CITY OF KERRVILLE
KERR COUNTY, TEXAS

CONTRACT DOCUMENTS

AND

TECHNICAL SPECIFICATIONS

FOR

ASPHALT PAVEMENT MAINTENANCE PROJECT 2009

Date: May 2009
Copy No. _____

PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION

Hewitt Engineering, Inc.
Consulting Engineering Services

City of Kerrville
Standard Specifications and Contract Documents
Version Updated January 2005

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Section 060

ADVERTISEMENT FOR BID

Sealed bids for the **Asphalt Pavement Maintenance Project 2009** will be received by the office of the city secretary, City Hall, 800 Junction Highway, Kerrville, Texas 78028 until 3:00 p.m. on **May 20, 2009** and will then be publicly opened and read aloud in Council Chambers at City Hall.

The date and time of opening the bids shall be clearly marked on the outside of the sealed envelope. No bids will be accepted after 3:00 p.m. on the date of bid opening.

The bidding documents, plans, specifications, etc. may be examined by all bidders at the engineering office at City Hall, 800 Junction Highway, Kerrville, Texas, 78028, 830-792-8314, or on the City's website www.kerrvilletx.gov. Copies may be purchased at Jackson Reprographics in Kerrville.

Each bid must be accompanied by a certified check, cashier's check, or bid bond payable to the City of Kerrville, Texas, in the amount of ten percent (10%) of the amount bid as a guarantee that the contract and bond will be entered into within ten (10) days after the award is made.

A performance/payment bond in the amount of one hundred percent (100%) of the total contract price will be required.

A non-mandatory pre-bid conference shall be held at **3:00 PM on May 12, 2009** at City Hall.

All questions regarding this project shall be directed to the Engineering Office at 830-792-8314.

Advertised:	May 1, 2009 May 8, 2009
Pre-bid Conference:	May 12, 2009
Bid Opening:	May 20, 2009
Bid Award:	June 9, 2009

Section 070

CITY OF KERRVILLE

CONSTRUCTION CONTRACT

This agreement made this day by and between the City of Kerrville, Texas, called "City," and the undersigned "Contractor" as follows:

1. THE WORK

The Contractor shall perform all the work as required by this contract for:

Reconstruction and maintenance of various asphalt streets in existing neighborhoods throughout Kerrville, Texas, as detailed in Section 090 "Description of Work".

The following are incorporated herein:

a. General Provisions
b. Technical Specifications
c. Addenda issued prior to receipt of Bid
d. Plans
e. Instructions to Bidders
f. Proposal

Some of such documents may not be physically attached hereto but are on file at City Hall, and copies may be obtained upon request.

2. TIME

Construction substantial completion time will be **70** calendar days and **10** calendar days after for final completion from the date of written notice to proceed. Working days are defined in specification section 123.20. The Contractor's obligations to the project however, are not complete and retainage will not be released until all disturbed areas within Kerrville right-of-way have been re-vegetated to the satisfaction of the City Engineer.

3. LIQUIDATED DAMAGES

Liquidated damages are hereby established for work which is not substantially complete in the amount of Three Hundred Dollars ($300.00) per working day for each working day after the date established in the Notice to Proceed. The City may offset any such liquidated damages against any sums from time to time due by the City to Contractor.

The completion time assumes that fifteen percent of the working days are "bad weather days," days on which the work cannot proceed; therefore, the time for completion shall not be extended on account of bad weather until the said number of assumed "bad weather days" has been exceeded.

The time for completion shall not be extended except by written memorandum executed by the Contractor and the City Manager. Contractor shall make written application to the City not later than ten (10) days after the day, event, or cause claimed by Contractor to be a delay. Failure to make such

written claim within such time shall result in a waiver by Contractor of an extension based on those particular days, events, or causes. If, for example, this contract assumes twenty (20) bad weather days and Contractor desired a one-day extension for the twenty-first day of rain, Contractor shall make a written claim not later than ten (10) days after the occurrence of such twenty-first day.

The said amount per day is not a penalty but an agreed amount of actual damages which are difficult to calculate. Such damages include loss of staff time, answering complaints by citizens who have been inconvenienced by the work, City Council time, loss of use, and other damages difficult to reasonably anticipate or calculate.

4. PAYMENTS

The City shall pay the Contractor ninety-five percent (95%) of the portion of Contract Sum properly allocable to labor, materials, and equipment incorporated in the Work and ninety-five percent (95%) of the portion of the Contract Sum properly allocable to materials and equipment suitably stored at the site or at some other location agreed upon in writing, less the aggregate of previous payments made by the City, and, upon substantial completion of the entire Work, a sum sufficient to increase the total payments to ninety-five percent (95%) of the Contract Sum. All retainages from progress payments shall be withheld without liability for interest. Upon acceptance, the City shall make payment to Contractor such that one hundred percent (100%) of the Contract Sum has been paid.

5. LIABILITY INDEMNITY

THE CONTRACTOR AGREES TO INDEMNIFY, DEFEND, AND HOLD HARMLESS THE CITY OF KERRVILLE, TEXAS, AND ALL OF THEIR RESPECTIVE OFFICERS, AGENTS AND EMPLOYEES FROM ALL SUITS, ACTIONS, CLAIMS, DAMAGES, PERSONAL INJURIES, LOSSES, PROPERTY DAMAGES, AND EXPENSES OF ANY CHARACTER WHATSOEVER, INCLUDING ATTORNEY'S FEES BROUGHT FOR OR ON ACCOUNT OF ANY INJURIES OF DAMAGES RECEIVED OR SUSTAINED BY ANY PERSON OR PROPERTY ON ACCOUNT OF ANY NEGLIGENT ACT OF THE CONTRACTOR, THE CITY OF KERRVILLE, TEXAS, OR ANY OF THEIR RESPECTIVE OFFICERS, EMPLOYEES, AGENTS, REPRESENTATIVES, OR SUBCONTRACTORS IN THE EXECUTION, SUPERVISION, AND OPERATIONS GROWING OUT OF OR IN ANY WAY CONNECTED WITH THE PERFORMANCE OF THIS AGREEMENT, WHETHER OR NOT THE ACT OR OMISSION OF THE CITY OR ANY OF THEIR RESPECTIVE OFFICERS, EMPLOYEES, OR AGENTS WAS THE SOLE PROXIMATE CAUSE OF THE INJURY OR DAMAGE OR A PROXIMATE CAUSE JOINTLY AND CONCURRENTLY WITH THE NEGLIGENCE OF THE CONTRACTOR OR ITS OFFICERS, EMPLOYEES, AGENTS, CONTRACTORS, OR SUBCONTRACTORS, IN THE EXECUTION, SUPERVISION AND OPERATIONS GROWING OUT OF OR IN ANY WAY CONNECTED WITH THE PERFORMANCE OF THIS AGREEMENT.

6. LIABILITY INSURANCE

Prior to the commencement of any work and not later than fifteen (15) days following the execution of this contract, the Contractor shall furnish the City copies of paid-up policies (to the City Risk Manager/City Hall) providing Liability and Workman's Compensation Coverage as follows minimum limits):

	TYPE OF INSURANCE	LIMITS
a.	Workman's Compensation covering all employees	Statutory
b.	Employer's Liability	$100,000.00
c.	Comprehensive General Liability	
	Bodily Injury & Property Damage (per occurrence)	$1,000,000.00
	Aggregate	$1,000,000.00
	(Premises/Operations Products/Completed Operations/Independent Contractors/Contractual Liability/Coverages may not be excluded). XCU must be supplied if any exposure.	
d.	Business Automobile Liability covering owned vehicles, rented and non-owned vehicles and employee non-ownership	
	Bodily Injury Property Damage (per occurrence)	$1,000,000.00
	Aggregate	$1,000,000.00

The Commercial General Liability and the Automobile Liability policies shall name the City of Kerrville, Texas, as additional insured and all policies shall provide for a waiver of subrogation in favor of the City of Kerrville. The policy and any renewal certificate shall provide that the City be notified thirty (30) days prior to cancellation or modification of any coverage. Language to the effect that the company will "Endeavor" or "Attempt" to so notify the City of Kerrville is not sufficient.

Renewal certificates must be received by the City at least ten (10) days prior to any cancellation date. Policies will be in effect until final acceptance or cancellation of this contract, unless otherwise specified. The City may, at its sole option, terminate this agreement and file a claim on the Contractor's bid bond if the Contractor fails to deliver the required policies and certificates within 15 days after execution of this contract.

It shall be the responsibility of the Contractor to insure that all Subcontractors comply with the same insurance requirements as the said Contractor.

7. CASUALTY INSURANCE

In the event the work includes structures or buildings susceptible to damage by fire, windstorm, or other casualty, then the Contractor before being authorized to begin work shall furnish the City a duplicate original of an insurance policy naming the City of Kerrville as an additionally insured. Such insurance shall insure both the City of Kerrville and Contractor, during the term of the work, against loss by fire, windstorm, vandalism, theft, or other casualty. Such policy shall be in the total amount of this contract.

8. QUALITY OF WORK

All work shall be of good workmanship. Contractor shall comply with all applicable City of Kerrville Codes as well as all applicable professional and technical standards. Materials shall be of first quality.

9. CHANGES AND EXTRAS

No change of this Contract, whether for additional work, additional compensation, or other, shall be effective unless prior thereto a written change order has been authorized by the City Engineer.

10. ADDENDA

Contractor acknowledges the receipt of the following addenda:

1. Dated: _____ Acknowledged by: _____

2. Dated: _____ Acknowledged by: _____

11. AWARD OF CONTRACT

The lowest qualified bidder will be awarded the base bid plus any combination of additive alternates pending availability of funds and City Council approval.

12. CONTRACT SUM

Proposal: Contractor agrees to provide all labor, materials, and all incidentals necessary to complete "The Work" for the following Unit Prices:

ITEM NO.	APPROX. QUANTITY	UNIT	DESCRIPTION OF ITEM	UNIT PRICE	TOTAL AMOUNT
BASE BID					
1	1	LS	Mobilization and Bonds		$
2	7574	CY	Mill asphalt and base material	$	$
3	7574	CY	Haul millings to City property at Spur 100 (approximately 14 miles round-trip from site)	$	$
4	937	Tons	Type 'B' Asphalt Base Course, complete in place per drawing and specifications	$	$
5	11252	Tons	Type 'C' or 'D' Asphalt Surface Course, complete in place per drawing and specifications	$	$
6	70	EA	Water Valve Adjustment	$	$
7	46	EA	Manhole Adjustment	$	$
8	1	LS	Barricades, signs, and traffic handling including traffic control plan		$
9	1	LS	Contingency to be used only as directed and approved by City Engineer		$10,000
			TOTAL BASE BID	$	
ADDITIVE ALTERNATE					
10	194	CY	4-inch Mill asphalt and base material	$	$
11	194	CY	Haul millings to City property at Spur 100 (approximately 14 miles round-trip from site)	$	$
12	385	Tons	4-inch Type 'C' or 'D' Asphalt Surface Course, complete in place per drawing and specifications	$	$
13	1	EA	Water Valve Adjustment	$	$
14	1	EA	Manhole Adjustment	$	$
15	1	LS	Barricades, signs, and traffic handling including traffic control plan		$
			TOTAL ADDITIVE ALTERNATE	$	
			TOTAL BID	$	

COMPLETED BY GENERAL CONTRACTOR

General Contractor Name	Date
General Contractor Representative	Title

Sub-Contractors:

	NAME	ADDRESS	PHONE	WORK TO BE PERFORMED
1.				
2.				
3.				

(Attach additional sheet if required)

INSURANCE AGENT

	NAME	ADDRESS	PHONE	POLICY
1.				
2.				
3.				

BONDING AGENT

	NAME	ADDRESS	PHONE	POLICY
1.				
2.				
3.				

Signed this _____day of _____, 2009

Attest: _____Contractor

_____
Secretary BY:_____
(if bid by a Corporation

Title:_____

SEAL

Business Address:

_____

_____

_____

Phone:_____

Fax:_____

ACCEPTED THIS _____

day of _____, 2009

By: _____
Todd Parton, City Manager
City of Kerrville, Texas.

ATTEST:

_____
Brenda G. Craig, City Secretary

APPROVED AS TO FORM:

_____
City Attorney

Section 075

Payment Bond

KNOW ALL MEN BY THESE PRESENTS, that _____

_____

of _____
hereinafter called the CONTRACTOR (Principal), and _____
_____
_____
a corporation duly organized and existing under and by virtue of the laws of the State of _____, hereinafter called the SURETY, and authorized to transact business within the State of Texas, as SURETY, are held and firmly bound unto THE CITY OF KERRVILLE, TEXAS, as OWNER (Obligee), in the sum of:

_____DOLLARS ($_____), lawful money of the United States of America, for the payment of which, well and truly be made to the OWNER, the CONTRACTOR and the SURETY bind themselves and each of their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents as follows:

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH THAT:

WHEREAS, the CONTRACTOR has executed and entered into a certain Contract hereto attached, with the OWNER, dated _____, 200__,
for:

_____
_____
_____

NOW, THEREFORE, if the CONTRACTOR shall promptly make payment to all persons, firms, and corporations furnishing materials, labor, and services used directly or indirectly by the Contractor in the prosecution of the work, as provided in the Contract Documents, and shall pay the OWNER, all loss, damage, expense, costs, including attorneys fees which the OWNER may sustain by reason of failure or default on the part of CONTRACTOR, then this obligation shall be void; otherwise it shall be and remain in full fore and effect.

PROVIDED, HOWEVER, that no final settlement between the OWNER and the CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

PROVIDED, FURTHER, that this BOND is executed pursuant to the provisions of Chapter 2253 of the Texas Government Code, as amended and all liabilities of 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.

Venue for any disputes arising from or in any way related to the performance of the obligations set forth herein shall be in Kerr County, Texas.

IN WITNESS WHEREOF, the above parties bounded together have executed this instrument this _____day of____, 200__, the name and corporate seal of each corporate party being hereto affixed and those presents duly signed by its undersigned representative, pursuant to authority of its governing body.

CONTRACTOR

_____

By _____(Seal)

_____
Attest

SURETY

_____

By _____(Seal)

_____
Attest

ATTACH POWER OF ATTORNEY

Section 080

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS, THAT _____
of _____hereinafter called the CONTRACTOR (Principal), and _____a corporation duly organized and existing under and by virtue of the laws of the State of Texas, hereinafter called the SURETY, and authorized to transact business within the State of Texas, as SURETY, are held and firmly bound unto THE CITY OF KERRVILLE, TEXAS as OWNER (Obligee), in the sum of:

_____DOLLARS ($_____), lawful money of the United States of America, for the payment of which, well and truly be made to the OWNER, the CONTRACTOR and the SURETY bind themselves and each of their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents as follows:

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH THAT:

WHEREAS, the CONTRACTOR has executed and entered into a certain Contract hereto attached, with the OWNER, dated _____, 200____, for:

_____

_____

_____

NOW, THEREFORE, if the CONTRACTOR shall in all things perform all the terms and conditions of the within and foregoing Contract as provided in the Contract Documents to be by such CONTRACTOR performed, and shall honor all claims for defective work made within ONE year after the completion and acceptance of the foregoing Contract, and shall pay the OWNER, all loss, damage, expense, costs, including attorneys fees which the OWNER may sustain by reason of failure or default on the part of CONTRACTOR, then this obligation shall be void; otherwise it shall be and remain in full force and effect.

PROVIDED, HOWEVER, that this Bond is executed pursuant to the provisions of Chapter 2253 of the Texas Government Code as amended and all liabilities of 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.

PROVIDED, FURTHER, that the SURETY, for value received, hereby stipulates and agrees that no change, extension of time, alterations, or addition to the terms of the Contract Documents or to the work to be performed thereunder, shall in any way affect its obligation on this bond, and it does

hereby waive notice of any such change, extension of time, alteration, or addition to the terms of the Contract Documents.

Venue for any disputes arising from or in any way related to the performance of the obligations set forth herein shall be in Kerr County, Texas.

IN WITNESS WHEREOF, the above parties bounded together have executed this instrument this _____day of _____, 200___, the name and corporate seal of each corporate party being hereto affixed and those presents duly signed by its undersigned representative, pursuant to authority of its governing body.

