

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT



CONTRACT DOCUMENTS
FOR
2012 HOT PAVER LAID
PACKAGE 4
PROJECT NO: 23-01269

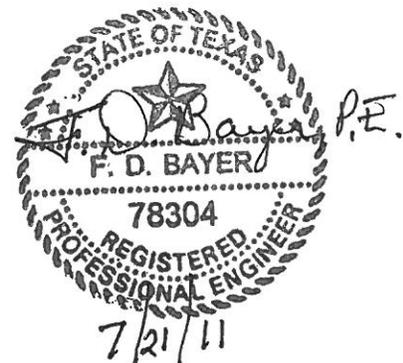


TABLE OF CONTENTS

INTRODUCTORY INFORMATION, BIDDING AND CONTRACTING REQUIREMENTS

010 INVITATION FOR BID	2
020 BID FORM	1
025 UNIT PRICING PROPOSAL	4
030 CONTRACTORS QUALIFICATIONS STATEMENT	5
040 STANDARD INSTRUCTIONS TO RESPONDENTS	8
050 SBEDA PROGRAM	5
052 GOOD FAITH EFFORT PLAN	4
053 LETTER OF INTENT FOR CONTRACTS	1
054 CHANGE OF SUBS FORM	1
060 SUPPLEMENTAL CONDITIONS	1
075 PERFORMANCE BOND	1
076 PAYMENT BOND	1
085 GENERAL CONDITIONS	63
095 SAWS Special Conditions	2

GOVERNING SPECIFICATIONS

103 REMOVE CONCRETE	
203 TACK COAT	
205 HOT MIX ASPHALTIC CONCRETE PAVEMENT	
208 MILLING OF ASPHALTIC PAVEMENT	
209 CONCRETE PAVEMENT	

GOVERNING SPECIFICATIONS

230 BASE AND PAVEMENT REPLACEMENT
500 CONCRETE CURB
502 CONCRETE SIDEWALKS
512 ADJUSTING EXISTING MANHOLES
515 TOP SOIL
516 SODDING
535 HOT APPLIED THERMOPLASTIC PAVEMENT MARKINGS
537 RAISED PAVEMENT MARKERS

SPECIAL SPECIFICATIONS

250 SEAL COAT
799 SPEED HUMPS TYPE II MODULAR RUBBER CUSHIONS
826 ADJUSTING EXISTING WATER VALVE BOXES (SAWS)
826-A VALVE BOX LOCATE AND ADJUSTMENTS (SAWS)
851 ADJUSTING EXISTING MANHOLES (SAWS)
851-A LOCATING AND AJUSTING EXISTING MANHOLES (SAWS)

SPECIAL PROVISIONS

205.2H RECYCLED TIRE RUBBER MODIFIED ASPHALT BINDER
SP100 DOOR HANGERS
SP2000 RAIL ROAD INSURANCE
260 ULTRATHIN BONDED WEARING COURSE (TYPE A)

CITY OF SAN ANTONIO

Issued By: Public Works Department
ID NO.: 23-01269-04-05-01

Date Issued: Sunday July 24, 2011
Page 1 of 2

FORMAL INVITATION FOR BIDS (IFB) and CONTRACT 2012 Asphalt Overlay with Rubber/Hot Paver Laid Package 4 (Prj. No. 23-01269-04-05-01)

Sealed bids, subject to the Terms and Conditions of this Invitation for Bids and other contract provisions, will be received at the Office of the City Clerk, City Hall, 100 Military Plaza, 2nd floor San Antonio, Tx 78205 until **2:00 p.m. CST on Tuesday, August 16, 2011** and publicly read aloud at **114 W. Commerce, Municipal Plaza Building "B" Room**. This is the *solicitation deadline*. Bids must be submitted in a sealed envelope and clearly marked with the due date of bid, bidder name, Project Name and ID NO. The City is not responsible for submissions not clearly and appropriately marked. Late submissions will be rejected and returned to bidder. A Non-Mandatory Pre-submittal conference will be held at **114 W. Commerce, Municipal Plaza Building, 8th Floor Conference Room on Friday, August 5, 2011 at 11:00 a.m.**

TABLE A - This invitation includes the following Contract Documents:

010 Invitation for Bids and Contract Signature 2012 Asphalt Overlay with Hot Paver Laid Package 4 (Prj. No. 23-01269-04-05-01)	Performance Bond
020 Bid Form	Payment Bond
025 Unit Pricing Form	085 General Conditions for Heavy/Hwy Construction Contracts
030 Contractor's Qualification/Information Statement	City of San Antonio, Specifications, Special Conditions & Plans "2012 Asphalt Overlay with Hot Paver Laid Package 4" prepared by the City of San Antonio
040 Standard Instructions to Respondent	General Wage Decision for Heavy Highway Projects
050.1 SBEDA Ordinance Compliance Provisions Respondents must demonstrate commitment to satisfy a five percent (5%) SBE subcontracting goal. In the absence of a waiver granted by the Small Business Office, failure of a Respondent to commit to satisfying the SBE subcontracting goal shall render its response NON-RESPONSIVE.	
Subcontractor/Supplier Utilization Plan	

Plans, Specifications and Special Conditions and any Addenda will be posted on the web at <http://epay.sanantonio.gov/rfp listings/> along with this solicitation Bidder understands and agrees that bidder is responsible for obtaining addenda and adhering to all requirements in addenda. City is not responsible for incorrect information obtained through other sources.

The following documents (fully completed and with original signatures) constitute the required information to be submitted as a part of the bid proposal clearly marked on the outside of the sealed envelope with the due date of bid, bidder name, Project Name and ID NO as follows:

- 1) 010 Invitation for Bids and Contract Signature Page for 2012 Asphalt Overlay with Hot Paver Laid Package 4 (Prj. No. 23-01269-04-05-01)
- 2) 020 Bid Form
- 3) 025 Unit Pricing Form
- 4) 030 Contractor's Qualification/Information Statement
- 5) Bid bond or cashiers check
- 6) Subcontractor/Supplier Utilization Plan
- 7) Signed Addenda Acknowledgement Forms (if applicable)

It is understood and agreed that the work is to be completed in full on or before **240** calendar days. This project does not include hazardous environmental work. This project requires **0** project sign(s).

This is a Public Works Contract and chapter 2258 of the Texas Government Code requires that not less than the prevailing wage rate for work of a similar character in this locality shall be paid all laborers, workmen, and mechanics employed in the construction thereof. The Wage Decision Number **TX100041 03/12/2010 TX41** shall be used on this contract, which is available on the web at <http://www.wdol.gov/dba.aspx#0>.

FORMAL INVITATION FOR BIDS (IFB) and CONTRACT
Asphalt Overlay with Hot Paver Laid Package 4
(Prj. No. 23-01269-04-05-01)

The undersigned acknowledges that this is a unit price contract; that unit prices established will remain in effect and valid throughout the duration of the contract; the quantities shown are estimated quantities for budgetary purposes only; the award of this contract does not guarantee contractor the entire work shown in this FORMAL INVITATION FOR BID (IFB); the City may order all, some, or none of the work shown in this IFB; and projects will be assigned as they become available.

The undersigned, by his/her signature, represents that he/she is authorized to bind the bidder to fully comply with Contract Documents for the amount(s) shown on the accompanying bid sheet(s). The work proposed to be done shall be accepted when fully completed and finished to the entire satisfaction of the City. The undersigned certifies all prices contained in this bid have been carefully checked and are submitted as correct and final. The Bidder by submitting this bid and signing below, acknowledges that he/she has received & read the entire Bid and Contract document and agrees to be bound by the terms therein, has received all Addenda, and agrees to the terms, conditions, and requirements of the bidder's bid proposal and all documents listed in TABLE A above and the enabling Ordinance and associated documentation that form the entire Contract upon approval by the City Council.

Official Name of Company (legal): _____

_____/_____
Original Signature of Person Authorized to Sign Bid/Contract Date Signer's Name: _____
(Please Print or Type)

CITY OF SAN ANTONIO

Project Name: 2012 Asphalt Overlay W/ Rubber/Hot Paver Laid (Package 4)
ID NO.: 23-01269

Date Issued: 7/24/2011

Page 1 of 1

020

BID FORM

IT IS THE INTENT OF THE CITY TO AWARD ONE CONTRACT BASED ON THE LOWEST BID.

The estimated construction budget for this contract is \$3,600,000.00

I. BASE BID (ALL BIDDERS REQUIRED TO BID)

Street/Roadway Base Bid: Asphalt Overlay W/Rubber

Amount of Street/Roadway Base Bid (Insert Amount in Words and Numbers):

_____ \$ _____

Amount of SAWS Water Base Bid (Insert Amount in Words and Numbers):

_____ \$ _____

Amount of SAWS Sewer Base Bid (Insert Amount in Words and Numbers):

_____ \$ _____

Total Amount of Base Bid (Insert Amount in Words and Numbers):

_____ \$ _____

II. SUBSTITUTE ALTERNATE #1(BIDDERS MAY ELECT NOT TO BID ON THE SUBSTITUTE ALTERNATE BY INDICATING "NO BID" ON THIS FORM. THIS SUPERCEDES ALL OTHER INSTRUCTIONS IN THE CONTRACT DOCUMENTS.)

Street/Roadway Substitute Alternate #1 – Hot Paver Laid

Amount of Street/Roadway Substitute Alternate #1 Bid (Insert Amount in Words and Numbers):

_____ \$ _____

Amount of SAWS Water Bid for Substitute Alternate #1 (Insert Amount in Words and Numbers):

_____ \$ _____

Amount of SAWS Sewer Bid for Substitute Alternate #1 (Insert Amount in Words and Numbers):

_____ \$ _____

Total Amount of Substitute Alternate #1 Bid (Insert Amount in Words and Numbers):

_____ \$ _____

II. UNIT PRICES

Bidders shall submit unit pricing on the 025 Unit Pricing form, and it shall be attached immediately following this sheet.

Official Name of Company (legal)

Telephone No.

Address

Fax No.

City, State and Zip Code

E-mail Address

2012 Asphalt Overlay W/Rubber/Hot Paver Laid Base Bid

ALT. NO.	ITEM NO.	DESC. CODE	S.P. NO	STREET/ROADWAY HOT PAVER LAID MICROSURFACE WITH RUBBER SUBSTITUTE ALTERNATE #1 BID ITEM DESCRIPTION	UNIT OF MEASURE	APPROX. QUANTITIES	UNIT BID PRICE	AMOUNT	ITEM SEQUENCE NO.
	103.1			Remove Concrete Curb	LF	312			
	103.3			Remove Sidewalks and Driveways	SY	167			
	203.0			Tack Coat	GAL	1,746			
	205.4A			Hot Mix Asphaltic Pavement Type D with Rubber	SY	194,487			
	205.4B			Hot Mix Asphaltic Pavement Type D (level up)* with Rubber	SY	8,938			
	208.2			Milling of Asphalt Pavement	CY	787			
	209.1			Concrete Pavement	SY	1,998			
	230.			Replacing Base & Pvmt With Type A Pvmt (6" Compacted Depth)	SY	47,550			
	230.1A			Replacing Base & Pvmt With ATB & Pvmt (8" Compacted Depth)	SY	100			
	230.1B			Replacing Base & Pvmt With Type A Pvmt (12" Compacted Depth)	SY	100			
	250.			Seal Coat	SY	185,549			
	500.			Concrete Curb	SY	316			
	502.1			Concrete Sidewalks	LF	161			
	502.1A			Handicamp Ramps (Type 1 thru 5)	SY	75			
	502.2			Concrete Driveway	EA	74			
	512.1			Adjusting Existing Manholes (Storm Sewer)	SY	20			
	512.1B			Adjusting AT&T Manholes	EA	31			
	515.			Top Soil	CY	58			
	516.1			Sodding	SY	71			
	535 A			4" Wide Yellow Line	LF	27,282			
	535 B			4" Wide White Line	LF	13,627			
	535 D			8" Solid White Line	LF	8,330			
	535 F			16" Wide White Line	LF	736			
	535 G			24" Wide White Line	LF	4,800			
	535 I			Left White Arrow	EA	47			
	535H			Right White Arrow	EA	11			
	535 L			Word "ONLY"	EA	16			
	535.17			Bicycle Rider Symbol	EA	6			
	537.3			Traffic Button (Type I-C)	EA	350			
	537.5			Traffic Button (Type II A-A)	EA	2,752			
	537.16			Pavement Marker (Type II C-R)	EA	2,245			
	537.1			Traffic Button (Type W)	EA	40			
	537.2			Traffic Button (Type Y)	EA	260			
	799.			Speed Hump, Type II, Modular Rubber Cushions	EA	14			
	SP100			Door Hangers	LS	1			
	SP2000			Railroad Insurance	LS	1			

* ITEM 205.4B IS INDICATED ON THE PLANS FOR APPROXIMATE LEVEL UP QUANTITIES

Total Street/Roadway Base Bid Amount: _____

AND SHALL BE BID IN THE BID PROPOSAL AT A PRICE NOT TO EXCEED 10% MORE THAN THE PRICE OF ITEM 205.4A

_____ certifies that the unit prices shown on this complete computer print-out for all of the bid items and the alternates contained in this proposal are the unit prices intended and that its bid will be tabulated using these unit prices and no other information from this print-out.

_____ Acknowledged and agrees that the total bid amount shown will be read as its total bid and further agrees that the official total bid amount will be determined by multiplying the unit bid prices shown in this print-out by the respective estimated quantities shown in the proposal and then totaling all of the extended amounts. _____ agrees to the terms, conditions, and requirements of the bidder's bid proposal.

Signed: _____ Date: _____

Title: _____

SAWS WATER BASE BID ITEM DESCRIPTION

ALT. NO.	ITEM NO.	DESC. CODE	S.P. NO	BID ITEM DESCRIPTION	UNIT OF MEASURE	APPROX. QUANTITIES	UNIT BID PRICE	AMOUNT	ITEM SEQUENCE NO.
	826.			Adjusting Existing Water Valve Boxes (SAWS)	EA	150			
	826.A			Valve Box Locate and Adjustments (SAWS)	EA	20			

Total SAWS Water Base Bid Amount: _____

_____ certifies that the unit prices shown on this complete computer print-out for all of the bid items and the alternates contained in this proposal are the unit prices intended and that its bid will be tabulated using these unit prices and no other information from this print-out.

_____ Acknowledged and agrees that the total bid amount shown will be read as its total bid and further agrees that the official total bid amount will be determined by multiplying the unit bid prices shown in this print-out by the respective estimated quantities shown in the proposal and then totaling all of the extended amounts. _____ agrees to the terms, conditions, and requirements of the bidder's bid proposal.

Signed: _____ Date: _____

Title: _____

SAWS SEWER BASE BID ITEM DESCRIPTION

ALT. NO.	ITEM NO.	DESC. CODE	S.P. NO	BID ITEM DESCRIPTION	UNIT OF MEASURE	APPROX. QUANTITIES	UNIT BID PRICE	AMOUNT	ITEM SEQUENCE NO.
	851.			Adjusting Existing Manholes (SAWS)	EA	135			
	851.A			Locating and Adjusting Existing Manholes (SAWS)	EA	6			

Total SAWS Sewer Base Bid Amount: _____

_____ certifies that the unit prices shown on this complete computer print-out for all of the bid items and the alternates contained in this proposal are the unit prices intended and that its bid will be tabulated using these unit prices and no other information from this print-out.

_____ Acknowledged and agrees that the total bid amount shown will be read as its total bid and further agrees that the official total bid amount will be determined by multiplying the unit bid prices shown in this print-out by the respective estimated quantities shown in the proposal and then totaling all of the extended amounts. _____ agrees to the terms, conditions, and requirements of the bidder's bid proposal.

Signed: _____ Date: _____

Title: _____

2012 Hot Paver Laid Substitute Alternate #1

ALT. NO.	ITEM NO.	DESC. CODE	S.P. NO	STREET/ROADWAY ASPHALT OVERLAY WITH RUBBER BID ITEM DESCRIPTION	UNIT OF MEASURE	APPROX. QUANTITIES	UNIT BID PRICE	AMOUNT	ITEM SEQUENCE NO.
	103.1			Remove Concrete Curb	LF	312			
	103.3			Remove Sidewalks and Driveways	SY	167			
	203.0			Tack Coat	GAL	1,746			
	205.4A			Hot Mix Asphaltic Pavement Type D with Rubber	SY	8,938			
	205.4B			Hot Mix Asphaltic Pavement Type D (level up)* with Rubber	SY	8,938			
	208.2			Milling of Asphalt Pavement	CY	285			
	209.1			Concrete Pavement	SY	1,998			
	230.			Replacing Base & Pvmt With Type A Pvmt (6" Compacted Depth)	SY	47,550			
	230.1A			Replacing Base & Pvmt With Type A (8" Compacted Depth)	SY	0			
	230.1B			Replacing Base & Pvmt With Type A Pvmt (12" Compacted Depth)	SY	0			
	250.			Seal Coat	SY	18,555			
	260.			Ultra-Thin Bonded Wearing Course (Type A) with Rubber	SY	185,549			
	500.			Concrete Curb	LF	316			
	502.1			Concrete Sidewalks	SY	161			
	502.1A			Handicamp Ramps (Type 1 thru 5)	EA	75			
	502.2			Concrete Driveway	SY	74			
	512.1			Adjusting Existing Manholes (Storm Sewer)	EA	20			
	512.1B			Adjusting AT&T Manholes	EA	31			
	515.			Top Soil	CY	58			
	516.1			Sodding	SY	71			
	535 A			4" Wide Yellow Line	LF	27,282			
	535 B			4" Wide White Line	LF	13,627			
	535 D			8" Solid White Line	LF	8,330			
	535 F			16" Wide White Line	LF	736			
	535 G			24" Wide White Line	LF	4,800			
	535 I			Left White Arrow	EA	47			
	535H			Right White Arrow	EA	11			
	535 L			Word "ONLY"	EA	16			
	535.17			Bicycle Rider Symbol	EA	6			
	537.3			Traffic Button (Type I-C)	EA	350			
	537.5			Traffic Button (Type II A-A)	EA	2,752			
	537.16			Pavement Marker (Type II C-R)	EA	2,245			
	537.1			Traffic Button (Type W)	EA	40			
	537.2			Traffic Button (Type Y)	EA	260			
	799.			Speed Hump, Type II, Modular Rubber Cushions	EA	14			
	SP100			Door Hangers	LS	1			
	SP2000			Railroad Insurance	LS	1			

* ITEM 205.4B IS INDICATED ON THE PLANS FOR APPROXIMATE LEVEL UP QUANTITIES

Total Substitute Alternate Bid Amount: _____

AND SHALL BE BID IN THE BID PROPOSAL AT A PRICE NOT TO EXCEED 10% MORE THAN THE PRICE OF ITEM 205.4A

_____ certifies that the unit prices shown on this complete computer print-out for all of the bid items and the alternates contained in this proposal are the unit prices intended and that its bid will be tabulated using these unit prices and no other information from this print-out.

_____ Acknowledged and agrees that the total bid amount shown will be read as its total bid and further agrees that the official total bid amount will be determined by multiplying the unit bid prices shown in this print-out by the respective estimated quantities shown in the proposal and then totaling all of the extended amounts. _____ agrees to the terms, conditions, and requirements of the bidder's bid proposal.

Signed: _____ Date: _____

Title: _____

SAWS WATER SUBSTITUTE ALTERNATE #1 BID ITEM DESCRIPTION

ALT. NO.	ITEM NO.	DESC. CODE	S.P. NO	BID ITEM DESCRIPTION	UNIT OF MEASURE	APPROX. QUANTITIES	UNIT BID PRICE	AMOUNT	ITEM SEQUENCE NO.
	826.			Adjusting Existing Water Valve Boxes (SAWS)	EA	150			
	826.A			Valve Box Locate and Adjustments (SAWS)	EA	20			

Total SAWS Water Base Bid Amount: _____

_____ certifies that the unit prices shown on this complete computer print-out for all of the bid items and the alternates contained in this proposal are the unit prices intended and that its bid will be tabulated using these unit prices and no other information from this print-out.

_____ Acknowledged and agrees that the total bid amount shown will be read as its total bid and further agrees that the official total bid amount will be determined by multiplying the unit bid prices shown in this print-out by the respective estimated quantities shown in the proposal and then totaling all of the extended amounts. _____ agrees to the terms, conditions, and requirements of the bidder's bid proposal.

Signed: _____ Date: _____

Title: _____

SAWS SEWER SUBSTITUTE ALTERNATE #1 BID ITEM DESCRIPTION

ALT. NO.	ITEM NO.	DESC. CODE	S.P. NO	BID ITEM DESCRIPTION	UNIT OF MEASURE	APPROX. QUANTITIES	UNIT BID PRICE	AMOUNT	ITEM SEQUENCE NO.
	851.			Adjusting Existing Manholes (SAWS)	EA	135			
	851.A			Locating and Adjusting Existing Manholes (SAWS)	EA	6			

Total SAWS Sewer Base Bid Amount: _____

_____ certifies that the unit prices shown on this complete computer print-out for all of the bid items and the alternates contained in this proposal are the unit prices intended and that its bid will be tabulated using these unit prices and no other information from this print-out.

_____ Acknowledged and agrees that the total bid amount shown will be read as its total bid and further agrees that the official total bid amount will be determined by multiplying the unit bid prices shown in this print-out by the respective estimated quantities shown in the proposal and then totaling all of the extended amounts. _____ agrees to the terms, conditions, and requirements of the bidder's bid proposal.

Signed: _____ Date: _____

Title: _____

Section 030
CONTRACTOR'S QUESTIONNAIRE

1. Respondent Information: Provide the following information regarding the Respondent.

(NOTE: Co-Respondents are two or more entities proposing as a team or joint venture with each signing the contract, if awarded. Sub-contractors are not Co-Respondents and should not be identified here. If this proposal includes Co-Respondents, provide the required information in this Item #1 for each Co-Respondent by copying and inserting an additional block(s) before Item #1.2. If Joint Venture or Partnership, attach Joint Venture or Partnership Agreement.)

Respondent Name: _____

(NOTE: Give exact legal name as it will appear on the contract, if awarded.)

Principal Address: _____

City: _____ State: _____ Zip Code: _____

Telephone No. _____ Fax No: _____

e-mail address: _____

List here, any other names under which Respondent has operated within the last 10 years. (add space as needed)

1.2 Business Structure: Check the box that indicates the business structure of the Respondent.

- Individual or Sole Proprietorship If checked, list Assumed Name, if any: _____
- Partnership
- Corporation If checked, check one: For-Profit Nonprofit
- Also, check one: Domestic Foreign
- Other If checked, list business structure: _____

1.3 Ownership: Does Respondent anticipate any mergers, transfer of organization ownership, management reorganization, or departure of key personnel within the next twelve (12) months?

Yes No

1.4 Is Respondent authorized and/or licensed to do business in Texas?

Yes No If "Yes", list authorizations/licenses.

1.5 Where is the Respondent's corporate headquarters located? _____

1.6 Local Operation: Does the Respondent have an office located in San Antonio, Texas?

Yes No If "Yes", respond to a. and b. below:

a. How long has the Respondent conducted business from its San Antonio office?

Years _____ Months _____

b. State the number of full-time employees at the San Antonio office. _____

1.7 **County Operation:** If the Respondent does not have a San Antonio office, does the Respondent have an office located in Bexar County, Texas?

Yes No If "Yes", respond to a. and b. below:

a. How long has the Respondent conducted business from its Bexar County office?

Years _____ Months _____

b. State the number of full-time employees at the Bexar County office. _____

1.8 **Debarment/Suspension Information:** Has the Respondent or any of its principals been debarred or suspended from contracting with any public entity?

Yes No If "Yes", identify the public entity and the name and current phone number of a representative of the public entity familiar with the debarment or suspension, and state the reason for or circumstances surrounding the debarment or suspension, including but not limited to the period of time for such debarment or suspension.

1.9 **Surety Information:** Has the Respondent ever had a bond or surety canceled or forfeited?

Yes No If "Yes", state the name of the bonding company, date, amount of bond and reason for such cancellation or forfeiture.

1.10 **Bankruptcy Information:** Has the Respondent ever been declared bankrupt or filed for protection from creditors under state or federal proceedings?

Yes No If "Yes", state the date, court, jurisdiction, cause number, amount of liabilities and amount of assets.

1.11 **LITIGATION DISCLOSURE - Failure to fully and truthfully disclose the information required by this Litigation Disclosure may result in the disqualification of your bid/proposal from consideration or termination of the contract, once awarded.**

A. Have you or any member of your Firm or Team to be assigned to this engagement ever been indicted or convicted of a felony or misdemeanor greater than a Class C in the last five (5) years?

Yes No

B. Have you or any member of your Firm or Team been terminated (for cause or otherwise) from any work being performed for the City of San Antonio or any other Federal, State or Local Government, or Private Entity? Yes No

C. Have you or any member of your Firm or Team been involved in any claim or litigation with the City of San Antonio or any other Federal, State or Local Government, or Private Entity during the last ten (10) years? Yes No

D. Have you or any other member of your Firm or Team paid liquidated damages in the last three (3) years? Yes No

If you have answered "Yes" to any of the above questions, please indicate the name(s) of the person(s), the nature, and the status and/or outcome of the information, indictment, conviction, termination, claim or litigation, as applicable. Any such information should be provided on a separate page and submitted with your bid as Attachment 1.11.

2. EXPERIENCE AND QUALIFICATIONS

2.1 Prospective bidders must show and document that they are responsible, qualified, capable, bondable, etc. to fulfill and abide by the specifications herein listed, and prospective bidders must have the capability and capacity in all respects to fully satisfy all of the contractual requirements described in this solicitation.

2.2 All bidders' facilities, personnel and equipment may be subject to inspection before contract award.

2.3 Bids shall be considered only from responsible businesses with a minimum of five (5) years experience or equivalent experience in working in similar Municipal Park Improvements or Commercial Building Construction.

2.4 How many years has your current organization been doing business as a construction general contractor? ___ years. If less than three years please explain on a separate page with you bid as Attachment 2.4.

2.5 How many years have you been doing construction-contracting work under previous business name(s)? ___ years.

2.6 RELEVANT (SIMILAR) EXPERIENCE PROJECT SHEETS: Contractor shall include project summary sheets for at least three (3) projects of similar complexity which have been completed within the last five (5) years that demonstrate knowledge of sequencing and staging challenges in a limited area of work due to native plant material that is to be protected, as well as having heavy foot traffic with Public Access to open adjacent portions of a park. Project sheets should demonstrate specific experience with the City of San Antonio Development Services Tree Ordinance and Landscape Ordinance or other municipal tree preservation and landscaping regulations; federal ADA requirements, as well as state TDLR requirements for site and Park Improvements. Each project sheet should include the project's: name, Construction Delivery type (Design Build, Design Bid Build, Construction Manager at Risk GMP), project scope, location, duration (start and end dates), photo(s), reference (owner name with a phone number and e-mail address), original and final contract amount, total number of change orders or amendments (with brief descriptions such as owner-requested, errors and omissions, unforeseen conditions, etc.), project managers' and superintendents' names. Bids submitted without required experience or equivalent experience and documentation of similar projects may be disqualified.

2.7 Organizational Chart: Attach a one page copy of your business organizational chart for the portion of your business that will be involved with this project, complete with names and titles, identify as Attachment 2.7.

2.8 **PROJECT MANAGER:**

- 2.8.1 Name of the proposed **project manager** _____
 - 2.8.2 Number of years of similar project management experience (including previous employment) _____
 - 2.8.3 Total number of years of management experience (including previous employment) _____
 - 2.8.4 Number of years employed with this organization _____
 - 2.8.5 Names of similar projects of this organization where employed as project manager and name of owner (add space as necessary) List no more than 5 relevant projects.
-

2.9 **SITE SUPERINTENDENT:**

- 2.9.1 a Name of the proposed **site superintendent:** _____
 - 2.9.2 Number of years of superintendent's experience on similar projects (including previous employment) _____
 - 2.9.3 Total number of years of superintendent's experience _____
 - 2.9.4 Number of years employed with this organization _____
 - 2.9.5 Names of similar projects of this organization where employed as superintendent and name of owner (add space as necessary) List no more than 5 relevant projects.
-

3. **FINANCIAL**

- 3.1 Please indicate the current limit of your **BONDING CAPACITY:**
_____. **This limit indication reduces your risk of forfeiting a bid bond.** Properly informing the CITY of your current capacity for BONDED work allows the determination of awards in cases where a CONTRACTOR has the low bids for multiple projects and that total amount exceeds the capacity for bonding. If this section is left blank, CONTRACTOR agrees to be fully responsible for all active bid submissions to the limit of their respective bid bonds.

- 3.2 How much work is your firm currently contracted to provide? I.E. current total amount of work in dollars from all sources.

\$ _____

STANDARD INSTRUCTIONS TO RESPONDENT**Read Carefully****1. STANDARD TERMS AND CONDITIONS****1.1 By submitting this offer, the Respondent:**

- (a) Affirms that they are duly authorized to execute the proposed contract, that this company, corporation, firm, partnership or individual has not prepared this offer in collusion with any other Respondent, and that the contents of this offer as to prices, terms or conditions of said offer have not been communicated by the undersigned nor by any employee or agent to any other person engaged in this type of business prior to the public offer opening or official award of this contract, as applicable.
- (b) Represents that to the best of its knowledge it is not indebted to the City of San Antonio (City). Indebtedness to the City may be basis for non-award and/or cancellation of any award.
- (c) Agrees to comply with City Ordinance Number 2008-11-20-1045 concerning Wage and Hour Labor Standard Provisions for City of San Antonio Construction Projects (amending City Ordinance Number 71312).
- (d) Agrees to comply with overtime regulations and pay workers the prevailing wage rate as listed in the wage decision noted on the Invitation for Bids and Contract Form 010 or Invitation for Competitive Sealed Proposals Form 011 specific to the solicitation. The Wage Decision is subject to change by addendum to the Invitation for Sealed Bids or Invitation for Competitive Sealed Proposals (hereafter referred to as the "solicitation") or as a result of the City's Wage Decision is on the Department of Labor web-site (search by DBA wage decision number) <http://www.wdol.gov/dba.aspx#0>.

1.2 Respondents are required to submit their offers upon the following expressed conditions:

- (a) Respondents shall thoroughly examine the drawings, specifications, schedule(s), instructions and all other contract documents.
- (b) Respondents shall make all investigations necessary to thoroughly inform themselves regarding the conditions at the Project site, the Specifications, the Plans and any Addenda to the Specifications and/or Plans issued. No plea of ignorance by the Respondent of conditions that exist or that may hereafter exist as a result of failure or omission on the part of the Respondent to make the necessary examinations and investigations, or failure to fulfill in every detail the requirements of the contract documents, will be accepted as a basis for varying the requirements of the City or the compensation to the vendor.
- (c) Respondents are advised that all City contracts are subject to all legal requirements provided for in the City Charter and/or applicable City Ordinances, state and federal statutes. Any offer, after being opened, becomes subject to the Open Information Act, V.T.C.A. Government Code Chapter 552, therefore vendors must clearly indicate any portion of the submitted offer that the vendor claims is not subject to public inspection under the Open Information Act.
- (d) No officer or employee of the City shall have a financial interest, direct or indirect, in any contract with the City, or shall benefit financially, directly or indirectly, in the sale to the City of any materials, supplies or services, except on behalf of the City as an officer or employee.

This prohibition extends to the City Public Service Board, San Antonio Water System, and all City boards and commissions other than those which are purely advisory. In this instance a City employee is defined as any employee of the City who is required to file a financial involvement report pursuant to the City's ethics ordinance.

- 1.3 For federally funded projects, the Respondent certifies the following:
- (a) Certifies that it does not and will not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not and will not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained.
 - (b) Certifies (in accordance with the guidelines below) that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency OR where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this offer.

GUIDELINES FOR CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION -- LOWER TIER COVERED TRANSACTIONS

By signing and submitting this offer, the prospective lower tier participant is providing the certification set out below.

1. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

2. The prospective lower tier participant shall provide immediate written notice to the person to which this offer is submitted if at any time the prospective lower tier participant learns that its certification was erroneous when submitted or had become erroneous by reason of changed circumstances.

3. The terms covered transaction, debarred, suspended, ineligible, lower tier covered transaction, participant, person, primary covered transaction, principal, proposal, and voluntarily excluded, as used in this clause, have the meaning set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the person to which this offer is submitted for assistance in obtaining a copy of those regulations.

4. The prospective lower tier participant agrees by submitting this offer that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is proposed for debarment under 48 CFR part 9, subpart 9.4, debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

5. The prospective lower tier participant further agrees by submitting this offer that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion -- Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

6. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that it is not proposed for debarment under 48 CFR part 9, subpart 9.4, debarred, suspended, ineligible, or voluntarily excluded from covered transactions, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant

may, but is not required to, check the List of Parties Excluded from Federal Procurement and Nonprocurement Programs.

7. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

8. Except for transactions authorized under paragraph 5 of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is proposed for debarment under 48 CFR part 9, subpart 9.4, suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

2. DISCREPANCIES AND INTERPRETATION

- (a) Prospective Respondents shall notify Consultant and City in writing at least five (5) calendar days prior to scheduled Offer Opening date if discrepancies and ambiguities or omissions are found in the Project Plans and/or Specifications, or if further information or interpretation is desired.
- (b) Answers by Consultant and/or City will be given in writing to all prospective Respondents in Addendum form. All provisions and requirements of such addenda will supersede or modify affected portions of the Project Plans and/or Specifications. All addenda will be incorporated in and bound with the Contract Documents. No other explanation or interpretation will be considered official or binding upon the City.

3. PREPARATION OF BIDS

Offers will be prepared in accordance with the following:

- (a) All information required by the invitation for offers shall be furnished or the bid may be deemed non-responsive.
- (b) Respondents shall complete the "020 Bid Form" and include the completed form in their proposal. Failure to complete and submit this form may render Respondent's proposal nonresponsive.
- (c) Respondents shall submit unit pricing either on the forms provided by the City or its Consultant or an original computer printout sheet bearing certification by and signature for the offering firm. The unit prices shown on acceptable printouts will be unit prices used to tabulate the offer and used in the contract if awarded by the City. As a minimum, computer printouts must contain the information and in the arrangement shown on the 025 Unit Pricing form included in the City's solicitation documents. Proposals with unit prices by computer printout may be considered nonresponsive if:
 - 1. The proposal does not bear the certification verbatim, as shown on the example in the City's solicitation documents.
 - 2. The computer printout is not signed in the name of the firm to whom the proposal was issued.
 - 3. The computer printout omits or alters required offer items or includes items not shown in the City's solicitation documents or specifications.

If the proposal submitted by the Respondent contains both the form furnished by the City, completed according to the instructions, and also a computer printout, completed according to the instructions, only one will be considered. In this situation the offer prices shown on the computer printout will be used to determine the offer.

- (d) Respondents shall submit a unit price for each Work element pay item for which an offer is requested, except in the case of an alternate. In such a case, the procedure is as follows:
 - 1. Additive Alternate: In the case of Additive Alternates, unit prices must be submitted for the base offer and the items in all proposed additive alternates separately.
 - 2. Substitute Alternate: In the case of a Substitute Alternate (these alternates appear in sets of two or more related alternates), unit prices must be submitted for all the items in the base offer separately and for all the items in one of the related substitute alternates in each set.
- (e) Where there is an error in extension of price, the unit price shall govern.
- (f) If a Respondent detects an error in quantities on the specifications or solicitation documents, unit price shall govern. Respondent shall notify the City of such error by indicating in the comments section of the bid/pricing form or beside the item on the City's proposal form or computer printout referenced in 3. (e) above. Respondent should not attempt to correct the error by inflating unit pricing.
- (g) In the event additional or extra blank spaces remain after completion of the various forms, Contractor shall enter the terms "none" or "not applicable" on any remaining blank spaces to indicate that the Contractor has considered City requests for information on every line presented. Any blank unit prices will be tabulated and evaluated as "no cost" to the City.
- (h) The combined total offers for Mobilization and Preparing Right-of-Way, shall not exceed fifteen percent (15%) of the total project offer. The 15% allowed for Mobilization and Preparing Right-of-Way will be calculated based upon the total of all offer components A offer containing a combined total for Mobilization and Preparing Right-of-Way in excess of fifteen (15%) percent may be considered unbalanced and may be rejected.
- (i) The unit price shall be inserted on the 025 Unit Pricing Form in the "UNIT BID PRICE" column. Extensions, which are the unit prices multiplied by the approximate quantities for each item, shall be inserted in figures in the amount column. Offers shall be submitted only on the City's 025 Unit Pricing Form or approved computer printout sheets. Offers not so submitted will be considered nonresponsive. Conditional offers or unbalanced offers will be considered nonresponsive.
- (j) Separated Contract: This project will be offer as a "separated contract" in accordance with a recent amendment to section 151.311 of the tax code in order for the contractor to claim a tax exemption on the contract price of materials.

4. SUBMISSION OF OFFERS

- (a) Respondent's Offer shall be enclosed in a sealed envelope addressed to the **City Clerk, City of San Antonio, 100 Military Plaza, San Antonio, Texas**, as set forth in the Invitation for Bid (IFB) or Invitation for Competitive Sealed Proposals (IFCSP). The name and address of Respondent, the date and hour of the offer/bid opening and the title of the offer solicitation shall be placed on the outside of the envelope.
- (b) Information and solicitation documents are obtainable from the Consultant as set forth in the published IFB/IFCSP. Solicitation documents are also on file in the Office of Plans and

Records, 9th Floor, Municipal Plaza Building, 114 W. Commerce, or online at the following web address: <http://epay.sanantonio.gov/RFPListings/RFPLList.aspx>

- (c) Offers must be submitted on the forms furnished. Offers, however, may be modified provided such modifications are sealed and received by the City Clerk prior to the submission deadline.
- (d) By submittal of this offer, Respondent certifies to the best of his/her knowledge that all information is true and correct.

5. REJECTION OF OFFERS

- (a) The City may reject an offer if:
 - 1. The Respondent misstates or conceals any material fact in the offer; or
 - 2. The offer does not strictly conform to law or the requirements of the offer;
 - 3. The offer is conditional.
 - 4. The Respondent is deemed by the City to be unqualified.
 - 5. The Respondent has exceeded its bonding capacity.
 - 6. The offer is unbalanced.
 - 7. Good Faith Effort Plan or List of Subcontractors is not submitted with bid, if applicable.
- (b) In the event that a Respondent is or subsequently becomes delinquent in the payment of his, her or its City taxes, including state and local sales taxes, such fact shall constitute grounds for rejection of the offer or if awarded the offer, for cancellation of the contract. The City reserves the right to deduct any delinquent taxes from payments that the City may owe to the delinquent Respondent as a result of such contract.
- (c) The City may, however, reject all offers whenever it is deemed in the best interest of the City to do so, and may reject any part of a offer unless the offer has been qualified as provided in 5(a)3 above.
- (d) The City at its sole discretion may also waive any minor informalities or irregularities in any offer, to include failure to submit sufficient offer copies, failure to submit literature or similar attachments, or business affiliation information.

6. WITHDRAWAL OF OFFERS

Offers may not be withdrawn after the time set for the offer opening, unless approved by the City.

7. LATE OFFERS OR MODIFICATIONS

- (a) Offers and modifications received after the time set for the offer opening (solicitation deadline) will not be considered.
- (b) Proposal amounts may not be amended or modified in any manner after the Solicitation Deadline in the published IFB/IFCSP, except as hereinafter provided.

(c) The City will perform a cursory review to determine if the offers are complete as to required contents, in proper form, and are properly signed. An offer that is obviously defective will not be read aloud at the bid/offer opening, nor will the offer prices included therein be publicly revealed. If a minor clerical error or omission is discovered and classified by the City as a technicality which the City of San Antonio has reserved the right to waive, or applicable law allows the City a right to waive, the Respondent's representative shall have the opportunity to make the appropriate correction.

8. PROPOSAL GUARANTY:

(a) Each Offer Proposal must be accompanied by a certified or cashier's check (if the offer is less than \$25,000) or an original Bid/Offer/Proposal Bond issued by a corporate surety company licensed to conduct business in the State of Texas, in the amount of not less than five percent (5%) of the greatest total amount of the Offer/Bid/Proposal, payable without recourse to the order of the City of San Antonio, Texas. These forms of security will serve as a guarantee that, if awarded the Contract, the Respondent will promptly enter into Agreement with the City as required by the Contract Documents and execute Performance and Payment Bonds on the City forms provided.

(b) Termination of Offer: No Offer shall be withdrawn or terminated by Respondent without consent of the City for a period of ninety (90) calendar days after the solicitation deadline.

(c) Should the successful Respondent fail to execute the Contract and Bonds and provide the required insurance within twenty (20) calendar days after the date of transmittal of the Contract Documents by City to Contractor, said Proposal Guaranty shall become the property of the City, not as a penalty, but as liquidated delay and administrative damages suffered by the City as a result of the successful Respondent failing to enter into the awarded City Contract.

(d) Proposal guarantees of the first-, second- and third-ranked respondents (for IF CSP) or first-, second- and third-lowest bidders (for IFB) will be retained until after the Contract Agreement and Bonds have been executed. Proposal guarantees in the form of any certified or cashier's check of all except the three above-referenced Respondents will be returned by mail to unsuccessful Respondents upon certification of the three above-referenced respondents, unless there is a justifiable reason for City to hold them for the full ninety (90) calendar day period.

9. QUALIFICATIONS OF RESPONDENT:

(a) The City or its agents may make such investigations as it deems necessary to determine the ability and responsibility of the Respondent to perform the Work. Respondent shall furnish to the City reasonable information and data for this purpose as the City may reasonably request. The City reserves the right to reject any offer if the evidence submitted by, or investigation of, such Respondent fails to satisfy the City that such Respondent is responsible to carry out the obligations of the Contract and to complete the Work contemplated therein.

(b) The City has implemented a Contractor performance evaluation system. The evaluation will cover accomplishment of the Project with adequate manpower; ability to meet schedule; adequacy of materials and equipment; citizen complaint response; adjacent-to-project property owner relations; and attendance at public project meetings. The Contractor's evaluation history may also be used by the City Staff as a basis for recommendations of award to the City Council.

10. AWARD OF CONTRACT

(a) For Invitation for Bids, the contract will be awarded to the lowest responsible Respondent whose offer, conforming to the Invitation for Bids, is most advantageous to the city.

(b) For Invitation for Competitive Sealed Proposals, the contract will be awarded to the Respondent whose offer, conforming to the Invitation for Competitive Sealed Proposals, is most advantageous to the City.

- (c) **A written award of acceptance (manifested by a City Ordinance) and appropriation (evidenced by Purchase Order) mailed or otherwise furnished to the successful Respondent results in a binding contract without further action by either party.**
- (d) Breaking of tie offers shall be in accordance with V.T.C.A. Local Government Code § 271.901.
- (e) The City reserves the right to accept any items or groups of items on this offer, unless the Respondent qualifies his/her offer by specific limitations (Re: Par. 5(a)(3) above).
- (g) Although the information furnished to Respondents specified the approximate quantities needed, based on the best available information where a contract is let on a unit price basis, payment shall be based on the actual quantities supplied. The City reserves the right to delete items, prior to the awarding of the contract, and purchase said items by other means; or after the awarding of the contract, to increase or decrease the quantities offer in accordance with § 252.048 of the Texas Local Government Code. No changes shall be made without written notification of the City.
- (h) Effective January 1, 2006, Chapter 176 of the Texas Local Government Code requires that persons, or their agents, who seek to contract for the sale or purchase of property, goods, or services with the City, shall file a completed conflict of interest questionnaire with the City Clerk not later than the 7th business day after the date that the person: (1) begins contract discussions or negotiations with the City; or (2) submits to the City an application, response to a request for proposals, offers, correspondence, or another writing related to a potential agreement with the City. The conflict of interest questionnaire form is available from the Texas Ethics Commission at http://www.ethics.state.tx.us/whatsnew/conflict_forms.htm. Completed conflict of interest questionnaires may delivered by hand to the Office of the City Clerk at City Hall, 2nd floor, 100 Military Plaza, San Antonio, TX 78205. Completed conflict of interest questionnaires may be mailed to the Office of the City Clerk, P.O. Box 839966, San Antonio, TX 78283-3966. If delivering a completed conflict of interest questionnaire, deliver to: Office of the City Clerk,. Please consult your own legal advisor if you have questions regarding the statute or form.

11. SITE INVESTIGATION

- (a) The submittal of an Offer by Respondent shall constitute an admission that the Respondent has fully examined the location of the proposed Work and the requirements of the Work. The Respondent shall be familiar with all of the Contract Documents and other City instructions including Respondent's ability to submit inquiries to City and Design Consultant before submitting an Offer so that no Contractor misunderstanding shall exist regarding the nature and character of the Work to be performed. No allowance will be made by City for any Respondent claim that the Offer/Proposal/Bid is based upon incomplete information as to the nature and character of the site or the Work involved.
- (b) After investigating the Project site and comparing the Plans and Specifications and other Contract Documents with the existing conditions, the prospective Respondent should immediately notify the Consultant of any conditions for which the requirements of labor and materials are not clear, and pose any question regarding the quantity and extent of the Work involved. Respondent inquiry notifications to the City and/or Consultant must be made in writing at least five (5) calendar days prior to the scheduled solicitation deadline.
- (c) It is understood and acknowledged by Respondent that full and complete allowance for conditions under which the Contractor will be required to perform construction, or that will in any manner affect Work under this Contract, are included in the Respondent's Proposal and reflected in the proposed Contract sum. If a soils investigation was conducted as a potential

aid to the Consultant in preparation of the Contract Plans and Specifications, this information is available to prospective respondents for review at the Project Consultant's office and is non-refundable. Copies may be purchased from the Consultant. THIS INFORMATION IS AVAILABLE TO PROSPECTIVE RESPONDENTS WITHOUT EXPRESS OR IMPLIED REPRESENTATION, ASSURANCE, WARRANTY OR GUARANTEE BY CITY OR CONSULTANT THAT IT IS COMPLETE OR CORRECT OR THAT IT REPRESENTS A TRUE, OR APPROXIMATELY TRUE, PICTURE OF THE SUB-SURFACE CONDITIONS TO BE ENCOUNTERED ACROSS THE PROPOSED WORK SITE. THIS INFORMATION IS SPECIFICALLY NOT PART OF THE CONTRACT DOCUMENTS. Before submitting its Offer, each Respondent may, at Respondent's own expense, make reasonable work site investigations and tests as the Respondent may deem necessary to determine his Offer for performance of the Work in accordance with the Contract Documents. Access for such investigations and tests must be reasonably coordinated with the City.

12. RESTRICTION ON COMMUNICATION

Respondents are prohibited from communicating with City staff and City officials regarding this solicitation with the following exceptions:

- (a) Questions or other communication at the pre-submittal conference are allowed.
- (b) Written questions and comments concerning this solicitation shall be sent to the consultant (see address for purchasing plans and specifications on the IFB or IFCSP) and a copy to the City's Plans and Records Office at 114 W. Commerce St., 9th floor, Municipal Plaza Building, San Antonio, TX 78205. These questions must be received no later than one week prior to submittal date.

Answers by Consultant and/or City will be given in writing to all prospective Respondents in Addendum form. All provisions and requirements of such addenda will supersede or modify affected portions of the Project Plans and/or Specifications. All addenda will be incorporated in and bound with the Contract documents. No other explanation or interpretation will be considered official or binding upon the City. No other explanation or interpretation will be considered official or binding upon the City. All addenda will be posted on the City's website with this solicitation. It is respondent's responsibility to obtain addenda.

Violation of this provision by Respondent or his or her agent may lead to disqualification of its offer from consideration.

SUPPLEMENTAL CONDITIONS

1. **When submitting a bid in person, visitors to City Hall must allow time for security measures.** Visitors to City Hall will be required to enter through the east side of the building. The public will pass through a metal detector and x-ray machine located in the lobby. All packages, purses and carried items will be scanned during regular business hours of 7 a.m. to 7 p.m. After the public proceeds through the metal detector, they will sign in and receive a visitor's badge. For those that might require the use of a ramp, entry is available on the south side of the building (Dolorosa side). Security will meet the visitor in the basement with a hand scanner.

2. **Scope of the Work -** The Contractor shall furnish all the materials and perform all the Work called for in the Contract Documents and more specifically described in the Plans and Specification for the Project entitled.

3. The Contractor shall begin Work at the job site within seven (7) calendar days after the date of the Owner's written Authorization to Proceed issued by the Owner's Representative.

4. For each Calendar Day that any Work is not completed after the expiration of Calendar Days stated in the Invitation for Bids or Invitation for Competitive Sealed Proposals, plus any Extended Calendar Days granted by Owner in accordance with the Contract Documents, the sum as shown in the table below will be deducted from the money due or to become due the Contractor, not as a penalty, but as mutually agreed to liquidated damages and added expense for Owner Contract administration, not otherwise susceptible to exact determination by Owner and Contractor prior to the execution of this Agreement.

<u>Amount of Contract</u>	<u>Liquidated Damages per Day</u>
\$ 1,000,001 or Over	\$ 700.00
\$ 750,001 to \$1,000,000	\$ 600.00
\$ 500,001 to \$ 750,000	\$ 500.00
\$ 250,001 to \$ 500,000	\$ 400.00
\$ 100,001 to \$ 250,000	\$ 300.00
\$ 50,001 to \$ 100,000	\$ 200.00
\$ 1 to \$ 50,000	\$ 100.00

5. **The Contract Sum -** The Owner shall pay the Contractor for the proper performance of the Contract, subject to additions and deduction provided therein, the Contract sum is listed in the Purchase Order.

6. **Partial Payment -** Each month, the Owner shall make a progress payment as approved by the Owner's Representative in accordance with the General Conditions.

7. **Acceptance and Final Payment -** Final Payment shall be due on final Owner acceptance of the Project Work, provided the Contract has been completed by Contractor as provided in the General Conditions.

Before issuance of the final payment, the Contractor shall submit an affidavit and reasonable additional supporting evidence if required, as satisfactory to the Director of Finance, City of San Antonio, that all labor payrolls, construction materials and supply bills, subcontractors, and other indebtedness connected with the Work have been paid in full, or that an outstanding debt is being disputed and that the corporate surety or its agent is processing the outstanding claim and is willing to defend and/or indemnify the City should the City make final Contract payment.

8. Contractor shall comply with Standard Specification 1000 in its invoicing.

PERFORMANCE BOND

STATE OF TEXAS)
COUNTY OF BEXAR)
CITY OF SAN ANTONIO)

Know all men by these presents:

1. That we _____,

as Principal, and _____,
as Sureties, do hereby acknowledge ourselves to be held and firmly bound unto the City of San Antonio, a municipal corporation of the County of Bexar and State of Texas in the sum of \$_____ for payment of which sum well and truly to be made in and unto said City of San Antonio, we do hereby bind and obligate ourselves, our heirs, executors, administrators, assigns, and successors, jointly and severally:

2. THE CONDITIONS OF THIS BOND, HOWEVER, ARE SUCH THAT WHEREAS, the said _____

hereinafter called Contractor or Principal, has made and does this day make and enter into a certain contract in writing with said City of San Antonio, for the construction and completion for said City of certain structures, work and improvements generally described as

(Insert Name and Location of Project)

and for the performance and observance of diverse other matters and things in connection with said work; all as more fully described in said contract and its included instruments which are expressly made a part of this obligation.

3. NOW THEREFORE, if Contractor, the principal party to this obligation shall faithfully construct and complete said structures, work and improvements, and shall observe, perform and comply with all the terms, conditions, stipulations, undertakings and provisions of said contract and all included instruments, according to their intent and purpose insofar as the same relate to or are incident to the construction and completion of said structures, work and improvements then and thereupon this obligation shall be and become null and void, but otherwise to remain in full force and effect; and it is hereby further understood and agreed that this bond shall be a continuous obligation against the principal and each member of said principal party hereto, and each and all sureties hereon, and that successive recoveries may be had hereon for each and every breach of this bond until the full amount thereof shall have been exhausted; and the liability of the sureties on this bond shall not be in any manner released or diminished by any changes in the work which may be authorized or directed by the City, nor by the exercise or failure to exercise by or on behalf of the City any right or remedy provided by the contract or specifications or by any law or ordinance.

4. It is further understood that this obligation is incurred pursuant to Chapter 2253 of the Texas Government Code as amended, and all liabilities on this bond shall be determined in accordance with the provisions of said Chapter to the same extent as if it were copied at length herein.

5. IN TESTIMONY WHEREOF, witness our hands and the seal of any incorporated surety hereon this _____ day of _____ A.D. 20 _____.

