement:

- A. Workers Compensation-
In accordance with the State statute
- B. Employer's Liability
 - Bodily Injury by Accident: \$100,000 each accident
 - Bodily Injury by Disease: \$100,000 each employee
\$500,000 policy limits
- C. Comprehensive General Liability

Bodily Injury \$250,000 each person
\$500,000 each occurrence
Property Damage \$100,000 each occurrence
\$100,000 aggregate

-or- \$500,000 combined single limits

D. Comprehensive Auto Liability

Bodily Injury \$250,000 each person
\$500,000 each occurrence
Property Damage \$100,000 each occurrence
\$100,000 each aggregate

-or- \$500,000 combined single limits

E. City's Protective Liability

Bodily Injury \$250,000 each person
\$500,000 each occurrence
Property Damage \$100,000 each occurrence
\$100,000 each aggregate

-or- \$500,000 combined single limits

Evidence of the above insurance coverage shall be required prior to final execution of the agreement. The City shall be listed as an additional insured.

Contractor warrants that it is adequately insured and carries liability, workers compensation, and automobile insurance for injury to its employees and others incurring loss or injury as a result of the acts of Contractor or its employees.

Contractor shall not commence work under this agreement until all insurance requirements have been obtained and proof of such insurance shall have been provided to the City, nor shall Contractor allow any Sub-Contractor to commence work until all insurance as noted above has been so obtained and provided to the City. Approval of the insurance by City shall not relieve or decrease the liability of the Contractor.

SECTION XVI
TERMINATION OF CONTRACT

In addition to any other terminate clause in this agreement, either party to this agreement shall have the right to terminate this contract at any time, and for any reason, after 30 days' written notice and any payment requested shall be made on work completed and/or goods delivered and as provided for in the contract.

SECTION XVII
SEVERABILITY

If any term or provision of this Agreement is held by a court of competent jurisdiction to be invalid, void, or unenforceable, the remainder of the provisions of this Agreement shall remain in full force and effect and shall in no way be affected, impaired or invalidated.

SECTION XVIII
ALTERNATE DISPUTE RESOLUTION/NEUTRAL PARTY

- A. Any controversy, claim or dispute between the parties arising out of or relating to the provisions of this Agreement or the breach, termination or validity thereof shall, upon written request of either party, immediately be referred jointly for resolution of the controversy by non-binding mediation.
- B. The mediation must be concluded within any period mutually agreed upon by the parties but in no event no later than within forty-five (45) days after written notice is given by either party of its intent to proceed to mediation. Unless the parties expressly agree otherwise, each party shall bear its own costs, legal and expert fees incurred in the mediation, and evenly share the costs of the mediator. If, after proceeding in good faith the parties, with the assistance of a neutral mediator, do not resolve the dispute within the forty-five (45) day period, the parties may proceed in accordance with paragraph (C) below.
- C. After exhausting the procedures set forth above, either party may initiate litigation to resolve the dispute. The Law of the State of Texas shall control the matter in controversy. Venue is mandatory in Hidalgo County, Texas.

SECTION XIX
NOTICE

All notices or other communications required under this Agreement may be affected either by personal delivery in writing or by Certified Mail, Return Receipt Requested. Notice shall be deemed to have been given when delivered or mailed to the parties at their respective addresses as set for the below or when mailed to the last address provided in writing to the other party by the addressee.

SECTION XX
HOLD HARMLESS CLAUSE

Contractor hereby agrees to indemnify and hold harmless and defend Lessor, its agents, employees, and officers from and against any claim, loss, damage, liability, and expense, including reasonable attorney's fees, incurred or suffered by it, by reason of any and all claims, demands, or causes of action asserted or that may be asserted, against any or all of the above named parties, whether alleging intentional or negligent acts or omissions, and whether seeking compensatory or punitive damages, and involving, arising out of, or in any manner relating to this Contract.

**SECTION XXI
MISCELLANEOUS**

Any changes to this document must be approved by City and signed by both parties to the agreement.

EXECUTED by the parties in triplicate originals on this _____ day of _____, 2014.

CITY OF EDINBURG:

BY: _____
Ramiro Garza Jr., City Manager
City of Edinburg
415 W. University Dr.
Edinburg, Texas 78540
Phone: (956)383-5661
Fax: (956)383-7111

ATTEST:

BY: _____
Myra L. Ayala Garza, City Secretary

APPROVED AS TO FORM:

PALACIOS & ASSOCIATES, P.C.

BY: _____
City Attorney

COMPANY NAME

BY: _____
Company Rep.
Title
Address
City, State, Zip
Phone: (555) 555-5555
Email:

ATTACHMENTS: Exhibit A: Bid #2016-17 2015-2016 Capital Improvement Projects Section 3 Street Improvements
Exhibit B: Certificates of Insurance

**EXHIBIT "A" OF THE AGREEMENT BETWEEN THE CITY OF EDINBURG AND NAME
OF CONTRACTOR FOR 2015-2016 CAPITAL IMPROVEMENT PROJECT SECTION 3
STREET IMPROVEMENTS**

SAMPLE

**EXHIBIT "B" OF THE AGREEMENT BETWEEN THE CITY OF EDINBURG AND NAME
OF CONTRACTOR FOR 2015-2016 CAPITAL IMPROVEMENT PROJECT SECTION
3 STREET IMPROVEMENTS**

SAMPLE

SECTION G & H

BONDS

PERFORMANCE BOND

STATUTORY PERFORMANCE BOND PURSUANT TO ARTICLE 2253
OF THE TEXAS LOCAL GOVERNMENT CODE AS AMENDED BY ACTS OF THE 1993, 73RD
LEGISLATURE, CH. 268, § 1, EFF. SEPT. 1, 1993

KNOW ALL MEN BY THESE PRESENTS, THAT _____

(hereinafter called the Principal(s), as Principal(s), and _____

(hereinafter called the Surety(s), as Surety(s), are held and firmly bound unto _____

(hereinafter called the Oblige), in the amount of _____

_____ Dollars (\$ _____)

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

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

_____ day of _____, 20_____, for the _____

PERFORMANCE BOND Continued:

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

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

PROVIDED, HOWEVER, that this bond is executed pursuant to the provisions of Statutory Performance Bond Pursuant To Article 2253 of the Texas Local Government Code as Amended by Acts of the 1993, 73rd Legislature, Ch. 268, § 1, Eff. Sept. 1, 1993, , and all liabilities on this bond shall be determined in accordance with the provisions of said Article to the same extent as if it were copied at length herein.

IN WITNESS WHEREOF, this instrument is executed in four counterparts, each one of which shall be deemed an original, this the _____ day of _____ A.D., 20____.

Principal

ATTEST:

(Principal) Secretary
(SEAL)

Signature

Witness as to Principal

(Print/Type Name)

(Address)

(Address)

ATTEST:

Surety

(Surety) Secretary
(SEAL)

Attorney-in-Fact (Signature)

Witness as to Surety

(Print/Type Name)

(Address)

(Address)

NOTE: Date of Bond must not be prior to date of Contract

- (1) Correct name of Contractor; (2) A Corporation, a Partnership or an Individual, as case may be; (3) Correct name of Surety; (4) Correct name of Owner; (5) County or Parish and State; (6) Owner; (7) If Contractor is Partnership, all partners should execute bond.

PAYMENT BOND

STATUTORY PAYMENT BOND PURSUANT TO ARTICLE 2253
OF THE TEXAS LOCAL GOVERNMENT CODE AS AMENDED BY ACTS OF THE 1993, 73RD
LEGISLATURE, CH. 268, § 1, EFF. SEPT. 1, 1993

KNOW ALL MEN BY THESE PRESENTS, that _____

(hereinafter called the Principal(s), as Principal(s), and _____

(hereinafter called the Surety(s), as Surety(s), are held and firmly bond unto _____

(hereinafter called the Oblige), in the amount of _____

_____ Dollars (\$_____)

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

WHEREAS, the Principal has entered into a certain written contract with the Oblige,
dated the _____ day of _____, 20_____, to

PAYMENT BOND Continued:

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

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

PROVIDED, HOWEVER, that this bond is executed pursuant to the provisions of Statutory Payment Bond Pursuant To Article 2253 of the Texas Local Government Code as Amended by Acts of the 1993, 73rd Legislature, Ch. 268, § 1, Eff. Sept. 1, 1993, , and all liabilities on this bond shall be determined in accordance with the provisions of said Article to the same extent as if it were copied at length herein.

IN WITNESS WHEREOF, this instrument is executed in four counterparts, each one of which shall be deemed an original, this the _____ day of _____ A.D., 20_____.

Principal

ATTEST:

(Principal) Secretary
(SEAL)

Signature

Witness as to Principal

(Print/Type Name)

(Address)

(Address)

ATTEST: _____

Surety

(Surety) Secretary
(SEAL)

Attorney-in-Fact (Signature)

Witness as to Surety

(Print/Type Name)

(Address)

(Address)

NOTE: Date of Bond must not be prior to date of Contract
(1) Correct name of Contractor; (2) A Corporation, a Partnership or an Individual, as case may be;
(3) Correct name of Surety; (4) Correct name of Owner; (5) County or Parish and State; (6) Owner;
(7) If Contractor is Partnership, all partners should execute bond.

SECTION I GENERAL CONDITIONS

GENERAL CONDITIONS

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ARTICLE 1 - DEFINITIONS

Wherever used in these General Conditions or in the other Contract Documents, the following terms have the meanings indicated in this Article 1 which meanings are applicable to both the singular and plural thereof. If a word which is entirely in upper case in these definitions is found in lower case in the Contract Documents, then the lower case word will have its ordinary meaning.

Addenda - Written or graphic instruments issued prior to the opening of Bids which make additions, deletions, or revisions to the Contract Documents.

Agreement -The written contract between the OWNER and the CONTRACTOR covering the WORK to be performed; other documents are attached to the Agreement and made a part thereof as provided therein.

Application for Payment - The form accepted by the ENGINEER which is to be used by the CONTRACTOR to request progress payments or final payment and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

Asbestos -Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.

Bid -The offer or proposal of the Bidder submitted on the prescribed form setting forth the price or prices for the WORK.

Bonds - Bid, Performance, and Payment Bonds and other instruments of security.

Change Order -A document recommended by the ENGINEER, which is signed by the CONTRACTOR and the OWNER, and authorizes an addition, deletion, or revision in the WORK, or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.

Clarification -A document issued by the ENGINEER to the CONTRACTOR that interprets the requirement(s) and/or design intent of the Contract Documents, which may not represent an addition, deletion, or revision in the WORK or an adjustment in the Contract Price or the Contract Times.

Contract Documents- The Notice Inviting Bids, Instructions to Bidders, Bid Forms (including the Bid, Bid Schedule(s), Information Required of Bidder, Bid Bond, and all required certificates, affidavits and other documentation), Agreement, Performance Bond, Payment Bond, General Conditions, Supplementary General Conditions, Technical Specifications, Drawings, all Addenda, and Change Orders executed pursuant to the provisions of the Contract Documents. Shop Drawings are not Contract Documents.

Contract Price- The total monies payable by the OWNER to the CONTRACTOR under the terms and conditions of the Contract Documents.

Contract Times - The number or numbers of successive calendar days or dates stated in the Contract Documents for the completion of the WORK.

CONTRACTOR -The individual, partnership, corporation, joint-venture, or other legal entity with whom the OWNER has executed the Agreement.

Day- A calendar day of 24 hours measured from midnight to the next midnight.

Defective Work - Work that is unsatisfactory, faulty, or deficient; or that does not conform to the Contract Documents; or that does not meet the requirements of any inspection, reference standard, test, or approval referred to in the Contract Documents; or work that has been damaged prior to the ENGINEER's recommendation of final payment.

Drawings -The drawings, plans, maps, profiles, diagrams, and other graphic representations which indicate the character, location, nature, extent, and scope of the WORK and which have been prepared by the ENGINEER and are included and/or referred to in the Contract Documents. Shop Drawings are not Drawings as so defined.

Effective Date of the Agreement - The date indicated in the Agreement on which it becomes effective, but if no such date is indicated it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

ENGINEER - The individual, partnership, corporation, joint-venture, or other legal entity named as such by the OWNER as set forth in the Supplementary General Conditions.

Field Order -A written order issued by the ENGINEER which may or may not involve a change in the WORK.

General Requirements - Division 1 of the Technical Specifications.

Hazardous Waste - The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.

Laws and Regulations; Laws or Regulations -Any and all applicable laws, rules, regulations, ordinances, codes, and/or orders of any and all governmental bodies, agencies, authorities and courts having jurisdiction.

Lien or Mechanic's Lien - A form of security, an interest in real property, which is held to secure the payment of an obligation. When related to public works construction, Lien or Mechanic's Lien may be called Stop Notice.

Milestone - A principal event specified in the Contract Documents relating to an intermediate completion date of a separately identifiable part of the WORK or a period of time within which the separately identifiable part of the WORK should be performed prior to Substantial Completion of all the WORK.

Notice of Award -The written notice by the OWNER to the apparent successful bidder stating that upon compliance by the apparent successful bidder with the conditions precedent enumerated therein within the time specified, the OWNER will enter into an Agreement.

Notice of Completion - A form signed by the ENGINEER and the CONTRACTOR recommending to the OWNER that the WORK is Substantially Complete and fixing the date of Substantial Completion. After acceptance of the WORK by the OWNER's governing body, the form is signed by the OWNER and filed with the County Recorder. This filing starts the 30 day lien filing period on the WORK.

Notice to Proceed -The written notice issued by the OWNER to the CONTRACTOR authorizing the CONTRACTOR to proceed with the WORK and establishing the date of commencement of the Contract Times.

OWNER - The public body or authority, corporation, association, firm, or person with whom the CONTRACTOR has entered into the Agreement and for whom the WORK is to be provided.

Partial Utilization - Use by the OWNER of a substantially completed part of the WORK for the purpose for which it is intended prior to Substantial Completion of all the WORK.

PCBs - Polychlorinated biphenyls.

Petroleum - Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Wastes and crude oils.

Project -The total construction project of which the WORK to be provided under the Contract Documents may be the whole, or a part as indicated elsewhere in the Contract Documents.

Radioactive Material - Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.

Resident Project Representative - The authorized representative of the ENGINEER who is assigned to the Site or any part thereof.

Samples -Physical examples of materials, equipment, or workmanship that are representative of some portion of the WORK and which establish the standards by which such portion of the WORK will be judged.

Shop Drawings - All drawings, diagrams, illustrations, schedules, and other data which are specifically prepared by or for the CONTRACTOR and submitted by the CONTRACTOR to illustrate some portion of WORK.

Site - Lands or other areas designated in the Contract Documents as being furnished by the OWNER for the performance of the construction, storage, or access.

Specifications - (Same definition as for Technical Specifications hereinafter).

Stop Notice - A legal remedy for subcontractors and suppliers who contribute to public works, but who are not paid for their work, which secures payment from construction funds possessed by the OWNER. In some states, for public property, the Stop Notice remedy is designed to substitute for a mechanic's lien.

Subcontractor -An individual, partnership, corporation, joint-venture, or other legal entity having a direct contract with the CONTRACTOR or with any other Subcontractor for the performance of a part of the WORK at the Site.

Substantial Completion - The time at which the WORK (or specified part) has progressed to the point where it is sufficiently complete, in accordance with the Contract Documents, as evidenced by Notice of Completion (or Notice of Partial Utilization) so that the WORK (or specified part) can be utilized for the purposes for which it is intended; or, if no such notice is issued, when final payment is due in accordance with Paragraph 14.8. The terms "substantially complete" and "substantially completed" as applied to any work refer to substantial completion thereof.

Supplementary General Conditions -The part of the Contract Documents which make additions, deletions, or revisions to these General Conditions.

Supplier - A manufacturer, fabricator, distributor, material man, or vendor having a direct contract with the CONTRACTOR or with any Subcontractor to furnish materials, equipment, or product to be incorporated in the WORK by the CONTRACTOR or any Subcontractor.

Technical Specifications - Divisions 1 through 17 of the Contract Documents consisting of the General Requirements and written technical descriptions of products and execution of the WORK.

Utilities - All pipelines, conduits, ducts, cables, wires, tracks, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities which have been installed underground or above the ground to furnish any of the following services or materials: water, sewage, sludge, drainage, fluids, electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, traffic control, or other control systems.

WORK -The entire completed construction or the various separately identifiable parts thereof required to be furnished under the Contract Documents. WORK is the result of performing or furnishing labor and furnishing and incorporating materials and equipment into the construction, and performing or furnishing services and furnishing documents, all as required by the Contract Documents.

ARTICLE 2 - PRELIMINARY MATTERS

2.1 DELIVERY OF BONDS AND INSURANCE CERTIFICATES

- A. When the CONTRACTOR delivers the signed Agreement to the OWNER, the CONTRACTOR shall also deliver to the OWNER such Bonds and insurance policies and certificates as the CONTRACTOR may be required to furnish in accordance with the Contract Documents.

2.2 COPIES OF DOCUMENTS

- A. The OWNER will furnish to the CONTRACTOR the required number of copies of the contract Documents specified in the Supplementary General Conditions.

2.3 COMMENCEMENT OF CONTRACT TIMES; NOTICE TO PROCEED

- A. The Contract Times will start to run on the commencement date stated in the Notice to Proceed.

2.4 STARTING THE WORK

- A. The CONTRACTOR shall begin to perform the WORK on the commencement date stated in the Notice to Proceed, but no work shall be done at the Site prior to said commencement date.
- B. Before undertaking each part of the WORK, the CONTRACTOR shall review the Contract Documents in accordance with Paragraph 3.3.

2.5 PRECONSTRUCTION CONFERENCE

- A. The CONTRACTOR is required to attend a preconstruction conference. This conference will be attended by the OWNER, ENGINEER, and others as appropriate in order to discuss the WORK in accordance with the applicable procedures specified.
- B. The CONTRACTOR's initial schedule submittals for shop drawings, obtaining permits, and Plan of Operation and Schedule will be reviewed and finalized. As a minimum, the CONTRACTOR's representatives should include its project manager and schedule expert. The CONTRACTOR should plan on this meeting taking no less than 3 hours. If the submittals are not finalized at the end of the meeting, additional meetings will be held so that the submittals can be finalized prior to the submittal of the first Application for Payment. No Application for Payment will be processed prior to receiving acceptable initial submittals from the CONTRACTOR.

ARTICLE 3 - INTENT AND USE OF CONTRACT DOCUMENTS

3.1 INTENT

- A. The Contract Documents comprise the entire agreement between the OWNER and the CONTRACTOR concerning the WORK. The Contract Documents are complementary; what is called for by one is as binding as if called for by all. The Contract Documents will be construed in accordance with the law of the State in which the Project is located.
- B. It is the intent of the Contract Documents to describe the WORK, functionally complete, to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that may reasonably be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the intended result will be provided whether or not called for specifically.
- C. When words or phrases which have a well-known technical or construction industry or trade meaning are used to describe work, materials, or equipment such words or phrases shall be interpreted in accordance with that meaning unless a definition has been provided in Article 1 of the General Conditions.

3.2 REFERENCE TO STANDARDS

- A. Reference to standard specifications, manuals, or codes of any technical society, organization, or association, or to the Laws or Regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids, except as may be otherwise specifically stated. However, no provision of any referenced standard specification, manual or code shall be effective to change the duties and responsibilities of the OWNER, the CONTRACTOR, the ENGINEER, or any of their consultants, agents, or employees, from those set forth in the Contract Documents, nor shall it be effective to assign to OWNER, ENGINEER, or any of ENGINEER's consultants, agents, or employees any duty or authority to direct the performance of the WORK or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

3.3 REVIEW OF CONTRACT DOCUMENTS

- A. If, during the performance of the WORK, CONTRACTOR discovers any conflict, error, ambiguity or discrepancy within the Contract Documents or between the Contract Documents and any provision of any such Law or Regulation applicable to the performance of the WORK or of any such standard, specification, manual, or code, or of any instruction of any Supplier, CONTRACTOR shall report it to ENGINEER in writing at once, and CONTRACTOR shall not proceed with the work affected thereby (except in an emergency as authorized by Paragraph 6.12) until a Clarification, Field Order, or Change Order to the Contract Documents has been issued.

3.4 ORDER OF PRECEDENCE OF CONTRACT DOCUMENTS

- A. In resolving conflicts resulting from errors or discrepancies in any of the Contract Documents, the order of precedence shall be as follows:

1. Permits from other agencies as may be required by law
2. Change Orders
3. Agreement
4. Addenda
5. Contractor's Bid (Bid Form)
6. Special Provisions
7. Notice to Bids
8. Instructions to Bidders
9. Supplementary General Conditions
10. General Conditions
11. Technical Specifications
12. Referenced Standard Specifications
13. Drawings

- B. With reference to the Drawings the order of precedence is as follows:

1. Figures govern over scaled dimensions
2. Detail drawings govern over general drawings
3. Addenda/Change Order drawings govern over any other drawings
4. Drawings govern over standard drawings

3.5 AMENDING CONTRACT DOCUMENTS

- A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the WORK or to modify the terms and conditions thereof by a Change Order (pursuant to Article 10).

3.6 REUSE OF DOCUMENTS

- A. Neither the CONTRACTOR, nor any Subcontractor or Supplier, nor any other person or organization performing any of the WORK under a contract with the OWNER shall have or acquire any title to or ownership rights in any of the Drawings, Technical Specifications, or other documents used on the WORK, and they shall not reuse any of them on the extensions of the Project or any other project without written consent of OWNER.

ARTICLE 4 - SITE OF THE WORK

4.1 AVAILABILITY OF LANDS

- A. The OWNER will furnish, as indicated in the Contract Documents, the lands upon which the WORK is to be performed, rights-of-way and easements for access thereto, and such other lands which are designated for the use of the CONTRACTOR. Easements for permanent structures or permanent changes in existing facilities will be obtained and paid for by the OWNER, unless otherwise provided in the Contract Documents. Nothing contained in

the Contract Documents shall be interpreted as giving the CONTRACTOR exclusive occupancy of the lands or rights-of-way provided. The CONTRACTOR shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment; provided, that the CONTRACTOR shall not enter upon nor use any property not under the control of the OWNER until a written temporary construction easement agreement has been executed by the CONTRACTOR and the property owner, and a copy of said easement furnished to the ENGINEER prior to said use; and, neither the OWNER nor the ENGINEER will be liable for any claims or damages resulting from the CONTRACTOR's trespass on or use of any such properties. The CONTRACTOR shall provide the OWNER with a signed release from the property owner confirming that the lands have been satisfactorily restored upon completion of the WORK.

4.2 REPORTS OF PHYSICAL CONDITIONS

- A. Subsurface Explorations: Reference is made to the Supplementary General conditions for identification of those reports of explorations and tests of subsurface conditions at the Site that have been utilized by the ENGINEER in the preparation of the Contract Documents.
- B. Existing Structures: Reference is made to the Supplementary General Conditions for identification of those drawings of physical conditions in or relating to existing surface and subsurface structures (except underground Utilities referred to in Paragraph 4.3 herein) which are at or contiguous to the Site that have been utilized in the preparation of the Contract Documents.
- C. Neither the OWNER nor ENGINEER makes any representation as to the completeness of the reports or drawings referred to in Paragraph 4.2 A or B above or the accuracy of any data or information contained therein. The CONTRACTOR may rely upon the accuracy of the technical data contained in such reports and drawings. However, the CONTRACTOR may not rely upon any interpretation of such technical data, including any interpolation or extrapolation thereof, or any non-technical data, interpretations, and opinions contained therein.

4.3 PHYSICAL CONDITIONS - UNDERGROUND UTILITIES

- A. Indicated: The information and data indicated in the Contract Documents with respect to existing underground Utilities at or contiguous to the Site are based on information and data furnished to the OWNER or the ENGINEER by the owners of such underground Utilities or by others. Unless it is expressly provided in the Supplementary General Conditions and/or Section 01011 – Site Conditions, the OWNER and the ENGINEER will not be responsible for the accuracy or completeness of any such information or data, and the CONTRACTOR shall have full responsibility for reviewing and checking all such information and data, for locating all underground Utilities indicated in the Contract Documents, for coordination of the WORK with the owners of such underground Utilities during construction, for the safety and protection thereof and repairing any damage thereto resulting from the WORK, the cost of all of which are deemed to have been included in the Contract Price.
- B. Not Indicated: If an underground Utility is uncovered or revealed at or contiguous to the Site which was not indicated in the Contract Documents and which the CONTRACTOR could not reasonably have been expected to be aware of, the CONTRACTOR shall identify the owner of such underground Utility and give written notice thereof to that owner and shall notify the ENGINEER in accordance with the requirements of the Supplementary General Conditions and Section 01011 – Site Conditions.

4.4 DIFFERING SITE CONDITIONS

- A. The CONTRACTOR shall notify the ENGINEER, in writing, of the following unforeseen conditions, hereinafter called differing Site conditions, promptly upon their discovery (but in no event later than 14 days after their discovery) and before they are disturbed:
 - 1. Subsurface or latent physical conditions at the Site of the WORK differing materially from those indicated, described, or delineated in the Contract Documents, including those reports discussed in Paragraph 4.2, 4.3, and 4.5; and

2. Unknown physical conditions at the Site of the WORK of an unusual nature differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents, including those reports and documents discussed in Paragraph 4.2, 4.3, and 4.5.
- B. The ENGINEER will review the pertinent conditions, determine the necessity of obtaining additional explorations or tests with respect thereto, and advise the OWNER, in writing, of the ENGINEER's findings and conclusions.
 - C. If the OWNER concludes that because of newly discovered conditions a change in the Contract Documents is required; a Change Order will be issued as provided in Article 10 to reflect and document the consequences of the difference.
 - D. In each such case, an increase or decrease in the Contract Price or an extension or shortening of the Contract Times, or any combination thereof, will be allowable to the extent that they are attributable to any such difference. If the OWNER and the CONTRACTOR are unable to agree as to the amount or length thereof, a claim may be made therefore as provided in Articles 11 and 12.
 - E. The CONTRACTOR's failure to give notice of differing Site conditions within 14 days of their discovery and before they are disturbed shall constitute a waiver of all claims in connection therewith, whether direct or consequential in nature.

4.5 HAZARDOUS MATERIALS

- A. Reference is made to the Supplementary General Conditions for identification of those reports and drawings relating to Asbestos, Hazardous Waste, PCBs, Petroleum and/or Radioactive Material identified at the Site that have been utilized by the ENGINEER in the preparation of the Contract Documents.
- B. OWNER shall be responsible for any Asbestos, Hazardous Waste, PCBs, Petroleum, or Radioactive Material uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the WORK and which may present a substantial danger to persons or property exposed thereto in connection with the WORK at the Site. OWNER will not be responsible for any such material brought to the Site by CONTRACTOR, Subcontractors, Suppliers, or anyone else for whom CONTRACTOR is responsible.
 1. Upon discovery of any Asbestos, Hazardous Waste, PCBs, Petroleum, or Radioactive Material, the CONTRACTOR shall immediately stop all work in any area affected thereby (except in an emergency as required by Paragraph 6.12) and notify OWNER and ENGINEER (and thereafter confirm such notice in writing). CONTRACTOR shall not be required to resume any work in any such affected area until after OWNER has obtained any required permits related thereto and delivered to CONTRACTOR special written notice. Such written notice will specify that such condition and any affected area is or has been rendered safe for the resumption of the work or specify any special conditions under which the work may be resumed safely. If OWNER and CONTRACTOR cannot agree as to entitlement to or the amount or extent of adjustment, if any, in Contract Price or Contract Times as a result of such work stoppage or such special conditions under which work is agreed by CONTRACTOR to be resumed, either party may make a claim therefor as provided in Articles 11 and 12.
 2. If, after receipt of such special written notice, CONTRACTOR does not agree to resume such WORK based on a reasonable belief it is unsafe, or does not agree to resume such WORK under special conditions, then OWNER may order such portion of the WORK that is in connection with such hazardous condition or in such affected area to be deleted from the WORK. If OWNER and CONTRACTOR cannot agree as to entitlement to or the amount or extent of an adjustment, if any, in Contract Price or Contract Times as a result of deleting such portion of the WORK then either party may make a claim therefore as provided in Articles 11 and 12. OWNER may have such deleted portion of the WORK performed by OWNER's own forces or others in accordance with Article 7.

- C. To the fullest extent permitted by Laws and Regulations, OWNER will indemnify and hold harmless CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's consultants, and the officers, directors, employees, agents, other consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages arising out of or resulting from such hazardous condition; provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the WORK itself), including the loss of use resulting there from. Nothing in this Paragraph shall obligate OWNER to indemnify a person or entity from and against the consequences of that person's or entity's own negligence.
- D. The provisions of Paragraphs 4.2, 4.3, and 4.4 are not intended to apply to Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material uncovered or revealed at the Site.

4.6 REFERENCE POINTS

- A. The OWNER will provide one bench mark, near or on the Site of the WORK, and will provide two points near or on the Site to establish a base line for use by the CONTRACTOR for alignment control. Unless otherwise specified in the Supplementary General Conditions, the CONTRACTOR shall furnish all other lines, grades, and bench marks required for proper execution of the WORK.
- B. The CONTRACTOR shall preserve all bench marks, stakes, and other survey marks, and in case of their removal or destruction by any party, the CONTRACTOR shall be responsible for the accurate replacement of such reference points by personnel qualified under the applicable state codes governing land surveyors.

ARTICLE 5 - BONDS AND INSURANCE

5.1 BONDS

- A. The CONTRACTOR shall furnish Performance and Payment Bonds, each in the amount set forth in the Supplementary General Conditions, as security for the faithful performance and payment of all the CONTRACTOR's obligations under the Contract Documents. These Bonds shall remain in effect at least until one year after the date of Substantial Completion, except as otherwise provided by Law or Regulation or by the Contract Documents. The CONTRACTOR shall also furnish such other Bonds as are required by the Supplementary General Conditions.
- B. All Bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff, Bureau of Government Financial Operations, U.S. Treasury Department. All Bonds signed by an agent must be accompanied by a certified copy of such agent's authority to act.
- C. If the surety on any Bond furnished by the CONTRACTOR is declared a bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the WORK is located, the CONTRACTOR shall within 7 days thereafter substitute another Bond and surety, which must be acceptable to the OWNER.
- D. All Bonds required by the Contract Documents to be purchased and maintained by CONTRACTOR shall be obtained from surety companies that are duly licensed or authorized in the State in which the Project is located to issue Bonds for the limits so required. Such surety companies shall also meet such additional requirements and qualifications as may be provided in the Supplementary General Conditions.

5.2 INSURANCE

- A. The CONTRACTOR shall purchase and maintain the insurance required under this Paragraph. Such insurance shall include the specific coverage's set out herein and be written for not less than the limits of liability and coverage's provided in the Supplementary General Conditions, or required by Laws or Regulations, whichever are greater. All

insurance shall be maintained continuously during the life of the Agreement up to the date of Substantial Completion and at all times thereafter when the CONTRACTOR may be correcting, removing, or replacing Defective Work in accordance with Paragraph 13.5. The CONTRACTOR's liabilities under this Agreement shall not be deemed limited in any way to the insurance coverage required.

- B. All insurance required by the Contract Documents to be purchased and maintained by the CONTRACTOR shall be obtained from insurance companies that are duly licensed or authorized to issue insurance policies for the limits and coverage's so required in the State in which the Project is located. Such insurance companies shall have a current Best's Rating of at least an "A" (Excellent) general policy holder's rating and a Class VII financial size category and shall also meet such additional requirements and qualifications as may be provided in the Supplementary General Conditions.
- C. The CONTRACTOR shall furnish the OWNER, with copies to each additional insured who is indicated in the Supplementary General Conditions, with certificates and original endorsements showing the type, amount, class of operations covered, effective dates and dates of expiration of policies. All of the policies of insurance so required to be purchased and maintained (or the certificates or other evidence thereof) shall contain a provision or endorsement that the coverage afforded will not be canceled, reduced in coverage, or renewal refused until at least 30 days' prior written notice has been given to the OWNER and additional insured's by certified mail. All such insurance required herein (except for worker's compensation and employer's liability) shall name the OWNER, the ENGINEER, and their consultants and sub consultants and their officers, directors, agents, and employees as "additional insured's" under the policies. The CONTRACTOR shall purchase and maintain the following insurance:
 - 1. Workers' Compensation and Employer's Liability: This insurance shall protect the CONTRACTOR against all claims under applicable workers' compensation laws or federal acts, including claims for injury, disease, or death of employees which, for any reason, may not fall within the provisions of a workers' compensation law. This insurance shall include an "all states" endorsement. In the event of a "monopolistic" state, CONTRACTOR shall certify all employees are covered by the state fund or shall provide a separate policy providing "all states" benefits. Employer's liability "stop gap" coverage for monopolistic states shall be provided under either a worker's compensation policy or general liability policy. The CONTRACTOR shall require each subcontractor similarly to provide workers' compensation insurance for all of the latter's employees to be engaged in such work unless such employees are covered by the protection afforded by the CONTRACTOR's workers' compensation insurance. In case any class of employees is not protected under the workers' compensation laws, the CONTRACTOR shall provide and shall cause each Subcontractor to provide adequate employer's liability insurance for the protection of such of its employees as are not otherwise protected. The CONTRACTOR and each Subcontractor shall provide a waiver of subrogation in favor of the OWNER and ENGINEER.
 - 2. Comprehensive or Commercial General Liability: This insurance shall be written in comprehensive form and shall protect the CONTRACTOR against all claims arising from injuries to persons other than its employees or damage to property of the OWNER or others arising out of any act or omission of the CONTRACTOR or its agents, employees, or subcontractors. The policy shall also include protection against claims insured by personal injury liability coverage and contractual coverage to insure the contractual liability assumed by the CONTRACTOR under the indemnification provisions in the General Conditions. To the extent that the CONTRACTOR's work, or work under its direction, may require blasting, explosive conditions, or underground operations, the comprehensive or commercial general liability coverage shall specifically include coverage relative to blasting, explosion, collapse, and/or underground hazards.
 - 3. Commercial Automobile Liability: This insurance shall be written in comprehensive form and shall protect the CONTRACTOR against all claims for injuries to members of the public and damage to property of others arising from the use of motor vehicles, and shall cover operation on or off the Site of all motor vehicles licensed for highway use, whether they are owned, nonowned, or hired.
 - 4. Subcontractor's Public Liability and Property Damage Insurance and Vehicle Liability Insurance: The CONTRACTOR shall either require each of the Subcontractors to procure and to maintain subcontractor's public liability and property damage insurance and vehicle liability insurance of the type and in the same

amounts specified in the Supplementary General Conditions for the CONTRACTOR or insure the activities of the Subcontractors under the CONTRACTOR's own policies.