CONTRACTOR

_____ _____

By _____(Seal)
Its:_____ (Title)

_____
Attest

SURETY

_____

By _____(Seal)
Attorney-in-Fact

ATTACH POWER OF ATTORNEY

Section 090

DESCRIPTION OF WORK

Following is a summary of work items included in the bid schedule:

BASE BID:

METHODIST ENCAMPMENT ROAD

4" Remove & Replace for approximately 1800 linear feet along Methodist Encampment Road between SH 27 and Lois. (See Sheet 3 of Plans for exact depths and locations)

WOODLAWN AVENUE/CIRCLE AVENUE

4" Remove & Replace for approximately 1900 linear feet along Woodlawn Avenue/Circle Avenue between SH 27 and Jefferson Street. (See Sheet 4 of Plans for exact depths and locations)

JACKSON ROAD

4" Remove & Replace for approximately 1610 linear feet along portions of Jackson Road between Harper Road and Woodlawn Avenue. (See Sheets 3 & 5 of Plans for exact depths and locations)

SCHREINER STREET

4" Remove & Replace for approximately 1070 linear feet along Schreiner Street between Lewis Avenue and Wallace Street. (See Sheet 4 of Plans for exact depths and locations)

LEWIS AVENUE

4" Remove & Replace for approximately 650 linear feet along Lewis Avenue between Leland Street and Stephen Street. (See Sheet 4 of Plans for exact depths and locations)

HARPER STREET

3" Remove & Replace for approximately 1240 linear feet along Harper Street between Galbraith Avenue and N. Lewis Avenue. (See Sheet 5 of Plans for exact depths and locations)

GALBRAITH AVENUE

3" Remove & Replace for approximately 2320 linear feet along Galbraith Avenue between W. Water Street and Culberson Avenue. (See Sheet 5 of Plans for exact depths and locations)

W. WATER STREET

3" Remove & Replace for approximately 730 linear feet along W. Water Street between Jackson Road and Galbraith Avenue. (See Sheet 5 of Plans for exact depths and locations)

WATER STREET

6" and 2" Remove & Replace for approximately 6060 linear feet along portions of Water Street between Sidney Baker Street (SH 16) and SH 27. (See Sheets 6 and 7 of Plans for exact depths and locations)

WASHINGTON STREET

4" Remove & Replace for approximately 860 linear feet along portions of Washington Street between Water Street and Jefferson Street. (See Sheet 6 of Plans for exact depths and locations)

EARL GARRETT STREET

4" Remove & Replace for approximately 100 linear feet at the intersection of Main Street. (See Sheet 6 of Plans for exact depths and locations) Coordination with the TxDOT Kerrville Office is required for this segment.

General Requirements
Section 100

101 Residential Subdivision Sequence of Construction

Residential Subdivisions must follow a sequence of construction as noted by the City Engineer and outline below. Where variances are deemed necessary by the Developer's Engineer (Texas Licensed Professional Engineer) the request must be in written form to the City Engineer for consideration.

A. Erosion Control devices installed per Storm Water Pollution Prevention Plan. Erosion Control devices must be maintained during the entire course of construction.
B. Drainage and Grading including all cut and fill for proposed streets must be installed first (drainage pipe, culverts, inlet boxes, channels, rip-rap, detention/retention ponds, etc.
C. Utilities installed after drainage and especially after cut and fill has been completed. Utilities include but are not limited to Water, Sewer, Electric, Cable, Telephone and Gas. Revegetation begins immediately in areas of utilities installed out of the Right of Way.
D. Utilities (including Storm Drainage Pipe) tested per Section 800 of Kerrville Standard Specifications of Subdivision Construction and subsequent repairs made.
E. Pavement installed and Revegetation of right of way. Pavement may not begin until all Utilities within the Right of Way are installed and complete (Water, Sewer, Electric, Cable, Telephone and Gas).
F. Utilities tested per Section 800 of Kerrville Standard Specifications of Subdivision Construction and subsequent repairs made.
G. Record drawings (As-Built) submitted to City Engineer.
H. Final Walk Through, Punch List, Final Acceptance.

110 Responsibilities and Obligations

111 City of Kerrville

111.01 Specification Deficiencies: If omissions or ambiguities occur in these specifications, requirements of the Texas Department of Transportation and/or the Texas Natural Resources Conservation Commission shall govern that part of the work.

111.02 Standard Products Lists (SPL): The City of Kerrville Standard Products Lists (SPL) is considered to form a part of these Specifications. Contractors may, when appropriate, elect to use products from the SPL; however, submittal to the Engineer is still required.

The SPL's should not be interpreted as being a pre-approved list of products necessarily meeting the requirements for a given construction project. Items contained in the SPL cannot be substituted for items shown on the Drawings, or called for in the specifications, or specified in the Bidding Requirements, Contract Forms and Conditions of Contract, unless approved by the Engineer

The Contractor shall submit descriptive information and evidence that the materials and equipment the Contractor proposes for incorporation in the Work is of the kind and quality that satisfies the specified functions and quality.

111.03 Authority and Duties of Inspector: Inspector will be authorized to inspect all work done and all materials furnished. Such inspection may extend to all or to any part of the work and to the preparation or manufacture of the materials to be used. An inspector will be assigned to the work by the City Engineer and will report to him the progress of the work and the manner in which it is being performed; also to report whenever it appears that the materials furnished and the work performed by

the Contractor fail to fulfill the requirements of the Construction Documents and to call the attention of the Contractor and the Owner to any obligation to perform the work in accordance with the requirements of the Construction Documents.

The Inspector will not be authorized to revoke, alter, enlarge, or release any requirement of the Construction Documents, nor to approve or accept any portion of work, or to issue instructions contrary to the Construction Documents. He will in no case act as foreman or perform other supervisory duties for the Contractor nor interfere with the management of the work. The inspector shall, however, have the authority to temporarily suspend work if deficiencies are discovered. Such suspension shall be followed by written notification to the Consulting Engineer/Owner and may be appealed to the City Engineer.

111.04 Final Inspection: Within five working days after the Owner has given the City Engineer written notice that the work has been substantially completed, the Inspector will review the work and schedule a final acceptance walk through.

111.05 Acceptance by the City: A meeting for final acceptance will be on the site and at a time mutually agreeable between the City Engineer and the Owner. The Inspector will also invite:

A. Contractors, as appropriate
B. Consulting Engineer
C. Water/Wastewater Utility Representative
D. Street Department Representative
E. City Of Kerrville Engineering Department
F. If the project involved A.D.A. requirements and T.D.L.R./Independent Contractor approved the plans the representative for T.D.L.R./Independent Contractor that reviewed the plans will be invited.

A final acceptance letter or a conditional acceptance letter will be provided by the City Engineer based on the results of the walk through.

112 Developers & Owners

112.01 Owner-Engineer Relationship: The owner shall specify his representatives for the work who will be responsible for all communications with the City. When the Construction Plans have been approved by the City Engineer and passed to the Construction Inspector, the work must not deviate from the signed Construction Documents. Field adjustments not affecting project integrity, cost of construction, time and consistent with intent of design may be approved by the Inspector. The office of the City Engineer must approve changes to Construction Drawings.

112.02 Owner's Duty and Superintendence: The Owner shall insure that no work shall be done nor materials used without qualified supervision and inspection of work.

If the project is 5 acres or more in size, then the owner is required to have an EPA NPDES Permit issued by the EPA Region VI. A copy of the report and permit shall be on file with the City Of Kerrville Engineering Department. A copy of the permit shall be posted on the jobsite per EPA requirements.

If burning is allowed on the project, then a TCEQ burn permit and authorization from the City Of Kerrville Fire Marshall is required. The owners and/or the contractor must also comply with any Kerr County Burn Bans that are imposed due to weather conditions.

112.03 Pre-construction Conference: The Owner will distribute approved plans prior to convening a

pre-construction Conference to start any construction. As a minimum, the conference shall consist of: introduction of all parties with exchange of phone numbers and addresses; discussion of start dates and schedule of events; Erosion and Sedimentation controls, traffic control, barricades, superintendence, and final acceptance guidelines and publishing and distribution of minutes. A minimum of two days notice of the conference will be given to:

A. Owners Representative
B. Consulting Engineer
C. Contractors for roads, drains, and utilities
D. City Engineer or Representative
E. Water/Wastewater Utility Director
F. Fire Department
G. Texas Department of Transportation, (if applicable)

112.04 Substantial Completion: Substantial completion shall be defined as the date that, in the opinion of the Owner or his Consulting Engineer, all work will be finished within 10 days.

112.05 Guarantee Against Work: Owner shall warrant the work for a period of one year from the date of the Letter of Final Acceptance of complete project. Said warranty shall bind Owner to correct any defects in materials, workmanship (including utility backfills), or design inadequacies, which may be discovered within said one year period. Owner shall correct or cause his Contractor to correct at his own expense, such defects within 30 days after receiving written notice of such defects from the City Engineer. Should Owner or his Contractor fail or refuse to correct such defects within the said 30 day period or to provide acceptable assurances that such work will be completed within a reasonable time thereafter, the City of Kerrville may correct any such defects at expense of Owner or his Contractor or his bond.

113 Engineers / Surveyors

113.01 Construction Drawings: Construction drawings shall meet all requirements of the City of Kerrville Standard Specifications and Subdivision ordinance, and must be approved by the office of the City Engineer.

All subdivisions are considered to be open to the public, this includes gated residential communities. All projects submitted for construction must be designed to adhere to the Texas Department of Licensing & Regulations – Architectural Barriers Act. Additional requirements are in this section under 120 of this chapter.

113.02 Geotechnical Evaluation: A geotechnical report including laboratory reports shall be submitted at the time of the construction drawings submittal to support the design submitted. This report shall include a geotechnical evaluation for any structures (i.e. Lift Stations, concrete foundations, etc.) and to support the street design.

113.03 Drainage Report: Drainage calculations are required for all culverts, low water crossing and drainage ditches.

A drainage report and storm water pollution prevention plan if required shall be submitted at the time of the construction drawings submittal to support the design.

113.04 As-Built Drawings: The Owner's Engineer must submit record drawings that have been signed, sealed, and dated by final acceptance of the project.

114 Laboratory

114.01 Testing of Materials: Unless otherwise specified, atterberg limits and soil moisture-density tests performed on the site to determine the quality of material to be incorporated into the project will be as directed by the Engineer. Frequency, time, locations, and procedures of tests will be coordinated and approved by the Inspector. This testing is to be accomplished by an independent laboratory. Payment for all testing will be the responsibility of the Contractor. Restoration or patching required due to testing shall be done at no expense to the City.

115 General Contractors / Sub Contractors

115.01 Submittals: Prior to the start of construction four copies of submittals are required for the project in bound folders. Allow five (5) workings days for Engineering to review the submittals. They will be reviewed by Engineering:

If approved: Two copies will be returned to the General Contractor stamped approved.
If rejected: Four Copies will be returned to the General Contractor with a cover letter stating areas of concern.

Utility and Street Construction cannot start prior to approval of the submittals.

115.02 Trench Safety System Plan Submittal: Prior to, or at the Pre-Construction Conference, the Contractor shall submit to the City Of Kerrville a Trench Safety System Plan sealed by a registered Professional Engineer licensed in the State of Texas.

A Notice To Proceed with construction will not be issued by the City Of Kerrville until the Contractor has submitted a Trench Safety System Plan to the City Of Kerrville.

The Trench Safety System Plan at a minimum shall conform to OSHA standards for sloping of sides, utilization of trench boxes, and/or utilization of shoring, sheeting and bracing methods.

The Contractor's Competent Person(s) shall be responsible for the maintenance of a copy of appropriate OSHA regulations onsite and the implementation of OSHA trenching safety regulations at the work site. Trenching shall be completed to the lines and grades indicated on the Drawings or as specified in various technical standard specification items requiring excavation and trenching and/or backfilling. The Contractor shall perform all trenching in a safe manner and shall maintain safety systems to prevent death or injury to personnel or damage to structures, utilities or property in or near excavation.

If evidence of possible cave-ins or earthen slides is apparent or an installed trench safety system is damaged, the work in trench shall immediately cease, personnel evacuated from hazardous area and the Owner notified. Personnel shall not be allowed to re-enter the excavation until necessary repairs or replacements are completed and are inspected and approved by the Contractor's Competent Person(s). Repair and replacement of damaged safety system shall be at the Contractor's sole expense.

115.03 Water, Solid Waste and Electricity: The Contractor shall make arrangements as may be required to bear all expenses for obtaining water, solid waste disposal, and temporary electric power. The contractor shall make all connections, furnish all necessary extensions, and remove same upon completion of the work.

The contractor shall establish an account with the City Of Kerrville landfill contractor prior to the start of the job, if solid waste is to be generated on the project. Construction debris and waste shall be disposed of per TCEQ requirements. Depending on the project a roll-off may be required to contain

the waste. Due to contracts requirements with the City Of Kerrville landfill contractor, the contractor shall pay all tipping fees for the project. This includes Capital Improvements Projects as well as private developments. All outstanding bills shall be paid prior to final acceptance of the project.

Any damage to City Of Kerrville property will be billed to the contractor. Any outstanding bills shall be paid prior to final acceptance of the project.

115.04 State Sales Tax: The Contractor shall be responsible for payment of all State Sales Taxes applicable to the materials used in the work. There shall be no separate payments for such taxes, it being intended that such taxes shall be included in the bid price for respective bid items for the work.

Contractors that contract with the City Of Kerrville and perform Capital Improvement Projects (CIP) for the City Of Kerrville will be issued a certificate that can be used to notify suppliers that no sales taxes are due for this project.

120 General Contract Requirements

121 General Requirements

The engineer on record for the project needs to determine what general requirements are required for the project. Private projects do not require all of the sections outlined in Section 122.

122 Special Requirements

122.01 Bidding: Expenditures of $25,000 and over must be awarded by the city council based on the sealed bid process. Expenditures under $25,000 may be awarded based on written quotes and may be approved by the city manager. All written contracts must be reviewed and approved by the city attorney.

122.02 Advertising: Any project subject to the sealed bidding process must be authorized for bidding by the city council and funds must be budgeted with a line item number. Bid documents must be available in the office of the City Secretary prior to authorization. After authorization the project must be advertised in the official newspaper of the city of Kerrville, a minimum of twice, with one week between notices.

122.03 Bid Award: Bids may be not be opened until 14 days after the first notice appears (not counting the day of advertising). A pre-bid conference will be scheduled during the week prior to opening of the bids. All bids received will be keep in the office of the City Clerk and will be opened by the purchasing agent of the city at the scheduled time and date.

This is a Unit Price Bid Contract, but does contain some lump sum bid items. The Contract Documents are intended to show clearly all work to be done and material to be furnished hereunder. Where the estimated quantities are shown for the various classes of work to be done and material to be furnished under this Contract, they are approximate and are to be used only as a basis for estimating the probable cost of the work and for comparing the proposals offered for the work. It is understood and agreed that the actual amount of work to be done, and material to be furnished under this Contract may differ from these estimates. Payment shall be for the actual amount of such work done and the material furnished. The CONTRACTOR agrees that he will make no claim for damages, anticipated profits, or otherwise on account of any differences which may be found between the quantities of work actually done, the material actually furnished under this Contract and the estimated quantities contemplated and contained in the proposal; provided, however, should the net monetary value of all additive and subtractive changes in

quantities of such items of work (i.e., difference in cost) increase or decrease the original contract price by more than twenty-five percent (25%) will entitle the CONTRACTOR to revised consideration. Any revised consideration is to be determined by agreement between the parties. It is also the intent of the Contract Documents that the quantities not be increased outside the limits of the work as bid without the mutual consent of CONTRACTOR and the OWNER.

122.04 Engineering: Any Public Works project must have plans, specifications and cost estimates prepared by a Registered Professional Engineer (P.E.) and must be constructed under supervision of a P.E., if the cost exceeds $20,000 or if it requires structural, electrical or mechanical engineering and the cost exceeds $8,000.

122.05 Bonding: Contracts for public works projects over $25,000 must include a payment bond and contracts for projects over $100,000 must include a performance and a payment bond. Both of these bonds must be in the total amount of the contract and must be solely for the protection of the city. As a matter of policy in Kerrville we do not execute contracts for over $100,000 without both bonds. Contracts for construction of public works projects under $25,000 may eliminate both of these bonds; however the contract will exclude any payments prior to completion of the work and final payment must include an affidavit stating that all bills for materials and labor have been paid by the prime contractor.