(Contractor)

By: _____
(Typed Name)

(Surety)

By: _____
(Typed Name)

(SEAL)

Address of Surety for Service Purposes

PAYMENT BOND

STATE OF TEXAS)
COUNTY OF BEXAR)
CITY OF SAN ANTONIO)

Know all men by these presents:

1. That we _____,

as Principal, and _____
as Sureties, do hereby acknowledge ourselves to be held and firmly bound unto the City of San Antonio, a municipal corporation of the County of Bexar and State of Texas in the sum of \$ _____ for payment of which sum well and truly to be made in and unto said City of San Antonio, we do hereby bind and obligate ourselves, our heirs, executors, administrators, assigns, and successors, jointly and severally:

2. THE CONDITIONS OF THIS BOND, HOWEVER, ARE SUCH THAT WHEREAS, the said _____

hereinafter called Contractor or Principal, has made and does this day make and enter into a certain contract in writing with said City of San Antonio, for the construction and completion for said City of certain structures, work and improvements generally described as

(Insert Name of Project and Location)

and for the performance and observance of diverse other matters and things in connection with said work, and, interalia, therein entered into covenants and agreements to promptly pay all persons supplying labor, materials and services in the prosecution of the work provided for in said contract; all as more fully described in said contract and its included instruments which are expressly made a part of this obligation;

3. NOW THEREFORE, if Contractor, the Principal party to this obligation shall promptly make payment to all persons supplying labor and materials in the prosecution of the work provided for in said contract, and any and all duly authorized modifications of said contract that may hereafter be made, notice of which modifications to the surety being hereby waived, then this obligation shall be and become null and void, but otherwise to remain in full force and effect: and it is hereby further understood and agreed that this bond shall be a continuous obligation against the principal and each member of said principal party hereto, and each and all sureties hereon, and that successive recoveries may be had thereon for each and every breach of this bond until the full amount thereof shall have been exhausted; and the liability of the sureties on this bond shall not be in any manner released or diminished by any changes in the work which may be authorized or directed by the City, nor by the exercise or failure to exercise by or on behalf of the City any right or remedy provided by the contract or specifications or by any law or ordinances.

4. It is further understood that this obligation is incurred pursuant to Chapter 2253 of the Texas Government Code, and that this obligation is for the benefit and sole protection of all persons supplying labor and materials in the prosecution of said contract.

5. IN TESTIMONY WHEREOF, witness our hands and the seal of any incorporated surety hereon this _____ day of _____ A.D. 20 _____.

(Contractor)

By: _____
(Typed Name)

(Surety)

By: _____
(Typed Name)

(SEAL)

Address of Surety for Service Purposes

**GENERAL CONDITIONS FOR
CITY OF SAN ANTONIO HEAVY/HIGHWAY CONSTRUCTION CONTRACTS**

TABLE OF CONTENTS

ARTICLE I. GENERAL PROVISIONS	3
1.1 CONTRACT DEFINITIONS.	3
1.2 PRELIMINARY MATTERS.	6
1.3 CONTRACT DOCUMENTS.	6
ARTICLE 2. OWNER	9
2.1 GENERAL	9
2.2 INFORMATION AND SERVICES TO BE PROVIDED BY OWNER.	9
ARTICLE 3. CONTRACTOR	10
3.1 GENERAL	10
3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR.....	11
3.3 SUPERVISION AND CONSTRUCTION PROCEDURES.	12
3.4 LABOR AND MATERIALS.....	13
3.5 WARRANTY.	15
3.6 TAXES.....	16
3.7 PERMITS, FEES AND NOTICES.	16
3.8 ALLOWANCES.	17
3.9 SUPERINTENDENT.....	17
3.10 CONTRACTOR'S WORK PROGRESS SCHEDULES.....	18
3.11 DOCUMENTS AND SAMPLES AT THE SITE.....	20
3.12 SHOP DRAWINGS, PRODUCE DATA AND SAMPLES	20
3.13 USE OF SITE	22
3.14 CUTTING AND PATCHING	23
3.15 CLEANING UP.	23
3.16 ACCESS TO WORK.	23
3.17 PATENT FEES AND ROYALTIES.	23
3.18 INDEMNITY PROVISIONS.	24
3.19 REPRESENTATIONS AND WARRANTIES.....	26
3.20 BUSINESS STANDARDS.	26
ARTICLE 4. ADMINISTRATION OF THE CONTRACT	26
4.1 DESIGN CONSULTANT.	26
4.2 ROLE OF THE DESIGN CONSULTANT IN ADMINISTRATION OF THE CONTRACT.	27
4.3 CLAIMS AND DISPUTES.	28
4.4 RESOLUTION OF CLAIMS AND DISPUTES.	32
4.5 ALTERNATIVE DISPUTE RESOLUTION.	33
ARTICLE 5. SUBCONTRACTORS	33
5.1 DEFINITION.....	33
5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK	33
5.3 SUBCONTRACTUAL RELATIONS.....	35
5.4 CONTINGENT ASSIGNMENT OF SUBCONTRACTS.	35
ARTICLE 6. CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTS	35
6.1 OWNER'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS	35
6.2 MUTUAL RESPONSIBILITY.	36
6.3 OWNER'S RIGHT TO CLEAN UP.	36
ARTICLE 7. CHANGES IN THE WORK	36
7.1 GENERAL.	36
7.2 CHANGE ORDERS.	37
7.3 FIELD WORK DIRECTIVES.....	37
7.4 MINOR CHANGES TO THE WORK.....	38
7.5 TIME REQUIRED TO PROCESS CHANGE ORDERS.....	39
ARTICLE 8. TIME	39

8.1	DEFINITIONS.....	39
8.2	PROGRESS AND COMPLETION.....	39
8.3	DELAYS AND EXTENSIONS OF TIME.....	40
ARTICLE 9 PAYMENTS AND COMPLETION		40
9.1	CONTRACT SUM.....	40
9.2	SCHEDULE OF VALUES.....	41
9.3	APPLICATIONS FOR PAYMENT.....	41
9.4	APPROVAL OF APPLICATIONS FOR PAYMENT.....	42
9.5	DECISIONS TO WITHHOLD CERTIFICATION.....	42
9.6	PROGRESS PAYMENTS.....	43
9.7	FAILURE OF PAYMENT.....	44
9.8	SUBSTANTIAL COMPLETION.....	44
9.9	PARTIAL OCCUPANCY OR USE.....	45
9.10	FINAL COMPLETION AND FINAL PAYMENT.....	45
9.11	AUDIT.....	46
9.12	ADDITIONAL INSPECTIONS.....	46
ARTICLE 10. PROTECTION OF PERSONS AND PROPERTY		46
10.1	SAFETY PRECAUTIONS AND PROGRAMS.....	46
10.2	SAFETY OF PERSONS AND PROPERTY	47
10.3	EMERGENCIES.....	48
10.4	PUBLIC CONVENIENCE AND SAFETY.....	48
10.5	BARRICADES, LIGHTS AND WATCHMEN.....	49
10.6	PUBLIC UTILITIES AND OTHER PROPERTIES TO BE CHANGED.....	49
10.7	TEMPORARY STORM SEWER AND DRAIN CONNECTIONS	49
10.8	ARRANGEMENT AND CHARGE FOR WATER FURNISHED BY THE OWNER; ELECTRICITY FOR THE PROJECT.....	50
10.9	USE OF FIRE HYDRANTS.....	50
10.10	ENVIRONMENTAL COMPLIANCE.....	50
ARTICLE 11. INSURANCE AND BONDS.....		51
11.1	CONTRACTOR'S LIABILITY INSURANCE.....	51
11.2	PROPERTY INSURANCE	52
11.3	PERFORMANCE BOND AND PAYMENT BONDS.....	53
11.4	'UMBRELLA' LIABILITY INSURANCE	54
11.5	POLICY ENDORSEMENTS AND SPECIAL CONDITIONS	55
ARTICLE 12. UNCOVERING AND CORRECTION OF WORK.....		56
12.1	UNCOVERING OF WORK	56
12.2	CORRECTION OF WORK.....	57
12.3	ACCEPTANCE OF NONCONFORMING WORK	58
ARTICLE 13. COMPLETION OF THE CONTRACT; TERMINATION; TEMPORARY SUSPENSION... 58		58
13.1	FINAL COMPLETION OF CONTRACT.....	58
13.2	WARRANTY FULFILLMENT.....	58
13.3	TERMINATION BY THE OWNER FOR CAUSE.....	58
13.4	TEMPORARY SUSPENSION OF THE WORK	60
ARTICLE 14. MISCELLANEOUS PROVISIONS.....		61
14.1	GOVERNING LAW; COMPLIANCE WITH LAWS AND REGULATIONS.....	61
14.2	SUCCESSORS AND ASSIGNS	61
14.3	WRITTEN NOTICE.....	61
14.4	RIGHTS AND REMEDIES; NO WAIVER OF RIGHTS BY OWNER.....	62
14.5	INTEREST	62
14.6	INDEPENDENT MATERIALS TESTING AND INSPECTION.....	62
14.7	OFFICERS OR EMPLOYEES OF THE OWNER NOT TO HAVE FINANCIAL INTEREST IN ANY CONTRACT OF THE OWNER.....	62
14.8	VENUE	63
14.9	INDEPENDENT CONTRACTOR.....	63
14.10	NONDISCRIMINATION.....	63
14.11	GIFTS TO PUBLIC SERVANTS.....	63
ARTICLE 15. RIGHT TO AUDIT CONTRACTOR'S RECORDS.....		64

**GENERAL CONDITIONS FOR
CITY OF SAN ANTONIO HEAVY/HIGHWAY CONSTRUCTION CONTRACTS**

ARTICLE I. GENERAL PROVISIONS

1.1 **CONTRACT DEFINITIONS.** Wherever used in the Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated, which are applicable to both the singular and plural thereof.

1.1.1 The Contract Documents.

1.1.1.1 The formal Building Construction Services Agreement between the Owner and the Contractor consists of the integrated Contract Documents, which include these General Conditions and other supplementary conditions included by special provisions or addenda, Drawings, Specifications, addenda issued prior to the close of the solicitation period, other documents listed in the Contract and Amendments issued after execution of an Integration Agreement (if such is deemed to be necessary by the City). An Amendment is a written supplemental agreement to the Contract signed by authorized representatives of both parties; a Change Order, including Change Orders signed only by the Owner as described in Section 7.1; or a written order for a minor change in the Work issued by the Design Consultant as described in Section 7.3.

1.1.1.2 The Contract Documents also include bid documents such as the Owner's Instructions to Bidders, sample forms, the Contractor's Bid Proposal and portions of addenda relating to any of these documents, and any other documents, exhibits or attachments specifically enumerated in the Contract Documents, but specifically exclude geotechnical and subsurface reports that the Owner may have provided to the Contractor.

1.1.2 The Contract. The Contract Documents, as defined in Section 1.1, are expressly incorporated into and made a part of the formal Building Construction Services Agreement between the Owner and the Contractor by reference in this Section and Section 1.1 (which documents are sometimes also referred to collectively in these General Conditions as the "Contract"). The Contract Documents represent the entire and integrated agreement between the Owner and the Contractor and supersede all prior negotiations, representations or agreements, either written or oral. The terms and conditions of the Contract Documents may be changed only by an Amendment. The Contract Documents shall not be construed to create a contractual relationship of any kind:

1.1.2.1 between the Design Consultant and Contractor;

1.1.2.2 between the Owner and a Subcontractor or Sub-subcontractor; or

1.1.2.3 between any persons or entities other than the Owner and Contractor.

The Design Consultant shall, however, be entitled to performance and enforcement of obligations under the Contract Documents intended to facilitate performance of the Design Consultant's duties.

1.1.3 The Work. The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all labor, materials, equipment, and services provided or to be provided by the Contractor, or any Subcontractors, Sub-subcontractors, material suppliers, or any other entity for whom the Contractor is responsible, to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

1.1.4 The Project. The Project is the total construction more particularly described in the Building Construction Services Agreement, of which the Work performed under the Contract Documents may be the whole or a part of the Project and which may include construction by the Owner or by separate contractors. All references in these General Conditions to or concerning the

Work or the site of the Work will use the term "Project," notwithstanding that the Work may only be a part of the Project.

1.1.5 The Drawings. The Drawings (also known as the "Plans") are the graphic and pictorial portions of the Contract Documents, wherever located and whenever issued, showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

1.1.6 The Specifications. The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, construction systems, standards, and workmanship for the Work, performance of related services, and other technical requirements.

1.1.7 The Project Manual. The Project Manual is the volume or volumes which contain the bidding requirements, sample forms, General Conditions for Building Construction, special provisions, and Specifications. The Project Manual may be modified by written addendums issued by the Owner during bidding, in which case the written addendums become a part of the Project Manual upon their issuance, unless otherwise indicated by the Owner in writing.

1.1.8 Alternate. An Alternate is a variation in the Work on which the Owner requires a price separate from the Base Bid. If an Alternate is accepted by the Owner, the variation will become a part of the Contract through the execution of a Change Order or Amendment to the Contract and the Base Bid will be adjusted to include the amount quoted. If an Alternate is accepted by the Owner, and later deleted, the Owner will be entitled to a credit in the full value of the Alternate as priced in the Contractor's Bid Proposal.

1.1.9 Base Bid. The Base Bid is the price quoted for the Work before Alternates are considered.

1.1.10 Hazardous Substance. The term Hazardous Substance is defined to include the following:

1.1.10.1 any asbestos or any material which contains any hydrated mineral silicate, including chrysolite, amosite, crocidolite, tremolite, anthophyllite or actinolite, whether friable or non-friable;

1.1.10.2 any polychlorinated biphenyls ("PCBs"), or PCB-containing materials, or fluids;

1.1.10.3 radon;

1.1.10.4 any other hazardous, radioactive, toxic or noxious substance, material, pollutant, or solid, liquid or gaseous waste;

1.1.10.5 any pollutant or contaminant (including but not limited to petroleum, petroleum hydrocarbons, petroleum products, crude oil or any fractions thereof, any oil or gas exploration or production waste, any natural gas, synthetic gas or any mixture thereof, lead, or other toxic metals) which in its condition, concentration or area of release could have a significant effect on human health, the environment, or natural resources;

1.1.10.6 any substance that, whether by its nature or its use, is subject to regulation or requires environmental investigation, monitoring, or remediation under any federal, state, or local environmental laws, rules, or regulations;

1.1.10.7 any underground storage tanks, as defined in 42 U.S.C. Section 6991(1)(A)(I) (including those defined by Section 9001(1) of the 1984 Hazardous and Solid Waste Amendments to the Resource Conservation and Recovery Act, 42 U.S.C. Section 6901 et seq.; the Texas Water Code Annotated Section 26.344; and Title 30 of the Texas

Administrative Code Sections 334.3 and 334.4), whether empty, filled or partially filled with any substance; and

1.1.10.8 any other hazardous material, hazardous waste, hazardous substance, solid waste, and toxic substance as those or similar terms are defined under any federal, state, or local environmental laws, rules, or regulations.

1.1.11 City Council. The duly elected members of the City Council of the City of San Antonio, Texas.

1.1.12 Construction Observer/Inspector. ("COI") The authorized representative of the Director of Capital Improvements Management Services or Public Works, or City of San Antonio designee department, assigned by the Owner to observe and inspect any or all parts of the Project and the materials to be used therein. Sometimes also referred to as the Resident Inspector. Also referred to as Resident Inspector.

1.1.13 Department. The Department of Capital Improvements Management Services, City of San Antonio, Texas or other department designee of the Department of Capital Improvements Management Services.

1.1.14 Federally Assisted Contract. Any contract financed in whole or in part with federal funds

1.1.15 Field Work Directives. A written order issued by the Design Consultant or the Owner Designated Representative (ODR) which orders minor changes in the Work, but which does not involve a change in the Contract Sum or the Contract Time.

1.1.16 Major Bid Item. Any individual bid item submitted by Contractor that constitutes, at a minimum, five percent (5%) of the total Contract Sum proposed by the Contractor or, the dollar amount defined in the Special Conditions as constituting a "Major Bid Item", whichever is less; or in some instances specific bid Items which are identified and defined in other sections of the Contract Documents as constituting "Major Bid Items"

1.1.17 Notice to Proceed. (also "Work Project Authorization") A written notice given by Owner to Contractor establishing the date on which the Contract Time will commence to run, and on which Contractor may begin performance of its contractual obligations.

1.1.18 Owner Designated Representative (ODR). Person designated by Owner to Act for Owner.

1.1.19 Site. Lands or areas (as indicated in the Contract Documents) furnished by Owner upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.

1.1.20 Other Definitions. As used in the Contract Documents, the following additional terms have the following meanings:

1.1.20.1 "provide" means to furnish, install, fabricate, deliver and erect, including all services, materials, appurtenances and other expenses to complete in place, ready for operation or use;

1.1.20.2 "shall" means the action of the party to which reference is being made is mandatory;

1.1.20.3 "as required" means as prescribed in the Contract Documents; and

1.1.20.4 "as necessary" means all action essential or needed to complete the work in accordance with the Contract Documents and applicable laws, ordinances, construction codes, and regulations.

1.1.20.5 "Design Consultant" means the architect or engineer retained by the City as more specifically defined in Sections 4.1.1 through 4.1.3 hereof.

1.1.20.6 "Program Management Team" is comprised of the Owner, its representatives, the Design Consultant and the Program Manager (if any) for this Work.

1.2 PRELIMINARY MATTERS.

1.2.1 Delivery of Bonds. When Contractor delivers the executed Contracts to City, Contractor shall also deliver to City such bonds as Contractor may be required to furnish, including but not limited to a payment bond in the form and amount specified in the Contract Documents and a performance bond in the form amount specified in the Contract Documents.

1.2.2 Delivery of Evidence of Insurance. Prior to the commencement of any Work under this Contract, Contractor shall furnish an original completed Certificate of Insurance and a copy of all insurance policies, together with all required endorsements thereto, required by the Contract Documents to the Department, or its delegate department, clearly labeled with the name of the Project, which shall furnish and contain all information required by Contract Documents. The Contractor shall be prohibited from commencing the Work and the City shall have no duty to pay or perform under this Contract until such evidence of insurance shall have been delivered to the City. No officer or employee, other than the City's Risk Manager, shall have authority to waive this requirement.

1.2.3 Notice to Proceed and Commencement of Contract Times. Unless otherwise stated in the Notice to Proceed, the Contract Times will commence to run on the earlier of the date work actually commenced, or seven calendar days after issuance of City's Notice to Proceed. No Work shall be done at the Site prior to issuance of the Notice to Proceed.

1.2.4 Submission of Preliminary Schedules. Within ten (10) calendar days after receipt of City's Notice to Proceed (unless otherwise specified elsewhere in the Contract Documents) Contractor shall submit to the Director of Capital Improvements Management Services or his designee the following:

1.2.4.1 As required in Specification 700

1.2.4.2 A Preliminary Schedule of Shop Drawing and Sample Submittals, which shall list each required submittal and the times for submitting, reviewing and processing such submittal; and

1.2.5 Preconstruction Conference. Before any Work at the Site is started, a conference attended by Contractor, Design Consultant and others as appropriate will be held to establish a working understanding among the parties as to the Work and discuss the Preliminary Work Progress Schedule referenced in this Article, procedures for handling Shop Drawings and other submittal, processing Applications for Payment and maintaining required records.

1.3 CONTRACT DOCUMENTS.

1.3.1 Execution of Contract Documents. The Contract Documents shall be signed by Owner and Contractor. If either the Owner or Contractor or both do not sign all of the Contract Documents, the Design Consultant shall identify such unsigned documents to both the Owner and the Contractor upon request. Execution of the Contract by the Contractor is a representation that the Contractor has been provided unrestricted access to the existing improvements and

conditions on the Project Site, that it has thoroughly investigated the visible conditions at the Site and the general local conditions affecting the Work, and that Contractor's investigation was instrumental in preparing its bid or proposal for the Work. Contractor shall not make or be entitled to any claim for any adjustment to the Contract Time or the Contract Sum arising from conditions that Contractor discovered or, in the exercise of reasonable care, should have discovered in Contractor's investigation.

1.3.2 Ownership and Use of Drawings, Specifications and Other Instruments of Service.

1.3.2.1 The Drawings, Specifications and other documents, including those in electronic form, prepared by the Design Consultant, its consultants, or other consultants retained by the City for the Project that describe the Work to be executed by the Contractor (the "Construction Documents") are Instruments Of Service and shall remain the property of their authors whether the Project(s) for which they are made is executed or not. The Contractor shall be permitted to retain one record set. Neither the Contractor nor any Subcontractor, Sub-subcontractor or material or equipment supplier shall own or claim a copyright in the Drawings, Specifications and other documents prepared by the Design Consultant or the Design Consultant's consultants, and unless otherwise indicated the Design Consultant and the Design Consultant's consultants shall be deemed the authors of them and will retain all common law, statutory and other reserved rights, in addition to the copyrights. All copies of Construction Documents, except the Contractor's record set, shall be returned or suitably accounted for to the Design Consultant, on request, upon completion of the Work. The Drawings, Specifications and other documents prepared by the Design Consultant and the Design Consultant's consultants, and copies thereof furnished to the Contractor, are for use solely with respect to this Project. They are not to be used by the Contractor or any Subcontractor, Sub-subcontractor or material or equipment supplier on other projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner, Design Consultant and the Design Consultant's consultants. The Contractor, Subcontractors, Sub-subcontractors and material or equipment suppliers are authorized to use and reproduce applicable portions of the Drawings, Specifications and other documents prepared by the Design Consultant and the Design Consultant's consultants appropriate to and for use in the execution of their Work under the Contract Documents. All copies made under this authorization shall bear the statutory copyright notice, if any, shown on the Drawings, Specifications and other documents prepared by the Design Consultant and the Design Consultant's consultants. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the Design Consultant's or Design Consultant's consultants' copyrights or other reserved rights.

1.3.2.2 All of the Contractor's non-proprietary, documentary Work product, including reports and correspondence to City prepared pursuant to this Contract, shall be the property of the City and, upon completion of this Contract, such documentary Work product shall, upon written request by the City, be promptly delivered to City in a reasonably organized form, without restriction on its future use by City on any additional Work associated with the any of the Projects. For the avoidance of doubt, documentary Work product does not include privileged communications, proprietary information and documents used to prepare Contractor's Bid Proposal.

1.3.2.3 The Contractor may retain for its files any copies of documents it chooses to retain and may use its Work product as it deems fit. Any materially significant Work product lost or destroyed by the Contractor shall be replaced or reproduced at the Contractor's non-reimbursable, sole cost. In addition, City shall have access during normal business hours and following reasonable notice during the time this Contract is in effect, and for four (4) years after the final completion of the Work, to all of Contractor's records and documents covering reimbursable expenses, actual base hourly rates, time cards, annual salary escalation records maintained in connection with this Contract, for purposes of auditing same at the sole cost of the City. The purpose of any such audit

shall be for the verification of such costs. The Contractor shall not be required to keep records of, or provide access to the make up of any negotiated and agreed-to lump sums, unit prices or fixed overhead and profit multipliers. At the conclusion of any City audit, Contractor will be afforded an audit exit conference to review the results of City's audit. Nothing herein shall deny the Contractor the right to retain duplicates. Refusal by the Contractor to comply with the provisions hereof shall entitle City to withhold further payments to Contractor until compliance is obtained.

1.3.2.4 All of the Contractor's documentary Work product shall be maintained within the Contractor's San Antonio offices, unless otherwise authorized by the City. After expiration of this Contract, the Contractor's documents may be archived in the Contractor's central record storage facility.

1.3.3 Correlation and Intent.

1.3.3.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonable inferable from them as being necessary to produce the indicated results. In cases of discrepancy between any drawing and the dimension figures written thereon, the dimension figures shall govern over scaled dimensions; Detailed Drawings and accompanying notations shall govern over general Drawings; Specifications shall govern over Drawings, subject to Section 1.3.3.6; and Special Conditions shall govern over Specifications, Drawings and these General Conditions. The most recent revision of Plans shall control over older revisions.

1.3.3.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

1.3.3.3 Unless otherwise stated in the Contract Documents, words which have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings. Where the phrases "directed by", "ordered by" or "to the satisfaction of" the Design Consultant or the City's Resident Inspector occur, it is to be understood that the directions, orders, or instructions to which they relate are those within the scope of, and authorized by the Contract Documents.

1.3.3.4 Reference to manufacturer's instructions, standard specifications, manuals or codes of any technical society, organization or association, Laws or Regulations of any governmental authority, or to any other documents, 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 Contractor's Bid Proposal except as may be otherwise specifically stated or where a particular issue is indicated. Municipal and utility standards shall govern except in case of conflict with the Specifications. In case of a conflict between the Specifications and the referenced standard, the more stringent shall govern.

1.3.3.5 The most recently issued Document takes precedence over previous issues of the same Document. The order of precedence is as follows with the highest authority listed as "1".

1. Contract Modifications signed by Contractor and Owner.
2. Addenda, with those of later date having precedence over those of earlier date.
3. Special Conditions
4. Supplementary Conditions.
5. Building Construction Services Agreement.
6. General Conditions

- 7. Specifications
- 8. Drawings.

1.3.3.6 Relation of Specifications and Drawings.

1.3.3.6.1 Drawings and Specifications are intended to be equivalent in authority and priority. Should they disagree in themselves, or with each other, prices shall be based on the better quality and greater quantity of work indicated. In the event of the above-mentioned disagreements, the Design Consultant shall determine the resolution.

1.3.3.6.2 Where in the Drawings and Specifications, certain products, manufacturer's trade names, or catalog numbers are given, that is done for the sole and express purpose of establishing a standard of function, dimension, appearance, and quality of design, in harmony with the Work, and is not intended for the purpose of limiting competition. Materials or equipment shall not be substituted unless such substitution has been specifically accepted for use on this Project by the Design Consultant.

1.3.3.7 When the work is governed by reference to standards, building codes, manufacturer's instructions, or other documents, unless otherwise specified, the current edition as of the date of the submission of the bid shall apply.

1.3.3.8 Requirements of public authorities apply as minimum requirements only and do not supersede more stringent specified requirements.

1.3.4 Interpretation. In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an", but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

ARTICLE 2. OWNER

2.1 GENERAL

2.1.1 Owner Defined. The City of San Antonio, Texas, a home-rule, Texas Municipal Corporation located in Bexar County, and identified as "Owner" or as "the City" in the Contract, is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters concerning this Contract requiring the Owner's approval or authorization. ("Owner's Designated Representative" or "ODR") Whenever the term "City" or "Owner" is found in this Contract, such term shall include the City's agents, elected officials, employees, officers, directors, volunteers, and representatives, successors and assigns.

2.1.2 .The Contractor acknowledges that no lien rights exist with respect to public property.

2.2 INFORMATION AND SERVICES TO BE PROVIDED BY OWNER.

2.2.1 The City will provide and maintain the Preliminary Budget developed by the Program Management and general schedule for the Project, if any. The Preliminary Budget will include the anticipated construction cost, contingencies for changes in the Work during construction, and other costs that are the responsibility of the Owner. The general schedule will set forth the Owner's plan for milestone dates and completion of the Project.

2.2.2 Except for permits and fees which are the responsibility of the Contractor under the Contract Documents, the Owner shall secure and pay for necessary approvals, easements,

assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

2.2.3 The Owner shall furnish surveys describing physical characteristics, legal limitations, and utility locations. The furnishing of these surveys and reports shall not relieve the Contractor of any of its duties under the Contract Documents or these General Conditions. Information or services required of the Owner by the Contract Documents shall be furnished by the Owner with reasonable promptness following actual receipt of a written request. It is incumbent upon the Contractor to identify, establish, and maintain a current schedule of latest dates for submittal and approval by the Owner, as required in Section 3.10, including when such information or services must be delivered. If Owner delivers the information or services to the Contractor as scheduled and Contractor is not prepared to accept or act on such information or services, then Contractor shall reimburse Owner for all extra costs incurred of holding, storage, or retention, including redeliveries by the Owner to comply with the current schedule.

2.2.4 Unless otherwise provided in the Contract Documents, the Contractor will be furnished, free of charge, five (5) complete sets of the Plans and Specifications. Additional complete sets of Plans and Specifications, if requested, will be furnished at reproduction cost to the Contractor requesting such additional sets.

2.2.5 Owner's personnel may, but are not required to be present at the construction site during progress of the Work to assist the Design Consultant in the performance of his duties, and to verify the Contractor's record of the number of workmen employed on the Work, their occupational classification, the time each is engaged in the Work, and the equipment used in the performance of the Work for purpose of verification of Contractor's Applications for Payment.

2.2.6 **OWNER'S RIGHT TO STOP THE WORK.** If the Contractor fails to correct Work which is not in accordance with the requirements of the Contract Documents as required by Section 12.2, "CORRECTION OF WORK," or fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the 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 person or entity. This right shall be in addition to, and not in restriction of, the Owner's right under Paragraph 12.2.

2.2.7 **OWNER'S RIGHT TO CARRY OUT THE WORK.** If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a three-day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, after such three-day period, give the Contractor a second written notice to correct such deficiencies within a three-day period. If the Contractor, within such three-day period after receipt of such second notice, fails to commence and continue to correct any deficiencies, the Owner may, without prejudice to other remedies the Owner may have, correct such deficiencies. In such case, an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Design Consultant's additional services made necessary by such default, neglect or failure. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

ARTICLE 3. CONTRACTOR

3.1 GENERAL.

3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The term "Contractor" means the Contractor or the Contractor's authorized representative.

3.1.2 The Contractor shall perform the Work in a good and workmanlike manner except to the extent the Contract Documents expressly specify a higher degree of finish or workmanship.

3.1.3 The Contractor shall not be relieved of obligations, responsibilities or duties to perform the Work in accordance with the Contract Documents either by activities or duties of the Design Consultant in the Design Consultant's administration of the Contract, or by tests, inspections or approvals required or performed by the City or persons other than the Contractor.

3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR.

3.2.1 Since the Contract Documents are complementary, before starting each portion of the Work, the Contractor shall carefully study and compare the various Drawings and other Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner, shall take field measurements of any existing conditions related to that portion of the Work and shall observe any conditions at the Site affecting it. Any error, inconsistencies or omissions discovered by the Contractor shall be reported promptly to the Design Consultant as a Request for Information in such form as the Design Consultant may require.

3.2.1.1 The exactness of grades, elevations, dimensions, or locations given on any Drawings issued by the Design Consultant, or the work installed by other contractors, is not guaranteed by the Design Consultant or the Owner. The Contractor shall, therefore, satisfy itself as to the accuracy of all grades, elevations, dimensions, and locations.

3.2.1.2 In all cases of interconnection of its Work with existing or other work, the Contractor shall verify at the site all dimensions relating to such existing or other work. Any errors due to the Contractor's failure to so verify all such grades, elevations, dimensions, or locations shall be promptly rectified by the Contractor without any additional cost to the Owner.

3.2.2 As between Owner and Contractor, and subject to the provisions of Section 3.2.4 below, Contractor has no responsibility for the timely delivery, completeness, accuracy and/or sufficiency of the Specifications or Drawings (or any errors, omissions, or ambiguities therein), and is not responsible for any failure of the design of the facilities or structures as reflected thereon to be suitable, sound or safe. The Contractor shall be deemed to have satisfied itself as to the design contained in and reflected by the Specifications and the Drawings. In particular, but without prejudice to the generality of the foregoing, the Contractor will review the Contract Documents to establish that:

3.2.2.1 the information is sufficiently complete to perform the Work; and

3.2.2.2 there are no obvious or patent ambiguities, inaccuracies or inconsistencies within or between the documents forming the Contract; and

3.2.2.3 the Contractor can work with the aforementioned Contract Documents so as to perform the Work and of each and every part thereof such that the Work and each and every part thereof will, jointly and severally, be in accordance with the requirements of the Contract Documents and in particular, but without limiting the generality of the foregoing, such that the Work as a whole and, as appropriate, each and every part thereof, shall comply with the requirements of any performance specifications.

3.2.3 Any design errors or omissions noted by the Contractor during its review shall be reported promptly to the Design Consultant, but it is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional unless otherwise specifically provided in the Contract Documents. The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, building codes, and rules and regulations, but any nonconformity discovered by or made known to the Contractor shall be reported promptly to the Design Consultant.

3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions issued by the Design Consultant in response to the Contractor's Notices or Requests for Information the Contractor shall make Claims as provided in Sections 4.3.6 and 4.3.7. If the Contractor fails to perform the obligations of Sections 3.2.1 and 3.2.2, the Contractor shall pay such costs and damages to the Owner as would have been avoided if the Contractor had performed such obligations. The Contractor shall not be liable to the Owner or Design Consultant for damages resulting from errors, inconsistencies or omissions in the Contract Documents or for differences between field measurements or conditions and the Contract Documents unless the Contractor recognized such error, inconsistency, omission or differences and knowing failed to report it to the Design Consultant.

3.2.5 Notwithstanding the delivery of a survey or other documents by the Owner, Contractor shall use reasonable efforts to perform all Work in such a manner so as to avoid damaging any utility lines, cables, pipes, or pipelines on the property. Contractor shall be responsible for, and shall repair at Contractor's own expense, any damage done to lines, cables, pipes, and pipelines identified to Contractor.

3.3 SUPERVISION AND CONSTRUCTION PROCEDURES.

3.3.1 The Contractor shall supervise, inspect and direct the Work competently and efficiently, exercising the skill and attention of a reasonably prudent Contractor, devoting such attention and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, procedures, and for coordinating all portions of the Work under the Contract, unless the Contract Documents give other specific instructions concerning these matters. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences or procedures, the Contractor shall evaluate the jobsite safety thereof and, except as stated below, shall be fully and solely responsible for the jobsite safety of such means, methods, techniques, sequences or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely written notice to the Owner and Design Consultant and shall not proceed with that portion of the Work without further written instructions from the Design Consultant. If the Contractor is then instructed to proceed with the required means, methods, techniques, sequences or procedures without acceptance of changes proposed by the Contractor, the Owner shall be solely responsible for any resulting loss or damage.

3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for or on behalf of the Contractor or any of its Subcontractors.

3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portion are in proper condition to receive subsequent Work.

3.3.4 Contractor shall bear responsibility for design and execution of acceptable trenching and shoring procedures, in accordance with Texas Government Code, Section 2166.303 and Texas Health and Safety Code, Subchapter C, Sections 756.021, et seq.

3.3.5 It is understood and agreed that the relationship of Contractor to Owner shall be that of an independent contractor. Nothing contained herein or inferable herefrom shall be deemed or construed to (1) make Contractor the agent, servant, or employee of the Owner, or (2) create any partnership, joint venture, or other association between Owner and Contractor. Any direction or instruction by Owner in respect of the Work shall relate to the results the Owner desires to obtain from the Work, and shall in no way affect Contractor's independent contractor status as described herein.

3.3.6 The Contractor shall review subcontractor safety programs, procedures, and precautions in connection with performance of the Work. However, the Contractor's duties shall not relieve any subcontractor(s) or any other person or entity (e.g. a supplier), including any person or entity with whom the Contractor does not have a contractual relationship, of their responsibility or liability relative to compliance with all applicable federal, state and local laws, rules, regulations, and ordinances, which shall include the obligation to provide for the safety of their employees, persons, and property and their requirements to maintain a work environment free of recognized hazards. The foregoing notwithstanding, the requirements of this paragraph are not intended to impose upon the Contractor any additional obligations that the Contractor would not have under any applicable state or federal laws including, but not limited to, any rules, regulations, or statutes pertaining to the Occupational Safety and Health Administration.

3.4 LABOR AND MATERIALS.

3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for all labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

3.4.1.1 PREVAILING WAGE RATE AND GENERAL LABOR CONDITIONS. The Provisions of Chapter 2258, Texas Government Code, are expressly made a part of this contract. In accordance therewith, the City will provide Contractor with a schedule of the general prevailing rate of per diem wages in this locality for each craft or type of workman needed to perform this contract prior to the bidding of the Project and this schedule will become a part hereof. The Contractor shall forfeit as a penalty to the City sixty dollars (\$60.00) for each laborer, workman, or mechanic employed, for each calendar day, or portion thereof, that such laborer, workman or mechanic is paid less than the said stipulated rates for any work done under said contract, by the contractor or any subcontractor under him. The establishment of prevailing wage rates pursuant to Chapter 2258, Texas Government Code shall not be construed to relieve the Contractor from his obligation under any Federal or State Law regarding the wages to be paid to or hours worked by laborers, workmen or mechanics insofar as applicable to the work to be performed hereunder. The Contractor, in the execution of this Project, agrees that he shall not discriminate in his employment practices against any person because of race, color, creed, sex or origin. The Contractor agrees that he/she will not engage in employment practices which have the effect of discriminating against employees or prospective employees because of race, color, religion, national origin, sex, age, handicap or political belief or affiliation. In addition, Contractor agrees that he/she will abide by all applicable terms and City "General Conditions" governing wages and labor standards and practices, established by City ordinance 60110, amended by City ordinance 71312 and 2008-11-20-1045, and provisions of the Nondiscrimination Clause and the Small and/or Minority Business Advocacy Clause as contained in the City of San Antonio's current Affirmative Action Plan on file in the City Clerk's Office.

3.4.2 Substitutions.

3.4.2.1 Substitutions and alternates may be rejected without explanation and will be considered only under one or more of the following conditions: (i) the proposal is required for compliance with interpretation of code requirements or insurance regulations then existing; (ii) specified products are unavailable through no fault of the Contractor (iii) and when in the judgment of the Owner or the Design Consultant, a substitution would be substantially in the Owner's best interests in terms of cost, time, or other considerations.

3.4.2.2 The Contractor must submit to the Design Consultant and the Owner (i) a full explanation of the proposed substitution and submittal of all supporting data, including technical information, catalog cuts, warranties, test results, installation instructions, operating procedures, and other like information necessary for a complete evaluation of the substitution; (ii) a written explanation of the reasons the substitution is necessary, including the benefits to the Owner and the Work in the event the substitution is acceptable; (iii) the adjustment, if any, in the Contract Sum; (iv) the adjustment, if any, in the time of completion of the Contract and the construction schedule; and (v) and in the event of a substitution under clause (ii) of Section 3.4.2.1, an affidavit stating the (a) the proposed substitution conforms to and meets all the requirements of the pertinent Specifications and the requirements shown on the Drawings, and (b) the Contractor accepts the warranty and correction obligations in connection with the proposed substitution as if originally specified by the Design Consultant. Proposals for substitutions shall be submitted in triplicate to the Design Consultant in sufficient time to allow the Design Consultant no less than twenty-one (21) working days for review. No substitutions will be considered or allowed without the Contractor's submittal of complete substantiating data and information as stated hereinbefore.

3.4.2.3 In the event of substitution under clause (ii) of Section 3.4.2.1, and whether or not any such proposed substitution is accepted by the Owner or the Design Consultant, the Contractor shall reimburse the Owner for any fees charged by the Design Consultant or other consultants for evaluating each proposed substitute.

3.4.3 Except as otherwise required for safety or protection of persons or the Work or property at the Site or adjacent thereto, no Work will be allowed by Owner between the hours of 10:00 p.m. and 6:00 a.m. of the following day unless directed by the ODR or requested in writing by Contractor and approved by the Director of Capital Improvements Management Services or its Designee Department Director.

3.4.4 The Contractor shall at all times enforce strict discipline and good order among persons working on the Project, and shall not employ or continue to employ any unfit person on the project or any person not skilled in the assigned work. The Contractor shall be responsible to the Owner for all acts and omissions of its employees, all tiers of its Subcontractors, material suppliers, anyone whom the Contractor may allow to perform any Work on the Project, and their respective officers, agents, employees, and consultants whom the Contractor may allow to come on the job site with the exception of the Owner, the Design Consultant, and the Program Management Team. In addition, if the Contractor receives written notice from the Owner complaining about any Subcontractors or employees or anyone who is a hindrance to proper or timely execution of the Work, Contractor shall remedy such complaint without delay to the Project and at no additional cost to the Owner. This provision shall be included in all contracts between the Contractor and all Subcontractors of all tiers.

3.4.5 The Contractor recognizes that the Project Site is a public facility which represents the City of San Antonio, and the Contractor shall prohibit the possession or use of alcohol, controlled substances, tobacco, and any prohibited weapons on the Project Site and shall require adequate dress of the Contractor's forces consistent with the nature of the work being performed, including wearing shirts at all times. Sexual harassment of employees of the Contractor or employees of the Owner by employees of the Contractor is strictly forbidden. Any employee of the Contractor who is found to have engaged in such conduct shall be subject to appropriate disciplinary action by the Contractor, including removal from the job Site.

3.4.6 The Contractor shall only employ or use labor in connection with the Work capable of working harmoniously with all trades, crafts, and any other individuals associated with the Project.

3.4.7 All materials and equipment shall be as specified in the Contract Documents, and if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. If required by the Design Consultant, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind and quality of materials and equipment.

The Contractor may make substitutions only with the consent of the Owner, after Contractor's compliance with Section 3.4.2 hereof.

3.4.8 All materials shall be shipped, stored and handled in a manner that will protect and ensure their condition at the time of incorporation in the Work. After installation, all materials shall be properly protected against damage to ensure their being in the condition required by Section 3.5.1 when the Work is Substantially Completed or Owner takes over use and occupancy, whichever is earlier.

3.4.9 The Contractor shall procure and furnish to the Owner all guarantees, warranties, spares and maintenance manuals that are called for by the Specifications or that are normally provided by a manufacturer. The maintenance manual shall include a catalog and price list for any equipment, materials, supplies, or parts used in the inspection, calibration, maintenance or repair of the equipment. Items in the catalog shall be readily available for purchase.

3.4.10 During construction of the Work and for four years after final completion, the Contractor shall retain and shall require all Subcontractors to retain for inspection and audit by the City all books, accounts, reports, files, time cards, material invoices, payrolls, and evidence of all other direct or indirect costs related to the bidding and performance of this Work. Upon request by the Owner, a legible copy or the original of any or all such records shall be produced by the Contractor at the administrative office of the Owner. To the extent that it requests copies of such documents, the City will reimburse the Contractor and its Subcontractors for copying costs. The Contractor shall not be required to keep records of, or provide access to the make up of any negotiated and agreed-to lump sums, unit prices or fixed overhead and profit multipliers.

3.5 **WARRANTY.**

3.5.1 The Contractor warrants to the Owner that materials and equipment furnished under the Contract will be of good quality and new unless otherwise required or permitted by the Contract Documents, that the Work will be free from defects not inherent in the quality required or permitted, and that the Work will conform to the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, modifications not executed by the Contractor, improper or insufficient maintenance, improper operation, normal wear and tear and normal usage, and additional damage or defects caused by Owner's failure to promptly notify Contractor. If required by the Owner, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

3.5.2 The Contractor agrees to assign to the Owner, at the time of final completion of the Work, any and all manufacturer's warranties relating to materials and labor used in the Work and further agrees to perform the Work in such manner so as to preserve any and all such manufacturer's warranties; provided that such assignment shall contain a reservation of Contractor's right to also enforce the manufacturer's warranties. As a condition precedent to final payment, the Contractor shall submit to Owner a complete set of warranties from subcontractors, manufacturers, or suppliers as appropriate, and executed by Contractor as required, with, as between Owner and Contractor, a warranty commencement date as required by the Contract Documents.

3.5.3 A right of action by the Owner for any breach of the Contractor's express warranty herein shall be in addition to, and not in lieu of, any other remedies Owner may have under this Contract, at law, or in equity regarding any defective Work.

3.5.4 The warranty provided in paragraph 3.5.1 shall be in addition to and not in limitation of any other warranty or remedy required by law or by the Contract Documents, and such warranty shall be interpreted to require Contractor, upon written timely demand by Owner, to replace defective materials and equipment and re-execute defective Work which is disclosed to the Contractor by the Owner within a period of one (1) year after (i) Substantial Completion of the applicable Work,

(ii) such earlier date contemplated by Section 9.9 or, (iii) in the event of a latent defect, within one (1) year after discovery thereof by Owner.

3.5.5 The Contractor shall issue in writing to the Owner, as a condition precedent to final payment, a "General Warranty" reflecting the terms and conditions of paragraphs 3.5.1 and 3.5.2 for all Work under the Contract Documents. This General Warranty shall be assignable. Submittal of all warranties and guarantees are required as a prerequisite to the final payment.

3.5.6 Except when a longer warranty time is specifically called for in the Specification Sections or is otherwise provided by law, the General Warranty shall be for twelve (12) months and shall be in form and content otherwise reasonably satisfactory to the Owner. Owner and Contractor acknowledge that the Project may involve construction work on more than one (1) building for the Owner. Each building, or approved phase of each building, shall have its own, separate, and independent date of Substantial Completion or final completion. Contractor shall maintain a complete and accurate schedule of the dates of Substantial Completion, dates upon which the one year warranty on each phase or building which is substantially complete will expire. Contractor agrees to provide notice of the warranty expiration date to Owner and Design Consultant at least one month prior to the expiration of the one year warranty period on each building or each phase of the building which has been substantially completed. Prior to termination of the one year warranty period, Contractor shall accompany the Owner and Design Consultant on reinspection of the building and be responsible for correcting any reasonable additional deficiencies not caused by the Owner or by the use of the building which are observed or reported during the reinspection. For extended warranties required by the Contract Documents, Owner will notify the Contractor of deficiencies and Contractor shall start remedying these defects within seven (7) days of initial notification from Owner. Contractor shall prosecute the work without interruption until accepted by the Owner and the Design Consultant, even though such prosecution should extend beyond the limit of the warranty period. If Contractor fails to provide notice of the expiration of the one-year warranty period at least one month prior to the expiration date, Contractor's warranty obligations described in this paragraph shall continue until such inspection is conducted and any deficiencies found in the inspection corrected.

3.5.7 Warranties shall become effective on a date established by the Owner and Design Consultant in accordance with the Contract Documents. This date shall be the Date of Substantial Completion of the entire Work, unless otherwise provided in any Certificate of Partial Substantial Completion approved by the parties, except for work to be completed or corrected after the date of Substantial Completion and prior to final payment. Warranties for Work to be completed or corrected after the date of Substantial Completion and prior to Final Completion shall become effective on the later of the date the Work is completed or corrected and accepted by the Owner and Design Consultant or the date of final completion of the Work.

3.5.8 Neither final payment nor compliance by the Contractor with any provision in the Contract Documents shall constitute an acceptance of Work not done in accordance with the Contract Documents or relieve the Contractor or its sureties of liability with respect to any warranties or responsibility for faulty materials and workmanship. The Contractor warrants that the Work will conform to the requirements of the Contract Documents.

3.6 **TAXES.** The Contractor will not include in the Contract Sum or any Modification any amount for sales, use, or similar taxes for which (1) the City is exempt, and (2) the Owner has provided the Contractor with a tax exemption certificate or other documentation necessary to establish the Owner's exemption from such taxes.

3.7 **PERMITS, FEES AND NOTICES.**

3.7.1 **Permits.** Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit and other permits and governmental fees, licenses, and inspections necessary for proper execution and completion of the Work which are customarily secured after execution of the Contract and which are legally required when bids are received or

negotiations concluded. Owner and Design Consultant shall assist Contractor, when necessary, in obtaining such permits and licenses.

3.7.2 The Contractor shall comply with and give notices required by laws, ordinances, rules, regulations and lawful orders of public authorities applicable to performance of the Work.

3.7.3 It is not the Contractor's responsibility to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, building codes, and rules and regulations. However, if the Contractor observes that portions of the Contract Documents are at variance therewith, the Contractor shall promptly notify the Design Consultant and Owner in writing, and necessary changes shall be accomplished by appropriate Modification before the Work affected by such modification is performed.

3.7.4 If the Contractor performs Work knowing it to be contrary to laws, statutes, ordinances, building codes, and rules and regulations without such notice to the Design Consultant and Owner, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

3.7.5 The Contractor shall also assist Owner in obtaining all permits and approvals, and pay all fees and expenses, if any, associated with National Pollutant Discharge Elimination System (NPDES) regulations administered by the Environmental Protection Agency (EPA) and local authorities, if applicable, that require completion of documentation and/or acquisition of a "Land Disturbing Activities Permit" for the Project. Contractor's obligations under this paragraph do not require it to perform engineering services during the pre-construction phase to prepare proper drainage for the Site. However, any drainage alterations made by Contractor during the construction process which require the issuance of a permit shall be at Contractor's sole cost.

3.8 ALLOWANCES.

3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

3.8.2 Unless otherwise provided in the Contract Documents:

3.8.2.1 Allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;

3.8.2.2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit and other expenses contemplated for stated allowance shall be included in the Contract Sum but not in the allowances;

3.8.2.3 Whenever actual costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect: (1) the difference between actual costs and the allowances under Section 3.8.2.1, and (2) changes in Contractor's costs under Section 3.8.2.2.

3.8.3 Materials and equipment under an allowance shall be selected by the Owner within such time as is reasonably specified by the Contractor as necessary to avoid delay in the Work.

3.9 SUPERINTENDENT.

3.9.1 At all times during the progress of the Work Contractor shall assign a competent resident superintendent, able to communicate fluently in English, and any necessary assistants, all satisfactory to the Director of Capital Improvements Management Services or Designee Department Director, as applicable. Any Superintendent designee shall be identified in writing to the ODR promptly after Owner issues written Notice to Proceed. The Superintendent shall represent the Contractor and all directions given to him shall be binding on the Contractor. The

designated Superintendent shall not be replaced without written notice to the ODR and approval of the Director, which approval will not be unreasonably withheld, except with good reason (including any termination or disability of the Superintendent) or under extraordinary circumstances. The Superintendent may not be employed on any other project prior to Final Completion of the Work, without the approval of the Director, which approval will not be unreasonably withheld.

3.9.2 The Contractor shall furnish a list to the Design Consultant of all engineers, consultants, job-site superintendents, subcontractors and suppliers involved in construction. The Design Consultant shall provide such information to the Owner.

3.9.2.1 The Owner, upon the showing of good and reasonable cause, may reject or require removal of any engineer, consultant, job superintendent, or employee of the Contractor, Subcontractor or Sub-subcontractor involved in the Project.

3.9.2.2 Contractor shall provide an adequate staff for the proper coordination and expedition of the Work. Owner reserves the right to require Contractor to dismiss from the Work any employee or employees that Owner may deem incompetent, careless, insubordinate, or in violation of any provision in these Contract Documents. This provision is applicable to Subcontractors, Sub-subcontractors and their employees.

3.9.2.3 The Owner reserves the right to utilize one or more of its employees to function in the capacity of the City's Inspector, whose primary function will be daily inspections, checking pay requests, construction timelines, and storage of supplies and materials.

3.10 **CONTRACTOR'S WORK PROGRESS SCHEDULES.**

3.10.1 The Work Progress Schedule and successive updates or revisions thereof are for the Contractor's use in managing the Work. The Work Progress Schedule is for the information of the Owner and to demonstrate that the Contractor has complied with requirements for planning the Work. The Owner's acceptance of a schedule and schedule updates or revisions constitutes the Owner's agreement to coordinate its own activities with the Contractor's activities as shown on the schedule.

3.10.1.1 Acceptance of the Work Progress Schedule, or update and/or revision thereto, does not indicate any approval of the Contractor's proposed sequences and duration.

3.10.1.2 Acceptance of a Work Progress Schedule update or revision indicating early or late completion does not constitute the Owner's consent to any changes, alter the terms of the Contract, waive either the Contractor's responsibility for timely completion, or waive the Owner's right to damages for the Contractor's failure to do so.

3.10.1.3 The Contractor's scheduled dates for completion of any activity or of the entire Work do not constitute a change in terms of the Contract. Change Orders are the only method of modifying the completion date(s) and Contract Times.

3.10.2 Submittal of a schedule, schedule revision or schedule update constitutes the Contractor's representation to the Owner, as of the date of the submittal, of the accurate depiction of all progress to date and that the Contractor will follow the schedule as submitted in performing the Work.

3.10.3 Schedule Updates. The Work Progress Schedule and the Submittal Schedule shall be updated monthly, as a minimum, to reflect progress to date and current plans for completing the Work. A paper and an electronic copy of the update shall be submitted to the Design Consultant and ODR as directed. The Owner has no duty to make progress payments unless accompanied by the updated Work Progress Schedule. The anticipated date of Substantial Completion shall show all extensions of time granted through Change Order(s) as of the date of the update. The Contractor, after coordination and consultation with the Owner, may revise the Work Progress

Schedule logic only with the Owner's concurrence, which will not be unreasonably withheld, when, in the Contractor's judgment, it becomes necessary for the management of the Work. The Contractor shall identify all proposed changes to schedule logic to Owner and to the Design Consultant via an Executive Summary accompanying the updated schedule for review prior to implementation of any revisions.

3.10.3.1 Each schedule shall segregate the Work into a sufficient number of activities to facilitate the efficient use of critical path method scheduling by the Contractor, Owner, and Design Consultant. Each schedule activity shall be assigned a cost value consistent with the Schedule of Values so as to allow the Owner and Contractor to project cash flow for the Project.

3.10.3.2 Each schedule shall include activities representing manufacturing, fabrication, or ordering lead time for materials, equipment, or other items for which the Design Consultant is required to review submittals, shop drawings, product data, or samples.

3.10.3.3 Each schedule, other than the initial schedule, shall indicate the activities, or portions thereof, which have been completed; shall reflect the actual time for completion of such activities; and shall reflect any changes to the sequence or planned duration of all activities.

3.10.3.4 If any updated schedule exceeds the time limits set forth in the Contract Documents for Substantial Completion of the Work, the Contractor shall include with the updated schedule a statement of the reasons for the anticipated delay in Substantial Completion of the Work and the Contractor's planned course of action for completing the Work within the time limits set forth in the Contract Documents. If the Contractor asserts that the failure of the Owner or the Design Consultant to provide information to the Contractor is the reason for anticipated delay in completion, the Contractor shall also specify what information is required from the Owner or Design Consultant.

