SECTION NO. 11

SPECIAL PROVISIONS – PAVING AND DRAINAGE SPECIFICATIONS

11-1 PURPOSE OF SPECIAL PROVISIONS: The project shall be in accordance with the Standard Specifications for Public Works Construction as issued by the North Central Texas Council of Governments, as it may be amended from time to time, hereinafter referred to as the *Standard Specifications*. (Rev 12/2011)

These Special Provisions are included for the purpose of adapting the Standard Specifications to the particular project which is subject to this agreement and of adding thereto such further provisions as may be necessary to state the contract in its entirety.

The work shall conform to the requirements of these Special Provisions and the details as shown on the drawings. These contract documents are intended to be complementary. Requirements of any of the contract documents are as binding as if called for by all. In the event of conflict between documents, Special Provisions shall take priority over drawings, and drawings shall govern over Standard Specifications. (Rev. 1/2017)

References made to *TxDOT Items* in this contract shall mean items in the Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges as published by the Texas Department of Transportation in 2004. Metric projects will refer to the 1995 edition. Further technical requirements contained in other publications are referenced in sections where they apply and are hereby incorporated. (Rev. 5/2003)

Note – *All sections in blue text are applicable only to street maintenance project only – delete entire blue text sections for typical street project*

11-1A CONTRACT TERM: This contract shall be for a period of one (1) year or 365 calendar days beginning on the date specified in the Notice to Proceed. City and Contractor may, upon mutual written consent, extend the contract for four (4) additional one-year periods after the initial term. Contractor shall present a written request no later than ninety (90) days prior to the expiration of the contract indicating interest in extending the contract for an additional term. Contractor may request a price increase in the written request at a rate not to exceed the effective percentage change in the consumer price index (CPI-U) for the previous twelve (12) months. At the City's discretion, the effective change rate shall be based on either the local or national index average rate for all items. The City will accept price reductions at any time during the contract period.

If agreement cannot be reached or if the City does not desire to extend the contract for an additional term, it shall be incumbent upon the Contractor to continue the contract under the same terms and conditions until a new contract can be completely operational. At no time shall this transition period extend more than ninety (90) days beyond the original expiration date of the existing contract. (Rev 7/2013)

11-2 SCOPE OF WORK:

A. This is a requirements contract. While locations have been included for the work anticipated, the City has the authority to add, reduce, cancel and/or postpone work at any

time. Changes may be made based upon need, prevailing weather conditions and available funding. Quantities included in the proposal reflect the estimate of the City for the contract period; the City is under no obligation to pay for quantities beyond those actually performed and/or installed, therefore, the award of the contract does not guarantee any minimum quantity of work. City reserves the right to rearrange the schedule at any time, while being sensitive to the mobilization cost associated with such changes. Contractor is required to have a work crew dedicated to this project to keep work progressing at all times.

The proposal is divided into two sections. The first section is listed as "Bond Funded Items". No proposed locations are provided for this section of the work. These pay items will be used to address requests received during the contract term and details will be provided to Contractor by the Inspector. The second section of the proposal is listed as "Sales Tax Items". Tentative locations have been included at the end of this section for locations anticipated for this portion of the work. However, as noted above, changes may be made to the locations.

A. The work governed by these specifications is located in the city of Arlington, Texas and consists of _____, City of Arlington Project No._____, including all necessary appurtenances.

B. The intent of the contract documents, including the Standard Specifications, Special Provisions, and other instruments, documents, drawings and maps comprising the Plans and Specifications, is to describe the completed work to be performed by the Contractor under the contract as an independent Contractor.

Any provision of the agreement vesting in the City or the engineer the right of inspection is understood by all the parties to be for the purpose of ensuring that the plans and specifications are complied with and that the completed work is obtained and described, and no such provision shall be interpreted as vesting the City of Arlington or engineer the right to control the details of work. (Rev 12/2011)

C. Critical sections of curb and gutter will be staked by the City. The areas requiring staking will be communicated to the Contractor by the Inspector. For these critical locations, Contractor shall not remove any concrete until the City Survey Crew has obtained all the necessary data. Contractor shall follow grades and stakes provided by the City.

Contractor shall provide regular schedule updates to the Inspector so that staking needs can be communicated in a timely manner. Calendar days will not be adjusted because a City Survey Crew was not available or due to the negligence of the Contractor or vandalism that causes the replacement of stakes.

C. The Contractor shall provide, at his own expense, all construction staking required to perform the work as described in the plans and specifications. For City capital projects, control staking will be performed by the City. The Contractor shall set excavation and

fill stakes on or near the right-of-way, all stakes necessary for utility relocation and storm drain placement, four foot (4') off-set back of curb stakes for subgrade stabilization and paving, and intermediate grade stakes (i.e. blue topping, fill, or cut stakes) on the centerline. All staking shall be subject to inspection by the City. While the City shall have the right to inspect, it shall have no duty to inspect. The Contractor will be responsible for any discrepancies from the plan alignment and/or grade.

Calendar days will not be adjusted due to the lack of available crews or due to the negligence of the Contractor or vandalism that causes the replacement of stakes.