5. Builder's Risk:

- a. This insurance shall be of the "all risks" type, shall be written in completed value form, and shall protect the CONTRACTOR, Subcontractors, the OWNER, and the ENGINEER, against risks of damage to buildings, structures, and materials and equipment (including any stored off-site and while in transit), CONTRACTOR'S equipment, debris removal and including demolition and contingent loss occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for ENGINEER'S services and expenses required as a result of such insured loss. The amount of such insurance shall be not less than the insurable value of the WORK at completion plus equipment. Builder's risk insurance shall provide for losses to be payable to the CONTRACTOR and the OWNER, as their interests may appear. This insurance shall contain a provision that in the event of payment for any loss under the coverage provided, the insurance company shall have no rights of recovery against the CONTRACTOR, the OWNER, and the ENGINEER. This insurance shall insure against all risks of loss (including earthquake, flood and collapse) and, at the option of the OWNER, shall include comprehensive boiler and machinery coverage including coverage for installation and testing.
- b. If the OWNER finds it necessary to occupy or use a portion or portions of the Project prior to Substantial Completion thereof, such occupancy shall not commence prior to the time mutually agreed to by the OWNER and CONTRACTOR and to which the insurance company or companies providing the Builder's Risk Insurance have consented by endorsement to the policy or policies.

ARTICLE 6 -- CONTRACTOR'S RESPONSIBILITIES

6.1 COMMUNICATIONS

- A. Written communications with the OWNER shall be only through or as directed by the ENGINEER.

6.2 SUPERVISION AND SUPERINTENDENCE

- A. The CONTRACTOR shall supervise, inspect, and direct the WORK competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the WORK in accordance with the Contract Documents. The CONTRACTOR shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction and all safety precautions and programs incidental thereto. The CONTRACTOR shall be responsible to see that the completed WORK complies accurately with the Contract Documents.
- B. The CONTRACTOR shall designate in writing and keep on the Site at all times during the performance of the WORK a technically qualified, English-speaking superintendent, who is an employee of the CONTRACTOR and who shall not be replaced without written notice to the OWNER and the ENGINEER. The superintendent will be the CONTRACTOR's representative at the Site and shall have authority to act on behalf of the CONTRACTOR. All communications given to the superintendent shall be as binding as if given to the CONTRACTOR.
- C. The CONTRACTOR's superintendent shall be present at the Site at all times while work is in progress and shall be available by phone for emergencies 24 hours per day, 7 days per week. Failure to observe this requirement shall be considered suspension of the WORK by the CONTRACTOR until such time as such superintendent is again present at the Site.

6.3 LABOR, MATERIALS, AND EQUIPMENT

- A. The CONTRACTOR shall provide competent, suitably qualified personnel to survey and lay out the WORK and perform construction as required by the Contract Documents. The CONTRACTOR shall furnish, erect, maintain, and remove the construction plant and any required temporary works. The CONTRACTOR shall at all times maintain good discipline and order at the Site. Except in connection with the safety or protection of persons or the

WORK or property at the Site or adjacent thereto, and except as otherwise indicated in the Contract Documents, all work at the Site shall be performed during regular working hours, and the CONTRACTOR will not permit overtime work or the performance of work on Saturday, Sunday, any City of Edinburg observed holiday, or any federally observed holiday without the OWNER's written consent. The CONTRACTOR shall apply for this consent through the ENGINEER in writing a minimum of 48 hours in advance.

- B. Except as otherwise provided in this Paragraph, the CONTRACTOR shall receive no additional compensation for overtime work, i.e., work in excess of 8 hours in any one calendar day or 40 hours in any one calendar week, even though such overtime work may be required under emergency conditions and may be ordered by the ENGINEER in writing.
- C. All increased costs of inspection and testing performed during overtime work by the CONTRACTOR which is allowed solely for the convenience of the CONTRACTOR shall be borne by the CONTRACTOR. The OWNER has the authority to deduct the cost of all such inspection and testing from any partial payments otherwise due to the CONTRACTOR.
- D. Unless otherwise specified in the Contract Documents, the CONTRACTOR shall furnish and assume full responsibility for all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, lubricants, power, light, heat, telephone, water, sanitary facilities, and all other facilities, consumables, and incidentals necessary for the furnishing, performance, testing, start-up, and completion of the WORK.
- E. All materials and equipment incorporated into the WORK shall be of specified quality and new, except as otherwise provided in the Contract Documents. All warranties and guarantees specifically called for by the Specifications shall expressly run to the benefit of the OWNER. If required by the ENGINEER, the CONTRACTOR shall furnish satisfactory evidence (including reports of required tests) as to the source, kind and quality of materials and equipment. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with the instructions of the applicable Supplier except as otherwise provided in the Contract Documents; but no provisions of any such instructions will be effective to assign to the OWNER, ENGINEER, or any of their consultants, agents, or employees, any duty or authority to supervise or direct the furnishing or performance of the WORK or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.9 C.

6.4 SCHEDULE

- A. The CONTRACTOR shall comply with the schedule requirements in the General Requirements.

6.5 SUBSTITUTES OR "OR EQUAL" ITEMS

- A. The CONTRACTOR shall submit proposed substitutes or "or equal" items in accordance with the provisions set forth in the Supplemental General Provisions SGC-6.5.

6.6 CONCERNING SUBCONTRACTORS, SUPPLIERS, AND OTHERS

- A. The CONTRACTOR shall be responsible to the OWNER and the ENGINEER for the acts and omissions of its Subcontractors, Suppliers, and their employees to the same extent as CONTRACTOR is responsible for the acts and omissions of its own employees. Nothing contained in this Paragraph shall create any contractual relationship between any Subcontractor and the OWNER or the ENGINEER nor relieve the CONTRACTOR of any liability or obligation under the Contract Documents. The CONTRACTOR shall include these General Conditions and the Supplementary General Conditions as a part of all its subcontract and supply agreements.

6.7 PERMITS

- A. Unless otherwise provided in the Supplementary General Conditions, the CONTRACTOR shall obtain and pay for all construction permits and licenses from the agencies having jurisdiction, including the furnishing of insurance and bonds if required by such agencies. The enforcement of such requirements shall not be made the basis for claims for additional compensation by CONTRACTOR. When necessary, the OWNER will assist the CONTRACTOR, in obtaining such permits and licenses. The CONTRACTOR shall pay all governmental charges and inspection fees necessary for the prosecution of the WORK, which are applicable at the time of opening of Bids. The CONTRACTOR shall pay all charges of utility owners for inspection or connections to the WORK.

6.8 PATENT FEES AND ROYALTIES

- A. The CONTRACTOR shall pay all license fees and royalties and assume all costs incident to the use in the performance of the WORK or the incorporation in the WORK of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the WORK and if to the actual knowledge of the OWNER or the ENGINEER its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights will be disclosed by the OWNER in the Contract Documents. The CONTRACTOR's indemnification obligation under this Paragraph 6.7 A. for all claims and liabilities arising out of any infringement of patent rights or copyrights incident to the use in the performance of the WORK or resulting from the incorporation in the WORK of any invention, design, process, product, or device not specified in the Contract Documents shall be in accordance with Paragraph 6.16 of these General Conditions.

6.9 LAWS AND REGULATIONS

- A. The CONTRACTOR shall observe and comply with all Laws and Regulations which in any manner affect those engaged or employed on the WORK, the materials used in the WORK, or the conduct of the WORK. If any discrepancy or inconsistency should be discovered between the Contract Documents and any such Laws or Regulations, the CONTRACTOR shall report the same in writing to the ENGINEER. Any particular Law or Regulation specified or referred to elsewhere in the Contract Documents shall not in any way limit the obligation of the CONTRACTOR to comply with all other provisions of federal, state, and local laws and regulations. The CONTRACTOR's indemnification obligations for all claims or liability arising from violation of any such law, ordinance, code, order, or regulation, whether by CONTRACTOR or by its employees, Subcontractors or Suppliers shall be in accordance with Paragraph 6.17 of these General Conditions.

6.10 TAXES

- A. The CONTRACTOR shall pay all sales, consumer, use, and other similar taxes required to be paid by the CONTRACTOR in accordance with the laws and regulations of the place of the Project which are applicable during the performance of the WORK.

6.11 USE OF PREMISES

- A. The CONTRACTOR shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site, the land and areas identified in and permitted by the Contract Documents, and the other land and areas permitted by Laws and Regulations, rights-of-way, permits, and easements. The CONTRACTOR shall assume full liability and responsibility for any damage to any such land or area, or to the owner or occupant thereof or of any land or areas contiguous thereto, resulting from the performance of the WORK. Should any claim be made against the OWNER or the ENGINEER by any such owner or occupant because of the performance of the WORK, the CONTRACTOR shall promptly attempt to settle with such other party by agreement or otherwise resolve the claim through litigation at the CONTRACTOR's sole liability expense. The CONTRACTOR's indemnification obligations for all claims and liability, arising directly, indirectly, or consequentially out of any action, legal or equitable, brought by any such owner or occupant against the OWNER, the ENGINEER, their consultants, sub consultants, and the officers, directors, employees and agents of each and any of them to the extent caused by or based upon the CONTRACTOR's performance of the WORK shall be in accordance with Paragraph 6.17 of these General Conditions.

6.12 SAFETY AND PROTECTION

- A. The CONTRACTOR shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the WORK. The CONTRACTOR shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:
 - 1. All persons at the Site and other persons and organizations who may be affected thereby;
 - 2. All the WORK and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
 - 3. Other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of the performance of the WORK.
- B. The CONTRACTOR shall comply with all applicable Laws and Regulations relating to the safety of persons or property or to the protection of persons or property from damage, injury, or loss and shall erect and maintain all necessary safeguards for such safety and protection. The CONTRACTOR shall notify owners of adjacent property and utilities when prosecution of the WORK may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property. CONTRACTOR'S duties and responsibilities for safety and for protection of the WORK shall continue until such time as all the WORK is completed and ENGINEER has issued a notice to OWNER and CONTRACTOR in accordance with Paragraph 14.7 B. that the WORK is acceptable (except as otherwise expressly provided in connection with Substantial Completion).
- C. The CONTRACTOR shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.
- D. Materials that contain hazardous substances or mixtures may be required on the WORK. A Material Safety Data Sheet shall be made available at the Site by the CONTRACTOR for every hazardous product used.
- E. Material usage shall strictly conform to OSHA safety requirements and all manufacturer's warnings and application instructions listed on the Material Safety Data Sheet and on the product container label.
- F. The CONTRACTOR shall be responsible for the exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.
- G. The CONTRACTOR shall notify the ENGINEER if it considers a specified product or its intended use to be unsafe. This notification must be given to the ENGINEER prior to the product being ordered, or if provided by some other party, prior to the product being incorporated in the WORK.

6.13 EMERGENCIES

- A. In emergencies affecting the safety or protection of persons or the WORK or property at the Site or adjacent thereto, CONTRACTOR, without special instruction or authorization from OWNER or ENGINEER, is obligated to immediately act to prevent threatened damage, injury, or loss. CONTRACTOR shall give ENGINEER prompt written notice if CONTRACTOR believes that any significant changes in the WORK or variations from the Contract Documents have been caused thereby. If ENGINEER determines that a change in the Contract Documents is required because of the action taken by CONTRACTOR in response to such an emergency, a Change Order will be issued to document the consequences of such action.

6.14 SUBMITTALS

- A. After checking and verifying all field measurements and after complying with applicable procedures specified in the General Requirements, the CONTRACTOR shall submit to the ENGINEER for review all Shop Drawings.
- B. The ENGINEER'S review will be only to determine if the items covered by the submittals will, after installation or incorporation in the WORK, generally conform to the Contract Documents and with the design concept of the completed Project.
- C. The CONTRACTOR shall also submit to the ENGINEER for review all Samples in accordance with the accepted schedule of Sample submittals.
- D. Before submittal of each Shop Drawing or Sample, the CONTRACTOR shall have determined and verified all quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers, and similar data with respect thereto and reviewed or coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the WORK and the Contract Documents. The CONTRACTOR shall provide submittals in accordance with the requirements of Submittal Requirements.

6.15 CONTINUING THE WORK

- A. The CONTRACTOR shall carry on the WORK and adhere to the progress schedule during all disputes or disagreements with the OWNER. No WORK shall be delayed or postponed pending resolution of any disputes or disagreements, except as the CONTRACTOR and the OWNER may otherwise agree in writing.

6.16 CONTRACTOR'S GENERAL WARRANTY AND GUARANTEE

- A. CONTRACTOR warrants and guarantees that all WORK will be in accordance with the Contract Documents and will not be defective. CONTRACTOR's warranty and guarantee hereunder excludes defects or damage caused by:
 - 1. Abuse, modification, or improper maintenance or operation by persons other than CONTRACTOR, Subcontractors, or Suppliers, or any other individual or entity for whom CONTRACTOR is responsible;
 - 2. Normal wear and tear under normal usage.
- B. CONTRACTOR's obligation to perform and complete the WORK in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of WORK that is not in accordance with the Contract Documents or a release of CONTRACTOR's obligation to perform the WORK in accordance with the Contract Documents:
 - 1. Observations by ENGINEER;
 - 2. Recommendation by ENGINEER or payment by OWNER of any progress or final payment;
 - 3. The issuance of a Certificate of Completion by the OWNER;
 - 4. Use or occupancy of the WORK or any part thereof by the OWNER;
 - 5. Any acceptance by OWNER or any failure to do so;
 - 6. Any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice or acceptability by ENGINEER pursuant to Paragraph 14.7 B.;
 - 7. Any inspection, test, or approval by others; or
 - 8. Any correction of Defective Work by OWNER.

6.17 INDEMNIFICATION

- A. To the fullest extent permitted by Laws and Regulations, the CONTRACTOR shall indemnify, defend, and hold harmless the OWNER, the ENGINEER, their consultants, sub consultants, and the officers, directors, employees, and agents of each and any of them, against and from all claims and liability arising under, by reason of, related, or incidental to the Contract Documents or any performance of the WORK, but not from the sole negligence or willful

misconduct of the OWNER and/or the ENGINEER. Such indemnification by the CONTRACTOR shall include, but not be limited to, the following:

1. Liability or claims resulting directly or indirectly from the negligence or carelessness of the CONTRACTOR, its employees, or agents in the performance of the WORK, or in guarding or maintaining the same, or from any improper materials, implements, or appliances used in its construction, or by or on account of any act or omission of the CONTRACTOR, its employees, or agents;
 2. Liability or claims arising directly or indirectly from bodily injury, occupational sickness or disease, or death of the CONTRACTOR's, Subcontractor's, or Supplier's own employees, or agents engaged in the WORK resulting in actions brought by or on behalf of such employees against the OWNER and/or the ENGINEER;
 3. Liability or claims arising directly or indirectly from or based on the violation of any Laws or Regulations, whether by the CONTRACTOR, its employees, or agents;
 4. Liability or claims arising directly or indirectly from the use or manufacture by the CONTRACTOR, its employees, or agents in the performance of this Agreement of any copyrighted or un-copyrighted composition, secret process, patented or unpatented invention, article, or appliance, unless otherwise specifically stipulated in this Agreement;
 5. Liability or claims arising directly or indirectly from the breach of any warranties, whether express or implied, made to the OWNER and/or ENGINEER or any other parties by the CONTRACTOR, its employees, or agents;
 6. Liability or claims arising directly or indirectly from the willful misconduct of the CONTRACTOR, its employees, or agents;
 7. Liability or claims arising directly or indirectly from any breach of the obligations assumed in this Agreement by the CONTRACTOR;
 8. Liability or claims arising directly or indirectly from, relating to, or resulting from a hazardous condition created by the CONTRACTOR, Subcontractors, Suppliers, or any of their employees or agents, and;
 9. Liability or claims arising directly, or indirectly, or consequentially out of any action, legal or equitable, brought against the OWNER, the ENGINEER, their consultants, subconsultants, and the officers, directors, employees and agents of each or any of them, to the extent caused by the CONTRACTOR's use of any premises acquired by permits, rights of way, or easements, the Site, or any land or areas contiguous thereto or its performance of the WORK thereon.
- B. The CONTRACTOR shall reimburse the OWNER and the ENGINEER for all costs and expenses, (including but not limited to fees and charges of engineers, architects, attorneys, and other professionals and court costs including all costs of appeals) incurred by said OWNER and ENGINEER in enforcing the provisions of this Paragraph 6.17.
- C. The indemnification obligation under this Paragraph 6.17 shall not be limited in any way by any limitation on the amount or type of insurance carried by CONTRACTOR or by the amount or type of damages, compensation, or benefits payable by or for the CONTRACTOR or any Subcontractor or other person or organization under workers' compensation acts, disability benefit acts, or other employee benefit acts.

6.18 CONTRACTOR'S DAILY REPORTS

- A. The CONTRACTOR shall complete a daily report indicating location worked, total manpower for each construction trade, major equipment on Site, each Subcontractor's manpower and equipment, weather conditions, and other related information involved in the performance of the WORK. The daily report shall be completed on forms furnished by the ENGINEER, and shall be submitted to the ENGINEER at the conclusion of each workday. The daily report shall comment on the daily progress and status of each major component of the WORK. These components will be decided by the ENGINEER.

ARTICLE 7 -- OTHER WORK

7.1 RELATED WORK AT SITE

- A. The OWNER may perform other work related to the Project at the Site by the OWNER's own forces, have other work performed by utility owners, or let other direct contracts for such other work. If the fact that such other work is to be

performed was not noted in the Contract Documents, written notice thereof will be given to the CONTRACTOR prior to starting any such other work.

- B. The CONTRACTOR shall afford each person who is performing the other work (including the OWNER's employees) proper and safe access to the Site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and shall properly coordinate the WORK with theirs. The CONTRACTOR shall do all cutting, fitting, and patching of the WORK that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. The CONTRACTOR shall not endanger any work of others by cutting, excavating, or otherwise altering their work and will only cut or alter their work with the written consent of the ENGINEER and the others whose work will be affected.
- C. If the proper execution or results of any part of the CONTRACTOR's work depends upon such other work by another, the CONTRACTOR shall inspect and report to the ENGINEER in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for such proper execution and results. The CONTRACTOR's failure to report such delays, defects, or deficiencies will constitute an acceptance of the other work as fit and proper for integration with the CONTRACTOR's work except for latent or nonparent defects and deficiencies in the other work.

7.2 COORDINATION

- A. If the OWNER contracts with others for the performance of other work at the Site, OWNER will have sole authority and responsibility in respect of such coordination unless otherwise provided in the Supplementary General Conditions.

ARTICLE 8 -- OWNER'S RESPONSIBILITIES

8.1 COMMUNICATIONS

- A. Except as may be otherwise provided in these General Conditions or the Supplementary General Conditions, the OWNER will issue all its communications to the CONTRACTOR through the ENGINEER.

8.2 PAYMENTS

- A. The OWNER will make payments to the CONTRACTOR as provided in Article 14.

8.3 LANDS, EASEMENTS, AND SURVEYS

- A. The OWNER's duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.1 and 4.6.

8.4 REPORTS AND DRAWINGS

- A. The OWNER will identify and make available to the CONTRACTOR copies of reports of physical conditions at the Site and drawings of existing structures which have been utilized in preparing the Contract Documents as set forth in Paragraph 4.2.

8.5 CHANGE ORDERS

- A. The OWNER will execute Change Orders as indicated in Article 10.

8.6 INSPECTIONS AND TESTS

- A. The OWNER's responsibility for inspections and tests is set forth in Paragraph 13.3.

8.7 SUSPENSION OF WORK

- A. The OWNER's right to stop work or suspend work is set forth in Paragraphs 13.4 and 15.1.

8.8 TERMINATION OF AGREEMENT

- A. The OWNER's right to terminate services of the CONTRACTOR is set forth in Paragraphs 15.2 and 15.3.

8.9 LIMITATION ON OWNER'S RESPONSIBILITIES

- A. The OWNER shall not supervise, direct or have control or authority over, nor be responsible for CONTRACTOR's means, methods, techniques, sequences, or procedures of construction or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the furnishing or performance of the WORK. OWNER will not be responsible for CONTRACTOR's failure to perform or furnish the WORK in accordance with the Contract Documents.

8.10 UNDISCLOSED HAZARDOUS ENVIRONMENTAL CONDITIONS

- A. OWNER's responsibility in respect to an undisclosed hazardous environmental condition is set forth in Paragraph 4.5.

ARTICLE 9 - ENGINEER'S STATUS DURING CONSTRUCTION

9.1 OWNER'S REPRESENTATIVE

- A. The ENGINEER will be the OWNER's representative during the construction period. The duties and responsibilities and the limitations of authority of the ENGINEER as the OWNER's representative during construction are set forth in the Contract Documents.

9.2 OBSERVATIONS ON THE SITE

- A. The ENGINEER will make observations on the Site during construction to monitor the progress and quality of the WORK and to determine, in general, if the WORK is proceeding in accordance with the Contract Documents. The ENGINEER will not be required to make exhaustive or continuous inspections to check the quality or quantity of the WORK.

9.3 PROJECT REPRESENTATION

- A. The ENGINEER may furnish a Resident Project Representative to assist in observing the performance of the WORK. The duties, responsibilities, and limitations of authority of any such Resident Project Representative will be as provided in the Supplementary General Conditions.

9.4 CLARIFICATIONS

- A. The ENGINEER will issue with reasonable promptness such written Clarifications of the requirements of the Contract Documents as the ENGINEER may determine necessary, which shall be consistent with or reasonably inferable from the overall intent of the Contract Documents.

9.5 AUTHORIZED VARIATIONS IN WORK

- A. The ENGINEER may authorize variations in the WORK from the requirements of the Contract Documents. These may be accomplished by a Field Order and will require the CONTRACTOR to perform the WORK involved in a manner that minimizes the impact to the WORK and the Contract Times. If the CONTRACTOR believes that a Field Order justifies an increase in the Contract Price or an extension of the Contract Times, the CONTRACTOR may make a claim therefore as provided in Article 11 or 12.

9.6 REJECTING DEFECTIVE WORK

- A. The ENGINEER will have authority to reject Defective Work and will also have authority to require special inspection or testing of the WORK as provided in Article 13.

9.7 CONTRACTOR SUBMITTALS, CHANGE ORDERS, AND PAYMENTS

- A. In accordance with the procedures set forth in the General Requirements, the ENGINEER will review all CONTRACTOR submittals.
- B. The ENGINEER's responsibilities for Change Orders are set forth in Articles 10, 11, and 12.
- C. The ENGINEER's responsibilities for Applications for Payment are set forth in Article 14.

9.8 DECISIONS ON DISPUTES

- A. The ENGINEER will be the initial interpreter of the requirements of the Contract Documents and of the acceptability of the WORK there under. Claims, disputes, and other matters relating to the acceptability of the WORK and interpretation of the requirements of the Contract Documents pertaining to the performance of the WORK shall be determined by the ENGINEER. Any claims in respect to changes in the Contract Price or Contract Times shall be resolved in accordance with the requirements set forth in Articles 10, 11, and 12.

9.9 LIMITATION ON ENGINEER'S RESPONSIBILITIES

- A. Neither the ENGINEER's authority to act under this Article 9 or other provisions of the Contract Documents nor any decision made by the ENGINEER in good faith either to exercise or not exercise such authority shall give rise to any duty or responsibility of the ENGINEER to the CONTRACTOR, any Subcontractor, any Supplier, any surety for any of them, or any other person or organization performing any of the WORK.
- B. Whenever in the Contract Documents the terms "as ordered," "as directed," "as required," "as allowed," "as reviewed," "as approved," or terms of like effect or import are used, or the adjectives "reasonable," "suitable," "acceptable," "proper," or "satisfactory," or adjectives of like effect or import are used to describe a requirement, direction, review, or judgment of the ENGINEER as to the WORK, it is intended that such requirement, direction, review, or judgment will be solely to evaluate the WORK for compliance with the requirements of the Contract Documents, and conformance with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents, unless there is a specific statement indicating otherwise. The use of any such term or adjective shall not be effective to assign to the ENGINEER any duty or authority to supervise or direct the performance of the WORK or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.9 C.
- C. The ENGINEER will not supervise, direct, control, or have authority over or be responsible for the CONTRACTOR's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of the CONTRACTOR to comply with Laws and Regulations applicable to the performance of the WORK. The ENGINEER will not be responsible for the CONTRACTOR's failure to perform the WORK in accordance with the Contract Documents. The ENGINEER will not be responsible for the acts or omissions of the CONTRACTOR nor of any Subcontractor, Supplier, or any other person or organization performing any of the WORK.

ARTICLE 10-- CHANGES IN THE WORK

10.1 GENERAL

- A. Without invalidating the Agreement and without notice to any surety, the OWNER may at any time or from time to time, order additions, deletions, or revisions in the WORK. Such additions, deletions or revisions will be authorized by a Change Order or Field Order. Upon receipt of any such document, CONTRACTOR shall promptly proceed to implement the additions, deletions, or revisions in the WORK in accordance with the applicable conditions of the Contract Documents.
- B. The CONTRACTOR shall not be entitled to an increase in the Contract Price nor an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented by Change Order, except in the case of an emergency and except in the case of uncovering work as provided in Paragraph 13.3.F and G.
- C. The OWNER and the CONTRACTOR shall execute appropriate Change Orders covering:
 - 1. Changes in the WORK which are ordered by the OWNER pursuant to Paragraph 10.1 A.;
 - 2. Changes required because of acceptance of Defective Work under Paragraph 13.6; and
 - 3. Changes in the Contract Price or Contract Times which are agreed to by the parties under Articles 11 and/or 12, respectively.
- D. If notice of any change in the WORK is required to be given to a surety, the giving of any such notice shall be the CONTRACTOR's responsibility. If the change in the WORK affects the Contract Price, the OWNER may require an adjustment to the amount of any applicable Bond and the amount of each applicable Bond shall be adjusted accordingly.
- E. If the OWNER and CONTRACTOR agree as to the extent, if any, of an increase in the Contract Price or an extension or shortening of the Contract Times that should be allowed as a result of a Field Order, the CONTRACTOR shall proceed so as to minimize the impact on and delays to the WORK pending the issuance of a Change Order.
- F. If the OWNER and the CONTRACTOR are unable to agree as to the extent, if any, of an increase in the Contract Price or an extension or shortening of the Contract Times that should be allowed as a result of a Field Order, the ENGINEER can direct the CONTRACTOR to proceed on the basis of time and materials so as to minimize the impact on and delays to the WORK, and the CONTRACTOR may make a claim as provided in Articles 11 and 12.

10.2 ALLOWABLE QUANTITY VARIATIONS

- A. In the event of an increase or decrease in the quantity of any bid item under a unit price contract, the total amount of work actually done or materials or equipment furnished will be paid for according to the unit price established for such work under the Contract Documents, wherever such unit price has been established; provided, that an adjustment in the Contract Price may be made for changes which result in an increase or decrease in excess of 25 percent of the estimated quantity of any unit price bid item of the WORK.
- B. In the event a part of the WORK is to be entirely eliminated and no lump sum or unit price is named in the Contract Documents to cover such eliminated work, the price of the eliminated work shall be agreed upon by the OWNER and the CONTRACTOR by Change Order.

ARTICLE 11 -- CHANGE OF CONTRACT PRICE

11.1 GENERAL

- A. The Contract Price constitutes the total compensation payable to the CONTRACTOR for performing the WORK. All duties, responsibilities, and obligations assigned to or undertaken by the CONTRACTOR to complete the WORK shall be at its expense without change in the Contract Price.

- B. The Contract Price may only be changed by a Change Order. The value of any work covered by a Change Order or of any claim for an increase or decrease in the Contract Price shall be determined in one of the following ways:
 - 1. Where the work involved is covered by unit prices contained in the Contract Documents, by application of unit prices to the quantities of the items involved.
 - 2. By mutual acceptance of a lump sum, which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.4; or
 - 3. On the basis of the cost of work (determined as provided in Paragraph 11.3) plus the CONTRACTOR's overhead and profit (determined as provided in Paragraph 11.4).

- C. Any claim for an increase in the Contract Price shall be based on written notice delivered by the CONTRACTOR to the ENGINEER promptly (but in no event later than 10 days) after the start of the event giving rise to the claim and shall state the general nature of the claim. Notice of the amount of the claim with supporting data shall be delivered within 60 days after the start of such event (unless the ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by the CONTRACTOR's written statement that the amount claimed covers all known amounts (direct, indirect, and consequential) to which the CONTRACTOR is entitled as a result of such event. All claims for adjustment in the Contract Price will be determined by the ENGINEER. No claim for an adjustment in the Contract Price will be valid if not submitted in accordance with this Paragraph 11.1 C.

11.2 COSTS RELATING TO WEATHER

- A. The CONTRACTOR shall have no claims against the OWNER for damages for any injury to work, materials, or equipment, resulting from the action of the elements. If, however, in the opinion of the ENGINEER, the CONTRACTOR has made all reasonable efforts to protect the materials, equipment, and work, the CONTRACTOR may be granted a reasonable extension of Contract Times to make proper repairs, renewals, and replacements of the work, materials, or equipment.

11.3 COST OF WORK (BASED ON TIME AND MATERIALS)

- A. General: The term "cost of work" means the sum of all costs necessarily incurred and paid by the CONTRACTOR for labor, materials, and equipment in the proper performance of extra work. Except as otherwise may be agreed to in writing by the OWNER, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items and shall not include any of the costs itemized in Paragraph 11.5.

- B. Labor: The costs of labor will be the actual cost for wages prevailing for each craft or type of workers performing the extra work at the time the extra work is done, plus employer payments of payroll taxes, workers compensation insurance, liability insurance, health and welfare, pension, vacation, apprenticeship funds, and other direct costs resulting from federal, state or local laws, as well as assessments or benefits required by lawful collective bargaining agreements. Labor costs for equipment operators and helpers will be paid only when such costs are not included in the invoice for equipment rental. The labor costs for foremen shall be proportioned to all of their assigned work and only that applicable to extra work shall be paid. Nondirective labor costs including superintendence shall be considered part of the markup set out in Paragraph 11.4.

- C. Materials: The cost of materials reported shall be at invoice or lowest current price at which materials are locally available and delivered to the Site in the quantities involved, plus the cost of freight, delivery and storage, subject to the following:
 - 1. All trade discounts and rebates shall accrue to the OWNER, and the CONTRACTOR shall make provisions so that they may be obtained;

2. For materials secured by other than a direct purchase and direct billing to the purchaser, the cost shall be deemed to be the price paid to the actual supplier as determined by the ENGINEER. Except for actual costs incurred in the handling of such materials, markup will not be allowed;
 3. Payment for materials from sources owned wholly or in part by the purchaser shall not exceed the price paid by the purchaser for similar materials from said sources on extra work items or the current wholesale price for such materials delivered to the Site, whichever price is lower; and
 4. If in the opinion of the ENGINEER the cost of material is excessive, or the CONTRACTOR does not furnish satisfactory evidence of the cost of such material, then the cost shall be deemed to be the lowest current wholesale price for the quantity concerned delivered to the Site less trade discount. The OWNER reserves the right to furnish materials for the extra work and no claim will be allowed by the CONTRACTOR for costs and profit on such materials.
- D. Equipment: The CONTRACTOR will be paid for the use of equipment at the rental rate listed for such equipment specified in the Supplementary General Conditions. Such rental rate will be used to compute payments for equipment whether the equipment is under the CONTRACTOR's control through direct ownership, leasing, renting, or another method of acquisition. The rental rate to be applied for use of each item of equipment will be the rate resulting in the least total cost to the OWNER for the total period of use. If it is deemed necessary by the CONTRACTOR to use equipment not listed in the publication specified in the Supplementary General Conditions, an equitable rental rate for the equipment will be established by the ENGINEER. The CONTRACTOR may furnish cost data which might assist the ENGINEER in the establishment of the rental rate. Payment for equipment shall be subject to the following:
1. All equipment shall, in the opinion of the ENGINEER, be in good working condition and suitable for the purpose for which the equipment is to be used;
 2. Before construction equipment is used on the extra work, the CONTRACTOR shall plainly stencil or stamp an identifying number thereon at a conspicuous location, and shall furnish to the ENGINEER, in duplicate, a description of the equipment and its identifying number;
 3. Unless otherwise specified, manufacturer's ratings and manufacturer approved modifications shall be used to classify equipment for the determination of applicable rental rates. Equipment which has no direct power unit shall be powered by a unit of at least the minimum rating recommended by the manufacturer;
 4. Individual pieces of equipment or tools having a replacement value of \$500 or less, whether or not consumed by use, will be considered to be small tools and no payment will be made therefore.
- E. Equipment Rental Time: The rental time to be paid for equipment on the Site will be the time the equipment is in productive operation on the extra work being performed and, in addition, will include the time required to move the equipment to the location of the extra work and return it to the original location or to another location requiring no more time than that required to return it to its original location; except, that moving time will not be paid if the equipment is used on other than the extra work, even though located at the Site of the extra work. Loading and transporting costs will be allowed, in lieu of moving time, when the equipment is moved by means other than its own power, except that no payment will be made for loading and transporting costs when the equipment is used at the Site of the extra work on other than the extra work. Rental time will not be allowed while equipment is inoperative due to breakdowns. The rental time of equipment on the work Site will be computed subject to the following:
1. When hourly rates are listed, any part of an hour less than 30 minutes of operation will be considered to be half-hour of operation, and any part of an hour in excess of 30 minutes will be considered one hour of operation;
 2. When daily rates are listed, any part of a day less than 4 hours operation will be considered to be half-day of operation. When owner-operated equipment is used to perform extra work to be paid for on a time and materials basis, the CONTRACTOR will be paid for the equipment and operator, as set forth in Paragraphs 3, 4, and 5, following;
 3. Payment for the equipment will be made in accordance with the provisions in Paragraph 11.3 D., herein;
 4. Payment for the cost of labor and subsistence or travel allowance will be made at the rates paid by the CONTRACTOR to other workers operating similar equipment already on the Site, or in the absence of such labor, established by collective bargaining agreements for the type of workmen and location of the extra work,

whether or not the operator is actually covered by such an agreement. A labor surcharge will be added to the cost of labor described herein in accordance with the provisions of Paragraph 11.3 B., herein, which surcharge shall constitute full compensation for payments imposed by state and federal laws and all other payments made to or on behalf of workers other than actual wages; and

5. To the direct cost of equipment rental and labor, computed as provided herein, will be added the allowances for equipment rental and labor as provided in Paragraph 11.4, herein.