3.10.3.5 Neither the Owner nor the Contractor shall have exclusive ownership of float time in the schedule, and all float time shall inure to the benefit of the project. The Contractor agrees to use its best efforts not to sequence the Work or assign activity duration so as to produce a schedule in which more than one-fourth of the remaining activities have no float time.

3.10.3.6 Submission of any schedule under this Contract constitutes a representation by the Contractor that as of the date of the submittal: (1) the schedule represents the sequence in which the Contractor intends to prosecute the remaining Work; (2) the schedule represents the actual sequence and duration used to prosecute the completed Work; (3) that to the best of its knowledge and belief the Contractor is able to complete the remaining Work in the sequence and time indicated; and, (4) that the Contractor intends to complete the remaining work in the sequence and time indicated.

3.10.4 Completion of Work. The Contractor is accountable for Substantially Completing the Work in the Contract Time, or as otherwise amended by Change Order.

3.10.4.1 If, in the judgment of the Owner, the Schedule update reflects that the Work is behind schedule and the rate of performance of the Work is inadequate to regain scheduled progress to insure timely Substantial Completion of the entire Work or a separable portion thereof, the Contractor, when so informed by the Owner, shall immediately take action to increase the rate of Work performance by: increasing working forces; increasing equipment or tools; increasing hours of work or number of shifts; expediting delivery of materials; changing, with the approval of the Owner, the schedule logic and Work sequences; or taking other action proposed if acceptable to Owner.

3.10.4.2 Within ten (10) calendar days after such notice from the Owner or the ODR, the Contractor shall notify the ODR in writing of the specific measures taken and/or planned

to increase the rate of progress. The Contractor shall include an estimate as to the date of scheduled progress recovery and an updated Work Progress Schedule illustrating the Contractor's plan for achieving timely completion of the project.

3.10.4.3 Should the ODR deem the plan of action inadequate, the Owner shall have the right to order the Contractor to take corrective measures necessary to expedite the progress of construction, including, without limitations, (i) working additional shifts of overtime, (ii) supplying additional manpower, equipment and facilities, and (iii) other similar measures (hereinafter referred to collectively as "Extraordinary Measures"). Such Extraordinary Measures shall continue until the progress of the Work complies with the stage of completion required by the Contract Documents.

3.10.4.4 The Owner's right to require Extraordinary Measures is solely for the purpose of ensuring the Substantial Completion of the Work within the Contract Time. The Contractor shall not be entitled to an adjustment in the Contract Sum in connection with Extraordinary Measures required by the Owner under or pursuant to this Section, except as may be provided under the provisions of Article 4.3.11.

3.10.4.5 The Owner may exercise the rights furnished the Owner under or pursuant to this Section 3.10.5 as frequently as the Owner deems necessary to ensure that the Contractor's performance of the Work will comply with any Milestone Date or completion date set forth in the Contract Documents.

3.10.5 If reasonably required by Owner, Contractor shall also prepare and furnish Project cash flow projections, manning data for critical activities, and schedules for the purchase and delivery of all critical equipment and material, together with periodic updating thereof.

3.10.6 The Contractor shall recommend to the Owner and to the Design Consultant a schedule for procurement of long-lead time items, which will constitute part of the Work as required to meet the project schedule

3.10.7 This Article pertains to construction phase schedules. Additional requirements for design phase scheduling for Construction Manager-at-Risk and Design Build contracts are outlined in Division 1 Project Planning and Scheduling Specification. Refer to Special Conditions and Division 1 General Administration Specifications for additional schedule requirements.

3.11 DOCUMENTS AND SAMPLES AT THE SITE.

3.11.1 The Contractor shall maintain at the Site for the Owner one record copy of the Drawings, Specifications, Addenda, Change Orders and other Amendments, in good order and currently marked, to record field changes and selections made during construction, and one record copy of approved Shop Drawings, Product Data, Samples and similar required submittals. These shall be available to the Design Consultant and shall be delivered to the Design Consultant for submittal to the Owner upon completion of the Work.

3.11.2 Contractor shall at all times maintain job records, including, but not limited to, invoices, payment records, payroll records, daily reports, logs, diaries, and job meeting minutes applicable to the Project. Contractor shall make such reports and records available to inspection by the Owner, Design Consultant, or their respective agents, within five (5) working days of request by Owner, Design Consultant, or their respective agents.

3.12 SHOP DRAWINGS, PRODUCE DATA AND SAMPLES

3.12.1 Shop Drawings are drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are prepared and furnished by the Contractor or its agents, manufacturers, suppliers or distributors, and which illustrate and detail some portion of the Work.

3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

3.12.3 Samples are physical samples of materials, equipment, or workmanship that are representative of some portion of the Work, furnished by the Contractor to Owner to assist Owner and Design Consultant in the establishment of workmanship and quality standards by which the Work will be judged.

3.12.4 Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents. The purpose of their submittal is to demonstrate, for those portions of the Work for which submittals are required by the Contract Documents, the way by which the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents. Review by the Design Consultant is subject to the limitations of Section 4.2.8. Informational submittals upon which the Design Consultant is not expected to take responsive action may be so identified in the Contract Documents. Submittals which are not required by the Contract Documents may be returned by the Design Consultant without action.

3.12.5 The Contractor shall review for compliance with the Contract Documents, approve and submit to the Design Consultant Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of separate contractors. Submittals which are not marked as reviewed for compliance with the Contract Documents and approved by the Contractor may be returned by the Design Consultant without action.

3.12.6 By approving and submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents that the Contractor has determined and verified materials, field measurements and filed construction criteria related thereto, or will do so, and has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been approved by the Design Consultant. The Design Consultant will review and return such submittals within ten (10) working days or within a reasonable period so as to not delay the project.

3.12.8 The Work shall be in accordance with approved submittals, except that the Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Design Consultant's approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Design Consultant in writing of such deviation at the time of submittal and (1) the Design Consultant has given written approval in the specific deviation as a minor change in the Work, or (2) a Change Order or Field Work Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Design Consultant's approval thereof.

3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples or similar submittals, to revisions other than those requested by the Design Consultant on previous submittals. In the absence of such written notice, the Design Consultant's approval of a resubmission shall not apply to such revisions.

3.12.10 The Contractor shall not be required to provide professional services which constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. The Contractor shall not be required to provide professional services in violation of applicable law. If professional design services or certifications

by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Design Consultant will specify all performance and design criteria that such services must satisfy. The Contractor shall cause such services or certifications to be provided by a properly licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Design Consultant. The Owner and the Design Consultant shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided the Owner and Design Consultant have specified to the Contractor all performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Design Consultant will review, approve or take other appropriate action on submittals only for the limited purpose of checking of conformance with information given and the design concept expressed in the Contract Documents. The Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

3.13 USE OF SITE

3.13.1 Contractor shall confine construction equipment, the storage of materials and equipment and the operations of workers to areas permitted by law, ordinances, permits, or the requirements of the Contract Documents, and shall not unreasonably encumber the premises with construction equipment or other materials or equipment.

3.13.2 Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

3.13.3 The Contractor will abide by all applicable rules and regulations of the Owner with respect to conduct, including smoking, parking of vehicles, security regulations and entry into adjacent facilities owned by the City.

3.13.4 The Contractor shall provide access to residents and businesses affected by the construction of this project to the greatest extent possible, including temporary base and asphalt.

3.13.5 The owner will have appropriate Temporary Bench Marks (TBM) and baseline (horizontal and vertical) established. As of the date of notice to proceed, it will be the Contractor's responsibility to protect, preserve and reestablish (if required) the TBM and/or baseline. Construction staking and tolerances shall be in accordance with the "Manual of Practice for Land Surveying in the State of Texas Category 5".

The Contractor shall layout his work from established baseline and TBM indicated on the drawings, and shall be responsible for all measurements in connection with the layout. The Contractor shall furnish, at his own expense, all stakes, templates, platforms, equipment, tools, materials, and labor required to layout any part of the work. The contractor shall provide cut sheets to the City's inspector seven (7) days prior to construction of street and drainage work. The Contractor shall establish the necessary offsets, hubs and guards marked showing control designation and offsets for SAWS Work. The Contractor shall provide cut sheets for improvements where Sewer profiles are provided for various phases of the project and cut sheets for Water profiles if applicable. The Contractor is to provide staking and preparation of cut sheets after receiving notice to proceed from COSA. The Contractor shall provide SAWS with cut sheets (7) days prior to commence of SAWS work. The Contractor shall be responsible for maintaining and preserving baseline and TBM indicated on the drawings for duration of construction. If such marks are destroyed, the Contractor shall replace them at his own expense. At the end of construction of the project, the Contractor shall provide the City a grade certificate prepared by a Registered Professional Land Surveyor. This certificate should state that the infrastructure is constructed in accordance to the construction documents or as approved by the owner and Engineer of Record which is noted on the record plan set.

3.14 CUTTING AND PATCHING

3.14.1 The Contractor shall be responsible for cutting, fitting or patching required to complete the Work or to make its parts fit together properly

3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or separate contractors by cutting, patching or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter such construction by the Owner or a separate contractor except with written consent of the Owner and of such separate contractor, which consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold from the Owner or a separate contractor the Contractor's consent to cutting or otherwise altering the Work.

3.14.3 Any part of the finished Work damaged during installation or prior to Substantial Completion of the Work (or such earlier date established in Section 9.9) shall be repaired so as to be equal in quality, appearance, serviceability and other respects to an undamaged item or part of the Work. Where this cannot be fully accomplished the damaged item or part shall be replaced.

3.15 CLEANING UP.

3.15.1 During the progress of the Work, Contractor shall keep the Site and surrounding area free from accumulations of waste materials, rubbish, and other debris resulting from the Work. Contractor shall clean, sweep, mop, brush and polish, as appropriate, the interior of the improvements or renovated areas, including but not limited to, any floors, carpeting, ducts, fixtures, and ventilation units operated during construction, and shall clean exterior gutters, drainage, walkways, driveways and roofs of debris. If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the cost therefore shall be charged to the Contractor

3.15.2 Prior to Substantial Completion of the Work, Contractor shall remove all waste materials, rubbish and debris from and about the premises as well as all tools, appliances, construction equipment and machinery, and surplus materials, and shall leave the site clean and ready for occupancy, by Owner. Contractor shall clean, sweep, mop, brush and polish, as appropriate, the interior of the improvements or renovated areas, including but not limited to, any floors, carpeting, ducts, fixtures, and ventilation units operated during construction, and shall clean exterior gutters, drainage, walkways, driveways and roofs of debris. Contractor shall restore to their original condition those portions of the Site not designated for alteration by the Contract Documents. If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the cost therefore shall be charged to the Contractor.

3.16 ACCESS TO WORK. The Contractor shall provide the Owner and Design Consultant access to the Work in preparation and in progress wherever located.

3.17 PATENT FEES AND ROYALTIES.

3.17.1 Contractor shall pay all license fees and royalties and assume all costs incident to the use of 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 Owner 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 shall be disclosed by Owner in the Contract Documents.

3.18 INDEMNITY PROVISIONS.

Contractor covenants and agrees to **HOLD HARMLESS and UNCONDITIONALLY INDEMNIFY, PROTECT and DEFEND** the City, its elected officials, employees, officers, directors, volunteers and representatives of the City, individually or collectively, from and against any and all third party claims, demands, actions, liabilities, liens, losses, damages, costs and expenses, of every kind and character whatsoever, including without limitation by enumeration the amount of any judgment, penalty, interest, court costs and reasonable legal fees incurred in connection with the same, or the defense thereof, for or in connection with loss of life or personal injury (including employees of Contractor and of Owner) damage to property (other than the Work itself and including property of Contractor and of Owner), but only to the extent caused by the negligent acts or omissions of, or incident to or in connection with or resulting from the negligent acts or omissions of, Contractor, its agents, servants, and employees, or its subcontractors and their agents, servants, and employees, in connection with the Work to be performed, services to be rendered, or materials to be furnished, under this Contract. Notwithstanding anything to the contrary included herein, in no event shall the Contractor be liable for claims arising out of accidents resulting from the sole negligence of Owner, all without however, waiving any governmental immunity available to the City under Texas Law and without waiving any defenses of the parties under Texas Law.

3.18.2 In addition to the above, Contractor also covenants and agrees to **HOLD HARMLESS and UNCONDITIONALLY INDEMNIFY, PROTECT and DEFEND** the City, its elected officials, employees, officers, directors, volunteers and representatives of the City, individually or collectively, from and against any and all third party claims, demands, actions, liabilities, liens, losses, damages, costs and expenses, of every kind and character whatsoever, including without limitation by enumeration the amount of any judgment, penalty, interest, court costs and reasonable legal fees incurred in connection with the same, or the defense thereof, for or in connection with loss of life or personal injury (including employees of Contractor and of Owner) damage to property (other than the Work itself and including property of Contractor and of Owner), but only to the extent caused by the intentional or deliberate misconduct, grossly negligent, willful acts or omissions of, Contractor, its agents, servants, and employees, or its subcontractors and their agents, servants, and employees, or in connection with the Work to be performed, services to be rendered, or materials to be furnished, under this Contract, including but not limited to violations of any statute, regulation, ordinance or provision of this Contract. Notwithstanding anything to the contrary included herein, in no event shall the Contractor be liable for claims arising out of accidents resulting from the sole negligence of Owner, all without however, waiving any governmental immunity available to the City under Texas Law and without waiving any defenses of the parties under Texas Law.

3.18.3 **Intellectual Property Indemnification** Contractor shall protect, indemnify, and defend and/or handle at its own cost and expense any claim or action against City, its elected officials, employees, officers, directors, volunteers and representatives of the City, individually or collectively, for infringement of any United States Patent, copyright or similar property right including, but not limited to, misappropriation of trade secrets and any infringement by Contractor and its employee or its subcontractors and their agents, servants, and employees, based on any deliverable or any other materials furnished hereunder by the Contractor, and used by either City or Contractor within the scope of this agreement (unless said infringement results directly from Contractor's compliance with City's written standards or specifications). Contractor does not warrant against infringement by reason of Owner's or Design Consultant's design of articles or their use in combination with other materials or in the operation of any process. Contractor shall have the sole right to conduct the defense of any such claim or action and all negotiations for its settlement or compromise, unless otherwise mutually agreed upon and expressed in writing signed by the parties hereto. Contractor agrees to consult with the City Attorney during such defense or negotiations, and make good faith efforts to avoid any position adverse to the interest of the City. City will make available to Contractor any deliverables and/or works made for hire by Contractor which are necessary to the defense of Contractor against any claim of infringement for the duration of Contractor's legal defense.

3.18.4 If such infringement claim or action has occurred or, in Contractor's judgment is likely to occur, City shall allow the Contractor at Contractor's option and expense, (unless such infringement results directly from Contractor's compliance with City's written standards or specifications or by reason of City's or Design Consultants' design of articles or their use in combination with other materials or in the operation of any process for which the City shall be liable) to either: (a) procure for City the right to continue using said deliverable and/or materials; (b) modify such deliverable and/or materials to become non-infringing (provided that such modification does not adversely affect City's intended use of the deliverable and/or materials as contemplated hereunder); (c) replace said deliverable and/or materials with an equally suitable, compatible and functionally equivalent non-infringing deliverable and/or materials at no additional charge to City; or (d) if none of the foregoing alternatives is reasonably available to Contractor, upon written request City shall return the deliverable and/or materials in question to Contractor and Contractor shall refund all monies paid by City with respect to such deliverable and/or materials and accept return of same. If any such cure provided for in this Section shall fail to satisfy the third-party claimant, these actions shall not relieve Contractor from its defense and indemnity obligations set forth in this Article.

3.18.5 The indemnification obligations under this Article 3.18 shall not be limited in any way by the limits of any insurance coverage or any limitation on the amount or type of damages, compensation, or benefits payable by, for, or to Contractor or any subcontractor, supplier, or any other individual or entity under any insurance policy, workers' compensation acts, disability benefit acts, or other employee benefits acts.

3.18.6 Workmen Safety. The indemnification hereunder shall include, without limiting the generality of the foregoing, liability which could arise to the Owner, its agents, consultants, and representatives or the Design Consultant pursuant to State statutes for the safety of workmen and in addition, all Federal statutes and rules existing there under for protection, occupational safety and health to workmen. It is agreed that the primary obligation of the Contractor is to comply with these statutes in the performance by Contractor of the Work and that the obligations of the Owner, its agents, consultants, and representatives under said statutes are secondary to that of the Contractor.

3.18.7 Other Provisions Regarding Indemnity.

3.18.7.1 The provisions of this indemnification are solely for the benefit of the Parties hereto and are not intended to create or grant any rights, contractual or otherwise, to any other person or entity.

3.18.7.2 The indemnities contained herein shall survive the termination of this Contract for any reason whatsoever.

3.18.7.3 Contractor shall promptly advise the City in writing of any claim or demand against the City or Contractor, as the case may be, known to Contractor, related to or arising out of Contractor's activities under this Contract, and shall see to the investigation and defense of such claim or demand at Contractor's cost. The City shall have the right, at its option and at its own expense, to participate in such defense without relieving Contractor of any of its obligations under this Article.

3.18.7.4 Defense Counsel. City shall have the right to approve defense counsel of which approval will not be unreasonably withheld, to be retained by Contractor in fulfilling its obligation hereunder to defend and indemnify City, unless such right is expressly waived by City in writing. Contractor shall retain City approved defense counsel within seven (7) business days of City's written notice that City is invoking its right to indemnification under this Contract. If Contractor fails to retain counsel within such time period, City shall have the right to retain defense counsel on its own behalf and Contractor shall be liable for all costs incurred by City. City shall also have the right, at its option, to be represented by

advisory counsel of its own selection and at its own expense, without waiving the foregoing.

3.19 **REPRESENTATIONS AND WARRANTIES.** The Contractor represents and warrants the following to the Owner (in addition to the other representations and warranties contained in the Contract Documents), as an inducement to the Owner to execute this Contract, which representations and warranties shall survive the execution and delivery of the Contract and the Final Completion of the Work:

3.19.1 that it is financially solvent, able to pay its debts as they mature and possessed of sufficient working capital to complete the Work and perform its obligations under the Contract Documents;

3.19.2 that it is able to furnish the plant, tools, materials, supplies, equipment and labor required to complete the Work and perform its obligations hereunder and has sufficient experience and competence to do so;

3.19.3 that it is authorized to do business in the State of Texas and properly licensed by all necessary governmental and public quasi-public authorities having jurisdiction over it and over the Work and the site of the Project;

3.19.4 that the execution of the Contract and its performance thereof is within its duly authorized powers; and

3.19.5 that its duly authorized representative has visited the Site of the Work, familiarized itself with the local conditions under which the Work is to be performed and correlated its observations with the requirements of the Contract Documents.

3.20 **BUSINESS STANDARDS.** Contractor, in performing its obligations under Contract, shall establish and maintain appropriate business standards, procedures, and controls, including those necessary to avoid any real or apparent impropriety or adverse impact on the interest of Owner or affiliates. Contractor shall review, with Owner, at a reasonable frequency during the performance of the Work hereunder, such business standards and procedures including, without limitation, those related to the activities of Contractor's employees and agents in their relations with Owner's employees, agents, and representatives, vendors, subcontractors, and other third parties, and those relating to the placement and administration of purchase orders and subcontracts.

ARTICLE 4. ADMINISTRATION OF THE CONTRACT.

4.1 DESIGN CONSULTANT.

4.1.1 Definition. A person registered as an Architect pursuant to Tex. Occupations Code Ann., Chapter 1051, as a landscape Architect pursuant to Texas Occupations Code, Chapter 1052, and/or a person licensed as a professional engineer pursuant to Texas Occupations Code, Chapter 1001, or a firm employed by Owner or Design-Build Contractor to provide professional Architectural or engineering services and exercising overall responsibility for the design of a Project or a significant portion thereof, and performing certain contract administration responsibilities as set forth in the Contract. The term "Design Consultant", unless the context clearly indicates otherwise, means an engineer or other Design Consultant in private practice retained for a specific project under a contractual agreement with the City.

4.1.2 Duties, responsibilities and limitations of authority of the Design Consultant as set forth in the Contract Documents shall not be restricted, modified or extended without written consent of the Owner, Contractor and Design Consultant. Consent shall not be unreasonably withheld. The Owner shall, and shall cause the Design Consultant to, exercise good faith and commercially reasonable standards in the administration, control, and approval of the Work.

4.1.3 If the employment of the Design Consultant is terminated, the Owner shall employ a new Design Consultant whose status under the Contract Documents shall be that of the former Design Consultant.

4.2 **ROLE OF THE DESIGN CONSULTANT IN ADMINISTRATION OF THE CONTRACT.**

4.2.1 The Design Consultant will provide administration of the Contract as described in the Contract Documents, and will be an Owner's representative (1) during construction, (2) until final payment is due and (3) with the Owner's concurrence, from time to time during the one-year period for correction of Work described in Section 12.2. The Design Consultant will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents, unless otherwise modified in writing in accordance with other provisions of the Contract.

4.2.2 The Design Consultant will advise and consult with the Owner. The Owner's instruction to the Contractor may be issued through the Design Consultant, but the Owner reserves the right to issue instructions directly to the Contractor through other designated City representatives. Contractor understands that City may modify the authority of such Design Consultant as provided in the terms of its contract relationship with the Design Consultant, and the Director shall, in such event, be vested with powers formerly exercised by such Design Consultant, provided written notice of such modification shall be immediately served on the Contractor in writing. Nothing herein shall authorize independent agreements between Contractor and such Design Consultant, nor shall the Design Consultant be deemed to have a legal relationship with the Contractor.

4.2.3 The Design Consultant will make visits to the Site at intervals appropriate to the various stages of construction to operations (1) to become generally familiar with and to keep the Owner informed about the progress and quality of the portion of the Work completed, (2) to endeavor to guard the Owner against defects and the Work. However, the Design Consultant will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Design Consultant will neither have control over or charge of, nor be responsible for, the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents, except as provided in Section 3.3.1. The Design Consultant's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will generally conform to the Contract Documents.

4.2.4 The Design Consultant will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Design Consultant will not have control over or charge of and will not be responsible for acts or omissions of the Contractor, Subcontractor, or their agents or employees, or any other persons or entities performing portions of the Work

4.2.5 Communications Facilitating Contract Administration. Except as otherwise provided in the Contract Documents or when direct communication have been specifically authorized, the Owner and Contractor shall endeavor to communicate with each other through the Inspectors about matters arising out of or relating to the Contract. Communications by and with the Design Consultant's consultants shall be through the Design Consultant. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with separate contractors shall be through the Owner.

4.2.6 Based on the Design Consultant's evaluations of the Contractor's Application for Payment, the Design Consultant will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

4.2.7 Except as otherwise provided in the Supplementary or Special Conditions, the Design Consultant and the Owner will have authority to reject Work that does not conform to the Contract Documents. Whenever the Design Consultant or Owner considers it necessary or advisable, the Design Consultant will have authority to require inspection or testing of the Work in accordance with Sections 13.5.2 and 13.5.3, whether or not such Work is fabricated, installed or completed.

However, neither this authority of the Design Consultant or Owner nor a decision made by either, in good faith, to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Design Consultant to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons or entities performing portions of the Work.

4.2.8 The Design Consultant will review and approve or take other appropriate action upon the Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Design Consultant will perform these reviews in a timely fashion so as to not delay the Work. The Design Consultant will respond to submittals such as Shop Drawings, Product Data, and Samples pursuant to the procedures set forth in Division 1 of the Project Specifications. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Design Consultant's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5 and 3.12. The Design Consultant's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Design Consultant, or any construction means, methods, techniques, sequences or procedures. The Design Consultant's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

4.2.9 The Design Consultant will prepare Change Orders and Field Work Directives, and with concurrence of the ODR, will have authority to order minor changes in the Work not involving an adjustment in the Contract Sum or an extension of the Contract Time. Such changes shall be effected by written order, which the Contractor shall carry out promptly and record on the as-built record documents.

4.2.10 The Design Consultant and the Owner will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion. The Design Consultant will receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor, and will issue a final Certificate for Payment upon compliance by the Contractor with the requirements of the Contract Documents.

4.2.11 Upon written request of the Owner or Contractor, the Design Consultant will issue its interpretation of the requirements of the plans and specifications. The Design Consultant's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If no agreement is made concerning the time within which interpretations required for the Design Consultant shall be furnished in compliance with this Section 4.2, then no delay will be recognized on account of any failure by the Design Consultant to furnish such interpretations except for actual substantiated delays for which the Contractor is not responsible occurring more than 15 days after written request is made for the interpretations.

4.2.12 Interpretations and decisions of the Design Consultant will be consistent with the intent of and reasonably inferable from the Contract Documents and will be in writing or in the form of drawings.

4.2.13 The Design Consultant's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents and not expressly overruled in writing by the Owner.

4.3 CLAIMS AND DISPUTES.

4.3.1 Definition. A Claim is a demand or assertion by one of the parties seeking, as a matter of right, adjustment or interpretation of Contract terms, payment of money, extension of time or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. Claims must be initiated by written notice. Except as contemplated by Section 4.3.10, every Claim of the Contractor, whether for additional compensation, additional time, or other relief, including

but not limited to claims arising from concealed conditions, shall be signed and sworn to by an authorized corporate officer (if not a corporation, then an official of the company authorized to bind the Contractor by his signature) of the Contractor, verifying the truth and accuracy of the Claim.. The responsibility to substantiate Claims shall rest with the party making the Claim.

4.3.2 Time Limit on Claims. Claims by the Contractor must be initiated within 21 days after occurrence of the event giving rise to such Claim. Claims by the Contractor must be initiated by written notice to the Design Consultant and the Owner. Claims by the Owner must be initiated by written notice to the Contractor.

4.3.3 Continuing Contract Performance. Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Sections 4.5.1 or 9.7.1 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

4.3.4 Claims for Concealed or Unknown Conditions. If conditions are encountered at the site which are (1) subsurface or otherwise concealed physical conditions which were not known to the Contractor and which differ materially from those indicated in the Contract Documents or the reports of investigations and tests of subsurface and latent physical conditions provided by Owner to Contractor prior to the preparation by Contractor of its Bid and referred to above or (2) unknown physical conditions of an unusual nature, which differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents in the general vicinity of the Project site, then the Contractor shall notify the Owner and the Design Consultant of such conditions promptly before conditions are disturbed, and in no event less than 3 days after first observation of the conditions. The Design Consultant will promptly investigate such conditions and report its findings to the Owner. If the Owner and the Contractor cannot agree on an adjustment to the Contract Sum or Contract Time, the adjustment shall be subject to dispute resolution pursuant to Article 4.5.

4.3.5 Claims for Additional Cost. If the Contractor wishes to make Claim for an increase in the Contract Sum, written notice as provided in this Section 4.3 shall be given before proceeding to execute the Work; provided that prior notice is not required for Claims relating to an emergency endangering life or property. If the Contractor believes additional cost is involved for reasons including but not limited to (1) a written interpretation from the Design Consultant, (2) an order by the Owner to stop the Work where the Contractor was not at fault, (3) a written order for a minor change in the Work issued by the Design Consultant, (4) failure of payment by the Owner, (5) termination of the Contract by the Owner for convenience, (6) Owner's suspension or (7) other reasonable grounds, a Claim shall be filed in accordance with this Section 4.3.

4.3.6 Claims for Additional Time.

4.3.6.1 If the Contractor wishes to make Claim for an increase in the Contract Time, written notice as provided in this Section 4.3 shall be given. The Contractor's Claim shall include an estimate of probable effect of delay on progress of the Work. In the case of a continuing delay only one Claim is necessary.

4.3.6.2 The Contractor shall be entitled to an extension of the Contract Time for delays or disruptions due to unusually severe weather in excess of that normally experienced at the job site, as determined from climatological data set forth in Specification 700 of the Project specifications. The Contractor shall bear the entire economic risk of all weather delays and disruptions, and shall not be entitled to any increase in the Contract Sum by reason of such delays or disruptions. Requests for an extension of time pursuant to this Section shall be submitted to the Design Consultant not later than the fifteenth (15th) day of the month following the month during which the delays or disruptions occurred, and shall include documentation and all details reasonably available demonstrating the nature and duration of the delays or disruptions and their effect on the critical path of the Schedule.

4.3.7 Injury or Damage to Person or Property. If either party to the Contract suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible (including, with respect to the Owner, the acts or omissions of the Owner's separate contractors), written notice of such injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding three (3) business days after the discovery of the injury or damage. The notice shall provide sufficient detail to enable the other party to investigate the matter.

4.3.8 Change in Unit Prices. If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed in a proposed Change Order or Field Work Directive so that application of such unit prices to quantities of Work proposed will cause substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

4.3.9 Claims for Consequential Damages. Except as otherwise provided in this Contract, in calculating the amount of any Claim or any measure of damages for breach of contract (such provision to survive any termination following such breach), the following standards will apply both to claims by the Contractor and to claims by the Owner:

4.3.9.1 No consequential, indirect, incidental, punitive, or exemplary damages will be allowed, whether or not foreseeable, regardless of whether based on breach of contract, tort (including negligence), indemnity, strict liability, or other bases of liability.

4.3.9.2 No recovery shall be based on a comparison of planned expenditures to total actual expenditures, or on estimated losses of labor efficiency, or on a comparison of planned manloading to actual manloading, or any other similar analysis that is used to show total cost or other damages.

4.3.9.3 Damages are limited to extra costs specifically shown to have been directly caused by a proven wrong for which the other party is claimed to be responsible.

4.3.9.4 The maximum amount of any recovery for delay, to the extent damages for delay are not otherwise disallowed by the terms of the Contract, shall be as is provided in Section 8.3.2 hereof.

4.3.9.5 No damages will be allowed for home office overhead or other home office charges or any Eichleay formula calculation, except as expressly authorized by the Contract Documents.

4.3.9.6 No profit will be allowed on any damage claim, except as expressly authorized by the Contract Documents.

4.3.10 Subcontractor Pass-Through Claims. In the event that any Subcontractor of the Contractor asserts a claim to the Contractor that the Contractor seeks to pass through to the Owner under the Contract Documents, any entitlement to submit and assert the claim as to the Owner shall be subject to:

4.3.10.1 the requirements of Section 4.3 of these General Conditions; and

4.3.10.2 the following additional three requirements listed below, all three of which additional requirements shall be conditions precedent to the entitlement of the Contractor to seek and assert such claim against the Owner:

(i) the Contractor shall either (A) have direct legal liability as a matter of contract, common law, or statutory law to the Subcontractor for the claim that the Subcontractor is asserting or (B) the Contractor shall have entered into a written liquidating agreement with the Subcontractor, under which agreement the Contractor has agreed to be legally responsible to the Subcontractor for

pursuing the assertion of such claim against the Owner under the Contract and for paying to the Subcontractor any amount that may be recovered, less Contractor's included markup (subject to the limits in the Contract Documents for any markup). The liability or responsibilities shall be identified in writing by the Contractor to the Owner at the time such claim is submitted to Owner, and a copy of any liquidating agreement shall be included by the Contractor in the claim submittal materials.

(ii) The Contractor shall have reviewed the claim of the Subcontractor prior to its submittal to Owner and shall have independently evaluated such claim in good faith to determine the extent to which the claim is believed in good faith to be valid. The Contractor shall inform the Owner that the Contractor has made a review, evaluation, and determination that the claim is made in good faith and is believed to be valid.

(iii) The Subcontractor making the claim to the Contractor shall certify to the Contractor and to the Owner that it has compiled, reviewed and evaluated the merits of such claim and that the claim is believed in good faith by the Subcontractor to be valid. A copy of the certification by the Subcontractor shall be included by Contractor in the claim submittal materials.

4.3.10.3 Any failure of the Contractor to comply with any of the foregoing requirements and conditions precedent with regard to any such claim shall constitute a waiver of any entitlement to submit or pursue such claim.

4.3.10.4 Receipt and review of a claim by the Owner under this Section shall not be construed as a waiver of any defenses to the claim available to the Owner under the Contract Documents or law.

4.3.11 Owner's Right to Order Acceleration and to Deny Claimed and Appropriate Time Extensions, in Whole or in Part. The Contractor acknowledges and agrees that Substantial Completion of the Work by or before the Scheduled Completion Date is of substantial importance to Owner. The following provisions, therefore, will apply:

(1) If the Contractor falls behind the approved construction schedule for whatever reason, the Owner shall have the right, in the Owner's sole discretion, to order the Contractor to develop a schedule recovery plan to alter its work sequences or to otherwise accelerate its progress in such a manner as to achieve Substantial Completion on or before the Contract Time completion date or such other date as Owner may reasonably direct and, upon receipt, the Contractor shall take all action necessary to comply with the order. In such event, any possible right, if any, of the Contractor to additional compensation for any acceleration shall be subject to the terms of this Section 4.3.11.

(2) In the event that the Contractor is entitled to an extension of Contract Time and has properly initiated a Claim for a time extension in accordance with Section 4.3(a) above, the Owner shall have the right, in the Owner's sole discretion, to deny all, or any part, of the Claim for extension of Contract Time and to order Contractor to exercise its commercially reasonable efforts to achieve Substantial Completion on or before the date that would have been required but for the existence of the event giving rise to the Claim by giving written notice to the Contractor provided within fourteen (14) days after receipt of the Contractor's Claim. If the Owner denies the Contractor's claim for an extension of Contract Time under this Subparagraph 4.3.11(2), either in whole or in part, the Contractor shall proceed to prosecute the Work in such a manner as to achieve Substantial Completion on or before the then existing Scheduled Completion Date. If, after initiating good faith acceleration efforts and through no fault of the Contractor, the Contractor is unable to achieve Substantial Completion within the originally scheduled Contract Time, the Owner will not be entitled to liquidated damages.

(3) If the Owner orders the Contractor to accelerate the Work under Section 4.3.11(2) above, and the Contractor would have been entitled to a time extension for a reason specifically allowed under the Contract Documents for an amount of time that would have justified approval by the Owner if not for the need and right to complete the Project within the stipulated period, the Contractor may initiate a Claim for schedule recovery or acceleration costs pursuant to Section 4.3.1. Any resulting Claim for these costs properly initiated by the Contractor under Section 4.3.1 above shall be limited to those reasonable and documented direct costs of labor, materials, equipment, and supervision solely and directly attributable to the actual recovery or acceleration activity necessary to bring the Work back within the then existing approved construction schedule. These direct costs include, but are not limited to, the premium portion of overtime pay additional crew, shift, or equipment costs if requested in advance by the Contractor and approved in writing by the Owner. A percentage markup for the prorated cost of premium on the existing performance and payment bonds and required insurance, profit and field overhead, not to exceed the markups permitted by this Contract, will be allowed on the claimed costs. **NO OTHER MARKUP FOR PROFIT, OVERHEAD (INCLUDING BUT NOT LIMITED TO HOME OFFICE OVERHEAD) OR ANY OTHER COSTS WILL BE ALLOWED ON ANY ACCELERATION CLAIM.** The Owner shall not be liable for any costs related to an acceleration claim other than those described in this Clause 4.3.11.

4.3.12 No Waiver of Governmental Immunity. **NOTHING IN THIS CONTRACT SHALL BE CONSTRUED TO WAIVE THE OWNER'S GOVERNMENTAL IMMUNITY FROM LAWSUIT, WHICH IMMUNITY IS EXPRESSLY RETAINED TO THE EXTENT IT IS NOT CLEARLY AND UNAMBIGUOUSLY WAIVED BY STATE LAW.**

4.4 **RESOLUTION OF CLAIMS AND DISPUTES.**

4.4.1 Recommendation of Design Consultant.

4.4.1.1 Claims by the Contractor against the Owner and Claims by the Owner against the Contractor, including those alleging an error or omission by the Design Consultant but excluding those arising under Sections 10.3 and 10.5, shall be referred initially to the Design Consultant for consideration and recommendation to the Owner. An initial recommendation by the Design Consultant shall be required as a condition precedent to mediation or litigation of all Claims by the parties arising prior to the date final payment is due, unless 30 days have passed after the Claim has been referred to the Design Consultant with no recommendation having been rendered by the Design Consultant.

4.4.1.2 The Design Consultant will review Claims and within 10 days of receipt of the Claim and take one or more of the following actions: (1) request additional supporting data from the party making the Claim; (2) issue an initial recommendation; (3) suggest a compromise; or (4) advise the parties that the Design Consultant is unable to issue an initial recommendation due to a lack of sufficient information or conflict of interest.

4.4.1.3 Following receipt of the Design Consultant's initial recommendation regarding a claim, the Owner and Contractor shall attempt to reach agreement as to any adjustment to the Contract Sum and/or Contract Time. If no agreement can be reached either party may request mediation of the dispute pursuant to Section 4.5.

4.4.1.4 If the Design Consultant requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall either provide a response or the requested supporting data, advise the Design Consultant when the response or supporting data will be furnished, or advise the Design Consultant that no response or supporting data will be furnished.

4.4.2 Waiver of Lien. It is understood that by virtue of this Contract, no mechanic, contractor, materialman, artisan, or laborer, whether skilled or unskilled, shall ever in any manner have, claim, or acquire any lien upon the building, or any of the improvements of whatever nature or kind so erected or to be erected by virtue of this Contract nor upon any of the land upon which said building or any of the improvements are so erected, built, or situated.

4.5 **ALTERNATIVE DISPUTE RESOLUTION.**

4.5.1 Continuation of Work Pending Dispute Resolution. Each party is required to continue to perform its obligations under this Contract pending final resolution of any dispute arising out of or relating to this Contract unless it would be impossible or impracticable under the circumstances.

4.5.2 Requirement for Senior Level Negotiations. Before invoking mediation or any other alternative dispute process set forth herein the parties agree that they shall first try to resolve any dispute arising out of or related to this Contract through discussions directly between those senior management representatives within their respective organizations who have overall managerial responsibility for similar projects. This step shall be a condition precedent to use of any other alternative dispute resolution process. If the parties' senior management representatives cannot resolve the dispute within thirty days after a party delivers a written notice of such dispute, then the parties shall proceed with the alternative dispute resolution process contained herein, including mediation and/or litigation. All negotiations pursuant to this clause are confidential and shall be treated as compromise and settlement negotiations for purposes of applicable rules of evidence.

4.5.3 Mediation.

4.5.3.1 In the event that the Owner or the Contractor shall contend that the other has committed a material breach of this Contract, the party alleging such breach shall, as a condition precedent to filing any lawsuit, request mediation of the dispute.

4.5.3.2 Request for mediation shall be in writing, and shall request that the mediation commence not less than 30 or more than 90 days following the date of the request, except upon agreement of both parties.

4.5.3.3 In the event the Owner and the Contractor are unable to agree to a date for the mediation or to the identity of the mediator or mediators within 30 days following the date of the request for mediation, all conditions precedent in this Section 4.5 shall be deemed to have occurred.

4.5.3.4 The parties shall share the mediator's fee and any filing fees equally. Venue for any mediation or lawsuit arising under this Contract shall be in Bexar County, Texas Any agreement reached in mediation shall be enforceable as a settlement agreement in any court having jurisdiction thereof. No provision of this Contract shall waive any immunity or defense. No provision of this Contract is a consent to suit.

ARTICLE 5. SUBCONTRACTORS

5.1 **DEFINITION.** A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a separate contractor or subcontractors of a separate contractor.

5.2 **AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK**

5.2.1 The Contractor shall, prior to entering into an agreement with such persons, notify the Director in writing of the names of all proposed first tier Subcontractors for the Work.

5.2.2 Contractor shall not employ any Subcontractor or other person or organization (including those who are to furnish the principal items of materials or equipment), whether initially or as a substitute, against whom Owner may have reasonable objection. A Subcontractor or other person or organization identified in writing to Owner prior to the Notice of Award and not objected to in writing by Owner prior to the Notice of Award will be deemed acceptable to Owner. Acceptance of any Subcontractor, other person, or organization by Owner shall not constitute a waiver of any right of Owner to reject defective Work. If Owner, after due investigation, has reasonable objection to any Subcontractor, other person or organization proposed by Contractor after the Notice of Award, the Contractor will be required to submit an acceptable substitute. The Contract Sum will be equitably adjusted, if permitted by applicable law, for any change in the price of the subcontract work resulting from such substitution. Contractor shall not be required to employ any Subcontractor, other person, or organization against whom Contractor has reasonable objection.

5.2.3 Contractor shall be fully responsible to Owner for all acts and omissions of his Subcontractors and of persons and organizations directly or indirectly employed by them and of persons and organizations for whose acts any of them may be liable to the same extent that Contractor is responsible for the acts and omissions of persons directly employed by Contractor. Nothing in the Contract Documents shall create any contractual relationship between Owner and any Subcontractor or other person or organization having a direct contract with Contractor, nor shall it create any obligation on the part of Owner to pay or to see to the payment of any moneys due any Subcontractor or other person or organization, except as may otherwise be required by law. Owner may furnish to any Subcontractor or other person or organization, to the extent practicable, evidence of amounts paid to Contractor on account of specific Work done.

5.2.4 The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or delineating the Work to be performed by any specific trade.

5.2.5 All Work performed for Contractor by a Subcontractor will be pursuant to an appropriate agreement between Contractor and the Subcontractor which specifically binds the Subcontractor to the applicable terms and conditions of the Contract Documents for the benefit of Owner.

5.2.6 SBEDA/DBE Reporting and Auditing. During the term of the contract, the Contractor must report the actual payments to all SBEDA or DBE (as applicable) Subcontractors and Suppliers in the time intervals and format prescribed by the City of San Antonio. The City reserves the right, at any time during the term of this Contract, to request additional information, documentation or verification of payments made to such Subcontractors and Suppliers in connection with this Contract. Verification of amounts being reported may take the form of requesting copies of canceled checks paid to SBEDA or DBE Subcontractors and Suppliers and/or confirmation inquiries directly to the SBEDA or DBE participants. Proof of payments, such as copies of canceled checks must properly identify the project name or project number to substantiate a SBEDA or DBE payment for the Project.

5.2.7 Small Business Subcontractor Substitutions. See SBEDA or DBE Requirements in Supplementary Conditions for Substitution of Subcontractors. Failure to follow such procedures is an event of default under this Contract and may be grounds for termination.

5.2.8 Internet-based Project Management Systems. At its option, Owner may administer its design and construction management through an Internet-based management system. In such cases, the Contractor shall conduct communication through this media and perform all Project related functions utilizing this database system. This includes correspondence, submittals, requests for information, vouchers, or payment requests and processing, Amendment, Change Orders and other administrative activities. When such systems are employed, the Owner shall administer the software, shall provide training to Project Team Members, and shall make the software accessible via the Internet to all Project Team Members.

5.3 **SUBCONTRACTUAL RELATIONS.** By appropriate agreement, written where legally required for validity, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work, which the Contractor, by these Documents, assumes toward the Owner and Design Consultant. Each subcontract agreement shall preserve and protect the rights of the Owner and Design Consultant under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

5.4 **CONTINGENT ASSIGNMENT OF SUBCONTRACTS.**

5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner provided that:

5.4.1.1 assignment is effective only after termination of the Contract by the Owner and only for those subcontract agreements which the Owner accepts by notifying the Subcontractor and Contractor in writing; and

5.4.1.2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increase in cost resulting from the suspension.

ARTICLE 6. CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTS.

6.1 **OWNER'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS**

6.1.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site under Conditions of the Contract identical or substantially similar to these. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, the Contractor shall make such Claim as provided in Section 4.3.

6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each separate contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with other separate contractors and the Owner in reviewing their construction schedules when directed to do so. The Contractor shall make any revisions to the construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, separate contractors and the Owner until subsequently revised.

6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operation related to the Project with the Owner's own forces, the Owner shall be subject to the same obligations and to have the same rights which apply to the Contractor under

the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6 and Articles 10, 11 and 12.

6.2 MUTUAL RESPONSIBILITY.

6.2.1 The Contractor shall afford the Owner and separate contractors reasonable opportunity for the introduction and storage of their materials and equipment and performance of their activities, and shall coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

6.2.2 If part of the Contractor's Work depends, for proper execution or results, upon the construction or operations by the Owner or a separate contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly report to the Design Consultant apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Contractor so to report shall constitute an acknowledgment that the Owner's or separate contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work, except as to defects not then reasonably discoverable.

6.2.3 The Owner shall be reimbursed by the Contractor for costs incurred by the Owner which are payable to a separate contractor because of delays, improperly timed activities or defective construction of the Contractor. The Owner shall be responsible to the Contractor for costs incurred by the Contractor because of delays, improperly timed activities, and damage to the Work or defective construction of a separate contractor.

6.2.4 The Contractor shall promptly remedy damage wrongfully caused by the Contractor to completed or partially completed construction or to property of the Owner or separate contractors as provided in Section 10.2.5.

6.2.5 Owner and each separate contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

6.3 OWNER'S RIGHT TO CLEAN UP. If a dispute arises among the Contractor, separate contractors and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Design Consultant will allocate the cost among those responsible.

ARTICLE 7. CHANGES IN THE WORK

7.1 GENERAL.

7.1.1 Changes in the Work may be accomplished after the execution of the Contract, and without invalidating the Contract, by Change Order, Field Work Directive or order for a minor change in the Work that does not affect the Contract Time or the Contract Sum, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor and Design Consultant; a Field Work Directive requires agreement by the Owner and Design Consultant and may or may not be agreed to by the Contractor; and an order for a minor change in the Work that does not affect the Contract Time or the Contract Sum may be issued by the Design Consultant alone.

7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents, and the Contractor shall proceed promptly with the changed Work, unless otherwise provided in the Change Order, Field Work Directive or order for a minor change in the Work or in this Article 7.

7.2 CHANGE ORDERS.

7.2.1 A Change Order is a written modification of the Contract prepared by the Design Consultant and signed by the Owner, Contractor and Design Consultant, (and approved by the City Council, if required) which authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Sum or the Contract Times and is issued on or after the Effective Date of the Agreement.

Methods used in determining adjustments to the Contract Sum may include those listed in Section 7.3.3.

7.2.3 Acceptance of a Change Order by the Contractor shall constitute a full accord and satisfaction for any and all claims and costs of any kind, whether direct or indirect, including but not limited to impact, delay or acceleration damages, arising from the subject matter of the Change Order. Each Change Order shall be specific and final as to prices and extensions of time, with no reservations or other provisions allowing for future additional money or time as a result of the particular changes identified and fully compensated in the change order. The execution of a Change Order by the Contractor shall constitute conclusive evidence of the Contractor's agreement to the ordered changes in the Work. This Contract, as amended, forever releases any claim against the Owner for additional time or compensation for matters relating to or arising out of or resulting from the Work included within or affected by the executed Change Order. This release applies to claims related to the cumulative impact of all Change Orders and to any claim related to the effect of a change on unchanged Work.

7.3 FIELD WORK DIRECTIVES.

7.3.1 A Field Work Directive is a written order prepared by the Design Consultant, and signed by the Owner and Design Consultant, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract time, or both. The Owner may by Field Work Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, with any changes to the Contract Sum and/or the Contract Time to be adjusted according to the terms of this Section 7.3.

7.3.2 A Field Work Directive shall be used in the absence of total agreement on the terms of a Change Order.

7.3.3 If the Field Work Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

7.3.3.1 mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;

7.3.3.2 unit prices stated in the Contract Documents or subsequently agreed upon;

7.3.3.3 cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or

7.3.3.4 as provided in Section 7.3.6.

7.3.4 Upon receipt of a Field Work Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Design Consultant of the Contractor's agreement or disagreement with the method, if any, provided in the Field Work Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

7.3.5 A Field Work Directive signed by the Contractor indicates the agreement of the Contractor therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

7.3.6 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the method and the adjustment shall be initially determined by the Design Consultant on the basis of reasonable costs and savings attributable to the change, including, in case of an increase in the Contract Sum, a reasonable allowance for overhead and profit. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Design Consultant may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.6 shall be limited to the following:

7.3.6.1 costs of labor, including social security, old age and unemployment insurance, fringe benefits required by Law, agreement or custom, and workers' compensation insurance;

7.3.6.2 costs of materials, supplies and equipment, including cost of transportation, storage installation, maintenance, dismantling and removal, whether incorporated or consumed;

7.3.6.3 rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others, including costs of transportation, installation, minor repairs and replacements, dismantling and removal;

7.3.6.4 Expenses incurred in accordance with Contractor's standard personnel policy for travel approved by the Owner in advance;

7.3.6.5 costs of premiums for all bonds and insurance, permit fees, and sales, use or similar taxes related to the Work; and additional costs of supervision and field office personnel directly attributable to the change; and

7.3.6.6 Payments made by the Contractor to Subcontractors.

7.3.7 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change which results in a net decrease in the Contract Sum shall be actual net cost of the deleted or change Work, plus the Contractor's allocated percent for profit and overhead as confirmed by the Design Consultant, subject to equitable adjustment recommended by the Design Consultant and approved by the Owner. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase or decrease, if any, with respect to that change.

7.3.8 Pending final determination of the total cost of a Field Work Directive to the Owner, amounts not in dispute for such changes in the Work shall be included in Applications for Payment accompanied by a Change Order indicating the parties' agreement with part or all of such costs. For any portion of such cost that remains in dispute, the Design Consultant will make an interim determination for purposes of monthly certification for payment for those costs. That determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a claim in accordance with Article 4.

7.3.9 When the Owner and Contractor agree with the determination made by the Design Consultant concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and shall be recorded by preparation and execution of an appropriate Change Order.

7.4 **MINOR CHANGES TO THE WORK.** The Design Consultant will have authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes shall be effected by written order and shall be binding on the Owner and Contractor. The Contractor shall carry out such written orders promptly.

7.5 TIME REQUIRED TO PROCESS CHANGE ORDERS

7.5.1 All responses by the Contractor to proposal requests from the Owner or Design Consultant shall be accompanied by a complete, itemized breakdown of costs. Responses to proposal requests shall be submitted sufficiently in advance of the required work to allow the Owner and the Design Consultant a minimum of thirty (30) calendar days after receipt by the Design Consultant to review the itemized breakdown and to prepare or distribute additional documents as may be necessary. Each of the Contractor's responses to proposal requests shall include a statement that the cost and additional time described and requested in the response represents the complete, total and final cost and additional Contract Time associated with the extra work, change, addition to, omission, deviation, substitution, or other grounds for seeking extra compensation or additional time under the Contract Documents, without reservation or further recourse.

7.5.2 All Change Orders require approval by either the City Council or, where authorized by the state law and City ordinance, by the City Manager or designee pursuant to Administrative Action. The approval process requires a minimum of forty-five (45) calendar days after submission to the Owner in final form with all supporting data. Receipt of a submission by Owner does not constitute acceptance or approval of a proposal, nor does it constitute a warranty that the proposal will be authorized by City Council Resolution or Administrative Action. **THE TIME REQUIRED FOR THE APPROVAL PROCESS SHALL NOT BE CONSIDERED A DELAY AND NO EXTENSIONS TO THE CONTRACT TIME OR INCREASE IN THE CONTRACT SUM WILL BE CONSIDERED OR GRANTED AS A RESULT OF THIS PROCESS.** Pending the approval of a Change Order as described above, the Contractor will proceed with the work under a pending Change Order only if directed in writing to do so by the Owner.

ARTICLE 8. TIME

8.1 DEFINITIONS.

8.1.1 Contract Time. Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work. When the plural ("Contract Times") is used, it refers to milestones designated in the Work Progress Schedule.

8.1.2 Commencement of Work. The date of commencement of the Work is the date established in the Contract.

8.1.3 Substantial Completion. The date of Substantial Completion is the date certified by the Design Consultant and Owner, in accordance with Section 9.8, when the Work, or a designated portion thereof, is sufficiently complete in accordance with the Contract Documents so as to be operational and fit for the use intended by the Owner.

8.1.4 Day. The term "day" as used in the Contract Documents shall mean Calendar Day unless otherwise specifically defined. A Calendar Day is a day of 24 hours measured from midnight to the next midnight, unless otherwise specifically stipulated. A Working Day is a day of eleven hours as measured from seven o'clock a.m. to six o'clock p.m. on weekdays, except legal holidays.

8.2 PROGRESS AND COMPLETION.

8.2.1 TIME LIMITS STATED IN THE CONTRACT DOCUMENTS ARE OF THE ESSENCE OF THE CONTRACT. By executing the Contract the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

8.2.2 The Contractor shall not knowingly, except by agreement with or the instruction of the Owner in writing, prematurely commence operations on the site or elsewhere prior to the effective date of insurance required by Article 11 to be furnished by the Contractor and Owner. The date of commencement is established by the Contract Documents or a Notice To Proceed given by the Owner.

8.2.3 The Contractor shall proceed with the Work expeditiously using adequate forces and shall achieve Substantial Completion within the Contract Time.

8.2.4 Nothing in sections 8.1 and 8.2 shall be construed as prohibiting the Contractor from working on Saturdays if he so desires and gives City's "COI" and City's Project Manager at least the prerequisite forty-eight (48) hours written notice of intent to perform work on Saturday so that Owner's representative may be scheduled to observe/inspect said work. Work on Sundays or holidays will not be permitted except in cases of extreme emergency and then only with the written permission of the City's Project Manager.