122.06 Insurance: Workers Compensation covering all employees per the statutory requirement is required on all contracts. The following insurance is required on all contracts over $15,000:

a. Employer's Liability $100,000
b. Comprehensive General Liability and
   Bodily Injury & Property Damage (per occurrence) $1,000,000
   Aggregate $1,000,000
   (Premises/Operations/Products/Completed Operations/Independent Contractors/Contractual Liability/Coverages may not be excluded). XCU must be supplied if any exposure.
c. Business Automobile Liability covering owned vehicles, rented and non-owned vehicles and employee non-ownership Bodily Injury Property Damage (per occurrence) of $1,000,000 with aggregate of $1,000,000

122.07 Americans with Disabilities Act: All subdivisions are considered to be open to the public, this includes gated residential communities. All projects submitted for construction must be designed to adhere to the Texas Department of Licensing & Regulations Architectural Barriers Act. Diagonal Curb Ramps will not be accepted, ramps shall intersect the roadway section at right angles. Any ramps that cannot intersect the roadway at right angles require approval of the City Engineer.

The engineer on record must submit the plans and specifications where the estimated total construction cost of the project exceeds $50,000 to the Texas Department of Licensing and Regulation for approval prior to the Notice to Proceed is issued.

All capital projects constructed by the city which are open to public access must be designed to be ADA compliant. All new construction or reconstruction projects where the estimated cost exceeds $50,000 must be submitted to the Texas Department of Licensing and Regulation for approval prior to the start of construction by the engineer of record.

122.08 Texas Antiquities Act: Advance project review is required by the Texas Historical Commission if the Public Works construction project disturbs more than five acres of surface area or 5,000 cubic yards of earth, or if the project is inside a designated historical district or a recorded archeological site.

If the THC determines that a survey is not required, no further action is necessary. If a survey is required it must be completed before construction begins and must conform to their guidelines for archeological surveys.

122.09 EPA National Pollutant Discharge Elimination (NPDES): Projects which disturb over 5 acres must comply with NPDES requirements. These require that a plan be prepared by a Professional Engineer and be included in the bid documents. A Notice of Intent (NOI) as part of an EPA - NPDES general permit must be submitted to EPA by the contractor or owner, at least 48 hours prior to the start of construction. A Notice of Termination (NOT) must be prepared upon completion of the conditions specified in the SW3P and submitted to EPA.

122.10 Storm Water Pollution Prevention Plan (SW3P): Plans and specifications for all projects located in TxDOT right of way and all projects which disturb over 5 acres, are required to include a plan to mitigate storm water pollution. Other city capital projects may include this plan if deemed necessary to prevent surface water pollution. This SW3P will be part of the work which is performed by the contractor. As a minimum the SW3P must include:

Site description.
Control measures to be performed by the contractor.
Any permanent storm water management measures.
Procedures for maintenance of erosion control measures.
Description of inspection procedures.

122.11 TCEQ Approvals: Plans and specification must be filed for record with TCEQ - Water Quality Division, for all wastewater collection system extensions, but no approval will be issued by TCEQ. All water distribution system extensions which constitute a significant change (10 % or more) must be submitted to the Plan Review Team of TCEQ and approved prior to construction. All improvements other than maintenance of existing facilities at the water or wastewater treatment plants must be submitted to and approved by TCEQ (Water Quality Division), prior to bidding. All plans which include work on public water or wastewater systems must conform to the TCEQ requirements for water and wastewater systems.

122.12 Wetlands: Any project which disturbs (cut/fill) land that is below the plane of ordinary high water of a stream or area that is considered "waters of the United States", will be required to submit a 404 permit. In most cases of city of Kerrville public works projects, this will be a US Army Corps of Engineers Nationwide Permit #14.

122.13 Minority/DBE Participation: The city of Kerrville has adopted a DBE program as a requirement of several DOT with the terms of that grant applications and every capital project must comply program. The DBE program director will compile and make available a list of DBE contractors and the bidding process should incorporate procedures whereby bidders, agree to make "reasonable efforts" to meet the stated goal of the city for DBE participation (10%).

122.14 Prevailing Wage Requirements: The ***Davis-Bacon Act,*** as amended, requires that each contract over $2,000 to which the United States is a party for the construction, alteration, or repair of public buildings or public works shall contain a clause setting forth the minimum wages to be paid to various classes of laborers and mechanics employed under the contract. Under the provisions of the Act, contractors or their subcontractors are to pay workers employed directly upon the site of the work no less than the locally prevailing wages and fringe benefits paid on projects of a similar character. In addition to the Davis-Bacon Act itself, Congress has added prevailing wage provisions to approximately 60 statutes which assist construction projects through grants, loans, loan guarantees, and insurance.

In general for city of Kerrville projects this act does not apply; however if we are utilizing grant monies from state agencies or if there is TxDOT participation in the form of federal pass through monies, then the grant documents will include a requirement for the city to comply with these provisions. Where we are required to comply we include a provision in the specifications that requires the contractor to pay the prevailing wages as determined by Texas Department of Commerce for this area. In addition we are required to request a copy of this "wage determination" within ten days of the bid opening and to make this a part of the contract documents.

122.15 Texas Antiquities Act: Advance project review is required by the Texas Historical Commission if public infrastructure disturbs more than five (5) acres of surface area or five thousand (5000) cubic yards of earth, or if the project is inside a designated historical district or a recorded archeological site. If the THC determines that a survey is not required, no further action is necessary. If a survey is required it must be complete before construction begins and must conform to their guidelines for archeological surveys.

122.16 City Of Kerrville Planning & Zoning: The engineer on record for the project needs to determine what planning and zoning ordinances are required for the project. If the project would require any waivers or variances that need to be acted upon then they need to be submitted to the City Of Kerrville Construction Development Department.

123 Instruction to Bidders

123.01 Examination of Contract Documents: Before submitting a bid, the bidder shall examine carefully the proposal, plans, specifications, special provisions and the form of contract to be entered into for the work contemplated. The submission of a bid shall constitute an acknowledgment that the bidder has thoroughly examined and is familiar with the contract documents. The failure or neglect of a bidder to receive or examine any of the contract documents shall in no way relieve him from any obligations with respect to his bid or to the contract. No claim for extra or additional compensation will be allowed based upon a lack of knowledge of any contract document, and the owner will in no case be responsible for any loss or for unanticipated cost that may be suffered by the Contractor as a result of conditions pertaining to the work.

123.02 Quantities Are Approximate: The quantities named in the proposal or separately listed are approximate only, but these are to be used as a basis for the comparison of proposals and to determine the amount of the bonds. If, however, unit prices (where used) appear to the Owner to be unbalanced to such an extent that changes in actual quantities required under the contract might result in contract price adjustments which would increase payments to the Contractor excessively, then the Owner may take such a condition under consideration in making the award of the contract.

123.03 Examination of Site and Conditions: Before making a proposal, the bidder shall examine the site of the work and ascertain for himself all physical conditions in relation thereto. Failure to take this precaution shall not release him from his obligation as implied by the proposal he submits nor excuse him from performing the work in strict accordance with the requirements of the contract documents.

No statement made by any officer, agent, or employee of the Owner pertaining to the site of the work or the conditions under which the work must be performed will be binding on the Owner.

123.04 Addenda and Interpretations of Documents: No interpretations of the contract documents or other pre-bid documents will be made to any bidder orally. Every request for such interpretation shall be submitted in writing, addressed to the City Engineer and in order to receive consideration shall be received at least five days prior to the date fixed for opening of bids. Any and all such interpretations

and any supplemental instructions will be in the form of written addenda to the specifications, which, if issued, will be mailed or otherwise delivered to each prospective bidder. Failure of any bidder to receive any such addendum shall not relieve such bidder from any obligation under his bid as submitted. All addenda issued shall become a part of the contract documents.

123.05 Qualification of Bidders: The owner desires that this project be built by a contractor who is competent and adequately financed. The Owner may request the bidder to submit a written statement to show experience in construction work of this character as an indication of qualifications and business standing. If required, the bidder may make his statement in such form as may seem appropriate. Such statement must be notarized. Failure to comply with this request may cause rejection of the bid.

123.06 Execution of Contract: The bidder, as part of the bid, shall execute the City of Kerrville Construction Contract and fill in all blanks.

123.07 Preparation of the Bid: Bids must be submitted by filling in with ink (or typing) each and every blank provided for such purpose in the form headed City of Kerrville Construction Contract (Proposal); or if the bidder is required to provide a special form appropriate to the nature of his bid, then such form shall be complete in all respects as required by the contract documents if it is to merit consideration by the Owner. When indicated, all blank spaces shall be filled in with words and figures. Written amounts shall take precedence where there is a conflict between the written and the figure. If the proposal is made by a partnership, it should contain the name of each partner and should be signed in the firm name followed by the signature of a partner or that of a person duly authorized to act for and on behalf of such partnership. If made by a corporation, the bid form should be signed with the name of the corporation and the state in which incorporated followed by the written signature of the qualified officer and the designation of the office he holds in the corporation in whose behalf the bid is submitted shall be given. The bidder shall comply with all other specific requirements of the bid form.

123.08 Alteration of Documents Prohibited: Except as may be provided otherwise herein, bids which are incomplete, are conditioned in any way, contain unverified erasures or alterations, or include items which are not named in the bid form or which are unlawful may be rejected.

123.09 Submission of Bid: Each bid shall be completely sealed in a package addressed as required by the official advertisement and marked with the name of the bidder and the title of the project and must be delivered to City Hall at or before the time named in the advertisement. If forwarded by mail, the sealed envelope containing the bid form shall be enclosed in another envelope addressed to the City Clerk, 800 Junction Highway, Kerrville, Texas 78028 "BID ENCLOSED".

123.10 Modification of a Bid: A change in a bid already delivered will be permitted only if a request for the privilege of making such modification is made in writing signed by the bidder and the specific modification itself is stated prior to the scheduled closing time for the receipt of bids. To be effective, every modification must be made in writing over the signature of the bidder, and no other procedure will be acceptable.

123.11 Listing of Subcontractors: If the Contractor proposes to sublet any of the work, he shall list the name of the subcontractor(s) in the space provided in the bid form. Should the bid form not provide space for the listing of the names for proposed subcontractor(s), the Contractor shall provide such a list to accompany his bid. Failure to include this information in his proposal could constitute cause for rejection of any and all requests for subcontracting any portion of the work.

123.12 Bid Security: Each bid form must be accompanied by cash, certified check of the bidder, or a

bid bond duly executed by the bidder as principal and having as surety thereon a surety company approved by the Owner in the amount of Ten (10) percent of the bid, unless applicable law requires less. Such cash checks, or bid bonds will be returned promptly after execution of the contract or, if no award has been made within sixty days after the date of the opening of bids, upon demand of the bidder at any time thereafter, so long as he had not been notified of the acceptance bid.

The successful bidder, upon his failure or refusal to execute and deliver the bonds required within ten days after he has received notice of the acceptance of his bid, shall forfeit to the Owner as liquidated damages for such failure or refusal the security deposited with his bid.

The Attorney-in-fact who signs the bid bonds or contract bonds must file with each bond a certified and effectively dated copy of his power of attorney.

123.13 Withdrawal of Bid: A bid may be withdrawn at any time prior to the scheduled closing time for filing the bids. This may be done by the bidder in person or upon his written request. A telephone request for withdrawal of a bid will not be recognized. If withdrawal is made personally, a written acknowledgment thereof will be required. After the scheduled closing time for filing the bids, no bidder will be permitted to withdraw his bid unless no award of contract has been made prior to the expiration of sixty days immediately following the date when the bids are opened. Bids received after the scheduled closing time will be returned to the bidder unopened.

123.14 Opening of Bids: All bids received prior to the scheduled closing time and which are not withdrawn as above provided will be publicly opened and read aloud, even though there may be irregularities or informalities therein.

123.15 Affidavit of Noncollusion: The Owner reserves the right to require that any bidder before being awarded a contract shall execute a noncollusion affidavit in such form as will satisfy the Owner that the bid offered is genuine, is not a sham or collusive, and in no respect or degree is made in the interest or on behalf of any person, firm, or corporation not named in the form containing such bid.

123.16 Pre-Bid Conference: A pre-bid conference between the City of Kerrville, prospective bidder, suppliers, etc., will be held at City Hall, 800 Junction Hwy., Meeting Room No. 1, to make certain the scope of work is fully understood and to answer any questions. No addendum will be issued at this meeting, but subsequent thereto, if necessary to clear up any questions an addendum will be issued. After this meeting, the contractors will have the opportunity of viewing the work sites and the test pits (if any) provided by the city.

123.17 Inspection of Site: The bidder shall examine the site of work and satisfy himself as to the conditions which will be encountered relating to the character, quality and quantity of work to be performed and materials to be furnished.

Any borings, soil profiles and water elevations shown on the plans were obtained for use of the City of Kerrville in the preparation of plans and the bidder is hereby cautioned regarding the accuracy of these data. The bidder, in preparing his proposal, shall take cognizance of the difficulty of accurately classifying material encountered in making foundation investigations, the possible erosion of stream channels and banks after survey data have been obtained and the reliability of water elevations other than for the date recorded.

123.18 Safe Return of Bid Information: "Good Condition" shall require that no markings, missing pages, erasures, etc., be present on or within Contract Documents, Technical Specifications or Plans to obtain the refund of deposit. Refund shall be made through the accounting department and may take approximately two weeks.

123.19 Supplemental Pay Items: These items are included to facilitate payment for changes and alterations that may be required to complete work. The actual work as provided by the General Conditions of the agreement and Technical SPECIFICATIONS and shown on Plans. When work covered by Supplemental Items or required by the Engineer, payment will be based on the quantity actually constructed and unit Prices Bid in Proposal.

123.20 Working Day: A working day is defined as a calendar day, not including Saturdays, Sundays, or legal holidays of the City of Kerrville, in which weather or others conditions not under the control of the Contractor will permit the performance of the principal unit of work underway for a continuous period of not less than 7 hours between 7 a.m. and 6 p.m. For every Saturday or legal holiday except the following holidays:

> January 1st, the last Monday in May, July 4th, the first Monday in September, the fourth Thursday in November and December 25th

on which the Contractor chooses to work, one day will be charged against the contract working time when weather conditions will permit 7 hours of work as delineated above and the contractor shall pay inspection fees of $35/hour to the City of Kerrville. The principal unit of work shall be that unit which controls the completion time of the contract. Work on Sunday and on the six legal holidays listed above will not be permitted except in cases of extreme emergency or when the safety of the Contractor's forces and/or the traveling public would be significantly improved, and then only with the written permission of the Engineer. If Sunday work or work on the six legal holidays listed above is permitted, working time will be charged on the same basis as weekdays.

124 Award and Execution of Contract

124.01 Consideration of Bids: For the purpose of award, after the proposals are opened and read, the summation of the products of the approximate quantities shown in the proposal and the unit prices bid will be considered the amount of the bid. The summations will then be compared and the results made available to the public. Until the award of the contract is made, the City of Kerrville reserves the right to reject any or all proposals and to waive such technicalities as may be considered to be in the best interest of the City.

In determining the amount of the bid as well as computing amount due for payment of each item under the contract, the City of Kerrville reserves the right to round off all unit bids involving fractional parts of a cent to the nearest one-tenth cent.

124.02 Award of the Contract: Within sixty calendar days after the opening of the bids, the Owner will award the contract or reject all bids. Formal acceptance of the bids can be made only by the City of Kerrville. It reserves the right to reject any or all bids, to solely determine the best and lowest bid, and to waive any informalities.

124.03 Execution of Contract, Bonds and Certificates of Insurance: Within 15 days after written notification of award of the contract, the bidder shall execute and furnish to the City of Kerrville: (1) contract, (2) performance bond and payment bond, with powers of attorney attached, each in the full amount of the contract price, executed by a surety company or surety companies authorized to execute surety bonds under and in accordance with the laws of the State of Texas, and (3) Certificate of Insurance showing coverages in accordance with contract requirements.

124.04 Beginning of Work: The Contractor shall not begin work until authorized by the City of Kerrville in writing to do so. Authorization notification will be by Notice to Proceed.

125 Scope of Work

125.01 Claims and Disputes: In the event that the Contractor requests additional compensation for work not clearly covered in the contract, the Contractor shall notify the Engineer in writing of his intention to make a claim for additional compensation before beginning such work, once he has knowledge, or during the initial stages of such work. An assessment of damages is not required to be a part of this notice but is desirable. If such notice is not given and the Engineer is not provided an opportunity to keep an accurate account of the actual cost of the work in question, then the Contractor waives his right to file a claim for such work, unless the circumstances are such that the Contractor could not reasonably have knowledge of the additional cost prior to the performance of the work. Notice of claim by the Contractor and the documentation of the cost of the work by the Engineer shall not be construed as proof or substantiation of the validity of said claim.

125.02 Final Clean Up: Upon completion of the work and before acceptance and final payment is made, the Contractor shall clean, remove rubbish and temporary structures from the highway, restore in an acceptable manner all property which has been damaged during the prosecution of the work and leave the site of the work in a neat and presentable condition throughout.