F. Special Services: Special work or services are defined as that work characterized by extraordinary complexity, sophistication, innovation, or a combination of the foregoing attributes which are unique to the construction industry. The ENGINEER will make estimates for payment for special services and may consider the following:

1. When the ENGINEER and the CONTRACTOR, determine that a special service or work is required which cannot be performed by the forces of the CONTRACTOR or those of any of its Subcontractors, the special service or work may be performed by an entity especially skilled in the work to be performed. After validation of invoices and determination of market values by the ENGINEER, invoices for special services or work based upon the current fair market value thereof may be accepted without complete itemization of labor, material, and equipment rental costs;
2. When the CONTRACTOR is required to perform work necessitating special fabrication or machining process in a fabrication or a machine shop facility away from the Site, the charges for that portion of the work performed at the off-site facility may, by agreement, be accepted as a special service and accordingly, the invoices for the work may be accepted without detailed itemization; and
3. All invoices for special services will be adjusted by deducting all trade discounts. In lieu of the allowances for overhead and profit specified in Paragraph 11.4, herein, an allowance of 15 percent will be added to invoices for special services.

G. Sureties: All work performed hereunder shall be subject to all of the provisions of the Contract Documents and the CONTRACTOR's sureties shall be bound with reference thereto as under the original Agreement. Copies of all amendments to Bonds or supplemental Bonds shall be submitted to the OWNER for review prior to the performance of any work hereunder.

11.4 CONTRACTOR'S OVERHEAD AND PROFIT

A. Extra work ordered on the basis of time and materials will be paid for at the actual necessary cost as determined by the ENGINEER, plus allowances for overhead and profit. The allowance for overhead and profit will include full compensation for superintendence, taxes, field office expense, extended overhead, home office overhead, and all other items of expense or cost not included in the cost of labor, materials, or equipment provided for under Paragraph 11.3. The allowance for overhead and profit will be made in accordance with the following schedule:

Overhead and Profit Allowance	
Labor	10 percent
Materials	10 percent
Equipment	10 percent

To the sum of the costs and markups provided for in this Article, an additional 2 percent of the sum will be added as compensation for Bonds and insurance.

B. It is understood that labor, materials, and equipment for extra work may be furnished by the CONTRACTOR or by the Subcontractor on behalf of the CONTRACTOR. When all or any part of the extra work is performed by a Subcontractor, the allowance specified herein will be applied to the labor, materials, and equipment costs of the Subcontractor, to which the CONTRACTOR may add 5 percent of the Subcontractor's total cost for the extra work. Regardless of the number of hierarchical tiers of Subcontractors, the 5 percent increase above the Subcontractor's total cost which includes the allowances for overhead and profit specified herein may be applied one time only.

11.5 EXCLUDED COSTS

- A. The term "cost of the work" shall not include any of the following:
1. Payroll costs and other compensation of CONTRACTOR's officers, executives, proprietors, partners, principals, general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by CONTRACTOR whether at the Site or in CONTRACTOR's principal or a branch office for general administration of the WORK all of which are to be considered administrative costs covered by the CONTRACTOR's allowance for overhead and profit;
 2. Expenses of CONTRACTOR's principal and branch offices other than CONTRACTOR's office at the Site;
 3. Any part of CONTRACTOR's capital expenses, including interest on CONTRACTOR's capital employed for the WORK and charges against CONTRACTOR for delinquent payments;
 4. Cost of premiums for all Bonds and for all insurance whether or not CONTRACTOR is required by the Contract Documents to purchase and maintain the same (except as provided by Paragraph 11.4 above);
 5. Costs due to the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of Defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property; and
 6. Other overhead or general expense costs of any kind and the cost of any item not specifically and expressly included in Paragraph 11.4.

11.6 CONTRACTOR'S EXTRA WORK REPORT

- A. In order to be paid for extra work, the CONTRACTOR must submit a daily extra work report on the form furnished by the ENGINEER. The form must be completely filled out based on the provisions of Paragraphs 11.3 through 11.5 and signed by the CONTRACTOR and ENGINEER at the end of each work day. Failure to complete the form and obtain appropriate signatures by the next working day after the extra work of the previous day was completed will result in CONTRACTOR's costs for extra work being disallowed.

ARTICLE 12- CHANGE OF CONTRACT TIMES

12.1 GENERAL

- A. The Contract Times may only be changed by a Change Order. Any claim for an extension of the Contract Times shall be based on written notice delivered by the CONTRACTOR to the ENGINEER promptly (but in no event later than 10 days) after the start of the event giving rise to the claim and stating the general nature of the claim. Notice of the extent of the claim with supporting data shall be delivered within 30 days after the start of such event (unless the ENGINEER allows an additional period of time for the submission of additional or more accurate data in support of the claim) and shall be accompanied by the CONTRACTOR's written statement that the adjustment claimed is the entire adjustment to which the CONTRACTOR is entitled as a result of said event. All claims for adjustment in the Contract Times will be determined by the ENGINEER. No claim for an adjustment in the Contract Times will be valid if not submitted in accordance with the requirements of this Paragraph 12.1 A. An increase in Contract Times does not mean that the CONTRACTOR is due an increase in Contract Price. Only compensable time extensions will result in an increase in Contract Price.
- B. All time limits stated in the Contract Documents are of the essence of the Agreement.
- C. When CONTRACTOR is prevented from completing any part of the WORK within the Contract Times (or Milestones) due to delay beyond the control of CONTRACTOR, the Contract Times (or Milestones) will be extended in an amount equal to the time lost on the critical path of the WORK due to such delay, if a claim is made therefore as provided in Paragraph 12.1.A. Delays beyond the control of CONTRACTOR shall include, but not be limited to, acts or neglect by OWNER; acts or neglect of those performing other work as contemplated by Article 7;

and fires, floods, epidemics, abnormal weather conditions, or acts of God. Delays attributable to and within the control of any Subcontractor or Supplier shall be deemed to be delays within the control of the CONTRACTOR.

- D. In no event will OWNER be liable to CONTRACTOR, any Subcontractor, any Supplier, any other person or organization, or to any surety for or employee or agent of any of them, for any increase in the Contract Price or other damages arising out or resulting from the following:
 - 1. Delays caused by or within the control of CONTRACTOR; or
 - 2. Delays beyond the control of both OWNER and CONTRACTOR including but not limited to fires, floods, epidemics, abnormal weather conditions, acts of God, or acts or neglect by those performing other work as contemplated by Article 7.

12.2 EXTENSIONS OF CONTRACT TIMES FOR DELAY DUE TO WEATHER

- A. The CONTRACTOR's construction schedule shall anticipate delay due to unusually severe weather.
- B. Contract Times may be extended by the ENGINEER because of delays in excess of the anticipated delay. The CONTRACTOR shall, within 10 days of the beginning of any such delay, notify the ENGINEER in writing and request an extension of Contract Times. The ENGINEER will ascertain the facts and the extent of the delay and extend the Contract Times when, in its judgment, the findings of the fact justify such an extension.

ARTICLE 13 - INSPECTIONS AND TESTS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK

13.1 NOTICE OF DEFECTIVE WORK

- A. Prompt notice of Defective Work known to the OWNER or ENGINEER will be given to the CONTRACTOR. All Defective Work, whether or not in place, may be rejected, corrected, or accepted as provided in this Article 13. Defective Work may be rejected even if approved by prior inspection.

13.2 ACCESS TO WORK

- A. OWNER, ENGINEER, their consultants, sub-consultants, other representatives and personnel of OWNER, independent testing laboratories, and governmental agencies with jurisdictional interests shall have access to the WORK at reasonable times for their observation, inspecting, and testing. CONTRACTOR shall provide them proper and safe conditions for such access and advise them of CONTRACTOR's Site safety procedures and programs so that they may comply therewith as applicable.

13.3 INSPECTIONS AND TESTS

- A. The CONTRACTOR shall give the ENGINEER not less than 24 hours notice of readiness of the WORK for all required inspections, tests, or approvals, and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.
- B. The OWNER shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:
 - 1. For inspection, tests, or approvals covered by Paragraphs 13.3C. and 13.3D. below;
 - 2. That costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.3G. shall be paid as provided in said Paragraph 13.3G.; and
 - 3. As otherwise provided in the Contract Documents.
- C. If Laws and Regulations of any public body having jurisdiction require any WORK (or any part thereof) to be inspected, tested, or approved by an employee or other representative of such public body, CONTRACTOR shall

assume full responsibility for arranging and obtaining such inspections, tests or approvals; pay all costs in connection therewith; and furnish the ENGINEER the required certificates of inspection or approval.

- D. The CONTRACTOR shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for the ENGINEER's acceptance of materials or equipment to be incorporated in the WORK or acceptance of materials, mix designs, or equipment submitted for approval prior to the CONTRACTOR's purchase thereof for incorporation in the WORK. Such inspections, tests, or approvals shall be performed by organizations acceptable to the ENGINEER.
- E. The ENGINEER will make, or have made, such inspections and tests as the ENGINEER deems necessary to see that the WORK is being accomplished in accordance with the requirements of the Contract Documents. Unless otherwise specified in the Supplementary General Conditions, the cost of such inspection and testing will be borne by the OWNER. In the event such inspections or tests reveal non-compliance with the requirements of the Contract Documents, the CONTRACTOR shall bear the cost of corrective measures deemed necessary by the ENGINEER, as well as the cost of subsequent re-inspection and retesting. Neither observations by the ENGINEER nor inspections, tests, or approvals by others shall relieve the CONTRACTOR from the CONTRACTOR's obligation to perform the WORK in accordance with the Contract Documents.
- F. If any WORK (including the work of others) that is to be inspected, tested, or approved is covered without written concurrence of the ENGINEER, it must, if requested by the ENGINEER, be uncovered for observation. Such uncovering shall be at the CONTRACTOR's expense unless the CONTRACTOR has given the ENGINEER not less than 24 hours notice of the CONTRACTOR's intention to perform such test or to cover the same and the ENGINEER has not acted with reasonable promptness in response to such notice.
- G. If any WORK is covered contrary to the written request of the ENGINEER, it must, if requested by the ENGINEER, be uncovered for the ENGINEER's observation and recovered at the CONTRACTOR's expense.
- H. If the ENGINEER considers it necessary or advisable that covered WORK be observed by the ENGINEER or inspected or tested by others, the CONTRACTOR, at the ENGINEER's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as the ENGINEER may require, that portion of the WORK in question, furnishing all necessary labor, material, and equipment. If it is found that such work is Defective Work, the CONTRACTOR shall bear all direct, indirect, and consequential costs and damages of such uncovering, exposure, observation, inspection, and testing and of satisfactory reconstruction, including but not limited to, fees and charges of engineers, architects, attorneys, and other professionals. However, if such work is not found to be Defective Work, the CONTRACTOR will be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, and reconstruction; and, if the parties are unable to agree as to the amount or extent thereof, the CONTRACTOR may make a claim therefore as provided in Articles 11 and 12.

13.4 OWNER MAY STOP THE WORK

- A. If Defective Work is identified, the OWNER may order the CONTRACTOR to stop performance of the WORK, or any portion thereof, until the cause for such order has been eliminated; however, this right of the OWNER to stop the WORK shall not give rise to any duty on the part of the OWNER to exercise this right for the benefit of the CONTRACTOR or any other party.

13.5 CORRECTION OR REMOVAL OF DEFECTIVE WORK

- A. If required by the ENGINEER, the CONTRACTOR shall promptly either correct all Defective Work, whether or not fabricated, installed, or completed, or, if the work has been rejected by the ENGINEER, remove it from the Site and replace it with non-defective WORK. The CONTRACTOR shall bear all direct, indirect, and consequential costs and damages of such correction or removal, including but not limited to fees and charges of engineers, architects, attorneys, and other professionals made necessary thereby.

13.6 ACCEPTANCE OF DEFECTIVE WORK

- A. If, instead of requiring correction or removal and replacement of Defective Work, the OWNER prefers to accept the Defective Work, the OWNER may do so. The CONTRACTOR shall bear all direct, indirect, and consequential costs attributable to the OWNER's evaluation of and determination to accept such Defective Work. If any such acceptance occurs prior to final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the WORK, and the OWNER shall be entitled to an appropriate decrease in the Contract Price.

13.7 OWNER MAY CORRECT DEFECTIVE WORK

- A. If the CONTRACTOR fails within a reasonable time after written notice from the ENGINEER to correct Defective Work, or to remove and replace Defective Work as required by the ENGINEER in accordance with Paragraph 13.5A., or if the CONTRACTOR fails to perform the WORK in accordance with the Contract Documents, or if the CONTRACTOR fails to comply with any other provision of the Contract Documents, the OWNER may, after seven days written notice to the CONTRACTOR, correct and remedy any such deficiency.
- B. In exercising the rights and remedies under this paragraph, the OWNER shall proceed with corrective and remedial action. In connection with such corrective and remedial action, the OWNER may exclude the CONTRACTOR from all or part of the Site, take possession of all or part of the WORK, and suspend the CONTRACTOR's services related thereto and incorporate in the WORK all materials and equipment for which the OWNER has paid the CONTRACTOR whether stored at the Site or elsewhere. The CONTRACTOR shall provide the OWNER, OWNER's representatives, ENGINEER, and ENGINEER's consultants access to the Site to enable OWNER to exercise the rights and remedies under this paragraph.
- C. All direct, indirect, and consequential costs and damages incurred by the OWNER in exercising the rights and remedies under this paragraph will be charged against the CONTRACTOR and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the WORK; and the OWNER shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, the OWNER may make a claim therefore as provided in Article 11. Such claim will include, but not be limited to, all costs of repair or replacement of work of others, destroyed or damaged by correction, removal, or replacement of CONTRACTOR's Defective Work and all direct, indirect, and consequential damages associated therewith.
- D. The CONTRACTOR shall not be allowed an extension of Contract Times (or Milestones) because of any delay in the performance of the WORK attributable to the exercise by OWNER of OWNER's rights and remedies under this paragraph.

13.8 CORRECTION PERIOD

- A. The correction period for Defective Work shall be the longer of:
 - 1. One year after the date of final acceptance;
 - 2. Such time as may be prescribed by Laws and Regulations;
 - 3. Such time as specified by the terms of any applicable special guarantee required by the Contract Documents; or
 - 4. Such time as specified by any specific provision of the Contract Documents.
- B. If, during the correction period as defined in Paragraph 13.8A above, any work is found to be Defective Work, the OWNER shall have the same remedies as set forth in Paragraphs 13.5, 13.6, and 13.7 above.
- C. Where Defective Work (and damage to other work resulting there from) has been corrected, removed, or replaced under this paragraph, the correction period hereunder with respect to such work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

ARTICLE 14 - PAYMENTS TO CONTRACTOR AND COMPLETION

14.1 SCHEDULE OF VALUES (LUMP SUM PRICE BREAKDOWN)

- A. The schedule of values or lump sum price breakdown established as provided in the General Requirements shall serve as the basis for progress payments and shall be incorporated into a form of Application for Payment acceptable to the ENGINEER.

14.2 UNIT PRICE BID SCHEDULE

- A. Progress payments on account of unit price work will be based on the number of units completed.

14.3 APPLICATION FOR PROGRESS PAYMENT

- A. Unless otherwise prescribed by law, on the 25th of each month, the CONTRACTOR shall submit to the ENGINEER for review, the Application for Payment filled out and signed by the CONTRACTOR covering the WORK completed as of the date of the Application for Payment and accompanied by such supporting documentation as is required by the Contract Documents.
- B. The Application for Payment shall identify, as a subtotal, the amount of the CONTRACTOR total earnings to date; plus the value of materials stored at the Site which have not yet been incorporated in the WORK; and less a deductive adjustment for materials installed which were not previously incorporated in the WORK, but for which payment was allowed under the provisions for payment for materials stored at the Site, but not yet incorporated in the WORK.
- C. The net payment due the CONTRACTOR shall be the above-mentioned subtotal from which shall be deducted the amount of retainage specified in the Supplementary General Conditions and the total amount of all previous payments made to the CONTRACTOR.
- D. The value of materials stored at the Site shall be an amount equal to the specified percent of the value of such materials as set forth in the Supplementary General Conditions. Said amount shall be based upon the value of all acceptable materials and equipment not incorporated in the WORK but delivered and suitably stored at the Site or at another location agreed to in writing; provided, each such individual item has a value of more than \$5,000 and will become a permanent part of the WORK. The Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that the CONTRACTOR has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance and other arrangements to protect the OWNER's interest therein, all of which will be satisfactory to the OWNER.

14.4 CONTRACTOR'S WARRANTY OF TITLE

- A. The CONTRACTOR warrants and guarantees that title to all WORK, materials, and equipment covered by an Application for Payment, whether incorporated in the WORK or not, will pass to the OWNER no later than the time of payment, free and clear of all Liens.

14.5 REVIEW OF APPLICATIONS FOR PROGRESS PAYMENT

- A. The ENGINEER will, within 7 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the application to the OWNER, or return the application to the CONTRACTOR indicating in writing the ENGINEER's reasons for refusing to recommend payment. In the latter case, the CONTRACTOR may make the necessary corrections and resubmit the application. If the ENGINEER still disagrees with a portion of the application, it will submit the application recommending the undisputed portion of the application to the OWNER for payment and provide reasons for recommending non-payment of the disputed amount. Thirty days after presentation of the Application for Payment with the ENGINEER's recommendation, the

amount recommended will (subject to the provisions of Paragraph 14.5B.) become due and when due will be paid by the OWNER to the CONTRACTOR.

- B. The ENGINEER, in its discretion, may refuse to recommend the whole or any part of any payment. ENGINEER may also refuse to recommend any such payment, or, because of subsequently discovered evidence or the results of subsequent inspections or tests, nullify any such payment previously recommended, to such extent as may be necessary in ENGINEER's opinion to protect OWNER from loss because:
 - 1. The work is Defective Work or the completed WORK has been damaged requiring correction or replacement.
 - 2. The Contract Price has been reduced by written amendment or Change Order.
 - 3. The OWNER has been required to correct Defective Work or complete WORK in accordance with Paragraph 13.7.
 - 4. ENGINEER has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.1 through 15.4 inclusive.

- C. The OWNER may refuse to make payment of the full amount recommended by the ENGINEER because:
 - 1. Claims have been made against OWNER on account of CONTRACTOR's performance or furnishing of the WORK.
 - 2. Liens have been filed in connection with the WORK, except where CONTRACTOR has delivered a specific Bond satisfactory to OWNER to secure the satisfaction and discharge of such Liens.
 - 3. There are other items entitling OWNER to a set-off against the amount recommended, or
 - 4. OWNER has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.5B. through 14.5C and 15.1 through 15.4 inclusive. The OWNER must give the CONTRACTOR immediate written notice (with a copy to the ENGINEER) stating the reasons for such action and promptly pay the CONTRACTOR the amount so withheld, or any adjustment thereto agreed to by OWNER and CONTRACTOR, when CONTRACTOR corrects to OWNER's satisfaction the reasons for such action.

14.6 SUBSTANTIAL COMPLETION

- A. When the CONTRACTOR considers the WORK ready for its intended use, the CONTRACTOR shall notify the OWNER and the ENGINEER in writing that the WORK is substantially complete. The CONTRACTOR shall attach to this request a list of all work items that remain to be completed and a request that the ENGINEER prepare a Notice of Completion. Within a reasonable time thereafter, the OWNER, the CONTRACTOR, and the ENGINEER shall make an inspection of the WORK to determine the status of completion. If the ENGINEER does not consider the WORK substantially complete, or the list of remaining work items to be comprehensive, the ENGINEER will notify the CONTRACTOR in writing giving the reasons therefore. If the ENGINEER considers the WORK substantially complete, the ENGINEER will prepare and deliver to the OWNER for its execution and recordation the Notice of Completion signed by the ENGINEER and CONTRACTOR, which shall fix the date of Substantial Completion.

14.7 PARTIAL UTILIZATION

- A. The OWNER shall have the right to utilize or place into service any item of equipment or other usable portion of the WORK prior to completion of the WORK. Whenever the OWNER plans to exercise said right, the CONTRACTOR will be notified in writing by the OWNER, identifying the specific portion or portions of the WORK to be so utilized or otherwise placed into service.

- B. It shall be understood by the CONTRACTOR that until such written notification is issued, all responsibility for care and maintenance of all of the WORK shall be borne by the CONTRACTOR. Upon issuance of said written notice of Partial Utilization, the OWNER will accept responsibility for the protection and maintenance of all such items or portions of the WORK described in the written notice.

- C. The CONTRACTOR shall retain full responsibility for satisfactory completion of the WORK, regardless of whether a portion thereof has been partially utilized by the OWNER, and the CONTRACTOR's one year correction period shall commence only after the date of Substantial Completion for the WORK.

14.8 FINAL APPLICATION FOR PAYMENT

- A. After the CONTRACTOR has completed all of the remaining work items referred to in Paragraph 14.6 and delivered all maintenance and operating instructions, schedules, guarantees, Bonds, certificates of inspection, marked-up record documents (as provided in the General Requirements), and other documents, all as required by the Contract Documents, and after the ENGINEER has indicated that the WORK is acceptable, the CONTRACTOR may make application for final payment following the procedure for progress payments. The final Application for Payment shall be accompanied by all documentation called for in the Contract Documents, together with complete and legally effective releases or waivers (satisfactory to the OWNER) of all Liens arising out of or filed in connection with the WORK.

14.9 FINAL PAYMENT AND ACCEPTANCE

- A. If, on the basis of the ENGINEER's observation of the WORK during construction and final inspection, and the ENGINEER's review of the final Application for Payment and accompanying documentation, all as required by the Contract Documents, the ENGINEER is satisfied that the WORK has been completed and the CONTRACTOR's other obligations under the Contract Documents have been fulfilled, the ENGINEER will, within 14 days after receipt of the final Application for Payment, indicate in writing the ENGINEER's recommendation of payment and present the application to the OWNER for payment.
- B. After acceptance of the WORK by the OWNER's governing body, the OWNER will make final payment to the CONTRACTOR of the amount remaining after deducting all prior payments and all amounts to be kept or retained under the provisions of the Contract Documents, including the following items:
 - 1. Liquidated damages, as applicable;
 - 2. Amounts withheld by OWNER under Paragraph 14.5B. and C. which have not been released; and
 - 3. Two times the value of outstanding items of correction work or punch list items yet uncompleted or uncorrected, as applicable. All such work shall be completed or corrected to the satisfaction of the OWNER within the time stated on the Notice of Completion, otherwise the CONTRACTOR does hereby waive any and all claims to all monies withheld by the OWNER to cover the value of all such uncompleted or uncorrected items.
- C. As a condition of final payment, the CONTRACTOR shall be required to execute a release on the form provided by OWNER, releasing the OWNER from any and all claims of liability for payment on the Project except for such amounts as may be specifically described and excluded from the release.

14.10 RELEASE OF RETAINAGE AND OTHER DEDUCTIONS

- A. After executing the necessary documents to initiate the Lien period, and not more than 45 days thereafter (based on a 30-day Lien filing period and 15-day processing time), the OWNER will release to the CONTRACTOR the retainage funds withheld pursuant to the Agreement, less any deductions to cover pending claims against the OWNER pursuant to Paragraph 14.5C.
- B. After filing of the necessary documents to initiate the Lien period, the CONTRACTOR shall have 30 days to complete any outstanding items of correction work remaining to be completed or corrected as listed on a final punch list made a part of the Notice of Completion. Upon expiration of the 45 days, referred to in Paragraph 14.10A., the amounts withheld pursuant to the provisions of Paragraph 14.9B. herein, for all remaining work items will be returned to the CONTRACTOR; provided, that said work has been completed or corrected to the satisfaction of the OWNER within said 30 days. Otherwise, the CONTRACTOR does hereby waive any and all claims for all monies withheld by the OWNER under this Agreement to cover two times the value of such remaining uncompleted or uncorrected items.

ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

15.1 SUSPENSION OF WORK BY OWNER

- A. The OWNER may, at any time and without cause, suspend the WORK or any portion thereof for a period of not more than 90 days by notice in writing to the CONTRACTOR without claim by CONTRACTOR for additional compensation. Beyond the ninety (90) day period, the CONTRACTOR shall resume the WORK on receipt of a notice of resumption of work. The CONTRACTOR will be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to any suspension if the CONTRACTOR makes an approved claim therefore as provided in Articles 11 and 12.

15.2 TERMINATION OF AGREEMENT BY OWNER FOR DEFAULT

- A. In the event of default by the CONTRACTOR, the OWNER may give seven days written notice to the CONTRACTOR of OWNER's intent to terminate the Agreement and provide the CONTRACTOR an opportunity to remedy the conditions constituting the default within a specified period of time. It will be considered a default by the CONTRACTOR whenever CONTRACTOR shall:
 - 1. Declare bankruptcy, become insolvent, or assign its assets for the benefit of its creditors;
 - 2. Disregard or violate the Laws or Regulations of any public body having jurisdiction;
 - 3. Fail to provide materials or workmanship meeting the requirements of the Contract Documents;
 - 4. Disregard or violate provisions of the Contract Documents or ENGINEER's instructions;
 - 5. Fail to prosecute the WORK according to the approved progress schedule;
 - 6. Fail to provide a qualified superintendent, competent workmen, or materials or equipment meeting the requirements of the Contract Documents; or
 - 7. Disregard the authority of the ENGINEER.
- B. If the CONTRACTOR fails to remedy the conditions constituting default within the time allowed, the OWNER may then issue the notice of termination.
- C. In the event the Agreement is terminated in accordance with Paragraph 15.2A., herein, the OWNER may take possession of the WORK and may complete the WORK by whatever method or means the OWNER may select. The cost of completing the WORK will be deducted from the balance which would have been due the CONTRACTOR had the Agreement not been terminated and the WORK completed in accordance with the Contract Documents. If such cost exceeds the balance which would have been due, the CONTRACTOR shall pay the excess amount to the OWNER. If such cost is less than the balance which would have been due, the CONTRACTOR shall not have claim to the difference.

15.3 TERMINATION OF AGREEMENT BY OWNER FOR CONVENIENCE

- A. Upon seven days' written notice to the CONTRACTOR and the ENGINEER, the OWNER may, without cause and without prejudice to any other right or remedy of the OWNER, elect to terminate the Agreement. In such case, the CONTRACTOR shall be paid (without duplication of any items):
 - 1. For completed and acceptable WORK executed in accordance with the Contract Documents, prior to the effective date of termination, including fair and reasonable sums for overhead and profit of such WORK;
 - 2. For expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted WORK, plus fair and reasonable sums for overhead and profit on such expenses;
 - 3. For all reasonable claims, costs, losses, and damages incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and
 - 4. For reasonable expenses directly attributable to termination, CONTRACTOR shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

15.4 TERMINATION OF AGREEMENT BY CONTRACTOR

- A. The CONTRACTOR may terminate the Agreement upon 14 days written notice to the OWNER, whenever:
 - 1. The WORK has been suspended under the provisions of Paragraph 15.1, herein, for more than 90 consecutive days through no fault or negligence of the CONTRACTOR, and notice to resume work or to terminate the Agreement has not been received from the OWNER within this time period; or
 - 2. The OWNER should fail to pay the CONTRACTOR any monies due him in accordance with the terms of the Contract Documents and within 60 days after presentation to the OWNER by the CONTRACTOR of a request therefore, unless within said 14-day period the OWNER shall have remedied the condition upon which the payment delay was based.
- B. In the event of such termination, the CONTRACTOR shall have no claims against the OWNER except for those claims specifically enumerated in Paragraph 15.3, herein, and as determined in accordance with the requirements of said paragraph.

ARTICLE 16 - MISCELLANEOUS

16.1 GIVING NOTICE

- A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

16.2 TITLE TO MATERIALS FOUND ON THE WORK

- A. The OWNER reserves the right to retain title to all soils, stone, sand, gravel, and other materials developed and obtained from excavations and other operations connected with the WORK. Unless otherwise specified in the Contract Documents, neither the CONTRACTOR nor any Subcontractor shall have any right, title, or interest in or to any such materials. The CONTRACTOR will be permitted to use in the WORK, without charge, any such materials which meet the requirements of the Contract Documents.

16.3 RIGHT TO AUDIT

- A. If the CONTRACTOR submits a claim to the OWNER for additional compensation, the OWNER shall have the right, as a condition to considering the claim, and as a basis for evaluation of the claim, and until the claim has been settled, to audit the CONTRACTOR's books to the extent they are relevant. This right shall include the right to examine books, records, documents, and other evidence and accounting procedures and practices, sufficient to discover and verify all direct and indirect costs of whatever nature claimed to have been incurred or anticipated to be incurred and for which the claim has been submitted. The right to audit shall include the right to inspect the CONTRACTOR's plant, or such parts thereof, as may be or have been engaged in the performance of the WORK. The CONTRACTOR further agrees that the right to audit encompasses all subcontracts and is binding upon Subcontractors. The rights to examine and inspect herein provided for shall be exercisable through such representatives as the OWNER deems desirable during the CONTRACTOR's normal business hours at the office of the CONTRACTOR. The CONTRACTOR shall make available to the OWNER for auditing, all relevant accounting records and documents, and other financial data, and upon request, shall submit true copies of requested records to the OWNER.

16.4 SURVIVAL OF OBLIGATIONS

- A. All representations, indemnifications, warranties, and guaranties made in, required by or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion and acceptance of the WORK or termination or completion of the Agreement.

16.5 CONTROLLING LAW

- A. This Agreement is to be governed by the law of the state in which the Project is located.

16.6 SEVERABILITY

- A. If any term or provision of this Agreement is declared invalid or unenforceable by any court of lawful jurisdiction, the remaining terms and provisions of the Agreement shall not be affected thereby and shall remain in full force and effect.

16.7 WAIVER

- A. The waiver by the OWNER of any breach or violation of any term, covenant or condition of this Agreement or of any provision, ordinance, or law shall not be deemed to be a waiver of any other term, covenant, condition, ordinance, or law or of any subsequent breach or violation of the same or of any other term, covenant, condition, ordinance, or law. The subsequent payment of any monies or fee by the OWNER which may become due hereunder shall not be deemed to be a waiver of any preceding breach or violation by CONTRACTOR or any term, covenant, condition of this Agreement or of any applicable law or ordinance.

END OF GENERAL CONDITIONS

SECTION J
SUPPLEMENTAL
GENERAL
CONDITIONS

SUPPLEMENTARY GENERAL CONDITIONS

PART 1- GENERAL

These Supplementary General Conditions make additions, deletions, or revisions to the General Conditions as indicated herein. All provisions which are not so added, deleted, or revised remain in full force and effect. Terms used in these Supplementary General Conditions which are defined in the General Conditions have the meanings assigned to them in the General Conditions.

SGC-1 DEFINITIONS

Add the following definitions to Article 1:

ENGINEER - In accordance with this contract, the ENGINEER is further defined as the City of Edinburg DIRECTOR OF PUBLIC WORKS, Ponciano H. Longoria, P.E., C.F.M.

OWNER -The OWNER is further defined as the City of Edinburg, 415 E. University, Edinburg, Texas, 78541.

SGC-2.2 COPIES OF DOCUMENTS

The OWNER shall furnish to the CONTRACTOR two copies of the Contract Documents which may include bound reduced drawings, if any, together with two sets of full-scale Drawings. Additional quantities of the Contract Documents will be furnished at reproduction cost plus mailing cost if copies are mailed.