8.3 DELAYS AND EXTENSIONS OF TIME.

8.3.1 Neither the Owner nor the Contractor, except as provided for in this Section 8.3.1, shall be liable to the other party for delay to the Contractor's Work by reason of unreasonably severe weather, fire, act of God, riot, strike, or any other cause beyond the Owner's control. Should any of these factors delay the Work's critical path, as evidenced by a time impact analysis developed by Contractor and verified by the Design Consultants, the Program Manager (if any), and the ODR, Contractor shall receive an extension of the Contract Times equal to the delay if a written claim is made within five work days of the delaying event, and under no circumstances shall the Owner be liable to pay the Contractor any compensation for such delays.

8.3.2 Should the Contractor be delayed by the act, neglect or default of the Owner or the Design Consultants, and should any of these factors delay the Project's critical path, as evidenced by a time impact analysis developed by Contractor and verified by the Design Consultants, the Program Manager and the ODR, Contractor shall receive an extension of the Contract Times equal to the delay if a written claim is made within twenty one (21) days. In addition, Contractor, upon timely notice to the City and substantiation by the Design Consultants, the Program Manager (if any) and the ODR, shall be compensated for its Project facilities and field management expenses on a per diem basis (said per diem includes the costs incurred by the Contractor to administer its Work and does not include costs associated for any tier of Subcontractor or Supplier to administer their Work. Compensation for the Subcontractor's and Supplier's compensable delay affecting the Project critical path shall be separate and apart from the per diem cost due and payable to the Contractor) for the particular Project delayed and for the period of the critical path delay attributable to the Owner-caused event. In no event will Contractor be entitled to home office or other off-site expenses or damages.

8.3.3 Claims relating to time shall be made in accordance with applicable provisions of Section 4.3.

8.3.4 This Contract does not permit the recovery of damages by the Contractor for delay, disruption or acceleration, other than those described above in Section 8.3.2 and as provided under Section 4.3.11(3). Contractor agrees that Contractor shall be fully compensated for all delays solely by an extension of time or as contemplated in Section 8.3.2

ARTICLE 9 PAYMENTS AND COMPLETION

9.1 **CONTRACT SUM.** The Contract sum is stated on the Purchase Order, including change orders. The estimated quantities of the various elements of Work to be done and material to be furnished are approximate only and are provided by Consultant and Owner as a basis for Owner comparison of proposals and award of Contract. It is expressly understood and agreed by Owner and Contractor

that the actual amounts of Work to be done and material to be furnished may differ somewhat from these estimates. The quantities of Work actually performed by Contractor will be computed on the basis of measurements taken by the Owner's representatives, and these measurements shall be final and binding on Contractor.

9.2 **PROJECT SCHEDULES.** Refer to Specification 700

9.3 **APPLICATIONS FOR PAYMENT.**

9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Design Consultant an itemized Application for Payment for operations completed in accordance with the project schedule. Such application shall be notarized, if required, and supported by such data substantiating the Contractor's right to payment as the Owner or Design Consultant may require, such as copies of requisitions from Subcontractors and material suppliers, and reflecting retainage if provided for in the Contract Documents.

9.3.1.1 As provided in Section 7.3.8, such applications may include requests for payment on account of changes in the Work which have been properly authorized by Field Work Directives, or by interim determination of the Design Consultant, but not yet included in Change Orders.

9.3.1.2 Such applications may not include requests for payment for portions of the Work for which the Contractor does not intend to pay to a Subcontractor or material supplier, unless such Work has been performed by others whom the Contractor intends to pay.

9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the Site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the Site at a location agreed upon in writing. Payment for materials and equipment stored on or off the Site shall be conditioned upon compliance by the Contractor with procedures reasonably satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest. The Contractor shall be solely responsible for payment of all costs of applicable insurance, storage and transportation to the site for materials and equipment stored off the site.

9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment, all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information and belief, be free and clear of liens, claims, security interests or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work. **CONTRACTOR SHALL INDEMNIFY AND HOLD OWNER HARMLESS FROM ANY LIENS, CLAIMS, SECURITY INTEREST OR ENCUMBRANCES FILED BY THE CONTRACTOR, SUBCONTRACTORS, OR ANYONE CLAIMING BY, THROUGH OR UNDER THE CONTRACTOR OR SUBCONTRACTOR FOR ITEMS COVERED BY PAYMENTS MADE BY THE OWNER TO CONTRACTOR.**

9.3.4 In each Application for Payment, Contractor shall certify that there are no known liens or bond claims outstanding at the date of this requisition, that all due and payable bills with respect to the Work have been paid to date or are included in the amount requested in the current application and that except for such bills not paid but so included, there is no known basis for the filing of any liens or bond claims relating to the Work, and that releases from all Subcontractors and Contractor's materialmen have been obtained in such form as to constitute an effective release of lien or claim under the laws of the State of Texas covering all Work theretofore performed and for which payment has been made by Owner to Contractor; provided that if any of

the foregoing is not true and cannot be certified, Contractor will revise the certificate as appropriate and identify all exceptions to the requested certifications.

9.4 APPROVAL OF APPLICATION FOR PAYMENT.

9.4.1 The Design Consultant will, within seven days after receipt of the Contractor's Application for Payment, either issue to the Owner an approval of the Application for Payment, with a copy to the Contractor, for such amount as the Design Consultant determines is properly due, or notify the Contractor and Owner in writing of the Design Consultant's reasons for withholding certification in whole or in part as provided in Section 9.5.1.

9.4.2 The issuance of an Approval of Application for Payment will constitute a representation by the Design Consultant to the Owner, based on the Design Consultant's evaluation of the Work and the data comprising the Application for Payment, that the Work has progressed to the point indicated and that, to the best of the Design Consultant's knowledge, information and belief, the quality of the work is in accordance with the Contract Documents. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to any specific qualifications expressed by the Design Consultant. The approval on application for Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified. However, the approval of an application for Payment will not be a representation that the Design Consultant has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work, (2) reviewed construction means, methods, techniques, sequences or procedures, (3) reviewed copies of requisitions received from Subcontractors and material suppliers and other data requested by the Owner to substantiate the Contractor's right to payment, or (4) made any examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

9.5 DECISIONS TO WITHHOLD CERTIFICATION.

9.5.1 The Design Consultant may withhold approval of the Application for Payment in whole or in part, to the extent reasonably necessary to protect the Owner if, in the Design Consultant's opinion, the representations to the Owner required by Section 9.4.2 cannot be made. If the Design Consultant is unable to approve payment in the amount of the Application, the Design Consultant will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Design Consultant cannot agree on a revised amount, the Design Consultant will promptly issue an approval for Payment for the amount for which the Design Consultant is able to make such representations to the Owner. The Design Consultant may also withhold approval of the Application for Payment or, because of subsequently discovered evidence, may modify the whole or a part of a Certificate for Payment to such extent as may be necessary, in the Design Consultant's opinion, to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of:

9.5.1.1 defective Work not remedied;

9.5.1.2 third party claims filed or reasonable evidence indicating probable filing of such claims for which Contractor is responsible hereunder unless security acceptable to the Owner is provided by the Contractor;

9.5.1.3 failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment;

9.5.1.4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum and Contractor has failed to provide Owner adequate assurance of its continued performance within a reasonable time after demand;

9.5.1.5 damage to the Owner or another contractor;

9.5.1.6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or

9.5.1.7 persistent failure by the Contractor to carry out the Work in accordance with the Contract Documents.

Upon receipt of an invoice, which is approved and accepted by the owner, the Owner will pay the undisputed portions of such Application for Payment within the time frames established in the Section 9.

9.5.2 When the above reasons for withholding certification are removed, certification will be made for amounts previously withheld. The Owner shall not be deemed in default by reason of withholding payment as provided for in subparagraph 9.5.1.

9.6 PROGRESS PAYMENTS.

9.6.1 During the latter part of each month as the Work progresses on all City Contracts regardless of Contract Sum, the City's Project Manager and Contractor shall determine the cost of the labor and materials incorporated into the Work during that month and actual invoiced cost of Contractor acquired materials stored on the Project site, and/or within off-site storage facilities either owned or leased by the Contractor. Upon receipt of a complete and mathematically accurate Construction Estimate Certification Form from the Contractor, The City shall make payments to Contractor within thirty (30) calendar days on Contracts totaling four hundred thousand (\$400,000.00) dollars or less, based upon such cost determination and at the Contract unit prices in a sum equivalent to ninety percent (90%) of each such invoice. At the time the last monthly invoice is paid by Owner, a Letter of Conditional Approval may be furnished to the Contractor. The remaining ten percent (10%) retainage shall be held by the City until the final Contract Settlement. However, where the Contract amount exceeds four hundred thousand dollars (\$400,000.00), installments shall be paid to Contractor at the rate of ninety-five percent (95%) of each monthly invoice within thirty (30) calendar days of Owner receipt of a complete and mathematically accurate Construction Estimate Certification Form from the Contractor, and the retainage held until final Contract Settlement shall be five percent (5%). The payments of such installments are payments toward satisfaction of the Contract Sum, and the Contractor invoices upon which such monthly payments are based, are given to Owner by Contractor only for the purposes of fixing the periodic sums to be paid in compliance with Paragraph 7.1. Owner's payment of installments shall not in any way be deemed to be a final acceptance of any part of the Work by Owner, and will not prejudice Owner in the final settlement of Contract account nor relieve the Contractor from completion of the Work as herein provided.

9.6.2 The Contractor shall, within ten (10) days following receipt of payment from the Owner, pay all bills for labor and materials performed and furnished by others in connection with the construction, furnishing and equipping of the improvements and the performance of the work, and shall, if requested, provide the Owner with evidence of such payment. Contractor's failure to make payments within such time shall constitute a material breach of this contract, unless the Contractor is able to demonstrate to Owner bona fide disputes associated with the unpaid subcontractor or supplier and its work. Contractor shall include a provision in each of its subcontracts imposing the same payment obligations on its Subcontractors as are applicable to the Contractor hereunder, and if the Owner so requests, shall provide copies of such subcontractor payments to the Owner. If the Contractor has failed to make payment promptly to the Contractor's Subcontractors or for materials or labor used in the Work for which the Owner has made payment to the Contractor, the Owner shall be entitled to withhold payment to the Contractor to the extent necessary to protect the Owner.

9.6.3 The Design Consultant will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Design Consultant and Owner on account of portions of the Work done by such Subcontractor.

9.6.4 Neither the Owner nor Design Consultant shall have an obligation to pay or to see to the payment of money to a Subcontractor, except as may otherwise be required by law, if any.

9.6.5 Payments to material suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4 regarding Subcontractors.

9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work that was not performed or furnished in accordance with the Contract Documents.

9.6.7 The Contractor shall, as a condition precedent to any obligation of the Owner under this Contract, provide to the Owner payment and performance bonds in the full penal amount of the Contract in accordance with Texas Government Code Chapter 2253.

9.7 FAILURE OF PAYMENT.

9.7.1 If the Design Consultant does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor the amount certified by the Design Consultant within seven (7) days after the date established in the Contract Documents, then the Contractor may, upon seven additional days' written notice to the Owner and Design Consultant, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shut-down, delay and start-up, plus interest as provided for in the Contract Documents.

9.8 SUBSTANTIAL COMPLETION.

9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use. In the event Substantial Completion is not achieved by the designated date, or as that date may be extended by Change Order(s), Owner may withhold payment of sums necessary to pay the estimated liquidated damages due Owner until Substantial Completion is achieved. Owner shall also be entitled to deduct out of any sums due to Contractor any or all liquidated damages due Owner in accordance with the Contract Between the Owner and the Contractor or the Owner and the Construction Manager-at-Risk.

9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is Substantially Complete, the Contractor shall prepare and submit to the Design Consultant a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

9.8.3 Upon receipt of the Contractor's list, the Design Consultant will make an inspection to determine whether the Work or designated portion thereof is Substantially Complete. If the Design Consultant's or Owner's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon written notification by the Design Consultant. In such case, the Contractor shall then submit a request for another inspection by the Design Consultant or Owner to determine Substantial Completion.

9.8.4 When the Work or designated portion thereof is Substantially Complete, the Design Consultant or Owner will prepare a Certificate of Substantial Completion which shall (a) establish the date of Substantial Completion (which will be the date on which the Work met the

requirements under the Contract Documents for Substantial Completion), (b) establish responsibilities of the Owner and Contractor, as agreed to by the Owner and Contractor, for security, maintenance, heat, utilities, damage to the Work and insurance, and (c) fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

9.8.5 The Certificate of Substantial completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate.

9.9 PARTIAL OCCUPANCY OR USE.

9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer as required under Section 11.4.1.5 and authorized by public authorities having jurisdiction over the Work. Such partial occupancy or use may commence whether or not the portion is Substantially Complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion Substantially Complete, the Contractor shall prepare and submit a list of items to be completed or corrected prior to final payment and submit such list to the Design Consultant as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The state of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Design Consultant.

9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor and Design Consultant shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

9.9.3 Unless expressly agreed upon in writing, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

9.9.4 Upon such partial occupancy or use, and upon Substantial Completion, the Owner will assume responsibility for maintenance, security and insuring that portion of the Work that it has put into use.

9.10 FINAL COMPLETION AND FINAL PAYMENT.

9.10.1 When all of the Work is finally completed and ready for final inspection, the Contractor shall notify the Owner and the Design Consultant thereof in writing. Thereupon, the Design Consultant and Owner will make final inspection of the Work and, if the Work is complete in full accordance with this Contract and this Contract has been fully performed, the Design Consultant will promptly issue a final Certificate for Payment certifying to the Owner that the Project is complete and that the Contractor is entitled to the remainder of the unpaid Contract Sum, less any amount withheld pursuant to this Contract. If the Design Consultant is unable to approve its final Certificate for Payment for reasons for which the Contractor is responsible and is required to repeat its final inspection of the Work, the Contractor shall bear the cost of such repeat final inspection(s), the reasonable cost of which may be deducted by the Owner from the Contractor's final payment.

9.10.2 The Contractor shall not be entitled to final payment unless and until redlines are accepted, and it submits to the Design Consultant all general warranties, survey certifications, and its affidavit that the payrolls, invoices for materials and equipment, and other liabilities connected

with the Work for which the Owner, or the Owner's property, might be responsible have been fully paid or otherwise satisfied or will be paid from final payment; releases and waivers of liens from all Subcontractors of the Contractor and of any and all other parties required by the Design Consultant or the Owner that are either unconditional or conditional on receipt of final payment, Certificates of insurance showing continuation of required insurance coverages; such other documents as Owner may request; and consent of Surety to final payment.

9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by Issuance of Change Orders affecting final completion, and the Design Consultant so confirms, the Owner shall, upon application by the Contractor and certification by the Design Consultant, and without terminating the Contract, make payment of the balance due for that portion of the work fully completed and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Design Consultant prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

9.10.4 The Owner shall make final payment of all sums due the Contractor not more than thirty (30) days after the Design Consultant's approval of a final Certificate for Payment.

9.10.5 Acceptance of final payment by the Contractor, a Subcontractor or material supplier shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payees as unsettled at the time of final Application for Payment.

9.11 **AUDIT.** Contractor agrees to maintain adequate books, payrolls and records satisfactory to the Owner in connection with any and all Work performed hereunder. Contractor agrees to retain all such books, payrolls and records (including data stored in computer) for a period of not less than three (3) years after completion of the Work. At all reasonable times, Owner and its duly authorized representatives shall have access to all personnel of Contractor and all such books, payrolls and records, and shall have the right to audit same.

9.12 **ADDITIONAL INSPECTIONS.** In addition to any liquidated damages payable to the Owner by the Contractor, if: (1) the Design Consultant is required to make more than one inspection for Substantial Completion, (2) the Design Consultant is required to make more than one inspection for final completion, or (3) the Work is not substantially complete within sixty days after the date established for Substantial Completion in the Contract Documents, the Owner shall be entitled to deduct from the Contract Sum amounts paid to the Design Consultant for any additional inspections or services, provided that the Design Consultant undertook these services due to the fault or neglect of the Contractor..

ARTICLE 10. PROTECTION OF PERSONS AND PROPERTY

10.1 SAFETY PRECAUTIONS AND PROGRAMS

10.1.1 The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Contract. Contractor shall develop a safety program applicable to each job site and to the Work to be done, review such program with Owner in advance of beginning the Work, and enforce such program at all times. Further, Contractor shall comply with all applicable laws and regulations including but not limited to, the standards and regulations promulgated by the Secretary of labor under the Occupational Safety and Health Act of 1970 (OSHA) and any other legislation enacted for the safety and health of contractor employees. Owner shall have the right, but not the obligation, to inspect and verify Contractor's compliance with Contractor's responsibility for protecting the safety and health of its employees and subcontractor.

10.1.2 Contractor shall notify Owner immediately, by telephone with prompt confirmation in writing, of all injuries and fatalities, including but not limited to copies of all reports and other documents filed or provided to Contractor's insurers and the State of Texas in connection with such injuries or fatalities.

10.1.3 Contractor has adopted or will adopt its own policy to assure a drug and alcohol free work place while performing the Work. Contractor's employees, agents, and subcontractors shall not perform any service for Owner while under the influence of alcohol or any controlled substance. Contractor, its employees, agents, and subcontractors shall not use, possess, distribute, or sell illicit or unprescribed controlled drugs or drug paraphernalia, or misuse legitimate prescription drugs while performing the Work. Contractor, its employees, agents, and Subcontractors shall not use, possess, distribute, or sell alcoholic beverages while performing the Work or while on the site of the Work. Contractor will remove any of its employees from performing the Work any time there is suspicion of alcohol and/or drug use, possession, or impairment involving such employee, and at any time an incident occurs where drug or alcohol use could have been a contributing factor. Owner has the right to require Contractor to remove employees from performing the Work any time cause exists to suspect alcohol or drug use. In such cases, Contractor's employees may only be considered for return to work after the Contractor certifies, as a result of a for-cause test conducted immediately following removal, that said employee was in compliance with this Contract. Contractor will not use an employee to perform the Work who either refuses to take, or tests positive in, any alcohol or drug test.

10.1.4 Contractor will comply with all applicable federal, state, and local drug and alcohol related laws and regulations (e.g., Department of Transportation regulations, Department of Defense Drug-free Work-free Workforce Policy, Drug-Free Workplace Act of 1988). The presence of any firearms or other lethal weapons by any person is prohibited on the Project site, regardless of whether the owner thereof has a permit for a concealed weapon.

10.1.5 Both Owner and Contractor agree that these safety and health terms are of the highest importance, and that a breach or violation of any of the terms of this Section by Contractor will be a material and substantial breach of this Contract. In the event that Owner shall determine that Contractor has breached or violated the terms of this Section, then Owner shall determine, immediately upon written notice to Contractor, whether the Work shall be suspended as a result thereof. If the Work is suspended, the Work shall not recommence until Owner shall be satisfied that the safety provisions hereof shall not be breached or violated thereafter. If Owner shall terminate the Contract as a result of such breach or violation, the Owner and Contractor shall complete their obligations hereunder to one another in accordance with Section 14.2 "Termination by Owner."

10.1.6 Nothing contained in this Section shall be interpreted as creating or altering the legal duty of Owner to Contractor or to Contractor's agents, employees, Subcontractors, or third parties, or altering the status of Contractor as an independent contractor.

10.1.7 Notwithstanding either of the above provisions or whether Owner exercises its rights set forth herein, Owner does not warrant nor represent to Contractor, Contractor's employees or agents, any subcontractors, or any other third party that Contractor's safety policy meets the requirements of any applicable law, code, rule, or regulation, nor does Owner warrant that the proper enforcement of Contractor's policy will insure that no accidents or injuries will occur. In addition, any action by Owner under these provisions in no way diminishes any of Contractor's obligations under applicable law or the contract documents.

10.2 SAFETY OF PERSONS AND PROPERTY

10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury or loss to:

10.2.1.1 employees on the Work and other persons who may be affected thereby;

10.2.1.2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under the care, custody or control of the Contractor or the Contractor's Subcontractors or Sub-subcontractors; and

10.2.1.3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of Construction.

10.2.2 The Contractor shall give notices and comply with applicable laws, ordinances, rules, regulations and lawful orders of public authorities bearing on safety of persons or property or their protection from damage, injury or loss.

10.2.3 The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent sites and utilities.

10.2.4 When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for the execution of the Work, the Contractor shall exercise extraordinary care and shall carry on such activities under the direct supervision of properly qualified personnel.

10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents). The Contractor shall also HOLD HARMLESS and UNCONDITIONALLY INDEMNIFY, PROTECT and DEFEND the City, its elected officials, employees, officers, directors, volunteers and representatives of the City, individually or collectively, from and against any and all damage or loss to property (other than the Work itself and including property of the Contractor and of the Owner) referred to in Clauses 10.2.1.2 and 10.2.1.3 but only to the extent caused in whole or in part by the acts or omissions of Contractor, its agents, servants, and employees, or its Subcontractors and their agents, servants, and employees, or anyone directly or indirectly employed by them, or by any other person or entity for which they may be responsible under the Contract Documents, in connection with the Work to be performed, services to be rendered, or materials to be furnished, under this Contract, including but not limited to violations of any statute, regulation, ordinance or provision of this Contract. Notwithstanding anything to the contrary included herein, in no event shall the Contractor be liable for claims arising out of accidents resulting from the sole negligence of Owner, all without however, waiving any governmental immunity available to the City under Texas Law and without waiving any defenses of the parties under Texas Law. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under paragraph 3.18.

10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Design Consultant.

10.2.7 The Contractor shall not load or permit any part of the construction or site to be loaded so as to endanger its safety.

10.3 **EMERGENCIES.**

10.3.1 In an emergency affecting safety of persons or property, the Contractor shall exercise its best efforts to act to prevent or minimize threatened damage, injury or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Section 4.3 and Article 7.

10.4 **PUBLIC CONVENIENCE AND SAFETY.**

10.4.1 The Contractor shall place materials stored at the Project site and shall conduct the Work at all times in a manner that causes no greater obstruction to the public than is considered necessary by the Owner. Sidewalks or streets shall not be obstructed, except by special permission of the Owner. Materials excavated and construction materials or plants used in the performance of the Work shall be placed in a manner that does not endanger the Work or prevent free access to all fire hydrants, water mains and appurtenances, water valves, gas valves, manholes for the telephone, telegraph signal or electric conduits, wastewater mains and appurtenances, and fire alarm or police call boxes in the vicinity.

10.4.2 The Owner reserves the right to remedy any neglect on the part of the Contractor in regard to public convenience and safety which may come to the Owner's attention, after twenty-four (24) hours notice in writing to the Contractor. In case of an emergency, the Owner shall have the right to immediately remedy any neglect without notice. In either case, the cost of any work done by or for the Owner to remedy the Contractor's neglect shall be deducted from the Contract Sum. The Contractor shall notify the City Traffic Control Department, the ODR and the Design Consultant when any street is to be closed or obstructed. The notice shall, in the case of major thoroughfares or street upon which transit lines operate, be at least forty-eight (48) hours in advance. The Owner reserves the right to postpone or prohibit any closure or obstruction of any streets or thoroughfares to the extent necessary for the safety and benefit of the traveling public. The Contractor shall, when directed by the Design Consultant or the Owner, keep any street or streets in condition for unobstructed use by City departments. When the Contractor is required to construct temporary bridges or make other arrangements for crossing over ditches or around structures, the Contractor's responsibility for accidents shall include the roadway approaches as well as the crossing structures.

10.5 BARRICADES, LIGHTS AND WATCHMEN.

10.5.1 If the Work is carried on, in, or adjacent to any street, alley or public place, the Contractor shall, at the Contractor's own cost and expense, furnish, erect and maintain sufficient barricades, fences, lights and danger signals, shall provide sufficient watchmen, and shall take such other precautionary measures as are necessary for the protection of persons or property and of the Work. All barricades shall be painted in a color that will be visible at night, and shall be illuminated by lights from sunset to sunrise. The term "lights," as used in this Section, shall mean flares, flashers, or other illuminated devices. A sufficient number of barricades with adequate markings and directional devices shall also be erected to keep vehicles from being driven on or into any Work under construction. The Contractor will be held responsible for all damage to the Work due to failure of barricades, signs, lights and watchmen to protect the Work. Whenever evidence is found of such damage, the Design Consultant may order the damaged portion immediately removed and replaced by the Contractor at Contractor's cost and expense. The Contractor's responsibility for maintenance of barricades, signs, and lights, and for providing watchmen as required under this Section 10.5 shall not cease until the Project has been finally accepted by the Owner.

10.6 PUBLIC UTILITIES AND OTHER PROPERTIES TO BE CHANGED.

10.6.1 In case it is necessary to change or move the property of the Owner or of any telecommunications or public utility, such property shall not be removed or interfered with until ordered to do so by the Design Consultant. The right is reserved to the owner of any public or private utilities to enter upon the Project site for the purpose of making such changes or repairs of their property that may become necessary during the performance of the Work. The Owner reserves the right of entry upon the Project site for any purpose, including repairing or relaying sewer and water lines and appurtenances, repairing structures, and for making other repairs, changes, or extensions to any of the Owner's property. The Owner's actions shall conform to the Contractor's current and approved schedule for the performance of the Work, provided that proper notification of schedule requirements has been given to the Owner by the Contractor.

10.7 TEMPORARY STORM SEWER AND DRAIN CONNECTIONS

10.7.1 When existing storm sewers or drains have to be taken up or removed, the Contractor shall, at its expense, provide and maintain temporary outlets and connections for all public and private storm sewers and drains. The Contractor shall also provide for all storm sewage and drainage which will be received from these storm drains and sewers. For this purpose, the Contractor shall provide and maintain, at the Contractor's own expense, adequate pumping facilities and temporary outlets or diversions. The Contractor shall, at the Contractor's own expense, construct such troughs, pipes, or other structures that may be necessary and shall be prepared at all times to dispose of storm drainage and sewage received from these temporary connections until such time as the permanent connections are built and are in service. The existing storm sewers and connections shall be kept in service and maintained under the Contract, except where specified or ordered to be abandoned by the Design Consultant. All storm water and sewage shall be disposed of in a satisfactory and lawful manner so that no nuisance is created and that the Work under construction will be adequately protected.

10.8 ARRANGEMENT AND CHARGE FOR WATER FURNISHED BY THE OWNER; ELECTRICITY FOR THE PROJECT.

10.8.1 When the Contractor desires to use the Owner's water in connection with the Work, the Contractor shall make complete and satisfactory arrangements with the San Antonio Water Service and shall be responsible for the cost of the water the Contractor uses. Where meters are used, the charge will be at the regular established rate; where no meters are used, the charge will be as prescribed by City ordinance, or where no ordinance applies, payment shall be based on estimates made by the representatives of the San Antonio Water Service.

10.8.2 The Contractor shall make complete and satisfactory arrangements for electricity and metered electrical connections with the Owner, or with any retail electric provider in the event that separately metered electrical connections are required for the Project. The Contractor shall pay for all electricity used in the performance of the Work through separate metered electrical connections obtained by the Contractor through a retail electric provider.

10.9 USE OF FIRE HYDRANTS.

10.9.1 The Contractor, Subcontractors, and any other person working on the Project shall not open, turn off, interfere with, attach any pipe or hose to, or connect anything with any fire hydrant, stop valve, or stop cock, or tap any water main belonging to the Owner, unless duly authorized to do so by the City.

10.10 ENVIRONMENTAL COMPLIANCE.

10.10.1 The Contractor and its Subcontractors are deemed to have made themselves familiar with and shall at all times shall comply with any and all applicable federal, state or local laws, rules, regulations, ordinances, and rules of common law now in effect (including any amendments now in effect), relating to the environment, Hazardous Substances or exposure to Hazardous Substances, including but not limited to the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C.A. §§ 9601, et seq.; the Hazardous Materials Transportation Act, 49 U.S.C.A. §§ 1801, et seq.; the Resource Conservation and Recovery Act of 1976, 42 U.S.C.A. §§ 6901, et seq.; the Federal Water Pollution Control Act, 33 U.S.C.A §§ 1201, et seq.; the Toxic Substances Control Act, 15 U.S.C.A. §§ 2601, et seq.; the Clean Air Act, 42 U.S.C.A. §§ 7401, et seq.; the Safe Drinking Water Act, 42 U.S.C.A. §§ 3808, et seq., and any current judicial or administrative interpretation of these laws, rules, regulations, ordinances, or rules of common law, including but not limited to any judicial or administrative order, consent decree, or judgment affecting the Project.

10.10.2 In the event the Contractor encounters on the Project site materials reasonably believed to be a Hazardous Substance that have not been rendered harmless, and the removal of such materials is not a part of the scope of Work required under the Contract Documents, the Contractor

shall immediately stop Work in the affected area and report in writing the facts of such encounter to the Design Consultant and the Owner. Work in the affected area shall not thereafter be resumed except by written order of the Owner and written consent of the Contractor, unless and until the material is determined not to be a Hazardous Substance or the Hazardous Substance is remediated. Unless removal of such materials is a part of the scope of Work required under the Contract Documents, the Owner shall remediate the Hazardous Substance with a separate contractor or through a Change Order with the Contractor. If the Hazardous Substance exists in the affected area due to the fault or negligence of the Contractor or any of its Subcontractors, the Contractor shall be responsible for remediating the condition at the sole expense of the Contractor. If applicable, such remediation shall be in accordance with the Contractor's Spill Remediation Plan. An extension of the Contract Time for any delay in the progress schedule caused as a result of the discovery and remediation of a Hazardous Substance may be granted by the Owner only if the Project critical path is affected. Any request for an extension of the Contract Time related to the discovery and remediation of a Hazardous Substance is subject to the provisions of Section 4.3 and Article 8.

10.10.3 The Contractor shall be responsible for identification, abatement, cleanup, control, removal, remediation, and disposal of any Hazardous Substance brought into or upon the site by the Contractor or any Subcontractor or Supplier. The Contractor shall obtain any and all permits necessary for the legal and proper handling, transportation, and disposal of the Hazardous Substance and shall, prior to undertaking any abatement, cleanup, control, removal, remediation, and disposal, notify the Owner and the Design Consultant so that they may observe the activities; provided, however, that it shall be the Contractor's sole responsibility to comply with all applicable laws, rules, regulations, or ordinances governing the activities.

ARTICLE 11. INSURANCE AND BONDS.

11.1 CONTRACTOR'S LIABILITY INSURANCE.

11.1.1 Without limiting any of the other obligations or liabilities of the Contractor under the Contract Documents, the Contractor shall purchase and maintain, during the term of the Contract and at the Contractor's own expense, the minimum liability insurance coverage described below with companies duly authorized or approved to do business in the State of Texas and otherwise satisfactory to the Owner. Contractor shall also require each Subcontractor performing work under the Contract, at the Subcontractor's own expense, to maintain during the term of the Contract levels of insurance that are necessary and appropriate for the Work performed, which levels of insurance comply with all applicable laws. The Subcontractor's liability insurance shall name the Contractor and the Owner as additional insureds by using endorsement CG 20 26 or broader. Certificates of insurance complying with the requirements prescribed in Section 11.1.2 which show the existence of each policy, together with copies of all policy endorsements showing the Owner as an additional insured, shall be delivered to the Design Consultant, who will in turn forward same to the Owner, before any Work is started. Contractor shall promptly furnish, upon the request of and without expense to the Owner, a copy of each policy required, including all endorsements.

11.1.1.1 Workers' Compensation, with statutory limits, with the policy endorsed to provide a waiver of subrogation as to the Owner; Employer's Liability Insurance of not less than \$100,000 for each accident, \$100,000 disease for each employee and \$500,000 disease policy limit.

11.1.1.2 Commercial General Liability Insurance, Including Personal Injury Liability, Independent Contractor's Liability, Products and Completed Operations and Contractual Liability covering, but not limited to, the liability assumed under the indemnification provisions of this Contract, fully insuring Contractor's (or Subcontractor's) liability for injury to or death of the Owner's employees and third parties, and for damage to property of third parties, with a combined bodily injury (including death) and property damage minimum limit of \$500,000 per occurrence, \$1,000,000 annual aggregate. If coverage is written on a claims-made basis, coverage shall be continuous (by renewal or extended

reporting period) for no less than 60 months following completion of the contract and acceptance of work by the City. Coverage, including any renewals, shall have the same retroactive date as the original policy applicable to the Project. The Owner and the Design Consultant shall be named as additional insureds by using endorsement CG 20 26 or broader.

The general liability policy shall include coverage extended to apply to completed operations and XCU hazards. The Completed Operations coverage must be maintained for a minimum of one (1) year after final completion and acceptance of the Work, with evidence of same filed with Owner. The policy shall include an endorsement CG2503 amendment of limits (designated project or premises) in order to extend the policy's limits specifically to the project in question.

11.1.1.3 Business Automobile Liability Insurance, covering owned, hired and non-owned vehicles, with a combined bodily injury (including death) and property damage minimum limit of \$500,000 per occurrence. Such insurance shall include coverage for loading and unloading hazards.

11.1.2 Certificates of Insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the Work. These certificates required under Section 11.1 shall contain a provision that coverages afforded under the policies will not be cancelled, nonrenewed, or materially changed until at least thirty (30) days prior written notice has been given to the Owner. If any of the foregoing insurance coverages are required to remain in force after final payment and are reasonably available, an additional certificate evidencing continuation of such coverage shall be submitted with the final Application for Payment as required by Section 9.10.2. Information concerning reduction of coverage shall be furnished by the Contractor to the Owner with reasonable promptness in accordance with the Contractor's information and belief.

11.1.3 If any insurance company for the Contractor, which company provides insurance required under the Contract Documents, becomes insolvent or becomes the subject of any rehabilitation, conservatorship, or liquidation or similar proceeding, the Contractor shall procure, immediately upon first notice of such occurrence and without cost to the Owner, replacement insurance coverage before continuing the performance of the Work at the Project. Any failure to provide such replacement insurance coverage shall constitute a material breach of the Contract.

11.2 PROPERTY INSURANCE

11.2.1 In addition to the insurance described in Sections 11.1 and 11.4, the Contractor shall obtain at its expense, and maintain throughout the duration of the Project, All-Risk Builder's Risk Insurance, if the Project involves complete construction of a new building, or an All-Risk Installation Floater policy, if the Project involves materials and supplies needed for additions to, or renovations or remodeling of an existing building. Coverage on either policy shall be All-Risk, including, but not limited to, Fire, Extended Coverage, Vandalism and Malicious Mischief, Flood (if located in a flood zone) and Theft, in an amount equal to one hundred percent (100%) of the insurable value of the Project for the Installation Floater policy, and one hundred percent (100%) of the replacement cost of the Project for the Builder's Risk policy. If an Installation Floater policy is provided, the Owner shall be shown as a Joint Named Insured with respect to the Project. If a Builder's Risk policy is provided, the policy shall be written on a Completed Value Form, including materials delivered and labor performed for the Project. This policy shall be in the name of the Contractor and naming the Owner and the Subcontractors, and Sub-Subcontractors as additional insureds as their interests may appear. The policy shall have endorsements as follows:

11.2.1.1 This insurance shall be specific as to coverage and not contributing insurance with any permanent insurance maintained on the property.

11.2.1.2 Loss, if any, shall be adjusted with and made payable to the Contractor or the Owner and Contractor as trustee for the insureds as their interests may appear.

11.2.1.3 The right of subrogation under the policy shall be waived as to the Design Consultant.

11.2.2 Boiler and Machinery Insurance. The Owner shall purchase and maintain boiler and machinery insurance required by the Contract Documents or by law, which shall specifically cover such insured objects during installation and until final acceptance by the Owner. This insurance shall include the interests of the Owner, Contractor, Subcontractors and Sub-subcontractors in the Work, and the Owner and Contractor shall be named insureds.

11.2.3 Loss of Use Insurance. The Owner, at the Owner's option, may purchase and maintain such insurance as will insure the Owner against loss of use of the Owner's property due to fire or other hazards, however caused. The Owner waives all rights of action against the Contractor that it may now have or have in the future for loss or damage to Owner's property howsoever arising, including consequential losses due to fire or other hazards however caused, ..

11.2.4 The Contractor shall provide to the Design Consultant for delivery to the Owner a certificate of insurance evidencing all property insurance policies procured under this Section 11.2 and all endorsements thereto before any exposure to loss may occur.

11.2.5 If any insurance company which provides insurance for the Contractor that is required under the Contract Documents becomes insolvent or becomes the subject of any rehabilitation, conservatorship, or liquidation or similar proceeding, the Contractor shall immediately cease the performance of the Work and shall procure, immediately upon first notice of such occurrence and without cost to the Owner, replacement insurance coverage before continuing the performance of the Work at the Project. Any failure to provide such replacement insurance coverage shall constitute a material breach of the Contract.

11.2.6 Partial occupancy or use in accordance with Section 9.9 shall not commence until the insurance company or companies providing property insurance have consented to such partial occupancy or use by endorsement or otherwise. The Owner and the Contractor shall take reasonable steps to obtain consent of the insurance company or companies and shall take no action without mutual written consent with respect to partial occupancy or use that would cause cancellation, lapse or reduction of insurance.

11.3 PERFORMANCE BOND AND PAYMENT BONDS

11.3.1 Subject to the provisions of Section 11.3.2, the Contractor shall, with the execution and delivery of the Building Construction Services Agreement, furnish and file with the Owner in the amounts required in this Section, the surety bonds described in Sections 11.3.1.1 and 11.3.1.2 below, which surety bonds shall be in accordance with the provisions of Chapter 2253, Texas Government Code, as amended. Each bond shall be signed by the Contractor, as Principal, and by an established corporate surety bonding company, as surety, meeting the requirements of Section 11.3.3 and approved by the Owner. The surety bonds shall be accompanied by an appropriate Power-of-Attorney clearly establishing the extent and limitations of the authority of each signer to so sign:

11.3.1.1 Performance Bond. A good and sufficient bond in an amount equal to 100% of the total Contract Sum, guaranteeing the full and faithful execution of the Work and performance of the Contract in accordance with Plans, Specifications and all other Contract Documents, including any extensions thereof, for the protection of the Owner. This bond shall also provide for the repair and maintenance of all defects due to faulty materials and workmanship that appear within a period of one (1) year from the date of final Completion or acceptance of the Work by the Owner or lesser or longer periods as may be otherwise designated in the Contract Documents.

11.3.1.2 Payment Bond. A good and sufficient bond in an amount equal to 100% of the total Contract Sum, guaranteeing the full and prompt payment of all claimants supplying labor or materials in the prosecution of the Work provided for in the Contract, and for the use and protection of each claimant.

11.3.2 If the Contract Sum, including Owner-accepted Alternates and allowances, if any, is greater than \$100,000, Performance and Payment Bonds in 100% of the Contract Sum are mandatory and shall be provided by the Contractor. If the Contract Sum is greater than \$25,000 but less than or equal to \$100,000, only a Payment Bond in 100% of the Contract amount is mandatory; provided, however, that the Contractor may elect to also furnish a Performance Bond in the same amount if the Contractor so chooses. If the Contract Sum is less than or equal to \$25,000, the Contractor may elect not to provide Performance and Payment Bonds; provided that in such event, no money will be paid to the Contractor until Final Completion of all Work by Owner. If the Contractor elects to provide Performance and Payment Bonds, the Contract Sum shall be payable to the Contractor through progress payments in accordance with these General Conditions.

11.3.3 No surety will be accepted by the Owner that is now in default or delinquent on any bonds or that is a party to any litigation against the Owner. All bonds shall be made and executed on the Owner's standard forms, shall be approved by the Owner, and shall be executed by not less than one corporate surety that is authorized and admitted to do business in the State of Texas, is licensed by the State of Texas to issue surety bonds, is listed in the most current United States Department of the Treasury List of Acceptable Sureties, and is otherwise acceptable to the Owner. Each bond shall be executed by the Contractor and the surety, and shall specify that legal venue for enforcement of each bond shall lie exclusively in Bexar County, Texas. Each surety shall designate an agent resident in Bexar County, Texas to which any requisite statutory notices may be delivered and on which service of process may be had in matters arising out of the suretyship.

11.3.4 The person or persons, partnership, company, firm, limited liability company, association, corporation, or other business entity to whom the Contract is awarded shall, within ten (10) days after such award, sign the required Contract with the Owner and provide the necessary surety bonds and evidence of insurance as required under the Contract Documents. No Contract shall be binding on the Owner until it has been approved as to form by the City Attorney, executed for the Owner by the City Manager, the performance and payment bonds and evidence of insurance have been furnished as required by the Contract Documents, and the fully executed Contract has been delivered to the Contractor.

11.3.5 The failure of the Contractor to execute the Contract or deliver the required bonds and evidence of insurance within ten (10) days after the Contract is awarded or as soon thereafter as the Owner can assemble and deliver the Contract shall, at the Owner's option, constitute a material breach of the Contractor's bid proposal and the Owner may rescind the Contract award and collect or retain the proceeds of the bid security. By reason of the uncertainty of the market prices for materials and labor, and it being impracticable and difficult to determine accurately the amount of damages occurring to the Owner by reason of the Contractor's failure to execute and furnish the bonds and to sign the Contract within ten (10) days, the filing of a bid proposal shall constitute an acceptance of this Section 11.3.5. In the event the Owner should readvertise for bids, the defaulting Contractor shall not be eligible to bid, and the lowest responsible bid obtained in the readvertisement shall be the bid referred to in this Section.

11.4 **'UMBRELLA' LIABILITY INSURANCE**

11.4.1 The Contractor shall obtain, pay for and maintain umbrella liability insurance during the Contract term, insuring Contractor for an amount of not less than \$5,000,000 per occurrence combined limit Bodily Injury (including death) and Property Damage, that follows form and applies in excess of the primary coverage required hereinabove. The Owner and Design Consultant shall be named as additional insureds using endorsement CG 20 26 or broader. No aggregate shall be

permitted for this type of coverage. The policy shall provide "drop down" coverage where underlying primary insurance coverage limits are insufficient or exhausted.

11.5 POLICY ENDORSEMENTS AND SPECIAL CONDITIONS

11.5.1 Each insurance policy to be furnished by the Contractor shall address the following required provisions within the certificate of insurance, which shall be reflected in the body of the insurance contract and/or by endorsement to the policy:

11.5.1.1 That the Owner and Design Consultant shall be named as additional insureds on all liability coverages, using endorsement CG 20 26 or broader. Where the Owner employs a Construction Manager on the Project, the Contractor and Subcontractor shall include the Construction Manager on all liability insurance policies to the same extent as the Owner and Design Consultant are required to be named as additional insureds.

11.5.1.2 That each insurance policy shall require that thirty (30) days prior to the expiration, cancellation, nonrenewal or any material change in coverage, a notice thereof shall be given to Owner. Contractor shall also notify Owner, within 10 days after receipt, of any notice of expiration, cancellation, nonrenewal or material change in coverage it receives from its insurer.

11.5.1.3 That the term "Owner" or "City of San Antonio" shall include all authorities, boards, bureaus, commissions, divisions, departments and offices of the Owner and the individual members, employees and agents thereof in their official capacities, while acting on behalf of Owner (the City of San Antonio).

11.5.1.4 That the policy phrase or clause "Other Insurance" shall not apply to Owner where Owner is an additional insured on the policy. The insurance coverage furnished by Contractor as required is considered to be primary insurance for purposes of the Project and the additional insureds named in the required policies.

11.5.1.5 That all provisions of the Contract Documents concerning liability, duty and standard of care, together with the indemnification provision, shall, to the maximum extent allowable in the insurance market, be underwritten by contractual liability coverage sufficient to include such obligations with the applicable liability policies.

11.5.1 Concerning the insurance to be furnished by the Contractor, it is a condition precedent to acceptability that:

11.5.2.1 All policies must comply with the applicable requirements and special provisions of this Article.

11.5.2.2 Any policy evidenced by a certificate of insurance shall not be subject to limitations, conditions or restrictions deemed inconsistent with the intent of the insurance requirements set forth herein, and the Owner's decision regarding whether any policy contains such provisions, contrary to this requirement, shall be final.

11.5.2.3 All policies required are to be written through companies duly authorized and approved to transact that class of insurance in the State of Texas and that are otherwise acceptable to the Owner.

11.5.2 The Contractor agrees to the following special provisions:

11.5.3.1 The Contractor hereby waives subrogation rights for loss or damage to the extent same are covered by insurance. Insurers shall have no right of recovery or subrogation against the Owner, it being the intention that the insurance policies shall protect all parties to the Contract and be primary coverage for all losses covered by the

policies. This waiver of subrogation shall be included, by endorsement or otherwise, as a provision of all policies required under this Article 11.

11.5.3.2 Insurance companies issuing the insurance policies and the Contractor shall have no recourse against the Owner for payment of any premiums or assessments for any deductibles, as all such premiums and deductibles are the sole responsibility and risk of Contractor.

11.5.3.3 Approval, disapproval or failure to act by the Owner regarding any insurance supplied by the Contractor (or any Subcontractors) shall not relieve the Contractor of any responsibility or liability for damage or accidents as set forth in the Contract Documents. The bankruptcy, insolvency or denial of liability of or by the Contractor's insurance company shall likewise not exonerate or relieve the Contractor from liability.

11.5.3.4 The Owner reserves the right to review the insurance requirements of this Article 11 during the effective period of this Contract and to adjust insurance coverages and their limits when deemed necessary and prudent by Owner's Risk Management Division based upon changes in statutory law, court decisions, or the claims history of the Contractor and the Subcontractors. The Contractor agrees to make any reasonable request for deletion, revision or modification of particular policy terms, conditions, limitations or exclusions (except where policy provisions are established by law or regulation binding upon either party to this Contract or upon the underwriter of any such policy provisions). Upon request by the Owner, the Contractor shall exercise reasonable efforts to accomplish such changes in policy coverages, at the Owner's cost and expense.

11.5.3.5 No special payments shall be made for any insurance policies that the Contractor and Subcontractors are required to carry. Except as provided in Section 11.5.3.4, all amounts payable regarding the insurance policies required under the Contract Documents are included in the Contract Sum.

11.5.3 Any insurance policies required under this Article may be written in combination with any of the other policies, where legally permitted, but none of the specified limits may be lowered or otherwise negatively impacted by doing so, nor may any of the requirements or special provisions of this Article be limited or circumvented by doing so.

ARTICLE 12. UNCOVERING AND CORRECTION OF WORK

12.1 UNCOVERING OF WORK

12.1.1 If a portion of the Work is covered contrary to the Owner's or Design Consultant's written request or to requirements specifically expressed in the Contract Documents, it must, if required in writing by the Owner or Design Consultant, be uncovered for the Owner's or Design Consultant's inspection and be replaced at the Contractor's expense without change in the Contract Time.

12.1.2 If a portion of the Work has been covered which the Design Consultant has not specifically requested in writing to inspect prior to its being covered, the Design Consultant may request to inspect such Work and the Contractor shall uncover it. If such Work is in accordance with the Contract Documents, costs of uncovering and replacement shall, by appropriate Change Order, be charged to the Owner. If such Work is not in accordance with the Contract Documents, the Contractor shall pay such costs unless the condition was caused by the Owner or a separate contractor, in which event the Owner shall be responsible for payment of such costs.

12.2 CORRECTION OF WORK

12.2.1 The Contractor shall promptly correct Work rejected by the Owner or Design Consultant as failing to conform to the requirements of the Contract Documents, whether inspected before or after Substantial Completion and whether or not fabricated, installed or completed. The Contractor shall bear costs of correcting such rejected Work, and all additional testing, inspections, and compensation for the Design Consultant's services and expenses made necessary thereby.

12.2.2 If any of the Work is found to be defective or nonconforming with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Design Consultant or the Owner to do so unless the Owner has previously given the Contractor a written acceptance or waiver of the defect or nonconformity. The Contractor's obligation to correct defective or nonconforming Work remains in effect for:

12.2.2.1 one year after the date of Substantial Completion of the Work or designated portion of the Work;

12.2.2.2 one year after the date for commencement of warranties established by agreement in connection with partial occupancy under Section 9.9.1; or

12.2.2.3 the stipulated duration of any applicable special warranty required by the Contract Documents.

12.2.3 The one-year period described in Sections 12.2.2.1 and 12.2.2.2 shall be extended with respect to portions of the Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of the Work.

12.2.4 The obligations of the Contractor under this Paragraph 12.2 shall survive final acceptance of the Work and termination of this Contract. The Owner shall give notice to the Contractor promptly after discovery of a defective or nonconforming condition in the Work. The one-year period stated in Sections 12.2.2.1 and 12.2.2.2 does not limit the ability of the Owner to require the Contractor to correct latent defects or nonconformities in the Work, which defects or nonconformities could not have been discovered through reasonable diligence by the Owner or the Design Consultant at the time the Work was performed or at the time of inspection for certification of Substantial Completion or final completion. The one year period also does not relieve the Contractor from liability for any defects or deficiencies in the Work that may be discovered after the expiration of the one year correction period.

12.2.5 The Contractor shall remove from the Project site portions of the Work which are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

12.2.6 If the Contractor fails to correct defective or nonconforming Work within a reasonable time after notice from the Owner or the Design Consultant, the Owner may correct it in accordance with Section 2.4. If the Contractor does not proceed with correction of defective or nonconforming Work within a reasonable time fixed by written notice from the Owner or the Design Consultant, the Owner may remove or replace the defective or nonconforming Work and store the salvageable materials or equipment at the Contractor's expense. If the Contractor does not pay the costs of removal and storage within ten days after written notice by the Owner or the Design Consultant, the Owner may, upon ten (10) additional days written notice, sell the materials and equipment at auction or at private sale and shall account for the proceeds after deducting costs and damages that should have been borne by the Contractor, including compensation for the Design Consultant's services and expenses made necessary as a result of the sale. If the proceeds of sale do not cover the costs which the Contractor should have borne, the Contract Sum shall be reduced by the deficiency. If payments due to the Contractor then or thereafter are not sufficient to cover the deficiency, the Contractor shall pay the difference to the Owner.

12.2.7 The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner or separate contractors, whether the construction is completed or partially completed, that is caused by the Contractor's correction or removal of Work which is not in accordance with the requirements of the Contract Documents.

12.2.8 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations which the Contractor might have under the Contract Documents. Establishment of the one-year time period as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

12.2.9 Any Work repaired or replaced pursuant to this Article 12 shall be subject to the provisions of Article 12 to the same extent as Work originally performed or installed.

12.3 ACCEPTANCE OF NONCONFORMING WORK

12.3.1 The Owner may, in the Owner's sole discretion, accept Work which is not in accordance with the requirements of the Contract Documents instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable as determined by the Owner and the Design Consultant. The adjustment will be accomplished whether or not final payment has been made.

ARTICLE 13. COMPLETION OF THE CONTRACT; TERMINATION; TEMPORARY SUSPENSION

13.1 **FINAL COMPLETION OF CONTRACT.** The Contract will be considered completed, except as provided in any warranty or maintenance stipulations, bond, or by law, when all the Work has been finally completed, the final inspection is made by the Design Consultant, and final acceptance and final payment is made by the Owner.

13.2 **WARRANTY FULFILLMENT.** Prior to the expiration of the specified warranty period provided for in the Contract Documents, the Design Consultant will make a detailed inspection of the Work and will advise the Contractor and the Contractor's Surety of the items that require correction. The Design Consultant will make a subsequent inspection and if the corrections have been properly performed, the Design Consultant will issue a letter of release on the maintenance obligations to the Contractor and the Surety. If for any reason the Contractor has not made the required corrections before the expiration of the warranty period, the warranty provisions as provided for in the Contract Documents shall remain in effect until the corrections have been properly performed and a letter of release issued.

13.3 TERMINATION BY THE OWNER FOR CAUSE.

13.3.1 Notwithstanding any other provision of these General Conditions, the Work or any portion of the Work may be terminated immediately by the Owner for any good cause after giving seven (7) days advance written notice and opportunity to cure to the Contractor, including but not limited to the following causes:

13.3.1.1 Failure or refusal of the Contractor to start the Work within ten (10) days after the date of written notice by the Owner to commence the Work.

13.3.1.2 A reasonable belief that the progress of the Work being made by the Contractor is insufficient to complete the Work within the specified time.

13.3.1.3 Failure or refusal of the Contractor to provide sufficient and proper equipment or construction forces to properly execute the Work in a timely manner.

13.3.1.4 A reasonable belief that the Contractor has abandoned the Work.

13.3.1.5 A reasonable belief that the Contractor has become insolvent, bankrupt, or otherwise financially unable to carry on the Work.

13.3.1.6 Failure or refusal on the part of the Contractor to observe any material requirements of the Contract Documents or to comply with any written orders given by the Design Consultant or the Owner as provided for in the Contract Documents.

13.3.1.7 Failure or refusal of the Contractor to promptly make good any defects in materials or workmanship, or any defects of any nature, the correction of which has been directed in writing by the Design Consultant.

13.3.1.8 A reasonable belief by the Owner that collusion exists or has occurred for the purpose of illegally procuring the contract or a Subcontractor, or that a fraud is being perpetrated on the Owner in connection with the construction of Work under the Contract.