Upon the completion of any structure, all excess materials, cofferdams, construction buildings, temporary structures and debris resulting from construction shall be removed. Where work is in a stream, all debris shall be removed to the ground line of the bed of the stream and the stream channels and street/highway left unobstructed and in a neat and presentable condition. All structures shall be cleaned to the flow line or the elevation of the outfall channel, whichever is higher.

125.03 Removal of Contractor's Equipment and Materials: It is understood and agreed that the Contractor is to promptly remove from the project right-of-way and other property owned or controlled by the Owner all equipment and material that he places thereon that is not to become the property of the Owner. It is further understood and agreed that any such equipment and material of all kinds that is not removed as herein provided within thirty (30) days after the date upon which all work to be done under the contract is completed and accepted by the Owner or within such longer time as may be agreed upon in writing between the Owner and the Contractor shall become the property of the Owner and may be used or otherwise disposed of by the Owner without obligation to the Contractor or to any party to whom he may transfer title.

126 Control of Work

126.01 Conformity with Plans, Specifications and Special Provisions: All work performed and all materials furnished shall be in reasonably close conformity with the lines, grades, cross sections, dimensions, details, gradations, physical and chemical characteristics of materials in accordance with tolerances shown on the plans or indicated in the specifications and special provisions.

In the event the Engineer finds that the work performed or the materials used are not within reasonably close conformity with the plans, specifications and special provisions, the affected material or product shall be removed and replaced or otherwise satisfactorily corrected by and at the expense of the Contractor.

Any deviations from the plans and approved work drawings will be made only with the approval of the Engineer.

126.02 Coordination of Plans, Specifications and Special Provisions: The specifications accompanying

plans, special provisions and addendums are essential parts of the contract and a requirement occurring in one is as binding as though occurring in all. They are intended to be cooperative and to describe and provide for a complete work. In cases of disagreement, figured dimensions shall govern over scaled dimensions, plans shall govern over standard and special specifications, and special provisions shall govern over both standard and special specifications and plans.

126.03 Cooperation of Contractor: The Contractor shall have one copy of the plans and specifications available on the project at all times. He shall give the work his constant attention to facilitate the progress thereof and shall cooperate with the Engineer and his representatives in every way possible. The Superintendent shall be cooperative, responsible and competent, English speaking, authorized to receive orders and to act for the Contractor. The Superintendent will be available at all times. In the event a competent superintendent is not available, the Engineer may suspend work until one is available.

126.04 Deviation from the Plans and Specifications: No deviation from the requirements of the plans and specifications will be permitted without the express, written approval of the Engineer. The Contractor shall prepare and/or assemble a detailed description of each proposed deviation from the plans and specifications. The description of each proposed deviation shall include, but not be limited to, drawings indicating horizontal and vertical details of all structural, mechanical and electrical elements of the proposed deviation, manufacturer's detailed performance and construction data for all equipment, detailed descriptive specifications of all piping and valves and all other data, information and plans as requested by the Engineer. The copies of the description of each proposed deviation shall be submitted to the Engineer for review.

All deviations from the plans and specifications shall conform to the original defined and implied intent of the plans and specifications.

The Contractor shall be responsible for and assume all costs of all elements of approved deviations including, but not limited to design, preparation of plans, procurement of materials and equipment, construction, installation and instigation of service. If the completed improvements of each deviation do not fulfill, provide, and meet the defined and implied intent of the plans and specifications, the Contractor shall provide labor, materials and equipment as required to modify the work to the satisfaction of the Engineer.

126.05 Interpretation of the Contract Documents: The apparent silence of the specifications and plans as to any detail or the apparent omission from them of a detailed description concerning any point shall be regarded as meaning that only the best general practice is to prevail and that only first-quality material and good workmanship are to be used.

The Contractor shall take no advantage of any errors or omissions in the specifications and plans or of any discrepancies in or between them and where such errors, omissions or discrepancies occur, the Contractor will be governed by the apparent intent of the specifications and plans and by orders of the Engineer. Work performed by the Contractor as a result of an error or omission in the plans and specifications when such error or omission is not called to the attention of the Engineer shall be at the Contractor's risk.

126.06 Shop Drawings, Product Data, Samples, and Submittals: After checking and verifying all field measurements, the Contractor shall approve in writing and submit with reasonable promptness and in such sequence as to cause no delay in the work or in the work of the Owner or any separate contractor, all shop drawings, product data and samples required to be reviewed or tested by the Engineer.

By approving and submitting shop drawings, product data and samples, the Contractor represents that

he has determined and verified all materials, field measurements, and field construction criteria related thereto and that he has submittals with the requirements of the work and of the contract documents and that he is satisfied they conform to the contract documents.

Unless otherwise provided in the contract documents, the Contractor shall submit one reproducible copy and six prints of each shop drawing, four copies of product data sheets and two samples.

All required shop drawings, product data and samples shall be furnished to the Engineer for his review and any required testing before any of the work or related work is performed. Products or material ordered prior to the Engineer's review and completion of any testing will be at Contractor's risk.

The Engineer will review all shop drawings, product data and samples and conduct such tests in less than fourteen (14) calendar days after receipt.

All shop drawings and product data shall be made in such a manner that clear and legible reproductions can be made from them. Any shop drawings, product data or samples submitted for review which are, in the Engineer's opinion, carelessly prepared, erroneous, or unchecked will be returned to the Contractor for redrawing, checking and resubmitting.

Where contents of submitted literature from manufacturers includes data not pertinent to the submittal, the Contractor shall clearly indicate which portion of the contents is being submitted for the Engineer's review.

The Contractor shall direct specific attention in writing on resubmitted shop drawings, product data, or samples to revisions other than those requested by Engineer on previous submittals.

The Contractor shall direct specific attention in writing to each deviation from the contract documents and state any trades, dimensions, functions, or other aspects of the work that will be affected by the proposed change. It is understood that any deviation will be made at no additional cost to the Owner and there will be no extension of the contract time for such deviation.

The Contractor is responsible for the design of any construction changes resulting from any such deviation, for dimensions which shall be confirmed and coordinated at the job site, for fabrication processes and techniques of construction, for coordination of the work with that of all trades and for complete installation which will function as originally specified.

The Engineer will, upon completion of the review, return one copy of all shop drawings, product data, and one sample to the Contractor, and the Contractor will maintain them together with other submittals and the contract documents in good order and available to the Engineer and his representatives at the construction site.

The contract sum shall include the cost of furnishing all shop drawings, product data, and samples, and the Contractor will be allowed no extra compensation for such drawings, product data, or samples.

The review by the Engineer of any shop drawings, product data, samples or other submittals is only for conformance with the general design concept of the project and does not extend to consideration of structural integrity, safety, detailed compliance with contract requirements or any other obligation of the Contractor. Any action shown is subject to the requirements of the plans and specifications. The Contractor is responsible for confirming and correlating all dimensions, fabricating and construction techniques, coordinating his work with that of all other trades, and the satisfactory performance of his entire work in strict accordance with the contract documents. The review is undertaken solely to satisfy the Engineer's obligations to the Owner and does not relieve the Contractor from his obligation

to fully perform all contract requirements, nor shall such review give rise to any right of action or suit in favor of the Contractor or third persons against the Engineer or the Owner.

126.07 Quality of Equipment and Materials: In order to establish standards of quality, the Engineer may have referred in detailed specifications to certain products by name and catalog number. This procedure is not to be construed as eliminating from competition other products of equal or better quality by other manufacturers. The word "or approved equal" shall be considered following all such listings regardless of whether they so appear.

The Contractor shall furnish to the Engineer the complete list of proposed desired substitutions in sufficient time prior to their use to give the Engineer adequate time for his review, together with such engineering and catalog data as the Engineer may require. Failure on the part of the Contractor to supply data to the Engineer prior to ordering or using such alternate material or equipment will not relieve the Contractor of furnishing acceptable material or equipment as required by the Engineer.

The Contractor shall abide by the Engineer's judgement when proposed substitute materials or items of equipment are judged to be unacceptable and shall furnish the specified material or item of equipment in such cases. All proposals for substitutions shall be submitted in writing by the Contractor and not by individual trades or material suppliers. The Engineer will review proposed substitutions within a reasonable time after submission and no substitutions shall be used unless the substitution is accepted in writing.

Any review or acceptance of substitution does not relieve the Contractor from his obligation to fully perform all contract requirements, nor does it give rise to any right of action or suit by Contractor or third persons against Owner or Engineer.

126.08 Specifications by Standard Designation: Whenever practicable, specifications will be made herein by designating certain published "standards" of recognized organizations. Standards will be indicated by the full name of the sponsoring organization or by clearly recognized abbreviations and designation number. In all cases, it shall be understood that such references mean the designated specifications or the latest revision thereof.

126.09 Cooperation with other Contractors: The Contractor shall conduct his operations so as to interfere as little as possible with those of other contractors or subcontractors on or near the work. It is expressly understood that the Owner has the right and may award other contracts in connection with the work so long as it does not unreasonably interfere with the work under this contract.

Where one contractor's operations are within the limits or adjoin the operations of another contractor, each shall be responsible to the other for any damage, injury, loss or expense which may be suffered on account of interference of operations, neglect, or failure to finish work at the proper time or of any other cause.

126.10 Information Regarding Work: The Contractor shall furnish the Engineer every reasonable facility necessary for obtaining such information as he may desire regarding the nature and quality of materials to be used and the progress and manner of the work.

The Engineer shall be allowed access at all times to the books and records of the Contractor, and the Contractor shall furnish him all data necessary for the determination of the actual cost of all or any part of the work.

126.11 Notice to Contractors: Any written notice to the Contractor which may be required by law or by the provisions of the contract documents may be served on the Contractor or his

representative, either personally or by mailing to the address given in the contract or by leaving it at such address.

126.12 Notice by Contractors: Wherever in the contract documents the Contractor is required to notify the Engineer for any reason, it shall be understood that such notification is to be made in writing, delivered to the Engineer or his representative in person, or mailed to the office of the Engineer at the address given in the "Notice to Proceed."

126.13 Surveys: The Engineer shall furnish the Contractor with available benchmark and horizontal control data, principal lines, grades, and measurements necessary for the proper prosecution of the work unless otherwise specified in the Technical Specifications or Construction Plans. From benchmarks and horizontal control data furnished by Engineer, the Contractor shall stake out work, establish elevations, and assume responsibility for correctness of installation as to location and grade.

During the prosecution of the work, the Contractor shall make all necessary measurements to prevent misfitting and shall be responsible for the accurate construction of the work.

126.14 Inspection: The Engineer or his representatives shall be allowed access to all parts of the work at all times and shall be furnished every reasonable facility for ascertaining whether the work as performed is in accordance with the requirements and intent of the plans and specifications. The Contractor shall cut and replace with new materials at his own expense such samples as are customarily required for testing purposes. If the Engineer requests it, the Contractor shall at any time before acceptance of the work, remove or uncover such portions of the finished work as may be directed. After examination, the Contractor shall restore the work to the standard required by the specifications. Should the work thus exposed or examined prove acceptable, the uncovering or removing and the replacing of the covering or the making good of parts removed shall be at the Owner's expense. Owner will in any event retain all samples required for the inspection.

126.15 Unauthorized and Defective Work: Any defective work, whether the result of poor workmanship, use of defective materials, damage through carelessness, or any other cause found to exist during construction or after final acceptance, shall be removed immediately and replaced by work and materials which shall conform to the contract documents or shall be remedied otherwise in an acceptable manner authorized by the Engineer. These provisions shall have full effect regardless of the fact that the defective work may have been done or the defective materials used with the full knowledge of the inspector. The fact that the owner may have previously overlooked such defective work shall not constitute an acceptance of any part of it. Work done contrary to or regardless of the instructions of the Engineer, work done beyond the requirements of the contract documents or any extra or additional work done without authority will be considered as unauthorized and will not be paid for by the Owner. Work so done may be ordered removed or replaced at the Contractor's expense.

126.16 Non-Waiver: No act or omission by Owner shall constitute waiver or estoppel of Owner's right to enforce any provision of this Contract.

126.17 Remedies Cumulative: No provision hereof is in lieu of any warranty implied by law. No provision hereof is in lieu of any remedy provided by law. All warranties and remedies are cumulative, and resort to one by Owner shall not be an election over others.

126.18 Final Inspection: Unless otherwise required, the Engineer shall make final inspection of the work included in the contract within a reasonable time after written notification by the Contractor that the work is completed. If the work is approved by the Engineer after inspection, he shall advise the Contractor that the work is completed. If the work is not approved by the Engineer after inspection, he

shall advise the Contractor as to the particular defects to be remedied before final approval and recommendation for acceptance can be made to the Owner.

127 Control of Materials

127.01 Materials: Only materials conforming with the contract documents shall be used in the work. Materials which for any reason become unsuitable for use shall be rejected and not used.

127.02 Test of Materials: All tests of materials shall be made in accordance with approved methods as described and designated in the technical specifications. When tests of materials are required, such test shall be made by a testing laboratory approved by the Engineer and at the expense of the Contractor. The Contractor shall provide such facilities as may be required for collecting and forwarding samples and shall hold materials represented by the samples until tests have been made and the materials found equal to the requirements of the specifications.

In the absence of any definite specification or reference to a specification in the technical provisions or in the special provisions for the particular project involved, it shall be understood that such materials and tests shall meet the specifications and requirements of the American Society for Testing Materials. Unless otherwise specified, all tests of materials shall be made in accordance with the methods prescribed by the American Society for Testing Materials.

Upon completion of laboratory testing of materials as specified above, the results of the tests made therein shall be used as a basis for acceptance or rejection in accordance with the specifications for the particular material. Contractor will retain all materials tested.

127.03 Storage of Materials: Materials shall be stored in such manner as to insure the preservation of their quality and fitness for use. Suitable sheds, platforms, and covers shall be provided when necessary to protect materials and the materials shall be stored in such manner as to facilitate inspection.

127.04 Defective Materials: All materials not conforming to the requirements of the contract documents shall be considered as defective. Upon failure on the part of the Contractor to remove, repair, or replace defective material when so ordered by the Engineer, the Owner shall have authority to remove, repair, or replace such defective material and to deduct all costs so incurred from any monies due or to become due the Contractor. Defective material not permitted for use shall be immediately removed from the site or disposed of as directed by the Engineer.

127.05 Ordering Materials: The Contractor is cautioned against placing orders for full quantities of materials until the work has advanced to a state permitting the determination of the exact quantities required. Estimates of quantities of materials furnished by the Engineer are understood to be approximate only and unless otherwise specified, the Owner will in no way be responsible for any materials in excess of actual requirements. The Owner will not be responsible for any increased costs or extra expense that the Contractor may have on account of materials or work not being ordered at some earlier date.

127.06 Materials and Equipment Furnished by Owner: Only materials and equipment specifically indicated in the contract documents shall be furnished by the Owner. The fact that the Owner is to furnish materials or equipment is conclusive evidence of its acceptability for the purpose intended and the Contractor may continue to use it until otherwise directed. Unless otherwise noted or specifically stated, materials or equipment furnished by the Owner which are not of local origin are considered to be f.o.b. the nearest freight station. The Contractor shall be prepared to unload and properly protect all such materials and equipment from damage or loss. Contractor will examine the materials or

equipment immediately after delivery or upon commencement of Contractor's performance, whichever is later, and advise Owner of any defects. Failure of the Contractor to so examine or advise Owner of any defects will relieve Owner of any responsibility for defects. The Contractor shall be responsible for material or equipment loss or damage after receipt at the point of delivery.

127.07 Manufacturer Directions: Manufactured articles, material, and equipment shall be applied, installed, connected, erected, used, cleaned, and conditioned as directed by the manufacturer and must be approved by the Engineer as required by the technical provisions.

128 Prosecution and Progress

128.01 Prosecution of Work: From the time of commencement of the work to the time of completion, the work shall be prosecuted as vigorously and as continuously as possible and always in accordance with a schedule which will insure completion within the specified time limit. There shall be no voluntary shutdown or slowing of operations without prior approval of the Engineer.

If it appears to the Engineer that the rate of progress being made is not such as will insure the completion of the work within the specified time limit, it shall be within the authority of Owner upon notification by Engineer to require Contractor to provide additional equipment and men to take such other steps as may be necessary to insure completion as specified.

128.02 Subletting or Assignment of Contract: The Contractor agrees not to assign, transfer, convey or otherwise dispose of the contract or his right, title, or interest, therein either in whole or in part, or his power to execute such contract to any other person, firm, or corporation, or to subcontract any part of the work without the previous consent in writing of the Owner.