SGC-2.4 STARTING THE WORK

Add the following as Paragraphs 2.4C and 2.4D of the General Conditions:

- C. The CONTRACTOR shall notify the Texas Excavation Safety System (TESS), Phone No. 1-800-DIG-TESS, at least 48 hours in advance of the commencement of work at any site to allow the member utilities to examine the construction site and mark the location of the utilities' respective facilities.
- D. The CONTRACTOR acknowledges that some (or all) of the utility companies with facilities shown on the drawings may not be members of TESS and, therefore, not automatically contacted by the above referenced telephone number. The CONTRACTOR shall be responsible for making itself aware of utility company facilities not reported by the USA System, and shall be liable for any and all damages stemming from repair or delay costs or any other expenses resulting from the unanticipated discovery of underground utilities. The CONTRACTOR shall be responsible for notifying all of the utilities at least 48 hours in advance of the commencement of work at any site to allow the utilities to examine the construction site and mark the location of the utilities' respective facilities. The CONTRACTOR shall also be responsible for verifying that each utility has responsibly responded to such notification.

SGC-4.2 REPORTS OF PHYSICAL CONDITIONS

In the preparation of the Contract Documents, the ENGINEER has relied upon reports of explorations and tests of subsurface conditions at the site prepared by a Geotechnical Engineer engaged for this project. The Geotechnical Engineer prepared a report for this project. A copy of this report and drawings may be examined at the office of Engineer/Architect, during regular business hours if said reports and drawings are not bound herein. The CONTRACTOR may rely upon the accuracy of the technical data contained in the geotechnical report and drawings; however, the interpretation of such technical data, including any interpolation or extrapolation thereof, and opinions contained in the report and drawings are not to be relied on by the CONTRACTOR.

b. Property Damage \$100,000 each occurrence
\$100,000 aggregate

-or- \$500,000 combined single limits

3. Comprehensive Automobile Liability (including owned, hired, and non-owned vehicles): Combined Single Limit:

a. Bodily Injury \$100,000 each person
\$500,000 each occurrence

b. Property Damage \$100,000 each occurrence
\$100,000 each aggregate

-or- \$500,000 combined single limits

4. City's Protective Liability:

a. Bodily Injury \$250,000 each person
\$500,000 each occurrence

b. Property Damage \$100,000 each occurrence
\$100,000 each aggregate

-or- \$500,000 combined single limits

B. All policies shall provide that the CONTRACTOR agrees to waive all rights of subrogation against the OWNER, the ENGINEER, and their sub-consultants, employees, officers and directors, for WORK performed under the Agreement. Endorsements shall be provided with certificates of insurance.

C. All policies shall also specify that the insurance provided by the CONTRACTOR will be considered primary and not contributory to any other insurance available to the OWNER or ENGINEER.

D. All policies except Workers' Compensation and Builders Risk shall name the OWNER, ENGINEER, their consultants, sub-consultants, and their officers, directors, agents and employees as additional insured. The Builders Risk insurance shall name the CONTRACTOR, OWNER, and ENGINEER as named insured.

E. All policies shall provide for thirty days notice prior to any cancellation, reduction in coverage or nonrenewal.

SGC-5.2C INSURANCE

Add the following to Paragraph 5.2C of the General Conditions:

The CONTRACTOR shall also name the City of Edinburg and its officers, directors, agents, and employees as "additional insured's" under the insurance policies.

SGC-6.5 SUBSTITUTES OR "OR EQUAL" ITEMS

Add the following to Paragraph 6.5 of the General Conditions:

A. Whenever materials or equipment are indicated in the Contract Documents by using the name of a proprietary item or the name of a particular manufacturer, the naming of the item is intended to establish the type, function, and quality required. If the name is followed by the words "or equal" indicating that a substitution is permitted, materials or equipment of other manufacturers may be accepted if sufficient information is submitted by the CONTRACTOR

to allow the ENGINEER to determine that the material or equipment proposed is equivalent or equal to that named, subject to the following requirements:

1. The burden of proof as to the type, function, and quality of any such substitution product, material or equipment shall be upon the CONTRACTOR.
2. The ENGINEER will be the sole judge as to the type, function, and quality of any such substitution and the ENGINEER's decision shall be final.
3. The ENGINEER may require the CONTRACTOR to furnish additional data about the proposed substitution.
4. The OWNER may require the CONTRACTOR to furnish a special performance guarantee or other surety with respect to any substitution.
5. Acceptance by the ENGINEER of a substitution item proposed by the CONTRACTOR shall not relieve the CONTRACTOR of the responsibility for full compliance with the Contract Documents and for adequacy of the substitution.
6. The CONTRACTOR shall pay all costs of implementing accepted substitutions, including redesign and changes to WORK necessary to accommodate the substitution.

B. The procedure for review by the ENGINEER will include the following:

1. If the CONTRACTOR wishes to provide a substitution item, the CONTRACTOR shall make written application to the ENGINEER on the "Substitution Request Form."
2. Unless otherwise provided by law or authorized in writing by the ENGINEER, the "Substitution Request Form(s)" shall be submitted within the 35-day period after award of the Contract.
3. Wherever a proposed substitution item has not been submitted within said 35-day period, or wherever the submission of a proposed substitution material or equipment has been judged to be unacceptable by the ENGINEER, the CONTRACTOR shall provide the material or equipment indicated in the Contract Documents.
4. The CONTRACTOR shall certify by signing the form that the list of paragraphs on the form are correct for the proposed substitution.
5. The ENGINEER will evaluate each proposed substitution within a reasonable period of time.
6. As applicable, no shop drawing submittals shall be made for a substitution item nor shall any substitution item be ordered, installed, or utilized without the ENGINEER'S prior written acceptance of the CONTRACTOR'S "Substitution Request Form."
7. The ENGINEER will record the time required by the ENGINEER in evaluating substitutions proposed by the CONTRACTOR and in making changes by the CONTRACTOR in the Contract Documents occasioned thereby.

C. The CONTRACTOR's application shall address the following factors which will be considered by the ENGINEER in evaluating the proposed substitution:

1. Whether the evaluation and acceptance of the proposed substitution will prejudice the CONTRACTOR's achievement of Substantial Completion on time.
2. Whether acceptance of the substitution for use in the WORK will require a change in any of the Contract Documents to adapt the design to the proposed substitution.
3. Whether incorporation or use of the substitution in connection with the WORK is subject to payment of any license fee or royalty.
4. Whether all variations of the proposed substitution from the items originally specified are identified.
5. Whether available maintenance, repair, and replacement service are indicated. The manufacturer shall have a local service agency (within 50 miles of the site) which maintains properly trained personnel and adequate spare parts and is able to respond and complete repairs within 24 hours.
6. Whether an itemized estimate is included of all costs that will result directly or indirectly from acceptance of such substitution, including cost of redesign and claims of other contractors affected by the resulting change.
7. Whether the proposed substitute item meets or exceeds the experience and/or equivalency requirements listed in the appropriate technical specifications.

- D. Without any increase in cost to the OWNER, the CONTRACTOR shall be responsible for and pay all costs in connection with proposed substitutions and of inspections and testing of equipment or materials submitted for review prior to the CONTRACTOR's purchase thereof for incorporation in the WORK, whether or not the ENGINEER accepts the proposed substitution or proposed equipment or material. The CONTRACTOR shall reimburse the OWNER for the charges of the ENGINEER for evaluating each proposed substitution.

SGC-6.6 SUBCONTRACT LIMITATIONS

Add the following as Paragraph 6.6B of the General Conditions:

- B. The CONTRACTOR shall perform not less than 20 percent of the WORK with its own forces (i.e., without subcontracting). The 20 percent requirement shall apply to the Contract Price less the values of OWNER-assigned contracts and allowances in the Bid for pre-negotiated WORK.

SGC-6.7 PERMITS

- A. Except for the permits specifically set forth in A above, the CONTRACTOR shall acquire all permits required by Laws or Regulations, including, without limitation, the following specific permits (if applicable):
 - 1. Local jurisdiction building permits. OWNER will pay for local jurisdiction building permit. CONTRACTOR will be responsible for acquiring permit.
 - 2. State permits to construct and/or operate sources of air pollution.
 - 3. Certificates and permits are required for sources such as, but not limited to:
 - a. Fuel burning equipment
 - b. Gasoline and petroleum distillate storage containers
 - c. Land disturbing activities
 - d. Processing equipment (sand, gravel, concrete batch plant, etc.)
 - e. Odors
 - 4. Permits to construct and/or operating permits for construction should be obtained from: United Irrigation District
 - 5. Stormwater Permit.
 - 6. Permit-Required Confined Space - The workplace in which the WORK is to be performed may contain permit-required confined spaces (permit spaces) as defined 29 CFR 1910.146 and, if so, permit space entry is allowed only through compliance with a confined space entry program meeting the requirements of 29 CFR 1910.146.

SGC-6.17 INDEMNIFICATION

Add the following to Paragraph 6.17A of the General Conditions:

The CONTRACTOR shall also indemnify, defend, and hold harmless the City of Edinburg, and its officers, directors, agents, and employees, against and from all claims and liability arising under or by reason of the Agreement or any performance of the WORK, but not from the sole negligence or willful misconduct of the City of Edinburg.

SGC-9.3 PROJECT REPRESENTATION

- A. The Owner, authorized representatives and agents of the Owner shall, at all times have access to and be permitted to observe and review all work, materials, equipment, payrolls, personnel records, employment conditions, material invoices, and other relevant data and records pertaining to this Contract. The Resident Project Representative, who is the OWNER's agent, will act as directed by and under the supervision of the OWNER and will confer with the ENGINEER regarding its actions. The Resident Project Representative's dealings in matters pertaining to the WORK shall, in general, be only with the ENGINEER and the CONTRACTOR, and dealings with Subcontractors shall only be through or with the full knowledge of the CONTRACTOR. Written communication with the OWNER will be only through or as directed by the ENGINEER.

B. The Resident Project Representative shall have the duties and responsibilities set forth in this paragraph.

1. Review the progress schedule of Shop Drawing submittals and schedule of values prepared by the CONTRACTOR and consult with the ENGINEER concerning their acceptability.
2. Attend preconstruction conferences. Arrange a schedule of progress meetings and other job conferences as required in consultation with the ENGINEER and notify in advance those expected to attend. Attend meetings and maintain and circulate copies of minutes thereof.
3. Serve as the ENGINEER's liaison with the CONTRACTOR, working principally through the CONTRACTOR's superintendent and assist said superintendent in understanding the intent of the Contract Documents. Assist the ENGINEER in serving as the OWNER's liaison with the CONTRACTOR.
4. Receive Shop Drawings and samples furnished by the CONTRACTOR.
5. Conduct on-site observations of the WORK in progress to assist the ENGINEER in determining if the WORK is proceeding in accordance with the Contract Documents.
6. Verify that the tests, equipment, and systems startups and operating and maintenance instruction are conducted as required by the Contract documents and in presence of the required personnel, and that the CONTRACTOR maintains adequate records thereof.
7. Transmit to the CONTRACTOR the ENGINEER's clarifications and interpretations of the Contract Documents.
8. Consider and evaluate the CONTRACTOR's suggestions for modifications in the Contract Documents and report them with recommendations to the ENGINEER.
9. Review applications for payment with the CONTRACTOR for compliance with the established procedure for their submittal and forward them with recommendations to the ENGINEER, noting particularly their relation to the schedule of values, work completed, and materials and equipment delivered at the Site but not incorporated in the WORK.
10. During the course of the WORK, verify that certificates, maintenance and operation manuals, and other data required to be assembled and furnished by the CONTRACTOR are applicable to the items actually installed.
11. Before the ENGINEER prepares a Notice of Completion, as applicable, submit to the CONTRACTOR a list of observed items requiring completion or correction.
12. Conduct final inspection in the company of the ENGINEER, the OWNER, and the CONTRACTOR, and prepare a punch list of items to be completed or corrected.
13. Verify that all items on the punch list have been completed or corrected and make recommendations to the ENGINEER concerning acceptance.

SGC-11.3D EQUIPMENT

The CONTRACTOR will be paid for the use of equipment at the rental rate listed for such equipment specified in the current edition of the following reference publication:

- A. "Rental Rate Blue Book for Construction Machinery" as published by the Machinery Information Division of the K-III Directory Corporation, (800) 669-3282.

SGC-12.2 WEATHER DELAYS

Delete paragraphs 12.2.A and 12.2.B. Add the following:

- A. The occurrence of unusually severe weather during the life of the Contract will be considered a basis for extending contract time when work is not already suspended for other reasons. Unusually severe weather means weather, which at the time of year that it occurs, is unusual for the place in which it occurs.
- B. Extension of time for unusually severe weather will be determined on a monthly basis and will include only those actual adverse weather days in excess of the normal adverse weather days included in the Contract Time. Normal adverse weather means adverse weather which, regardless of its severity, is to be reasonable expected for that

particular place at that particular time of year. The normal adverse weather days included in the Contract Time are based on historical records of temperature and precipitation.

- C. Actual adverse weather days are those days meeting one or more of the criteria listed below. Time extensions for more than one criterion will take into consideration only that criterion having the greatest impact. Those actual adverse weather days in excess of the days listed in Table 12-1 will be allowed without regard to when they occur (except prior to mobilization or during suspension for other reasons) or their impact on contract completion.
1. Days with maximum temperature of 32 degrees F or less – one full day allowed.
 2. Days with minimum temperature of 32 degrees F or less, but whose maximum temperature is over 32 degrees F – one-half day allowed.
 3. Days when ½" or more of precipitation (rain or snow equivalent) occurs – one full day allowed.
- D. Attached to the monthly Extension of Time Request, the CONTRACTOR shall submit a summary statement showing the number of days charged to the Contract for the preceding period
1. An itemized account of each day of the month showing which days meet one of the criteria outlined above.
 3. A total number of adverse weather days.
 4. The total number of days due to the CONTRACTOR for adverse weather days in excess of the normal adverse weather days.

SGC-14.3C AMOUNT OF RETENTION

Add the following to Paragraph 14.3C of the General Conditions:

Unless otherwise prescribed by law, the OWNER may retain a portion of the amount otherwise due to the CONTRACTOR, as follows:

1. Contracts equaling a total amount of \$400,000.00 or over will bear a retainage of five (5) percent (%) on each partial disbursement. Contracts totaling less than \$400,000.00 will bear a retainage of ten (10) percent (%) on each partial disbursement.

SGC-14.3D VALUE OF MATERIALS STORED AT THE SITE

Unless otherwise prescribed by law, the value of materials stored at the Site shall be 90% of the value of such materials.

SGC-16.8 OPERATION AND MAINTENANCE MANUALS AND TRAINING.

- A. The Contractor shall obtain installation, operation, and maintenance manuals from manufacturers and suppliers for equipment furnished under the contract. The Contractor shall submit three copies of each complete manual to the Engineer within 90 days after approval of shop drawings, product data, and samples, and not later than the date of shipment of each item of equipment to the project site or storage location.
- B. Each manual is to be bound in a folder and labeled to identify the contents and project to which it applies. The manual shall contain the following applicable items:
1. A listing of the manufacturer's identification, including order number, model, serial number, and location of parts and service centers.
 2. A list of recommended stock of parts, including part number and quantity.
 3. Complete replacement parts list.
 4. Performance data and rating tables.
 5. Specific instructions for installation, operation, adjustment, and maintenance.

6. Exploded view drawings for major equipment items.
 7. Lubrication requirements.
 8. Complete equipment wiring diagrams and control schematics with terminal identification.
- C. Operations and maintenance manuals specified herein are in addition to any operation, maintenance, or installation instructions required by the Contractor to install, test, and start-up the equipment.
- D. The Owner shall require the Engineer to promptly review each manual submitted, noting necessary corrections and revisions. If the Engineer rejects the manual, the Contractor shall correct and resubmit the manual until it is acceptable to Engineer as being in conformance with design concept of project and for compliance with information given in the Contract Documents. Owner may assess Contractor a charge for reviews of same items in excess of three (3) times. Such procedure shall not be considered cause for delay. Acceptance of manuals by Engineer does not relieve Contractor of any requirements or terms of the Contract.
- E. The Contractor shall provide the services of trained, qualified technicians to check final equipment installation, to assist as required in placing same in operation, and to instruct operating personnel in the proper manner of performing routine operation and maintenance of the equipment.

SGC-16.9 AS-BUILT DIMENSION & DRAWINGS.

- A. Contractor shall make appropriate daily measurements of facilities constructed and keep accurate records of location (horizontal and vertical) of all facilities.
- B. Upon completion of each facility, the Contractor shall furnish Owner with one set of direct prints, marked with red pencil, to show as-built dimensions and locations of all work constructed. As a minimum, the final drawings shall include the following:
1. Horizontal and vertical locations of work.
 2. Changes in equipment and dimensions due to substitutions.
 3. "Nameplate" data on all installed equipment.
 4. Deletions, additions, and changes to scope of work.
 5. Any other changes made.

END OF SUPPLEMENTARY GENERAL CONDITIONS

SECTION K TECHNICAL SPECIFICATIONS

105 – REMOVING STABILIZED BASE AND ASPHALT PAVEMENT

(Referenced from 2004 TxDOT, ITEM 105 – references made to any other Sections of the 2004 TxDOT Manual shall become part of the Contract to be followed)

105.1. Description Break, remove, and store or dispose of existing asphalt pavement or stabilized base materials.

105.2. Construction. Break material retained by the Department into pieces not larger than 24 in. Remove existing asphalt pavement prior to disturbing stabilized base. Avoid contamination of the asphalt materials and damage to adjacent areas. Repair material damaged by operations outside the designated locations. When shown on the plans and as directed, stockpile materials designated salvageable at designated sites. Prepare stockpile site by removing vegetation and trash and by providing for proper drainage. Dispose of materials not designated as salvageable in accordance with federal, state, and local regulations.

105.3. Measurement. This Item will be measured by the 100-ft. station along the baseline of each roadbed, by the square yard of existing stabilized base and asphalt pavement in its original position, or by the cubic yard of existing stabilized base and asphalt pavement in its original position, as calculated by the average end area method. Square yard and cubic yard measurement will be established by the widths and depths shown in the plans and the lengths measured in the field.

105.4. Payment. The work performed in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Removing Stabilized Base and Asphalt Pavement," of the depth specified. This price is full compensation for breaking the material, loading, hauling, unloading, stockpiling or disposing; repair to areas outside designated locations for removal; and equipment, labor, tools, and incidentals.

00216 – PROOF ROLLING

(Referenced from 2004 TxDOT, ITEM 216 Proof Rolling – references made to any other Sections of the 2004 TxDOT Manual shall become part of the Contract to be followed)

00216.1. Description. Proof-roll earthwork, base, or both to locate unstable areas.

00216.2. Equipment.

- A. Specified Equipment.** Furnish rollers that when loaded weigh at least 25 tons. The maximum acceptable load is 50 tons. Provide rollers that meet the requirements of Section 210.2.D, "Pneumatic Tire Rollers."
- B. Alternative Equipment.** Instead of the specified equipment, the Contractor may, as approved, operate other compaction equipment that produces equivalent results in the same period of time. Discontinue the use of the alternative equipment and furnish the specified equipment if the desired results are not achieved.

00216.3. Construction. Perform proof rolling as directed. Adjust the load and tire inflation pressures within the range of the manufacturer's charts or tabulations, as directed. Make at least 2 coverages with the proof roller. Offset each trip of the roller by at most 1 tire width. Operate rollers at a speed between 2 and 6 miles per hour, as directed. If an unstable or nonuniform area is found, correct the area in accordance with the applicable Item.

00216.4. MEASUREMENT AND PAYMENT

- A.** When listed as a separate contract pay item, shall be measured in accordance with "Measurement and Basis of Payment" section or as shown on the Bid Proposal Form.
- B.** When not listed as a separate contract pay item, shall be considered as incidental work, and the cost thereof shall be included in such contract pay item(s) as are provided in the proposal contract.
- C.** Compensation, whether by contract pay item or incidental work will be for furnishing all materials, labor, equipment, tools and incidentals required for the work, all in accordance with the plans and these specifications.

***** END OF SECTION *****

00210 – ROLLING

(Referenced from 2004 TxDOT, ITEM 210 Rolling – references made to any other Sections of the 2004 TxDOT Manual shall become part of the Contract to be followed)

00210.1. Description. Compact embankment, subgrade, base, surface treatments, broken concrete pavement, or asphalt pavement using rollers. Break up asphalt mats, pit run material, or base materials.

00210.2. Equipment. The Contractor may use any type of roller to meet the production rates and quality requirements of the Contract unless otherwise shown on the plans or directed. When specific types of equipment are required, use equipment that meets the requirements of this Article. The Engineer may allow the use of rollers that operate in one direction only when turning does not affect the quality of work or encroach on traffic.

**Table 1
Roller Requirements¹**

Roller Type	Materials to be Compacted	Load (tons)	Contact Pressure	Roller Speed (mph)
Steel wheel	Embankment, subgrade, base, asphalt concrete	≥ 10	≥ 325 lb. per linear inch of wheel width	2–3
Tamping	Embankment, subgrade, base	–	125–550 psi per tamping foot	2–3
Heavy tamping	Embankment, subgrade, base	–	≤ 550 psi per tamping foot	2–3
Vibratory	Embankment, subgrade, base, asphalt concrete	Type A < 6 Type B > 6 Type C as shown on plans	Per equipment specification and as approved	As approved
Light pneumatic	Embankment, subgrade, base, surface treatment	4.5–9.0	≥ 45 psi	2–6
	Asphalt Concrete			4–12
Medium pneumatic	Same as light pneumatic	12–25	≥ 80 psi, as directed	Same as light pneumatic
Heavy pneumatic	Embankment, subgrade, base, previously broken concrete pavement, other pavements	≥ 25	≤ 150 psi	2–6
Grid	Embankment, base, breaking up existing asphalt mats or base	5–13	–	2–3

1. Unless otherwise specified in the Contract.

- A. **Static Steel Wheel Rollers.** Furnish single, double, or triple steel wheel, self-propelled power rollers weighing at least 10 tons capable of operating in a forward and backward motion. Ensure all wheels are flat. When static steel wheel rollers are required, vibratory rollers in the static mode may be used.

For single steel wheel rollers, pneumatic rear wheels are allowed for embankment, subgrade, and base. For triple steel wheel rollers, provide rear wheels with a minimum diameter of 48 in., a minimum width of 20 in., and a minimum compression of 325 lb. per inch of wheel width.

- B. **Tamping Rollers.** Furnish self-propelled rollers with at least 1 self-cleaning metal tamping drum capable of operating in a forward or backward motion with a minimum effective rolling width of 5 ft. For rollers with more than 1 drum, mount drums in a frame so that each drum moves independently of the other. Operate rollers in static or vibratory mode.

1. **Tamping Roller (Minimum Requirement).** For all tamping rollers except for heavy tamping rollers, provide tamping feet that exert a static load of 125 to 550 psi and project at least 3 in. from the surface of the drum.

2. **Heavy Tamping Roller.** Provide tamping rollers that have:

- 2 metal tamping drums, rolls, or shells, each with a 60-in. minimum diameter and a 5-ft. minimum width, or
- 1 rear and 2 forward drums, each with a 60-in. minimum diameter. Arrange drums so that the rear drum compacts the space between the 2 forward drums and the minimum overall rolling width is 10 ft.

Equip drums with tamping feet that:

- project at least 7 in. from the drum surface,
- have an area of 7 to 21 sq. in.,
- are self-cleaning,
- exert a static load of at least 550 psi, and
- are spaced at 1 tamping foot per 0.65 to 0.70 sq. ft. of drum area.

- C. **Vibratory Rollers.** Furnish self-propelled rollers with at least 1 drum equipped to vibrate. Select and maintain amplitude and frequency settings per manufacturer's specifications to deliver maximum compaction without material displacement or shoving, as approved. Furnish the equipment manufacturer's specifications concerning settings and controls for amplitude and frequency. Operate rollers at speeds that will produce at least 10 blows per foot unless otherwise shown on the plans or approved. Pneumatic rear wheels are allowed for embankment, subgrade, and base. Equip each vibrating drum with:

- separate frequency and amplitude controls,
- controls to manually start and stop vibration, and
- a mechanism to continuously clean the face of the drum.

For asphalt-stabilized base and asphalt concrete pavement, furnish a roller that also has the ability to:

- automatically reverse the direction of the rotating eccentric weight,
- stop vibration before the motion of the roller stops, and
- thoroughly moisten the drum with water or approved asphalt release agent.

1. **Drum (Type A).** Furnish a roller with a static weight less than 6 tons and a vibratory drum.
2. **Drum (Type B).** Furnish a roller with a minimum static weight of 6 tons and a vibratory drum.
3. **Drum (Type C).** Furnish a roller as shown on plans.

- D. **Pneumatic Tire Rollers.** Pneumatic tire rollers consist of rubber tire wheels on axles mounted in a frame with either a loading platform or body suitable for ballast loading. Arrange the rear tires to cover the gaps between adjacent tires of the forward group. Furnish rollers capable of forward and backward motion. Compact asphalt pavements and surface treatments with a roller equipped with smooth-tread tires. Compact without damaging the surface. When necessary, moisten the wheels with water or an approved asphalt release agent.

Select and maintain the operating load and tire air pressure within the range of the manufacturer's charts or tabulations to attain maximum compaction throughout the lift, as approved. Furnish the manufacturer's chart or tabulations showing the contact areas and contact pressures for the full range of tire inflation pressures and for the full range of loadings for the particular tires furnished. Maintain individual tire inflation pressures within 5 psi of each other. Provide uniform compression under all tires.

1. **Light Pneumatic Tire.** Furnish a unit:

- with at least 9 pneumatic tires,
- with an effective rolling width of approximately 5 ft.,
- capable of providing a total uniform load of 4.5 to 9 tons, and
- with tires capable of maintaining a minimum ground contact pressure of 45 psi.

2. **Medium Pneumatic Tire.** Furnish a unit:

- with at least 7 pneumatic tires,
- with an effective rolling width of approximately 7 ft.,
- capable of providing a total uniform load of 12 to 25 tons, and
- with tires capable of maintaining a minimum ground contact pressure of 80 psi or 90 psi as directed.

3. **Heavy Pneumatic Tire.** Furnish a unit:

- with at least 4 pneumatic-tired wheels mounted on axles carrying at most 2 wheels,
- with wheels arranged to carry approximately equal loads on uneven surfaces,
- with a width between 8 and 10 ft. that can turn 180° in the crown width,
- capable of providing a total uniform load of at least 25 tons,
- with tires capable of maintaining a maximum ground contact pressure of 150 psi, and
- with liquid-filled tires inflated to such a level that liquid will flow from the valve stem when the stem is in the uppermost position.

E. **Grid Rollers.** Furnish rollers that have 2 cylindrical cages with a minimum diameter of 66 in. and a minimum width of 32 in. Mount cages in a rigid frame with weight boxes. Use a cage surface of cast or welded steel fabric grid with bars 1-1/2 in. wide, spaced on 5-in. centers in each direction, that undulate approximately 1 in. between the high and low points.

Furnish rollers capable of providing a total load of 5 to 13 tons and capable of being operated in a forward or backward motion.

F. **Alternate Equipment.** Instead of the specified equipment, the Contractor may, as approved, operate other compaction equipment that produces equivalent results. Discontinue the use of the alternate equipment and furnish the specified equipment if the desired results are not achieved.

00210.3. Construction. Perform this work in accordance with the applicable Items using equipment and roller speeds specified in Table 1. Use only rubber-tired equipment to push or pull compaction equipment on base courses. Use equipment that does not damage material being rolled.

00210.4. MEASUREMENT AND PAYMENT

A. When listed as a separate contract pay item, shall be measured in accordance with "Measurement and Basis of Payment" section or as shown on the Bid Proposal Form.

B. When not listed as a separate contract pay item, shall be considered as incidental work, and the cost thereof shall be included in such contract pay item(s) as are provided in the proposal contract.

C. Compensation, whether by contract pay item or incidental work will be for furnishing all materials, labor, equipment, tools and incidentals required for the work, all in accordance with the plans and these specifications.

***** END OF SECTION *****

ITEM 760 - CLEANING AND RESHAPING DITCHES

(Referenced from 2004 TxDOT, ITEM 760 – references made to any other Sections of the 2004 TxDOT Manual shall become part of the Contract to be followed)

760.1. Description. Clean and reshape ditches.

760.2. Work Methods. Excavate and remove excess material from ditches and from around fixtures within the limits of the excavation. Reshape ditches in conformance with the lines, grades, and typical cross-sections shown on the plans or as directed. Dispose of excess material in accordance with applicable federal, state, and local regulations, or place on right of way, as directed. Maintain ditch drainage during cleaning and reshaping work.

760.3. Measurement. Measurement will be as follows:

- A. Foot.** By the foot, measured along the centerline of the ditch.
- B. Cubic Yard in Place.** By the cubic yard in its original position computed by the method of average end areas.
- C. Cubic Yard in Vehicle.** By the cubic yard in vehicles measured at the point of excavation.

760.4. Payment. The work performed in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Ditch Cleaning and Reshaping (Foot)," "Ditch Cleaning and Reshaping (Cubic Yard in Place)," or "Ditch Cleaning and Reshaping (Cubic Yard in Vehicle)." This price is full compensation for excavation, disposal of removed materials, reshaping, equipment, labor, tools, and incidentals.

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ITEM 678 - PAVEMENT SURFACE PREPARATION FOR MARKINGS

(Referenced from 2004 TxDOT, ITEM 678 – references made to any other Sections of the 2004 TxDOT Manual shall become part of the Contract to be followed)

678.1. Description. Prepare pavement surface areas before placement of pavement markings and raised pavement markers. Item 677, "Eliminating Existing Pavement Markings or Markers," governs complete removal of existing markings.

678.2. Materials. Use a commercial abrasive-blasting medium capable of producing the specified surface cleanliness. Use potable water, when water is required.

678.3. Equipment. Furnish and maintain equipment in good working condition. Use moisture and oil traps in air compression equipment to remove all contaminants from the blasting air and prevent the deposition of moisture, oil, or other contaminants on the roadway surface.

678.4. Construction. Prepare pavement surface of sufficient area for the pavement markings or raised pavement markers shown on the plans. Remove all contamination and loose material. Avoid damaging the pavement surface. When existing pavement markings are present, remove loose and flaking material. Approved pavement surface preparation methods are sweeping, air blasting, flail milling, and blast cleaning unless otherwise specified on the plans.

For concrete pavement surfaces, in addition to the above, air blast after the removal of contamination or existing material and just prior to placing the stripe. Perform the air blasting with a compressor that is capable of generating compressed air at a minimum of 150 cfm and 100 psi using 5/16-in. or larger hosing for the air blast.

Contaminants up to 0.5 sq. in. may remain if they are not removed by the following test, performed just before application of markings:

Step 1. Air-blast the surface to be tested, to simulate blasting during application of markings.

Step 2. Firmly press a 10-in.-long, 2-in.-wide strip of monofilament tape onto the surface, leaving approximately 2 in. free.

Step 3. Grasp the free end and remove the tape with a sharp pull.

678.5. Measurement. This Item will be measured by the foot for each width specified; by each word, shape, or symbol; or by any other unit except lump sum.

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.

678.6. 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 Surface Preparation for Markings" of the type and width as applicable. This price is full compensation for the cleaning method used, and equipment, materials, tools, labor, and incidentals.

ITEM 677 - ELIMINATING EXISTING PAVEMENT MARKINGS AND MARKERS

(Referenced from 2004 TxDOT, ITEM 677 – references made to any other Sections of the 2004 TxDOT Manual shall become part of the Contract to be followed)

610.1. Description. Eliminate existing pavement markings and raised pavement markers.

610.2. Materials. Furnish surface treatment materials in accordance with Item 300, "Asphalts, Oils, and Emulsions"; Item 302, "Aggregates for Surface Treatments"; and Item 316, "Surface Treatments." Use approved patching materials for repairing damaged surfaces.

Use a commercial abrasive blasting medium capable of producing the specified surface cleanliness. Use potable water when water is required.

610.3. Equipment. Furnish and maintain equipment in good working condition. Use moisture and oil traps in air compression equipment to remove all contaminants from the blasting air and prevent the deposition of moisture, oil, or other contaminants on the roadway surface.

610.4. Construction. Eliminate existing pavement markings and markers on both concrete and asphaltic surfaces in such a manner that color and texture contrast of the pavement surface will be held to a minimum. Repair damage to asphaltic surfaces, such as spalling, shelling, etc., greater than 1/4 in. in depth resulting from the removal of pavement markings and markers. Dispose of markers in accordance with federal, state, and local regulations. Use any of the following methods unless otherwise shown on the plans.

- A. Surface Treatment Method.** Apply surface treatment material at rates shown on the plans or as directed. Place a surface treatment a minimum of 2 ft. wide to cover the existing marking. Place a surface treatment, thin overlay, or microsurfacing a minimum of 1 lane in width in areas where directional changes of traffic are involved or in other areas as directed by the Engineer.
- B. Burn Method.** Use an approved burning method. For thermoplastic pavement markings or prefabricated pavement markings, heat may be applied to remove the bulk of the marking material prior to blast cleaning. When using heat, avoid spalling pavement surfaces. Sweeping or light blast cleaning may be used to remove minor residue.
- C. Blasting Method.** Use a blasting method such as water blasting, abrasive blasting, water abrasive blasting, shot blasting, slurry blasting, water-injected abrasive blasting, or brush blasting as approved. Remove pavement markings on concrete surfaces by a blasting method only.
- D. Mechanical Method.** Use any mechanical method except grinding. Flail milling is acceptable in the removal of markings on asphalt and concrete surfaces.

610.5. Measurement. This Item will be measured by each word, symbol, or shape eliminated; by the foot of marking eliminated; or by any other unit shown on the plans.

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.