13.3.1.9 Repeated and flagrant violation of safe working procedures.

13.3.2 When the Work or any portion of the Work is terminated for any of the causes itemized above or for any other cause except termination for convenience pursuant to Section 13.3.5, the Contractor shall, as of the date specified by the Owner, discontinue the Work or portion of the Work as the Owner shall designate, whereupon the Surety shall, within fifteen (15) days after the written notice of termination for cause has been served upon the Contractor and the Surety or its authorized agents, assume the obligations of the Contractor for the Work or that portion of the Work which the Owner has ordered the Contractor to discontinue and may:

13.3.2.1 perform the Work with forces employed by the surety;

13.3.2.2 with the written consent of the Owner, tender a replacement contractor to take over and perform the Work, in which event the surety shall be responsible for and pay the amount of any costs required to be incurred for the completion of the Work that are in excess of the amount of funds remaining under the Contract as of the time of the termination; or

13.3.2.3 with the written consent of the Owner, tender and pay to the Owner in settlement the amount of money necessary to finish the balance of uncompleted Work under the Contract, correct existing defective or nonconforming work, and compensate the Owner for any other loss sustained as a result of Contractor's default.

In the event of termination for cause involving Articles 13.3.2.1 and 13.3.2.2, the Surety shall assume the Contractor's place in all respects, and the amount of funds remaining unpaid under the Contract shall be paid by the Owner for all Work performed by the surety or the replacement contractor in accordance with the terms of the Contract Documents, subject to any rights of the Owner to deduct any costs, damages, or liquidated or actual damages that the Owner may have incurred, including but not limited to additional fees and expenses of the Design Consultant and attorneys fees, as a result of such termination..

13.3.3 The balance of the Contract Sum remaining at the time of the Contractor's default and of the termination shall become due and payable to the surety as the Work progresses, subject to all of the terms, covenants, and conditions of the Contract Documents. If the surety does not, within the time specified in Section 13.3.2, exercise its obligation to assume the obligations of the Contractor, or that portion of the Contract which the Owner has ordered the Contractor to discontinue, then the Owner shall have the power to complete the Work by contract or otherwise, as it may deem necessary. The Contractor agrees that the Owner shall have the right to take possession of or use any or all of the materials, plant, tools, equipment, supplies, and property of every kind provided by the Contractor for the purpose of the Work, and to procure other tools,

equipment, labor, and materials for the completion of the Work, and to charge to the account of the Contractor the expenses of completion and labor, materials, tools, equipment, and incidental expenses. The expenses incurred by the Owner to complete the Work shall be deducted by the Owner out of the balance of the Contract Sum remaining unpaid to or unearned by the Contractor. The Contractor and the surety shall be liable to the Owner for any costs incurred in excess of the balance of the Contract Sum for the completion and correction of the Work, and for any other costs, damages, expenses (including but not limited to additional fees of the Design Consultant and attorney's fees), and liquidated or actual damages, as the case may be, incurred as a result of the termination.

13.3.4 The Owner shall not be required to obtain the lowest bid for the Work of completing the Contract as described in Section 13.3.3, but the expenses to be deducted from the Contract Sum shall be the actual cost of such Work and the other damages as provided in Section 13.3.3. In case the Owner's costs and damages are less than the sum which would have been payable under the Contract if the same had been completed by the Contractor, then the Owner may pay to the Contractor (or the Surety, in the event of a complete termination for cause) the difference, provided that the Contractor (or the Surety) shall not be entitled to any claim for damages or for loss of anticipated profits. In case such costs for completion and damages shall exceed the amount which would have been payable under the Contract if the same had been completed by the Contractor, then the Contractor and his Sureties shall pay the amount of the excess to the Owner on notice from the Owner for the excess amount owed. When only a particular part of the Work is being carried on by the Owner by contract or otherwise under the provisions of this Section, the Contractor shall continue the remainder of the Work in conformity with the terms of the Contract and in such manner as not to hinder or interfere with the performance of workmen employed and provided by the Owner.

13.3.5 The right to terminate this Contract for the convenience of the Owner (including but not limited to non-appropriation of funding) is expressly retained by the Owner. In the event of a termination for convenience, the Owner shall deliver at least ten (10) days advance written notice of the termination for convenience to the Contractor. Upon the Contractor's receipt of such written notice, the Contractor shall cease the performance of the Work and shall take reasonable and appropriate action to secure and protect the Work in place. The Contractor shall then be paid by the Owner in accordance with the terms and provisions of the Contract Documents an amount not to exceed the actual labor costs incurred, the actual cost of all materials stored at the Project site or away from the Project site as approved by the Owner but not yet paid for and which can not be returned, plus applicable overhead and profit, and actual, reasonable, and documented termination costs, if any, paid by the Contractor in connection with the Work in place which is completed and in conformance with the Contract Documents to the date of termination for convenience, less all amounts previously paid for the Work. No amount shall ever be due to the Contractor for lost or anticipated profits on any part of the Work not performed.

13.4 TEMPORARY SUSPENSION OF THE WORK

13.4.1 The Work or any portion of the Work may be temporarily suspended by the Owner, for a time period not to exceed ninety days, immediately upon written notice to the Contractor for any reason, including but not limited to:

13.4.1.1 the causes described in Sections 13.3.1.1 through 13.3.1.9 above;

13.4.1.2 under other provisions in the Contract Documents that require or permit temporary suspension of the Work;

13.4.1.3 situations where the Work is threatened by, contributes to, or causes an immediate threat to public health, safety, or security; or

13.4.1.4 other unforeseen conditions or circumstances.

13.4.2 The Contractor shall immediately resume the temporarily suspended Work when ordered in writing by the Owner to do so. The Owner shall not under any circumstances be liable for any claim of the Contractor arising from a temporary suspension due to a cause described in Article 13.4.1 above; provided, however, that in the case of a temporary suspension for any of the reasons described under Articles 13.4.1.2 through 13.4.1.4, where the Contractor is not a contributing cause of the suspension or where the provision of the Contract Documents in question does not specifically provide that the suspension is at no cost to the Owner, the Owner will make an equitable adjustment for the following items, provided that a claim is properly made by the Contractor under Section 4.3 of these General Conditions:

13.4.2.1 an equitable extension of the Contract Time, not to exceed the actual delay caused by the temporary suspension as determined by the Design Consultant and the Owner;

13.4.2.2 an equitable adjustment to the Contract Sum for the actual, necessary, and reasonable costs of properly protecting any Work that is finished or partially finished during the period of the temporary suspension (no profit and overhead shall be allowed on top of these costs); and

13.4.2.3 if it becomes necessary to move equipment from the Project site and then return it to the Project site when the Work is ordered to be resumed, an equitable adjustment to the Contract Sum for the actual, necessary, and reasonable cost of these moves; provided, however, that no adjustment shall be due if the equipment is moved to another Project site of the Owner.

ARTICLE 14. MISCELLANEOUS PROVISIONS

14.1 GOVERNING LAW; COMPLIANCE WITH LAWS AND REGULATIONS

14.1.1 This Contract shall be governed by the laws and case decisions of the State of Texas, without regard to conflict of law or choice of law principles of Texas or of any other state.

14.1.2 This Contract is entered into subject to and controlled by the Charter and ordinances of the City of San Antonio and all applicable laws, rules, and regulations of the State of Texas and the Government of the United States of America. The Contractor shall, during the performance of the Work, comply with all applicable City codes and ordinances, as amended, and all applicable State and Federal laws, rules and regulations, as amended.

14.2 SUCCESSORS AND ASSIGNS

14.2.1 The Owner and the Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to the promises, covenants, terms, conditions, and obligations contained in the Contract Documents. The Contractor shall not assign, transfer, or convey its interest or rights in the Contract, in part or as a whole, without the written consent of the Owner. If the Contractor attempts to make an assignment, transfer, or conveyance without the Owner's written consent, the Contractor shall nevertheless remain legally responsible for all obligations under the Contract Documents. The Owner shall not assign any portion of the Contract Sum due or to become due under this Contract without the written consent of the Contractor, except where assignment is compelled by court order or other operation of law.

14.3 WRITTEN NOTICE.

14.3.1 Any notice, payment, statement, or demand required or permitted to be given under this Contract by either party to the other may be effected by personal delivery in writing or by facsimile transmission or by mail, postage prepaid, or by overnight delivery to an officer, management level employee,, or other designated representative of either party. Mailed notices shall be addressed to the parties at an address designated by each party, but each party may change its address by

written notice in accordance with this section. Mailed notices shall be deemed received as of three (3) days after mailing.

14.4 RIGHTS AND REMEDIES; NO WAIVER OF RIGHTS BY OWNER

14.4.1 The duties and obligations imposed on the Contractor by the Contract Documents and the rights and remedies available to the Owner under the Contract Documents shall be in addition to, and not a limitation of, any duties, obligations, rights, and remedies otherwise imposed or made available by law.

14.4.2 No action or failure to act by the Owner shall constitute a waiver of a right afforded the Owner under the Contract Documents, nor shall any action or failure to act by the Owner constitute approval of or acquiescence in a breach of the Contract by Contractor, except as may be specifically agreed in writing by Change Order or Supplemental Agreement.

14.5 INTEREST

14.5.1 The Owner shall not be liable for interest on any progress or final payment to be made under the Contract Documents, except as may be provided by the applicable provisions of the Prompt Payment Act, Chapter 2251, Texas Government Code, as amended, subject to Section 9.6.1 of these General Conditions.

14.6 INDEPENDENT MATERIALS TESTING AND INSPECTION.

14.6.1 In some circumstances, the City will retain, independent of the Contractor, the inspection services, the testing of construction materials engineering, and the verification testing services necessary for acceptance of the Project by the City. Such consultants will be selected in accordance with Section 2254.004 of the Government Code. The professional services, duties, and responsibilities of those independent consultants will be described in the agreements between the City and those consultants. The provision of inspection services by City shall not reduce or lessen Contractor's responsibility for the Work or its duty to establish and implement a program to monitor the quality of construction to guard the City against defects and deficiencies in the Work, required above. Contractor is fully and solely responsible for constructing the Project in strict accordance with the Construction Documents.

14.6.2 In connection with the City's visual observation/inspection of the Work or materials testing contemplated herein, it is clearly understood that the Contractor is responsible for his own quality control inspection and testing services to assure Project compliance with plans, specifications and other included instruments. The Contractor shall give the City's "COI" reasonable advanced notice of the readiness of any Work for observation/inspection, and when practicable, twenty-four (24) hours notice. If any underground Work is performed without the proper prior notification to the City's "COI", it shall be uncovered for observation/inspection and properly restored at the Contractor's expense.

14.7 OFFICERS OR EMPLOYEES OF THE OWNER NOT TO HAVE FINANCIAL INTEREST IN ANY CONTRACT OF THE OWNER

14.7.1 Contractor acknowledges that it is informed that the Charter of the City of San Antonio and its Ethics Code prohibit a City officer or employee, as those terms are defined in Section 2-52 of the Ethics Code, from having a financial interest in any contract with the City or any City agency, such as city owned utilities. An officer or employee has a "prohibited financial interest" in a contract with the City or in the sale to the City of land, materials, supplies or service, if any of the following individual(s) or entities is a party to the contract or sale: a City officer or employee; his parent, child or spouse; a business entity in which the officer or employee, or his parent, child or spouse owns ten (10) percent or more of the voting stock or shares of the business entity, or ten (10) percent or more of the fair market value of the business entity; a business entity in which any individual or entity above listed is a subcontractor on a City contract, a partner or a parent or subsidiary business entity. Pursuant to the subsection above, the Contractor warrants and

certifies, and this Contract is made in reliance thereon, that it, its officers, employees and agents are neither officers nor employees of the City. The Contractor further warrants and certifies that it has tendered to the City a Discretionary Contracts Disclosure Statement in compliance with the City's Ethics Code. Any violation of this article shall constitute malfeasance in office, and any officer or employee of Owner guilty thereof shall thereby forfeit his office or position. Any violation of this section, with the knowledge, express or implied, of the person, persons, partnership, company, firm, association or corporation contracting with the Owner shall render the Contract involved voidable by the Owner's City Manager or City Council.

14.8 VENUE

14.8.1 This Contract is performed in Bexar County, Texas, and if legal action is necessary to enforce this Contract, exclusive venue shall lie in Bexar County, Texas.

14.9 INDEPENDENT CONTRACTOR

14.9.1 In performing the Work under this Contract, the relationship between the Owner and the Contractor is that of an independent contractor. The Contractor shall exercise independent judgment in performing the Work and is solely responsible for setting working hours, scheduling or prioritizing the Work flow and determining the means and methods of performing the Work, subject only to the requirements of the Contract Documents. No term or provision of this Contract shall be construed as making the Contractor an agent, servant, or employee of the Owner, or making the Contractor or any of the Contractor's employees, agents, or servants eligible for the fringe benefits, such as retirement, insurance and worker's compensation, which the Owner provides to its employees.

14.10 NONDISCRIMINATION

14.10.1 As a condition of this Contract, the Contractor covenants that he will take all necessary actions to insure that, in connection with any Work under this Contract, the Contractor and its Subcontractors will not discriminate in the treatment or employment of any individual or groups of individuals on the grounds of race, color, religion, national origin, age, sex, or handicap unrelated to job performance, either directly, indirectly or through contractual or other arrangements. The Contractor shall also comply with all applicable requirements of the Americans with Disabilities Act, 42 U.S.C.A. §§12101-12213, as amended. In this regard, the Contractor shall keep, retain and safeguard all records relating to his Contract or Work performed thereunder for a minimum period of three (3) years from final Contract completion, with full access allowed to authorized representatives of the Owner, upon request, for purposes of evaluating compliance with this and other provisions of the Contract.

14.11 GIFTS TO PUBLIC SERVANTS

14.11.1 The Owner may terminate this Contract immediately if the Contractor has offered, conferred, or agreed to confer any benefit on a City of San Antonio employee or official that the City of San Antonio employee or official is prohibited by law from accepting.

14.11.2 For purposes of this Article, "benefit" means anything reasonably regarded as pecuniary gain or pecuniary advantage, including benefit to any other person in whose welfare the beneficiary has a direct or substantial interest, but does not include a contribution or expenditure made and reported in accordance with law.

14.11.3 Notwithstanding any other legal remedies, the Owner may require the Contractor to remove any employee of the Contractor from the Project who has violated the restrictions of this Article or any similar State or Federal law, and may obtain reimbursement for any expenditures made to the Contractor as a result of the improper offer, agreement to confer, or conferring of a benefit to a City of San Antonio employee or official.

ARTICLE 15. RIGHT TO AUDIT CONTRACTOR'S RECORDS

- 15.1 The Contractor agrees that the City may review any and all of the work performed by the Contractor under this Agreement. The City is granted the right to audit, at the City's election, all of the Contractor's records and billings related to performance of this Agreement. The Contractor agrees to retain such records for a minimum of four (4) years following completion of this Agreement. Any payment, settlement, satisfaction, or release provided under this Agreement shall be subject to the City's rights as may be disclosed by such audit.

095
SAN ANTONIO WATER SYSTEM
WATERWORKS AND SANITARY SEWER CONSTRUCTION

The following changes are made to the Contract Documents to accommodate San Antonio Water System construction operations.

1. Add to the Contract Definitions

San Antonio Water System: San Antonio Water System Board of Trustees.

2. Add to the Invitation for Bid

The San Antonio Water System area of construction operations is coincident with the area of construction operations specified in the contract documents for the project. All water and sewer facility adjustment and attendant work as shown on the Plans is considered to be an integral part of the project, and the Contractor shall be responsible for the timely scheduling and accomplishment of all water and sewer main and attendant work in conjunction with the work outlined in the City of San Antonio Invitation for Bid.

3. Add to the Public Works' General Conditions

All resident inspection of water and sewer facility adjustment and attendant work will be performed by an authorized representative of the San Antonio Water System who will in turn be responsible directly to the inspectors designated above.

4. Add to the Public Works' General Conditions

Materials for Water and Sanitary Sewer Main Replacement and adjustments: The Contractor shall also furnish all materials required for the installation of all water and sanitary main replacement and adjustments, service lines, sanitary sewer laterals, manholes and attendant work as shown on the drawings and in accordance with the San Antonio Water System Material Specifications.

5. Add to Public Works' General Conditions

Water Mains: The Contractor shall be responsible for the establishment in the field of all lines and grades for water works construction utilizing as may be appropriate the survey base control data provided by the Engineer for the work indicated in Paragraph 1 of the City of San Antonio Invitation for Bid. All construction staking, additional survey, layout and measurement work shall also be performed by the Contractor as part of his work.

6. Add to the Public Works' General Conditions

Warranty/Correction Period for Water and Sewer Works: During a period of 24 months from and after the date of the final acceptance by the San Antonio Water System of the work embraced by this contract, the Contractor shall make all needed repairs arising out of defective workmanship or materials, or both, which in the judgment of the San Antonio Water System shall become necessary during such period. If within 3 days after the receipt of a notice in writing to the Contractor or his agent, the Contractor shall neglect to make or to undertake with due diligence the aforesaid repairs, the San Antonio Water System is hereby authorized to make such repairs at the Contractor's expense. In case of an emergency where, in the judgment of the San Antonio Water System delay would cause a serious loss or damage, repairs may be made with notice being sent to the Contractor, and the Contractor shall pay the cost thereof.

7. Add to these Contract Documents, the Standard Specifications for Water and Sanitary Sewer Construction, available to the Contractor at the San Antonio Water System or at www.saws.org.
8. Add to these Contract Documents, the San Antonio Water System Special Provisions, attached separately.
9. Add to these Contract Documents, the San Antonio Water System Proposals, attached separately.

ITEM

103 REMOVE CONCRETE

- 103.1. DESCRIPTION:** *This item shall govern the breaking up, removing, and satisfactorily disposing of existing concrete, as classified, at locations shown on the plans or as directed by the Engineer. Existing concrete not shown on the plans, located beneath the natural ground surface, not indicated by the Engineer or not obvious to the naked eye will not be covered under this item. Such materials will be removed as needed and paid for under Item 104 "Street Excavation," Item 105 "Channel Excavation," or Item 306 "Structural Excavation."*
- 103.2. CLASSIFICATION:** Existing concrete to be removed under this item will be classified as follows:
- A. Concrete Curb.** "Concrete Curb" will include curb, curb and gutter, and low curb at driveways, and combinations thereof. The removal of monolithic concrete curb or doweled concrete curb will be included in the concrete pavement measurement.
 - B. Concrete Traffic Barrier.** "Concrete Traffic Barrier" will include permanent concrete barrier used for channeling or dividing traffic that is not considered salvageable.
 - C. Sidewalks and Driveways.** "Sidewalks and Driveways" will include concrete sidewalks and driveways.
 - D. Miscellaneous Concrete.** "Miscellaneous Concrete" will include all other items that are not noted above or covered by other items.
- 103.3. EQUIPMENT:** Provide the machinery, tools and equipment necessary for proper prosecution of the work. All machinery, tools and equipment used shall be maintained in a satisfactory and workmanlike manner.
- 103.4. CONSTRUCTION:**
- A. General.** The existing concrete shall be broken up, removed, and disposed of by the Contractor in accordance with federal, state, and local regulations.
 - B. Partial Removal of Concrete.** When only a portion of the existing concrete is to be removed, care shall be exercised to avoid damage to that portion to remain in place. The existing concrete shall be cut to neat lines shown on the plans or as established by the Engineer, by sawing with an appropriate type circular concrete saw to a minimum depth of ½-inch. Any existing concrete which is damaged or destroyed beyond the neat lines so established shall be replaced at the Contractor's expense. Where reinforcement is encountered in the removed portions of the concrete, a minimum of 1-foot shall be cleaned of all old concrete and left in place to tie into the new concrete construction.
- 103.5. MEASUREMENT:** Measurement for this item will be conducted as follows:
- A. Concrete Curb.** Concrete curb removed as prescribed above will be measured by the linear foot in its original position regardless of the thickness and reinforcing steel encountered.
 - B. Concrete Traffic Barrier.** Concrete Traffic Barrier as prescribed above will be measured by the linear foot in its original position regardless of the type or size encountered.

C. Concrete Sidewalk and Driveway. Concrete sidewalks and driveways removed as prescribed above will be measured by the square foot in its original position regardless of the thickness of the concrete and reinforcing steel encountered.

D. Miscellaneous Concrete. Miscellaneous Concrete will be measured by the square foot in its original position regardless of the thickness of the concrete and reinforcing steel encountered.

103.6. PAYMENT: This item will be paid for at the contract unit price bid for "Remove Concrete Curb," "Remove Concrete Traffic Barrier," "Remove Concrete Sidewalks and Driveways," or "Remove Miscellaneous Concrete" which price shall be full compensation for all work herein specified, including the furnishing of all materials, equipment, tools, labor and incidentals necessary to complete the work.

103.7. BID ITEM:

Item 103.1 - Remove Concrete Curb - per linear foot

Item 103.2 - Remove Concrete Traffic Barrier - per linear foot

Item 103.3 - Remove Sidewalks and Driveways - per square foot

Item 103.4 - Remove Miscellaneous Concrete - per square foot

ITEM**203 TACK COAT**

- 203.1. DESCRIPTION:** *Apply asphaltic material on the completed base course after the prime coat has sufficiently cured, existing pavement, bituminous surface, or in the case of a bridge, on the prepared floor slab in accordance with these specifications and/or as directed by the Engineer.*
- 203.2. MATERIALS:** The asphaltic material used for Tack Coat shall meet the requirements for "Asphalt Cement", "Cut-Back Asphalt" or "Emulsified Asphalt" in Item No. 300, "Asphalts, Oils and Emulsions" of the Texas Department of Transportation Standard Specifications. The asphaltic material used for Tack Coat shall be the type or grade shown in the referring specification, or on the plans, or as directed/approved by the Engineer.
- 203.3. EQUIPMENT:** Provide equipment that conforms to the requirements of Item 202, "Prime Coat," Part 3, "Equipment."
- 203.4. CONSTRUCTION:** Before the tack coat is applied, the surface shall be cleaned thoroughly with a vacuum sweeper to the satisfaction of the Engineer. The asphaltic material shall be applied on the clean surface by an approved type of self-propelled pressure distributor evenly and smoothly under a pressure necessary for proper distribution.
- The tack coat shall be applied at the rate specified by the referring specification or on the plans. Unless otherwise stated or allowed by the Engineer the application rate shall not exceed 0.10 gallon per square yard of surface.
- Where the pavement mixture will adhere to the surface on which it is to be placed without the use of a tack coat, the tack coat may be eliminated by the Engineer. All contact surfaces of curbs and structures and all joints shall be painted with a thin uniform coat of the asphaltic material used for tack coat. During the application of tack coat, care shall be taken to prevent splattering of adjacent pavement, curb and gutters or structures.
- 203.5. MEASUREMENT:** The asphaltic material for tack coat will be measured at point of delivery on the project in gallons at the applied temperature. The quantity to be paid for shall be the number of gallons of asphaltic material used, as directed, in the accepted tack coat. Water used with Emulsions will not be measured for payment.
- 203.6. PAYMENT:** The work performed and materials furnished as prescribed by this item will be paid for at the contract unit price bid per gallon for "Tack Coat" which price shall be full compensation for cleaning the surface, for furnishing, heating, hauling and distributing the tack coat as specified; for all freight involved; and for all manipulations, labor, tools, equipment, and incidentals necessary to complete the work.

203.7. BID ITEM:

Item 203.1 - Tack Coat - per gallon

ITEM

205 HOT MIX ASPHALTIC CONCRETE PAVEMENT

205.1. DESCRIPTION: *Construct a leveling-up course, a surface course or any combination of these courses as shown on the plans, each to be composed of a compacted mixture of mineral aggregate and asphaltic material. The pavement shall be constructed on the newly constructed subgrade or base course, existing pavement, bituminous surface or in the case of bridges, on the prepared floor slab, as herein specified and in accordance with the details shown on the plans.*

205.2. MATERIALS: Materials used in Hot Mix Asphaltic Concrete Pavement shall meet the requirements as set forth herein. If shown on the plans, materials may also meet the requirements as described in Item 340, "Dense-Graded Hot-Mix Asphalt (Method)" or Item 341, "Dense-Graded Hot-Mix Asphalt (QC/QA)" of the Texas Department of Transportation Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges.

Unless otherwise shown on the plans, provide aggregates that meet the aggregate quality requirements of TxDOT's Bituminous Rated Source Quality Catalog (BRSQC). Unapproved sources may be used if accepted by the Engineer and approved prior to use.

Furnish aggregates from sources that conform to the requirements shown in Table 1 herein, and as specified in this Section, unless otherwise shown on the plans. Provide aggregate stockpiles that meet the definition in this Section for either a coarse aggregate or fine aggregate. When reclaimed asphalt pavement (RAP) is used, 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.

Document all test results on a mixture design report and submit to the Engineer for approval. The Engineer may perform tests on independent or split samples to verify Contractor mix design 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 TxDOT standard laboratory test procedure Tex-200-F, Part II. Do not add material to an approved stockpile from other sources, unless otherwise approved by the Engineer.

Unless otherwise shown on the plans, reclaimed asphalt pavement (RAP) may be used in asphalt pavement maintenance or rehabilitation applications and shall be limited to a maximum of 20% RAP for surface or wearing courses and 30% RAP for courses below the surface or wearing course. Higher percentages of RAP may be used if requested in writing and approved by the Engineer prior to use.

A. Coarse Aggregate. Coarse aggregate stockpiles must have no more than 20% passing the #8 sieve. Provide aggregates with a surface aggregate classification (SAC) as shown below:

<u>Street Classification</u>	<u>Minimum Surface Aggregate Classification</u>
Primary and Secondary Arterials	A
Collector and Local Type B Streets	B
Local Type A Street With Bus Traffic	B
Local Type A Street Without Bus Traffic	C

SAC requirements apply only to aggregates used on the surface of travel lanes, unless otherwise shown on the plans. Blending aggregates to meet SAC criteria is allowable. 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.

- B. Reclaimed Asphalt Pavement (RAP).** RAP is defined as a salvaged, pulverized, broken or crushed asphalt pavement. The RAP to be used in the mix shall be crushed or broken to the extent that 100% will pass the two inch sieve.

The stockpiled RAP shall not be contaminated by dirt or other objectionable materials. Unless otherwise shown on the plans, stockpiled, crushed RAP shall have a decantation of 5% or less and a plasticity index of eight (8) or less, when tested in accordance with TxDOT standard laboratory test procedures Tex-406-A, Part I, and Tex-106-E, respectively. This requirement applies to stockpiles from which the asphalt has not been removed by extraction. When RAP is used, determine asphalt content and gradation for mixture design purposes.

- C. Fine Aggregate.** Fine aggregates may consist of manufactured sands, screenings and field sands. Supply fine aggregates that are free from organic impurities. Field sands and other uncrushed aggregates shall be limited to 15% of the total aggregate.

If 10% or more of the fine aggregate 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 (TxDOT standard laboratory test procedure Tex-460-A) and flat and elongated particles (TxDOT standard laboratory test procedure Tex-280-F).

- D. Asphalt Binder.** Unless shown on the plans, provide the type and grade of performance-graded asphalt binder in accordance with TxDOT Item 300.2.J. "Performance-Graded Binders" and as specified below:

Street Classification	Minimum PG Asphalt Cement Grade		
	Surface Courses	Binder & Level Up Courses	Base Courses
Primary and Secondary Arterials	PG 76-22	PG 70-22	PG 64-22
Collector and Local Type B Streets	PG 70-22		
Local Type A Street With Bus Traffic		PG 64-22	
Local Type A Street Without Bus Traffic	PG 64-22		

- E. 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 of Table 3 herein.
- F. Baghouse Fines.** Fines collected by the baghouse or other dust collecting equipment may be reintroduced into the mixing drum.
- G. 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 and in accordance with Item 203, "Tack Coat." Do not dilute emulsified asphalts at the terminal, in the field, or at any other location before use.
- H. 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 antistripping agent is used, add in accordance with TxDOT Item 301, "Asphalt Antistripping 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 baghouse or dust collection system that reintroduces the lime back into the drum.

**Table 1
Aggregate Quality Requirements**

Property	TxDOT Standard Laboratory Test Procedure	Surface Courses	Binder, Level Up, & Base Courses
Coarse Aggregate			
Deleterious Material, %, max	Tex-217-F, Part I	1.0	1.5
Decantation, %, max	Tex-217-F, Part II	1.5	1.5
Micro-Deval Abrasion, %, max	Tex-461-A	Screening Only	Screening Only
Los Angeles Abrasion, %, max	Tex-410-A	35	40
Magnesium Sulfate Soundness, 5 cycles, %, max	Tex-411-A	25	30
Coarse Aggregate Angularity, 2 crushed faces, %, min	Tex-460-A, Part I	95 ¹	85 ¹
Flat and Elongated Particles @ 5:1, %, max	Tex-280-F	10	10
Fine Aggregate			
Linear Shrinkage, %, max	Tex-107-E	3	3
Combined Aggregate²			
Sand Equivalent, %, min	Tex-203-F	45	45

Note 1: Applies to Gravel Only

Note 2: Aggregate without mineral filler, RAP, or additives combined as used in the job-mixed formula (JMF)

**Table 2
Gradation Requirements for Fine Aggregates**

Sieve Size, in	% Passing by Weight or Volume
3/8	100
#8	70 – 100
#200	0 – 30

**Table 3
Gradation Requirements for Mineral Filler**

Sieve Size, in	% Passing by Weight or Volume
#8	100
#200	55 – 100

205.3. EQUIPMENT: All equipment for the handling of all materials, mixing, placing and compacting of the mixture shall be maintained in good repair and operating condition and subject to the approval of the Engineer. Any equipment found to be defective and potentially having a negative effect on the quality of the paving mixture or ride quality will not be allowed.

A. Spreading and Finishing Machine. The spreading and finishing machine shall be approved by the Engineer and shall meet the requirements indicated below.

- 1. Screed Unit.** The spreading and finishing machine shall be equipped with a heated compacting screed. It shall produce a finished surface meeting the requirements of the typical cross sections and the surface test.

Extensions added to the screed shall be provided with the same compacting action and heating capability as the main screed unit, except for use on variable depth tapered areas and/or as approved by the Engineer.

The spreading and finishing machine shall be equipped with an approved automatic dual longitudinal screed control system and automatic transverse screed control system. The longitudinal controls shall be capable of operating from any longitudinal grade reference including a stringline, ski, mobile stringline, or matching shoe.

The Contractor shall furnish all equipment required for grade reference. It shall be maintained in good operating condition by personnel trained in the use of this type of equipment.

The grade reference used by the Contractor may be of any type approved by the Engineer. The contractor shall set the grade reference to have sufficient support so that the maximum deflection shall not exceed 1/16 inch between supports.

- 2. Tractor Unit.** The tractor unit shall be equipped with a hydraulic hitch sufficient in design and capacity to maintain contact between the rear wheels of the hauling equipment and the pusher rollers of the finishing machine while the mixture is being unloaded.

No portion of the weight of hauling equipment, other than the connection, shall be supported by the asphalt paver. No vibrations or other motions of the loading equipment, which could have a detrimental effect on the riding quality of the completed pavement, shall be transmitted to the paver.

The use of any vehicle which requires dumping directly into the finishing machine and which the finishing machine cannot push or propel to obtain the desired lines and grades without resorting to hand finishing will not be allowed.

B. Material Transfer Equipment. Equipment to transfer mixture from the hauling units or the roadbed to the spreading and finishing machine will be allowed unless otherwise shown on the plans. A specific type of material transfer equipment shall be required when shown on the plans.

C. Motor Grader. The motor grader, when used, shall meet the requirements as shown in Item 220, "Blading."

D. Rollers. Rollers provided shall meet the requirements for their type as shown in Item 210, "Rolling."

205.4. CONSTRUCTION: It shall be the responsibility of the Contractor to design, produce, transport, place and compact the specified paving mixture in accordance with the requirements herein. The Engineer will perform verification testing as needed. Provide quality control (QC) testing as needed to meet the requirements of this Item. Provide a certified Level I-A specialist at the plant during production hours. Provide a certified Level I-B specialist to conduct placement tests.

- A. Quality Control Plan (QCP).** Unless otherwise shown on the plans, develop and follow a QCP. Obtain approval from the Engineer for changes to the QCP made during the project. The Engineer may suspend operations if the Contractor fails to comply with the QCP.

Submit a written QCP to the Engineer and receive the Engineer's approval of the QCP before beginning production. Include the following items in the QCP.

1. Project Personnel. Provide:

- a. a list of individuals that will conduct tests as well their associated certifications (i.e. Level IA, IB, and II certifications), including when certifications will expire for each individual; and
- b. a list of individuals responsible for QC with authority to take corrective action and the contact information for each individual listed.

2. Material Delivery and Storage. Provide:

- a. the sequence of material processing, delivery, and minimum quantities to assure continuous plant operations;
- b. aggregate stockpiling procedures to avoid contamination and segregation;
- c. frequency, type, and timing of aggregate stockpile testing to assure conformance of material requirements before mixture production; and
- d. procedure for monitoring the quality and variability of asphalt binder.

3. Production. Detail:

- a. loader operation procedures to avoid contamination in cold bins;
- b. procedures for calibrating and controlling cold feeds;
- c. procedures to eliminate debris or oversized material;
- d. procedures for adding and verifying rates of each applicable mixture component (e.g., aggregate, asphalt binder, RAP, lime, liquid antistrip);
- e. procedures for reporting job control and acceptance test results; and
- f. procedures to avoid segregation and drain-down in the silo.

4. Loading and Transporting. Provide:

- a. the type and application method for release agents; and

b. truck loading procedures to avoid segregation.

5. Placement and Compaction. Provide:

- a. the proposed agenda for mandatory pre-paving meeting including date and location;
- b. the type and application method for release agents in the paver and on rollers, shovels, lutes, and other utensils;
- c. procedures for the transfer of mixture into the paver while avoiding segregation and preventing material spillage;
- d. the process to balance production, delivery, paving, and compaction to achieve continuous placement operations;
- e. the paver operations (e.g., operation of wings, height of mixture in auger chamber) to avoid physical and thermal segregation and other surface irregularities; and
- f. procedures to construct quality longitudinal and transverse joints.

B. Mixture Design. Use a Level II specialist certified by a TxDOT-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 TxDOT standard laboratory test procedure Tex-204-F, Part I or Part III, to design a mixture meeting the requirements listed in Tables 1 through 5. At the request of the Engineer, furnish representative samples of all materials used in the mixture design for verification. 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 that includes the following items:

- the combined aggregate gradation, source, specific gravity, and percent of each material used;
- results of all applicable tests;
- the mixing and molding temperatures;
- all applicable correlation and correction factors;
- 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.

The Hamburg Wheel Test is not required, unless otherwise shown on the plans. When required through plan note, the minimum number of passes shown in Table 6 shall be met, unless otherwise approved by the Engineer. The contractor will be responsible for submitting the results of the Hamburg Wheel test to the Engineer with the other mixture design data. Use an approved laboratory to perform the Hamburg Wheel test. The TxDOT Construction

Division maintains a list of approved laboratories that may be referenced. Hamburg Wheel Testing will not be performed or required for any Type "F" mixtures.

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
1-½"	98.0–100.0	–	–	–	–
1"	78.0–94.0	98.0–100.0	–	–	–
¾"	64.0–85.0	84.0–98.0	95.0–100.0	–	–
½"	50.0–70.0	–	–	98.0–100.0	–
⅜"	–	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	70.0–90.0
#8	22.0–36.0	29.0–43.0	32.0–44.0	35.0–46.0	35.0–50.0
#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 Voids in the Mineral Aggregate (VMA), % minimum					
	12.0	13.0	14.0	15.0	16.0
Plant-Produced Voids in the Mineral Aggregate (VMA), % minimum					
	11.0	12.0	13.0	14.0	15.0

Table 5
Laboratory Mixture Design Properties

Property	TxDOT Standard Laboratory Test Procedure	Required	
Target laboratory-molded density, %	Tex-207-F	96.5	Base, Binder, and Level Up Courses
		Surface or Wearing Courses	
		96.5	Primary and Secondary Arterials
		97.0	Collectors, Local Type B Streets, and Local Type A Street With Bus Traffic
		97.5	Local Type A Street Without Bus Traffic
Boil test ¹	Tex-530-C	–	

1. 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	5,000
PG 70	10,000
PG 76 or higher	20,000

1. Tested in accordance with Tex-242-F.

2. May be decreased if shown on the plans.

C. Job-Mix Formula. The laboratory mixture design shall be submitted to the Engineer for approval prior to production and placement. The submittal shall provide the laboratory

designed mixture target properties and data that demonstrate the contractor's ability to produce the mixture within the tolerances specified in Table 7 herein either through a trial batch or by submittal of previous production data from a City or TxDOT project.

Once approved, the contractor may begin production and placement of the approved JMF. Results from Lot 1 of the JMF may be used to modify the optimum mixture properties as long as the tested properties are within the tolerances specified in Table 7 herein. Further adjustments to the JMF may be allowed by the Engineer during production and placement, if warranted. JMF adjustment requests must be made in writing to the Engineer and the mixture must conform to the master gradation limits for the mixture type and be within the operational limits of Table 7 noted above for the initial JMF approved by the Engineer.

Table 7
Operational Tolerances

Description	Test Method	Allowable Difference from Current JMF Target
Individual % Retained for #8 Sieve or Larger	Tex-200-F or Tex-236-F	±5.0 ¹
Individual % Retained for Sieves Smaller than #8 and Larger than #200		±3.0 ¹
% Passing the #200 Sieve		±2.0 ¹
Asphalt Content, %	Tex-236-F	±0.3 ²
Laboratory-Molded Density, %	Tex-207-F	±1.0
VMA, % minimum		Note 3

Note 1: When within these tolerances, mixture production gradations may fall outside the master grading limits; however, the % passing the #200 sieve will be considered out of tolerance when outside the master grading limits.

Note 2: Tolerance between Laboratory Mix and Plant Trial Batch may exceed ±0.3.

Note 3: Test and verify that Table 4 requirements are met.

- D. Production.** Do not heat the asphalt binder above the temperatures specified in TxDOT Item 300, "Asphalts, Oils, and Emulsions," or outside the manufacturer's recommended values. Do not store an asphaltic mixture for a period long enough to affect the quality of the mixture, nor in any case longer than 12 hr.

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 Engineer will not pay for, or allow placement of, any mixture produced at more than 350°F. Control the mixing time and temperature so that moisture is removed from the mixture before discharging from the plant. If requested, determine the moisture content by oven-drying in accordance with TxDOT standard laboratory test procedure Tex-212-F, Part II, and verify that the mixture contains no more than 0.2% of moisture by weight. Obtain the sample immediately after discharging the mixture into the truck, and perform the test promptly.

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.

- E. Tack Coat.** The surface upon which the tack coat is to be placed shall be cleaned thoroughly to the satisfaction of the Inspector. The surface shall be given a uniform application of tack coat using asphaltic materials of this specification. Unless otherwise shown on the plans, tack

coat shall be applied with an approved sprayer at a rate directed by the Engineer between 0.04 and 0.10 gallon residual asphalt per square yard of surface.

- F. Transporting Asphaltic Concrete.** The asphaltic mixture shall be hauled to the work site in vehicles previously cleaned of all foreign material and with beds that do not discharge or lose materials during the haul. Trucks that do not meet the satisfaction of the Engineer or Inspector will not be allowed to deliver materials to City projects. The dispatching of the vehicles shall be arranged so that all material is delivered, placed, and rolled during daylight hours unless otherwise shown on the plans. In cool weather, or for long hauls, covering and insulating of the truck bodies may be required. If necessary, to prevent the mixture from adhering to the inside of the truck body, the inside of the truck may be given a light coating of release agent satisfactory to the Engineer.

G. Placement.

- 1. Weather Conditions.** Place mixture, when placed with a spreading and finishing machine, or the tack coat when the roadway surface temperature is 60°F or higher unless otherwise approved. Measure the roadway surface temperature with a handheld infrared thermometer. Place mixtures only when weather conditions and moisture conditions of the roadway surface are suitable in the opinion of the Engineer.

The asphaltic mixture, when placed with a motor grader, shall not be placed when the surface temperature is below 65°F and is falling, but may be placed when the surface temperature is above 55°F and is rising. The maximum depth of asphalt mixture placed with a motor grader will not exceed 5 inches of compacted material.

Mat thicknesses of 1-½ inches and less shall not be placed when the temperature of the surface on which the mat is to be placed is below 60°F.

It is further provided that the tack coat or asphaltic mixture shall be placed only when the humidity, general weather conditions, temperature and moisture condition of the base are suitable.

- 2. Placement Temperature.** If, after being discharged from the mixer and prior to placing, the temperature of the asphaltic mixture falls below 200°F, all or any part of the load may be rejected and payment will not be made for the rejected material.
- 3. Placement Operations.** Placement and laydown operations shall be in conformance with this section and Section 205.4.H. - "Quality Control and Acceptance."

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.

The asphaltic mixture shall be dumped and spread on the approved prepared surface with the spreading and finishing machine. Place the mixture to meet the typical section requirements and produce a smooth, finished surface with a uniform appearance and texture. In addition, the placing of the asphaltic mixture shall be completed without tearing, shoving, gouging or segregating the mixture and without producing streaks in the mat.

Unloading into the finishing machine shall be controlled so that bouncing or jarring the spreading and finishing machine shall not occur and the required lines and grades shall be obtained without resorting to hand finishing.

When approved by the Engineer, level-up courses may be spread with a motor grader.

Construction joints of successive courses of asphaltic material shall be offset at least 6 inches. Construction joints on surface courses shall coincide with lane lines, or as directed by the Engineer.

The spreading and finishing machine shall be operated at a uniform forward speed consistent with the plant production rate, hauling capability, and roller train capacity to result in a continuous operation. The speed shall be slow enough that stopping between trucks is not ordinarily required. If, in the opinion of the Inspector, sporadic delivery of material is adversely affecting the mat, the Inspector may require paving operations to cease until acceptable methods are provided to minimize starting and stopping of the paver.

The hopper flow gates of the spreading and finishing machine shall be adjusted to provide an adequate and consistent flow of material. These shall result in enough material being delivered to the augers so that they are operating approximately 85 percent of the time or more. The augers shall provide means to supply adequate flow of material to the center of the paver. Augers shall supply an adequate flow of material for the full width of the mat, as approved by the Engineer. Augers should be kept approximately one-half to three-quarters full of mixture at all times during the paving operation.

When the asphaltic mixture is placed in a narrow strip along the edge of an existing pavement, or used to level up small areas of an existing pavement, or placed in small irregular areas where the use of a finishing machine is not practical, the finishing machine may be eliminated when authorized by the Engineer.

Adjacent to flush curbs, gutters and structures, the surface shall be finished uniformly high so that when compacted, it will be slightly above the edge of the curb or structure.

If a pattern of surface irregularities or segregation is detected, the Contractor shall make an investigation into the causes and immediately take the necessary action. With the approval of the Inspector, placement may continue for no more than one full production day from the time the Contractor is first notified and while corrective actions are being taken. If the problem still exists after that time, paving shall cease until the Contractor further investigates the causes and the Engineer approves further corrective action to be taken.

Place mixture within the compacted lift thickness shown in Table 8, unless otherwise shown on the plans or allowed.

Use the guidelines in Table 9 to establish the temperature of mixture delivered to the paver.

Table 8
Compacted Lift Thickness and Required Core Height

Mixture Type	Compacted Lift Thickness		Minimum Untrimmed Core Height (in.) Eligible for Testing
	Minimum (in.)	Maximum (in.)	
A	3.00	6.00	2.00
B	2.50	5.00	1.75
C	2.00	4.00	1.50
D	1.50	3.00	1.25
F	1.25	2.50	1.25

Table 9
Suggested Minimum Mixture Placement Temperature

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

4. **Compaction.** The pavement shall be compacted thoroughly and uniformly with the necessary rollers to obtain the compaction and cross section of the finished paving mixture meeting the requirements of the plans and specifications.

The edges of the pavement along curbs, headers and similar structures, and all places not accessible to the roller, or in such positions as will not allow thorough compaction with the rollers, shall be thoroughly compacted with lightly oiled tamps.

Rolling with a trench roller will be required on widened areas, in trenches and other limited areas where satisfactory compaction cannot be obtained with the approved rollers.

- a. **In-Place Compaction Control.** Use density control unless ordinary compaction control is specified on the plans. Use the control strip method given in Tex-207-F, Part IV, to establish the rolling pattern for density controlled areas.

Where specific density or air void requirements are waived, furnish and operate compaction equipment as approved.

Do not use pneumatic-tire rollers if excessive pickup of fines by roller tires occurs. 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.

When rolling with the three-wheel, tandem or vibratory rollers, it is recommended that rolling start by first rolling the joint with the adjacent pavement and then continue by rolling longitudinally at the sides and proceed toward the center of the pavement, overlapping on successive trips by at least 1 foot. Alternate trips of the roller should be slightly different in length. On super-elevated curves, rolling should begin at the low side and progress toward the high side.

When rolling with vibratory steel-wheel rollers, equipment operation shall be in accordance with Item 210, "Rolling", and the manufacturer's recommendations, unless otherwise directed by the Engineer. Vibratory rollers shall not be left vibrating

while not rolling or when changing directions. In addition, vibratory rollers shall not be allowed in the vibrating mode on mats with a plan depth of less than 1-½ inches, unless approved by the Engineer.

The motion of the rollers shall be slow enough to avoid other than usual initial displacement of the mixture. If any displacement occurs, it shall be corrected to the satisfaction of the Inspector. Ensure pavement is fully compacted before allowing rollers to stand on the pavement.

(1) Ordinary Compaction Control. One three-wheel roller, one pneumatic-tire roller, and one tandem roller shall be furnished for each compaction operation except as provided below or approved by the Engineer. The use of a tandem roller may be waived by the Engineer when the surface is already adequately smooth and further steel-wheel rolling is shown to be ineffective. With approval of the Engineer, the Contractor may substitute a vibratory roller for the three-wheel roller and/or the tandem roller. Use of at least one pneumatic-tire roller is required unless approved by the Engineer. Additional or heavier rollers shall be furnished if required by the Engineer.

Rolling patterns shall be established by the Contractor to achieve the maximum compaction. The selected rolling pattern shall be followed unless changes in the mixture or placement conditions occur which affect compaction. When changes in the mixture or placement conditions occur, a new rolling pattern shall be established.

(2) Density Compaction Control. Place and compact asphaltic concrete materials in accordance with the method specified in Section 205.4.H, "Quality Control and Acceptance."

- 5. Compaction Cessation Temperature.** Regardless of the method required for in-place compaction control, all rolling for compaction shall be completed before the mixture temperature drops below 175°F.
- 6. Opening to Traffic.** 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.

If the surface ravel, flushes, ruts or deteriorates in any manner prior to final acceptance of the work, it will be the Contractor's responsibility to correct this condition at their expense, to the satisfaction of the Inspector and in conformance with the requirements of this specification.

H. Quality Control and Acceptance. Control and acceptance of hot mixed asphaltic concrete pavement shall be followed as specified herein or as directed on the plans. The contractor shall conduct production and placement operations in accordance with the method specified. All testing will be conducted in accordance with the testing methods shown in Table 10.

Table 10
Acceptable Production and Placement Testing Methods

Description	Test Method
Gradation including % passing the #200 sieve	Tex-200-F or Tex-236-F
Laboratory-molded density	Tex-207-F
VMA	
Laboratory-molded bulk specific gravity	
In-Place air voids	
Segregation (density profile)	Tex-207-F, Part V
Longitudinal joint density	Tex-207-F, Part VII
Moisture content	Tex-212-F, Part II
Theoretical maximum specific (Rice) gravity	Tex-227-F
Asphalt content	Tex-236-F
Hamburg Wheel test	Tex-242-F
Thermal profile	Tex-244-F
Asphalt binder sampling and testing ¹	Tex-500-C
Boil test ¹	Tex-530-C

1. The Engineer may waive the sampling and testing requirements at their discretion.

- 1. Production Sampling and Testing.** For a given project, sample asphaltic concrete materials at the production facility every 500 tons for each mixture type supplied or as directed by the Engineer. Unless otherwise shown on the plans, a production facility that supplies the same mixture to multiple City projects on the same day will not be required to sample and test at the required frequency for every project. A single test report may be used on two or more projects to represent the quality of the mixture for that day's production.

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.

Suspend production and shipment of mixture if the asphalt content deviates from the current JMF by more than 0.5% for any test.

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.

The Contractor shall perform a Hamburg Wheel test at the direction of the Engineer at any time during production, including when the boil test indicates a change in quality from the materials submitted for the initial JMF. If the production sample fails the Hamburg Wheel test criteria in Table 6, suspend production until further Hamburg Wheel tests meet the specified values. The Engineer may require up to the entire subplot of any mixture failing the Hamburg Wheel test to be removed and replaced at the Contractor's expense.

If the Hamburg Wheel test results in a "remove and replace" condition, the Contractor may request that the Engineer confirm the results by retesting the failing material. An Independent laboratory retained by the Engineer will perform the Hamburg Wheel tests

and determine the final disposition of the material in question based on the initial test results.

2. Placement Sampling and Testing.

- a. **In-Place Density.** For every 500 tons of compacted asphaltic material or as directed by the Engineer, test the in place density. The in place density shall be in the range of 92.0% to 97.0% of the maximum density. Do not increase the asphalt content of the mixture to increase pavement density.

Unless otherwise shown on the plans, obtain 2 roadway specimens at each location selected by the Engineer for in-place density determination. Unless otherwise determined, the Engineer will witness the coring operation and measurement of the core thickness. Unless otherwise approved, obtain the cores within 1 working day after placement is completed. Obtain two 6 inch diameter cores side-by-side from within 1 foot of the location provided by the Engineer. For Type C, D and F mixtures, 4 inch diameter cores are allowed. Mark the cores for identification.

Visually inspect each core and verify that the current paving layer is bonded to the underlying layer. If an adequate bond does not exist between the current and underlying layer, take corrective action to insure that an adequate bond will be achieved during subsequent placement operations.

Immediately after obtaining the cores, dry the core holes and tack the sides and bottom. Fill the hole with the same type of mixture and properly compact the mixture. Repair core holes with other methods when approved.

If the core heights exceed the minimum untrimmed values listed in Table 8, trim the cores within 1 working day following placement operations unless otherwise approved. If the core height before trimming is less than the minimum untrimmed value shown in Table 8, decide whether or not to include the pair of cores in the density determination for that subplot. If the cores are to be included in density determination, trim the cores. If the cores will not be included in density determination, store untrimmed cores for the Engineer.

The Engineer will measure density in accordance with Tex-207-F and Tex-227-F. Before drying to a constant weight, cores may be predried using a vacuum device, or by other methods approved by the Engineer, to remove excess moisture. The Engineer will use the average density of the 2 cores to calculate the in-place density at the selected location.

If the in-place density in the compacted mixture is below 92% or greater than 97%, change the production and placement operations to bring the in-place density within requirements. The Engineer may suspend production until the in-place density is brought to the required level, and may require a test section as described below, before proceeding.

At the onset of production, or after production and placement operations have been altered to bring the in-place density into conformance, construct a test section of 1 lane-width and at most 0.2 miles in length to demonstrate that compaction to between 92.0% and 97.0% in-place density can be obtained. Continue this procedure until a test section with the correct density 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.

- (1) **Shoulders and Ramps.** Shoulders and ramps are subject to in-place density testing, unless otherwise shown on the plans.
- (2) **Miscellaneous Areas.** Miscellaneous areas include areas that are not generally subject to primary traffic, such as driveways, mailbox turnouts, crossovers, gores, spot level-up areas, and other similar areas. Miscellaneous areas also include level-ups and thin overlays if the layer thickness designated on the plans is less than the compacted lift thickness shown in Table 8.

Miscellaneous areas will not be included in the in place density testing. Compact areas that are not subject to in-place air void determination in accordance with ordinary compaction control.

- b. **Segregation (Density Profile).** If shown on the plans, test for segregation using density profiles in accordance with Tex-207-F, Part V. Provide the Engineer with the results of the density profiles as they are completed. Areas defined as “Miscellaneous Areas,” are not subject to density profile testing.

If density profiles are required by the plans, perform a density profile every time the screed stops, on areas that are identified by either the Contractor or the Engineer as having thermal segregation, and on any visibly segregated areas. If the screed does not stop, and there are no visibly segregated areas or areas that are identified as having thermal segregation, perform a minimum of 1 profile per 500 tons of compacted material or as directed by the Engineer.

Reduce the test frequency to a minimum of 1 profile per 2,000 tons of compacted material, or as directed by the Engineer, if 4 consecutive profiles are within established tolerances. Continue testing at this frequency unless a profile fails, at which point resume testing at a minimum frequency of 1 per 500 tons or as directed by the Engineer. The Engineer may further reduce the testing frequency based on a consistent pattern of satisfactory results.

Unless otherwise shown on the plans, the density profile is considered failing if it exceeds the tolerances in Table 11. No production or placement bonus will be paid for any subplot that contains a failing density profile. The Engineer may make as many independent density profile verifications as deemed necessary. The Engineer’s density profile results will be used when available.

Investigate density profile failures and take corrective actions during production and placement to eliminate the segregation. Suspend production if 2 consecutive density profiles fail, unless otherwise approved. Resume production after the Engineer approves changes to production or placement methods.

Table 11
Segregation (Density Profile) Acceptance Criteria

Mixture Type	Maximum Allowable Density Range (Highest to Lowest)	Maximum Allowable Density Range (Average to Lowest)
Type A & Type B	8.0 pcf	5.0 pcf
Type C, Type D, & Type F	6.0 pcf	3.0 pcf

c. Longitudinal Joint Density.