It is understood and agreed that if any part of the work to be done under the contract is subcontracted, the subcontracting shall be done in accordance with, and the Contractor shall be bound by, the following provisions.

All subcontracts shall be in writing and shall provide that all work to be performed thereunder shall be conducted and performed in accordance with the terms of the prime contract. Upon request, certified copies of any or all subcontracts shall be furnished to the Engineer.

In case the work being done or to be done under any subcontract is not conducted in a manner satisfactory to the Engineer, Contractor shall upon written notice to this effect cause such subcontractor to be terminated and the subcontractor and his employees to be removed from the work. Any loss or damage that may be suffered on account of such action shall be borne by the Contractor.

The Contractor agrees that he is as fully responsible to Owner for the acts and omissions of his subcontractors and of persons either directly or indirectly employed by them as he is for acts and omissions of his own employees. Nothing contained in the contract documents shall create any contractual relation between any subcontractor and the Owner.

Insofar as is practical, the Contractor shall make payment for subcontract work in the same units and on the same basis of measurement as apply under the prime contract. The Owner will not be responsible for loss resulting from Contractor's failure to do so. In making payments to subcontractor, Contractor shall protect himself against possibility of overpayment, and he shall assume such losses as may result from overpayment.

The subcontracting of any or all of the work to be done will in no way relieve Contractor of any part of

his responsibility under the contract. The Contractor shall have on the work at all times a qualified and capable superintendent whose duty shall be to direct and coordinate the operations of the subcontractors and to make certain orders of the Engineer are compiled with. Failure of Contractor to control the work of the subcontractors to the satisfaction of the Engineer will result in the issuance of orders requiring the cancellation of the subcontractors and removal of the subcontractors from the work.

128.03 Limitations of Operation: Operations of the various units or portions of the work shall begin at the times and locations approved by the Engineer and shall be prosecuted between such limits as he may establish. No part of the work shall be undertaken without his approval, and no work shall be carried on contrary to his instructions.

In case of a dispute arising between two or more Contractors engaged on the same work as to the respective rights of each under the specifications, the Engineer shall determine the matters at issue and shall define the respective rights of the various interests involved in order to secure the completion of all parts of the work in general harmony and with satisfactory results, and his decision shall be final and binding on all parties concerned.

128.04 Utilities: The Contractor, at his expense, shall provide electricity, power, heat, oil, gas and other utilities necessary to perform the work, unless otherwise stated by the Engineer.

128.05 Use of Premises: The Contractor shall confine his apparatus, the storage of materials and the operations of his workmen to limits indicated by law, ordinances, permits or directions of the Engineer and shall not unreasonably encumber the premises with his materials.

The Contractor shall not load or permit any part of a structure which he is constructing under this contract to be loaded with a weight that will endanger its safety, and he shall not use any such structure for any purpose except as provided in the contract documents.

128.06 Protection of Work and Property: The Contractor shall continuously maintain adequate protection of all his work from damage and shall protect the Owner's property from injury or loss arising in connection with this contract. He shall adequately protect adjacent property as provided by law and these contract documents.

The Contractor shall erect and properly maintain at all times, as required by the conditions and progress of the work, all necessary safeguards for the protection of workmen and the public and shall post danger signs warning against the hazards created by such features of construction as protruding nails, hoists, well holes, elevator hatchways, scaffolding, window openings, stairways and falling materials; and he shall designate a responsible member of his organization whose duty shall be the prevention of accidents. The name and position of the person so designated shall be reported to the Engineer by the Contractor.

In an emergency affecting the safety of life or of the work or of adjoining property, the Contractor, without special instruction or authorization from the Engineer or Owner, is hereby permitted to act, at his discretion, to prevent such threatened loss or injury and he shall so act without appeal if so instructed or authorized. Any compensation claimed by Contractor on account of emergency work shall be determined by negotiation or as a claim for extra compensation.

128.07 Workmen and Equipment: The Contractor shall employ only competent and efficient laborers, mechanics, or artisans, and whenever in the opinion of the Engineer any employee is or becomes unsatisfactory for the work assigned to the employee the Contractor shall upon request of the Engineer remove him from the work and not employ him again upon it.

The methods, equipment and appliances used and the quantity and quality of the personnel employed

on the work shall be such as will produce a satisfactory quality of work and shall be adequate to complete the contract within the time limit specified.

128.08 Time of Completion of Work: At the Engineers request, Contractor shall, before commencing any work, prepare and furnish an estimated progress schedule for the entire project.

128.09 Termination of Contract by Owner: If the Contractor should be adjudged bankrupt or if he should make a general assignment for the benefit of his creditors or if a receiver should be appointed on account of his insolvency or if he should persistently or repeatedly refuse or should fail to supply enough properly skilled workmen or proper materials for the efficient prosecution of the project or if he should fail to make prompt payment to subcontractors or for material or persistently disregard the laws, ordinances, or the instructions of the Engineer, or otherwise fail to comply with any provision of the contract, then the Owner, upon the certificate of the Engineer that, in his opinion, sufficient cause exists to justify such action, may without prejudice to any other right or remedy and after giving the Contractor and his surety seven (7) days written notice, terminate the Contractor and take possession of the premises, or any part thereof, and of all materials, tools, equipment, machinery, and appliances thereon and finish the work, or any part thereof, by whatever method it may deem expedient.

Neither by the taking over of all or any portion of the work nor by its completion in accordance with the terms of this provision shall the Owner forfeit its right to recover damages from Contractor or from Contractor's surety for failure to complete or for delay in such completion. Should the expense incurred by Owner in taking over and completing any or all of the work, including without limitation any additional administrative or engineering expense, be less than the sum that would have become payable under this agreement if the work had been completed by the Contractor, then Contractor shall be entitled to the difference with no interest, and should such expense exceed the said sum, then Contractor and Contractor's surety shall be liable to the Owner for the amount of such excess. Upon the taking over of the work by Owner as herein provided for, no further payment will be made to Contractor until the work is completed, and any monies due or that may become due contractor under this agreement may be withheld and applied by Owner to payments for labor, materials, supplies and equipment used in the prosecution of the work, and/or for the payment or rental charges on equipment used therein, or to the payment of any excess cost to Owner incurred in completing the work. The election by owner to take over any of the work shall not constitute Owner's sole remedy, but rather Owner reserves all other remedies at law or in equity upon default or breach of contract.

The Contractor and its surety shall likewise be liable for any expenses incurred by Owner in assisting Contractor to complete the contract.

128.10 Right of the Owner to Do Work: If Contractor should neglect to prosecute the work properly or fail to perform any provision of the contract, Owner after three (3) days written notice to Contractor may without prejudice to any other remedy it may have, make good such deficiencies and deduct the cost thereof from the payment then or thereafter due Contractor.

128.11 Contractor's Right to Stop Work or Terminate Contract: If Engineer should fail to issue any certification for a legitimate payment within ten (10) days after it is due or if Owner should fail to pay Contractor within forty-five (45) days of its presentation any sum certified by the Engineer and approved by Owner, Contractor may upon seven (7) days written notice to Owner and Engineer stop work or terminate this contract and recover from Owner payment for all work executed and any loss sustained upon any parts or materials and reasonable profit.

128.12 Owner's Right to Terminate Contract: The Owner reserves the right to terminate this

contract for any such reason in its discretion considered to be in the public interest or if it is suspended by an order of any public agency. In the event of such termination, the amount to be paid to Contractor shall be determined by contract price in the case of any fully completed separate item or portion of the work for which there is a separate or unit price and, in respect to any other work, a percentage of the contract price equal to the percentage of the work completed as determined by Engineer.

128.13 Venue and Attorney's Fee: In the event there is any dispute between the parties arising out of this agreement, venue shall be determined in Kerr County, Texas.

128.14 Temporary Suspension of Work: The Engineer will have authority to suspend the work, wholly or in part, for such period as he may consider necessary, and the "Time Change" will be suspended during such period. Notice of such suspension with the reasons there will be given the Contractor in writing.

129 Measurement and Payment

129.01 Methods of Measurement and Computation: All work completed under the contract shall be measured by Engineer according to United States standard measures.

The methods of measurement and computation to be used in the determination of the quantities of materials furnished and the quantities of work performed under the contract shall be the methods outlined in the contract documents or by those methods generally recognized as good engineering practice which in the opinion of Engineer give the greatest accuracy consistent with practicable application.

129.02 Scope of Payment: The Contractor shall accept the compensation as herein provided in full payment for furnishing all materials, labor, tools and equipment and for performing all work under the contract, and for all loss, damage, or liability arising from any unforeseen difficulties which may be encountered during the prosecution of the work until its final acceptance by Owner.

129.03 Payment Retainage: Five Percent (5%) retainage will be withheld from each payment request. All retainage will be paid at completion and acceptance of the project.

129.04 Payment for Materials on Omitted Items: Acceptable materials ordered by Contractor or delivered on the work prior to the date of cancellation or suspension of the work by order of Owner may be purchased from the Contractor by Owner at actual cost and thereupon become the property of the Owner.

129.05 Progress Payments: At a regular period each month, Engineer shall make an estimate of the amount of work completed and of the value of such completed work based on a request submitted by the Contractor. He shall also make an estimate of the amount and value of acceptable material to be incorporated in the completed work which has been delivered and properly stored at or near the site or at an acceptable location to the Engineer. With these estimates as a base, a progress payment shall be made to Contractor.

The Engineer may withhold, or on account of subsequently discovered evidence, nullify the whole or part of any payment certificate to such extent as may be deemed necessary to protect Owner from loss on account of:

a. Defective work not remedied.

b. Claims filed or reasonable evidence indicating probable filing of claims.

c. Failure of Contractor to make payments properly to subcontractors or for materials or labor.

d. A reasonable doubt in the opinion of the Engineer that the contract can be completed for the balance then unpaid.

e. Damage to another Contractor.

f. Reasonable indication that the work will not be completed within contract time.

g. Unsatisfactory prosecution of the work by Contractor.

h. Failure of Contractor to comply with any other order of Engineer made in accordance with the contract documents.

In the event the amount due Contractor under estimate for any given month is less than five hundred ($500.00), no payment need be made by Owner for that month.

Progress payments shall not be construed as an acceptance or approval of any part of the work covered thereby, and shall in no manner relieve Contractor of responsibility for defective workmanship or material.

The estimates upon which progress payments are based are not represented to be accurate estimates, and all quantities shown therein are subject to correction in the final estimate. If Contractor uses such estimates as a basis for making payments to subcontractors, he does so at his own risk and he shall bear all loss that may result.

The making of progress payments under the contract either before or after the date set for completion of the work shall not operate to invalidate any of the provisions of the contract or to release the surety.

At the time payment is made for any materials which have been stored at or near the site, the ownership of such materials shall be vested in Owner, and they shall remain in storage until used on the work. Such materials shall not be used on other work. The risk of damage or loss of materials due to disappearances, theft, casualty, or other, shall be upon the Contractor.

129.06 Advances on Materials: For materials delivered and held in storage at the site with the prior approval of Engineer (or near the site of the work if approved by Engineer), allowances may be made in the progress payments to Contractor. No allowance shall be made upon fuels, supplies, form lumber, framework or other materials, or on temporary structures of any kind which will not become an integral part of the finished construction.

As a basis for determining the amount of advances on materials, the Contractor shall make available to Engineer such invoices, freight bills, and other information concerning the materials in question as Engineer may request. Should there be reasonable evidence in the opinion of Engineer that Contractor is not making prompt payments for material on hand, allowances for material on hand will be omitted from progress payments.

129.07 Allowances for Materials Left on Hand: Materials not required by the unit or lump sum

contract but delivered to work at the order of Engineer but left unused due to changes in plans, will, if the materials are not practicable returnable for credit, be purchased from Contractor by Owner at actual cost (without percentage allowance and profit) and shall thereupon become the property of Owner.

129.08 Final Estimate: As soon as the complete project has passed inspection by the Engineer, he will so notify Owner and Contractor in writing. The Engineer will then prepare the final estimate and recommend acceptance. Upon acceptance of the completed project and the final estimate by Owner, Contractor will be paid an amount such as will make the total payments equal to the final total contract price less the retained percentage. This payment will be made at the same time in the month and in the same manner as provided for monthly estimates.

The Contractor will be entitled to payment of the retainage thirty (30) days after acceptance of the work. The Owner may retain such sums as necessary for all incomplete or defective work or unsettled claims of owner or third parties against Contractor. As a condition of payment, Owner may require sufficient evidence that all indebtedness of Contractor connected with the work has been paid and may require releases on waivers or liens in a form satisfactory to Owner from all parties performing the work.

129.09 Guarantee and Correction of Work After Final Payment: Neither the final certificate nor payment nor any provision in the contract documents shall relieve the Contractor of responsibility for faulty materials or workmanship.

129.10 Payments: Payments under the contract shall be paid by check by Owner unless otherwise provided by the contract documents.

129.11 Certificate of Compliance: No final payment of the retained percentage shall be made until Contractor files with Owner following acceptance of the work a Certification of Compliance in form substantially as follows:

> I (we) hereby certify that all work has been performed and materials supplied in accordance with the plans, specifications, and contract documents for the above work and that:
>
> a. There have been no unauthorized substitutions of subcontractors, and no subcontracts been entered into without the names of the subcontractors having been submitted to the Engineer prior to the start of such subcontracted work.
> b. No subcontract was assigned or transferred or performed by any subcontractor other than the original subcontractor without prior notice having been submitted to Engineer together with the names of all subcontractors.
> c. All claims for material and labor and other service performed in connection with these specifications have been paid.

129.12 Savings: To the best knowledge and belief of the parties, this agreement contains no provision that is contrary to any law or to any ruling or regulation of a federal or state agency. Should any provision of this agreement at any time be in conflict with any such law, ruling or regulation, then such provision shall continue in effect only to the extent that it remains valid. In

the event any provision of this agreement become thus inoperative, the remaining provisions of this agreement shall nevertheless remain in full force and effect.

130 Technical Specifications

131 General Information

131.01 References: TECHNICAL SPECIFICATIONS are of the abbreviated, simplified, or streamlined type and include incomplete sentences. The omission of words or phrases such as "Contractor shall", "in conformity therewith", "shall be", "as noted on PLANS", "according to PLANS", "a", "an", "the", and "all", are intentional. Omitted words or phrases shall be supplied by inference in same matter as they are when a "note" occurs on PLANS.

The TECHNICAL SPECIFICATIONS are interpreted to require that Contractor shall provide all items, articles, materials, operation or methods listed, mentioned, or scheduled either on PLANS or specified herein, or both, including all labor, materials, equipment, and incidentals necessary and required for their completion.

Whenever the words "approved", "satisfactory", "designated", "submitted", "observed", or similar words or phrases are used, it shall be assumed that the word "Engineer" follows the verb as the object of the clause, such as "approved by Engineer".

All references to standard TECHNICAL SPECIFICATIONS or manufacturer's installation directions shall mean the latest edition thereof.

Reference to technical society, organization, or body is made in TECHNICAL SPECIFICATIONS in accordance with following abbreviations:

AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
ANSI	American National Standards Institute (Formerly ASA)
API	American Petroleum Institute
ASTM	American Society for Testing and Materials
AWS	American Welding Society
AWWA	American Waterworks Association
FS	Federal Specifications
IEEE	Institute of Electrical and Electronic Engineers
IPCEA	Insulated Power Cable Engineers Association
NEC	National Electric Code
NEMA	National Electrical Manufacturers Association
NSF	National Sanitation Foundation
PCA	Portland Cement Association
PCI	Prestressed Concrete Institute
PTI	Post-Tensioning Institute
SSPC	Steel Structures Painting Council
TCEQ	Texas Commission on Environmental Quality
UL	Underwriters' Laboratories

Some TECHNICAL SPECIFICATION items cover construction requirements and materials in comprehensive manner, and only pertinent portions of these items apply.

131.02 Lands for Work: Owner provides, as indicated on PLANS, land upon which work is to be done, rights-of-way for access to same, and such other lands which are designated for use of Contractor. Contractor provides, at his expense and without liability of Owner, any additional land and access thereto that may be required for his construction operations, temporary construction facilities, or for storage of materials.

131.03 Lines and Grades: From bench marks and horizontal control references established by Engineer, the Contractor shall stake out work, establish elevations, and assume responsibility for correctness of installation as to location and grade.

Where provided for in contract or construction plans, Engineer will set stakes one time only. Contractor must satisfy himself, before commencing work, as to meaning and correctness of all stakes or marks, and no claim will be entertained for or on account of any alleged inaccuracies, or for alterations subsequently rendered necessary on account of such alleged inaccuracies, unless Contractor notifies Engineer in writing before commencing to work thereon.