610.6. 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 "Eliminating Existing Pavement Markings and Markers" of the type and width as applicable. This price is full compensation for the elimination method used and equipment, materials, tools, labor, and incidentals. Removal of raised pavement markers will not be paid for directly and will be subsidiary to the pertinent bid items.

10007 / 00666 – REFLECTORIZED PAVEMENT MARKINGS

(Referenced from 2004 TxDOT, ITEM 666 ReflectORIZED Pavement Markings – references made to any other Sections of the 2004 TxDOT Manual shall become part of the Contract to be followed)

10007.1. Description. Furnish and place reflectORIZED pavement markings.

10007.2. 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.

10007.3. 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.

10007.4. 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.
- 2.

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.

1. **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.
 2. **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.

10007.5. 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.

10007.6. MEASUREMENT AND PAYMENT

- A. When listed as a separate contract pay item, shall be measured in accordance with "Measurement and Basis of Payment" section or as shown on the Bid Proposal Form.
- B. When not listed as a separate contract pay item, shall be considered as incidental work, and the cost thereof shall be included in such contract pay item(s) as are provided in the proposal contract.
- C. Compensation, whether by contract pay item or incidental work will be for furnishing all materials, labor, equipment, tools and incidentals required for the work, all in accordance with the plans and these specifications.

***** END OF SECTION *****

00533 – MILLING

(Referenced from 2004 TxDOT, ITEM 0533 – references made to any other Sections of the 2004 TxDOT Manual shall become part of the Contract to be followed)

PART 1 - GENERAL

1.01 GENERAL DESCRIPTION OF WORK:

The work for this item shall consist of milling the existing pavement within the limits shown on the plans to the depth and width shown on the plans providing a transition as shown on the plans. This work shall include planning to provide a uniform texture, removal and stockpiling of milled material, providing for dust control and .

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT:

- A. Provide materials and equipment required to perform work as specified.

PART 3 - EXECUTION

3.01 CONSTRUCTION METHODS:

- A. Traffic control, in accordance with the Texas MUTCD, shall be established before starting the milling operations.
- B. The existing asphalt surface shall be milled or planed within limits shown on the plans to the depth of 1" on one side and transition it to match the existing pavement at the other side for a minimum width of 10'.
- C. The milled surface shall provide a smooth surface free from gouges, ridges, oil film, and other imperfections of workmanship and shall have a uniform textured appearance.
- D. In all situations where the existing H.M.A.C. surface contacts the curb face the wedge milling shall include the removal of the existing asphalt covering the gutter up to and along the face of curb.
- E. The wedge milling operations for this project will be performed on one half of the roadway width at a time and in one working day.
- F. If the overlay operations do not start within three (3) days of the milling operations, a temporary ramp will be constructed to reduce the impact on vehicles striking the vertical drop-off. The temporary ramp will be constructed utilizing either hot-mix or cold-mix asphalt concrete pavement. This temporary ramp will extend two (2) feet along the length of the roadway at the edge of the one (1) inch vertical drop-off. The temporary ramp will be removed prior to commencing the placing of the hot-mix asphaltic concrete pavement.

3.02 EQUIPMENT

The equipment for removing the pavement surface shall be a power operated milling machine or other equal or better mechanical means capable of removing, in either one pass or two passes, the necessary pavement thickness in a ten-foot minimum width. The equipment shall be self-propelled with sufficient power, traction and stability to maintain accurate depth of cut and slope. The machine shall be equipped with an integral loading and reclaiming means to immediately remove material being cut from the surface of the roadway and discharge the cuttings into a truck, all in one operation.

Adequate back-up equipment (mechanical street sweepers, loaders, water, truck, etc.) and personnel will also be provided to keep flying dust to a minimum and to insure that all cuttings are removed from street surface the same day. Stockpiling of planed material will not be permitted on the project site unless approved by the Engineer. The machine shall be equipped with means to control dust created by the cutting action and shall have a manual system providing for uniformly varying the depth of cut while the machine is in motion thereby making it possible to cut flush to all inlets, manholes, or other obstructions within the paved area. The speed of the machine shall be variable.

PART 4 – MEASUREMENT & PAYMENT

4.01 MEASUREMENT:

- A. Milling will be measured by the linear foot.

4.02 PAYMENT:

- A. The accepted quantities of milling will be paid for at the contract unit bid price per linear foot for Milling as specified complete in place.
- B. When not listed as a separate contract pay item, milling shall be considered as incidental work, and the cost thereof shall be included in such contract pay item(s) as are provided in the proposal contract.
- C. Compensation, whether by contract pay item or incidental work will be for furnishing all materials, labor, equipment, tools and incidentals required for the work, all in accordance with a the plans and these specifications.

END OF SECTION

ITEM 520 - WEIGHING AND MEASURING EQUIPMENT

(Referenced from 2004 TxDOT, ITEM 520 – references made to any other Sections of the 2004 TxDOT Manual shall become part of the Contract to be followed)

520.1. Description. Provide weighing and measuring equipment for materials measured or proportioned by weight or volume.

520.2. Equipment. Provide certified scales, scale installations, and measuring equipment meeting the requirements of NIST Handbook 44, except that the required accuracy must be 0.4% of the material being weighed or measured.

Provide personnel, facilities, and equipment for checking the scales to the satisfaction of the Engineer. Check all weighing and measuring equipment after each move and at least once each 6 mo. or when requested.

Calibrate all scales using weights certified by the TDA or an equivalent agency approved by the Engineer. Provide a written calibration report from a scale mechanic for all calibrations. Cease plant operations during the checking operation. Do not use inaccurate or inadequate scales. When adjusting equipment, bring performance errors as close as practicable to zero.

Furnish sufficient certified weights to check the accuracy and sensitivity of the scales. Insulate scales against shock, vibrations, or movement of other operating equipment. On a daily basis, provide an automated ticket printout for each truckload of material where payment is determined by weight. Each loading ticket must show the ticket number, truck number, gross weight, tare weight, and net weight.

If required on the plans for materials paid for by the ton, provide a summary spreadsheet that lists separately the ticket number, truck number, gross weight, tare weight, net weight, overload weight, and payment weight amounts as shown in Table 1. Provide this spreadsheet:

- for each lot when materials are paid for in increments of sublots or lots and
- daily for other materials.

For all summary sheets, within 2 days of delivery of materials, provide the totals for net weight and overload amounts to be deducted. Include the overload deduction in the total amount reported for payment. Submissions are subject to verification by the Engineer.

**Table 1
Example Spreadsheet**

Ticket No.	Truck No.	Gross Wt.	Tare Wt.	Net Wt.	Overload Wt.	Payment Wt.
				Totals	Totals	Totals

Furnish leak-free weighing containers large enough to hold a complete batch of the material being measured.

A. Truck Scales. Furnish platform truck scales capable of weighing the entire truck or truck-trailer combination in a single draft.

- B. **Aggregate Batching Scales.** Equip scales used for weighing aggregate with a quick adjustment at zero that provides for any change in tare. Provide a visual means that indicates the required weight for each aggregate.
- C. **Suspended Hopper.** Provide a means for the addition or the removal of small amounts of material to adjust the quantity to the exact weight per batch. Ensure the scale equipment is level.
- D. **Belt Scales.** Use belt scales for proportioning aggregate that are accurate to within 1.0% based on the average of 3 test runs, where no individual test run exceeds 2.0% when checked in accordance with Tex-920-K.
- E. **Asphalt Material Meter.** Provide an asphalt material meter with an automatic digital display of the volume or weight of asphalt material. Verify the accuracy of the meter in accordance with Tex-921-K. When using the asphalt meter for payment purposes, ensure the accuracy of the meter is within 0.4%. When used to measure component materials only and not for payment, ensure the accuracy of the meter is within 1.0%.
- F. **Liquid Asphalt Additive Meters.** Provide a means to check the accuracy of meter output for asphalt primer, fluxing material, and liquid additives. Furnish a meter that reads in increments of 0.1 gal. or less. Verify accuracy of the meter in accordance with Tex-923-K. Ensure the accuracy of the meter within 5.0%.
- G. **Particulate Solid and Slurry Additive Meters.** Provide a means to check the accuracy of meter output for particulate solids (such as hydrated lime or mineral filler) and slurries (such as hydrated lime slurry). Ensure the accuracy of the meter within 5.0%.

520.3. Measurement and Payment. The work performed, materials furnished, equipment, labor, tools, and incidentals will not be measured or paid for directly, but will be subsidiary to pertinent items.

ITEM 506 - TEMPORARY EROSION, SEDIMENTATION, AND ENVIRONMENTAL CONTROLS

(Referenced from 2004 TxDOT, ITEM 506 – references made to any other Sections of the 2004 TxDOT Manual shall become part of the Contract to be followed)

506.1. Description. Install, maintain, and remove erosion, sedimentation, and environmental control devices. Remove accumulated sediment and debris.

506.2. Materials.

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 Section 506.2.1, "Sandbags," 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. **Baled Hay.** Provide hay bales weighing at least 50 lb., composed entirely of vegetable matter, measuring 30 in. or longer, and bound with wire, nylon, or polypropylene string.
- D. **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.
- E. **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.
- F. **Embankment for Erosion Control.** Provide rock, loam, clay, topsoil, or other earth materials that will form a stable embankment to meet the intended use.
- G. **Pipe.** Provide pipe outlet material in accordance with Item 556, "Pipe Underdrains," and details shown on the plans.
- H. **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.
- I. **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 #	Maximum Retained (% by Weight)
4	3%
100	80%
200	95%

- J. **Temporary Sediment Control Fence.** Provide a net-reinforced fence using woven geo-textile 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 4 in. 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.

506.3. Equipment. Provide a backhoe, front end loader, blade, scraper, bulldozer, or other equipment as required when "Earthwork for Erosion Control" is specified on the plans as a bid item.

506.4. Construction.

A. Contractor Responsibilities. Implement the Department's Storm Water Pollution Prevention Plan (SWP3) for the project site in accordance with the specific or general storm water permit requirements. 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. General.

1. **Phasing.** Implement control measures in the area to be disturbed before beginning construction, or as directed. Limit the disturbance to the area shown on the plans or as directed. If, in the opinion of the Engineer, the Contractor cannot control soil erosion and sedimentation resulting from construction operations, the Engineer will limit the disturbed area to that which the Contractor is able to control. Minimize disturbance to vegetation.
2. **Maintenance.** Immediately correct ineffective control measures. Implement additional controls as directed. Remove excavated material within the time requirements specified in the applicable storm water permit.
3. **Stabilization.** Stabilize disturbed areas where construction activities will be temporarily stopped in accordance with the applicable storm water permit. Establish a uniform vegetative cover. The project will not be accepted until a 70% density of existing adjacent undisturbed areas is obtained, unless otherwise shown on the plans. When shown on the plans, the Engineer may accept the project when adequate controls are in place that will control erosion, sedimentation, and water pollution until sufficient vegetative cover can be established.
4. **Finished Work.** Upon acceptance of vegetative cover, remove and dispose of all temporary control measures, temporary embankments, bridges, matting, falsework, piling, debris, or other obstructions placed during construction that are not a part of the finished work, or as directed.
5. **Restricted Activities.** Do not locate disposal areas, stockpiles, or haul roads in any wetland, water body, or streambed.

Do not install temporary construction crossings in or across any water body without the prior approval of the appropriate resource agency and the Engineer. Restrict construction operations in any water body to the necessary areas as shown on the plans or applicable

permit, or as directed. Use temporary bridges, timber mats, or other structurally sound and non-eroding material for stream crossings.

Provide protected storage area for paints, chemicals, solvents, and fertilizers at an approved location. Keep paints, chemicals, solvents, and fertilizers off bare ground and provide shelter for stored chemicals.

- C. Installation, Maintenance, and Removal Work.** Perform work in accordance with the specific or general storm water permit. 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. If a device ceases to function as intended, repair or replace the device or portions thereof as necessary. Remove sediment, debris, and litter. When approved, sediments may be disposed of within embankments, or in the right of way in areas where the material will not contribute to further siltation. Dispose of removed material in accordance with federal, state, and local regulations.

Remove devices upon approval or when 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 dissipators 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. **Baled Hay for Erosion and Sedimentation Control.** Install hay bales at locations shown on the plans by embedding in the soil at least 4 in. and, where possible, approximately 1/2 the height of the bale, or as directed. Fill gaps between bales with hay.
4. **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.
5. **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.
6. **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.
7. **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.
8. **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.
9. **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 attached 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.

506.5. 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. **Baled Hay.** Baled hay will be measured by each bale.
- D. **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.
- E. **Construction Exits.** Construction exits will be measured by the square yard of surface area.
- F. **Earthwork for Erosion Control.**
 1. **Equipment.** Equipment use will be measured by the actual number of hours the equipment is operated.
 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 Vehicles)." 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.

- G. **Construction Perimeter Fence.** Construction perimeter fence will be measured by the foot.
- H. **Sandbags for Erosion Control.** Sandbags will be measured as each sandbag or by the foot along the top of sandbag berms or dams.
- I. **Temporary Sediment-Control Fence.** Temporary sediment-control fence will be measured by the foot.

506.6. 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;
- 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.

The Contractor will be reimbursed in accordance with pertinent Items or Article 9.5, "Force Account," for maintenance, repair, or reinstallation of devices and features when the need for additional control measures cannot be attributed to the above, as determined by the Engineer. 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 Section 506.5.F, "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. **Baled Hay.** 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 "Baled Hay." This price is full compensation for furnishing and placing bales, excavating trenches, removal and disposal, equipment, labor, tools, and incidentals.

When the Engineer directs that the baled hay installation (or portions thereof) be replaced, payment will be made at the unit price bid for "Baled Hay," which is full compensation for removal and reinstallation of the baled hay.

- D. **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 Section 506.5.F, "Earthwork for Erosion and Sediment Control."

- E. **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 Section 506.5.F, "Earthwork for Erosion and Sediment Control."

- F. 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)," "Earthwork (Erosion and Sediment Control, In Vehicles)," "Dragline Work (Erosion and Sediment Control)," "Backhoe Work (Erosion and Sediment Control)," "Excavator Work (Erosion and Sediment Control)," "Front End Loader Work (Erosion and Sediment Control)," "Blading Work (Erosion and Sediment Control)," "Scraper Work (Erosion and Sediment Control)," or "Bulldozer Work (Erosion and Sediment Control)."

This price is full compensation for excavation 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; sandbags; plywood; stage construction for curb inlets involved in curb-inlet sediment traps; 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.

- G. 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 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.

- H. 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.

- I. 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 for "Temporary Sediment-Control Fence." This price is full compensation for furnishing and placing the fence; trenching, fence posts, fabric and backfill; removal and disposal; and equipment, labor, tools, and incidentals.

Removal of temporary sediment-control fence will not be paid for directly but is subsidiary to the installation Item. When the Engineer directs that the temporary sedimentation control fence installation or portions thereof be replaced, payment will be made at the unit price bid for "Temporary Sediment-Control Fence," which is full compensation for the removal and reinstallation of the temporary sediment-control fence.

END OF ITEM

09100 / 502 – BARRICADES, SIGNS, AND TRAFFIC HANDLING

(Referenced from 2004 TxDOT, ITEM 502 Barricades, Signs and Traffic Handling – references made to any other Sections of the 2004 TxDOT Manual shall become part of the Contract to be followed)

09100.1. Description. Provide, install, move, replace, maintain, clean, and remove upon completion of work all barricades, signs, cones, lights, and other traffic control devices used for traffic handling as indicated on the plans and as directed.

09100.2. Construction. Provide traffic control devices that conform to details shown on the plans, the TMUTCD, and the Compliant Work Zone Traffic Control Device List (CWZTCDL) maintained by the Traffic Operations Division.

A. Implementation. Before beginning work, designate in writing a Contractor's Responsible Person (CRP) to be the representative of the Contractor who is responsible for taking or directing corrective measures of installation and maintenance deficiencies as soon as possible. The CRP must be accessible by phone and able to respond to emergencies 24 hours per day.

Follow the traffic control plan (TCP) and install traffic control devices as shown on the plans and as directed. Install traffic control devices straight and plumb. Do not make changes to the location of any device or implement any other changes to the TCP without the approval of the Engineer. Minor adjustments to meet field constructability and visibility are allowed.

Submit Contractor-proposed TCP changes, signed and sealed by a licensed professional engineer, to the Engineer for approval. The Engineer may develop, sign, and seal Contractor-proposed changes. Changes must conform to guidelines established in the TMUTCD using approved products from the CWZTCDL.

Maintain traffic control devices by taking corrective action as soon as possible. Corrective action includes but is not limited to cleaning, replacing, straightening, covering, or removing devices. Maintain the devices such that they are properly positioned, spaced, and legible, and that retroreflective characteristics meet requirements during darkness and rain.

B. Flaggers. Provide a Contractor representative who has been certified as a flagging instructor through courses offered by the Texas Engineering Extension Service, the American Traffic Safety Services Association, the National Safety Council, or other approved organizations. Provide the certificate indicating course completion when requested. This representative is responsible for training and assuring that all flaggers are qualified to perform flagging duties. A qualified flagger must be independently certified by one of the organizations listed above or trained by the Contractor's certified flagging instructor. Provide the Engineer with a current list of qualified flaggers before beginning flagging activities. Use only flaggers on the qualified list.

Flaggers must be courteous and able to effectively communicate with the public. When directing traffic, flaggers must use standard attire, flags, signs, and signals and follow the flagging procedures set forth in the TMUTCD.

- C. **Removal.** Upon completion of work, remove all barricades, signs, cones, lights, and other traffic control devices used for work-zone traffic handling, unless otherwise shown on the plans.

09100.3. MEASUREMENT AND PAYMENT

- A. When listed as a separate contract pay item, shall be measured in accordance with "Measurement and Basis of Payment" section or as shown on the Bid Proposal Form.
- B. When not listed as a separate contract pay item, shall be considered as incidental work, and the cost thereof shall be included in such contract pay item(s) as are provided in the proposal contract.
- C. Compensation, whether by contract pay item or incidental work will be for furnishing all materials, labor, equipment, tools and incidentals required for the work, all in accordance with the plans and these specifications.

* * * END OF SECTION * * *

ITEM 432 – RIP RAP

(Referenced from 2004 TxDOT, ITEM 432 – references made to any other Sections of the 2004 TxDOT Manual shall become part of the Contract to be followed)

432.1. Description. Furnish and place concrete, stone, cement-stabilized, or special riprap.

432.2. Materials. Furnish materials in accordance with the following:

- Item 420, “Concrete Structures”
- Item 421, “Hydraulic Cement Concrete”
- Item 431, “Pneumatically Placed Concrete”
- Item 440, “Reinforcing Steel”
- DMS-6200, “Filter Fabric.”

A. Concrete Riprap. Use Class B Concrete unless otherwise shown on the plans.

B. Pneumatically Placed Concrete Riprap. Use Class II concrete that meets Item 431, “Pneumatically Placed Concrete,” unless otherwise shown.

C. Stone Riprap. Unless otherwise shown on the plans, use durable natural stone with a minimum bulk specific gravity of 2.40 as determined by Tex-403-A. Provide stone that, when tested in accordance with Tex-411-A, has a maximum weight loss of 18% after 5 cycles of magnesium sulfate solution and 14% after 5 cycles of sodium sulfate solution.

For all types of stone riprap perform a size verification test on the first 5,000 sq. yd. of finished riprap stone at a location determined by the Engineer. Weigh each stone in a square test area with the length of each side of the square equal to 3 times the specified riprap thickness. The weight of the stones, excluding spalls, should be as specified below. Additional tests may be required. Do not place additional riprap until the initial 5,000 sq. yd. of riprap has been approved.

When specified, provide grout or mortar in accordance with Item 421, “Hydraulic Cement Concrete.” Provide grout with a consistency that will flow into and fill all voids.

Provide filter fabric in accordance with DMS-6200, “Filter Fabric.” For protection stone riprap, provide Type 2 filter fabric unless otherwise shown on the plans. For Type R, F, or Common stone riprap, provide Type 2 filter fabric when shown on the plans.

1. Type R. Use stones between 50 and 250 lb. with a minimum of 50% of the stones heavier than 100 lb.
2. Type F. Use stones between 50 and 250 lb. with a minimum of 40% of the stones heavier than 100 lb. Use stones with at least 1 broad flat surface.
3. Common. Use stones between 50 and 250 lb. Use stones that are at least 3 in. in their least dimension. Use stones that are at least twice as wide as they are thick. When shown on the plans or approved, material may consist of broken concrete removed under the Contract or from other approved sources. Before placement of each piece of broken concrete, cut exposed reinforcement flush with all surfaces.

4. **Protection.** Use boulders or quarried rock that meets the gradation requirements of Table 1. Both the width and the thickness of each piece of riprap must be at least 1/3 of the length. When shown on the plans or as approved, material may consist of broken concrete removed under the Contract or from other approved sources. Before placement of each piece of broken concrete, cut exposed reinforcement flush with all surfaces. Determine gradation of the finished, in-place, riprap stone under the direct supervision of the Engineer in accordance with Tex-411-A, Part II.

**Table 1
In-Place Protection Riprap Gradation Requirements**

Thickness	Maximum Size (lb.)	90% Size ¹ (lb.)	50% Size ¹ (lb.)	8% Size ¹ , Minimum (lb.)
12 in.	200	80–180	30–75	3
15 in.	320	170–300	60–165	20
18 in.	530	290–475	105–220	22
21 in.	800	460–720	175–300	25
24 in.	1,000	550–850	200–325	30
30 in.	2,600	1,150–2,250	400–900	40

1. As defined in Tex-401-A, Part II.

Provide bedding stone that in-place meets the gradation requirements shown in Table 2 or as otherwise shown on the plans. Determine size distribution in accordance with Tex-401-A, Part I.

**Table 2
Protection Riprap Bedding Material Gradation Requirements**

Sieve Size (Sq. Mesh)	% by Weight Passing
3 in.	100
1-1/2 in.	50–80
3/4 in.	20–60
No. 4	0–15
No. 10	0–5

- D. **Cement-Stabilized Riprap.** Provide aggregate that meets Item 247, “Flexible Base,” for the type and grade shown on plans. Use cement-stabilized riprap with 7% hydraulic cement by dry weight of the aggregate.
- E. **Special Riprap.** Furnish materials for special riprap according to the plans.

432.3. **Construction.** Dress slopes and protected areas to the line and grade shown on the plans before the placement of riprap. Place riprap and toe walls according to details and dimensions shown on the plans or as directed.

- A. **Concrete Riprap.** Reinforce concrete riprap with 6 × 6 – W2.9 × W2.9 welded wire fabric or with No. 3 or No. 4 reinforcing bars spaced at a maximum of 18 in. in each direction unless

otherwise shown. Alternative styles of welded wire fabric that provide at least 0.058 sq. in. of steel per foot in both directions may be used if approved. A combination of welded wire fabric and reinforcing bars may be provided when both are permitted. Provide a minimum 6-in. lap at all splices. At the edge of the riprap, provide a minimum horizontal cover of 1 in. and a maximum cover of 3 in. Place the first parallel bar at most 6 in. from the edge of concrete. Use approved supports to hold the reinforcement approximately equidistant from the top and bottom surface of the slab. Adjust reinforcement during concrete placement to maintain correct position.

As directed, sprinkle or sprinkle and consolidate the subgrade before the concrete is placed. All surfaces must be moist when concrete is placed.

After placing the concrete, compact and shape it to conform to the dimensions shown on plans. After it has set sufficiently to avoid slumping, finish the surface with a wood float to secure a smooth surface or broom finish as approved.

Immediately after the finishing operation, cure the riprap according to Item 420, "Concrete Structures."

- B. Stone Riprap.** Provide the following types of stone riprap when shown on the plans:
- Dry Riprap. Dry riprap is stone riprap with voids filled with only spalls or small stones.
 - Grouted Riprap. Grouted riprap is Type R, F, or Common stone riprap with voids grouted after all the stones are in place.
 - Mortared Riprap. Mortared riprap is Type F stone riprap laid and mortared as each stone is placed.

Use spalls and small stones lighter than 25 lb. to fill open joints and voids in stone riprap, and place to a tight fit.

Do not place mortar or grout when the air temperature is below 35°F. Protect work from rapid drying for at least 3 days after placement.

Unless otherwise approved, place filter fabric with the length running up and down the slope. Ensure fabric has a minimum overlap of 2 ft. Secure fabric with nails or pins. Use nails at least 2 in. long with washers or U-shaped pins with legs at least 9 in. long. Space nails or pins at a maximum of 10 ft. in each direction and 5 ft. along the seams. Alternative anchorage and spacing may be used when approved.

1. **Type R.** Construct riprap as shown in Figure 1 and as shown on the plans. Place stones in a single layer with close joints so that most of their weight is carried by the earth and not by the adjacent stones. Place the upright axis of the stones at an angle of approximately 90° to the embankment slope. Place each course from the bottom of the embankment upward with the larger stones in the lower courses.

Fill open joints between stones with spalls. Place stones to create a uniform finished top surface. Do not exceed a 6-in. variation between the tops of adjacent stones. Replace, embed deeper, or chip away stones that project more than the allowable amount above the finished surface.

When the plans require Type R stone riprap to be grouted, prevent earth, sand, or foreign material from filling the spaces between the stones. After the stones are in place, wet the stones thoroughly, fill the spaces between the stones with grout, and pack. Sweep the surface of the riprap with a stiff broom after grouting.

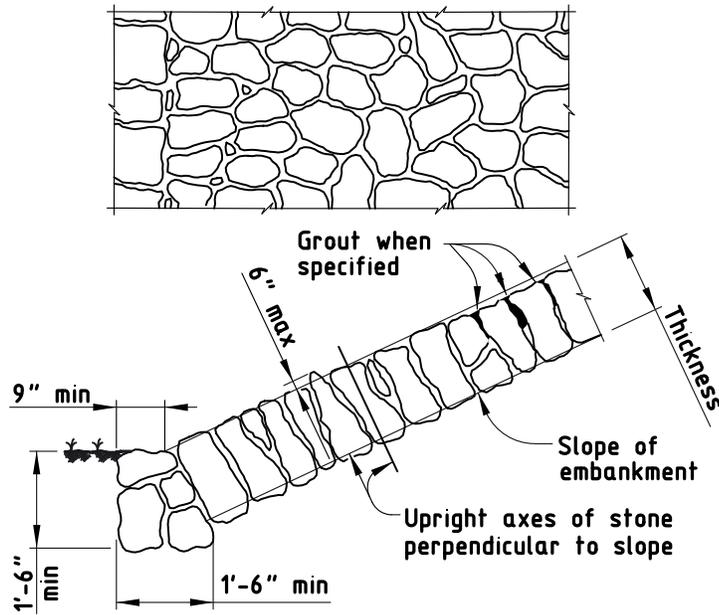


Figure 1
Type R stone riprap, dry or grouted.

2. Type F.

- a. **Dry Placement.** Construct riprap as shown in Figure 2. Set the flat surface on a prepared horizontal earth bed, and overlap the underlying course to secure a lapped surface. Place the large stones first, roughly arranged in close contact. Fill the spaces between the large stones with suitably sized stones placed to leave the surface evenly stepped and conforming to the contour required. Place stone to drain water down the face of the slope.

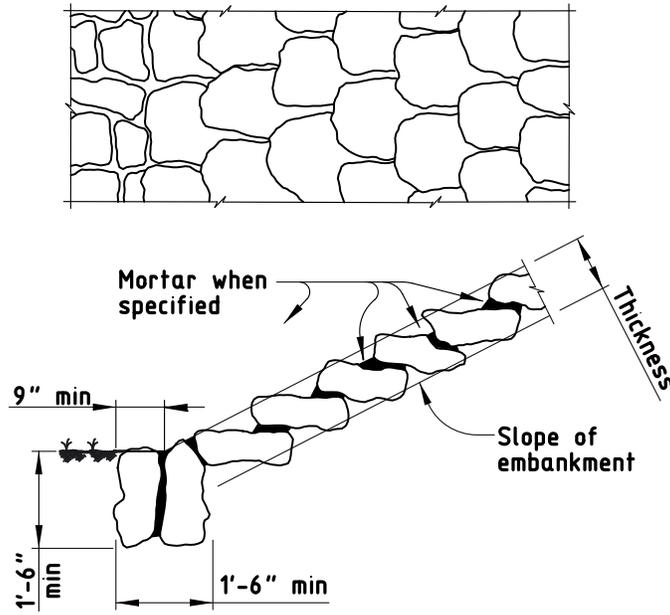


Figure 2
Type F stone riprap, dry or mortared.

- b. Grouting. Construct riprap as shown in Figure 3. Size, shape, and lay large flat-surfaced stones to produce an even surface with minimal voids. Place stones with the flat surface facing upward parallel to the slope. Place the largest stones near the base of the slope. Fill spaces between the larger stones with stones of suitable size, leaving the surface smooth, tight, and conforming to the contour required. Place the stones to create a plane surface with a maximum variation of 6 in. in 10 ft. from true plane. Provide the same degree of accuracy for warped and curved surfaces. Prevent earth, sand or foreign material from filling the spaces between the stones. After the stones are in place, wet them thoroughly, fill the spaces between them with grout, and pack. Sweep the surface with a stiff broom after grouting.

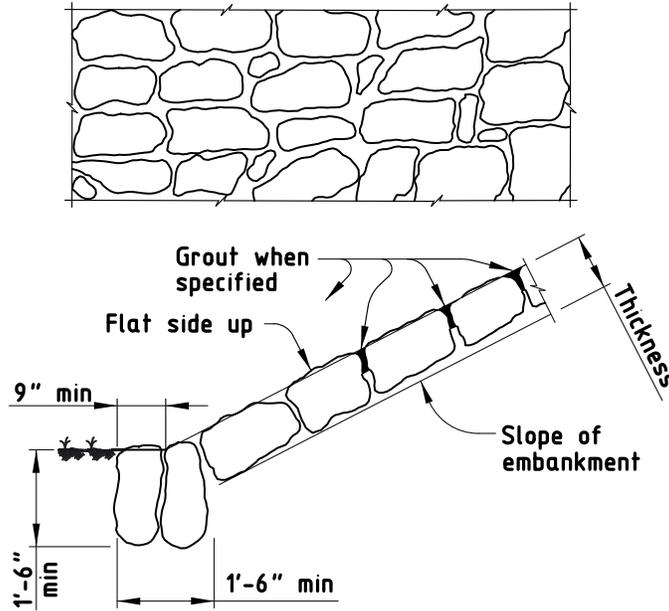


Figure 3
Type F stone riprap, grouted.

- c. **Mortaring.** Construct riprap as shown in Figure 2. Lap courses as described for dry placement. Before placing mortar, wet the stones thoroughly. As the larger stones are placed, bed them in fresh mortar and shove adjacent stones into contact with one another. After completing the work, spread all excess mortar forced out during placement of the stones uniformly over them to fill all voids completely. Point up all joints roughly either with flush joints or with shallow, smooth-raked joints as directed.
3. **Common.** Construct riprap as shown in Figure 4. Place stones on a bed excavated for the base course. Bed the base course of stone well into the ground with the edges in contact. Bed and place each succeeding course in even contact with the preceding course. Use spalls and small stones to fill any open joints and voids in the riprap. Ensure the finished surface presents an even, tight surface, true to the line and grades of the typical sections. When the plans require grouting common stone riprap, prevent earth, sand, or foreign material from filling the spaces between the stones. After the stones are in place, wet them thoroughly, fill the spaces between them with grout, and pack. Sweep the surface with a stiff broom after grouting.

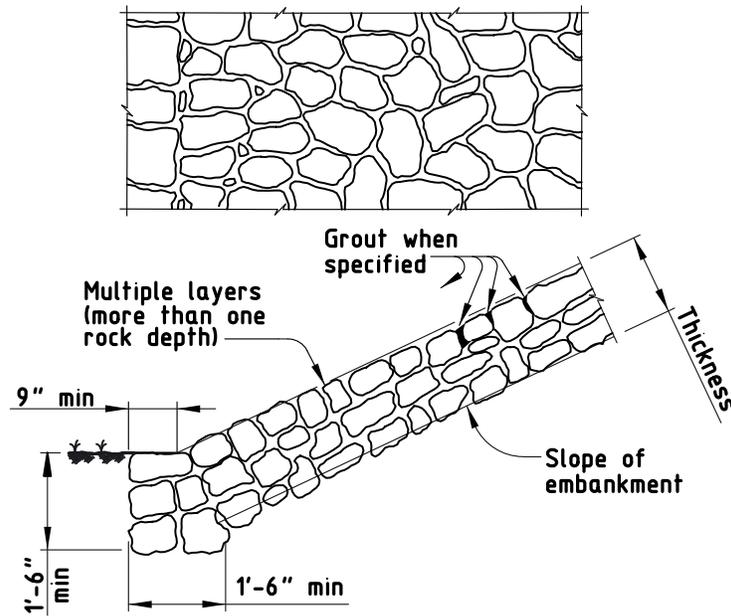


Figure 4
Common stone riprap, dry or grouted.

4. **Protection.** Construct riprap as shown in Figure 5. Place riprap stone on the slopes within the limits shown on the plans. Place stone for riprap on the bedding material to produce a reasonably well-graded mass of riprap with the minimum practicable percentage of voids. Construct the riprap to the lines and grades shown on the plans or staked in the field. A tolerance of +6 in. and -0 in. from the slope line and grades shown on the plans is allowed in the finished surface of the riprap. Place riprap to its full thickness in a single operation. Avoid displacing the bedding material. Ensure that the entire mass of stones in their final position is free from objectionable pockets of small stones and clusters of larger stones. Do not place riprap in layers, and do not place it by dumping it into chutes, dumping it from the top of the slope, pushing it from the top of the slope, or any method likely to cause segregation of the various sizes. Obtain the desired distribution of the various sizes of stones throughout the mass by selective loading of material at the quarry or other source or by other methods of placement that will produce the specified results. Rearrange individual stones by mechanical equipment or by hand if necessary to obtain a reasonably well-graded distribution of stone sizes.