- (1) **Informational Tests.** While establishing the rolling pattern, perform joint density evaluations and verify that the joint density is no more than 3.0 pounds per cubic foot below the density taken at or near the center of the mat. Adjust the rolling pattern if needed to achieve the desired joint density. Perform additional joint density evaluations at least once per subplot unless otherwise directed.
- (2) **Record Tests.** If shown on the plans, for each 500 tons of compacted material or as directed by the Engineer, perform a joint density evaluation at each pavement edge that is or will become a longitudinal joint. Determine the joint density in accordance with Tex-207-F, Part VII. Record the joint density information and submit results to the Engineer. The evaluation is considered failing if the joint density is more than 3.0 pounds per cubic foot below the density taken at the core random sample location and the correlated joint density is less than 90.0%. The Engineer may make independent joint density verifications at the random sample locations. The Engineer's joint density test results will be used when available.

Investigate joint density failures and take corrective actions during production and placement to improve the joint density. Suspend production if 2 consecutive evaluations fail unless otherwise approved. Resume production after the Engineer approves changes to production or placement methods.

- d. **Recovered Asphalt DSR.** The Engineer may take production samples or cores from suspect areas of the project to determine recovered asphalt properties. Asphalt binders with an aging ratio greater than 3.5 do not meet the requirements for recovered asphalt properties and may be deemed defective when tested and evaluated by the Engineer. The aging ratio is the dynamic shear rheometer (DSR) value of the extracted binder divided by the DSR value of the original unaged binder (including RAP binder). DSR values are obtained according to AASHTO T 315 at the specified high temperature performance grade of the asphalt. The binder from RAP will be included proportionally as part of the original unaged binder. The Engineer may require removal and replacement of the defective material at the Contractor's expense. The asphalt binder will be recovered for testing from production samples or cores using Tex-211-F.
- e. **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 allow placement to continue for at most 1 day of production while taking appropriate action. If the problem still exists after that day, suspend paving until the problem is corrected to the satisfaction of the Engineer.

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.

3. **Individual Loads of Hot Mix.** The Engineer can reject individual truckloads of hot mix. When a load of hot mix is rejected for reasons other than temperature, the Contractor may request that the rejected load be tested. Make this request within 4 hr. of rejection. The Engineer will sample and test the mixture. If test results are within the operational tolerances shown in Table 7, payment will be made for the load. If test results are not within operational tolerances, no payment will be made for the load and the Engineer may require removal.
4. **Ride Quality.** When required by the plans, measure ride quality in accordance with TxDOT Standard Specification Item 585, "Ride Quality for Pavement Surfaces." Surface Test Type A or B as well as Pay Schedule 1, 2, or 3 shall also be indicated on the plans.

205.5. MEASUREMENT: Hot Mix Asphaltic Concrete Pavement shall be measured by square yard, complete in place, for the thickness specified on the plans. Limits of payment will be from face of curb to face of curb. Pavement area shall not exceed the limits shown on the plans without written authorization.

205.6. PAYMENT: The work performed and materials furnished, as described by this item and measured as provided herein, shall be paid for at the contract unit bid price per square yard specified on the plans of "Hot Mix Asphaltic Concrete Pavement," which price shall be full compensation for furnishing and placing all materials, and for all labor, tools, equipment, and incidentals necessary to complete the work. The prime coat and tack coat, when required, shall be paid under the provisions of Item Nos. 202 and 203, respectively.

Trial batches will not be paid for unless they are incorporated into pavement work approved by the Engineer.

Pay adjustment for ride quality, when required on the plans, will be determined in accordance with TxDOT Standard Specification Item 585, "Ride Quality for Pavement Surfaces."

205.7. BID ITEM:

Item 205.1 - Hot Mix Asphaltic Pavement Type A - per square yard __ inches pavement thickness

Item 205.2 - Hot Mix Asphaltic Pavement Type B - per square yard __ inches pavement thickness

Item 205.3 - Hot Mix Asphaltic Pavement Type C - per square yard __ inches pavement thickness

Item 205.4 - Hot Mix Asphaltic Pavement Type D - per square yard __ inches pavement thickness

Item 205.5 - Hot Mix Asphaltic Pavement Type F - per square yard __ inches pavement thickness

ITEM**208 SALVAGING, HAULING & STOCKPILING RECLAIMABLE ASPHALTIC PAVEMENT**

208.1. DESCRIPTION: *Salvage, by milling existing asphalt concrete pavement or asphalt-stabilized base, haul, and stockpile existing asphalt material.*

208.2. EQUIPMENT: The Engineer may require demonstration of the equipment's capabilities.

A. Milling (Planing) Machine. Use milling (planing) machines that:

1. have a minimum 6 foot cutting width except for work areas less than 6 feet wide;
2. are self-propelled with sufficient power, traction, and stability to maintain an accurate depth of cut and slope;
3. can cut in 1 continuous operation:
 - a. 4 inches of asphalt concrete pavement,
 - b. 1 inch of concrete pavement,
 - c. or a combination of 2 inches of asphalt concrete pavement and ½ inch of concrete pavement;
4. use dual longitudinal controls capable of operating on both sides automatically from any longitudinal grade reference, which includes string line, ski, mobile string line, or matching shoe;
5. use transverse controls with an automatic system to control cross slope at a given rate;
6. use integral loading and reclaiming devices to allow cutting, removal, and discharge of the material into a truck in one operation; and
7. include devices to control dust created by the cutting action.

B. Manual System. Use a manual system that can achieve a uniform depth of cut, flush to all inlets, valve covers, manholes, and other appurtenances within the paved area. Use of a manual system is allowed for areas restricted to self-propelled access and for detail pavement removal.

C. Sweeper. Unless otherwise approved, use a street sweeper to remove cuttings and debris from the planed or textured pavement. Equip the sweeper with a water tank, dust control spray assembly, both a pick-up and a gutter broom, and a debris hopper.

208.3. CONSTRUCTION: Remove dirt, raised pavement markings, and other debris, as directed. Unless otherwise shown on the plans, ensure that 95% of the reclaimed material passes a 2 inch sieve. Do not contaminate asphalt material during its removal, transportation, or storage. Repair pavement to remain that is damaged by the removal operations. Work performed under this item shall be prosecuted in such a manner as to cause minimum inconvenience to traffic or to the owners of adjacent property.

- A. Grade Reference.** When required, place grade reference points at maximum intervals of 50 feet. Use the control points to set the grade reference. Support the grade reference so the maximum deflection does not exceed 1/16 inch between supports.
- B. Milling (Planing).** Vary the speed of the machine to leave a grid or other pattern type with discontinuous longitudinal reach. Remove the pavement surface for the length, depth, and width shown on the typical section and to the established line and grades. Remove pavement to vertical lines adjacent to curbs, gutters, inlets, manholes, or other obstructions. Do not damage appurtenances or underlying pavement.

Provide a milled (planed) surface that has a uniform textured appearance and riding surface. Surface should be free from gouges, continuous longitudinal grooves, ridges, oil film, and other imperfections of workmanship. Leave a uniform surface of concrete pavement free of asphalt materials when removing an asphalt concrete pavement overlay.

When an overlay on the milled (planed) pavement is not required, provide a minimum texture depth of not less than 0.05 inch. Stop milling (planing) operations when surface texture depth is not sufficient.

When located within 4 inches of steep curbs, water valves, draw grates, bridge joints, etc., asphaltic concrete that cannot be removed by the milling (planing) machine shall be removed by a manual system conforming to 208.2.B. "Manual System" or other methods acceptable to the Engineer.

When milling (planing) over a bridge deck, the milling depth shall not exceed 3/16 inch into the original deck surface of the bridge. Do not damage armor joints, sealed expansion joints, and other appurtenances.

Provide a pavement surface that, after milling (planing), has a smooth riding quality and is true to the established line, grade, and cross section. Provide a pavement surface that does not vary more than 1/8 inch in 10 feet. Evaluate this criterion with a 10 foot straightedge placed parallel to the centerline of the roadway. Deviations will be measured from the top of the texture. Correct any point in the surface not meeting this requirement.

Sweep pavement and gutter. The pavement and curb surfaces shall be cleaned of all debris and left in a neat and presentable condition.

- C. Edge Treatments.** At the end of the day and for areas under traffic, slope vertical or near vertical longitudinal faces in the pavement surface in accordance with the requirements in the plans. Taper transverse faces to provide an acceptable ride.
- D. Salvaged Materials.** The loose material resulting from the operation shall become the property of the contractor. If the material is designated to remain the property of the City, it shall be as stockpiled by the Contractor at locations as shown on the plans. Prepare the stockpile site by removing vegetation and trash and by providing proper drainage. Keep salvaged paving material free from contamination during its removal, transportation, and storage. Place different types or quality of salvaged asphalt paving material into separate stockpiles. Silt fencing around stockpile areas shall be provided in accordance with Item 542, "Temporary Sediment Control Fence."

The plans or the Engineer may allow or require the use of salvaged material for other Items in the Contract.

Dispose of unsalvageable material in accordance with applicable federal, state, and local regulations.

208.4. MEASUREMENT: Measurement under this bid item shall include removal of asphaltic concrete pavement by the cubic yard (loose vehicle measurement) of material, or by the square yard in its original position at a depth as shown on the plans.

208.5. PAYMENT: The work performed in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid per cubic yard for "Salvaging, Hauling and Stockpiling Reclaimable Asphaltic Pavement" or at the Unit price bid per square yard for "Salvaging, Hauling and Stockpiling Reclaimable Asphaltic Pavement" of the depth specified. This price shall be full compensation for cleaning and removing existing pavement; for any necessary stockpile area preparation; for loading, crushing or breaking, hauling and stockpiling of the material; and for furnishing all materials, labor, tools, equipment, supplies and all incidentals necessary to satisfactorily complete the work.

When plans call for the installation of silt fencing protection around stockpile areas, the fencing will be measured and paid for under Item No. 542.

208.6. BID ITEM:

Item 208.1 - Salvaging, Hauling, and Stockpiling Reclaimable Asphaltic Pavement (___ inches depth) - per square yard

Item 208.2 - Salvaging, Hauling, and Stockpiling Reclaimable Asphaltic Pavement - per cubic yard (loose vehicle measurement)

ITEM**209 CONCRETE PAVEMENT**

209.1. DESCRIPTION: *Construct hydraulic cement concrete pavement with or without curbs on the concrete pavement.*

209.2. MATERIALS:

- A. Hydraulic Cement Concrete.** Provide hydraulic cement concrete in accordance with Item 300, "Concrete," except that strength over-design is not required. Provide Class P concrete designed to meet a minimum average compressive strength of 3,500 psi at 7-days or a minimum average compressive strength of 4,400 psi at 28-days. Test in accordance with TxDOT standard laboratory test procedure Tex-448-A or Tex-418-A.

When shown on the plans or allowed, provide Class HES concrete for very early opening of small pavement areas or leave-outs to traffic. Design Class HES to meet the requirements of Class P and a minimum average compressive strength of 2,600 psi in 24-hours, unless other early strength and time requirements are shown on the plans or allowed. No strength over-design is required. Type III cement is allowed for Class HES concrete.

Use Class A or P concrete for curbs that are placed separately from the pavement. Provide concrete that is workable and cohesive, possesses satisfactory finishing qualities, and conforms to the mix design and mix design slump.

- B. Reinforcing Steel.** Unless shown on the plans, provide Grade 60 deformed steel for bar reinforcement in accordance with Item 301, "Reinforcing Steel." Provide approved positioning and supporting devices (baskets and chairs) capable of securing and holding the reinforcing steel in proper position before and during paving in accordance with 209.B.3, "Positioning and Support Devices for Reinforcement and Joint Assemblies." Provide corrosion protection when shown on the plans.
1. **Dowels.** Provide smooth, straight dowels of the size shown on the plans, free of burrs, and conforming to the requirements of Item 301, "Reinforcing Steel." Coat dowels with a thin film of grease or other approved de-bonding material. Provide dowel caps on the lubricated end of each dowel bar used in an expansion joint. Provide dowel caps filled with a soft compressible material with enough range of movement to allow complete closure of the expansion joint.
 2. **Tie Bars.** Provide straight deformed steel tie bars. Provide either multiple-piece tie bars or single-piece tie bars as shown on the plans. Provide multiple-piece tie bars composed of 2 pieces of deformed reinforcing steel with a coupling capable of developing a minimum tensile strength of 125% of the design yield strength of the deformed steel when tensile-tested in the assembled configuration. Provide a minimum length of 33 diameters of the deformed steel in each piece. Use multiple-piece tie bars from the list of "Prequalified Multiple Piece Tie Bar Producers" maintained by the TxDOT Construction Division, or submit samples for testing in accordance with TxDOT standard laboratory test procedure Tex-711-I. A laboratory test report from an independent laboratory that has conducted Tex-711-I on the unapproved multiple piece tie bar may also be submitted to the Engineer for consideration.

- C. Positioning and Support Devices for Reinforcement and Joint Assemblies.** These devices shall be of sufficient structural quality to prevent movement of the dowels or steel reinforcement during concrete placement and finishing. Devices shall be of a type approved by the Engineer.

Positioning and supporting devices (chairs) for steel reinforcement bars shall be either plastic or metal and of sufficient number to maintain the position of the bars within the allowable tolerances.

Metal positioning and supporting devices for expansion and contraction joint assemblies (such as welded wire bar chairs, bar stakes, etc.) where used shall be as shown on the plans or may be similar devices of equivalent or greater strength, approved by the Engineer. The support devices shall secure the joint assembly and dowels within the allowable tolerances while providing no restraint against joint movement. Dowels used in joint assemblies shall be secured in parallel position by a transverse metal brace of the type and design shown on the plans, or may be secured by other devices approved by the Engineer. The devices shall provide positive mechanical connection between the brace and each unit (other than by wire tie) and prevent transverse movement of each load transmission device.

- D. Curing Materials.** Provide Type 2 membrane curing compound conforming to TxDOT DMS-4650, "Hydraulic Cement Concrete Curing Materials and Evaporation Retardants." Provide SS-1 emulsified asphalt conforming to TxDOT Item 300, "Asphalts, Oils, and Emulsions," for concrete pavement to be overlaid with asphalt concrete under this Contract unless otherwise shown on the plans or approved. Provide materials for other methods of curing conforming to the requirements of Item 307, "Concrete Structures."
- E. Epoxy.** Provide Type III epoxy in accordance with TxDOT DMS-6100, "Epoxies and Adhesives," for installing all drilled-in reinforcing steel.
- F. Evaporation Retardant.** Provide evaporation retardant conforming to TxDOT DMS-4650, "Hydraulic Cement Concrete Curing Materials and Evaporation Retardants."
- G. Joint Sealants and Fillers.** Provide Class 5 or Class 8 joint-sealant materials and fillers unless otherwise shown on the plans or approved and other sealant materials of the size, shape, and type shown on the plans in accordance with TxDOT DMS-6310, "Joint Sealants and Fillers."

- 209.3. EQUIPMENT:** Furnish and maintain all equipment in good working condition. Use measuring, mixing, and delivery equipment conforming to the requirements of Item 300, "Concrete." Obtain approval for other equipment used.

- A. Placing, Consolidating, and Finishing Equipment.** Provide approved self-propelled paving equipment that uniformly distributes the concrete with minimal segregation and provides a smooth machine-finished consolidated concrete pavement conforming to plan line and grade. Provide an approved automatic grade control system on slip-forming equipment. Provide approved mechanically operated finishing floats capable of producing a uniformly smooth pavement surface. Provide equipment capable of providing a fine, light water fog mist.

Provide mechanically operated vibratory equipment capable of adequately consolidating the concrete. Provide immersion vibrators on the paving equipment at sufficiently close intervals to provide uniform vibration and consolidation of the concrete over the entire width and depth of the pavement and in accordance with the manufacturer's recommendations. Provide

immersion vibrator units that operate at a frequency in air of at least 8,000 cycles per minute. Provide enough hand-operated immersion vibrators for timely and proper consolidation of the concrete along forms, at joints and in areas not covered by other vibratory equipment. Surface vibrators may be used to supplement equipment-mounted immersion vibrators. Provide tachometers to verify the proper operation of all vibrators.

For small or irregular areas or when approved, the paving equipment described in this Section is not required.

B. Forming Equipment.

1. **Pavement Forms.** Provide metal side forms of sufficient cross-section, strength, and rigidity to support the paving equipment and resist the impact and vibration of the operation without visible springing or settlement. Use forms that are free from detrimental kinks, bends, or warps that could affect ride quality or alignment. Provide flexible or curved metal or wood forms for curves of 100 foot radius or less.
2. **Curb Forms.** Provide curb forms for separately placed curbs that are not slipformed that conform to the requirements of Item 500, "Concrete Curb, Gutter, and Concrete Curb and Gutter."

C. Reinforcing Steel Inserting Equipment. Provide inserting equipment that accurately inserts and positions reinforcing steel in the plastic concrete parallel to the profile grade and horizontal alignment in accordance to plan details.

D. Texturing Equipment.

1. **Carpet Drag.** Provide a carpet drag mounted on a work bridge or a moveable support system. Provide a single piece of carpet of sufficient transverse length to span the full width of the pavement being placed and adjustable so that a sufficient longitudinal length of carpet is in contact with the concrete being placed to produce the desired texture. Obtain approval to vary the length and width of the carpet to accommodate specific applications. Use an artificial grass-type carpet having a molded polyethylene pile face with a blade length of $\frac{5}{8}$ to 1 inch, a minimum weight of 70 oz. per square yard, and a strong, durable, rot-resistant backing material bonded to the facing.
2. **Tining Equipment.** Provide a self-propelled transverse metal tine device equipped with 4 to 6 inch steel tines and with cross-section approximately 1/32 inch thick by 1/12 inch wide, spaced at 1 inch, center-to-center. Hand-operated tining equipment that produces an equivalent texture may be used only on small or irregularly shaped areas or, when permitted, in emergencies due to equipment breakdown.

E. Curing Equipment. Provide a self-propelled machine for applying membrane curing compound using mechanically pressurized spraying equipment with atomizing nozzles. Provide equipment and controls that maintain the required uniform rate of application over the entire paving area. Provide curing equipment that is independent of all other equipment when required to meet the requirements of Article 209.4.I, "Curing." Hand-operated pressurized spraying equipment with atomizing nozzles may be used on small or irregular areas or when permitted.

- F. **Sawing Equipment.** Provide power-driven concrete saws to saw the joints shown on the plans. Provide standby power-driven concrete saws during concrete sawing operations. Provide adequate illumination for nighttime sawing.
 - G. **Grinding Equipment.** When required, provide self propelled powered grinding equipment that is specifically designed to smooth and texture concrete pavement using circular diamond blades. Provide equipment with automatic grade control capable of grinding at least a 3 foot width longitudinally in each pass without damaging the concrete.
 - H. **Testing Equipment.** Provide testing equipment regardless of job-control testing responsibilities in accordance with Item 300, "Concrete," unless otherwise shown in the plans or specified.
 - I. **Coring Equipment.** When required, provide coring equipment capable of extracting cores in accordance with the requirements of TxDOT standard laboratory test procedure Tex-424-A.
 - J. **Miscellaneous Equipment.** Furnish both 10 foot and 15 foot steel or magnesium long-handled standard straightedges. Furnish enough work bridges, long enough to span the pavement, for finishing and inspection operations. Furnish date stencils to impress pavement placement dates into the fresh concrete, with numerals approximately 2 inches high by 1 inch wide by ¼ inch deep.
- 209.4. CONSTRUCTION:** Obtain approval for adjustments to plan grade-line to maintain thickness over minor subgrade or base high spots while maintaining clearances and drainage. Maintain subgrade or base in a smooth, clean, compacted condition in conformity with the required section and established grade until the pavement concrete is placed. Keep subgrade or base damp with water sufficiently in advance of placing pavement concrete. Adequately light the active work areas for all nighttime operations. Provide and maintain tools and materials to perform testing.
- A. **Paving and Quality Control Plan.** Unless otherwise shown on the plans, submit a paving and quality control plan for approval before beginning pavement construction operations. Include details of all operations in the concrete paving process, including longitudinal construction joint layout, sequencing, curing, lighting, early opening, leave-outs, sawing, inspection, testing, construction methods, other details and description of all equipment. List certified personnel performing the testing. Submit revisions to the paving and quality control plan for approval.
 - B. **Job-Control Testing.** Unless otherwise shown on the plans, perform all fresh and hardened concrete job-control testing at the specified frequency. Provide job-control testing personnel meeting the requirements of Item 300, "Concrete." Provide and maintain testing equipment, including strength testing equipment at a location acceptable to the Engineer. Use of a commercial laboratory is acceptable. Maintain all testing equipment calibrated in accordance with pertinent test methods. Make strength-testing equipment available to the Engineer for verification testing.
- Provide the Engineer the opportunity to witness all tests. The Engineer may require a retest if not given the opportunity to witness. Furnish a copy of all test results to the Engineer daily. Check the first few concrete loads for slump, air, and temperature on start-up production days to check for concrete conformance and consistency. Sample and prepare strength test specimens (2 specimens per test) on the first day of production and for each 3,000 square yards or fraction thereof of concrete pavement thereafter. Prepare at least 1 set of strength-test specimens for each production day. Perform slump, air, and temperature tests each time

strength specimens are made. Monitor concrete temperature to ensure that concrete is consistently within the temperature requirements. The Engineer will direct random job-control sampling and testing. Immediately investigate and take corrective action as approved if any Contractor test result, including tests performed for verification purposes, does not meet specification requirements.

When job-control testing by the Contractor is waived by the plans, the Engineer will perform the testing; however, this does not waive the Contractor's responsibility for providing materials and work in accordance with this Item.

- 1. Job-Control Strength.** Unless otherwise shown on the plans or permitted by the Engineer, use 7-day job-control concrete strength testing in accordance with TxDOT standard laboratory test procedure Tex-418-A.

For 7-day job-control by compressive strength, use a compressive strength of 3,200 psi or a lower job-control strength value proven to meet a 28-day compressive strength of 4,400 psi as correlated in accordance with TxDOT standard laboratory test procedure Tex-427-A.

Job control of concrete strength may be correlated to an age other than 7-days in accordance with TxDOT standard laboratory test procedure Tex-427-A when approved. Job-control strength of Class HES concrete is based on the required strength and time.

When a job-control concrete strength test value is more than 10% below the required job-control strength or when 3 consecutive job-control strength values fall below the required job-control strength, investigate the strength test procedures, the quality of materials, the concrete production operations, and other possible problem areas to determine the cause. Take necessary action to correct the problem, including redesign of the concrete mix if needed. The Engineer may suspend concrete paving if the Contractor is unable to identify, document, and correct the cause of low strength test values in a timely manner. If any job-control strength is more than 15% below the required job-control strength, the Engineer may evaluate the structural adequacy of the pavements. When directed, remove and replace pavements found to be structurally inadequate at no additional cost.

- 2. Split-Sample Verification Testing.** When indicated on the plans, perform split-sample verification testing with the Engineer on random samples taken and split by the Engineer at a rate of at least 1 for every 10 job-control samples. The Engineer will evaluate the results of split-sample verification testing. Immediately investigate and take corrective action as approved when results of split-sample verification testing differ more than the allowable differences shown in Table 1, or when the average of 10 job-control strength results and the Engineer's split-sample strength result differ by more than 10%.

Table 1
Verification Testing Limits

Test Method¹	Allowable Differences
Temperature, Tex-422-A	2°F
Slump, Tex-415-A	1 inch
Air content, Tex-414-A or Tex-416-A	1%
Compressive strength, Tex-418-A	10%

¹ TxDOT standard laboratory test procedures

- C. Reinforcing Steel and Joint Assemblies.** Accurately place and secure in position all reinforcing steel as shown on the plans and in accordance with the requirements herein. Place dowels at mid-depth of the pavement slab, parallel to the surface. Place dowels for transverse contraction joints parallel to the pavement edge. Tolerances for location and alignment of dowels will be shown on the plans. Stagger the longitudinal reinforcement splices to avoid having more than ½ of the splices within a 2 foot longitudinal length of each lane of the pavement. Use multiple-piece tie bars or drill and epoxy grout tie bars at longitudinal construction joints. Verify that tie bars that are drilled and epoxied into concrete at longitudinal construction joints develop a pullout resistance equal to a minimum of ¾ of the yield strength of the steel after 7-days. Test 15 bars using ASTM E-488, except that alternate approved equipment may be used. All 15 tested bars must meet the required pullout strength. If any of the test results do not meet the required minimum pullout strength, perform corrective measures to provide equivalent pullout resistance. Repair damage from testing. Acceptable corrective measures include but are not limited to installation of additional or longer tie bars.
- 1. Manual Placement.** Secure reinforcing bars at alternate intersections with wire ties or locking support chairs. Tie all splices with wire.
 - 2. Mechanical Placement.** If mechanical placement of reinforcement results in steel misalignment or improper location, poor concrete consolidation, or other inadequacies, complete the work using manual methods.
- D. Joints.** Install joints as shown on the plans. Joint sealants are not required on concrete pavement that is to be overlaid with asphaltic materials. Clean and seal joints in accordance with TxDOT Item 438, "Cleaning and Sealing Joints and Cracks (Rigid Pavement and Bridge Decks)." Repair excessive spalling of the joint saw groove using an approved method before installing the sealant. Seal all joints before opening the pavement to all traffic. When placing of concrete is stopped, install a rigid transverse bulkhead, accurately notched for the reinforcing steel and shaped accurately to the cross-section of the pavement.
- 1. Placing Reinforcement at Joints.** Where the plans require an assembly of parts at pavement joints, complete and place the assembly at the required location and elevation with all parts rigidly secured in the required position. Accurately notch joint materials for the reinforcing steel.
 - 2. Transverse Construction Joints.**
 - a. Jointed Concrete Pavement.** When the placing of concrete is intentionally stopped, install and rigidly secure a complete joint assembly and bulkhead in the planned transverse contraction joint location. When the placing of concrete is unintentionally

stopped, install a transverse construction joint either at a planned transverse contraction joint location or mid-slab between planned transverse contraction joints. For mid-slab construction joints, install tie bars of the size and spacing used in the longitudinal joints.

- b. **Curb Joints.** Provide joints in the curb of the same type and location as the adjacent pavement. Use expansion joint material of the same thickness, type, and quality required for the pavement and of the section shown for the curb. Extend expansion joints through the curb. Construct curb joints at all transverse pavement joints. For non-monolithic curbs, place reinforcing steel into the plastic concrete pavement as shown on the plans unless otherwise approved. Form or saw the weakened plane joint across the full width of concrete pavement and through the monolithic curbs. Construct curb joints in accordance with Item 500, "Concrete Curb, Gutter, and Curb and Gutter."

- E. **Placing and Removing Forms.** Use clean and oiled forms. Secure forms on a base or firm subgrade that is accurately graded and that provides stable support without deflection and movement by form riding equipment. Pin every form at least at the middle and near each end. Tightly join and key form sections together to prevent relative displacement.

Set side forms far enough in advance of concrete placement to permit inspection. Check conformity of the grade, alignment, and stability of forms immediately before placing concrete, and make all necessary corrections. Use a straightedge or other approved method to test the top of forms to ensure that the ride quality requirements for the completed pavement will be met. Stop paving operations if forms settle or deflect more than $\frac{1}{8}$ inch under finishing operations. Reset forms to line and grade, and refinish the concrete surface to correct grade.

Avoid damage to the edge of the pavement when removing forms. Repair damage resulting from form removal and honeycombed areas with a mortar mix within 24 hours after form removal unless otherwise approved. Clean joint face and repair honeycombed or damaged areas within 24 hours after a bulkhead for a transverse construction joint has been removed unless otherwise approved. When forms are removed before 72 hours after concrete placement, promptly apply membrane curing compound to the edge of the concrete pavement.

Forms that are not the same depth as the pavement but are within 2 inches of that depth are permitted if the subbase is trenched or the full width and length of the form base is supported with a firm material to produce the required pavement thickness. Promptly repair the form trench after use. Use flexible or curved wood or metal forms for curves of 100 foot radius or less.

- F. **Concrete Delivery.** Clean delivery equipment as necessary to prevent accumulation of old concrete before loading fresh concrete. Use agitated delivery equipment for concrete designed to have a slump of more than 5 inches. Segregated concrete is subject to rejection. Place agitated concrete within 60 minutes after batching. Place non-agitated concrete within 45 minutes after batching. In hot weather or under conditions causing quick setting of the concrete, times may be reduced by the Engineer. Time limitations may be extended if the Contractor can demonstrate that the concrete can be properly placed, consolidated, and finished without the use of additional water.

- G. Concrete Placement.** Do not allow the pavement edge to deviate from the established paving line by more than ½ inch at any point. Place the concrete as near as possible to its final location, and minimize segregation and re-handling. Where hand spreading is necessary, distribute concrete using shovels. Do not use rakes or vibrators to distribute concrete.
- 1. Pavement.** Consolidate all concrete by approved mechanical vibrators operated on the front of the paving equipment. Use immersion-type vibrators that simultaneously consolidate the full width of the placement when machine finishing. Keep vibrators from dislodging reinforcement. Use hand-operated vibrators to consolidate concrete in areas not accessible to the machine-mounted vibrators. Do not operate machine-mounted vibrators while the paving equipment is stationary. Vibrator operations are subject to review.
 - 2. Date Imprinting.** Imprint dates in the fresh concrete indicating the date of the concrete placement. Make impressions approximately 1 foot from the outside longitudinal construction joint or edge of pavement and approximately 1 foot from the transverse construction joint at the beginning of the placement day. Orient the impressions to be read from the outside shoulder in the direction of final traffic. Impress date in DD MM YY format. Imprinting of the Contractor name or logo in similar size characters to the date is allowed.
 - 3. Curbs.** Where curbs are placed separately, conform to the requirements of Item 500, "Concrete Curb, Gutter, and Curb and Gutter."
 - 4. Temperature Restrictions.** Place concrete that is between 40°F and 95°F when measured in accordance with TxDOT standard laboratory test procedure Tex-422-A at the time of discharge, except that concrete may be used if it was already in transit when the temperature was found to exceed the allowable maximum. Take immediate corrective action or cease concrete production when the concrete temperature exceeds 95°F.

Do not place concrete when the ambient temperature in the shade is below 40°F and falling unless approved. Concrete may be placed when the ambient temperature in the shade is above 35°F and rising or above 40°F. When temperatures warrant protection against freezing, protect the pavement with an approved insulating material capable of protecting the concrete for the specified curing period. Submit for approval proposed measures to protect the concrete from anticipated freezing weather for the first 72-hours after placement. Repair or replace all concrete damaged by freezing.

- H. Spreading and Finishing.** Unless otherwise shown on the plans, finish all concrete pavements with approved self-propelled equipment. Use power-driven spreaders, power-driven vibrators, power-driven strike-off, and screed, or approved alternate equipment. Use the transverse finishing equipment to compact and strike off the concrete to the required section and grade without surface voids. Use float equipment for final finishing. Use concrete with a consistency that allows completion of all finishing operations without addition of water to the surface. Use the minimal amount of water fog mist necessary to maintain a moist surface. Reduce fogging if float or straightedge operations result in excess slurry.
- 1. Finished Surface.** Perform sufficient checks with long-handled 10 foot and 15 foot straightedges on the plastic concrete to ensure that the final surface is within the tolerances specified in Surface Test A in TxDOT standard test procedure Item 585, "Ride Quality for Pavement Surfaces." Check with the straightedge parallel to the centerline.

2. **Maintenance of Surface Moisture.** Prevent surface drying of the pavement before application of the curing system by means that may include water fogging, the use of wind screens and the use of evaporation retardants. Apply evaporation retardant at the rate recommended by the manufacturer. Reapply the evaporation retardant as needed to maintain the concrete surface in a moist condition until curing system is applied. Do not use evaporation retardant as a finishing aid. Failure to take acceptable precautions to prevent surface drying of the pavement will be cause for shut down of pavement operations.
3. **Surface Texturing.** Complete final texturing before the concrete has attained its initial set. Drag the carpet longitudinally along the pavement surface with the carpet contact surface area adjusted to provide a satisfactory coarsely textured surface. Prevent the carpet from getting plugged with grout. Do not perform carpet dragging operations while there is excessive bleed water.

A metal-tine texture finish is required for all areas with a posted speed limit in excess of 45 mph. A metal-tine texture finish is required unless otherwise shown on the plans for areas with a posted speed limit less than 45 mph. Immediately following the carpet drag, apply a single coat of evaporation retardant at a rate recommended by the manufacturer. Provide the metal-tine finish immediately after the concrete surface has set enough for consistent tining. Operate the metal-tine device to obtain grooves spaced at 1 inch, approximately 3/16 inch deep, with a minimum depth of 1/8 inch, and approximately 1/12 inch wide. Do not overlap a previously tined area. Use manual methods to achieve similar results on ramps and other irregular sections of pavements. Repair damage to the edge of the slab and joints immediately after texturing. Do not tine pavement that will be overlaid or that is scheduled for blanket diamond grinding or shot blasting.

When carpet drag is the only surface texture required by the plans, ensure that adequate and consistent micro-texture is achieved by applying sufficient weight to the carpet and keeping the carpet from getting plugged with grout, as directed by the Engineer. Target a carpet drag texture of .04 inch, as measured by Tex-436-A. Correct any location with a texture less than .03 inch by diamond grinding or shot blasting. The Engineer will determine the test locations at points located transversely to the direction of traffic in the outside wheel path.

4. **Small or Irregular Placements.** Where machine placements and finishing of concrete pavement are not practical, use hand equipment and procedures that produce a consolidated and finished pavement section to the line and grade.
 5. **Emergency Procedures.** Use hand-operated equipment for applying texture, evaporation retardant, and cure in the event of equipment breakdown.
- I. **Curing.** Keep the concrete pavement surface from drying as described in Section 209.4.H.2, "Maintenance of Surface Moisture," until the curing material has been applied. Maintain and promptly repair damage to curing materials on exposed surfaces of concrete pavement continuously for at least 3 curing days. A curing day is defined as a 24 hour period when either the temperature taken in the shade away from artificial heat is above 50°F for at least 19 hours or when the surface temperature of the concrete is maintained above 40°F for 24 hours. Curing begins when the concrete curing system has been applied. Stop concrete paving if curing compound is not being applied promptly and maintained adequately. Other methods of curing in accordance with Item 307, "Concrete Structures," may be used when specified or approved.

1. **Membrane Curing.** Spray the concrete surface uniformly with 2 coats of membrane curing compound at an individual application rate of not more than 180 square feet per gallon. Do not allow the concrete surface to dry before applying the curing compound. Use a towel or absorptive fabric to remove any standing pools of bleed water that may be present on the surface before applying the curing compound. Apply the first coat within 10 min. after completing texturing operations. Apply the second coat within 30 minutes after completing texturing operations.

Before and during application, maintain curing compounds in a uniformly agitated condition, free of settlement. Do not thin or dilute the curing compound.

Where the coating shows discontinuities or other defects or if rain falls on the newly coated surface before the film has dried enough to resist damage, apply additional compound at the same rate of coverage to correct the damage. Ensure that the curing compound coats the sides of the tining grooves.

2. **Asphalt Curing.** When an asphaltic concrete overlay is required, apply a uniform coating of asphalt curing at a rate of 90 to 180 square feet per gallon as required. Apply curing immediately after texturing and just after the free moisture (sheen) has disappeared. Obtain approval to add water to the emulsion to improve spray distribution. Maintain the asphalt application rate when using diluted emulsions. Maintain the emulsion in a mixed condition during application.
 3. **Curing Class HES Concrete.** For all Class HES concrete pavement, provide membrane curing in accordance with Section 209.4.I.1, "Membrane Curing," followed promptly by water curing until opening strength is achieved but not less than 24 hours.
- J. **Sawing Joints.** Saw joints to the depth shown on the plans as soon as sawing can be accomplished without damage to the pavement regardless of time of day or weather conditions. Some minor raveling of the saw cut is acceptable. Use a chalk line, string line, sawing template, or other approved method to provide a true joint alignment. Provide enough saws to match the paving production rate to ensure sawing completion at the earliest possible time to avoid uncontrolled cracking. Reduce paving production if necessary to ensure timely sawing of joints. Promptly restore membrane cure damaged within the first 72 hours of curing.
- K. **Protection of Pavement and Opening to Traffic.** Testing for early opening is the responsibility of the Contractor regardless of job-control testing responsibilities unless otherwise shown in the plans or directed. Testing result interpretation for opening to traffic is subject to the approval of the Engineer.
1. **Protection of Pavement.** Erect and maintain barricades and other standard and approved devices that will exclude all vehicles and equipment from the newly placed pavement for the periods specified. Before opening to traffic, protect the pavement from damage due to crossings using approved methods. Where a detour is not readily available or economically feasible, an occasional crossing of the roadway with overweight equipment may be permitted for relocating equipment only but not for hauling material. When an occasional crossing of overweight equipment is permitted, temporary matting or other approved methods may be required.

Maintain an adequate supply of sheeting or other material to cover and protect fresh concrete surface from weather damage. Apply as needed to protect the pavement surface from weather.

2. **Opening Pavement to All Traffic.** Pavement that is 7 days old may be opened to all traffic. Before opening to traffic, clean pavement, place stable material against the pavement edges, seal joints, and perform all other traffic safety related work.
3. **Opening Pavement to Construction Equipment.** Unless otherwise shown on the plans, concrete pavement may be opened early to concrete paving equipment and related delivery equipment after the concrete is at least 48 hours old and opening strength has been demonstrated in accordance with Section 209.4.K.4, "Early Opening to All Traffic," before curing is complete. Keep delivery equipment at least 2-feet from the edge of the concrete pavement. Keep tracks of the paving equipment at least 1 foot from the pavement edge. Protect textured surfaces from the paving equipment. Restore damaged membrane curing as soon as possible. Repair pavement damaged by paving or delivery equipment before opening to all traffic.
4. **Early Opening to All Traffic.** Concrete pavement may be opened after curing is complete and the concrete has attained a compressive strength of 2,800 psi, except that pavement using Class HES concrete may be opened after 24 hours if the specified strength is achieved.
 - a. **Strength Testing.** Test concrete specimens cured under the same conditions as the portion of the pavement involved.
 - b. **Maturity Method.** Unless otherwise shown on the plans, the maturity method, TxDOT standard laboratory test procedure Tex-426-A, may be used to estimate concrete strength for early opening pavement to traffic. Install at least 2 maturity thermocouples for each day's placement in areas where the maturity method will be used for early opening. Thermocouples, when used, will be installed near the day's final placement for areas being evaluated for early opening. Use test specimens to verify the strength-maturity relationship in accordance with TxDOT standard laboratory test procedure Tex-426-A, starting with the first day's placement corresponding to the early opening pavement section.

After the first day, verify the strength-maturity relationship at least every 10 days of production. Establish a new strength-maturity relationship when the strength specimens deviate more than 10% from the maturity-estimated strengths. Suspend use of the maturity method for opening pavements to traffic when the strength-maturity relationship deviates by more than 10% until a new strength-maturity relationship is established.

When the maturity method is used intermittently or for only specific areas, the frequency of verification will be as determined by the Engineer.

5. **Emergency Opening to Traffic.** Under emergency conditions, when the pavement is at least 72 hours old, open the pavement to traffic when directed in writing. Remove all obstructing materials, place stable material against the pavement edges, and perform other work involved in providing for the safety of traffic as required for emergency opening.

L. Pavement Thickness. Unless otherwise shown on the plans, the Engineer will perform 1 thickness test consisting of 1 reading at approximately the center of each lane every 500 feet or fraction thereof. The Engineer will check the thickness in accordance with TxDOT standard laboratory test procedure Tex-423-A unless other methods are shown on the plans. Core where directed in accordance with TxDOT standard laboratory test procedure Tex-424-A to verify deficiencies of more than 0.2 inch from plan thickness and to determine the limits of deficiencies of more than 0.75 inch from plan thickness. Fill core holes using a concrete mixture and method approved by the Engineer.

- 1. Thickness Deficiencies Greater than 0.2-inch.** When any depth test measured in accordance with TxDOT standard laboratory test procedure Tex-423-A is deficient by more than 0.2 inch from the plan thickness, take one 4-inch diameter core at that location to verify the measurement.

If the core is deficient by more than 0.2 inch but not by more than 0.75 inch from the plan thickness, take 2 additional cores from the unit (as defined in Section 209.4.L.3, "Pavement Units for Payment Adjustment") at intervals of at least 150 feet and at locations selected by the Engineer, and determine the thickness of the unit for payment purposes by averaging the length of the 3 cores. In calculations of the average thickness of this unit of pavement, measurements in excess of the specified thickness by more than 0.2 inch will be considered as the specified thickness plus 0.2 inch.

- 2. Thickness Deficiencies Greater than 0.75-inch.** If a core is deficient by more than 0.75 inch, take additional cores at 10 foot intervals in each direction parallel to the centerline to determine the boundary of the deficient area. The Engineer will evaluate any area of pavement found deficient in thickness by more than 0.75 inch but not more than 1 inch. As directed, remove and replace the deficient areas without additional compensation or retain deficient areas without compensation. Remove and replace any area of pavement found deficient in thickness by more than 1 inch without additional compensation.
- 3. Pavement Units for Payment Adjustment.** Limits for applying a payment adjustment for deficient pavement thickness from 0.2 inch to not more than 0.75 inch are 500-feet of pavement in each lane. Lane width will be as shown on typical sections and pavement design standards.

For greater than 0.75 inch deficient thickness, the limits for applying zero payment or requiring removal will be defined by coring or equivalent nondestructive means as determined by the Engineer. The remaining portion of the unit determined to be less than 0.75 inch deficient will be subject to the payment adjustment based on the average core thickness at each end of the 10 foot interval investigation as determined by the Engineer.

Shoulders will be measured for thickness unless otherwise shown on the plans. Shoulders 6 feet wide or wider will be considered as lanes. Shoulders less than 6 feet wide will be considered part of the adjacent lane.

Limits for applying payment adjustment for deficient pavement thickness for ramps, widenings, acceleration and deceleration lanes, and other miscellaneous areas are 500 feet in length. Areas less than 500 feet in length will be individually evaluated for payment adjustment based on the plan area.

M. Ride Quality. When required by the plans, measure ride quality in accordance with TxDOT Item 585, "Ride Quality for Pavement Surfaces." Surface Test Type A or B as well as Pay Schedule 1, 2, or 3 shall also be indicated on the plans.

209.5. MEASUREMENT: This Item will be measured as follows:

A. Concrete Pavement. Concrete pavement will be measured by the square yard of surface area in place. The surface area includes the portion of the pavement slab extending beneath the curb.

B. Curb. Curb on concrete pavement will be measured by the foot in place.

209.6. PAYMENT: Payment includes full compensation for materials, equipment, labor, tools, and incidentals.

A. Concrete Pavement. The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the adjusted unit price bid for "Concrete Pavement" of the type and depth specified as adjusted in accordance with Sections 209.6.B, "Deficient Thickness Adjustment" and 209.4.M, "Ride Quality."

B. Deficient Thickness Adjustment. Where the average thickness of pavement is deficient in thickness by more than 0.2 inch but not more than 0.75 inch, payment will be made using the adjustment factor as specified in Table 2 applied to the bid price for the deficient area for each unit as defined under Section 209.4.L.3, "Pavement Units for Payment Adjustment."

Table 2
Deficient Thickness Price Adjustment Factor (1 in = 25.4 mm)

Deficiency in Thickness Determined by Cores (in.)	Proportional Part of Contract Price Allowed (adjustment factor)
Not deficient	1.00
Over 0.00 through 0.20	1.00
Over 0.20 through 0.30	0.80
Over 0.30 through 0.40	0.72
Over 0.40 through 0.50	0.68
Over 0.50 through 0.75	0.57

C. Curb. Work performed and furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Curb" of the type specified.

209.7. BID ITEM:

Item 209.1 - Concrete Pavement - per square yard at __ inches of depth

ITEM**230 BASE AND PAVEMENT REPLACEMENT**

- 230.1. DESCRIPTION:** *Repair localized sections of flexible pavement and full depth repair of concrete pavement including subgrade, base, and surfacing as shown on the plans due to distress from traffic loading, environment, or other causes. Cutting and replacing existing pavements for utility trench construction (cuts up to 6 feet in width) is specified in Item 511, "Cutting and Replacing Pavements (Trench Repair)."*
- 230.2. MATERIALS:** Furnish materials in accordance with the requirements herein unless otherwise shown on the plans. Provide materials of the type and grade as shown on the plans and in accordance with the pertinent Items listed below:
- A. Embankment.** Item 107, "Embankment."
 - B. Lime Treated Subgrade.** Item 108, "Lime Treated Subgrade."
 - C. Cement Treated Subgrade.** Item 109, "Cement Treated Subgrade."
 - D. Flexible Base.** Item 200, "Flexible Base."
 - E. Cement Treated Base.** Item 201, "Cement Treated Base."
 - F. Asphalt Treated Base.** Item 206, "Asphalt Treated Base."
 - G. Prime Coat.** Item 202, "Prime Coat."
 - H. Surface Treatments.** Item 204, "Surface Treatments."
 - I. Hot Mix Asphaltic Concrete Pavement.** Item 205, "Hot Mixed Asphaltic Concrete Pavement."
 - J. Concrete Pavement.** Item 209, "Concrete Pavements."
 - K. Concrete.** Item 300, "Concrete."
 - L. Reinforcing Steel.** Item 301, "Reinforcing Steel."
 - M. Epoxy.** TxDOT DMS 6100, "Epoxies and Adhesives."
- 230.3. EQUIPMENT:** Furnish equipment in accordance with the pertinent Items. Use of a motor grader will be permitted for asphalt concrete pavement unless otherwise shown on the plans.
- 230.4. CONSTRUCTION:** Repair using one or more of the following operations as shown on the plans. Cut neat vertical faces around the perimeter of the work area when removing pavement structure layers. Removed materials are the property of the Contractor unless otherwise shown on the plans. Dispose of removed material in accordance with federal, state, and local regulations. Provide a smooth line and grade conforming to the adjacent pavement.
- A. Removing Pavement Structure.** All concrete and asphaltic concrete pavements shall be cut with a concrete saw or other approved equally capable equipment. If necessary, remove

adjacent soil and vegetation to prevent contamination of the repair area, and place it in a windrow. Do not damage adjacent pavement structure during repair operations.

1. **Existing Flexible Pavement.** The depth of the cut shall be such that upon removal of asphaltic concrete, the sides of the cut will be straight and square. Where existing base materials are to remain, pavements shall be removed to their full depth up to the top of the base material. Care shall be taken not to damage the existing base. If subgrade work is required, remove flexible pavement structure layers from work area.
2. **Existing Concrete Pavement.** Remove areas identified by the Engineer. Make repair areas rectangular, at least 6 feet long and at least ½ a full lane in width unless otherwise shown on the plans. Saw-cut and remove existing asphalt concrete overlay over the repair area and at least 6 inches outside each end of the repair area. Saw-cut full depth through the concrete around the perimeter of the repair area before removal. Do not spall or fracture concrete adjacent to the repair area. Schedule work so that concrete placement follows full-depth saw cutting by no more than 7 days unless otherwise shown on the plans or approved.

Remove or repair loose or damaged base material, and replace or repair it with approved base material to the original top of base grade. Place a polyethylene sheet at least 4 mils thick as a bond breaker at the interface of the base and new pavement. Allow concrete used as base material to attain sufficient strength to prevent displacement when placing pavement concrete.

- B. Preparing Subgrade.** Fill holes, ruts, and depressions with approved material. If required, thoroughly wet, reshape, and compact the subgrade as directed.

Where subgrade has failed, remove unstable subgrade material to the depth directed and replace with an approved material.

- C. Mixing and Placing Base Material.** Place, spread, and compact material in accordance with the applicable Item to the required or directed depth. For flexible pavement repair, when bituminous material is to remain in the pavement structure, pulverize to a maximum dimension of 2-½ inches and uniformly mix with existing base to the depth shown on the plans.

1. **Flexible Base.** Use existing base and add new flexible base as required in accordance with Item 200, "Flexible Base," and details shown on the plans to achieve required section.
2. **Cement-Treated Base.** Use existing base, add flexible base, and stabilize with a minimum cement content of 4% by weight of the total mixture. Construct in accordance with details shown on the plans and Item 201, "Cement Treated Base," to achieve required section.
3. **Asphalt-Treated Base.** Place asphalt-treated base in accordance with details shown on the plans and Item 206, "Asphalt Treated Base," or Item 205, "Hot Mix Asphaltic Concrete Pavement," to achieve required section.
4. **Concrete Base.** Unless otherwise shown on the plans or permitted, furnish pavement concrete for replacement base material when required. The Engineer may waive quality control tests for base material.

- D. Curing Base.** Cure in accordance with the appropriate Item unless otherwise directed or approved by the Engineer. Maintain completed base sections until surfacing.
- E. Surfacing.** Apply surfacing with materials as shown on the plans to the completed base section.
- 1. Prime Coat.** Protect the compacted, finished, and cured flexible or cement-treated base mixtures with a prime coat of the type and grade shown on the plans. Apply the prime coat at the rate shown on the plans.
 - 2. Surface Treatments.** Apply surface treatment with the type and grade of asphalt and aggregate as shown on the plans in accordance with Item 204, "Surface Treatments."
 - 3. Asphalt Concrete Pavement.** Apply tack coat of the type and grade and at the rate shown on the plans unless otherwise directed. Construct in accordance with Item 205, "Hot Mix Asphaltic Concrete Pavement," to achieve required section.
 - 4. Portland Cement Concrete Pavement.** Use only drilling operations that do not damage the surrounding operations when drilling holes for replacement steel. Place new deformed reinforcing steel bars of the same size and spacing as the bars removed or as shown on the plans. Lap all reinforcing steel splices in accordance with Item 301, "Reinforcing Steel." Place dowel bars and tiebars as shown on the plans. Epoxy-grout all tiebars for at least a 12 inch embedment into existing concrete. Completely fill the tiebar hole with Type III, Class A or Class C epoxy before inserting the tiebar into the hole.

Provide grout retention disks for all tiebar holes. Provide and place approved supports to firmly hold the new reinforcing steel, tiebars, and dowel bars in place. Demonstrate, through simulated job conditions, that the bond strength of the epoxy-grouted tiebars meets a pullout strength of at least $\frac{3}{4}$ of the yield strength of the tiebar when tested in accordance with ASTM E 488 within 18 hr. after grouting. Increase embedment depth and retest when necessary to meet testing requirements. Perform tiebar testing before starting repair work.

If the time frame designated for opening to traffic is less than 72 hours after concrete placement, provide Class HES concrete designed to attain a minimum average flexural strength of 255 psi or a minimum average compressive strength of 1,800 psi within the designated time frame. Otherwise provide Class P concrete conforming to Item 209, "Concrete Pavement." Type III cement is permitted for Class HES concrete. Mix, place, cure, and test concrete to the requirements of Item 209, "Concrete Pavement," and Item 300, "Concrete," unless otherwise shown on the plans. Broom-finish the concrete surface unless otherwise shown on the plans.

Match the grade and alignment of existing concrete pavement. After concrete strength requirements have been met, replace any asphalt overlay and shoulder material removed with new asphalt concrete material in accordance with Item 205, "Hot Mixed Asphaltic Concrete Pavement."

For repair areas to be opened to traffic before 72 hours, use curing mats to maintain a minimum concrete surface temperature of 70°F when air temperature is less than 70°F. Cure repaired area for at least 72 hours or until overlaid with asphalt concrete, if required, or until the area is opened to traffic. Saw and seal contraction joints in the repair area in

accordance with Item 209, "Concrete Pavement." Remove repair area debris from the right of way each day.

- F. **Finishing.** Regrade and compact disturbed topsoil. Clean roadway surface after repair operations.

230.5. MEASUREMENT:

- A. **Flexible Pavement.** This Item will be measured by the square yard. In areas where material is excavated, as directed, to depths greater than those specified on the plans, measurement will be made by dividing the actual depth of such area by the plan depth and then multiplying this figure by the area in square yards of work performed. Calculations for each repaired area will be rounded up to the nearest 1/10 square yard. At each repair location, the minimum area for payment purposes will be 1 square yard.
- B. **Concrete Pavement.** This Item will be measured by the square yard of concrete surface area repaired. No measurement will be made for areas damaged because of Contractor negligence.

230.6. PAYMENT:

- A. **Flexible Pavement.** 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 "Flexible Pavement Structure Repair" of the specified depth. This price is full compensation for scarifying, removing, hauling, spreading, disposing of, and stockpiling existing pavement structure; removing objectionable or unstable material; furnishing and placing materials; maintaining completed section before surfacing; applying tack or prime coat; hauling, sprinkling, spreading, and compacting; and equipment, labor, tools, and incidentals.
- B. **Concrete Pavement.** The work performed and the materials furnished in accordance with this Item and measured as specified under "Measurement" will be paid for at the unit price bid for "Concrete Full-Depth Repair" of the type and depth specified. This price is full compensation for removal, stockpiling, and disposal of waste material and for equipment, materials, labor, tools, and incidentals. Asphalt concrete, base material, and curbing will not be paid for directly but will be considered subsidiary to this Item.