Contractor is to protect stakes and pay all costs involved in any re-staking.

131.04 Utility Services for Construction: Contractor will provide all utilities necessary for construction at no additional cost to Owner unless otherwise specified in preceding Special Provision.

131.05 Materials Testing: Contractor provides for tests of materials unless otherwise specified. Notify Engineer prior to manufacture or fabrication of items so that observation may be accomplished and furnish field samples of materials for testing.

131.06 Variations Due to Equipment: Foundations, structural supports, electrical work, and piping shown on PLANS for items of equipment may be changed if necessary to accommodate equipment furnished. Every effort has been made to design foundations, structural supports, electrical work, and piping so that no changes will be necessary; however, exact dimensions and size of subject foundations and structural supports and exact electrical and piping installations cannot be finally determined until various items of equipment are purchased and manufacturer's certified shop drawings are secured. Make required changes, after prior consultation with Engineer, at no cost to Owner.

If substitute items of equipment are authorized which vary materially from those shown on PLANS, prepare equipment data and detailed drawings covering necessary modifications and submit to Engineer for approval Make drawings same size as Contract PLANS and of comparable quality. Make payment of charges resulting from modifications, including engineering charges for checking modifications.

131.07 Alternate Designs: If alternate design features are proposed for convenience of Contractor, submit design calculations an detail drawings covering proposed changes and related modifications of Contract PLANS to Engineer for review. Make drawings same size as Contract PLANS and of comparable quality. Make payment of charges resulting from modifications, including engineering charges for checking such designs.

131.08 Shop Drawings: Furnish Engineer six copies of shop and erection drawings, schedules, and data sheets covering items of construction and equipment listed below:

1. Structural and miscellaneous steel and steel tanks.

2. Architectural products.

3. Reinforcing steel.

4. Prestressed reinforced concrete members.

5. Fiberglass wet wells for lift stations, etc.

6. Mechanical equipment, including valves and sluice gates.

7. Electrical equipment, including instruments.

8. Special items, as directed.

Contractor will check and approve shop drawings for compliance with requirements of Contract and will so certify by stamp on each drawing prior to submittal to Engineer. Any drawings submitted without Contractor's stamp of approval will not be considered and will be returned to him for proper submission.

Engineer will pass promptly upon drawings submitted, noting necessary corrections or revisions. If Engineer rejects drawings, resubmit corrected drawings until drawings are acceptable to Engineer as being in conformance with design concept of project and for compliance with information given in the Contract Documents. Such procedure shall not be considered cause for delay. Acceptance of drawings by Engineer does not relieve Contractor of any requirements of terms of Contract.

131.09 Operation and Maintenance Manuals: Operation and maintenance manuals are to be provided where required by Specification Item.

Contractor to be responsible for obtaining installation, operation, and maintenance manuals from manufacturers and suppliers for equipment furnished under the contract. Submit three copies of each complete manual to the Engineer within 90 days after approval of shop drawings, product data, and samples, and not later than the date of shipment of each item of equipment to the project site or storage location.

Operations and maintenance manuals specified hereinafter are in addition to any operation, maintenance, or installation instructions required by the Contractor to install, test, and start up equipment.

Each manual to be bound in a folder and labeled to identify the contents and project to which it applies.

The manual to contain the following:

1. An 8 1/2-inch x 11-inch typewritten sheet listing the manufacturer's identification, including order number, model, and serial number and location of parts and service centers.

2. A separate 8 1/2-inch x 11-inch typewritten list of recommended stock of parts, including part number and quantity.

3. Complete replacement parts list.

4. Performance data and rating tables.

5. Specific instructions for installation, operation, adjustment, and maintenance.

131.10 Cost Breakdown: Within 15 days after execution of Contract, submit, in acceptable form, schedule showing subdivision of Contract into various items of permanent construction, stating quantities and prices, as basis for computing value to Owner of permanent usable parts of facility to be paid for on monthly estimates. No payment will be made to Contractor until such schedule has been submitted and approved.

131.11 Progress Schedule: Within 15 days after execution of Contract, submit in acceptable form, anticipated progress schedule covering work to be performed.

131.12 Guarantees: Guarantee work, including equipment installed, to be free from defects due to faulty workmanship or materials for period of one year from date of issue of Certificate of Acceptance. Upon notice from Owner, repair defects in all construction which develop during specified period at no cost to Owner. Neither final acceptance nor final payment nor any provision in Contract Documents relieves Contractor of above guarantee. Notice to observed defects will be given with reasonable promptness. Failure to repair or replace defect upon notice entitles Owner to repair or replace, same and recover reasonable cost thereof from Contractor and/or his Surety.

131.13 Site Maintenance and Clean-up: Maintain sites of work during construction to keep them reasonably neat and free of trash, rubbish, and other debris. In clean-up operations, remove from sites of work and from public and private property, temporary structures, rubbish, and waste materials. Dispose of excavated materials beyond that needed to bring site to elevations shown. During final clean-up, any road constructed by Contractor for access to construction site to be leveled and ruts filled so that natural surface drainage is not hindered.

131.14 Materials and Equipment: Incorporate into work only new materials and equipment of domestic manufacture unless otherwise designate. Store these materials and equipment in manner to protect them from damages. Manner of protection subject to specific approval of Engineer. Pipe, fittings, equipment, and other serviceable materials found on site of work, or dismantled by reason of construction, remain property of Owner. Remove and deliver materials to Owner at designated points. Pay, at prevailing market price, for usable materials that are damaged through negligence.

131.15 Subsurface Exploration: It is not represented that PLANS show all existing storm sewer, sanitary sewer, water, gas, telephone, and electrical facilities, and other underground structures. Determine location of these installations in way of construction by referring to available records, consulting appropriate municipal departments and utility owners, and by making necessary exploration and excavations.

131.16 Deviations Occasioned by Utility Structures: Whenever existing utilities, not indicated on PLANS, present obstructions to grade and alignment of pipe, immediately notify Engineer, who without delay, will determine whenever existing improvements are to be relocated, or grade and alignment of pipe changed. Where necessary to move services, poles, guy wires, pipelines, or

other obstructions, make arrangements with owners of utilities. Owner will not be liable for damages on account of delays due to changes made by owners to privately owned utilities which hinder progress of work.

131.17 Protection and Replacement of Property: Where necessary to take down fences, signs, or other obstructions, replace in their original condition and restore damaged property or make satisfactory restitution, at no cost to Owner.

131.18 Interruption of Utility Services: Operate no valve or other control on existing systems. Exercise care in performing work so as not to interrupt service. Locate and uncover existing utilities ahead of heavy excavation equipment. At house connections, either lift trenching machine over lines or cut and reconnect with minimum interruption of service, as approved.

131.19 Protective Measures: Where construction creates hazard to traffic or public safety, furnish and maintain suitable barricades, warning signs, and lights. Remove same when no longer necessary.

131.20 Use of Streets:

1. Remove, as soon as practicable, accumulated rubbish and open each block for public use. Use of any portion of street shall not constitute acceptance of any portion of work. Backfill and shape trenches across street intersections or driveways for safe traffic at night or, where permitted, span open trenches with wooden mats or bridges to permit traffic flow. When driveways are cut, immediate placement of mats for ingress or egress of vehicles may be directed if undue hardship to property owner would otherwise result.

2. Except where approved otherwise, do not hinder or inconvenience travel on streets or intersecting alleys for more than two blocks at any one time. Whenever street is closed, place properly worded sign announcing fact to public, with proper barricades at nearest street corners, on both sides of obstruction. Leave no street or driveway blocked at night.

3. When street is closed, notify Fire Department, and Police Department.

4. Do not block ditches, inlets, fire hydrants, etc., and, where necessary, provide temporary drainage.

140 General Provisions

141 Definitions

"Act of God" - An earthquake, flood, cyclone, or other cataclysmic phenomenon of nature.

"Addendum" - Any written or graphic modification or interpretations of the contract document issued by the Engineer.

"Bid" - The signed, written bid of the bidder on the form furnished, indicating total price for the work in completed form as per the plans and specifications.

"Bid Bond" - The form of security approved by the Owner and furnished by the Contractor, guaranteeing that he will enter into a contract in accordance with the contract documents if his bid is accepted.

"Bidder" - Any individual, firm, or corporation formally submitting a proposal for the work contemplated or any portion thereof, acting directly or through an authorized representative.

"Contract Sum" - The total amount payable to the Contractor for the work, which shall include sales, use, and other consumer taxes related to the work.

"Contractor" - The individual, firm, or corporation undertaking the execution of the work under the terms of the contract and acting directly through his agents or employees.

"Engineer" - The City Engineer for the City of Kerrville, Texas or his designated representative.

"Notice to Proceed" - The written notice given by the Owner to the Contractor fixing the date on which Contractor shall commence to perform his obligation under the contract documents.

"Owner" - The City of Kerrville, Texas.

"Payment Bond" - The form of security approved by the Owner and furnished by the Contractor and his surety guaranteeing payment of all labor, material, equipment, and all other obligations arising out of the work.

"Performance Bond" - The form of security approved by the Owner and furnished by the Contractor and his surety guaranteeing the complete and faithful performance of all of the obligations and conditions placed upon the Contractor by the contract.

"Plans" -The maps and drawings together with any supplements furnished by the Engineer.

Product Data" - Complete catalog data for the manufactured items of equipment and all component parts, including specific performance data, material description and source, rating, capacity, working pressure, material gauge or thickness, brand name, catalog numbers, and other necessary information.

"Right-of-Way" - The area (either temporary or permanent) provided by the Owner for use in constructing the work covered by the contract, including the appurtenances thereto.

"Shop Drawings" - All diagrams, drawings, illustrations, brochures, schedules, and all other data submittals required by the contract to be furnished by the Contractor illustrating fabrication, installation, dimensions, and other aspects of the work.

"Specifications" - The directions, requirements, explanations, terms and provisions pertaining to the various features of the work to be done, the manner and method of performance, and the manner and method of measurement and payment (Specifications include such directions, requirements, and explanations as appear on the plans).

"Subcontractor" - Any individual, firm, or corporation having a contract with the Contractor or with any other subcontractor for the performance of a part of the work.

"Substantial Completion" - The date when the work or specified part thereof it sufficiently completed in accordance with the contract so that the project or a specified part can be used for the purposes for which it was intended.

"Work" - The furnishing of all labor, materials, equipment, and other incidentals necessary or convenient to the successful completion of the project or the portion of the project involved and the carrying out of all the duties and obligations imposed by the contract.

"Written Notice" - A written communication delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended or delivered or sent by mail to the last business address known to the one who gave the notice. (It shall be the duty of each party to advise the other parties to the contract as to any change in business address until completion of the contract.)

142 Bonds

The Contractor shall within ten (10) days from the date Owner signs the Notice of Award furnish to the Owner and maintain in force during the continuance of the work a performance and a labor and material payment bond satisfactory to the Owner and with such surety or sureties as the Owner may approve. The bonds shall be in the full amount of the contract price. If the bonds are not so furnished within such ten (10) days, the contract may be immediately terminated by the Owner without any notice to the Contractor. No work may commence until the bonds have been approved by the Owner. The bonds shall be executed by a surety company authorized to do business within the State, shall be subject to the approval of the attorney of the Owner, and shall remain in effect during the period of Contractor's guarantee.

If the Contract amount should be less than Twenty-Five Thousand ($25,000.00) Dollars, the Contractor shall have the option of providing Performance and Payment Bonds as required or payment for the work performed shall be in accordance with these specifications. Final Estimate, once the work has been accepted and approved by the Owner.

150 Legal Relations and Responsibility to the Public

151 Responsibilities

151.01 General: Contractor shall, at his own expense, comply with all applicable federal, state, and local laws, regulations, and standards including without limitation those governing labor, safety, health, and sanitation.

151.02 Permits and Licenses: The Contractor shall produce all permits and licenses and give all notices necessary and incident to the due and lawful prosecution of the work. The City of Kerrville will waive all permit and connection fees.

151.03 Public Safety and Convenience: The Contractor shall be solely and completely responsible for conditions of the job site, including safety of all persons and property during performance of the work. This requirement shall apply continuously and not be limited to normal working hours. Any review by the Engineer of the Contractor's performance does not, and is not intended to, include review of the adequacy of the Contractor's safety measures in, on or near the construction site.

The Contractor shall at all times so conduct his work as to insure the least possible obstruction to traffic. The convenience of the general public and the protection of persons and property are of prime importance and shall be provided for by the Contractor in an adequate and satisfactory manner.

The Contractor shall conduct the work so as to cause a minimum of inconvenience to traffic at intersections and connecting streets and to persons operating commercial enterprises or residing along the route of work. Entrances to residences, garages, service stations, business places and driveways of all kinds shall not be blocked for more than a few hours, if at all. Satisfactory means of ingress and

egress for persons residing or transacting business along the route of the work shall be maintained all times. The Contractor shall not work before 7:00 a.m. or after 6:00 p.m. without written permission of the Engineer.

Adequate sanitary conveniences for the use of persons employed on the work properly secluded from public observation shall be constructed and maintained by the Contractor in such a manner and at such points as shall be approved by the Engineer. These conveniences shall be maintained at all times without nuisance and their use shall be enforced. Upon completion of the work, they shall be removed form the premises, leaving all clean and free from nuisance.

151.04 Barricades, Warning Signs and Flagmen: The Contractor shall at his expense and without further or other order provide, erect and maintain at all times during the progress or temporary suspension of the work suitable barricades, fences, signs or other adequate warnings or protection, and shall provide, keep and maintain such danger lights, signals, and flagmen as may be necessary to insure the safety of the public as well as those engaged in connection with the work. All barricades and obstructions shall be protected at night by signal lights which shall be suitably distributed across the roadway and which shall be kept burning from sunset to sunrise. The Contractor shall provide all barricades and the placement of all barricades shall meet the requirements as provided within Part VI, Texas Manual on Uniform Traffic Control Device for Streets and Highways.

Failure of the Engineer to notify the Contractor to maintain barriers, lights, signals, or flagmen shall not relieve the Contractor from this responsibility. The Contractor will be required, at the request of the Engineer, to produce a Traffic Control plan and submit this to the City Engineer for approval.

All traffic control devices and procedures used by the Contractor in controlling, directing, and safeguarding traffic shall conform to the requirements of the "Texas Manual on Uniform Traffic Control Devices".

The Contractor's responsibility for the safeguarding of traffic as specified above shall cease when the work included in the contract is completed and accepted by the Owner.

151.05 Fences: By the construction of temporary fences or by other adequate means, the Contractor shall restrain stock from leaving the lands wherein they are confined, or from trespassing which would be made possible, or which might result from, the removal or destruction of existing fences or the carrying out of any part of the work under the contract. The Contractor shall be responsible for all loss, injury or damage that may result from his failure to restrain stock as above provided. The expense for erecting and maintaining temporary fences and for otherwise providing for the restraint of stock shall be borne by the Contractor.

151.06 Safeguarding of Excavations: The Contractor shall provide such safeguards and protections around and in the vicinity of excavations as may be necessary to prevent and avoid the occurrence of damage, loss, injury and death to property and persons because of such excavations. Liability for such damage, loss, injury or death shall rest with the Contractor.

151.07 Use of Explosives: In the use and storage of explosives, the Contractor shall use every precaution to prevent injury to persons and damage to property. Secure storage places shall be provided and all such places shall be clearly marked with warning signs. Only persons experienced in the handling of explosives shall be used on the project. No blasting shall take place until a warning has been sounded and all persons within the radius of danger removed. In the handling and storage of explosives, the Contractor must comply with all Federal, State and local laws, and the Owner and Engineer will in no way be responsible for damages to property or injury to persons resulting from explosions.

When explosives are used, particularly in proximity to buildings or other structures, care shall be taken to protect the surroundings from injury by explosion, resultant concussion or by flying rocks or debris. The quantities of explosives and manner of their use shall be such that adjacent property will not be damaged. In case the vicinity of the work is accessible to the general public, the Contractor shall, before any explosives are used, post men about the work in various directions to warn all persons of the danger existing and to prevent them from approaching more closely than safety will permit.

151.08 Trespass: The Contractor will be solely responsible for any trespass upon adjacent property or injury thereto resulting from or in connection with his operations. He will be liable for any claims that may be made on account of trespass or the deposit of debris of any kind upon private property.