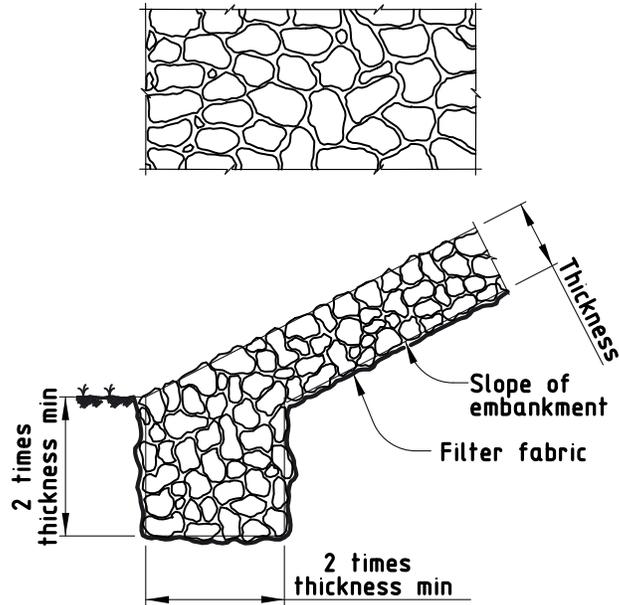


Figure 5
Protection stone riprap.

- C. **Pneumatically Placed Concrete Riprap, Class II.** Meet Item 431, "Pneumatically Placed Concrete." Provide reinforcement following the details on the plans and Item 440, "Reinforcing Steel." Support reinforcement with approved supports throughout placement of concrete.
Give the surface a wood-float finish or a gun finish as directed. Immediately after the finishing operation, cure the riprap with membrane-curing compound in accordance with Item 420, "Concrete Structures."
- D. **Cement-Stabilized Riprap.** Follow the requirements of the plans and the provisions for concrete riprap except when reinforcement is not required. The Engineer will approve the design and mixing of the cement-stabilized riprap.
- E. **Special Riprap.** Construct special riprap according to the plans.

432.4. **Measurement.** This Item will be measured by the cubic yard of material complete in place. Volume will be computed on the basis of the measured area in place and the thickness and toe wall width shown on the plans.

For stone riprap for protection, the quantity of the bedding material to be paid for will be measured by the cubic yard as computed from the measured area in place and the bedding thickness shown on the plans.

432.5. **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 "Riprap" of the type, thickness, and void-filling technique (Dry, Grout, Mortar) specified, as applicable. This price is full compensation for furnishing, hauling, and placing riprap and for filter fabric, expansion joint material, concrete and reinforcing steel, grout and mortar, scales, test weights, equipment, labor, tools, and incidentals.

Payment for excavation of toe wall trenches, for all necessary excavation below natural ground or bottom of excavated channel, and for shaping of slopes for riprap will be included in the unit price bid per cubic yard of riprap.

When bedding is required for protection stone riprap, payment will be made at the unit price for "Bedding Material" of the thickness specified. This price is full compensation for furnishing, hauling, placing, and maintaining the bedding material until placement of the riprap cover is completed and accepted; excavation required for placement of bedding material; and equipment, scales, test weights, labor, tools, and incidentals. No payment will be made for excess thickness of bedding nor for material required to replace embankment material lost by rain wash, wind erosion, or otherwise.

02612- 00340 – DENSE-GRADED HOT-MIX ASPHALT (METHOD)

(Referenced from 2004 TX-Dot, ITEM 340 Dense-Graded Hot-Mix Asphalt (Method) – references made to any other Sections of the 2004 TX-Dot Manual shall become part of the Contract to be followed)

02612.1. Description. Construct a pavement layer composed of a compacted, dense-graded mixture of aggregate and asphalt binder mixed hot in a mixing plant.

02612.2. Materials. Furnish uncontaminated materials of uniform quality that meet the requirements of the plans and specifications. Notify the Engineer of all material sources. Notify the Engineer before changing any material source or formulation. When the Contractor makes a source or formulation change, the Engineer will verify that the requirements of this Item are met and may require a new laboratory mixture design, trial batch, or both. The Engineer may sample and test project materials at any time during the project to verify compliance.

A. Aggregate. Furnish aggregates from sources that conform to the requirements shown in Table 1, and as specified in this Section, unless otherwise shown on the plans. Provide aggregate stockpiles that meet the definition in this Section for either coarse aggregate or fine aggregate. When reclaimed asphalt pavement (RAP) is allowed by plan note, provide RAP stockpiles in accordance with this Section. Aggregate from RAP is not required to meet Table 1 requirements unless otherwise shown on the plans. Supply mechanically crushed gravel or stone aggregates that meet the definitions in Tex-100-E. The Engineer will designate the plant or the quarry as the sampling location. Samples must be from materials produced for the project. The Engineer will establish the surface aggregate classification (SAC) and perform Los Angeles abrasion, magnesium sulfate soundness, and Micro-Deval tests. Perform all other aggregate quality tests listed in Table 1. Document all test results on the mixture design report. The Engineer may perform tests on independent or split samples to verify Contractor test results. Stockpile aggregates for each source and type separately. Determine aggregate gradations for mixture design and production testing based on the washed sieve analysis given in Tex-200-F, Part II. Do not add material to an approved stockpile from sources that do not meet the aggregate quality requirements of the Department's *Bituminous Rated Source Quality Catalog* (BRSQC) unless otherwise approved.

- 1. Coarse Aggregate.** Coarse aggregate stockpiles must have no more than 20% material passing the No. 8 sieve. Provide aggregates from sources listed in the BRSQC. Provide aggregate from non-listed sources only when tested by the Engineer and approved before use. Allow 30 calendar days for the Engineer to sample, test, and report results for non-listed sources. Provide coarse aggregate with at least the minimum SAC shown on the plans. SAC requirements apply only to aggregates used on the surface of travel lanes, unless otherwise shown on the plans. The SAC for sources on the Department's AQMP is listed in the BRSQC.

Class B aggregate meeting all other requirements in Table 1 may be blended with a Class A aggregate in order to meet requirements for Class A materials. When blending Class A and B aggregates to meet a Class A requirement, ensure that at least 50% by weight of

the material retained on the No. 4 sieve comes from the Class A aggregate source. Blend by volume if the bulk specific gravities of the Class A and B aggregates differ by more than 0.300. When blending, do not use Class C or D aggregates. For blending purposes, coarse aggregate from RAP will be considered as Class B aggregate.

2. **RAP.** RAP is salvaged, milled, pulverized, broken, or crushed asphalt pavement. Crush or break RAP so that 100% of the particles pass the 2-in. sieve.

RAP from either Contractor- or Department-owned sources, including RAP generated during the project, is permitted only when shown on the plans. Department-owned RAP, if allowed for use, will be available at the location shown on the plans. When RAP is used, determine asphalt content and gradation for mixture design purposes. Perform other tests on RAP when shown on the plans.

When RAP is allowed by plan note, use no more than 30% RAP in Type A or B mixtures unless otherwise shown on the plans. For all other mixtures, use no more than 20% RAP unless otherwise shown on the plans.

Do not use RAP contaminated with dirt or other objectionable materials. Do not use the RAP if the decantation value exceeds 5% and the plasticity index is greater than 8. Test the stockpiled RAP for decantation in accordance with the laboratory method given in Tex-406-A, Part I. Determine the plasticity index using Tex-106-E if the decantation value exceeds 5%. The decantation and plasticity index requirements do not apply to RAP samples with asphalt removed by extraction.

Do not intermingle Contractor-owned RAP stockpiles with Department-owned RAP stockpiles. Remove unused Contractor-owned RAP material from the project site upon completion of the project. Return unused Department-owned RAP to the designated stockpile location.

3. **Fine Aggregate.** Fine aggregates consist of manufactured sands, screenings, and field sands. Fine aggregate stockpiles must meet the gradation requirements in Table 2. Supply fine aggregates that are free from organic impurities. The Engineer may test the fine aggregate in accordance with Tex-408-A to verify the material is free from organic impurities. At most 15% of the total aggregate may be field sand or other uncrushed fine aggregate. With the exception of field sand, use fine aggregate from coarse aggregate sources that meet the requirements shown in Table 1, unless otherwise approved.

If 10% or more of the stockpile is retained on the No. 4 sieve, test the stockpile and verify that it meets the requirements in Table 1 for coarse aggregate angularity (Tex-460-A) and flat and elongated particles (Tex-280-F).

Table 1 Aggregate Quality Requirements

Property	Test Method	Requirement
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Coarse Aggregate		
SAC	AQMP	As shown on plans
Deleterious material, %, max	Tex-217-F, Part I	1.5
Decantation, %, max	Tex-217-F, Part II	1.5
Micro-Deval abrasion, %, max	Tex-461-A	Note 1
Los Angeles abrasion, %, max	Tex-410-A	40
Magnesium sulfate soundness, 5 cycles, %, max	Tex-411-A	302
Coarse aggregate angularity, 2 crushed faces, %, min	Tex 460-A, Part I	853
Flat and elongated particles @ 5:1, %, max	Tex-280-F	10
Fine Aggregate		
Linear shrinkage, %, max	Tex-107-E	3
Combined Aggregate⁴		
Sand equivalent, %, min	Tex-203-F	45

1. Not used for acceptance purposes. Used by the Engineer as an indicator of the need for further investigation.
2. Unless otherwise shown on the plans.
3. Unless otherwise shown on the plans. Only applies to crushed gravel.
4. Aggregates, without mineral filler, RAP, or additives, combined as used in the job-mix formula (JMF).

Table 2 Gradation Requirements for Fine Aggregate

Sieve Size	% Passing by Weight or Volume
3/8"	100
#8	70-100
#200	0-30

- B. Mineral Filler.** Mineral filler consists of finely divided mineral matter such as agricultural lime, crusher fines, hydrated lime, cement, or fly ash. Mineral filler is allowed unless otherwise shown on

the plans. Do not use more than 2% hydrated lime or cement, unless otherwise shown on the plans. The plans may require or disallow specific mineral fillers. When used, provide mineral filler that:

- is sufficiently dry, free-flowing, and free from clumps and foreign matter;
- does not exceed 3% linear shrinkage when tested in accordance with Tex-107-E; and
- meets the gradation requirements in Table 3.

Table 3 Gradation Requirements for Mineral Filler

Sieve Size	% Passing by Weight or Volume
#8	100
#200	55-100

- C. **Bag house Fines.** Fines collected by the bag house or other dust-collecting equipment may be reintroduced into the mixing drum.
- D. **Asphalt Binder.** Furnish the type and grade of performance-graded (PG) asphalt binder specified on the plans in accordance with Section 300.2.J, "Performance-Graded Binders."
- E. **Tack Coat.** Unless otherwise shown on the plans or approved, furnish CSS-1H, SS-1H, or a PG binder with a minimum high-temperature grade of PG 58 for tack coat binder in accordance with Item 300, "Asphalts, Oils, and Emulsions."

Do not dilute emulsified asphalts at the terminal, in the field, or at any other location before use. If required, verify that emulsified asphalt proposed for use meets the minimum residual asphalt percentage specified in Item 300, "Asphalts, Oils, and Emulsions."

The Engineer will obtain at least 1 sample of the tack coat binder per project and test it to verify compliance with Item 300. The Engineer will obtain the sample from the asphalt distributor immediately before use.

- F. **Additives.** When shown on the plans, use the type and rate of additive specified. Other additives that facilitate mixing or improve the quality of the mixture may be allowed when approved.

If lime or a liquid anti-stripping agent is used, add in accordance with Item 301, "Asphalt Anti-stripping Agents." Do not add lime directly into the mixing drum of any plant where lime is removed through the exhaust stream unless the plant has a bag house or dust collection system that reintroduces the lime back into the drum.

02612.3. Equipment. Provide required or necessary equipment in accordance with Item 320, "Equipment for Asphalt Concrete Pavement."

02612.4. Construction. Design, produce, store, transport, place, and compact the specified paving mixture in accordance with the requirements of this Item. Unless otherwise shown on the plans, provide the mix design. The Department will perform quality assurance (QA) testing. Provide quality control (QC) testing as

needed to meet the requirements of this Item.

A. Mixture Design.

1. **Design Requirements.** Use a Level II specialist certified by a Department-approved hot-mix asphalt certification program to develop the mixture design. Have the Level II specialist sign the design documents. Unless otherwise shown on the plans, use the typical weight design example given in Tex-204-F, Part I, to design a mixture meeting the requirements listed in Tables 1 through 6. Use an approved laboratory to perform the Hamburg Wheel test and provide results with the mixture design, or provide the laboratory mixture and request that the Department perform the Hamburg Wheel test. The Construction Division maintains a list of approved laboratories. Furnish the Engineer with representative samples of all materials used in the mixture design. The Engineer will verify the mixture design. If the design cannot be verified by the Engineer, furnish another mixture design.

The Contractor may submit a new mixture design at anytime during the project. The Engineer will approve all mixture designs before the Contractor can begin production.

Provide the Engineer with a mixture design report using Department-provided software. Include the following items in the report:

- the combined aggregate gradation, source, specific gravity, and percent of each material used;
- results of all applicable tests;
- the mixing and molding temperatures;
- the signature of the Level II person or persons who performed the design;
- the date the mixture design was performed; and
- a unique identification number for the mixture design.

Table 4 Master Gradation Bands (% Passing by Weight or Volume) and Volumetric Properties

Sieve Size	A Coarse Base	B Fine Base	C Coarse Surface	D Fine Surface	F Fine Mixture
1-1/2"	98.0–100.0	–	–	–	–
1"	78.0–94.0	98.0–100.0	–	–	–
3/4"	64.0–85.0	84.0–98.0	95.0–100.0	–	–
1/2"	50.0–	–	–	98.0–	–

	70.0			100.0	
3/8"	-	60.0- 80.0	70.0- 85.0	85.0- 100.0	98.0- 100.0
#4	30.0- 50.0	40.0- 60.0	43.0- 63.0	50.0- 70.0	80.0- 86.0
#8	22.0- 36.0	29.0- 43.0	32.0- 44.0	35.0- 46.0	38.0- 48.0
#30	8.0-23.0	13.0- 28.0	14.0- 28.0	15.0- 29.0	12.0- 27.0
#50	3.0-19.0	6.0-20.0	7.0-21.0	7.0-20.0	6.0-19.0
#200	2.0-7.0	2.0-7.0	2.0-7.0	2.0-7.0	2.0-7.0
Design VMA1, % Minimum					
-	12.0	13.0	14.0	15.0	16.0
Plant-Produced VMA, % Minimum					
-	11.0	12.0	13.0	14.0	15.0

1. Voids in Mineral Aggregates.

Table 5 Laboratory Mixture Design Properties

Property	Test Method	Requirement
Target laboratory-molded density, %	Tex-207-F	96.01
Tensile strength (dry), psi (molded to 93% ±1% density)	Tex-226-F	85-2002
Boil test3	Tex-530-C	-

1. Unless otherwise shown on the plans.
2. May exceed 200 psi when approved and may be waived when approved.
3. Used to establish baseline for comparison to production results. May be waived when approved.

Table 6 Hamburg Wheel Test Requirements¹

High-Temperature Binder Grade	Minimum # of Passes ² @ 0.5" Rut Depth, Tested @ 122°F
PG 64 or lower	10,000
PG 70	15,000
PG 76 or higher	20,000

1. Tested in accordance with Tex-242-F.
2. May be decreased or waived when shown on the plans.

B. Job-Mix Formula Approval. The job-mix formula (JMF) is the combined aggregate gradation and target asphalt percentage used to establish target values for mixture production. JMF is the original

laboratory mixture design used to produce the trial batch. The Engineer and the Contractor will verify JMF based on plant-produced mixture from the trial batch unless otherwise approved. The Engineer may accept an existing mixture design previously used on a Department project and may waive the trial batch to verify JMF. If the JMF is not verified by the Engineer from the trial batch, adjust the JMF or redesign the mix and produce as many trial batches as necessary to verify the JMF.

Provide the Engineer with split samples of the mixtures and blank samples used to determine the ignition oven correction factors. The Engineer will determine the aggregate and asphalt correction factors from the ignition oven using Tex-236-F.

The Engineer will use a Texas gyratory compactor calibrated in accordance with Tex-914-F in molding production samples. The Engineer will perform Tex-530-C and retain the tested sample for comparison purposes during production. The Engineer may waive the requirement for the boil test.

- C. **JMF Field Adjustments.** Produce a mixture of uniform composition closely conforming to the approved JMF. If, during initial days of production, the Contractor or Engineer determines that adjustments to the JMF are necessary to achieve the specified requirements, or to more nearly match the aggregate production, the Engineer may allow adjustment of the JMF within the tolerances of Table 7 without a laboratory redesign of the mixture.

The Engineer will adjust the asphalt content to maintain desirable laboratory density near the optimum value while achieving other mix requirements.

Table 7 Operational Tolerances

Description	Test Method	Allowable Difference from JMF Target
Individual % retained for #8 sieve and larger		±5.01
Individual % retained for sieves smaller than #8 and larger than #200	Tex-200-F or Tex-236-F	±3.01
% passing the #200 sieve		±2.01
Asphalt content, %	Tex-236-F	±0.31
Laboratory-molded density, %		±1.0
VMA, %, min	Tex-207-F	Note 2

1. When within these tolerances, mixture production gradations may fall outside the master grading limits; however, the percent passing the #200 sieve will be considered out of tolerance when outside the master grading limits.
 2. Test and verify that Table 4 requirements are met.
- D. Production Operations.** Perform a new trial batch when the plant or plant location is changed. The Engineer may suspend production for noncompliance with this Item. Take corrective action and obtain approval to proceed after any production suspension for noncompliance.
1. **Operational Tolerances.** During production, do not exceed the operational tolerances in Table 7. Stop production if testing indicates tolerances are exceeded on:
 - 3 consecutive tests on any individual sieve,
 - 4 consecutive tests on any of the sieves, or
 - 2 consecutive tests on asphalt content. Begin production only when test results or other information

indicate, to the satisfaction of the Engineer, that the next mixture produced will be within Table 7 tolerances.

1. **Storage and Heating of Materials.** Do not heat the asphalt binder above the temperatures specified in Item 300, "Asphalts, Oils, and Emulsions" or outside the manufacturer's recommended values. On a daily basis, provide the Engineer with the records of asphalt binder and hot-mix asphalt discharge temperatures in accordance with Item 320, "Equipment for Asphalt Concrete Pavement." Unless otherwise approved, do not store mixture for a period long enough to affect the quality of the mixture, nor in any case longer than 12 hr.
2. **Mixing and Discharge of Materials.** Notify the Engineer of the target discharge temperature and produce the mixture within 25°F of the target. Monitor the temperature of the material in the truck

before shipping to ensure that it does not exceed 350°F. The Department will not pay for or allow placement of any mixture produced at more than 350°F. Control the mixing time and temperature so that substantially all moisture is removed from the mixture before discharging from the plant.

- E. Hauling Operations.** Before use, clean all truck beds to ensure mixture is not contaminated. When a release agent is necessary to coat truck beds, use a release agent on the approved list maintained by the Construction Division.
- F. Placement Operations.** Prepare the surface by removing raised pavement markers and objectionable material such as moisture, dirt, sand, leaves, and other loose impediments from the surface before placing mixture. Remove vegetation from pavement edges. Place the mixture to meet the typical section requirements and produce a smooth, finished surface with a uniform appearance and texture. Offset longitudinal joints of successive courses of hot mix by at least 6 in. Place mixture so longitudinal joints on the surface course coincide with lane lines, or as directed. Ensure that all finished surfaces will drain properly. Place mixture within the compacted lift thickness shown in Table 8, unless otherwise shown on the plans or allowed.

Table 8 Compacted Lift Thickness and Required Core Height

Mixture Type	Compacted Lift Thickness	
	Minimum (in.)	Maximum (in.)
A	3.00	6.00
B	2.50	5.00
C	2.00	4.00
D	1.50	3.00
F	1.25	2.50

1. **Weather Conditions.** Place mixture when the roadway surface temperature is 60°F or higher unless otherwise approved. 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 Engineer.
2. **Tack Coat.** Clean the surface before placing the tack coat. Unless otherwise approved, apply tack coat uniformly at the rate directed by the Engineer. The Engineer will set the rate between 0.04 and 0.10 gal. of residual asphalt per square yard of surface area. Apply a thin, uniform tack coat to all contact surfaces of curbs, structures, and all joints. Prevent splattering of tack coat when placed adjacent to curb, gutter, and structures. Roll the tack coat with a pneumatic-tire roller when directed. The Engineer may use Tex-243-F to verify that the tack coat has adequate adhesive properties. The Engineer may suspend paving operations until there is adequate adhesion.

G. Lay-Down Operations.

1. **Minimum Mixture Placement Temperatures.** Use Table 9 for suggested minimum mixture placement temperatures.
2. **Windrow Operations.** When hot mix is placed in windrows, operate windrow pickup equipment so that substantially all the mixture deposited on the roadbed is picked up and loaded into the paver.

Table 9 Suggested Minimum Mixture Placement Temperature

High-Temperature Binder Grade	Minimum Temperature (Before Entering Paver)	Placement (Before Entering Paver)
PG 64 or lower	260°F	
PG 70	270°F	
PG 76	280°F	
PG 82 or higher	290°F	

- H. Compaction.** Use air void control unless ordinary compaction control is specified on the plans. Avoid displacement of the mixture. If displacement occurs, correct to the satisfaction of the Engineer. Ensure pavement is fully compacted before allowing rollers to stand on the pavement. Unless otherwise directed, use only water or an approved release agent on rollers, tamps, and other compaction equipment. Keep diesel, gasoline, oil, grease, and other foreign matter off the mixture. Unless otherwise directed, operate vibratory rollers in static mode when not compacting, when changing directions, or when the plan depth of the pavement mat is less than 1-1/2 in.

Use tamps to thoroughly compact the edges of the pavement along curbs, headers, and similar structures and in locations that will not allow thorough compaction with the rollers. The Engineer may require rolling with a trench roller on widened areas, in trenches, and in other limited areas.

Allow the compacted pavement to cool to 160°F or lower before opening to traffic unless otherwise directed. When directed, sprinkle the finished mat with water or limewater to expedite opening the roadway to traffic.

1. **Air Void Control.** Compact dense-graded hot-mix asphalt to contain from 5% to 9% in-place air voids. Do not increase the asphalt content of the mixture to reduce pavement air voids.
2. **Ordinary Compaction Control.** Furnish the type, size, and number of rollers required for compaction, as approved. Furnish at least 1 medium pneumatic-tire roller (minimum 12-ton weight). Use the control strip method given in Tex-207-F, Part IV, to establish rolling patterns that achieve maximum compaction.
 - a. **Rollers.** Furnish the type, size, and number of rollers required for compaction, as approved. Use a pneumatic-tire roller to seal the surface, unless otherwise shown on the plans. Use additional rollers as required to remove any roller marks.
 - b. **Air Void Determination.** Unless otherwise shown on the plans, obtain 2 roadway specimens at each location selected by the Engineer for in-place air void determination. The Engineer will measure air voids in accordance with Tex-207-F and Tex-227-F. Before drying to a constant weight, cores may be predried using a Corelok or similar vacuum device to remove excess moisture. The Engineer will use the average air void content of the 2 cores to calculate the in-place air voids at the selected location.
 - c. **Air Voids Out of Range.** If the in-place air void content in the compacted mixture is below 5% or greater than 9%, change the production and placement operations to bring the in-place air void content within requirements. The Engineer may suspend production until the in-place air void content is brought to the required level, and may require a test section as described in Section 340.4.H.1.d, "Test Section."
 - d. **Test Section.** Construct a test section of 1 lane-width and at most 0.2 mi. in length to demonstrate that compaction to between 5% and 9% in-place air voids can be obtained. Continue this procedure until a test section with 5% to 9% in-place air voids can be produced. The Engineer will allow only 2 test sections per day. When a test section producing satisfactory in-place air void content is placed, resume full production.

Follow the selected rolling pattern unless changes that affect compaction occur in the mixture or placement

conditions. When such changes occur, establish a new rolling pattern. Compact the pavement to meet the requirements of the plans and specifications.

When rolling with the 3-wheel, tandem or vibratory rollers, start by first rolling the joint with the adjacent pavement and then continue by rolling longitudinally at the sides. Proceed toward the center of the pavement, overlapping on successive trips by at least 1 ft., unless otherwise directed. Make alternate trips of the roller slightly different in length. On superelevated curves, begin rolling at the low side and progress toward the high side unless otherwise directed.

- I. **Irregularities.** Immediately take corrective action if surface irregularities, including but not limited to segregation, rutting, raveling, flushing, fat spots, mat slippage, color, texture, roller marks, tears, gouges, streaks, or uncoated aggregate particles, are detected. The Engineer may suspend production or placement operations until the problem is corrected.

At the expense of the Contractor and to the satisfaction of the Engineer, remove and replace any mixture that does not bond to the existing pavement or that has other surface irregularities identified above.

- J. **Ride Quality.** Use Surface Test Type A to evaluate ride quality in accordance with Item 585, "Ride Quality for Pavement Surfaces," unless otherwise shown on the plans.

02612.5. MEASUREMENT AND PAYMENT

- A. When listed as a separate contract pay item, shall be measured in accordance with "Measurement and Basis of Payment" section or as shown on the Bid Proposal Form.
- B. When not listed as a separate contract pay item, shall be considered as incidental work, and the cost thereof shall be included in such contract pay item(s) as are provided in the proposal contract.
- C. Compensation, whether by contract pay item or incidental work will be for furnishing all materials, labor, equipment, tools and incidentals required for the work, all in accordance with the plans and these specifications.

* * * END OF SECTION * * *

SECTION 03320 - CONCRETE ADMIXTURES

(Referenced from 2004 TxDOT, ITEM 320 – references made to any other Sections of the 2004 TxDOT Manual shall become part of the Contract to be followed)

PART 1 - GENERAL

1.01 GENERAL DESCRIPTION OF WORK:

- A. This work shall consist of furnishing materials for use as admixtures in concrete.

PART 2 - PRODUCTS

2.01 AIR ENTRAINING ADMIXTURE:

- A. An "Air Entraining Admixture is defined as material which, when added to a concrete mixture in the correct quantity, will entrain uniformly dispersed microscopic air.
- B. This admixture shall conform to ASTM C 260, modified as follows:
 - 1. The cement used in any series of tests shall be either the cement proposed for specific work or a "reference" Type I cement from one mill.
 - 2. Unless otherwise indicated, the minimum relative durability factor shall be 80.
- C. The air entraining admixture used in the reference concrete shall be high quality neutralized Vinsol Resin.

2.02 WATER - REDUCING, RETARDING ADMIXTURE:

- A. A "Water-reducing, Retarding Admixture" is defined as a material which when added to a concrete mixture in the correct quantity, will reduce the quantity of mixing water required to produce concrete of a given consistency and retard the initial set of the concrete.
- B. This mixture shall conform to ASTM C 494, Type A or D, modified as follows:
 - 1. The water-reducing retarder shall retard the initial set of the plastic concrete a minimum of 2 hours and a maximum of 4 hours when the materials are at a temperature of 90oF, the dosage rate specified by the manufacturer.
 - 2. The cement used in any series of tests shall be either the cement proposed for specific work or a "reference" Type I cement for one mill.
 - 3. All concrete tested shall contain entrained air.

2.03 WATER-REDUCING ADMIXTURE:

- A. A "Water-reducing Admixture" is defined as a material which, when added to a concrete mixture in the correct quantity, will reduce the quantity of mixing water required to produce concrete of a given consistency and required strength.
- B. This admixture shall conform to ASTM C 494, Type A.

2.04 ACCELERATING ADMIXTURE:

- A. An "Accelerating Admixture" is defined as an admixture that accelerates the setting time and the early strength development of concrete.
- B. This admixture shall conform to ASTM C 494, Type C, modified as follows:
 - 1. The accelerating admixture will contain no chlorides and shall be used in the liquid form only.

2.05 HIGH-RANGE WATER REDUCING ADMIXTURES:

- A. A "High-range Water Reducing Admixture," referred to as a superplaster size, is defined as a synthetic polymer material which, when added to a low slump concrete mixture increases the slump without segregation, impermeability and durability of the mix.
- B. This admixture shall conform to ASTM C 494, Type F or G, modified as follows:
 - 1. It shall reduce the required water by a minimum of 15 percent.
 - 2. It shall increase the 7 day compressive strength of the concrete by a minimum of 25 percent.
- C. The admixture when added to the mix shall produce the following:
 - 1. Modify a low slump concrete, without the addition of water, to produce a slump which conforms to the range indicated.
 - 2. It shall prevent a temperature rise of the mix above 100oF during high ambient conditions.
 - 3. It shall not increase the chloride content of the mix.

2.06 CERTIFICATION:

- A. The CONTRACTOR shall submit the name of the admixture proposed and manufacturer's certification that products selected meet the requirements of this item and of ADTM C 260 and C 494 as required.

- B. If more than one admixture is proposed in the concrete mix, a statement of compatibility of components shall accompany certification.
- C. The ENGINEER may request additional information to be submitted such as infrared spectrophotometer scan, solids content, ph value, etc., for further identification.
- D. A change in formulation discovered by any of the tests prescribed herein or other means and not reported and retested, may be cause to permanently bar the manufacturer from furnishing admixtures for City of McAllen work.
- E. The ENGINEER reserves the right to perform any or all of the tests required by ASTM C 260 and C 494 as a check on the tests reported by the manufacturer.
- F. In case of any variance, the ENGINEER tests will govern.

2.07 APPROVAL:

- A. The ENGINEER shall approve all admixtures and dosage. Approval of admixtures shall be based on previous performance of the admixture.
- B. The dosage will be determined from the manufacturer's recommendations, trial mixes or current job approved mix designs, if it is shown that no substantial change in any of the proposed ingredients has been made.
- C. Should the CONTRACTOR desire to change the admixture or dosage approved during the progress of the work, the CONTRACTOR shall perform trial mixes at his own expense and submit the new mix design for approval.

PART 3 - EXECUTION

3.01 CONSTRUCTION METHODS:

- A. No concrete shall be delivered to the project until the mix design is approved. All concrete delivered shall conform to the approved job mix formula. Unless otherwise indicated, all concrete shall be air entrained. All admixtures will be added at the Batch Plant. All admixtures shall be in the liquid state. No admixtures shall be dispensed on dry aggregates.

Each admixture shall be dispensed separately, but at the same time as the mixing water.
- B. An approved job mix formula for normal hot weather concreting may not perform satisfactorily for extended retardation, in which case its use will not be permitted.
- C. The rotation of the mixer shall be sufficient to thoroughly mix the admixture into the concrete.
- D. Admixtures shall be agitated as required to prevent separation or sedimentation of solids. Air agitation of Neutralized Vinsol Resin will not be permitted.

- E. Normally Air entraining agents shall be charged into the mixer at the beginning of the batch and retarding or water reducing admixtures shall be charged into the mixer during the last part (approximately 1/3) of the batch when an air-entraining agent is used.
- F. Accelerating admixtures will be used only on the written approval of the ENGINEER. Accelerating admixtures will not be permitted in bridge decks, direct traffic culvert slabs at any time nor when Type II cement is specified.
- G. All admixtures shall be of the same brand from only one manufacturer for the entire project, unless otherwise approved by the ENGINEER.
- H. Accelerators will be used only to meet special project requirements and will require the approval of the ENGINEER.
- I. For individual placements of concrete of 25 cubic yards or more and for all ready-mix concrete, the admixture shall be measured and dispenses by a readily adjustable dispenser. When set to a predetermined volume, the dispenser shall fill to the preset amount and hold it positively without leakage until the operator releases the content into the mixing water by some positive means. Unless otherwise indicated, completely automatic dispensing will not be required, except for use with a fully automatic plant.
- J. The calibrated container shall be a measuring reservoir of the type where the level of the admixture is visible at all times. A strip gauge with one ounce increments for air entraining admixtures, ten ounce increments for dispersing admixtures, shall be attached securely to the measuring apparatus. This strip shall be a material possessing weather resistant qualities. The accuracy equipment shall visibly show the total amount to be dispensed for ready check by the ENGINEER.
- K. When the individual placements of less than 25 cubic yards and with the concrete batched on the job site, the ENGINEER may waive the requirements for mechanical dispensing equipment.
- L. When high range water reducing admixtures are indicated the following will be observed:
 1. Ready-mixed concrete shall be delivered in transit mixers and the capacity of the transit mixer shall be reduced for each bath by 25 percent of the rated capacity to assure proper mixing.
 2. If during the placement of concrete, a change in slump resulting in a slump loss in excess of 3 inches is noted, the remaining concrete shall be rejected.
 3. The addition of water will not be permitted at the job site.
 4. Only the liquid admixture shall be used to achieve the desired results, except where air entrainment is indicated, the air entrainment agent will be permitted.
 5. The concrete design shall meet the following requirements:

Item

Test

Value

Air entrainment	ASTM C 260	3 to 6 percent
High range water reducing admixture	ASTM C 494	Type F or G
Water cement ratio Gal/Sack Max.		6.25
Minimum cement content in Sacks (94 lb. sack)		6.0
Coarse aggregate factor		6.5
Slump Maximum, inches		10
Flexural strength @ 7 days, psi		650
Maximum concrete temperature, F		100

PART 4 - MEASUREMENT AND PAYMENT

4.01 No additional compensation will be made for the materials, equipment tests or methods required by this item, but shall be considered subsidiary to various items included in the contract.