230.7. BID ITEM:

Item 230.1 - Flexible Pavement Structure Repair - __ inches compacted depth - per square yard

Item 230.2 - Concrete Pavement Full-Depth Repair - __ inches compacted depth - per square yard

DIVISION V - INCIDENTAL CONSTRUCTION**ITEM****500 CONCRETE CURB, GUTTER, AND CONCRETE CURB AND GUTTER**

500.1. DESCRIPTION: *Construct hydraulic cement concrete curb, gutter, and combined curb and gutter.*

500.2. MATERIALS: Furnish materials conforming to:

- A. Concrete.** Item 300, "Concrete." Use Class A concrete or material specified in the plans. Use Grade 8 coarse aggregate for extruded Class A concrete. Use other grades if approved by the Engineer.
- B. Reinforcing Steel.** Item 301, "Reinforcing Steel."
- C. Expansion Joint Materials.** Item 304, "Expansion Joint Materials."
- D. Membrane Curing Compound.** Item 305, "Membrane Curing."

500.3. EQUIPMENT:

- A. General.** Provide machinery, tools, and equipment necessary for proper execution of the work.
- B. Concrete Forms.** Forms shall be of metal and shall extend for the full depth of the concrete. Wooden forms may be used, when authorized by the Engineer, on short radius curves such as at street intersections and at such other locations for which curved metal forms may not be available. Wooden forms may be used in other situations when authorized by the Engineer.

All forms shall be free from warp and of sufficient strength to resist the pressure of the concrete without displacement. Bracing and staking of forms shall be such that the forms remain in both horizontal and vertical alignment until their removal. All forms shall be cleaned and coated with an approved form release agent or form oil before concrete is placed. Divider plates shall be of metal. Forms shall conform to the specified radius when placed on curves.
- C. Concrete Curbing Machine.** The curb, gutter, or curb and gutter may be constructed by the use of an automatic curb forming machine meeting the following requirements:
 - 1. The weight of the machine shall be such that required compaction is obtained without the machine riding above the bed on which curbing is constructed.
 - 2. The machine shall form curbing that is uniform in texture, shape and density.
 - 3. The forming tube of the extrusion machine or the form of the slipform machine must be easily adjustable vertically during the forward motion of the machine to provide variable heights necessary to conform to the established gradeline.

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

500.4. CONSTRUCTION: Curbs, gutters, or curb and gutter combinations may be placed using conventionally formed concrete placement or using a City approved self-propelled concrete curbing machine.

Provide finished work with a well-compacted mass and a surface free from voids and honeycomb, in the required shape, line, and grade. Round exposed edges with an edging tool of the radius shown on the plans. Mix, place, and cure concrete in accordance with Item 307, "Concrete Structures." Construct joints at locations shown on the plans. Cure for at least 72 hours unless approved by the Engineer.

Furnish and place reinforcing steel in accordance with Item 301, "Reinforcing Steel."

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

A. Formed Concrete.

1. **Excavation and Foundation.** Excavate, shape and compact subgrade, foundation, or pavement surface to the line, grade, and cross section shown on the plans. Lightly sprinkle subgrade or foundation material immediately before concrete placement.

If the subgrade is undercut, or the natural ground is below "top of subgrade," the necessary backfill shall be made with an approved material and compacted with a mechanical tamper. Hand tamping will not be permitted.

2. **Placement.** Place concrete into forms, and strike off with a template $\frac{1}{4}$ to $\frac{3}{8}$ inch less than the dimensions of the finished curb unless otherwise approved. After initial set, plaster surface with mortar consisting of 1 part hydraulic cement and 2 parts fine aggregate. Brush exposed surfaces to a uniform texture.

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

The reinforcing steel, if required, shall be placed in position as shown on the typical section. Care shall be exercised to keep all steel in its proper location.

Expansion joint material shall be provided at intervals not to exceed 50 feet, and shall extend the full width and depth of the concrete. Templates for joints shall be of steel, not less than $\frac{3}{16}$ of an inch in thickness and patterned to the shape of the curb. Templates shall be cleaned and oiled and spaced to cut the curb in sections 10 feet in length. The templates shall extend a distance of 8 inches into the curb from the top down.

Two round smooth dowel bars $\frac{3}{8}$ of an inch in diameter and 18 inches in length shall be installed at each expansion joint. One 9 inch end of each dowel shall be thoroughly coated with hot oil asphalt so that it will not bond to the concrete; approved types of slip joints may be used in lieu of coating ends of dowels. The dowels shall be placed on the vertical centerline 3 inches from the top and bottom.

Immediately after finishing the curb, it shall be protected by a membrane-compound curing agent.

The curb shall be backfilled to the full height of the concrete, tamped and sloped as directed by the Inspector. The top 4 inches of fill shall be of clean top soil, free of stones and debris.

B. Machine Laid Concrete.

- 1. Foundation.** Hand-tamp and sprinkle subgrade or foundation material before concrete placement. Provide clean surfaces for concrete placement. If required, coat cleaned surfaces with approved adhesive or coating at the rate of application shown on the plans or as directed.
- 2. Placement.** The concrete shall be fed into the machine in such a manner and at such consistency that the finished curb will present a well compacted mass with a surface free from voids and honeycomb and true to established shape, line and grade.

Immediately following extrusion any voids between the trench walls and curb shall be filled with well compacted concrete and finished off flush with the surface of the base. Any additional surface finishing specified and/or required shall be performed immediately after the above void-filling operation. Joints shall be cut to a depth of ½ inch at 10 foot intervals or as directed by the Inspector.

Whenever the curb end abuts a concrete structure a ½ inch, pre-molded, expansion joint, conforming to the curb section, shall be placed between the two concrete surfaces.

Whenever extrusion is suspended long enough to produce a cold joint, ¾ inch smooth dowel bars, 18 inches long, shall be embedded 9 inches into the completed curb, one-quarter (¼) curb height from top and bottom. The end of the curb at the point of suspension of extrusion shall be cut back until all remaining concrete is of a dense well compacted nature.

Any addition of concrete to the extruded curb is to be applied and finished before the extruded curb has achieved its initial set.

When finishing operations are completed the curb is to be coated with membrane curing compound.

When the curb has cured, it shall be backfilled to the full height of the concrete, tamped and sloped as directed by the Inspector. The top 4-inches of fill shall be clean top soil, free of stones and debris.

500.5. MEASUREMENT: Accepted work as prescribed by this item will be measured by the linear foot of concrete curb, complete in place.

500.6. 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 "Concrete Curb," "Concrete Curb (Mono)," "Concrete Gutter," or "Concrete Curb and Gutter" of the type specified. This price is full compensation for surface preparation of base, equipment, labor, materials, tools, and incidentals. Topsoil to be paid under Item 515, "Topsoil."

500.7. BID ITEM:

Item 500.1 - Concrete Curb - per linear foot

Item 500.2 - Concrete Curb (Mono) - per linear foot

Item 500.3 - Concrete Gutter - per linear foot

Item 500.4 - Concrete Curb and Gutter - per linear foot

ITEM**502 CONCRETE SIDEWALKS**

502.1. DESCRIPTION: *Construct or repair hydraulic cement concrete sidewalks.*

502.2. MATERIALS: Furnish materials conforming to the following:

- A. Hydraulic Cement Concrete.** Item 300, "Concrete." Use Class A concrete or other concrete as specified. Use Grade 8 course aggregate for extruded Class A concrete. Use other grades if approved by the Engineer.
- B. Reinforcing Steel.** Item 301, "Reinforcing Steel."
- C. Wire Mesh.** Item 303, "Welded Wire Flat Sheets."
- D. Expansion Joint Material:** Item 304, "Expansion Joint Materials."
- E. Membrane Curing Compound:** Item 305, "Membrane Curing."
- F. Concrete Structures.** Item 307, "Concrete Structures."

502.3. EQUIPMENT: Furnish equipment as required and/or in accordance with the pertinent Items.

502.4. CONSTRUCTION: Routing and location of sidewalks shall be indicated by plans or as directed by the Engineer. Grading of sidewalks shall be a minimum of two feet wider than sidewalk width on straight sections and three feet wider than sidewalk at turns. Grading for sidewalks shall be in accordance with direction by the Engineer. Generally, where sidewalks occur on slopes, grading shall be performed so as to result in curved contours rather than abrupt banks. Fine grading shall prevent pocketing of water. Contractor shall complete final excavation and preparation of subgrade achieving slope, drainage and compaction.

Where a sidewalk crosses a concrete driveway, confirm that the sidewalk depth and reinforcement are not less than the driveway cross-sectional details shown on the plans.

A. Trees and Roots.

- 1. Tree Protection.** Trees that are near sidewalk construction shall be protected from construction equipment through the use of fencing or boarding in accordance with *City of San Antonio Tree Protection Details – Tree Preservation Standard Details 1.1.3, "Level II A Fence Protection," 1.1.4, "Level II B Fence Protection,"* or as shown on the plans. Whenever possible, the entire drip line of the tree should be protected from construction activities in accordance with *Tree Preservation Standard Details 1.1.2, "Level I & Fence Protection."*
- 2. Root Barriers.** When shown on the plans, install root barriers near the edge of the sidewalk to reduce potential future damage to the sidewalk in accordance with the locations and depths shown on the plans. Unless otherwise shown on the plans, the root barrier shall be thermoplastic panels or sheets.
- 3. Root Damage to Existing Sidewalks.** When roots have damaged the sidewalk and repairs are undertaken, the tree roots causing the damage shall be removed. Unless

otherwise shown on the plans, retain the City Arborist to review the trees affected before sidewalk reconstruction begins. The City Arborist will identify roots to be removed and branches to be pruned, if required. Utilize equipment that will provide a sharp clean cut to minimize damage to the tree roots and branches. Prune the tree in accordance with the City Arborist's requirements.

- B. Removal of Existing Sidewalk.** If an existing sidewalk is to be reconstructed or repaired, remove existing sidewalk to the depths and limits shown on the plans or identified by the Engineer. All concrete sidewalks to be repaired shall be cut with a concrete saw or other equipment approved by the Engineer from existing sidewalks, driveways or other concrete structures. If necessary, remove adjacent soil and vegetation to prevent contamination of the sidewalk area, and place it in a windrow or stockpile. Do not damage adjacent sidewalk or other structures during removal and reconstruction operations. Remove and dispose of existing concrete and other materials from the work area.
- C. Subgrade Preparation.** Shape and compact subgrade to the line, grade, and cross-section shown on the plans. Mechanically tamp and sprinkle foundation when placement is directly on subgrade.
- D. Subbase Placement.** A cushion, 2 inch minimum thickness, of crusher screenings, gravel, crushed rock or flexible base material shall be spread, wetted thoroughly, tamped and leveled. The cushion shall be moist at the time the concrete is placed. Where the subgrade is rock or gravel, 70% of which is rock, the 2 inch cushion need not be used. The Engineer will determine if the subgrade meets the above requirement.

If the subgrade is undercut, or the natural ground is below "top of subgrade," the necessary backfill shall be made with an approved material and compacted with a mechanical tamper. Hand tamping will not be permitted.

The foundation shall be level and uniformly compacted to prevent future settlement.

- E. Reinforcement.** Concrete sidewalks shall be reinforced as shown in the plans. Concrete reinforcement for sidewalks may consist of longitudinal reinforcing steel without traverse reinforcement or as specified by the manufacturer or the Engineer. Steel reinforcement may be omitted if approved by the Engineer.

An alternate method of reinforcing using nylon or polypropylene fibers may be used if approved by Engineer or slip-form paver equipment manufacturer. Nylon fibers shall be used at a rate of one pound (1 lb) per cubic yard or polypropylene fibers at one and a half pounds (1.5 lbs) per cubic yard, unless otherwise specified by the Engineer or slip-form paver manufacturer.

- F. Joints.** Unless otherwise specified on plans or as agreed to by Engineer, tooled joints with rounded edges will be placed every ten feet (10') and will be opened with one-half inch ($\frac{1}{2}$ ") radius by one and one-half inch ($1 \frac{1}{2}$ ") depth and closed by one-half inch ($\frac{1}{2}$ ") radius by one-inch (1") depth.
- 1. Expansion Joints.** Provide sidewalk sections separated by pre-molded or board joint $\frac{1}{2}$ inch thick, or as shown on the plans, in lengths greater than 8 feet but less than 50 feet, unless otherwise directed. Terminate workday production at an expansion joint. Expansion joint material shall also be placed where the new construction abuts the existing curbs or driveways if the Engineer deems it necessary. The expansion joint

material shall be placed vertically and shall extend the full depth and width of the concrete.

2. **Expansion Joint Dowels.** Unless otherwise shown on the plans, a minimum of two (2) round smooth dowel bars $\frac{3}{8}$ inch in diameter and 18 inches in length shall be spaced 18 inches apart at each expansion joint. Nine inches (9") of each dowel shall be thoroughly coated with hot oil asphalt or greased, so that it will not bond to the concrete. Approved types of slip joints may be used in lieu of coating ends of dowels.
 3. **Transverse Joints.** Sidewalks shall be marked with transverse "dummy" joints as shown on detail sheets, by the use of City approved jointing tools.
- G. Curb Ramps.** Curb ramps must include a detectable warning surface and conform to details shown on the plans. Confirm that abrupt changes in sidewalk elevation do not exceed $\frac{1}{4}$ inch, sidewalk cross slope does not exceed 2%, curb ramp grade does not exceed 8.3%, and flares adjacent to the ramp do not exceed 10% slope.
- H. Concrete Placement.** Provide a smooth, uniform surface free of debris and loose foundation material for concrete placement. Lightly sprinkle subgrade or foundation material immediately before concrete placement. Mix and place concrete in accordance with the pertinent Items. Hand-finishing is allowed for any method of construction. Finish exposed surfaces to a uniform transverse broom finish surface.
1. **Conventionally Formed Concrete.** Forms shall be of metal or wood and shall extend for the full depth of the concrete. All forms shall be free from warp and of sufficient strength to resist the pressure of the concrete without displacement. Bracing and staking of forms shall be such that the forms remain in both horizontal and vertical alignment until their removal. All forms shall be cleaned and coated with an approved form release agent or form oil before concrete is placed. Divider plates shall be of metal. Forms shall conform to the specified radius when placed on curves.
 2. **Extruded or Slip-Formed Concrete.** A slip form paver approved by the Engineer shall lay the sidewalk. Contractor shall set guidelines or guide-rails from survey marks established by the Engineer. Guidelines shall be set to avoid obstacles in the path that may interfere with operation of equipment and overall quality of sidewalk. Sidewalk outline shall strictly conform to the details shown on the plans or as set by Engineer. Slip form equipment shall be operated according to machine specifications and manual for paving accuracy. Slip form equipment shall spread, consolidate and finish the concrete to produce a dense homogeneous concrete true to grade and cross section. Concrete shall be consolidated by the use of internal vibrators. The concrete shall be of such consistency that it will maintain the shape of the sidewalk section without support.

Where forms are required for transitional zones the forms shall conform to 502.4.G.2. "Conventionally Formed Concrete."

- I. **Finish and Curing.** Provide finished work with a well-compacted mass, a surface free from voids and honeycomb, and the required true-to-line shape and grade. After finishing each portion of the sidewalk, the surface shall be textured with heavy broom finish. Within twenty minutes of broom finish, a curing compound shall be used to protect the sidewalk. The curing compound shall be of a high solid content, greater than thirty percent (+30%). All edges shall be tooled to have slight radius. Surface water retention is not acceptable. Finished surface of

sidewalks shall generally be one-half inch ($\frac{1}{2}$ inch) to one inch (1 inch) above existing grade. Concrete must be cured and protected from freezing temperatures for at least three (3) days.

J. Exposed Aggregate Surface. For exposed Aggregate finished sidewalks, wash concrete surface after initial set with stiff bristle brush and water to remove matrix and clean each piece of exposed coarse aggregate. Unless otherwise acceptable to the Engineer, perform washing and brushing 3 - 4 hours after casting. Care shall be taken to uniformly expose about a third of each piece of coarse aggregate, removing no more of the matrix than necessary across the panel surface and as required to achieve appearance similar to adjacent existing work. After seven days, follow with a final cleaning with a mild acid solution and final rinsing with clear water.

K. Backfilling. Once sidewalk has cured, sidewalk will need to be backfilled to the full height of the sidewalk with material approve by the Engineer. The top 4 inches of fill shall be tamped and sloped using clean topsoil. Heavy equipment must remain off sidewalks at all times.

All necessary excavation for the sidewalk section, will be considered incidental work pertaining to this item, and will not be paid for directly. The adjacent excavation and grading of the slopes shall be done in a manner acceptable to the Engineer.

502.5. MEASUREMENT: Sidewalks will be measured by the square yard of surface area at the depth specified. Curb ramps will be measured by the square yard of surface area or by each unit. The unit will consist of the curb ramp, landing, adjacent flares or side curb, and detectable warning surface as shown on the plans.

502.6. 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 per square yard for "Concrete Sidewalks - Conventionally Formed" or "Concrete Sidewalks - Machine Laid" an includes curb ramps where applicable. This price is full compensation for surface preparation of base; materials; removal and disposal of existing concrete; excavation, hauling and disposal of excavated material; drilling and doweling into existing concrete curb, sidewalk, and pavement; repair of adjacent street or pavement structure damaged by these operations; and equipment, labor, materials, tools, and incidentals.

Sidewalks that cross and connect to concrete driveways will be measured and paid for in accordance with Item 503, "Asphaltic Concrete, Portland Cement Concrete, and Gravel Driveways."

502.7. BID ITEM:

Item 502.1 - Concrete Sidewalks - Conventionally Formed - per square yard

Item 502.2 - Concrete Sidewalks - Machine Laid - per square yard

ITEM**512 ADJUSTING EXISTING MANHOLES AND VALVE BOXES**

512.1. DESCRIPTION: *Adjustment of all existing manholes and valve boxes by either lowering or raising the top elevation to match the final profile grade line and includes the reconstruction of existing manholes or valve boxes in conformity with the provisions of these specifications.*

512.2. MATERIALS: Provide materials as provided herein or as shown on the plans.

A. Concrete. Item No. 300, "Concrete (Class B)."

512.3. EQUIPMENT: Provide equipment necessary to conduct the work specified herein or as directed by the Engineer.

512.4. CONSTRUCTION:

A. Manholes. Perform all work in conformance with Sections 1. "Lowering Manholes", 2. "Raising Manholes" and 3. "Reconstructing Existing Manholes" unless otherwise shown on the plans. Existing manhole rings, risers, and covers which are determined by the Inspector to be in an unacceptable condition, will be removed and replaced with new rings, risers, and cover. Contractor shall take all necessary measures to prevent damage to existing or new rings, risers, covers, or cones from equipment and materials used in or taken through the work area. If an existing or new manhole cover, ring, riser, or cone is damaged by the Contractor, it shall be replaced, as directed by the Engineer, by the Contractor at his expense.

- 1. Lowering Manholes.** Manholes shall be lowered below subgrade before placing base materials and openings shall be protected by hatch covers. Manholes shall be adjusted after the base material has been laid and before placing of the surface course. Material excavation from around the manholes shall be replaced with concrete in accordance with Standard Drawings, and select materials from the excavation as shown on the plans or specified by the Engineer. All excess materials shall be disposed of by the Contractor at his own expense and in an approved location.

All manholes shall be lowered a sufficient depth so as to be level with the finished surface course and shall not exceed $\pm\frac{1}{2}$ inch deviation at any point between the top of manhole elevation and surface of pavement. Adjustment in height will be made by removal of "throat rings" above the manhole "cone" where feasible. A minimum of two and a maximum of six throat rings shall be used at each manhole. If the height of the manhole cannot be adjusted to meet the required number of throat rings, the manhole shall be reconstructed in accordance with Section 3, "Reconstructing Existing Manholes."

- 2. Raising Manholes.** Manholes to be raised between $\frac{3}{4}$ inches to 5- $\frac{3}{4}$ inches on an existing surface course not being replaced will be completed utilizing a pivoted turnbuckle manhole riser meeting the requirements shown in Figure 1. Installation of the riser begins by removal of the manhole lid and cleaning the manhole frame from roadway materials, dirt, and any other debris not part of the manhole frame. Insert appropriately sized riser (see Section a. "Measurement Dimensions Required for Obtaining Properly Sized Riser") and seat with a hammer. Expand turnbuckle mechanism to full circumferential engagement. Replace lid and ensure that lid seats fully on riser without rocking. If necessary, seating surfaces shall be machined. Apply solvent to the top of the lid just

prior to application of pavement overlay. Manufacturer's instructions shall be consulted to ensure proper installation of riser.

All manholes shall be raised a sufficient height so as to be level with the finished surface course and shall not exceed $\pm\frac{1}{2}$ inch deviation at any point between the top of manhole elevation and surface of pavement.

a. Measurement Dimensions Required for Obtaining Properly Sized Manhole Riser. Measurement dimensions typically required to obtain a properly sized riser include the interior or bottom of hole dimension, the top of hole opening, the lid thickness, lid diameter, and riser height. Manufacturer's requirements shall be consulted to ensure that the proper dimensions for the riser are obtained.

3. Reconstructing Existing Manholes. Major adjustments will be made by reconstruction of the manhole below the "cone" where necessary. Material excavation from around the manholes shall be replaced with concrete meeting the requirements of Item No. 300, "Concrete (Class B)," and select materials from the excavation as shown on the plans or specified by the Engineer. All excess materials shall be disposed of by the Contractor.

B. Valve Boxes. Perform all work in conformance with this section unless otherwise shown on the plans. Adjust existing valve boxes in situations where the finished profile of the street or sidewalk will be changed from its existing elevation. Existing valve boxes and covers which are determined by the Inspector to be in an unacceptable condition, will be removed and replaced with new boxes and/or covers. Material excavation from around the valve boxes shall be replaced with concrete meeting the requirements of Item No. 300, "Concrete (Class B)," and select materials from the excavation as shown on the plans or specified by the Engineer. Contractor shall take all necessary measures to prevent damage to existing or new boxes and covers from equipment and materials used in or taken through the work area. If an existing or new box and/or cover is/are damaged by the Contractor, it shall be replaced, as directed by the Engineer, by the Contractor at his expense.

The valve box shall be repositioned in such a manner as to prevent shock or stress from being transmitted to the valve. It shall be centered and plumb over the operating nut of the valve. Valve boxes shall be located so that the valve operating nut is readily accessible for operation through the opening in the valve box.

All valve box covers shall be raised or lowered a sufficient distance so as to be level with the finished surface course and shall not exceed $\pm\frac{1}{2}$ inch deviation at any point between the top of valve box elevation and surface of pavement or sidewalk.

512.5. MEASUREMENT: Manholes adjusted, as prescribed above, will be measured by the unit of each manhole adjusted. The excavation and the amount of concrete or reinforced concrete as necessary to fill the area excavated, if required, will not be measured for payment.

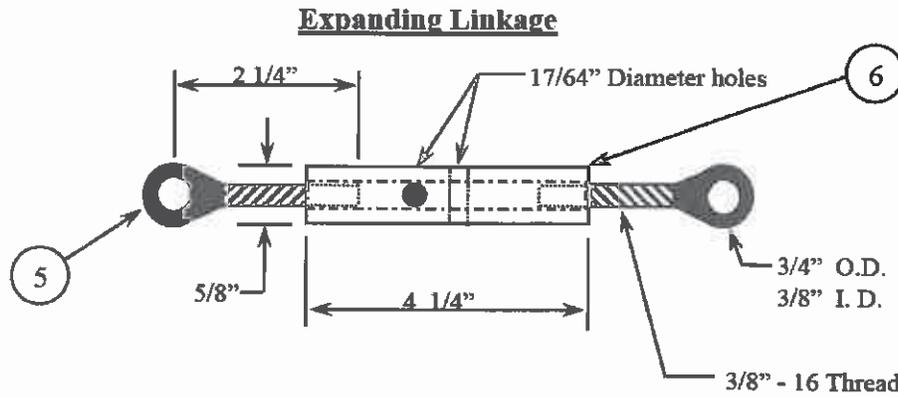
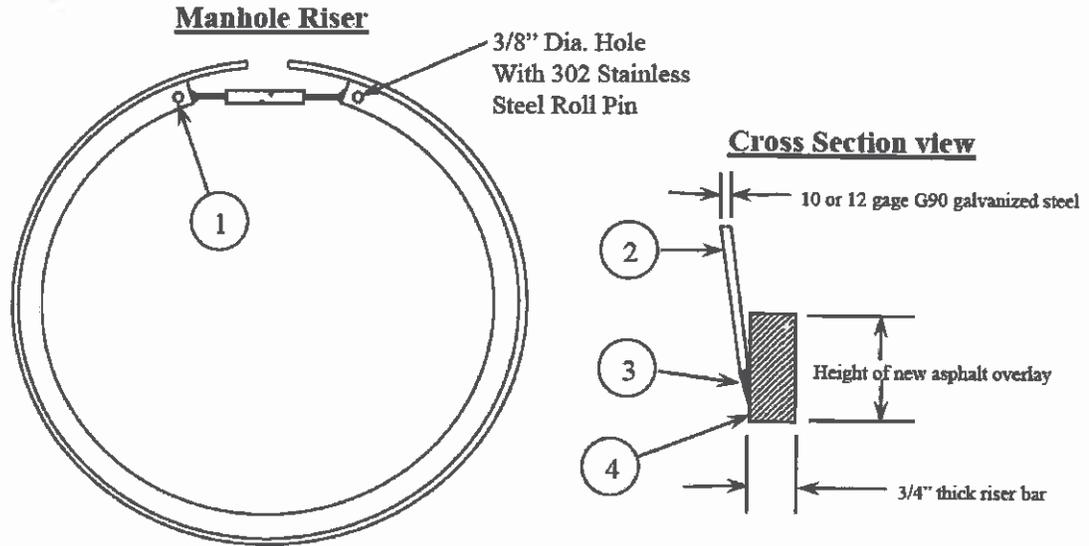
512.6. PAYMENT: The work performed as prescribed by this item will be paid for at the contract unit price bid per manhole for "Adjusting Existing Manholes" which price shall be full compensation for all excavation, including saw cutting of surfaces as required, reinforced concrete and disposal of material excavated; for furnishing and placing all materials and for all labor, tools, equipment and incidentals necessary to complete the work.

512.7. BID ITEM:

Item 512.1 - Adjusting Existing Manholes - per each

Item 512.2 - Reconstructing Existing Manholes - per each

Item 512.3 - Valve Box Adjustments - per each



Item Number	Item Description	Material Description	Tensile Yield	Tensile Ultimate
1	3/8" Roll Pins	302 Stainless Steel (14,000 LB Double Sheer Strength)		
2	Steel Skirt	12 or 10 gage A.I.S.I. 1020 Steel (A-36) G-90 Galvanized	33,000 P.S.I.	60,000 P.S.I.
3	Weld	65%-70% circumference welded	75,000 P.S.I.	85,000 P.S.I.
4	3/4" wide Riser Bar	Hot Rolled Steel A.I.S.I. 1020 (A-36)	33,000 P.S.I.	60,000 P.S.I.
5	Rod Ends	Forging A.I.S.I. C-1030 Steel Heat Treated BHN 240 Zinc Plated with Dichromate Finish	70,000 P.S.I.	92,000 P.S.I.
6	Tumbuckle	A.I.S.I. 1020 BHN 149 Zinc Plated dipped in Linebacker rust inhibitor	70,000 P.S.I.	80,000 P.S.I.

Figure 1
Manhole Riser Detail

ITEM**515 TOPSOIL**

- 515.1. DESCRIPTION:** *This item shall govern for the furnishing, placing and spreading of approved selected topsoil, to the lines and grades, at locations shown on the plans or as directed by the Inspector and in conformity with these specifications.*
- 515.2. MATERIALS:** Use easily cultivated, fertile topsoil that is free from objectionable material, has a high resistance to erosion, and is able to support plant growth. Obtain topsoil from the right of way at sites of proposed excavation or embankment when specified on the plans, or as directed. Secure additional topsoil, if necessary, from approved sources outside the right of way in accordance with the requirements of TxDOT Standard Specification Item 7, Article 7.19, "Preservation of Cultural and Natural Resources and the Environment." Ensure that the topsoil obtained from sites outside the right of way has a pH of 5.5 to 8.5. Topsoil is subject to testing by the Engineer. Use water that is clean and free of industrial wastes and other substances harmful to the growth of vegetation.
- 515.3. EQUIPMENT:** Provide the machinery, tools and equipment necessary for proper prosecution of the work. All machinery, tools and equipment used shall be maintained in a satisfactory and workmanlike manner.
- 515.4. CONSTRUCTION:** Remove and dispose of objectionable material from the topsoil source before beginning the work. Stockpile topsoil, when necessary, in a windrow at designated locations along the right of way line or as directed by the Engineer. Keep source and stockpile areas drained during the period of topsoil removal and leave them in a neat condition when removal is complete. Before placing topsoil, cultivate the area to a depth of 4 in. Spread the topsoil on excavated areas to a uniform loose cover at a minimum thickness of 4 in. or at the thickness specified in the plans. Water and roll the topsoil with a light roller or other suitable equipment. If the topsoil settles below the established grade after the application of water and light rolling, additional topsoil shall be added and sprinkled with water and rolled as directed by the Engineer.
- 515.5. MEASUREMENT:** Measurement of "Topsoil" shall be made by the cubic yard in place and only for those areas designated on the plans, or to areas as directed by the Engineer.
- 515.6. PAYMENT:** Topsoil measured as specified above will be paid for at the contract unit price bid per cubic yard, which price shall be full compensation for all hauling, placing material, sprinkling the material with water, and for all labor, equipment, tools and incidentals necessary to complete the work.
- 515.7. BID ITEM:**
- Item 515.1 - Topsoil - per cubic yard

ITEM**516 SODDING**

- 516.1. DESCRIPTION:** *This item shall govern for the furnishing and planting of Bermuda, St. Augustine, Buffalo 609 or other acceptable grass sod on the areas designated on the plans or as directed by the Engineer. All planting shall be completed as soon as practical to avoid erosion of topsoil and graded areas in advance of acceptance of the work.*
- 516.2. MATERIALS:** The sod shall consist of live, growing grass secured from sources where the soil is fertile. All grass sod shall have a healthy, virile root system of dense, thickly matted roots throughout the soil of the sod for a minimum thickness of 1 inch. The Contractor shall not use sod from areas where the grass is thinned out, or where the grass roots have been dried out by exposure to air and sun to such an extent as to damage its ability to grow when transplanted. The sod shall be free from noxious weeds or other grasses and shall not contain any matter deleterious to its growth or which might affect its subsistence or hardness when transplanted. Sources from which sod is to be obtained shall be subject to approval by the Engineer.
- A. Block Sod.** Use block sod free from noxious weeds, Johnson grass, other grasses, or any matter deleterious to the growth and subsistence of the sod.
 - B. Fertilizer.** A pelleted or granulated fertilizer shall be used with an analysis of 16-8-8. (The figures in the analysis represent the percent of nitrogen, phosphoric acid, and potash nutrients respectively.) At least 50% of the nitrogen component must be of a slow-release formulation such as urea-based and plastic resin-coated fertilizers. Ensure that fertilizer is in an acceptable condition for distribution in containers labeled with the analysis. Fertilizer is subject to testing by the Texas A&M Feed and Fertilizer Control Service in accordance with the Texas Fertilizer Law.
 - C. Water.** Use water that is clean and free of industrial wastes and other substances harmful to the growth of vegetation.
 - D. Mulch.** When mulch is specified below the sod, use straw mulch consisting of oat, wheat or rice straw or hay mulch of either Bermudagrass or prairie grasses. Use straw or hay mulch free of Johnson grass and other noxious and foreign materials. Keep the mulch dry and do not use molded or rotted material.
 - E. Tacking Methods.** Use a tacking agent applied in accordance with the manufacturer's recommendations or a crimping method on all straw or hay mulch operations. Tacking agents must be approved before use, or may be specified on the plans.
- 516.3. EQUIPMENT:** Provide the machinery, tools and equipment necessary for proper prosecution of the work. All machinery, tools and equipment used shall be maintained in a satisfactory and workmanlike manner.
- 516.4. CONSTRUCTION:**
- A. General.** Cultivate the area to a depth of 4 in. before placing the sod. Plant the sod specified and mulch, if required, after the area has been completed to lines and grades as shown on the plans. Where rolling is specified by the following sub-articles, the roller shall be a light corrugated drum roller.

- B. Planting Season.** All planting shall be done between the average date of the last freeze in the spring and six weeks prior to the average date for the first freeze in the fall according to the U.S. Weather Bureau for the area.
- C. Block Sodding.** At locations shown on plans or where directed by the Engineer, sod blocks shall be carefully placed on the prepared areas. The fertilizer shall then be applied and thoroughly watered. When sufficiently dry, the sodded area shall be rolled or tamped to form a thoroughly compacted, solid mat. Any voids left in the block sodding shall be filled with additional sod and tamped.
- D. Watering.** Sod shall be thoroughly watered immediately after planting and subsequently at such intervals to promote growth or as directed by the Engineer. Furnish and operate equipment to distribute water at a uniform and controllable rate. Ensure that watering does not erode soil or plantings. Apply water in the required quantity where shown on the plans or as directed by the Engineer.
- E. Fertilizing.** The fertilizer shall be applied uniformly over the sodded areas and in the manner directed. The fertilizer shall be dry and in good physical condition. Fertilizer that is powdered or caked will be rejected. Distribution of fertilizer shall meet the approval of the Engineer. Unless otherwise indicated on the plans, fertilizer shall be applied uniformly at the average rate of 300 pounds per acre for all types of sod.
- F. Finishing.** Where applicable, the shoulders, slopes, and ditches shall be smoothed after planting has been completed and shaped to conform to the cross-section previously provided and existing at the time sodding operations were begun. Any excess dirt from the planting operations shall be spread uniformly over adjacent areas or disposed of as directed by the Engineer so that the completed surfaces will present a sightly appearance. Keep sod along edges of curbs, driveways, walkways, etc., trimmed until acceptance.
- G. Sequence of Sodding.** It is the intent of this specification that all sodding be placed and watered twice a week, unless intervening rains make watering unnecessary. Watering shall be required for at least thirty (30) days after planting to establish growth or until acceptance of the work by the City. If the season is inappropriate, the Engineer may require that the sodding operations be advanced or retarded as may seem advisable. All areas shall be covered with live sod before final acceptance. Any blocks which show no signs of life shall be replaced with live sod before the work shall be measured for payment.
- 516.5. MEASUREMENT:** Measurement of acceptable "Sodding," complete in place, will be by the square yard. Fertilizer, mulch, and water will not be measured for payment.
- 516.6. PAYMENT:** "Sodding," measured as provided above, will be paid for at the contract unit price bid per square yard, which price shall be full compensation for furnishing, hauling and placing all materials, for all fertilizer and water required and for all labor, tools, equipment and incidentals necessary to complete the work.
- 516.7. BID ITEM:**
- Item 516.1 - Bermuda Sodding - per square yard
 - Item 516.2 - St. Augustine Sodding - per square yard
 - Item 516.3 - Buffalo 609 Sodding - per square yard

ITEM

535 HOT APPLIED THERMOPLASTIC PAVEMENT MARKINGS

- 535.1. DESCRIPTION:** *Apply thermoplastic pavement markings, in conformance with the minimum optical and physical properties required for a thermoplastic road marking compound described herein, in a molten state, onto a pavement surface.*
- 535.2. MATERIALS:** All materials shall conform to the requirements of TxDOT DMS-8220 "Hot Applied Thermoplastic." Thermoplastic materials shall be stored in a dry environment to minimize the amount of moisture retained during storage.
- 535.3. EQUIPMENT:** Provide the necessary equipment to conduct the work specified herein. All equipment shall be maintained in good working order such that neat and clean thermoplastic markings are applied at the proper thicknesses and glass beads are placed at the correct rate. Equipment that is deemed deficient by the Engineer shall be replaced immediately.
- 535.4. CONSTRUCTION:** The appearance of the finished markings shall have a uniform surface, crisp edges with a minimum over-spray, clean cut-off, meet straightness requirements and conform to the design drawings and/or engineer instructions.

The contractor shall provide the Engineer with certification from the marking manufacturer that contractor has been adequately trained and certified to apply the manufacturer's material. This certification shall be considered current if the certification date provided by the manufacturer is within two years of the date of marking application.

All striping and pavement markings shall be placed in accordance with the requirements of this specification, the detailed plans, and the current edition of the *Texas Manual on Uniform Traffic Control Devices (TMUTCD)*. The Contractor shall provide all other engineering services necessary for pre-marking of all proposed stripe within the limits of the designated work.

Unless authorized otherwise in writing by the Engineer, striping shall be accomplished during daylight hours. Approved lighting arrangements will be required for night time operations when allowed.

The Contractor may be required to place markings over existing markings, as determined by the Engineer. The contractor shall adjust the operation of the thermoplastic screed shoe to match the previous lengths of stripes and skips, when necessary.

Failure of the striping material to adhere to the pavement surface during the life of the contract shall be prima facie evidence that the materials, even though complying with these specifications, or the application thereof, was inconsistent with the intent of the requirements for the work under the latest City specifications and shall be cause for ordering corrective action or replacement of the marking without additional cost to the City.

Unless otherwise approved by the Engineer, permanent pavement markings on newly constructed pavements surfaced with asphaltic concrete or bituminous seals shall not be applied for a minimum of 14 days or a maximum 35 days. Temporary pavement marking shall be provided during the 14 to 35 day period.

A. Surface Preparation.

1. **Moisture.** All surfaces shall be inspected for moisture content prior to application of thermoplastic. Approximately two square feet of a clear plastic or tar paper shall be laid on the road surface and held in place for 15 to 20 minutes. The underside of the plastic or tar paper shall then be inspected for a buildup of condensed moisture from the road surface. Pavement is considered dry if there is no condensation on the underside of the plastic or tarpaper. In the event of moisture, this test shall be repeated until there is no moisture on the underside of the plastic or tar paper.
2. **Cleaning.** All surfaces shall be clean and dry, as defined in Section 535.4.A.1, before thermoplastic can be applied. Loose dirt and debris shall be removed by thoroughly blowing compressed air over the area to be striped. If the thermoplastic is to be applied over existing paint lines, the paint line shall be swept with a mechanical sweeper or wire brush to remove poorly adhered paint and dirt that would interfere with the proper bonding of the thermoplastic. Additional cleaning through the use of compressed air may be required to remove embedded dirt and debris after sweeping. Latence and curing compound shall be removed from all new portland cement concrete surfaces in accordance with Item 533, "Removal of Pavement Markings and Markers."
3. **Layout.** The pavement markings shall be placed in proper alignment with guidelines established on the roadway. Deviation from the alignment established shall not exceed 2 inches and, in addition, the deviation in alignment of the marking being placed shall not exceed 1 inch per 200 feet of roadway nor shall any deviation be abrupt.

No striping material shall be applied over a guide cord; only longitudinal joints, existing stripes, primer, or other approved type guides will be permitted. In the absence of a longitudinal joint or existing stripe, the Contractor shall mark the points necessary for the placing of the proposed stripe. Edge striping shall be adjusted as necessary so that the edge stripe will be parallel to the centerline and shall not be placed off the edge of the pavement.

Longitudinal markings shall be offset at least 2-inches from construction joints of portland cement concrete surfaces and joints and shoulder breaks of asphalt surfaces.

4. **Primer Sealer.** Primer sealer shall be used on all portland cement concrete surfaces. A primer sealer shall be used on asphalt surfaces that are over two years old and/or on asphalt surfaces that are worn or oxidized to a condition where 50 percent or more of the wearing surface is exposed aggregate. Existing pavement markings may act as the primer sealer if, after cleaning, more than 70 percent of the existing pavement marking is still properly bonded to the asphalt surface (see coverage check procedure in Appendix A to estimate percent of marking remaining).
5. **Primer Sealer Application.** When required as described, the primer-sealer shall be applied to the road surface in a continuous film at a minimum thickness of 3 to 5 mils. Before the Thermoplastic is applied, the primer-sealer shall be allowed to dry to a tacky state. The thermoplastic shall be applied within 4 hours after the primer application.

B. Temperature Requirements.

1. **Ambient Conditions.** The ambient air and road surface shall be 55°F and rising before application of thermoplastic can begin.

2. **Material Requirements.** Unless otherwise specified by the material manufacturer, the thermoplastic compound shall be heated from 400°F to 450°F and shall be a minimum of 400°F as it makes contact with road surface during application. An infrared temperature gun shall be used to determine the temperature of the thermoplastic as it is being applied to the road surface.

C. Drop-on Glass Sphere Application.

1. **Application Rate.** Retro-reflective glass spheres shall be applied at the rate of 10 pounds per 100 square feet of applied markings. This application rate shall be determined by confirming the following consumption rates:
 - a. 200 pounds of drop on glass spheres per ton of applied thermoplastic when the thermoplastic is being applied at 0.090 inch film thickness.
 - b. 150 pounds of drop on glass spheres per ton of applied thermoplastic when the thermoplastic is being applied at 0.125 inch thickness.
2. **Application Method.** Retro-reflective glass spheres shall be applied by a mechanical dispenser properly calibrated and adjusted to provide proper application rates and uniform distribution of the spheres across the cross section of the entire width of the line. To enable the spheres to embed themselves into the hot thermoplastic, the sphere dispenser shall be positioned immediately behind the thermoplastic application device. This insures that the spheres are applied to the thermoplastic material while it is still in the molten state.

D. Application Thickness.

1. **Longitudinal and Transverse Markings.** On previously unmarked pavements or pavements where markings have been effectively removed, all lane lines, center lines, transverse markings and pavement markings in traffic areas with $\leq 1,000$ vehicles per day per lane shall have a minimum film thickness of 0.090 inch at the edges and a maximum of 0.145 inch at the center. A minimum average film thickness of 0.090 inch shall be maintained. On pavements with existing markings, meeting the traffic requirements stated above, all lane lines, center lines, transverse markings and pavement markings shall have a minimum film thickness of 0.060 inch for re-application over existing strip line.
2. **High Wear Longitudinal and Transverse Marking.** On previously unmarked pavements or pavements where markings have been effectively removed, all lane lines, center lines, transverse markings and pavement markings in high traffic areas ($>1,000$ vehicles per day per lane) shall have a minimum film thickness of 0.125 inch at the edges and a maximum of 0.188 inch at the center. A minimum average film thickness of 0.125 inch shall be maintained. On pavements with existing markings, meeting the traffic requirements stated above, all lane lines, center lines, transverse markings and pavement markings shall have a minimum film thickness of 0.090 inch for re-application over existing strip line.

E. Packaging.

1. **Containers.** The thermoplastic material shall be delivered in 50 pound containers or bags of sufficient strength to permit normal handling during shipment and handling on the job without loss of material.
2. **Labeling.** Each container shall be clearly marked to indicate the color of the material, the process batch number and/or manufacturer's formulation number, the manufacturer's name and address and the date of manufacture.

F. Acceptance.

1. **Sampling Procedure.** Random samples may be taken at the job site at the discretion of the City Engineer for quality assurance. The City reserves the right to conduct the tests deemed necessary to identify component materials and verify results of specific tests indicated in conjunction with the specification requirements.

The sample(s) shall be labeled as to the shipment number, lot number, date, quantity, and any other pertinent information. At least three randomly selected bags shall be obtained from each lot. A 10 pound) sample from the three bags shall be submitted for testing and acceptance. The lot size shall be approximately 44,000 pounds unless the total order is less than this amount.

2. **Manufacturer's Responsibility.**

- a. **Sampling and Testing.** The manufacturer shall submit test results from an approved independent laboratory. All material samples shall be obtained 20 days in advance of the pavement marking operations. The cost of testing shall be included in the price of thermoplastic material. The approved independent laboratory's test results shall be submitted to the City Traffic Engineer in the form of a certified test report.
- b. **Bill of Lading.** The manufacturer shall furnish the Material and Tests Laboratory with copies of Bills of Lading for all materials inspected. Bill of lading shall indicate the consignee and the destination, date of shipment, lot numbers, quantity, type of material, and location of source.
- c. **Material Acceptance.** Final acceptance of a particular lot of thermoplastic will be based on the following.
 - (1) Compliance with the specification for material composition requirements verified by approved independent laboratory with tests results.
 - (2) Compliance with the specification for the physical properties required and verified by an approved independent laboratory with test results.
 - (3) Manufacturer's test results for each lot thermoplastic have been received.
 - (4) Identification requirements are satisfactory.

3. **Contractor's Responsibility.**

- a. **Notification.** The contractor shall notify the Construction Inspector 72 hours prior to the placement of the thermoplastic markings to enable the inspector to be present during the application operation. At the time of notification, the Contractor shall indicate the manufacturer and the lot numbers of the thermoplastic that will be used.

A check should be made by the contractor to insure that the approved lot numbers appear on the material package. Failure to do so is cause for rejection.

- b. **Warranty or Guarantee.** If the normal trade practice for manufacturers is to furnish warranties or guarantees for the materials and equipment specified herein, the Contractor shall turn the guarantees and warranties over to the Engineer for potential dealing with the manufactures. The extent of such warranties or guarantees will not be a factor in selecting the successful bidder.

535.5. MEASUREMENT: Measurement shall be based on the length of satisfactorily installed line, in feet, or as appropriate, the number of symbols or words which are satisfactorily installed on the roadway surface by the contractor.

535.6. PAYMENT: Payment shall be according to the quantities measured for each bid item.

535.7. BID ITEM:

Item 535.1 - 4 inch wide yellow line

Item 535.2 - 4 inch wide white line

Item 535.3 - 8 inch wide yellow line

Item 535.4 - 8 inch wide white line

Item 535.5 - 12 inch wide white line

Item 535.6 - 16 inch wide white line

Item 535.7 - 24 inch wide white line

Item 535.8 - Right White Arrow (per each)

Item 535.9 - Left White Arrow (per each)

Item 535.10 - Combination Thru/Right White Arrow (per each)

Item 535.11 - Combination Thru/Left White Arrow (per each)

Item 535.12 - Word "ONLY" (per word)

Item 535.13 - Straight White Arrow (per each)

Item 535.14 - Railroad Crossing Symbol, including two R's, crossbuck and 3 transverse bars (per each)

Item 535.15 - White Diamond (per each)

Item 535.16 - Straight White Arrow Bicycle Facility (per each)

Item 535.17 - Bicycle Rider Symbol (per each)

Item 535.18 - Solid White Yield Lines (6" x 9") (per each)

Item 535.19 - Word "STOP" (per word)

Item 535.20 - Word "YIELD" (per word)

Item 535.21 - Word "BUS" (per word)

APPENDIX A: Method for Estimating Amount of Marking Bonded to Pavement

This inspection will ensure uniformity of coverage of the entire line, such as paint cracking, peeling, and whether or not the marking has adequate coverage. One-square-inch sections of transparent material inscribed within a grid of 100 equal squares shall be used as a tool for quantitative measure of specified percentage of coverage. The grid concept was taken from the Air Force who used it for measuring rubber coverage on pavement. For a 4-inch line, it is suggested that a grid of 4 x 25 inches be used, and for a 12-inch (or larger) line, a grid of 10 x 10 inches. Count the squares that have no paint, e.g., 3 out of 100 squares equal 3% of the paint gone or 97% coverage.

Follow the steps below to take the readings of the pavement markings:

1. Using either the 10- x 10-inch grid or the 4- x 25-inch grid, place the grid on the line to be evaluated.
2. Count the squares that have no paint.
3. The number of squares without paint will be the percentage of paint gone. In other words, if there are 30 out of 100 squares that have no paint, then 30% of the paint is gone.



Cyrus, Holly M., "Development of Methods for Determining Airport Pavement Marking Effectiveness," DOT/FAA/AR-TN03/22, Federal Aviation Administration, March 2003.

ITEM**537 RAISED PAVEMENT MARKERS**

- 537.1. DESCRIPTION:** *Provide raised pavement markers which include reflectorized and non-reflectorized traffic buttons, pavement markers and jiggle bars all of which are capable of being attached to a roadway surface by an adhesive.*
- 537.2. MATERIALS:** Materials shall conform to the following requirements:
- A. Jiggle Bar Tiles.** TxDOT DMS-4100, "Jiggle Bar Tiles."
 - B. Raised Pavement Markers.** TxDOT DMS-4200, "Pavement Markers (Reflectorized)."
 - C. Traffic Buttons.** TxDOT DMS-4300, "Traffic Buttons."
 - D. Testing.** The Engineer reserves the right to perform any or all tests required by this item as a check on the tests reported by the manufacturer. Upon request, the Contractor shall furnish, free of charge, samples of the material of the size and in the amount determined by the Engineer for test purposes. In case of any variance, the Engineer's tests will govern.
- 537.3. EQUIPMENT:** Provide all equipment necessary to perform the work specified herein.
- 537.4. CONSTRUCTION:** The Contractor shall establish guides to mark the lateral location of pavement markings as shown on the plans or as directed by the Engineer. The Engineer shall approve locations of these markings and may authorize necessary adjustments from the plans.

The reflective faces of all Type II markers shall be positioned so that the direction of reflection of one (1) face shall be directly opposite to the direction of reflection of the other face.

Raised Pavement markers Type I-C shall have clear reflector face towards traffic. Raised pavement markers Type II C-R, shall have the clear face toward the normal traffic flow and the red face toward wrong-way traffic.

Unless otherwise shown on the plans or specified by the Engineer, all raised pavement markers placed in broken lines shall be placed in line with and midway between the stripes. The first and last raised pavement marker in a no-passing line shall be a reflective marker. Buttons used to simulate a 10 foot skip lane lines shall be spaced at 40 inches.

The pavement markers not placed in accordance with the plans or as directed by the Engineer shall be removed by the Contractor at the Contractor's expense.

Removal of existing pavement markers or residual adhesive from a missing pavement marker prior to placement of new or replacement marker(s) shall be in conformance with Item 533, "Cleaning or Removal of Pavement Markings or Markers." The portion of the highway surface to which the raised pavement marker is attached by the adhesive shall be clean and free of dirt, grease, oil, and moisture at the time of installation. Surface preparation for installation of raised pavement markers will not be paid for directly, but shall be considered subsidiary to this item. Unsound pavement or other materials that would adversely affect the bond of the adhesive shall not be an acceptable surface.

The hot epoxy adhesive shall be applied so that 100 percent of the bonding area of the raised pavement marker will be in contact and shall be of sufficient thickness so that excess adhesive shall be forced out around the perimeter of the raised pavement marker but without impairing the functional capability of the reflectivity of the pavement marker. When the project is complete, the raised pavement marker shall be firmly bonded to the pavement; lines formed by the raised pavement markers shall be true, and the entire installation shall present a neat appearance.

Where required by the Engineer, pavement markings outside the limits of this project will be removed or adjusted to provide for a proper tie into this project. The old markings shall be removed or defaced in such a manner that they do not give the appearance of traffic pavement markings.

537.5. MEASUREMENT: Measurement will be based on the number of satisfactorily installed pavement markers.

537.6. PAYMENT: Pavement markers will be paid for at the contract unit bid price per each type of marker. The price shall be full compensation for furnishing the raised pavement marker, epoxy adhesive and all other materials, surface preparation, installation, labor, equipment, tools and incidentals necessary to complete the work.

537.7. BID ITEM:

Item 537.1 - Traffic Button (Type W) per each

Item 537.2 - Traffic Button (Type Y) per each

Item 537.3 - Jiggle Bar (Type W) per each

Item 537.4 - Jiggle Bar (Type Y) per each

Item 537.5 - Pavement Marker (Type I-A) per each

Item 537.6 - Pavement Marker (Type I-C) per each

Item 537.7 - Pavement Marker (Type I-R) per each

Item 537.8 - Pavement Marker (Type II-A-A) per each

Item 537.9 - Pavement Marker (Type II C-R) per each

ITEM 250 SEAL COAT

loose aggregate form compacted Seal Coat.

250.1 CONSTRUCTION METHOD:

Prior to Seal Coating, all dirt and other objectionable material shall be removed from the existing pavement by sweeping or other approved methods. All existing raised pavement markings shall be removed fully, as the work progresses, and as approved by the Engineer. All vegetation found in the existing pavement shall be destroyed by an approved chemical killer.

Building paper shall be placed over all manholes, valve boxes, gates, etc., so as to protect the surfaces from Asphaltic materials. Asphaltic materials shall not be placed, lapped, or splashed onto adjacent structures.

Seal Coat shall not be applied when the air temperature is below 60°F and is falling, but it may be applied when the air temperature is 50°F and is rising, the air temperature being taken in the shade and away from artificial heat. Seal Coat shall not be applied when the roadway surface temperature is below 60°F or when in the opinion of the Engineer, general weather conditions are not suitable. When hot modified asphalt cement is specified, Seal Coat shall not be applied when the air temperature is below 80°F and is falling, but may be applied when the air temperature is above 70°F and is rising and shall not be applied when the temperature of the surface on which the Seal Coat is to be applied is below 70°F.

Asphalt and aggregate rates as shown on the plans are for estimate purposes only and may be varied as directed by the Engineer.