151.09 Protection of Property and Persons: In the performance of the work to be done under the contract, the Contractor shall use every reasonable and practical means to avoid damage to property, injury to persons and loss, expense, inconvenience and delay to property owner, users of streets or highways and others. He shall provide protective devices and flagmen where ever and when ever needed in affording this protection and in the performance of the work, and shall use no means or methods which will unnecessarily endanger either persons or property.

At points where the Contractor's operations are adjacent to properties of railway, telegraph, telephone, water, gas, or other pipeline or power companies, or are adjacent to other property, work shall not be commenced until all arrangements necessary for the protection of the interests of the Owner as well as any interest that a third party may have therein, have been made.

All utility companies shall be advised by the Contractor of the work proposed under this Contract and of the necessary adjustments to their respective installations. The Contractor shall communicate with all utility companies at least three (3) days in advance before commencing any work in areas where utilities are located.

The Contractor shall be on the alert for any additional utilities which he may encounter in the course of the operations. If additional utilities are discovered, the Contractor shall immediately take steps to protect the utility and notify the Engineer and the utility owner.

In case of damage to any utilities by the Contractor, either above or below the ground, the Contractor shall restore such utilities to a condition equal to that existing before the damage was done. Any and all costs incurred for such restoration shall be borne entirely by the Contractor.

The Contractor shall take into consideration the adjustments of installations by public utilities in areas within the limits of the contract in preparing his proposal. No additional compensation will be allowed for work interruptions, changes in handling, excavation, drainage and paving, changes in types of equipment used, etc. caused by others performing work within the limits of the contract.

151.10 Restoration of Damaged Property: All damage and injury to property that may be caused by or that may result from the carrying out of the work to be done under the subcontractors, or his employees, shall promptly be made good by the Contractor either by the repairing, rebuilding, or replacing of the property damaged or in some other manner satisfactory to the Owner of such property. In case of failure on the part of the Contractor to promptly and satisfactorily make good damage or injury, the Owner may without notice to the Contractor proceed to repair, rebuild, or replace such property as may be deemed necessary, and the cost thereof will be deducted from any monies due or which may become due the Contractor under the contract.

In applying the provisions above stated, the repairing, rebuilding or replacing of damaged property shall be understood to include the providing of any temporary facilities that may be needed to maintain normal service until the required repairing, rebuilding or replacing is accomplished.

151.11 Contractor's Responsibility for Work: Until final acceptance of the contract, the Contractor will be responsible for any injury or damage to the work or any part thereof or to materials, equipment, or supplies due to any cause whatsoever, and he shall make good at his own expense all such injuries or damages.

151.12 No Personal Liability of Engineer: The exercise of all responsibility, power, and authority by Engineer or his representative is undertaken solely to satisfy Engineer's obligation to Owner. It shall not give rise to any claim against nor impose liability to Engineer or his representatives in favor of Contractor or third persons for any reason whatsoever and Contractor agrees that any remedy he has arising out of in connection with Engineer's performance hereunder, whether neglect or otherwise, is against Owner and not Engineer.

151.13 No Waiver of Legal Rights: The Owner shall not be precluded by any measurement, estimate, or certificate made either before or after the completion and acceptance of the work and payment therefor from showing the true amount and character of the work performed and materials furnished by the Contractor, or from showing that any such measurement, estimate or certificate is untrue or incorrectly made, or that the work or materials do not conform in fact to the contract. The Owner shall not be precluded, notwithstanding any such measurement, estimate or certificate, and payment in accordance therewith, from recovering from the Contractor and his sureties such damages as the Owner may sustain by reason of the Contractor's failure to comply with the terms of the contract or of any power herein reserved or any right to damages herein provided.

151.14 Payment of Bills by Contractors: The Contractor shall promptly make full payment for labor, material, supplies, and provisions at such times as they become due and payable to all persons supplying said Contractor or his subcontractor with labor, services, materials, supplies, or provisions for the prosecution of the work provided for the contract, and he shall not permit any lien or claim to be filed or persecuted against Owner for or on account of any labor, service, material, supplies or provisions furnished.

In the event that Contractor fails, neglects, or refuses to make prompt and full payment of any claim for labor, services, materials, supplies, or provisions furnished by any person in connection with the contract, whether the labor, services, materials, supplies, or provisions to be performed or are furnished for the Contractor or for a subcontractor, then, and in such event, the Owner may withhold the amount of such claim by the person or persons furnishing such labor, services, materials, supplies, or provisions and deduct the amount thereof from funds due or to become due to the Contractor by reason of the contract. The deduction of any such amounts because of claims in the manner therein authorized will not, however, relieve the Contractor or his surety from their obligations with respect to any unpaid claims.

151.15 Use of Completed or Uncompleted Portions: The Owner shall have the right to take possession of and use any completed or partially completed portions of the work, notwithstanding that the time for completing the entire work or such portions may not have expired, but such taking possession and use shall not be deemed an acceptance of any work not completed in accordance with the contract documents. If such prior use increases the cost of or delays the completion of uncompleted work or causes refinishing of completed work, the Contractor shall be entitled to such extra compensation or extension of time or both as the Engineer may determine.

Street Specifications
Section 200

220 Roadway Excavation and Subgrade Preparation

221 General

221.01 Description: This section shall consist of the required clearing and grubbing of all areas to be excavated or receive embankment; all required excavation within the limits of the project (except as otherwise classified); cleaning out and shaping ditches as indicated; the removal and proper utilization or disposal of all excavated materials; the construction, compaction, shaping and finishing all earthwork within the limits of the project, all in conformity with required lines, grades and typical cross-section and in accordance with these specifications.

221.02 Testing and Soil Sample Locations: The existing natural grade shall be excavated to the correct line and grade and then tested to determine the soil classification, Plasticity Index (PI) per ASTM D-4318, percent passing #200 sieve (ASTM D-1140), optimum moisture content and optimum density per ASTM D-698 for areas of fill less than ten feet or ASTM D-1557 for areas of fill ten feet or more. Soil samples shall be taken from each location where there is an obvious change in soil classification and at the direction of the city engineer or his designated representative (city construction inspector).

222 Construction Work

222.01 Clearing and Grubbing: Clearing and grubbing shall consist of removal of all trees, brush, logs, down timber, fence posts, wire and other debris of all kinds from the sites of the street and utility work. All stumps and other objectionable matter, all roots and other projections shall be removed to a depth of one foot below the subgrade elevation if located in cut area, and one foot below the natural ground surface in other areas. Disposal of all refuse obtained from clearing operations shall be in a manner approved by the City Engineer, and shall conform to State Laws and local ordinances.

222.02 Excavation: Excavation shall be performed at the locations required to bring the subgrade of the areas to be paved to established alignment, grade and cross section. All suitable excavated materials shall be utilized insofar as practicable in constructing the required sections and shall be spread as directed in such manner as to present a neatly finished appearance, and not obstruct the drainage or cause injury to any street improvements or to abutting property. Unsuitable excavation and excavation in excess of that needed for construction shall be known as Waste and shall become the property of the Contractor to be disposed of by him outside the limits of the right of way at a location approved by the Engineer.

222.03 Embankment: Prior to placing any embankment, all clearing and grubbing operations shall have been completed on the areas over which the embankment is to be placed. Stump holes or other small excavations or depressions within the limits of the embankment shall be backfilled with suitable material to the original slope by blading or other methods, indicated on plans or required by the Engineer. Suitable material will not be 'Moisture Sensitive' as defined in Section 212. The ground surface thus prepared shall be compacted by sprinkling and rolling as described below in 222.04 Compaction.

A. All fill material shall be placed in uniform layers of not more than eight (8) inches in depth (loose material) for compaction by sheepsfoot rolling or six (6) inches pneumatic tire, flat wheel, or vibratory steel wheel rolling for the full width of the cross section. Each loose layer shall be compacted as described below in 222.04 Compaction. The method of compaction shall be such that a uniform density will be obtained over the entire area and the depth of materials being compacted. All fill material deposited in place by means of dump

trucks, draglines, or other similar equipment shall be thoroughly broken up so as to be free from lumps, large stones and clods before being spread into uniform layers. Each layer shall be graded so as to conform to finish grade of street section.

B. Embankment placed adjacent to, over and under pipes shall be suitable material and shall be placed in successive layers approximately horizontal or parallel with the finished grade. For areas of embankment adjacent to curbs, walks, etc. where it is impractical to employ the compaction methods above specified, the embankment shall be placed in layers not exceeding two (2) inches in depth of loose material, thoroughly mixed and wetted (or dried) uniformly to the approved methods, such as mechanical hand tampers, maintaining the required moisture content by additional sprinkling if necessary, until each layer has been uniformly compacted to the satisfaction of the Engineer.

222.04 Compaction & Moisture Content : All materials to receive compaction in fill areas less than 10 feet vertically shall be thoroughly mixed and wetted (or dried) as may be required to produce the optimum moisture of that material as determined by the moisture-density relationship in accordance with the Standard Proctor ASTM D-698 (materials receiving compaction in fill areas 10 feet or more vertically shall use the Modified Proctor ASTM D-1557). For 'Moisture Sensitive' material the moisture content shall be within 3% (+ or -) of the optimum otherwise it shall require rework. It shall then be rolled with an approved sheepsfoot producing a minimum compression of 150 pounds per square inch of cross sectional area on each tamping foot until a uniform compaction of at least 95% of Standard Proctor density is obtained (Modified Proctor for 10 feet or more of fill). Proof rolling may be substituted for density testing when approved by Engineer.

222.05 Proof Rolling: This item shall govern furnishing and operating heavy pneumatic tired compaction equipment for locating unstable areas of embankment, subgrade and flexible base courses.

This specification is applicable for projects or work involving either inch-pound or SI units. Within the text, the inch-pound units are given preference followed by SI units shown within parentheses.

Submittals

The submittal requirements of this specification item may include:

A. A plan describing the condition of each roller proposed for the work, as well as the type of traction (self propelled or drawn), Type of roller, size, weight, tire pressure (if appropriate) and configuration of each individual roller, and

B. The operating speed proposed for each individual roller.

Equipment

A. Standard Proof Roller:

The proof rolling equipment shall have a loading platform or body suitable for ballast loading that is supported on a minimum of two (2) axles with not more than two (2) pneumatic tired wheels per axle. All wheels shall be arranged so that they will carry approximately equal loads when operating on uneven surfaces. Pneumatic proof rolling equipment with multiple pivotal axles and more than two tires along the front or rear axle axis shall have articulating axle supports to equally distribute the load to all tires over uneven surfaces.

The proof roller unit, under working conditions, shall have a minimum contact width of 7-1/2 feet (2.3 meters) and shall be so designed that the gross roller weight may be varied uniformly from 25 tons to 50 tons (23 megagrams to 45 megagrams) by ballast loading. The tires shall be capable of operating under various loads with variable air pressures up to 145 psi (up to 1000 kiloPascals).

The tires shall be smooth tread and shall impart a minimum ground contact pressure of 75 pounds per square inch (520 kiloPascals). Tires shall be practically full of liquid (i.e. when liquid will flow from the valve stem of a fully inflated tire with the stem in the uppermost position). The operating load and tire pressure shall be within the range of the manufacture's chart as directed by the Engineer or designated representative.

The proof roller shall be drawn by a power train of adequate tractive effort or may be of a self-propelled type. The proof rolling equipment shall be equipped with a reverse mode transmission or be capable of turning 180 degrees in the street width. When a separate power train is used to draw the proof roller, the power train weight shall not be considered in the weight of the proof roller. The power train shall be rubber-tired when rolling subgrade and base materials. A cleated or track-type power train may be used on earth and rock embankments.

B. Alternate Equipment:

With the written approval of the Engineer or designated representative, the Contractor may utilize alternate equipment on embankment courses, subgrade and base courses subject to the requirements of the standard proof roller except with respect to minimum contact width, axle/tire arrangement and tire tread.

Alternate equipment for stability testing of embankments shall be restricted to equipment that can be shown to impart a stress distribution on the embankment structure equivalent to or greater than the stress induced by the concentrated weight of a standard proof roller.

C. Equipment Submittals:

All standard proof rollers and proposed alternate equipment must be approved by the Engineer or designated representative prior to their use. The Contractor shall furnish the Engineer or designated representative with charts or tabulations showing the contact areas and contact pressures for the full range of tire inflation pressures and for the full range of loadings for the particular tires furnished.

Alternate equipment submittals for proof rolling of embankments shall be signed and sealed by a registered Professional Engineer licensed in the State of Texas.

Construction Methods

A. General:

Within the ranges set forth in Equipment (A) above, the load and tire inflation pressures shall be adjusted as directed by the Engineer or designated representative. It is proposed to use a contact pressure corresponding as nearly as practical to the maximum supporting value of the earthwork or base. The entirety of prepared surfaces to be tested by this method shall be proof rolled by a minimum of two passes or the proof roller tires. Each succeeding trip of the proof roller shall be offset by not greater than one tire width.

When alternate equipment is proposed and only one axle meets minimum requirements, only the qualifying axle shall be used to proof roll. If the operation of the proof roller shows an area to be unstable, the substandard area shall be brought to satisfactory stability and uniformity by additional curing, compaction, or by removal and replacement of unsuitable materials. The re-worked area shall then be proof rolled.

Proof rollers shall be operated at speeds between 2 and 6 miles per hour (3 and 10 kilometers per hour) or as directed by the Engineer or designated representative.

Acceptable limits of elastic and plastic deformation of prepared subgrade courses shall be established by proof rolling Test Sections of representative soil conditions, previously tested and approved for

density and moisture requirements of the governing subgrade and earth embankment items. Proof rolling of first course base over a plastic subgrade may be waived by the Engineer or designated representative if it is determined that the prepared first course base will be damaged by the proof roller.

B. Roadway Construction:

The subgrade and all lifts of base material shall be proof rolled in new roadway construction and in the reconstruction of existing streets. Proof rolling of the curb course base shall be substituted for proof rolling of final course base at the direction of the Engineer or designated representative. Proof rolling may be waived by the Engineer or designated representative where construction is limited to turn lanes, street widening less than 7-1/2 feet (2.3 meters) in width, or where the site is otherwise congested.

C. Trenches:

Trenches shall be proof rolled where no limitations to the operation of the proof roller exist as may be determined by the Engineer subject to the provisions hereunder.

All trenches shall be proof rolled in new roadways or in existing roadways under reconstruction. Trenches shall be proof rolled at the street subgrade elevation by longitudinal and perpendicular passes of the roller as may be dictated by the width of the trench.

Proof rolling of trenches in existing paved streets shall be limited to pavement cross-sections capable of sustaining the weight of the proof rolling equipment without imparting damage to the remaining pavement structure as determined by the Engineer. Trenches less than 4 feet (1.2 meters) in width shall be exempted of all proof rolling requirements. Only the final course base shall be proof rolled in trenches 4 feet (1.2 meters) or wider but narrower than the proof roller contact width. The subgrade, the first course and the final course base shall be proof rolled in trenches 7-1/2 feet (2.3 meters) or wider.

D. Embankment Construction:

All embankment courses shall be proof rolled, unless otherwise directed by the Engineer or designated representative.

If required by the Engineer or designated representative, stability testing of embankments constructed to the finished cross-section and elevation or to interim elevations shall either be conducted with a standard proof roller or alternate equipment, which can be proven to impart a horizontal and vertical pressure distributions equivalent to or greater than those induced by a standard proof roller.

Measurement and Payment

No direct payment will be made for the materials, equipment or labor required by this item, but shall be considered subsidiary to the various items included in the contract.

223 Testing

223.01 Minimum Requirements: The Contractor shall provide independent soils laboratory testing to determine the plasticity index (ASTM D-4318), the percent of material passing #200 sieve (ASTM D-1140), and density curve for the subgrade material (ASTM D-698), field density testing of the completed subgrade shall be 95%-100% of the standard proctor for fill less than 10 feet and 95%-100% modified proctor for fill 10 feet or greater. The subgrade shall be tested at minimum intervals of one per 8"lift per 100 lineal feet of proposed pavement or as shown on the construction plans. All testing must be done in the presence of a city construction inspector, the inspector has the authority to pick locations for all tests. Proof rolling may be substituted for density testing when approved by

Engineer. A copy of all tests shall be submitted to the City Engineer.

224 Payment

224.01 Measurement and Payment: The work performed under this section shall be paid for at the unit bid price for Excavation and Subgrade Preparation measured by the square yard of work completed, which payment shall be full compensation for excavation, embankment, rolling, PI testing, material passing #200 sieve, sprinkling and compacting to 95%-100% Standard or Modified Proctor Density by soils laboratory testing (or proof rolling), including furnishing and operating all equipment and all labor, tools and incidentals necessary to satisfactorily perform the work.