**** END OF SECTION ****

ITEM 316 – SURFACE TREATMENTS

(Referenced from 2004 TxDOT, ITEM 316 – references made to any other Sections of the 2004 TxDOT Manual shall become part of the Contract to be followed)

316.1. Description. Construct a surface treatment consisting of 1 or more applications of a single layer of asphalt material covered with a single layer of aggregate.

316.2. Materials. Furnish materials of the type and grade shown on the plans in accordance with the following:

- Item 300, "Asphalts, Oils, and Emulsions"
- Item 302, "Aggregates for Surface Treatments."

For final surfaces, unless otherwise shown on the plans, furnish aggregate with a surface aggregate classification of "B" or better.

316.3. Equipment.

A. Distributor. Furnish a distributor that will apply the asphalt material uniformly at the specified rate or as directed.

1. **Transverse Variance Rate.** When a transverse variance rate is shown on the plans, ensure that the nozzles outside the wheel paths will output a predetermined percentage more of asphalt material by volume than the nozzles over the wheel paths.

2. Calibration.

a. **Transverse Distribution.** Furnish a distributor test report, no more than 1 yr. old, documenting that the variation in output for individual nozzles of the same size does not exceed 10% when tested at the greatest shot width in accordance with Tex-922-K, Part III.

Include the following documentation on the test report:

- the serial number of the distributor,
- a method that identifies the actual nozzle set used in the test, and
- the fan width of the nozzle set at a 12-in. bar height.

When a transverse variance rate is required, perform the test using the type and grade of asphalt material to be used on the project. The Engineer may verify the transverse rate and distribution at any time. If verification does not meet the requirements, correct deficiencies and furnish a new test report.

b. **Tank Volume.** Furnish a volumetric calibration and strap stick for the distributor tank in accordance with Tex-922-K, Part I.

Calibrate the distributor within the previous 5 yr. of the date first used on the project. The Engineer may verify calibration accuracy in accordance with Tex-922-K, Part II.

3. **Computerized Distributor.** When paying for asphalt material by weight, the Engineer may allow use of the computerized distributor display to verify application rates. Verify application rate accuracy at a frequency acceptable to the Engineer.

B. Aggregate Spreader. Use a continuous-feed, self-propelled spreader to apply aggregate uniformly at the specified rate or as directed.

- C. **Rollers.** Unless otherwise shown on the plans, furnish light pneumatic-tire rollers in accordance with Item 210, "Rolling."
- D. **Broom.** Furnish rotary, self-propelled brooms.
- E. **Asphalt Storage and Handling Equipment.** When the plans or the Engineer allows storage tanks, furnish a thermometer in each tank to indicate the asphalt temperature continuously. Keep equipment clean and free of leaks. Keep asphalt material free of contamination.
- F. **Aggregate Haul Trucks.** Unless otherwise authorized, use trucks of uniform capacity to deliver the aggregate. Provide documentation showing measurements and calculation in cubic yards. Clearly mark the calibrated level. Truck size may be limited when shown on the plans.
- G. **Digital Measuring Instrument.** Furnish a vehicle with a calibrated digital-measuring instrument accurate to ± 6 ft. per mile.

316.4. Construction.

- A. **General.** Asphalt application season will be as shown on the plans. Asphalt and aggregate rates shown on the plans are for estimating purposes only. The Engineer will adjust the rates for the existing conditions.
- B. **Temporary Aggregate Stockpiles.** The Engineer will approve the location of temporary aggregate stockpiles on the right of way before delivery. Place stockpiles in a manner that will not:
 - obstruct traffic or sight distance,
 - interfere with the access from abutting property, or
 - interfere with roadway drainage.

Locate stockpiles a minimum of 30 ft. from roadway when possible. Sign and barricade as shown on the plans.
- C. **Aggregate Furnished by the Department.** When shown on the plans, the Department will furnish aggregate to the Contractor without cost. Stockpile locations are shown on the plans.
- D. **Adverse Weather Conditions.** Do not place surface treatments when, in the Engineer's opinion, general weather conditions are unsuitable. Meet the requirements for air and surface temperature shown below.
 1. **Standard Temperature Limitations.** Apply surface treatment when air temperature is above 50°F and rising. Do not apply surface treatment when air temperature is 60°F and falling. In all cases, do not apply surface treatment when surface temperature is below 60°F.
 2. **Polymer-Modified Asphalt Cement Temperature Limitations.** When using materials described in Section 300.2.B, "Polymer Modified Asphalt Cement," apply surface treatment when air temperature is above 70°F and rising. Do not apply surface treatment when air temperature is 80°F and falling. In all cases, do not apply surface treatment when surface temperature is below 70°F.
 3. **Asphalt Material Designed for Winter Use.** When winter asphalt application is allowed, the Engineer will approve the air and surface temperature for asphalt material application. Apply surface treatment at air and surface temperatures as directed.

- E. Surface Preparation.** Remove existing raised pavement markers. Repair any damage incurred by removal as directed. Remove dirt, dust, or other harmful material before sealing. When shown on the plans, remove vegetation and blade pavement edges.
- F. Rock Land and Shot.**
- 1. Definitions.**
 - A “rock land” is the area covered at the aggregate rate directed with 1 truckload of aggregate.
 - A “shot” is the area covered by 1 distributor load of asphalt material.
 - 2. Setting Lengths.** Calculate the lengths of both rock land and shot. Adjust shot length to be an even multiple of the rock land. Verify that the distributor has enough asphalt material to complete the entire shot length. Mark shot length before applying asphalt. When directed, mark length of each rock land to verify the aggregate rate.
- G. Asphalt Placement.**
- 1. General.** The maximum shot width is the width of the current transverse distribution test required under Section 316.3.A.2, “Transverse Distribution,” or the width of the aggregate spreader box, whichever is less. Adjust the shot width so operations do not encroach on traffic or interfere with the traffic control plan, as directed. Use 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. Use sufficient pressure to flare the nozzles fully.
Select an application temperature, as approved, in accordance with Item 300, “Asphalts, Oils, and Emulsions.” Uniformly apply the asphalt material at the rate directed, within 15°F of the approved temperature, and not above the maximum allowable temperature.
 - 2. Limitations.** Do not apply asphalt to the roadway until:
 - traffic control methods and devices are in place as shown on the plans or as directed,
 - the loaded aggregate spreader is in position and ready to begin,
 - haul trucks are loaded with enough aggregate to cover the shot area, and
 - haul trucks are in place behind the spreader box.
 - 3. Nonuniform Application.** Stop application if it is not uniform due to streaking, ridging, puddling, or flowing off the roadway surface. Verify equipment condition, operating procedures, application temperature, and material properties. Determine and correct the cause of nonuniform application. If the cause is high or low emulsion viscosity, replace emulsion with material that corrects the problem.
 - 4. Test Strips.** The Engineer may stop asphalt application and require construction of test strips at the Contractor’s expense if any of the following occurs:
 - nonuniformity of application continues after corrective action;
 - on 3 consecutive shots, application rate differs by more than 0.03 gal. per square yard from the rate directed; or
 - any shot differs by more than 0.05 gal. per square yard from the rate directed.The Engineer will approve the test strip location. The Engineer may require additional test strips until surface treatment application meets specification requirements.

- H. **Aggregate Placement.** As soon as possible, apply aggregate uniformly at the rate directed without causing the rock to roll over.
- I. **Rolling.** Start rolling operation on each shot as soon as aggregate is applied. Use sufficient rollers to cover the entire mat width in 1 pass, i.e., 1 direction. Roll in a staggered pattern. Unless otherwise shown on the plans, make a minimum of:
- 5 passes or
 - 3 passes when the asphalt material is an emulsion.
- If rollers are unable to keep up with the spreader box, stop application until rollers have caught up, or furnish additional rollers. Keep roller tires asphalt-free.
- J. **Patching.** Before rolling, repair spots where coverage is incomplete. Repair can be made by hand spotting or other approved method. When necessary, apply additional asphalt material to embed aggregate.
- K. **Brooming.** After rolling, sweep as soon as aggregate has sufficiently bonded to remove excess.
- L. **Final Acceptance.** Maintain surface treatment until the Engineer accepts the work. Repair any surface failures. Before final project acceptance, remove all temporary stockpiles and restore the area to the original contour and grade.

316.5. Measurement.

- A. **Asphalt Material.** Unless otherwise shown on the plans, asphalt material will be measured by one of the following methods:
1. **Volume.** Asphalt material will be measured at the applied temperature by strapping the tank before and after road application and determining the net volume in gallons from the distributor's calibrated strap stick. The quantity to be measured for payment will be the number of gallons used, as directed, in the accepted surface treatment.
 2. **Weight.** Asphalt material will be measured in tons using certified scales meeting the requirements of Item 520, "Weighing and Measuring Equipment," unless otherwise approved. The transporting truck must have a seal attached to the draining device and other openings. The Engineer may require random checking on public scales at the Contractor's expense to verify weight accuracy.

Upon work completion or temporary suspension, any remaining asphalt material will be weighed by a certified public weigher, or measured by volume in a calibrated distributor or tank and the quantity converted to tons at the measured temperature. The quantity to be measured will be the number of tons received minus the number of tons remaining after all directed work is complete and minus the amount used for other items.
- B. **Aggregate.** Aggregate will be measured by the cubic yard in the trucks as applied on the road. The Engineer may require loaded aggregate to be struck off for accurate measurement.
- C. **Loading, Hauling, and Distributing Aggregate.** When the Department furnishes the aggregate, the loading, hauling, and distributing will be measured by the cubic yard in the trucks as applied on the road.

316.6. 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 prices bid for "Asphalt,"

"Aggregate," and "Loading, Hauling, and Distributing Aggregate" of the types-grades specified. These prices are full compensation for surface preparation; furnishing, preparing, hauling, and placing materials; removing existing pavement markers and excess aggregate; rolling; cleaning up stockpiles; and equipment, labor, tools, and incidentals.

ITEM 314 – EMULSIFIED ASPHALT TREATMENT

(Referenced from 2004 TxDOT, ITEM 314 – references

made to any other Sections of the 2004 TxDOT Manual shall become part of the Contract to be followed)

314.1. Description. Apply an emulsified asphalt and water mixture as a base or subgrade treatment; for erosion control, including dust prevention; or as a prime coat.

314.2. Materials. Furnish materials in accordance with the following:

- Item 204, "Sprinkling"
- Item 300, "Asphalts, Oils, and Emulsions."

Use emulsified asphalt of the type and grade shown on the plans. Use a quantity of emulsified asphalt in the mixture, expressed as a percent of total volume, in accordance with the percentage shown on the plans or as directed.

314.3. Equipment. Provide a self-propelled sprinkler in accordance with Article 204.3, "Equipment." Provide calibration documentation for the tank used for distribution.

314.4. Construction. Agitate the water and emulsified asphalt to produce a uniform blend. Evenly distribute at the rate selected by the Engineer to locations shown on the plans or as directed.

A. Base or Subgrade Treatment. Treat the base or subgrade to the depth and width shown on the plans or as directed.

Regulate the percentage of emulsified asphalt in the mixture and distribute successive applications to achieve the specified rate. Maintain the proper moisture content of the treated material. Mix the treated material, then shape and compact as required by the specification for the course. Finish the course to the line, grade, and typical section shown on the plans. While curing the course, maintain the surface with light applications of the emulsified asphalt mixture, as directed.

B. Erosion Control. Apply the mixture as shown on the plans or as directed.

C. Prime Coat. Regulate the percentage of emulsified asphalt in the mixture and distribute successive applications to achieve the specified rate.

314.5. Measurement. The treatment will be measured by the gallon of emulsified asphalt used in the emulsified asphalt and water mixture.

314.6. 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 "Emulsified Asphalt (Base or Subgrade Treatment)," "Emulsified Asphalt (Erosion Control)," or "Emulsified Asphalt (Prime Coat)," of the type and grade specified. This price is full compensation for materials, including emulsified asphalt and water, and for equipment, labor, tools, and incidentals.

02610 - 00310 – PRIME COAT

(Referenced from 2004 TxDOT, ITEM 310 Prime Coat – references made to any other Sections of the 2004 TxDOT Manual shall become part of the Contract to be followed)

02610.1. Description. Prepare and treat existing or newly constructed surface with a bituminous material. Apply blotter material as required.

02610.2. Materials.

- A. **Bituminous.** Use material of the type and grade shown on the plans in accordance with Item 300, "Asphalts, Oils, and Emulsions."
- B. **Blotter.** Unless otherwise shown on the plans or approved, use either base course sweepings obtained from cleaning the base or native sand as blotter materials.

02610.3. Equipment. Provide applicable equipment in accordance with Article 316.3, "Equipment."

02610.4. Construction.

- A. **General.** Apply the mixture when the air temperature is 60°F and above, or above 50°F and rising. Measure the air temperature in the shade away from artificial heat. The Engineer will determine when weather conditions are suitable for application.

Do not permit traffic, hauling, or placement of subsequent courses over freshly constructed prime coats. Maintain the primed surface until placement of subsequent courses or acceptance of the work.

- B. **Surface Preparation.** Prepare the surface by sweeping or other approved methods. When directed, before applying bituminous material, lightly sprinkle the surface with water to control dust and ensure absorption.
- C. **Application.**

- 1. **Bituminous.** The Engineer will select the application temperature within the limits recommended in Item 300, "Asphalts, Oils, and Emulsions." Apply material within 15°F of the selected temperature.

Distribute the material smoothly and evenly at the rate selected by the Engineer. When directed, roll the freshly applied prime coat with a pneumatic-tire roller to ensure penetration.

- 2. **Blotter.** Spread blotter material before allowing traffic to use a primed surface. When "Prime Coat and Blotter" is shown on the plans as a bid item, apply blotter material to primed surface at the rate shown in the plans or as directed. When "Prime Coat" is shown on the plans as a bid item, apply blotter to spot locations or as directed to accommodate

traffic movement through the work area. Remove blotter material before placing the surface. Dispose of blotter material according to applicable state and federal requirements.

02610.5. MEASUREMENT AND PAYMENT

- A. When listed as a separate contract pay item, shall be measured in accordance with "Measurement and Basis of Payment" section or as shown on the Bid Proposal Form.
- B. When not listed as a separate contract pay item, shall be considered as incidental work, and the cost thereof shall be included in such contract pay item(s) as are provided in the proposal contract.
- C. Compensation, whether by contract pay item or incidental work will be for furnishing all materials, labor, equipment, tools and incidentals required for the work, all in accordance with the plans and these specifications.

*** * * END OF SECTION * * ***

ITEM 301 – ASPHALT ANTISTRIPPING AGENTS

(Referenced from 2004 TxDOT, ITEM 301 – references made to any other Sections of the 2004 TxDOT Manual shall become part of the Contract to be followed)

301.1. Description. Furnish and incorporate all required asphalt antistripping agents in asphalt concrete paving mixtures and asphalt-stabilized base mixtures to meet moisture resistance testing requirements.

301.2. Materials.

- A. Lime.** Provide hydrated lime or commercial lime slurry in accordance with DMS-6350, "Lime and Lime Slurry."
- B. Liquid Antistripping Agent.** Provide a liquid antistripping agent that is uniform and shows no evidence of crystallization, settling, or separation.

Ensure that all liquid antistripping agents arrive in:

- properly labeled and unopened containers, as shipped from the manufacturer, or
- sealed tank trucks with an invoice to show contents and quantities.
- Provide product information to the Engineer including:
 - material safety data sheet,
 - specific gravity of the agent at the manufacturer's recommended addition temperature,
 - manufacturer's recommended dosage range, and
 - handling and storage instructions.

301.3. Equipment. Provide all equipment to store, handle, dispense, meter, and mix asphalt antistripping agents.

301.4. Construction.

- A. Laboratory Design Evaluation and Production Mixture Verification.** Provide a laboratory mixture design and production mixture that meet moisture resistance requirements. During design and production, evaluate proposed asphalt pavement or base mixtures according to the moisture resistance requirements in the asphalt mixture specification.

Governing specifications require the Contractor or Engineer to design the mixture, and the party performing the design is responsible for the moisture susceptibility evaluation. If the Contractor designs the mixture, the Engineer verifies compliance.

If an antistripping agent is required, determine the dosage needed to achieve the moisture resistance requirements during design. Use this addition rate in the production mixture.

When using lime, add between 0.5% and 2.0% of hydrated lime or commercial lime slurry solids by weight of the individual aggregate treated.

When using a liquid antistripping agent, add it to the binder in accordance with the manufacturer's instructions and do not exceed the manufacturer's maximum recommended dosage rate.

If the production mixture does not meet moisture resistance requirements, stop production and correct the problem.

B. Addition of Antistrip Agents at the Mix Plant. Connect the measuring device for the addition of the asphalt antistripping agent into the automatic plant controls to automatically adjust the supply to plant production and provide a consistent percentage in the mixture. Set automatic plant controls so that an interruption of asphalt antistripping agent's flow causes plant shutdown.

1. **Lime.** Incorporate lime in a manner that thoroughly and uniformly distributes lime onto the aggregate surface or into the mixture. Use metering equipment, as approved, to ensure the required quantity of lime is used.

a. **Hydrated Lime.** Add to the aggregate by one of the following methods, unless otherwise shown on the plans:

- Mix in an approved pug mill mixer with damp aggregate containing water at least 2% above saturated surface dry conditions.
- Add into the drum-mix plant immediately before asphalt binder addition or in the pug mill of the weigh-batch plant before asphalt binder addition. If a weigh-batch plant is used, dry mix aggregates and lime before adding asphalt binder.

b. **Commercial Lime Slurry.** Add to the aggregate by one of the following methods, unless otherwise shown on the plans:

- Mix in a suitable pug mill mixer with the aggregate.
- During mixture production, mix with aggregate between the plant cold feeds and the dryer or mixing drum.

2. **Liquid Antistripping Agent.** Incorporate into the binder as follows:

- Handle in accordance with the manufacturer's recommendations.
- Add at the manufacturer's recommended addition temperature.
- Add into the asphalt line by means of an in-line-metering device, in accordance with Item 520, "Weighing and Measuring Equipment," and a blending device to disperse the agent.
- Place the metering and blending devices in an approved location.

301.5. Measurement and Payment. The work performed, materials furnished, equipment, labor, tools, and incidentals will not be measured or paid for directly, but is subsidiary or is included in payment quantity for pertinent Items.

02577 – 0300 – ASPHALTS, OILS AND EMULSIONS

(Referenced from 2004 TxDOT, ITEM 300 Asphalts, Oils, and Emulsions – references made to any other Sections of the 2004 TxDOT Manual shall become part of the Contract to be followed)

02577.1. Description. Provide asphalt cements, cutback and emulsified asphalts, performance-graded asphalt binders, and other miscellaneous asphalt materials as specified on the plans.

02577.2. Materials. Provide asphalt materials that meet the stated requirements when tested in accordance with the referenced Department, AASHTO, and ASTM test methods. Refer to the Material Inspection Guide (maintained by the Construction Division), Section 11. “Asphalt Inspection, Quality Control and Quality Assurance,” for sampling and testing requirements.

Acronyms used in this Item are defined in Table 1.

Table 1
Acronyms

Acronym	Definition
Test Procedure Designations	
Tex	Department
T or R	AASHTO
D	ASTM
Polymer Modifier Designations	
P	polymer-modified
SBR or L	styrene-butadiene rubber (latex)
SBS	styrene-butadiene-styrene block co-polymer
TR	tire rubber (from ambient temperature grinding of truck and passenger tires)
AC	asphalt cement
AE	asphalt emulsion
AE-P	asphalt emulsion prime
A-R	asphalt-rubber
C	cationic
EAP&T	emulsified asphalt prime and tack
H-suffix	harder residue (lower penetration)
HF	high float
MC	medium-curing

Table 1 (continued)
Acronyms

Acronym	Definition
MS	medium-setting
PCE	prime, cure, and erosion control
PG	performance grade
RC	rapid-curing
RS	rapid-setting
S-suffix	stockpile usage
SCM	special cutback material
SS	slow-setting

- A. **Asphalt Cement.** Asphalt cement must be homogeneous, water-free, and nonfoaming when heated to 347°F, and must meet Table 2 requirements.

Table 2
Asphalt Cement

Property	Test Procedure	Viscosity Grade									
		AC-0.6		AC-1.5		AC-3		AC-5		AC-10	
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Viscosity 140°F, poise 275°F, poise	T 202	40	80	100	200	250	350	400	600	800	1,200
Penetration, 77°F, 100g, 5 sec.	T 49	350	–	250	–	210	–	135	–	85	–
Flash point, C.O.C., °F	T 48	425	–	425	–	425	–	425	–	450	–
Solubility in trichloroethylene, %	T 44	99.0	–	99.0	–	99.0	–	99.0	–	99.0	–
Spot test	Tex-509-C	Neg.		Neg.		Neg.		Neg.		Neg.	
Tests on residue from Thin-Film Oven Test:	T 179										
Viscosity, 140°F, poise	T 202	–	180	–	450	–	900	–	1,500	–	3,000
Ductility ¹ , 77°F 5 cm/min., cm	T 51	100	–	100	–	100	–	100	–	100	–

1. If AC-0.6 or AC-1.5 ductility at 77°F is less than 100 cm, material is acceptable if ductility at 60°F is more than 100 cm.

- B. **Polymer-Modified Asphalt Cement.** Polymer-modified asphalt cement must be smooth and homogeneous, and comply with the requirements of Table 3. If requested, supply samples of the base asphalt cement and polymer additives.

**Table 3
Polymer-Modified Asphalt Cement**

Property	Test Procedure	Polymer-Modified Viscosity Grade							
		AC-5 w/2% SBR		AC-10 w/2% SBR		AC-15P		AC-20-5TR	
		Min	Max	Min	Max	Min	Max	Min	Max
Polymer		SBR		SBR		SBS		TR	
Polymer content, % (solids basis)	Tex-533-C	2.0	–	2.0	–	3.0	–	5.0	–
Dynamic shear, G*/sin δ, 64°C, 10 rad/s, kPa	T 315	–	–	–	–	–	–	1.0	–
Viscosity									
140°F, poise	T 202	700	–	1,300	–	1,500	–	2,000	–
275°F, poise	T 202	–	7.0	–	8.0	–	8.0	–	10.0
Penetration, 77°F, 100 g, 5 sec.	T 49	120	–	80	–	100	150	75	115
Ductility, 5cm/min., 39.2°F, cm	T 51	70	–	60	–	–	–	–	–
Elastic recovery, 50°F, %	Tex-539-C	–	–	–	–	55	–	55	–
Softening point, °F	T 53	–	–	–	–	–	–	120	–
Polymer separation, 48 hr.	Tex-540-C	None		None		None		None	
Flash point, C.O.C., °F	T 48	425	–	425	–	425	–	425	–
Tests on residue from Thin-Film Oven Test:	T 179								
Retained penetration ratio, 77°F	T 49	–	–	–	–	0.60	1.00	0.60	1.00
Tests on residue from RTFOT aging and pressure aging:	Tex-541-C and R 28								
Creep stiffness	T 313								
S, -18°C, MPa		–	–	–	–	–	–	–	300
m-value, -18°C		–	–	–	–	–	–	0.300	–

- C. **Cutback Asphalt.** Cutback asphalt must meet the requirements of Tables 4, 5, and 6 for the specified type and grade. If requested, supply samples of the base asphalt cement and polymer additives.

**Table 4
Rapid-Curing Cutback Asphalt**

Property	Test Procedure	Type-Grade					
		RC-250		RC-800		RC-3000	
		Min	Max	Min	Max	Min	Max
Kinematic viscosity, 140°F, cSt	T 201	250	400	800	1,600	3,000	6,000
Water, %	T 55	–	0.2	–	0.2	–	0.2
Flash point, T.O.C., °F	T 79	80	–	80	–	80	–
Distillation test:	T 78						
Distillate, percentage by volume of total distillate to 680°F							
to 437°F		40	75	35	70	20	55
to 500°F		65	90	55	85	45	75
to 600°F		85	–	80	–	70	–
Residue from distillation, volume %		70	–	75	–	82	–
Tests on distillation residue:							
Penetration, 100 g, 5 sec., 77°F	T 49	80	120	80	120	80	120
Ductility, 5 cm/min., 77°F, cm	T 51	100	–	100	–	100	–
Solubility in trichloroethylene, %	T 44	99.0	–	99.0	–	99.0	–
Spot test	Tex-509-C	Neg.		Neg.		Neg.	

**Table 5
Medium-Curing Cutback Asphalt**

Property	Test Procedure	Type-Grade							
		MC-30		MC-250		MC-800		MC-3000	
		Min	Max	Min	Max	Min	Max	Min	Max
Kinematic viscosity, 140°F, cSt	T 201	30	60	250	500	800	1,600	3,000	6,000
Water, %	T 55	–	0.2	–	0.2	–	0.2	–	0.2
Flash point, T.O.C., °F	T 79	100	–	150	–	150	–	150	–
Distillation test:	T 78								
Distillate, percentage by volume of total distillate to 680°F									
to 437°F		–	25	–	10	–	–	–	–
to 500°F		40	70	15	55	–	35	–	15
to 600°F		75	93	60	87	45	80	15	75
Residue from distillation, volume %		50	–	67	–	75	–	80	–
Tests on distillation residue:									
Penetration, 100 g, 5 sec., 77°F	T 49	120	250	120	250	120	250	120	250
Ductility, 5 cm/min., 77°F, cm ¹	T 51	100	–	100	–	100	–	100	–
Solubility in trichloroethylene, %	T 44	99.0	–	99.0	–	99.0	–	99.0	–
Spot test	Tex-509-C	Neg.		Neg.		Neg.		Neg.	

1. If the penetration of residue is more than 200 and the ductility at 77°F is less than 100 cm, the material is acceptable if its ductility at 60°F is more than 100 cm.

**Table 6
Special-Use Cutback Asphalt**

Property	Test Procedure	Type-Grade					
		MC-2400L		SCM I		SCM II	
		Min	Max	Min	Max	Min	Max
Kinematic viscosity, 140°F, cSt	T 201	2,400	4,800	500	1,000	1,000	2,000
Water, %	T 55	–	0.2	–	0.2	–	0.2
Flash point, T.O.C., °F	T 79	150	–	175	–	175	–
Distillation test:	T 78						
Distillate, percentage by volume of total distillate to 680°F							
to 437°F		–	–	–	–	–	–
to 500°F		–	35	–	0.5	–	0.5
to 600°F		35	80	20	60	15	50
Residue from distillation, volume %		78	–	76	–	82	–
Tests on distillation residue:							
Polymer		SBR					
Polymer content, % (solids basis)	Tex-533-C	2.0	–	–	–	–	–
Penetration, 100 g, 5 sec., 77°F	T 49	150	300	180	–	180	–
Ductility, 5 cm/min., 39.2°F, cm	T 51	50	–	–	–	–	–
Solubility in trichloroethylene, %	T 44	99.0	–	99.0	–	99.0	–

- D. **Emulsified Asphalt.** Emulsified asphalt must be homogeneous, not separate after thorough mixing, and meet the requirements for the specified type and grade in Tables 7, 8, 9, and 10.

**Table 7
Emulsified Asphalt**

Property	Test Procedure	Type-Grade									
		Rapid-Setting		Medium-Setting		Slow-Setting					
		HFRS-2		MS-2		AES-300		SS-1		SS-1H	
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Viscosity, Saybolt Furol 77°F, sec. 122°F, sec.	T 72	-	-	-	-	75	400	20	100	20	100
Sieve test, %	T 59	-	0.1	-	0.1	-	0.1	-	0.1	-	0.1
Miscibility	T 59	-	-	-	-	-	-	Pass	Pass	-	-
Cement mixing, %	T 59	-	-	-	-	-	-	-	2.0	-	2.0
Coating ability and water resistance: dry aggregate/after spray wet aggregate/after spray	T 59	-	-	-	-	Good/Fair Fair/Fair	-	-	-	-	-
Demulsibility, 35 ml of 0.02 N CaCl ₂ , %	T 59	50	-	-	30	-	-	-	-	-	-
Storage stability, 1 day, %	T 59	-	1	-	1	-	1	-	1	-	1
Freezing test, 3 cycles ¹	T 59	-	-	Pass	-	-	-	Pass	Pass	-	-
Distillation test: Residue by distillation, % by wt. Oil distillate, % by volume of emulsion	T 59	65	-	65	-	65	-	60	-	60	-
		-	0.5	-	0.5	-	5	-	0.5	-	0.5
Tests on residue from distillation: Penetration, 77°F, 100 g, 5 sec.	T 49	100	140	120	160	300	-	120	160	70	100
Solubility in trichloroethylene, %	T 44	97.5	-	97.5	-	97.5	-	97.5	-	97.5	-
Ductility, 77°F, 5 cm/min., cm	T 51	100	-	100	-	-	-	100	-	80	-
Float test, 140°F, sec.	T 50	1,200	-	-	-	1,200	-	-	-	-	-

1. Applies only when the Engineer designates material for winter use.

**Table 8
Cationic Emulsified Asphalt**

Property	Test Procedure	Type-Grade											
		Rapid-Setting		Medium-Setting		Slow-Setting							
		CRS-2		CRS-2H		CMS-2		CMS-2S		CSS-1		CSS-1H	
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Viscosity, Saybolt Furol 77°F, sec. 122°F, sec.	T 72	-	-	-	-	-	-	-	-	20	100	20	100
Sieve test, %	T 59	-	0.1	-	0.1	-	0.1	-	0.1	-	0.1	-	0.1
Cement mixing, %	T 59	-	-	-	-	-	-	-	-	2.0	-	2.0	
Coating ability and water resistance: dry aggregate/after spray wet aggregate/after spray	T 59	-	-	-	-	Good/Fair Fair/Fair	Good/Fair Fair/Fair	-	-	-	-	-	
Demulsibility, 35 ml of 0.8% sodium dioctyl sulfosuccinate, %	T 59	70	-	70	-	-	-	-	-	-	-	-	
Storage stability, 1 day, %	T 59	-	1	-	1	-	1	-	1	-	1		
Particle charge	T 59	Positive	Positive	Positive	Positive	Positive	Positive	Positive	Positive	Positive	Positive		
Distillation test: Residue by distillation, % by wt. Oil distillate, % by volume of emulsion	T 59	65	-	65	-	65	-	65	-	60	-	60	
		-	0.5	-	0.5	-	7	-	5	-	0.5	-	0.5
Tests on residue from distillation: Penetration, 77°F, 100 g, 5 sec.	T 49	120	160	70	110	120	200	300	-	120	160	70	110
Solubility in trichloroethylene, %	T 44	97.5	-	97.5	-	97.5	-	97.5	-	97.5	-	97.5	-
Ductility, 77°F, 5 cm/min., cm	T 51	100	-	80	-	100	-	-	-	100	-	80	-

**Table 9
Polymer-Modified Emulsified Asphalt**

Property	Test Procedure	Type-Grade											
		Rapid-Setting				Medium-Setting				Slow-Setting			
		RS-1P		HFRS-2P		AES-150P		AES-300P		AES-300S		SS-1P	
Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max		
Viscosity, Saybolt Furol 77°F, sec. 122°F, sec.	T 72	-	-	-	-	75	400	75	400	75	400	30	100
		50	200	150	400	-	-	-	-	-	-	-	-
Sieve test, %	T 59	-	0.1	-	0.1	-	0.1	-	0.1	-	0.1	-	0.1
Miscibility	T 59	-	-	-	-	-	-	-	-	-	-	-	Pass
Coating ability and water resistance: dry aggregate/after spray wet aggregate/after spray	T 59	-	-	-	-	Good/Fair	Good/Fair	Good/Fair	Good/Fair	Good/Fair	Good/Fair	Good/Fair	-
		-	-	-	-	Fair/Fair	Fair/Fair	Fair/Fair	Fair/Fair	Fair/Fair	Fair/Fair	Fair/Fair	-
Demulsibility, 35 ml of 0.02 N CaCl ₂ , %	T 59	60	-	50	-	-	-	-	-	-	-	-	-
Storage stability, 1 day, %	T 59	-	1	-	1	-	1	-	1	-	1	-	1
Breaking index, g	Tex-542-C	-	80	-	-	-	-	-	-	-	-	-	-
Distillation test: ¹ Residue by distillation, % by wt. Oil distillate, % by volume of emulsion	T 59	65	-	65	-	65	-	65	-	65	-	60	-
		-	3	-	0.5	-	3	-	5	-	7	-	0.5
		-	-	-	-	-	-	-	-	-	-	-	-
Tests on residue from distillation: Polymer content, wt. % (solids basis) Penetration, 77°F, 100 g, 5 sec. Solubility in trichloroethylene, % Viscosity, 140°F, poise Float test, 140°F, sec. Ductility ² , 39.2°F, 5 cm/min., cm Elastic recovery ² , 50°F, %	Tex-533-C	-	-	3.0	-	-	-	-	-	-	-	3.0	-
	T 49	225	300	90	140	150	300	300	-	300	-	100	140
	T 44	97.0	-	97.0	-	97.0	-	97.0	-	97.0	-	97.0	-
	T 202	-	-	1,500	-	-	-	-	-	-	-	1,300	-
	T 50	-	-	1,200	-	1,200	-	1,200	-	1,200	-	-	-
	T 51	-	-	50	-	-	-	-	-	-	-	50	-
	Tex-539-C	55	-	55	-	-	-	-	-	-	-	-	-
Tests on RIFO curing of distillation residue Elastic recovery, 50°F, %	Tex-541-C	-	-	-	-	50	-	50	-	30	-	-	-
	Tex-539-C	-	-	-	-	-	-	-	-	-	-	-	-

1. Exception to T 59: Bring the temperature on the lower thermometer slowly to 350°F ±10°F. Maintain at this temperature for 20 min. Complete total distillation in 60 ±5 min. from the first application of heat.
2. HFRS-2P must meet one of either the ductility or elastic recovery requirements.