The width of each application of Asphaltic material shall be such to allow uniform application and immediate sweeping with aggregate. The contractor shall be responsible for uniform application of asphaltic material at the junction of distributor loads. Paper or other suitable material shall be used to prevent overlapping of transverse joints. Longitudinal joints shall match lane lines unless otherwise authorized by the Engineer. Application of asphaltic material will be measured as necessary to determine the rate of application. In those areas where the asphalt distributor is not accessible, hand spraying may be permitted as directed by the Engineer.

Aggregate shall be immediately and uniformly applied and spread in the same width as the application of asphaltic material. The entire surface shall then be broomed or raked as required by the Engineer.

The aggregate shall be rolled for its width with a minimum of two (2) pneumatic tire rollers which shall be maintained in good repair and operating condition. Rolling shall begin as soon as sufficient aggregate is spread so prevent pick-up and shall begin longitudinally at the outside edge of the mat and progress toward the center of the mat, uniformly lapping each preceding pass by at least 2 the width of the roller. Rolling shall continue until no more aggregate can be worked into the surface.

After all rolling, the finished surface shall be cleared of any surplus aggregate by the Contractor by sweeping. Until the work has been accepted, additional sweeping shall be required as often as necessary so that loose aggregate does not present a hazard to traffic.

The Contractor shall be responsible for the maintenance of the Seal Coat until the work is accepted by the Engineer. All holes or failures in the surface shall be repaired by use of additional asphalt and aggregate. All hot or bleeding surfaces shall be covered with approved cover material in such a manner that the asphaltic material will not adhere to or be picked up by the wheels of vehicles.

All parkways, private property, and driveways adjacent to the work shall be cleaned of loose aggregate and other debris as produced from Seal Coat operations.

250.5 MEASUREMENT:

Seal Coat will be measured by the square yard of completed and accepted work.

250.6 PAYMENT:

The work performed as prescribed by this item will be paid for at the contract unit price bid per square yard for "Seal Coat", which price shall be full compensation for furnishing and placing all materials, sweeping, rolling, manipulations, labor, tools, equipment and incidentals necessary to complete the work.

Payment will be made in kind:

PAY ITEM NO. 250: SEAL COAT - per square yard.

ITEM 799

**SPEED HUMPS, TYPE II
MODULAR RUBBER CUSHIONS**

This item shall govern for installation of Speed Humps, Type II, Modular Rubber Cushions and shall be constructed of materials and workmanship as prescribed by these specifications, at such places as shown on the plans or as designated by the Engineer, and in accordance with the designated plan and typical details shown.

799.1 MATERIALS:

1. Pre-formed components manufactured from recycled rubber
 - a. Each component unit shall be 3" high
 - b. The side gradient shall be 1:4
 - c. The ramp gradient shall be 1:10
 - d. The transition from the street shall not exceed 1/4 inch
 - e. The cushion length shall be a minimum 78 inches
 - f. The cushion width shall be 74 to 75 inches
 - g. The cushions shall be black in color
 - h. The markings shall be white in color and integral to the pre-formed rubber components
 - i. Shore hardness shall be a minimum of 65 and the manufacturer shall provide test data confirming the product meets the minimum criteria
2. Rigid reinforcement perpendicular to the flow of traffic
3. Stainless/galvanized steel torx or hex head screws/fasteners
4. Plastic or nylon screw anchors
5. Metal washers
6. Resin/adhesive
7. Rubber caps

799.2 CONSTRUCTION METHODS:

1. Install as per manufacturer's instructions.
2. Placing of the speed cushions will be based on the width of the roadway and shall be in accordance with the plans and details shown.
3. Pavement markings shall be in accordance with the plans and details shown.
4. Through vehicular movement shall be maintained at all times. The contractor must install all cushions required for the full street width before the end of each working day. No partial speed installations shall be left overnight. Street closures shall comply with Part VI of the *Texas Manual on Uniform Traffic Control Devices*.

799.3 MEASUREMENTS:

Accepted work as prescribed by this item will be measured by the number and size of individual cushions.

799.4 PAYMENT:

The work performed as prescribed by this Item will be paid for at the contract unit price per modular rubber cushion. The price shall be full compensation for furnishing all materials, preparation, furnishing and placing all new materials, and for all manipulations, work, tools, equipment, traffic control, labor and incidentals necessary to complete the work.

799.5 WARRANTY:

The speed cushion and all associated equipment shall be fully warranted in accordance with the manufacturer's standard warranty, or for a minimum of two (2) years from the date of acceptance, whichever is greater.

799.6 BID ITEM:

Pay Item No. 799:

Speed Hump, Type II, Modular Rubber Cushions

San Antonio Water System Standard Specifications for Construction

**ITEM NO. 826
VALVE BOX ADJUSTMENTS**

826.1 DESCRIPTION: This Item shall consist with the adjusting of existing valve boxes in accordance with these specifications and as directed by the Engineer.

826.2 MATERIALS: The materials for valve boxes shall conform to the specifications contained within the latest revision of SAWS Material Specifications "Valve Boxes", Item No. 10-20.

1. **Construction Method:** The valve box shall be placed in such a manner to prevent shock or stress from being transmitted to the valve. It shall be centered and plumb over the operating nut of the valve with the box cover flush with the surface of the finished pavement or at such other level as may be directed by the Engineer. Valve boxes located in streets or other area subject to vehicular traffic shall be provided with concrete collars as shown in the Standard Drawings DD-828 Series. Collars around such valve boxes shall be formed and finished off neatly and in a workmanlike manner.

Valve box shall be located so that the valve operating nut is readily accessible for operation through the opening in the valve box. The valve box shall be set flush with the surface of the finished pavement or at such other elevations as may be specified. Pits shall be constructed so that it permits minor valve repairs and provides the valve and pipe protection from impact where they pass through the pit walls.

2. **Existing valve box:** Existing valve boxes shall be defined as boxes which are located within the right-of-way of the specified area of construction operations and are in conflict. These boxes shall be adjusted to match proposed finished grades.

Valve boxes installed as part of a new valve and mainline construction project are considered "new valves." Adjustments to "new valves" are incidental to the installation of the valve and are paid for as part of Item Nos. 828, 830 or 832 of these Specifications. Separate pay shall not be given to adjust "new valves" to finished grade.

826.3 MEASUREMENT: Adjustment of valve boxes will be measured by the unit of valve boxes adjusted to the finished grade.

826.4 PAYMENT: Payment for "Valve Box Adjustment" shall be made at the contract

San Antonio Water System Standard Specifications for Construction

unit price.

ITEM NO. 326a
VALVE BOX LOCATE AND ADJUSTMENTS

326a.1 DESCRIPTION: This item shall consist of locating covered valve boxes, cutting asphalt, replacing asphalt, and adjusting existing valve boxes in accordance with these specifications and as directed by the Engineer.

326a.2 MATERIALS: The materials for valve boxes shall conform to the specifications contained within the latest revision of S&W's Material Specifications Item 10-20, "Valve Boxes."

1. **Construction Methods:** Locate valve box using maps and metal detectors. Cut and replace asphalt as necessary. The valve box shall be placed in such a manner to prevent shock or stress from being transmitted to the valve. It shall be centered and plumb over the operating nut of the valve with the box cover flush with the surface of the finished pavement or street, other level as may be directed by the Engineer.

Valve boxes located in streets or other area subject to vehicular traffic shall be provided with concrete collars as shown in the Standard Drawings DD-828 Series. Collars around such valve boxes shall be formed and finished off neatly and in a workmanlike manner. Valve box shall be located so that the valve operating nut is readily accessible for operation through the opening in the valve box. The valve box shall be set flush with the surface of the finished pavement or at such other elevation as may be specified. Pits shall be constructed to permit minor valve repairs and to afford protection to the valve and pipe from impact where they pass through the pit walls.

2. **Existing valve box:** Existing covered valve boxes shall be defined as those boxes which are located within the right-of-way of the specified area of construction operations which are covered by asphalt. These boxes shall be adjusted to match proposed finished grades.

Valve boxes installed as part of a new water and mainline construction project are considered "new valves." Adjustments to "new valves" are incidental to the installation of the valve and is paid for as part of Items 324, 330 or 332 of these Specifications. Separate pay shall not be given to adjust "new valves" to finished grade.

326a.3 MEASUREMENT: Locating and adjusting of valve boxes will be measured by the unit of valve boxes located and adjusted to the finished grade.

326a.4 PAYMENT: Payment for "Valve Box Locate and Adjustment" shall be made at the contract unit price.

San Antonio Water System Standard Specifications for Construction

**ITEM NO. 851
ADJUSTING EXISTING MANHOLES**

851.1 **DESCRIPTION:** This item shall consist of the adjustment of all existing manholes, to include the replacing of existing manhole covers and rings regardless of type shown on the plans and in conformity with the provisions of these specifications. All manholes shall be watertight and coated with a SAWS approved sewer structural coating. An approved list of sewer structural coating manufactures maybe found on the SAWS website.

851.2 **CONSTRUCTION:** Manholes shall be lowered below street subgrade before placing base materials, and openings shall be protected by hatch covers.

Existing manhole rings and covers which are determined by the SAWS Inspector to be in an unacceptable condition, will be removed and replaced with new rings and covers. If cone section is removed the contractor is to upgrade to a 30" opening as required by 30 TAC 217. Contractor shall take all necessary measures to prevent damage to existing or new rings, cover, or cone from equipment and materials used in or taken through the work area. If an existing or new manhole cover, ring, or cone is damaged by the Contractor, it shall be replaced (as directed by SAWS inspector) by the Contractor at his expense. If concrete throat rings are to be installed they must be used in conjunction with a UV stabilized polyethylene liner and I/I barrier. I/I barrier must meet the following ASTM standards: ASTM D-790/1505 Density of Polyethylene Materials, ASTM D1238 Melt Flow index, ASTM 638 Tensile Strength @ Yield (50mm/mm), ASTM 790 Flexural Modulus, ASTM 648 Heat Deflection temperature @ IGEPAL, ASTM 1693 EsCR, 100% IGEPAL/10% IGEPAL.

Manholes shall be adjusted after street the base material has been laid and before placing of the surface course. Manholes that are going to be adjusted on an existing surface course not being replaced will be in accordance to the City of San Antonio Utility Excavation Criteria Manual Standard Drawing No. 8.8. All manholes shall then be raised, or lowered a sufficient height so as to be level with the finished surface course. Adjustment in height will be made by addition or removal of "throat rings" above the manhole "cone" where feasible. A minimum of two and a maximum of six throat rings may be used at each adjusted manhole. Note: *All new manhole installation shall not exceed four throat rings.*

All manholes shall be watertight and the interior walls coated with a SAWS approved sewer structural coating. Note: *Check SAWS website for updates on approved materials.*

San Antonio Water System Standard Specifications for Construction

For adjusted manholes, apply a combination of both products with the cementitious coating first, followed by the epoxy coating. Lafarge SewperCoat 2000 HR regular, with the required one inch thick application, is the only product yet approved which satisfies the requirement of applying the combination of both the cementitious coating and epoxy coating. Approved materials are as follows:

Cementitious coating: With required one inch thick application.

- Permacast CR-5000
- Strong - Seal MS-2C
- Standard Cement Material Inc. Reliner
- Quadex Aluminaliner

Epoxy coating: With specified thickness application.

- Raven 405 Series High Build Epoxy Liner: Required thickness 125 mils
- Spray Wall polyurethane System: Required thickness 150 mils

Material excavation from around the manholes shall be replaced with flowable concrete in accordance with Standard Drawings, and select materials from the excavation (as shown on the plans or specified by the SAWS). All excess materials shall be disposed of by the Contractor at his own expense and in an approved location.

851.3 **MEASUREMENT:** Manholes completely adjusted, as prescribed above, will be measured by the unit of each manhole adjusted. The excavation and the amount of concrete or reinforced concrete as necessary to fill the area excavated will not be measured for payment.

851.4 **PAYMENT:** The work performed as prescribed by this item will be paid for at the contract unit price bid per manhole for "Adjusting Existing Manholes" which price shall be full compensation for all excavation, including saw cutting of surfaces as required, reinforced concrete and disposal of material excavated; for furnishing and placing all materials and for all labor, tools, equipment and incidentals necessary to complete the work. Note: No separate payment for structural coating.

ITEM NO. 851-a

LOCATING AND ADJUSTING EXISTING MANHOLES

851a.1 DESCRIPTION: This item shall consist of the locating covered manholes, cutting asphalt, replacing asphalt, and adjustment of all existing manholes, to include the replacing of existing manhole covers and rings regardless of type shown on the plans and in conformity with the provisions of these specifications.

851a.2 CONSTRUCTION: Locate manholes using maps and metal detectors. Cut and replace asphalt as necessary. Manholes shall be lowered below subgrade before placing base materials, and openings shall be protected by hatch covers. Existing manhole rings and covers which are determined by the SAWS Inspector to be in an unacceptable condition, will be removed and replaced with new rings and cover. Contractor shall take all necessary measures to prevent damage to existing or new rings, cover, or cone from equipment and materials used in or taken through the work area. If an existing or new manhole cover, ring, or cone is damaged by the Contractor, it shall be replaced (as directed by SAWS Inspector) by the Contractor at his expense. Manholes shall be adjusted after the base material has been laid and before placing of the surface course. Manholes that are going to be adjusted on an existing surface course not being replaced will be in accordance to the City of San Antonio Utility Department (Cited as Manual Standard Drawing M.U. 88. All manholes shall then be raised, or lowered a sufficient height as per to be level with the finished surface course. Adjustment in height will be made by addition or removal of "throat rings" above the manhole "cone" where feasible. A minimum of two and a maximum of six throat rings shall be used at each manhole. Material excavated from around the manholes shall be replaced with concrete in accordance with Standard Drawings, and select materials from the excavation (as shown on the plans or specified by the SAWS). All excess material shall be disposed of by the Contractor at his own expense in an approved location.

851a.3 MEASUREMENT: Manholes located and completely adjusted, as prescribed above, will be measured by the unit of each manhole located and adjusted. The excavation and the amount of asphalt, concrete or reinforced concrete as necessary to fill the area excavated will not be measured for payment.

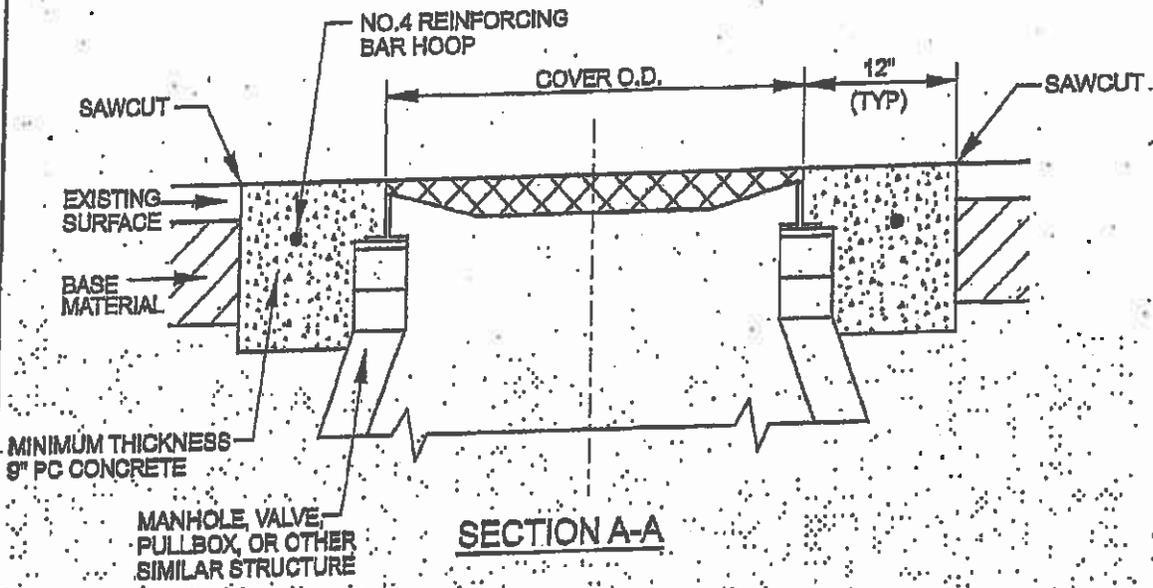
851a.4 PAYMENT: The work performed as prescribed by this item will be paid for at the contract unit price bid per manhole for "Locating and Adjusting Existing Manholes" which price shall be full compensation for all excavation, including any cutting of surfaces as required, reinforced concrete and disposal of material excavated; for furnishing and placing all materials and for all labor, tools, equipment and incidentals necessary to complete the work.

San Antonio Water System Standard Specifications for Construction

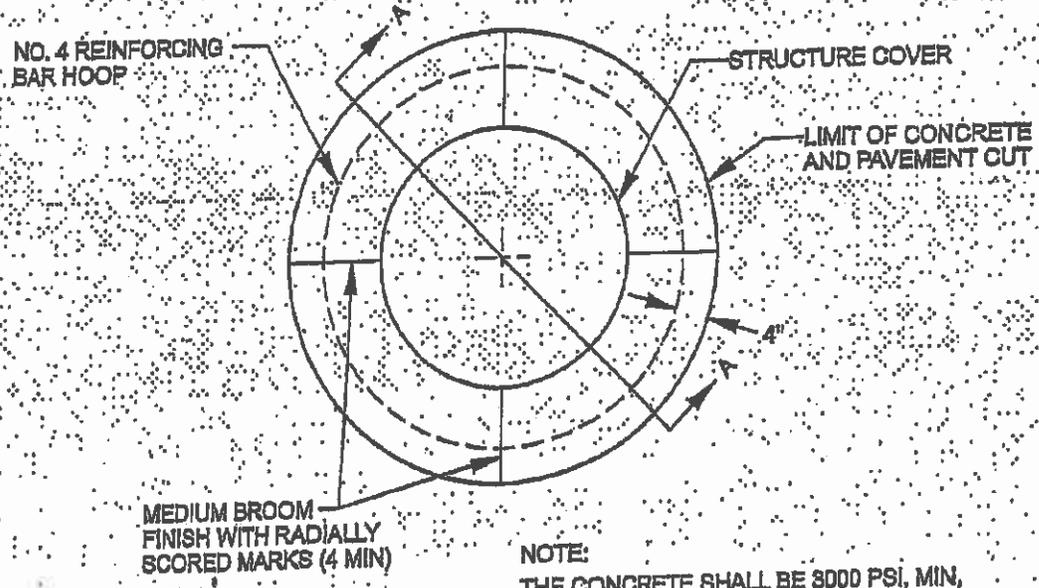
furnishing and placing all materials and for all labor, tools, equipment and incidentals necessary to complete the work.

Nov 07

CONCRETE COLLAR FOR MANHOLE AND VALVE ADJUSTMENTS



SECTION A-A



NOTE:
 THE CONCRETE SHALL BE 8000 PSI, MIN,
 AND REINFORCED WITH NO. 4 BARS, AS SHOWN
 THE CONCRETE SHALL EXTEND TO EDGE OF
 SAW CUT PAVEMENT EDGE

City of San Antonio Special Provision

ITEM

SP100 DOOR HANGERS

SP100 DESCRIPTION: The City of San Antonio is to provide template/verbage for the Door Hangers. Contractor shall place Hangers on every business or resident within each segment limits and Inspector specified locations.

City of San Antonio Special Provision

ITEM

SP2000 RAILROAD INSURANCE AND PERMIT

SP2000 DESCRIPTION: Each Contractor is to include a \$5000 allowance for the SP2000 Bid Item, Railroad Insurance and Permit. Any required railroad permit fees will be included in this item.

SPECIAL SPECIFICATIONS
FOR
HOT PAVER-LAID MICRO-SURFACE

ITEM NO. 260

ULTRATHIN BONDED WEARING COURSE

260.1 Description. This Item shall govern for the construction of a surface treatment composed of the application of a warm polymer modified asphalt emulsion membrane followed immediately with an ultrathin placement of hot, plant-mixed paving mixture, in accordance with the details shown on the plans and the requirements herein. The emulsion shall be spray applied immediately prior to the application of the hot asphalt concrete overlay so as to produce a homogeneous wearing surface that can be opened to traffic immediately upon sufficient cooling. The finished wearing course shall have a minimum thickness of ½ inch for Type A and ¾ inch for Type B and Type C.

260.2 Materials. The Contractor shall furnish materials to the project meeting the following requirements prior to mixing. Additional test requirements affecting the quality of individual materials or the paving mixture shall be required when shown on the plans.

(1) Aggregate. The aggregate shall be composed of a coarse aggregate, a fine aggregate and, if required, a mineral filler, meeting the requirements below, and of such gradation that the master gradation requirements for the paving mixture will be met. Samples of each material shall be submitted for approval in accordance with Item 6, "Control of Materials".

(A) Coarse Aggregate. Coarse aggregate is defined as that part of the aggregate retained above the No. 4 sieve. When coarse aggregates for these mixes are from more than one source or of more than one type of material, they shall be proportioned and blended to provide a uniform mixture if approved by the Engineer.

The coarse aggregate shall be of natural origin, from approved sources, of uniform quality throughout, and shall be 100 percent crushed material, with a minimum 85 percent with two or more crushed faces.

The coarse aggregate shall have a Micro-Deval loss of 18 percent or less when tested in accordance with Test Method AASHTO TP 58-99.

The aggregate shall be subjected to five (5) cycles of magnesium sulfate soundness testing in accordance with Test Method Tex-411A. The loss shall not exceed 18 percent, unless otherwise shown on the plans.

The aggregate shall have a 25 percent maximum 3:1 flat and elongated ratio when tested in accordance with Test Method ASTM D 4791.

(B) Fine Aggregate. Fine aggregate is defined as that part of the aggregate passing the No. 4 sieve. The aggregate shall be of uniform quality throughout.

The fine aggregate, when tested alone, shall have a sand equivalent value of not less than 45 when tested in accordance with Test Method Tex-203-F.

On fine aggregate materials passing the 200 sieve, the methylene blue shall be no greater than 10, when tested in accordance with Test Method AASHTO TP 57-99.

The fine aggregate shall have an uncompacted void content of no less than 40 when tested in accordance with Test Method AASHTO T 304-96.

(C) Mineral Filler. Mineral filler may be used as an option in meeting the combined gradation requirements. Hydrated lime, certain classes of fly ash, baghouse fines and Type 1 Portland cement are acceptable as mineral filler.

If mineral filler is used, 100 percent shall pass the No. 30 sieve, and 75-100 percent shall pass the No. 200 sieve.

The mineral filler shall be proportioned into the mix by a vane meter or an equivalent measuring device acceptable to the Engineer. A hopper or other acceptable storage system shall be required to maintain a constant supply of mineral filler to the measuring device.

(2) Asphaltic Material

(A) Paving Mixture. The Performance Graded Asphalt Binder for the paving mixture shall be of the grade conforming to the climate and traffic conditions at the project site, as shown on the plans or as designated by the Engineer. The Contractor shall notify the Engineer of the source of supply of the asphaltic material prior to beginning production, and the source of supply shall not be changed during the course of the project without the authorization of the engineer.

(B) Polymer Modified Emulsion Membrane. The emulsion shall be Polymer Modified Emulsion, Novabond, or equal meeting the requirements of Table 1.

Table 1

Polymer Modified Emulsion

The emulsion shall be smooth and homogeneous and conform to the following requirements:

<u>TEST ON EMULSION</u>		<u>Method</u>
<u>Min.</u>	<u>Max.</u>	
Viscosity @ 77°F, SSF		ASTM D88
20	100	
Sieve Test, %		ASTM
D244		0.05
24-Hour Storage Stability, % (Note 1)		ASTM
D244		1
Residue from Distillation @ 400°F, %		ASTM D244
Oil portion from distillation ml of oil per 100 g emulsion (Note 2)		63

Sand Breaking Index 100	TM201	
Pump Stability Test @ 140°F	TM101	3 Passes

Table 1 Continued

TEST ON EMULSION FROM PUMP STABILITY TEST

Sieve Test, % D244	ASTM 0.05
-----------------------	--------------

TEST ON RESIDUE FROM DISTILLATION:

Solubility in TCE, % (Note 3)	ASTM D2042	97.5
Elastic Recovery @ 50°F, % (Note 4)	ASTM D5892	58
Penetration @ 77°F, 100 g, 5 sec, dmm 60 150	ASTM D5	

Note 1: After standing undisturbed for 24 hours, the surface shall show no white, milky colored substance, but shall be a smooth homogeneous color throughout.

Note 2: ASTM D244 with modifications to include a 400°F ± 10°F maximum temperature to be held for a period of 15 minutes.

Note 3: ASTM D5546, "Test Method for Solubility of Polymer-Modified Asphalt Materials in 1,1,1-Trichloroethane" may be substituted where polymers block the filter in Method D2042.

Note 4: ASTM D5976, "Standard Specification for Type I Polymer Modified Asphalt Cement for Use in Pavement Construction", Section 6.2 with exception that the elongation is 20 cm and the test temperature is 50F.

TM 201

PROCEDURE FOR DETERMINATION OF BREAKING INDEX

1. SCOPE

This method consists of determining the amount of a specified silica sand necessary to break 100 grams of emulsion. The weight of sand that results in the breaking of the emulsion is the breaking index.

2. EQUIPMENT AND MATERIALS

- 2.1 500 mL metal beaker
- 2.2 Glass stirring rod
- 2.3 Balance capable of ± 0.1 g. accuracy\
- 2.4 Oven
- 2.5 Siliceous filler

The siliceous filler shall be natural sand having a minimum SiO₂ content of 98%. The specific gravity should be approximately 2.65. The grading shall be as follows:

Passing	Micron Size Opening	Cumulative %
	100	95-99
	80	85-90
	63	60-70
	50	50-60
	40	17-30

The filler must be dried to constant weight at 248°F prior to the test and stored in a sealed container.

3. PROCEDURE

- 3.1 Record the weight of the 500 mL metal beaker and stirring rod. Record as M(1).
- 3.2 Weigh 100 g. of emulsion in the test beaker. Record the beaker, stirring rod plus emulsion weight at M(2).
- 3.3 Place the beaker and stirring rod with the emulsion in an environmental chamber at 68°F and allow to stabilize.
- 3.4 Slowly add the filler in the emulsion while stirring with the glass rod. Continuously add the filler at a rate of a few grams per second.
- 3.5 When the emulsion plus filler becomes black and cohesive, the emulsion is considered broken at that point and addition of filler should stop. Only a small amount of free water should be present.
- 3.6 Weigh the beaker, stirring rod, and emulsion plus filler. Record the weight as M(3).

4. CALCULATION

- 4.1 The breaking index is defined as the weight of filler necessary to break 100 grams of emulsion. $B.I. = M(3) - M(2)$

TM 101

Resistance of Emulsions to Shear Induced Degradation Polymer Modified Emulsion Pumping Stability Test

Scope:

This test procedure measures the propensity for an asphalt emulsion to incur shear induced degradation as a result of being pumped or circulated by means of a positive displacement gear pump. A representative sample of emulsion, after being pre-sieved [#20 mesh, according to ASTM D-244] and conditioned to 60 C, is subjected to numerous pumping cycles [usually 6 cycles for Novabond]. Afterward, the emulsion is tested according to ASTM D-244 for Sieve. Any emulsion which, after being subjected to the required number of pumping cycles, exhibits degradation in the form of sieve exceeding 0.050%, shall be considered suspect and will be rejected.

Apparatus:

Viking Model F-432 Gear Pump, driven at 500 +/- 10 rpm by Dayton 1/3 h.p. electric motor; metal inlet and outlet lines to and from the pump; numerous plastic containers [either ½ gal. or 1 gal.] for transfer/collection of material being pumped.

3/4 inch*	19					100	
1/2 inch	12.7			100		85 - 100	
3/8 inch	9.5	100		85 - 100	±5	60 - 80	±5
#4	4.75	40 - 55	±4	28 - 38	±4	28 - 38	±4
#8	2.36	22 - 32	±4	25 - 32	±4	25 - 32	±4
#16	1.18	15 - 25	±3	15 - 23	±3	15 - 23	±3
#30	0.60	10 - 18	±3	10 - 18	±3	10 - 18	±3
#50	0.30	8 - 13	±3	8 - 13	±3	8 - 13	±3
#100	0.15	6 - 10	±2	6 - 10	±2	6 - 10	±2
#200	0.075	4 - 7	±2	4 - 7	±2	4 - 7	±2
Asphalt Content, %	5.0-5.8			4.8-5.6		4.6-5.6	±0.5
Draindown Test Tex-235-F	0.10% max						
Moisture Sensitivity, AASHTO T283**	80% min						
Asphalt Grade Conforming to PG for Climate and Traffic Conditions							
* A target of 100% passing the 5/8" is recommended. Mixtures containing 5/8" aggregate size will require greater paving thickness.							
**Specimens for T-283 testing are to be compacted using the Superpave gyratory compactor. The mixtures are to be compacted using 100 gyrations. Mixture and compaction temperatures are to be as recommended by the binder supplier.							

Unless otherwise shown on the plans, the mixture of aggregate, asphalt and additives proposed for use will be evaluated in the design stage for moisture susceptibility as indicated in Table 2 above.

- (2) Tolerances. The gradation of the aggregate and the asphalt cement content of the produced paving mixture shall not vary from the job-mix formula percentages by more than the tolerances given in Table 2 when tested in accordance with Test Method Tex-210-F or Test Method Tex-228-F.

If three consecutive tests indicate that the material produced exceeds the above tolerances on any individual sieve, or if two consecutive tests indicate that the asphalt content tolerance is exceeded, production shall stop and not resume until test results or other information indicate, to the satisfaction of the Engineer, that the next mixture to be produced will be within the above tolerances.

260.4

Equipment.

- (1) General. All equipment for the handling of all materials, mixing, placing and compacting of the paving mixture shall be maintained in good repair and operating condition and subject to the approval of the Engineer. Any equipment found to be defective and potentially having a negative affect on the quality of the paving mixture will not be allowed.
- (2) Mixing Plants. Mixing plants may be the weigh-batch type, the modified weigh-batch type, or the drum-mix type. All plants shall be equipped with satisfactory conveyors, power units, mixing equipment, aggregate handling equipment, bins and dust collectors.

Automatic proportioning devices are required for all plants and shall be in accordance with Item 520, "Weighing and Measuring Equipment".

It shall be the Contractor's responsibility to provide safe and accurate means to enable inspection forces to take all required samples, to provide permanent means for checking the output of any specified metering device, and to perform calibration and weight checks as required by the Engineer.

When using fuel oil heavier than ' Grade No. 2, or waste oil, the Contractor shall insure that the fuel delivered to the burner is at a viscosity of 100 SSU or less, when tested in accordance with Test Method Tex-534-C, to insure complete burning of the fuel. Higher viscosities will be allowed if recommended by the burner manufacturer. If necessary, the Contractor shall preheat the oil to maintain the required viscosity.

The Contractor shall provide means for obtaining a sample of the fuel, just prior to entry into the burner, in order to perform the viscosity test. The Contractor shall perform this test or provide a laboratory test report that will establish the temperature of the fuel necessary to meet the viscosity requirements. There shall be an in-line thermometer to check the temperature of the fuel delivered to the burner.

Regardless of the burner fuel used, the burner or combination of burners and types of fuel used shall provide a complete burn of the fuel and not leave any fuel residue that will adhere to the heated aggregate.

(A) Weigh-Batch Type.

Cold Aggregate Bin Unit and Proportioning Device. The cold aggregate bin unit shall have a separate bin for each aggregate which is of sufficient-size to store the amount of aggregate required to keep the plant in continuous operation and of proper design to prevent overflow of material from one bin to another. There shall be vertical partitions between each bin and on each end of the bins of sufficient height so that any overflow will be to the front and back, and not allow overflow to the sides or between bins. Overflow that might occur shall not fall onto any feeder belt. The proportioning device shall provide a uniform and continuous flow of aggregate in the desired proportion to the dryer. Each aggregate shall be proportioned from a separate bin.

Dryer. The dryer shall continually agitate the aggregate during heating. The temperature shall be controlled so that the aggregate will not be damaged in the drying and heating operations. The dryer shall be of sufficient size to keep the plant in continuous operation.

Screening and Proportioning. The screening capacity and size of the hot aggregate bins shall be sufficient to screen and store the amount of aggregate required to properly operate the plant and keep the plant in continuous operation at full capacity. The hot bins shall be constructed so that oversize and overloaded material will be discarded through overflow chutes. Provisions shall be made to enable inspection forces to have easy and safe access to the proper location on the mixing plant where representative samples may be taken from the hot bins for testing.

Aggregate Weigh Box and Batching Scale. The aggregate weigh box and batching scales shall be of sufficient capacity to hold and weigh a complete batch of aggregate. The weigh box and scales shall conform to the requirements of Item 520, "Weighing and Measuring Equipment".

Asphaltic Material Measuring System. If an asphaltic material bucket and scales are used, they shall be of sufficient capacity to hold and weigh the necessary asphaltic material for one batch. The bucket and scales shall conform to the requirements of Item 520, "Weighing and Measuring Equipment".

If a pressure type flow meter is used to measure the asphaltic material, the requirements of Item 520, "Weighing and Measuring Equipment", shall apply. This system shall include an automatic temperature compensation device to insure a constant percent by weight of asphaltic material in the paving mixture.

Provisions of a permanent nature shall be made for checking the accuracy of the asphaltic material measuring device. The asphalt line to the measuring device shall be protected with a jacket of hot oil or other approved means to maintain the temperature of the line near the temperature specified for the asphaltic material.

Mixer. The mixer shall be of the pugmill type and shall have a capacity of not less than 3,000 pounds (of natural-aggregate mixture) in a single batch, unless otherwise shown on the plans. Any mixer that has a tendency to segregate the aggregate or fails to secure a thorough and uniform mixture with the asphaltic material shall not be used. All mixers shall be provided with an automatic timer that will lock the discharge doors of the mixer for the required mixing period. The dump door or doors and the shaft seals of the mixer shall be tight enough to prevent spilling of aggregate or mixture from the pugmill.

Surge Storage System and Scales. A surge-storage system may be used to minimize the production interruptions during the normal day's operations. A device such as a gob hopper or other device approved by the Engineer to prevent segregation in the surge storage bin shall be used. The paving mixture shall be weighed upon discharge from the surge-storage system.

When a surge-storage system is used, scales shall be standard platform truck scales or other equipment such as weigh hopper (suspended) scales and shall conform to Item 520, "Weighing and Measuring Equipment". If truck scales are used, they shall be placed at a location approved by the Engineer. If other weighing equipment is used, the Engineer may require weight checks by truck scales for the basis of approval of the equipment.

Recording Device and Record Printer. The paving mixture shall be weighed for payment. If a surge-storage system is used, an automatic recording device and a digital record printer shall be provided to indicate the date, project identification number, vehicle identification, total weight of the load, tare weight of the vehicle, the weight of paving mixture in each load and the number of loads for the day, unless otherwise indicated on the plans. When surge-storage is not used, batch weights shall be used as the basis for payment and automatic recording devices and automatic digital record printers in accordance with Item 520, "Weighing and Measuring Equipment", shall be required.

(B) Modified Weigh-Batch Type.

General. This plant is similar to the weigh-batch type plant. The hot bin screens shall be removed and the aggregate control is placed at the cold feeds. The cold feed bins will be the same as those required for the drum-mix type plant.

Cold-Aggregate Bin Unit and Feed System. The number of bins in the cold-aggregate bin unit shall be equal to or greater than the number of stockpiles of individual materials to be used.

The bins shall be of sufficient size to store the amount of aggregate required to keep the plant in continuous operation and of proper design to prevent overflow of material from one bin to another. There shall be vertical partitions between each bin and on each end of the bins of

sufficient height so that any overflow will be to the front and back and not allow overflow to the sides or between bins. Overflow that might occur shall not fall onto any feeder belt. The feed system shall provide a uniform and continuous flow of aggregate in the desired proportion to the dryer. The Contractor shall furnish a chart indicating the calibration of each cold bin in accordance with Construction Bulletin C-14, or other methods of cold bin calibration acceptable to the Engineer.

Scalping Screen. A scalping screen shall be required after the cold feeds and ahead of the hot aggregate surge bins.

Dryer. The dryer shall continually agitate the aggregate during heating. The temperature shall be controlled so that the aggregate will not be damaged in the drying and heating operations. The dryer shall be of sufficient size to keep the plant in continuous operation.

Screening and Proportioning. The hot aggregate shall not be separated into sizes after being dried. There shall be one or more surge bins provided between the dryer and the weigh hopper. Surge bins shall be of sufficient size to hold enough combined aggregate for one complete batch of paving mixture.

Aggregate Weigh Box and Batching Scale. The aggregate weigh box and batching scales shall be of sufficient capacity to hold and weigh a complete batch of aggregate. The weigh box and scales shall conform to the requirements of Item 520, "Weighing and Measuring Equipment".

Asphaltic Material Measuring System. If an asphaltic material bucket and scales are used, they shall be of sufficient capacity to hold and weigh the necessary asphaltic material for one batch. The bucket and scales shall conform to the requirements of Item 520, "Weighing and Measuring Equipment".

If a pressure type flow meter is used to measure the asphaltic material, the requirements of Item 520, "Weighing and Measuring Equipment", shall apply. This system shall include an automatic temperature compensation device to insure a constant percent by weight of asphaltic material in the mixture.

Provisions of a permanent nature shall be made for checking-the accuracy of the asphaltic material measuring-device. The asphalt line to the measuring device shall be protected with a jacket of hot oil or other approved means to maintain the temperature of the line near the temperature specified for the asphaltic material.

Mixer. The mixer shall be of the pugmill type and shall have a capacity of not less than 3,000 pounds (of natural-aggregate mixture) in a single batch unless otherwise shown on the plans. Any mixer that has a tendency to segregate the aggregate or fails to secure a thorough and uniform mixture with the asphaltic material shall not be used. All mixers shall be provided with an automatic timer that will lock the discharge doors of the mixer for the required mixing period. The dump door or doors and the shaft seals of the mixer shall be tight enough to prevent spilling of aggregate or mixture from the pugmill.

Surge-Storage System and Scales. A surge-storage system may be used to minimize the production interruptions during the normal day's operations. A device such as a gob hopper or other device approved by the Engineer to prevent segregation in the surge storage bin shall be used. The paving mixture shall be weighed upon discharge from the surge-storage system.

When a surge-storage system is used, scales shall be standard platform truck scales or other equipment such as weigh hopper (suspended) scales and shall conform to Item 520, "Weighing and Measuring Equipment". If truck scales are used, they shall be placed at a location approved by the Engineer. If other weighing equipment is used, the Engineer may require weight checks by truck scales for the basis of approval of the equipment.

Recording Device and Record Printer. The paving mixture shall be weighed for payment. If a surge-storage system is used, an automatic recording device and a digital record printer shall be provided to indicate the date, project identification number, vehicle identification, total weight of the load, tare weight of the vehicle, the weight of paving mixture in each load and the number of loads for the day, unless otherwise indicated on the plans. When surge-storage is not used, batch weights shall be used as the basis for payment and automatic recording devices and automatic digital record printers in accordance with Item 520, "Weighing and Measuring Equipment", shall be required.

(C) Drum-Mix Type.

General. The plant shall be adequately designed and constructed for the process of mixing aggregates and asphalt. The plant shall be equipped with satisfactory conveyors, power units, aggregate-handling equipment and feed controls.

Cold-Aggregate Bin Unit and Feed System. The number of bins in the cold-aggregate bin unit shall be equal to or greater than the number of stockpiles of individual materials to be used.

The bins shall be of sufficient size to store the amount of aggregate required to keep the plant in continuous operation and of proper design to prevent overflow of material from one bin to another. There shall be vertical partitions between each bin and on each end of the bins of sufficient height so that any overflow will be to the front and back and not allow overflow to the sides or between bins. Overflow that might occur shall not fall onto any feeder belt. The feed system shall provide a uniform and continuous flow of aggregate in the desired proportion to the mixer. The Contractor shall furnish a chart indicating the calibration of each cold bin in accordance with Construction Bulletin C-14, or other methods of cold bin calibration acceptable to the Engineer.

The system shall provide positive weight measurement of the combined cold aggregate feed by use of belt scales or other approved devices. Provisions of a permanent nature shall be made for checking the accuracy of the measuring device as required by Item 520, "Weighing and Measuring Equipment". When a belt scale is used, paving mixture production shall be maintained so that the scale normally operates between 50 percent and 100 percent of its rated capacity. Belt scale operation below 50 percent of the rated capacity may be allowed by the Engineer if accuracy checks show the scale to meet the requirements of Item 520, "Weighing and Measuring Equipment", at the selected rate. It shall be satisfactorily demonstrated to the Engineer that paving mixture uniformity and quality have not been adversely affected.

Scalping Screen. A scalping screen shall be required after the cold feeds and ahead of the combined aggregate belt scales.

Asphaltic Material Measuring System. An asphaltic material measuring device meeting the requirements of Item 520, "Weighing and Measuring Equipment", shall be placed in the asphalt line leading to the mixer so that the cumulative amount of asphalt used can be accurately determined. Provisions of a permanent nature shall be made for checking the accuracy of the measuring device output. The asphalt line to the measuring device shall be

protected with a jacket of hot oil or other approved means to maintain the temperature of the line near the temperature specified for the asphaltic material. The measuring system shall include an automatic temperature compensation device to maintain a constant percent by weight of asphaltic material in the paving mixture.

Synchronization Equipment for Feed-Control Systems. The asphaltic material feed control shall be coupled with the total aggregate weight measuring device to automatically vary the asphalt-feed rate in order to maintain the required proportion.

Mixing System. The mixing system shall control the temperature so that the aggregate and asphalt will not be damaged in the drying, heating and mixing operations. A continuously recording thermometer shall be provided which will indicate the temperature of the paving mixture as it leaves the mixer.

Surge-Storage System and Scales. A surge-storage system shall be used to minimize the production interruptions during the normal day's operations. A device such as a gob hopper or other device approved by the Engineer to prevent segregation in the surge-storage bin shall be used. The paving mixture shall be weighed upon discharge from the surge-storage system.

Scales shall be standard platform truck scales or other equipment such as weigh hopper (suspended) scales and shall conform to Item 520, "Weighing and Measuring Equipment". If truck scales are used, they shall be placed at a location approved by the Engineer. If other weighing -equipment is used, the Engineer may require weight checks by truck scales for the basis of approval of the equipment.

Recording Device and Record Printer. Automatic recording and automatic digital record printers shall be provided to indicate the date, project identification number, vehicle identification, total weight of the load, tare weight of the vehicle, the weight of paving mixture in each load and the number of loads for the day in accordance with Item 520, "Weighing and Measuring Equipment", unless otherwise shown on the plans.

- (3) Asphaltic Material Heating Equipment. Asphaltic material heating equipment shall be adequate to heat the required amount of asphaltic material to the desired temperature. The heating apparatus shall be equipped with a continuously recording thermometer with a 24-hour chart that will record the temperature of the asphaltic material at the location of highest temperature.
- (4) Bonded Wearing Course Paver. The surface treatment paver shall be approved by the Engineer and shall meet the following requirements.

The self-priming machine shall be capable of spraying the Polymer Modified Emulsion Membrane, applying the hot asphalt concrete overlay and leveling the surface of the mat in one pass at the rate of 30.5 to 92 ft/minute. The self-priming paving machine shall incorporate a receiving hopper, feed conveyor, insulated storage tank for Polymer Modified Emulsion, Polymer Modified Emulsion Membrane spray bar and a variable width, heated, combination vibratory-tamping bar screed.

(A) Screed Unit. The screed shall have the ability to be crowned at the center both positively and negatively and have vertically adjustable extensions to accommodate the desired pavement profile. The paver shall be equipped with a heated screed. It shall produce a finished surface meeting the requirements of the typical cross sections.

Extensions added to the screed shall be provided with the same heating capability as the main screed unit, except for use on variable depth tapered areas and/or as approved by the Engineer. The screed, with extensions if necessary, shall be of such width as to pave an entire lane in a single pass.

(B) Asphalt Distribution System. A metered mechanical pressure sprayer shall be provided on the paver to accurately apply and monitor the rate of application of the Polymer Modified Emulsion Membrane. The rate shall be uniform across the entire paving width. Application shall be immediately in front of the screed unit.

(C) Tractor Unit. The tractor unit shall be equipped with a hydraulic hitch sufficient in design and capacity to maintain contact between the rear wheels of the hauling equipment and the pusher rollers of the finishing machine while the paving mixture is being unloaded.

No portion of the weight of hauling equipment, other than the connection, shall be supported by the asphalt paver. No vibrations or other motions of the loading equipment, which could have a detrimental effect on the riding quality of the completed pavement, shall be transmitted to the paver.

(5) Rollers. Roller(s) shall be well maintained, in reliable operating condition and be equipped with functioning water system and scrapers to prevent adhesion of the fresh mix onto the roller drums. Adequate roller units shall be supplied so the compaction will be accomplished promptly following the placement of the material. A release agent (added to the water system) may be required to prevent adhesion of the fresh mix to the roller drum and wheels. Compaction shall normally be done in the static mode. Rollers provided shall meet the requirements for their type as follows:

(A) Two-Axle Tandem Roller. This roller shall be an acceptable self-propelled tandem roller.

(B) Three-Wheel Roller. This roller shall be an acceptable self-propelled three wheel roller.

(C) Three-Axle Tandem Roller. This roller shall be an acceptable self-propelled three axle roller.

(6) Straightedges and Templates. When directed by the Engineer, the Contractor shall provide acceptable 10 foot straightedges for surface testing. Satisfactory templates shall be provided as required by the Engineer.

(7) Alternate Equipment. When permitted by the Engineer, equipment other than that specified herein which will consistently produce satisfactory results may be used.

260.5 Stockpiling, Storage and Mixing.

(1) Stockpiling of Aggregates. Prior to stockpiling of aggregates, the area shall be cleaned of trash, weeds, grass and shall be relatively smooth and well drained. The stockpiling shall be done in a manner that will minimize aggregate degradation, segregation, mixing of one stockpile with another, and will not allow contamination with foreign material.

The plant shall have at least a two-day supply of aggregates on hand before production can begin and at least a two-day supply shall be maintained through the course of the Project, unless otherwise directed by the Engineer,

No stockpile shall contain aggregate from more than one source.

When required by the Engineer, additional material shall not be added to stockpiles that have previously been sampled for approval.

Equipment of an acceptable size and type shall be furnished to work the stockpiles and prevent segregation and degradation of the aggregates.

- (2) Storage and Heating of Asphaltic Materials. The asphaltic material storage capacity shall be ample to meet the requirements of the plant. Asphalt shall not be heated to a temperature in excess of that specified in Item 300, "Asphalts, Oils and Emulsions". All equipment used in the storage and handling of asphaltic material shall be kept in a clean condition at all times and shall be operated in such a manner that there will be no contamination with foreign matter.
- (3) Feeding and Drying of Aggregate. The feeding of various sizes of aggregate to the dryer shall be done through the cold aggregate bins and the proportioning device in such a manner that a uniform and constant flow of materials in the required proportions will be maintained. The aggregate shall be dried and heated to the temperature necessary to produce a paving mixture seal having the specified temperature.
- (4) Mixing and Storage.

(A) Weigh-Batch Plant. In introducing the batch into the mixer, all aggregate shall be introduced first and shall be mixed thoroughly for a minimum period of 5 seconds to uniformly distribute the various sizes throughout the batch before the asphaltic material is added. The asphaltic material shall then be added and the mixing continued for a wet mixing period of not less than 15 seconds. The mixing period shall be increased if, in the opinion of the Engineer, the paving mixture is not uniform or the aggregates are not properly coated.

Temporary storing or holding of the paving mixture by the surge storage system will be permitted during the normal day's operation. The paving mixture coming out of the surge-storage bin shall be of equal quality to that coming out of the mixer.

(B) Modified Weigh-Batch Plant. The mixing and storage requirements shall be the same as is required for a standard weigh-batch plant.

(C) Drum-Mix Plant. The amount of aggregate and asphaltic material entering the mixer and the rate of travel through the mixing unit shall be so coordinated that a uniform mixture of the specified grading and asphalt content will be produced.

Temporary storing or holding of the paving mixture by the surge-storage system will be required during the normal day's operation. The paving mixture coming out of the surge-storage bin shall be of equal quality to that coming out of the mixer.

206.6 Construction Methods.

Polymer Modified Emulsion Membrane and paving mixture may be placed only when the temperature of the surface to be overlaid is 50°F or more, and the air temperature is above 50 F and rising, but shall not be placed when the air temperature is below 60 F and falling. The air temperature will be taken in the shade away from artificial heat. It is further provided that the Polymer Modified Emulsion Membrane or paving mixture shall be placed only when the humidity,

general weather conditions and moisture condition of the pavement surface, in the opinion of the Engineer, are suitable.

- (1) Surface Preparation. The following items will be performed prior to the commencement of paving operations and paid for under the appropriate item numbers.

Manhole covers, drains, grates catch basins and other such utility structures shall be protected and covered with plastic or building felt prior to paving and also shall be clearly referenced for location and adjustment after paving.

Thermoplastic traffic markings shall be removed if greater than 1/4" thickness.

Pavement cracks and joints greater than 1/4" wide shall be cleaned and filled using an approved material and method.

Surface irregularities greater than 1" deep shall be filled with a material approved by the Engineer.

The entire pavement surface to be overlaid shall be thoroughly cleaned, giving specific attention to accumulated mud and debris. Pressurized water and/or vacuum systems may be required to insure a clean surface.

- (2) Polymer Modified Emulsion Membrane. Before the membrane and paving mixture are applied, the surface upon which the tack coat is to be placed shall be cleaned thoroughly to the satisfaction of the Engineer. The Polymer Modified Emulsion Membrane shall be sprayed by a metered mechanical pressure spray bar at a temperature of 140 - 180°F. The sprayer shall accurately and continuously monitor the rate of spray and provide a uniform application across the entire width to be overlaid. The rate of spray shall be in the range of 0.15 – 0.30 gallons per square yard as determined by the mix design. Adjustments to the spray rate shall be made based upon the existing pavement surface conditions and recommendations of the emulsion supplier.

No wheel or other part of the paving machine shall come in contact with the Polymer Modified Emulsion Membrane before the hot mix asphalt concrete wearing course is applied.

- (3) Transporting Paving Mixture. The paving mixture shall be hauled to the work site in tight vehicles previously cleaned of all foreign material. The dispatching of vehicles shall be arranged so that all material delivered may be placed and all rolling shall be completed during daylight hours. Covers and insulated truck beds shall be required, unless otherwise shown on the plans. If necessary to prevent the paving mixture from adhering to the bed, the inside of the truck bed shall be given a light coating of release agent satisfactory to the Engineer. Use of diesel will not be allowed.
- (4) Placing. The hot mix asphalt concrete shall be applied at a temperature of 302 - 330°F and shall be spread over the Polymer Modified Emulsion Membrane immediately after the application of the membrane. The hot asphalt concrete wearing course shall be placed over the full width of the emulsion with a heated, combination vibratory-tamping bar screed. The paving mixture shall be dumped directly into the specified paver and spread on the membrane surface in such a manner that, when properly compacted, the finished surface will be smooth and of uniform texture and density. The paver shall be operated at a speed satisfactory to the Engineer. If, in the opinion of the Engineer, sporadic delivery of the paving mixture adversely affects the quality of the work or unduly lengthens the time the traffic is restricted from full use of the through lanes, laying operations shall cease and traffic shall be fully restored to the through lanes until consistent delivery of the paving mixture is

provided by the Contractor. Care shall be taken to prevent splattering of adjacent pavement, curb and gutter and structures during paving operations.

- (5) Compaction. Compaction of the wearing course shall consist of a minimum of two passes with a steel double drum asphalt roller of minimum weight of 10 tons, before the material temperature has fallen below 185°F. At no time shall the roller or rollers be allowed to remain stationary on the freshly placed asphalt concrete. Compaction shall immediately follow the placement of the Ultrathin Bonded Wearing Course with an approved asphalt roller(s). Adequate roller units shall be supplied so the compaction will be accomplished promptly following the placement of the material. Compaction shall normally be done in the static mode. The speed and motion of the rollers shall be such as to avoid displacement of the paving mixture. If any displacement occurs, it shall be corrected to the satisfaction of the Engineer. To prevent adhesion of the paving mixture to the roller, the wheels shall be kept thoroughly moistened with a soap-water solution. Necessary precautions shall be taken to prevent the dropping of gasoline, oil, grease or other foreign matter on the pavement, either when the rollers are in operation or when standing. Sprinkling of the fresh mat shall be required, when directed by the Engineer, to expedite opening the roadway to traffic. Sprinkling shall be with water or lime-water solution, as directed by the Engineer.
- (6) Traffic Return. Because of the minimal depth of the hot mix asphalt concrete being placed, it may be damaged if opened to traffic too quickly. Therefore, the new pavement shall not be opened to traffic until the rolling operation is complete and the material has cooled sufficiently to resist damage. The cooling time will be brief due to the minimal depth of the mat.

260.7 Measurement.

- (1) The Ultrathin Bonded Wearing Course shall be measured by the number of square yards of pavement surfaced in accordance with this specification.

260.8 Payment.

- (1) The unit price bid per square yard shall include all labor, materials, equipment, and incidentals necessary to complete the work.
- (2) All templates, straightedges, scales and other weighing and measuring devices necessary for the proper construction, measuring and checking of the work shall be furnished, operated and maintained by the Contractor at his expense.