250 Hot-Mix Asphaltic Concrete Pavement Base and Surface Courses

251 General

251.01 Description: This item shall consist of a base course and a surface course as shown on plans, composed of a compacted mixture of mineral aggregate and asphaltic material, mixed, transported, and placed on an approved tack coat.

251.02 Requirements: The base course shall consist of Type B Asphaltic Concrete (hot mix) meeting item 292 specifications of the Texas Department of Transportation's *Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges* 2004. A final asphaltic surface course shall consist of a minimum of two (2") inches (after compaction), of Type D Asphaltic Concrete (hot mix), meeting City specifications for material and installation. The pavement surface shall have a parabolic crown of five (5") inches, measured from the gutter elevation to the centerline of the paved section.

252 Prime Coat

252.01 Asphalt Materials: The asphalt materials for prime coat shall conform to Cutback Asphalt MC-30, Emulsion MS-2, SS-1 or AE-P.

252.02 Water: Water shall be furnished by the Contractor and shall be clean and free from industrial wastes and other objectionable matter.

252.03 Dispersal Agent: Detergent shall be added to water and sprayed on surfaces to be primed in accordance to asphalt manufacturer's recommendations.

252.04 Construction Methods: When, in the opinion of the Engineer, the base course or other surface is satisfactory to receive the prime coat, the surface shall be cleaned by sweeping or other approved methods as directed by the Engineer. The surface shall be lightly sprinkled with water just prior to application of the asphaltic material unless the Engineer waives this requirement. The Contractor shall submit a list of prime materials to be applied to the Engineer for approval. When emulsions are approved, a dispersal agent shall be added to the water before sprinkling. The asphaltic material shall be applied on the clean surface by an approved type of self-propelled pressure distributor operated so as to distribute the prime coat at a rate ranging from .1 to .3 gallons per square yard of surface area. The distributor, when used for pay purposes, shall have been calibrated within three (3) years from the date it is first used on the project. The material shall be evenly and smoothly distributed. During the application of prime coat, care shall be taken to prevent splattering of adjacent pavement, curb and gutters, or structures. The Contractor shall be responsible for cleaning splattered areas.

Prime Coat shall not be applied when the air temperature is below 60°F and falling, but it may be

applied when the air temperature is above 50°F and rising. Asphaltic material shall not be placed when general weather conditions, in the opinion of the City Engineer, are not suitable.

The Contractor shall be responsible for the maintenance of the surface until the work is accepted by the City Engineer. No traffic, hauling or placement of any subsequent courses shall be permitted over the freshly applied prime coat.

253 Tack Coat

253.01 Description: This item shall consist of an application of asphaltic material on the completed base course after the prime coat has sufficiently cured, existing pavement, bituminous surface, bridge deck, or on a prepared surface as directed by the Engineer.

253.02 Asphalt Materials: The asphalt material for "Tack Coat" shall meet the requirements for Cutback Asphalt or Emulsified Asphalt as listed below. Combining 50 to 70 percent by volume of the asphaltic material as specified for the type of paving mixture with 30 to 50 percent by volume of gasoline and/or kerosene shall make cutback asphalt. The type of mixture shall be selected from the following table:

Temp of Surface °F	
40 - 70	**Over 70**
RS-2	MS-2
RS-2H	MS-2H
RC-250	MC-70
CRS-2	CMS-2
CRS-2H	CMS-2H

253.03 Construction Methods: The surface upon which the tack coat is to be placed shall be cleaned thoroughly and the surface shall be given a uniform application of tack coat. The tack coat shall be applied with an approved sprayer at a rate not to exceed 0.05 gallon residual asphalt per square yard of surface. Where the mixture will adhere to the surface upon which it is to be placed without the use of a tack coat, the tack coat may be eliminated. All contact surfaces of curbs and structures and all joints shall be painted with a thin uniform application of tack coat. During the application of the tack coat, care shall be taken to prevent splattering of adjacent pavement, curb and gutter and structures. The tack coat shall be rolled with a pneumatic tire roller when directed by the Engineer.

Tack coat shall not be applied when the air temperature is below 50°F and falling, but it may be applied when the air temperature is above 40°F and rising, the air temperature being taken in the shade and away from artificial heat. Asphaltic material shall not be placed when general weather conditions, in the opinion of the City Engineer, are not suitable.

The distributor shall have been recently calibrated. After beginning of the work, should theyieldon the asphaltic material applied appear in error, the distributor shall be calibrated in a manner satisfactory to the Engineer before proceeding with the work.

The contractor shall be responsible for maintenance of the surface until the HMAC is placed over the tack coat or the City Engineer accepts the work. No traffic, hauling, or placement of any subsequent courses shall be permitted over the freshly applied tack coat unless it is blotted by the application of sand as directed by the Engineer.

All storage tanks, piping, retorts, booster tanks and distributors used in storing or handling asphaltic material shall be kept clean and in good operating condition at all times and they shall be operated in such a manner that there will be no contamination of the asphaltic material with foreign material. It shall be the responsibility of the Contractor to provide and maintain in good working order a recording

thermometer at the storage heating unit at all times.

254 Hot-Mix Asphaltic Concrete Pavement Surface Course

254.01 Description: This item shall govern for the construction of a Type D surface course as shown on the plans, being composed of a compacted mixture of aggregate and asphalt cement mixed hot in a mixing plant, in accordance with the details shown on the plans and the requirements herein. Type C hot-mix may be substituted for Type D hot-mix when authorized by the Engineer.

254.02 Materials: Materials shall conform to Item 340, "Dense-Graded Hot-Mix Asphalt (Method)" of the Texas Department of Transportation's *Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges* 2004.

254.03 Mixture Design: The Contractor shall furnish the City Engineer with a mix design for approval. To substantiate the design, trial mixtures shall be produced and tested using all of the proposed project materials and equipment prior to any placement. The City Engineer may waive trial mixtures if similar designs have proven satisfactory.

254.04 Density: The mixture shall be designed to produce an acceptable mixture at an optimum density of 96.0 percent, when tested in accordance with Test Method Tex-207-F and Test Method Tex –227-F. The operating range for control of laboratory density during production shall be optimum plus or minus 1.5 percent. If the laboratory density of the mixture produced has a value outside the range specified, the Contractor shall investigate the cause and take corrective action.

254.05 Stability: The materials used in the mixture design shall produce a mixture with a stability value of at least 35 when tested in accordance with Test Method Tex-208-F. If during production, the stability falls below the specified minimum, the Engineer and the Contractor shall closely evaluate other test result values for specification compliance such as gradation, asphalt content, moisture content, etc. to determine the cause and take corrective action.

254.06 Master Grading Limits:

Sieve	Type C	Type D
7/8"	100	
5/8"	95-100	
1/2"		100
3/8"	70-85	85-100
1/4"		
No.4	43-63	50-70
No.10	30-40	32-42
No.40	10-25	11-26
No.80	3-13	4-14
No.200	1-6*	1-6*
VMA(%min)	13	14

* 2- 8 when Test Method Tex-200-F, Part II (Washed Sieve Analysis) is used

254.07 Tolerances: The gradation of the aggregate and the asphalt cement content of the produced mixture shall not vary from the job-mix formula by more than the tolerances herein.

	Tolerance Percent by Weight Or Volume
Passing the 1-1/4" to No. 10 sieve	Plus or Minus 5
Passing the No. 40 to No. 200 sieve	Plus or Minus 3
Asphalt, weight	Plus or Minus 0.5
Asphalt, volume	Plus or Minus 1.2

254.08 Equipment:

A. General: 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.

B. Mixing Plants: Mixing plants may be the weigh-batch type, the modified weigh-batch type, the drum-mix type, or the specialized recycling type. All plants shall be equipped with satisfactory conveyors, power units, mixing equipment, aggregate handling equipment, bin and dust collectors.

C. Screed Unit: The spreading and finishing machine shall be equipped with a heated compacting screed. Extensions added to the screed shall be provided with the same compacting action and heating capacity as the main screed unit. 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 for grade reference. It shall be maintained in good operating condition by personnel trained in the use of this type of equipment.

D. 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 push rollers of the finishing machine while the mixture is being unloaded. No portion

of the weight of the hauling equipment shall be supported by the asphalt paver. No vibrations or other motions of the loading equipment shall be transmitted to the paver.

E. 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. Windrow pick-up equipment shall be constructed in such a manner that substantially all the mixture deposited on the roadbed is picked up and shall not be contaminated with foreign material. Material feeding systems shall be designed to provide a continuous flow of uniform mixture to the spreading and finishing machine.

F. Rollers:

1. Pneumatic Tire Roller: Pneumatic tire rollers shall consist of not less than seven (7) pneumatic wheels, running on axles in such a manner that the rear group of tires will not follow in the tracks of the front group. The pneumatic tire roller shall have an effective rolling width of approximately 84 inches and shall be equipped with tires that will afford ground contact pressures to 80 pounds per square inch or more. When used for kneading and sealing the surface only, they shall provide a minimum of 55 psi ground contact pressure.

2. Non-vibratory Steel Wheel Rollers: This roller shall be an acceptable self-propelled tandem roller weighing not less than 10 tons.

3. Vibratory Steel Wheel Roller: This roller shall have a minimum weight of 6 tons. The compactor shall be equipped with amplitude and frequency controls and shall be specifically designed to compact the material on which it is used.

G. Staightedges and Templates: When requested, the contractor shall provide an acceptable 10 foot straightedge for surface testing.

254.09 Construction Methods:

A. General: It shall be the responsibility of the Contractor to produce, transport, place and compact the specified paving mixture in accordance with the requirements herein.

The asphaltic mixture, shall not be placed when the air temperature is below 50°F and is falling, but it may be placed when the air temperature is above 40°F and is rising. Mat thicknesses of 1-1/2" or less shall not be placed when the temperature of the surface on which the mat is to be placed is below 50°F.

It is further provided that the asphaltic mixture shall be placed only when general weather conditions and temperature and moisture condition of the base, in the opinion of the Engineer, are suitable.

If after being discharged from the mixer and prior to placing, the temperature of the asphaltic mixture is 50°F or more below the selected discharge temperature, all or any part of the load may be rejected and payment will not be made for the rejected load.

B. Transporting: The asphaltic mixture shall be hauled to the work site in tight vehicles previously cleaned of all foreign material. In cool weather or for long hauls, covering and insulating of the truck bodies may be required.

C. Placing: The asphaltic mixture shall be dumped and spread on the approved prepared surface with the spreading and finishing machine. The placing of the asphaltic mixture shall be done 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 of the spreading and finishing machine shall not occur and the required lines and grades shall be obtained without resorting to hand finishing.

Unless otherwise shown on the plans, dumping of the asphaltic mixture in a windrow and then placing the mixture in the finishing machine with windrow pick-up equipment will be permitted. Any operation of the windrow pick-up equipment resulting in the accumulation and subsequent shedding of accumulated material into the asphaltic mixture will not be permitted.

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.

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.

D. Compacting: 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.

When rolling with steel wheeled rollers, rolling shall 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 one foot. Alternate trips of the roller shall be slightly different in length. On super-elevated curves, rolling shall begin at the low side and progress toward the high side.

Vibratory rollers shall not be left vibrating while not rolling or when changing directions. Vibratory rollers shall not be allowed in the vibrating mode on mats with a plan depth of less than 1-1/2 inches.

The motion of the rollers shall be slow enough to avoid other than usual displacement of the mixture. The roller shall not be allowed to stand on pavement which has not been fully compacted.

The edges of the pavement along curbs, headers and similar structures, and all places not accessible to the roller, shall be thoroughly compacted with lightly oiled tamps.

All rolling for compaction shall be completed before the mixture temperature drops below 175°F.

255 Testing

255.01 Minimum Requirements: No asphaltic concrete shall be placed without the presence of a certified lab technician. Testing for laboratory density, stability, percent asphalt, gradation, and moisture content will be required for each day's production. In place densities shall be taken at intervals of one every 500 lineal feet per travelway.

255.02 Ride Quality: All irregularities shall be corrected at the contractor's expense. Irregularities shall be any variation of the surface from the testing edge of the straightedge which exceeds 1/8" between any two contacts, longitudinally or vertically.

255.03 Final Acceptance: If the surface ravels, 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 his

expense, to the satisfaction of the Engineer and in conformance with the requirements of this specification.

256 Payment

256.01 Measurement and Payment The work performed and materials furnished, as prescribed by this item and measured by the ton of 2000 pounds of the composite "Asphaltic Concrete", will be paid for at the unit bid price for "Hot-Mix Asphaltic Surface" and "Hot-Mixed Asphalt Stabilized Base" of the type specified, which price shall each be full compensation for furnishing all materials and freight involved; for all heating, mixing, hauling, cleaning the existing base course; placement of a prime coat; placement of a tack coat; placing asphaltic concrete mixture; testing, rolling and finishing; and for all manipulations, labor, tools, equipment and incidentals necessary to satisfactorily complete the work.

260 Surface Treatments

261 General

261.01 Description: This item shall consist of a surface treatment composed of a single, double or triple application of asphalt material, each covered with aggregate for the sealing of existing pavements in accordance with these specifications.

261.02 Materials: The materials used under this specification shall meet the following requirements:

A. Asphaltic Material: Asphalt oil shall be AC-15-P or approved equal and shall meet the requirements of the Texas Department of Transportation's *Standard Specifications for Construction of Highways, Streets, and Bridges*, Item 300, "Asphalts, Oils, and Emulsions".

B. Aggregates: The aggregate shall be pre-coated grade 4 aggregate and the aggregate, placement, and storage methods shall conform to the Texas Department of Transportation's *Standard Specifications for Construction of Highways, Streets, and Bridges*, Item 302, "Aggregates for Surface Treatments".

C. Application Rates: The application rate for the surface treatment shall be as follows:

Asphalt Rate, (GAL/SY)	Aggregate Rate, (CY/SY)
0.30	1:90 – 1:100

262 Construction Methods

Construction methods for the placement of the seal coat shall meet the requirements of Item 316 of the Texas Department of Transportation's *Standard Specifications for Construction of Highways, Streets, and Bridges.*

262.01 Stockpiles: Temporary stockpiling of aggregates on the right of way will be permitted, provided that the stockpiles are so placed as to allow for the safety of the traveling public and not obstruct traffic or sight distance, and do not interfere with access from abutting property, nor with roadway drainage. Location of stockpiles shall be either a minimum of 30 feet from the edge of the travel lanes or shall be signed and barricaded. Prior to final acceptance, the Contractor shall remove remaining aggregate stockpiles.

262.02 Temperature: Surface treatments shall not be applied when the air temperature is below 60°F and is falling, but may be applied when the air temperature is above 50°F and is rising. Surface treatments shall not be applied when the temperature of the surface on which the surface treatment is to be applied is below 60°F.

262.03 Preparation: The area to be treated shall be cleaned of all dirt, dust or other deleterious matter by sweeping or other approved methods. Manholes, valve boxes, grate inlets, and other utility access devices shall be protected from the surface treatment by placement of plywood discs or other approved materials. Button covers or another approved method shall be used to protect the existing raised pavement markers. The inspector shall approve the surface preparation prior to treatment.

262.04 Placing: The applied seal coat shall be rolled for its entire width with a multiple wheel self propelled pneumatic tire roller with provisions for loading up to 10 tons. Rolling shall begin longitudinally at the edges of the mat and progress towards the center, uniformly lapping each preceding track by at least ½ the width of the roller and be repeated as often as necessary to thoroughly key the cover aggregate into the bitumen over the entire surface. Aggregate impediment in the bitumen shall be 95%. The width of each application of asphaltic material shall be such to allow uniform application and immediate covering with aggregate. Paper or other suitable material shall used to prevent overlapping of transverse joints. Longitudinal joints shall match lane lines. The finished surface shall be cleared of any surplus aggregate by the Contractor by sweeping or other approved methods after all rolling is completed.

All holes or failures in the seal coat surface shall be repaired by use of additional asphalt and aggregate and all fat or bleeding surfaces shall be covered with approved cover material in such manner that the asphaltic material will not adhere to or be picked up on the wheels of vehicles. This maintenance will continue until the bleeding has stopped. Final acceptance of the project will occur after all excess rock is removed from project areas and all streets have been swept with approved sweeper.

263 Measurement and Payment

The one, two, or three course seal coat shall be measured and paid per square yard of seal coat in place. This pay item shall include all labor, material, and equipment to prepare existing pavement surface using pressure washers, sweepers, etc., the placement of the asphalt, the placement of the aggregate, and all incidentals necessary for the placement of a one course seal coat on existing city streets.

APPENDIX – Construction Plans