Table 10
Polymer-Modified Cationic Emulsified Asphalt

Property	Test Procedure	Type-Grade					
		Rapid-Setting				Slow-Setting	
		CRS-1P		CRS-2P		CSS-1P	
		Min	Max	Min	Max	Min	Max
Viscosity, Saybolt Furol 77°F, sec. 122°F, sec.	T 72	-	-	-	-	20	100
		50	150	150	400	-	-
Sieve test, %	T 59	-	0.1	-	0.1	-	0.1
Demulsibility, 35 ml of 0.8% sodium dioctyl sulfosuccinate, %	T 59	60	-	70	-	-	-
Storage stability, 1 day, %	T 59	-	1	-	1	-	1
Breaking index, g	Tex-542-C	-	80	-	-	-	-
Particle charge	T 59	Positive		Positive		Positive	
Distillation test: ¹ Residue by distillation, % by weight Oil distillate, % by volume of emulsion	T 59	65	-	65	-	62	-
		-	3	-	0.5	-	0.5
Tests on residue from distillation: Polymer content, wt. % (solids basis)	Tex-533-C	-	-	3.0	-	3.0	-
Penetration, 77°F, 100 g, 5 sec.	T 49	225	300	90	150	55	90
Viscosity, 140°F, poise	T 202	-	-	1,300	-	-	-
Solubility in trichloroethylene, %	T 44	97.0	-	97.0	-	97.0	-
Softening point, °F	T 53	-	-	-	-	135	-
Ductility, 77°F, 5 cm/min., cm	T 51	-	-	-	-	70	-
Ductility ² , 39.2°F, 5 cm/min., cm	T 51	-	-	50	-	-	-
Elastic recovery ² , 50°F, %	Tex-539-C	45	-	55	-	-	-

1. Exception to T 59: Bring the temperature on the lower thermometer slowly to 350°F ±0°F. Maintain at this temperature for 20 min. Complete total distillation in 60 ±5 min. from the first application of heat.
 2. CRS-2P must meet one of either the ductility or elastic recovery requirements.
- E. Specialty Emulsions. Specialty emulsions may be either asphalt-based or resin-based and must meet the requirements of Table 11.

**Table 11
Specialty Emulsions**

Property	Test Procedure	Type-Grade					
		Medium-Setting				Slow-Setting	
		AE-P		EAP&T		PCE ¹	
		Min	Max	Min	Max	Min	Max
Viscosity, Saybolt Furol 77°F, sec. 122°F, sec.	T 72	-	-	-	-	10	100
Sieve test, %	T 59	-	0.1	-	0.1	-	0.1
Miscibility ²	T 59	-	-	Pass	-	Pass	-
Demulsibility, 35 ml of 0.10 N CaCl ₂ , %	T 59	-	70	-	-	-	-
Storage stability, 1 day, %	T 59	-	1	-	1	-	-
Particle size ⁵ , % by volume < 2.5 µm	Tex-238-F ³	-	-	90	-	90	-
Asphalt emulsion distillation to 500°F followed by Cutback asphalt distillation of residue to 680°F: Residue after both distillations, % by wt. Total oil distillate from both distillations, % by volume of emulsion	T 59 & T 78	40	-	-	-	-	-
		25	40	-	-	-	-
Residue by distillation, % by wt.	T 59	-	-	60	-	-	-
Residue by evaporation ⁴ , % by wt.	T 59	-	-	-	-	60	-
Tests on residue after all distillation(s):							
Viscosity, 140°F, poise	T 202	-	-	800	-	-	-
Kinematic viscosity ⁵ , 140°F, cSt	T 201	-	-	-	-	100	350
Flash point C.O.C., °F	T 48	-	-	-	-	400	-
Solubility in trichloroethylene, %	T 44	97.5	-	-	-	-	-
Float test, 122°F, sec.	T 50	50	200	-	-	-	-

1. Supply with each shipment of PCE: a) a copy of a lab report from an approved analytical lab, signed by a lab official, indicating the PCE formulation does not meet any characteristics of a Resource Conservation Recovery Act (RCRA) hazardous waste; b) a certification from the producer that the formulation supplied does not differ from the one tested and that no listed RCRA hazardous wastes or PCBs have been mixed with the product; and c) a Material Safety Data Sheet.
 2. Exception to T 59: In dilution, use 350 ml of distilled or deionized water and a 1,000-ml beaker.
 3. Use Tex-238-F, beginning at "Particle Size Analysis by Laser Diffraction," with distilled or deionized water as a medium and no dispersant, or use another approved method.
 4. Exception to T 59: Leave sample in the oven until foaming ceases, then cool and weigh.
 5. PCE must meet either the kinematic viscosity requirement or the particle size requirement.
- F. **Recycling Agent.** Recycling agent and emulsified recycling agent must meet the requirements in Table 12. Additionally, recycling agent and residue from emulsified recycling agent, when added in the specified proportions to the recycled asphalt, must meet the properties specified on the plans.

**Table 12
Recycling Agent and Emulsified Recycling Agent**

Property	Test Procedure	Recycling Agent		Emulsified Recycling Agent	
		Min	Max	Min	Max
Viscosity, Saybolt Furol, 77°F, sec.	T 72	–	–	15	100
Sieve test, %	T 59	–	–	–	0.1
Miscibility ¹	T 59	–		No coagulation	
Residue by evaporation ² , % by wt.	T 59	–	–	60	–
Tests on recycling agent or residue from evaporation:					
Flash point, C.O.C., °F	T 48	400	–	400	–
Kinematic viscosity, 140°F, cSt	T 201	75	200	75	200
275°F, cSt		–	10.0	–	10.0

1. Exception to T 59: Use 0.02 N CaCl₂ solution in place of water.
2. Exception to T 59: Maintain sample at 300°F until foaming ceases, then cool and weigh.

- G. **Crumb Rubber Modifier.** Crumb rubber modifier (CRM) consists of automobile and truck tires processed by ambient temperature grinding. CRM must be:
- free from contaminants including fabric, metal, and mineral and other nonrubber substances;
 - free-flowing; and
 - nonfoaming

When added to hot asphalt binder. When tested in accordance with Tex-200-F, Part I, using a 50-g sample, the rubber gradation must meet the requirements of the grades in Table 13.

**Table 13
CRM Gradations**

Sieve Size (% Passing)	Grade A		Grade B		Grade C		Grade D	Grade E
	Min	Max	Min	Max	Min	Max		
#8	100	–	–	–	–	–	As shown on the plans	As approved
#10	95	100	100	–	–	–		
#16	–	–	70	100	100	–		
#30	–	–	25	60	90	100		
#40	–	–	–	–	45	100		
#50	0	10	–	–	–	–		
#200	–	–	0	5	–	–		

- H. **Crack Sealer.** Polymer modified asphalt-emulsion crack sealer must meet the requirements of Table 14. Rubber-asphalt crack sealer must meet the requirements of Table 15.

Table 14
Polymer-Modified Asphalt Emulsion Crack Sealer

Property	Test Procedure	Min	Max
Rotational viscosity, 77°F, cP	D 2196, Method A	10,000	25,000
Sieve test, %	T 59	–	0.1
Storage stability, 1 day, %	T 59	–	1
Evaporation Residue by evaporation, % by wt.	Tex-543-C	65	–
Tests on residue from evaporation:			
Penetration, 77°F, 100 g, 5 sec.	T 49	35	75
Softening point, °F	T 53	140	–
Ductility, 39.2°F, 5 cm/min., cm	T 51	100	–

Table 15
Rubber-Asphalt Crack Sealer

Property	Test Procedure	Class A		Class B	
		Min	Max	Min	Max
CRM content, Grade A or B, % by wt.	Tex-544-C	22	26	–	–
CRM content, Grade B, % by wt.	Tex-544-C	–	–	13	17
Virgin rubber content ¹ , % by wt.		–	–	2	–
Flash point ² , COC, °F	T 48	400	–	400	–
Penetration ³ , 77°F, 150 g, 5 sec.	T 49	30	50	30	50
Penetration ³ , 32°F, 200 g, 60 sec.	T 49	12	–	12	–
Softening point, °F	T 53	–	–	170	–
Bond ⁴	D5329	–	–	Pass	–

1. Provide certification that the min. % virgin rubber was added.
 2. Before passing the test flame over the cup, agitate the sealing compound with a 3/8- to 1/2-in. (9.5- to 12.7-mm) wide, square-end metal spatula in a manner so as to bring the material on the bottom of the cup to the surface, i.e., turn the material over. Start at one side of the thermometer, move around to the other, and then return to the starting point using 8 to 10 rapid circular strokes. Accomplish agitation in 3 to 4 sec. Pass the test flame over the cup immediately after stirring is completed.
 3. Exception to T 49: Substitute the cone specified in ASTM D 217 for the penetration needle.
 4. No crack in the crack sealing materials or break in the bond between the sealer and the mortar blocks over 1/4 in. deep for any specimen after completion of the test.
- I. **Asphalt-Rubber Binders.** Asphalt-rubber (A-R) binders are mixtures of asphalt binder and CRM, which have been reacted at elevated temperatures. The A-R binders meet D 6114 and contain a minimum of 15% CRM by weight. Types I or II, containing CRM Grade C, are used for hot mixed aggregate mixtures. Types II or III, containing CRM Grade B, are used for surface treatment binder. Table 16 describes required binder properties.

**Table 16
A-R Binders**

Property	Test Procedure	Binder Type					
		Type I		Type II		Type III	
		Min	Max	Min	Max	Min	Max
Apparent viscosity, 347°F, cP	D 2196, Method A	1,500	5,000	1,500	5,000	1,500	5,000
Penetration, 77°F, 100 g, 5 sec.	T 49	25	75	25	75	50	100
Penetration, 39.2°F, 200 g, 60 sec.	T 49	10	–	15	–	25	–
Softening point, °F	T 53	135	–	130	–	125	–
Resilience, 77°F, %	D 5329	25	–	20	–	10	–
Flash point, C.O.C., °F	T 48	450	–	450	–	450	–
Tests on residue from Thin-Film Oven Test:	T 179						
Retained penetration ratio, 39.2°F, 200 g, 60 sec., % of original	T 49	75	–	75	–	75	–

J. Performance-Graded Binders. PG binders must be smooth and homogeneous, show no separation when tested in accordance with Tex-540-C, and meet Table 17 requirements.

Separation testing is not required if:

- a modifier is introduced separately at the mix plant either by injection in the asphalt line or mixer,
- the binder is blended on site in continuously agitated tanks, or
- binder acceptance is based on field samples taken from an in-line sampling port at the hot mix plant after the addition of modifiers.

**Table 17
Performance-Graded Binders**

Property and Test Method	Performance Grade																	
	PG 58			PG 64			PG 70			PG 76			PG 82					
	-22	-28	-34	-16	-22	-28	-34	-16	-22	-28	-34	-16	-22	-28	-34	-16	-22	-28
Average 7-day max pavement design temperature, °C ¹	< 58			< 64			< 70			< 76			< 82					
Min pavement design temperature, °C ¹	>-22	>-28	>-34	>-16	>-22	>-28	>-34	>-16	>-22	>-28	>-34	>-16	>-22	>-28	>-34	>-16	>-22	>-28
ORIGINAL BINDER																		
Flash point, T 48, Min, °C	230																	
Viscosity, T 316, ^{2,3} Max, 3.0 Pa-s, test temperature, °C	135																	
Dynamic shear, T 315: ⁴ G*/sin(δ), Min, 1.00 kPa Test temperature @ 10 rad/sec., °C	58			64			70			76			82					
Elastic recovery, D 6084, 50°F, % Min	–	–	30	–	–	30	50	–	30	50	60	30	50	60	70	50	60	70
ROLLING THIN-FILM OVEN (Tex-541-C)																		
Mass loss, Tex-541-C, Max, %	1.0																	
Dynamic shear, T 315: G*/sin(δ), Min, 2.20 kPa Test temperature @ 10 rad/sec., °C	58			64			70			76			82					
PRESSURE AGING VESSEL (PAV) RESIDUE (R 28)																		
PAV aging temperature, °C	100																	
Dynamic shear, T 315: G*/sin(δ), Max, 5000 kPa Test temperature @ 10 rad/sec., °C	25	22	19	28	25	22	19	28	25	22	19	28	25	22	19	28	25	22

**Table 17 (continued)
Performance-Graded Binders**

Property and Test Method	Performance Grade																	
	PG 58			PG 64			PG 70			PG 76			PG 82					
	-22	-28	-34	-16	-22	-28	-34	-16	-22	-28	-34	-16	-22	-28	-34	-16	-22	-28
Average 7-day max pavement design temperature, °C ¹	< 58			< 64			< 70			< 76			< 82					
Min pavement design temperature, °C ¹	>-22	>-28	>-34	>-16	>-22	>-28	>-34	>-16	>-22	>-28	>-34	>-16	>-22	>-28	>-34	>-16	>-22	>-28
Creep stiffness, T 313: ^{5,6} S, max, 300 MPa, m-value, min, 0.300 Test temperature @ 60 sec., °C	-12	-18	-24	-6	-12	-18	-24	-6	-12	-18	-24	-6	-12	-18	-24	-6	-12	-18
Direct tension, T 314: ⁶ Failure strain, min, 1.0% Test temperature @ 1.0 mm/min., °C	-12	-18	-24	-6	-12	-18	-24	-6	-12	-18	-24	-6	-12	-18	-24	-6	-12	-18

1. Pavement temperatures are estimated from air temperatures using an algorithm contained in a Department-supplied computer program, may be provided by the Department, or by following the procedures outlined in AASHTO MP 2 and PP 28.
2. This requirement may be waived at the Department’s discretion if the supplier warrants that the asphalt binder can be adequately pumped, mixed, and compacted at temperatures that meet all applicable safety, environmental, and constructability requirements. At test temperatures where the binder is a Newtonian fluid, any suitable standard means of viscosity measurement may be used, including capillary (T 201 or T 202) or rotational viscometry (T 316).
3. Viscosity at 135°C is an indicator of mixing and compaction temperatures that can be expected in the lab and field. High values may indicate high mixing and compaction temperatures. Additionally, significant variation can occur from batch to batch. Contractors should be aware that variation could significantly impact their mixing and compaction operations. Contractors are therefore responsible for addressing any constructability issues that may arise.
4. For quality control of unmodified asphalt binder production, measurement of the viscosity of the original asphalt binder may be substituted for dynamic shear measurements of $G^*/\sin(\delta)$ at test temperatures where the asphalt is a Newtonian fluid. Any suitable standard means of viscosity measurement may be used, including capillary (T 201 or T 202) or rotational viscometry (T 316).
5. Silicone beam molds, as described in AASHTO TP 1-93, are acceptable for use.
6. If creep stiffness is below 300 MPa, direct tension test is not required. If creep stiffness is between 300 and 600 MPa, the direct tension failure strain requirement can be used instead of the creep stiffness requirement. The m-value requirement must be satisfied in both cases.

02577.3. Equipment. Provide all equipment necessary to transport, store, sample, heat, apply, and incorporate asphalts, oils, and emulsions.

02577.4. Construction.

A. Typical Material Use. Table 18 shows typical materials used for specific applications. These are typical uses only. Circumstances may require use of other material.

**Table 18
Typical Material Use**

Material Application	Typically Used Materials
Hot-mixed, hot-laid asphalt mixtures	PG binders, A-R binders Types I and II
Surface treatment	AC-5, AC-10, AC-5 w/2% SBR, AC-10 w/2% SBR, AC-15P, AC-20-5TR, HFRS-2, MS-2, CRS-2, CRS-2H, HFRS-2P, CRS-2P, A-R binders Types II and III
Surface treatment (cool weather)	RS-1P, CRS-1P, RC-250, RC-800, RC-3000, MC-250, MC-800, MC-3000, MC-2400L
Precoating	AC-5, AC-10, PG 64-22, SS-1, SS-1H, CSS-1, CSS-1H
Tack coat	PG Binders, SS-1H, CSS-1H, EAP&T
Fog seal	SS-1, SS-1H, CSS-1, CSS-1H
Hot-mixed, cold-laid asphalt mixtures	AC-0.6, AC-1.5, AC-3, AES-300, AES-300P, CMS-2, CMS-2S
Patching mix	MC-800, SCM I, SCM II, AES-300S
Recycling	AC-0.6, AC-1.5, AC-3, AES-150P, AES-300P, recycling agent, emulsified recycling agent
Crack sealing	SS-1P, polymer mod AE crack sealant, rubber asphalt crack sealers (Class A, Class B)
Microsurfacing	CSS-1P
Prime	MC-30, AE-P, EAP&T, PCE
Curing membrane	SS-1, SS-1H, CSS-1, CSS-1H, PCE
Erosion control	SS-1, SS-1H, CSS-1, CSS-1H, PCE

- B. **Storage and Application Temperatures.** Use storage and application temperatures in accordance with Table 19. Store and apply materials at the lowest temperature yielding satisfactory results. Follow the manufacturer's instructions for any agitation requirements in storage. Manufacturer's instructions regarding recommended application and storage temperatures supercede those of Table 19.

**Table 19
Storage and Application Temperatures**

Type-Grade	Application		Storage Maximum (°F)
	Recommended Range, °F	Maximum Allowable (°F)	
AC-0.6, AC-1.5, AC-3	200–300	350	350
AC-5, AC-10	275–350	350	350
AC-5 w/2% SBR, AC-10 w/2% SBR, AC-15P, AC-20-5TR	300–375	375	360
RC-250	125–180	200	200
RC-800	170–230	260	260
RC-3000	215–275	285	285
MC-30, AE-P	70–150	175	175
MC-250	125–210	240	240
MC-800, SCM I, SCM II	175–260	275	275
MC-3000, MC-2400L	225–275	290	290
HFRS-2, MS-2, CRS-2, CRS-2H, HFRS-2P, CRS-2P, CMS-2, CMS-2S, AES-300, AES-300S, AES-150P, AES-300P	120–160	180	180
SS-1, SS-1H, CSS-1, CSS-1H, PCE, EAP&T, SS-1P, RS-1P, CRS-1P, CSS-1P, recycling agent, emulsified recycling agent, polymer mod AE crack sealant	50–130	140	140
PG binders	275–350	350	350
Rubber asphalt crack sealers (Class A, Class B)	350–375	400	–
A-R binders Types I, II, and III	325–425	425	425

02577.5. MEASUREMENT AND PAYMENT

- A. When listed as a separate contract pay item, shall be measured in accordance with “Measurement and Basis of Payment” section or as shown on the Bid Proposal Form.
- B. When not listed as a separate contract pay item, shall be considered as incidental work, and the cost thereof shall be included in such contract pay item(s) as are provided in the proposal contract.
- C. Compensation, whether by contract pay item or incidental work will be for furnishing all materials, labor, equipment, tools and incidentals required for the work, all in accordance with the plans and these specifications.

* * * END OF SECTION * * *

(Referenced from 2004 TxDOT, ITEM 247 – references

made to any other Sections of the 2004 TxDOT Manual shall become part of the Contract to be followed)

247.1. Description. Construct a foundation course composed of flexible base.

247.2. Materials. Furnish uncontaminated materials of uniform quality that meet the requirements of the plans and specifications. Notify the Engineer of the proposed material sources and of changes to material sources. The Engineer may sample and test project materials at any time before compaction throughout the duration of the project to assure specification compliance. Use Tex-100-E material definitions.

247.3 Aggregate. Furnish aggregate of the type and grade shown on the plans and conforming to the requirements of Table 1. Each source must meet Table 1 requirements for liquid limit, plasticity index, and wet ball mill for the grade specified. Do not use additives such as but not limited to lime, cement, or fly ash to modify aggregates to meet the requirements of Table 1, unless shown on the plans.

Table 1
Material Requirements

Property	Test Method	Grade 1	Grade 2	Grade 3	Grade 4
Master gradation sieve size (% retained)	Tex-110-E				As shown on the plans
2-1/2 in.		–	0	0	
1-3/4 in.		0	0–10	0–10	
7/8 in.		10–35	–	–	
3/8 in.		30–50	–	–	
No. 4		45–65	45–75	45–75	
No. 40		70–85	60–85	50–85	
Liquid limit, % max. ¹	Tex-104-E	35	40	40	As shown on the plans
Plasticity index, max. ¹	Tex-106-E	10	12	12	As shown on the plans
Plasticity index, min. ¹		As shown on the plans			
Wet ball mill, % max. ²	Tex-116-E	40	45	–	As shown on the plans
Wet ball mill, % max. increase passing the No. 40 sieve		20	20	–	
Classification ³	Tex-117-E	1.0	1.1–2.3	–	As shown on the plans
Min. compressive strength ³ , psi					As shown on the plans
lateral pressure 0 psi		45	35	–	
lateral pressure 15 psi		175	175	–	

1. Determine plastic index in accordance with Tex-107-E (linear shrinkage) when liquid limit is unattainable as defined in Tex-104-E.

2. When a soundness value is required by the plans, test material in accordance with Tex-411-A.

3. Meet both the classification and the minimum compressive strength, unless otherwise shown on the plans.

- 247.4. Material Tolerances.** The Engineer may accept material if no more than 1 of the 5 most recent gradation tests has an individual sieve outside the specified limits of the gradation.
- When target grading is required by the plans, no single failing test may exceed the master grading by more than 5 percentage points on sieves No. 4 and larger or 3 percentage points on sieves smaller than No. 4.
- The Engineer may accept material if no more than 1 of the 5 most recent plasticity index tests is outside the specified limit. No single failing test may exceed the allowable limit by more than 2 points.
- 247.5. Material Types.** Do not use fillers or binders unless approved. Furnish the type specified on the plans in accordance with the following.
- 247.6. Type A.** Crushed stone produced and graded from oversize quarried aggregate that originates from a single, naturally occurring source. Do not use gravel or multiple sources.
- 247.7. Type B.** Crushed or uncrushed gravel. Blending of 2 or more sources is allowed.
- 247.8. Type C.** Crushed gravel with a minimum of 60% of the particles retained on a No. 4 sieve with 2 or more crushed faces as determined by Tex-460-A, Part I. Blending of 2 or more sources is allowed.
- 247.9. Type D.** Type A material or crushed concrete. Crushed concrete containing gravel will be considered Type D material. Crushed concrete must meet the requirements in Section 247.2.A.3.b, "Recycled Material (Including Crushed Concrete) Requirements," and be managed in a way to provide for uniform quality. The Engineer may require separate dedicated stockpiles in order to verify compliance.
- 247.10. Type E.** As shown on the plans.
- 247.11. Recycled Material.** Recycled asphalt pavement (RAP) and other recycled materials may be used when shown on the plans. Request approval to blend 2 or more sources of recycled materials.
- 247.12. Limits on Percentage.** When RAP is allowed, do not exceed 20% RAP by weight unless otherwise shown on the plans. The percentage limitations for other recycled materials will be as shown on the plans.
- 247.13. Recycled Material (Including Crushed Concrete) Requirements.**
- 247.14. Contractor Furnished Recycled Materials.** When the Contractor furnishes the recycled materials, including crushed concrete, the final product will be subject to the requirements of Table 1 for the grade specified. Certify compliance with DMS-11000, "Evaluating and Using Nonhazardous Recyclable Materials Guidelines," for Contractor furnished recycled materials. In addition, recycled materials must be free from reinforcing steel and other objectionable material and have at most 1.5% deleterious material when tested in accordance with Tex-413-A. For RAP, do not exceed a maximum percent loss from decantation of 5.0% when tested in accordance with Tex-406-A. Test RAP without removing the asphalt.
- 247.15. Department Furnished Required Recycled Materials.** When the Department furnishes and requires the use of recycled materials, unless otherwise shown on the plans:
- Department required recycled material will not be subject to the requirements in Table 1,
 - Contractor furnished materials are subject to the requirements in Table 1 and this Item,
 - the final product, blended, will be subject to the requirements in Table 1, and

- for final product, unblended (100% Department furnished required recycled material), the liquid limit, plasticity index, wet ball mill, classification, and compressive strength is waived.

Crush Department-furnished RAP so that 100% passes the 2 in. sieve. The Contractor is responsible for uniformly blending to meet the percentage required.

- 247.16. Department Furnished and Allowed Recycled Materials.** When the Department furnishes and allows the use of recycled materials or allows the Contractor to furnish recycled materials, the final blended product is subject to the requirements of Table 1 and the plans.
- 247.17. Recycled Material Sources.** Department-owned recycled material is available to the Contractor only when shown on the plans. Return unused Department-owned recycled materials to the Department stockpile location designated by the Engineer unless otherwise shown on the plans.
- The use of Contractor-owned recycled materials is allowed when shown on the plans. Contractor-owned surplus recycled materials remain the property of the Contractor. Remove Contractor-owned recycled materials from the project and dispose of them in accordance with federal, state, and local regulations before project acceptance. Do not intermingle Contractor-owned recycled material with Department-owned recycled material unless approved by the Engineer.
- 247.18. Water.** Furnish water free of industrial wastes and other objectionable matter.
- 247.19. Material Sources.** When non-commercial sources are used, expose the vertical faces of all strata of material proposed for use. Secure and process the material by successive vertical cuts extending through all exposed strata, when directed.
- 247.20. Equipment.** Provide machinery, tools, and equipment necessary for proper execution of the work. Provide rollers in accordance with Item 210, "Rolling." Provide proof rollers in accordance with Item 216, "Proof Rolling," when required.
- 247.21. Construction.** Construct each layer uniformly, free of loose or segregated areas, and with the required density and moisture content. Provide a smooth surface that conforms to the typical sections, lines, and grades shown on the plans or as directed.
- Stockpile base material temporarily at an approved location before delivery to the roadway. Build stockpiles in layers no greater than 2 ft. thick. Stockpiles must have a total height between 10 and 16 ft. unless otherwise shown on the plans. After construction and acceptance of the stockpile, loading from the stockpile for delivery is allowed. Load by making successive vertical cuts through the entire depth of the stockpile.
- Do not add or remove material from temporary stockpiles that require sampling and testing before delivery unless otherwise approved. Charges for additional sampling and testing required as a result of adding or removing material will be deducted from the Contractor's estimates.
- Haul approved flexible base in clean trucks. Deliver the required quantity to each 100-ft. station or designated stockpile site as shown on the plans. Prepare stockpile sites as directed. When delivery is to the 100-ft. station, manipulate in accordance with the applicable Items.
- 247.22. Preparation of Subgrade or Existing Base.** Remove or scarify existing asphalt concrete pavement in accordance with Item 105, "Removing Stabilized Base and Asphalt Pavement," when

shown on the plans or as directed. Shape the subgrade or existing base to conform to the typical sections shown on the plans or as directed.

When new base is required to be mixed with existing base, deliver, place, and spread the new flexible base in the required amount per station. Manipulate and thoroughly mix the new base with existing material to provide a uniform mixture to the specified depth before shaping.

When shown on the plans or directed, proof roll the roadbed in accordance with Item 216, "Proof Rolling," before pulverizing or scarifying. Correct soft spots as directed.

- 247.23. Placing.** Spread and shape flexible base into a uniform layer with an approved spreader the same day as delivered unless otherwise approved. Construct layers to the thickness shown on the plans. Maintain the shape of the course. Control dust by sprinkling, as directed. Correct or replace segregated areas as directed, at no additional expense to the Department.

Place successive base courses and finish courses using the same construction methods required for the first course.

- 247.24. Compaction.** Compact using density control unless otherwise shown on the plans. Multiple lifts are permitted when shown on the plans or approved. Bring each layer to the moisture content directed. When necessary, sprinkle the material in accordance with Item 204, "Sprinkling."

Begin rolling longitudinally at the sides and proceed towards the center, overlapping on successive trips by at least 1/2 the width of the roller unit. On superelevated curves, begin rolling at the low side and progress toward the high side. Offset alternate trips of the roller. Operate rollers at a speed between 2 and 6 mph as directed.

Rework, recompact, and refinish material that fails to meet or that loses required moisture, density, stability, or finish before the next course is placed or the project is accepted. Continue work until specification requirements are met. Perform the work at no additional expense to the Department.

- 247.25. Ordinary Compaction.** Roll with approved compaction equipment as directed. Correct irregularities, depressions, and weak spots immediately by scarifying the areas affected, adding or removing approved material as required, reshaping, and recompact.

- 247.26. Density Control.** Compact to at least 100% of the maximum density determined by Tex-113-E unless otherwise shown on the plans. Determine the moisture content of the material at the beginning and during compaction in accordance with Tex-103-E.

The Engineer will determine roadway density of completed sections in accordance with Tex-115-E. The Engineer may accept the section if no more than 1 of the 5 most recent density tests is below the specified density and the failing test is no more than 3 pcf below the specified density.

- 247.27. Finishing.** After completing compaction, clip, skin, or tight-blade the surface with a maintainer or subgrade trimmer to a depth of approximately 1/4 in. Remove loosened material and dispose of it at an approved location. Seal the clipped surface immediately by rolling with a pneumatic tire roller until a smooth surface is attained. Add small increments of water as needed during rolling. Shape and maintain the course and surface in conformity with the typical sections, lines, and grades as shown on the plans or as directed.

In areas where surfacing is to be placed, correct grade deviations greater than 1/4 in. in 16 ft. measured longitudinally or greater than 1/4 in. over the entire width of the cross-section. Correct by loosening, adding, or removing material. Reshape and recompact in accordance with Section 247.4.C, "Compaction."

247.28. Curing. Cure the finished section until the moisture content is at least 2 percentage points below optimum or as directed before applying the next successive course or prime coat.

247.29. Measurement. Flexible base will be measured as follows:

- **Flexible Base (Complete In Place).** The ton, square yard, or any cubic yard method.
- **Flexible Base (Roadway Delivery).** The ton or cubic yard in vehicle.
- **Flexible Base (Stockpile Delivery).** The ton, cubic yard in vehicle, or cubic yard in stockpile.

Measurement by the cubic yard in final position and square yard is a plans quantity measurement. The quantity to be paid for 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.

Measurement is further defined for payment as follows.

247.30. Cubic Yard in Vehicle. By the cubic yard in vehicles of uniform capacity at the point of delivery.

247.31. Cubic Yard in Stockpile. By the cubic yard in the final stockpile position by the method of average end areas.

247.32. Cubic Yard in Final Position. By the cubic yard in the completed and accepted final position. The volume of base course is computed in place by the method of average end areas between the original subgrade or existing base surfaces and the lines, grades, and slopes of the accepted base course as shown on the plans.

247.33. Square Yard. By the square yard of surface area in the completed and accepted final position. The surface area of the base course is based on the width of flexible base as shown on the plans.

247.34. Ton. By the ton of dry weight in vehicles as delivered. The dry weight is determined by deducting the weight of the moisture in the material at the time of weighing from the gross weight of the material. The Engineer will determine the moisture content in the material in accordance with Tex-103-E from samples taken at the time of weighing.

When material is measured in trucks, the weight of the material will be determined on certified scales, or the Contractor must provide a set of standard platform truck scales at a location approved by the Engineer. Scales must conform to the requirements of Item 520, "Weighing and Measuring Equipment."

247.35. 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 the types of work shown below. No additional payment will be made for thickness or width exceeding that shown on the typical section or provided on the plans for cubic yard in the final position or square yard measurement.

Sprinkling and rolling, except proof rolling, will not be paid for directly but will be subsidiary to this Item unless otherwise shown on the plans. When proof rolling is shown on the plans or directed, it will be paid for in accordance with Item 216, "Proof Rolling."

Where subgrade is constructed under this Contract, correction of soft spots in the subgrade will be at the Contractor's expense. Where subgrade is not constructed under this project, correction of soft spots in the subgrade will be paid in accordance with pertinent Items or Article 4.2, "Changes in the Work."

247.36. Flexible Base (Complete In Place). Payment will be made for the type and grade specified. For cubic yard measurement, "In Vehicle," "In Stockpile," or "In Final Position" will be specified. For square yard measurement, a depth will be specified. This price is full compensation for furnishing

materials, temporary stockpiling, assistance provided in stockpile sampling and operations to level stockpiles for measurement, loading, hauling, delivery of materials, spreading, blading, mixing, shaping, placing, compacting, reworking, finishing, correcting locations where thickness is deficient, curing, furnishing scales and labor for weighing and measuring, and equipment, labor, tools, and incidentals.

247.37. Flexible Base (Roadway Delivery). Payment will be made for the type and grade specified. For cubic yard measurement, "In Vehicle" will be specified. The unit price bid will not include processing at the roadway. This price is full compensation for furnishing materials, temporary stockpiling, assistance provided in stockpile sampling and operations to level stockpiles for measurement, loading, hauling, delivery of materials, furnishing scales and labor for weighing and measuring, and equipment, labor, tools, and incidentals.

247.38. Flexible Base (Stockpile Delivery). Payment will be made for the type and grade specified. For cubic yard measurement, "In Vehicle" or "In Stockpile" will be specified. The unit price bid will not include processing at the roadway. This price is full compensation for furnishing and disposing of materials, preparing the stockpile area, temporary or permanent stockpiling, assistance provided in stockpile sampling and operations to level stockpiles for measurement, loading, hauling, delivery of materials to the stockpile, furnishing scales and labor for weighing and measuring, and equipment, labor, tools, and incidentals.