D. The Contractor shall provide a superintendent authorized to receive and fulfill instructions from the Inspector at all times on the job site. Superintendent must:

1. Serve as the Contractor's primary point of contact.
2. Be a permanent staff employee.
3. Be knowledgeable of the specifications herein, and inspect the performance of the crew(s).
4. Be responsible for the day to day operations in accordance to the service requirements throughout the term of the contract.
5. Make decisions and receive, follow, give, and understand written and verbal instructions in English, and inspect the work site with the Inspector and/or City Engineer upon request.
6. Provide a hard copy of the Contractor's Work Record Summary to the Inspector on a monthly basis.

The City recognizes that events beyond the control of the Contractor such as death, physical, or mental incapacity, long-term illness, or the voluntary termination of employment of the on-site supervisor will require the Contractor to propose a replacement. In the event that such replacement is necessary, the Contractor agrees that no personnel shall begin work on the project without written approval from the City. (Rev. 12/2011)

E. The Contractor shall employ only competent, efficient workmen and shall not use on the work any unfit person or one not skilled in the work assigned to him; and shall at all times maintain good order among his employees.

Whenever the City of Arlington shall inform the Contractor in writing that, in his opinion, any employee is unfit, unskilled, disobedient or is disrupting the orderly progress of the work, such employee shall be removed from the work and shall not again be employed on it.

Under urgent circumstances, the City of Arlington may orally require immediate removal of an employee for cause, to be followed by written confirmation. (Rev. 9/2004)

F. Work shall be accomplished between the hours of 7 a.m. to 6 p.m., Monday through Friday unless otherwise approved by the Engineer. For Saturday and holiday inspections, see Section 11-7A. (Rev. 11/2009)

G. Contractor is responsible to stay informed of all events involving the AT&T Stadium, Globe Life Park (Texas Rangers) and any other major events at other venues in the Entertainment District. Contractor shall not work in the Entertainment District unless approved by the Field Operations Manager or designee. Upon approval to proceed with construction, the contractor must complete work and remove all traffic control devices two days prior to the next event, or as directed by the Field Operations Manager or designee. It will be the responsibility of the Prime Contractor to see that Subcontractor is in compliance with requirement (Rev. 12/2014)

11-2A MINORITY/WOMEN BUSINESS ENTERPRISE (MWBE): Contractor is encouraged to use, if applicable, qualified subcontractors, suppliers, and firms where at least fifty-one percent (51%) of the ownership of such subcontractor, supplier or firm is vested in racial or ethnic minorities or women. In the selection of subcontractors, suppliers or other persons in organizations proposed for work on this contract, the Contractor agrees to consider this policy and to use reasonable and best effort to select and employ such company and persons for work on this contract. The successful Contractor will be required to submit cost information towards MWBE. The information submitted shall include the Contractors and any other subcontractors performing work as part of this contract. See the following sample Prime And Subs & Minority/Women Business Enterprise (MWBE) Report for information required. Submitted form shall be accompanied by copy of certification(s) for contractor and all applicable subcontractors. The successful Contractor will be required to submit anticipated dollar amounts towards these enterprises (if applicable) at time contract is awarded and actual dollar amounts spent with the monthly pay estimate. It will be the successful contractor responsibility to ensure submitted certification(s) are up-to-date, including for all applicable subcontractors. (Rev. 3/2016)

PRIME AND SUBS &
MINORITY/WOMEN BUSINESS ENTERPRISE (MWBE) REPORT

Please complete this form, include copy of certification(s) and return with executed contracts

Project Name: _____

Project No: _____ Date: _____

LEGEND

* Answer with "YES" or "NO"

AI - Native American (AI)
NW - Native American, Women-Owned (NW)
AS - Asian (AS)
AW - Asian, Women-Owned (AW)
BL - Black (BL)
BW - Black, Women-Owned (BW)
HI - Hispanic (HI)
HW - Hispanic, Women-Owned (HW)
WO - Women-Owned (WO)
Other _____

PRIME CONTRACTOR	*Arlington Firm (Yes/No)	*MWBE (Yes/No)	TYPE (Use abbreviation in Legend)	Anticipated Amount

LIST **ALL** SUBS:

Name of Company	Description of Primary Work Type (For prequalification verification purposes)	*Arlington Firm (Yes/No)	*MWBE (Yes/No)	TYPE (Use abbreviation in Legend)	Anticipated Amount

SAMPLE (Copy for exception will be included with award letter)

(Rev 3/2016)

11-3 BONDS, INSURANCE AND AFFIDAVITS:

A. The following bonds and proof of insurance shall be filed with the City of Arlington as a condition of the contract, together with appropriate powers of attorney.

1. Performance, Payment, And Maintenance Bonds: Performance, payment and maintenance bonds in the amount of not less than one hundred percent (100%) of the contract price conditioned upon the faithful performance of the contract, and upon payment of all persons supplying labor or furnishing materials, will be required upon the forms which are a part of the Contract Documents. Bonds shall be executed by a surety company authorized to do business in the State of Texas and acceptable to and approved by the City of Arlington. The period of the Maintenance Bond shall be two years from the date of acceptance of all work done under the contract, to cover the guarantee as set forth in the Special Conditions.

2. Performance Bonds And Payment Bonds In Excess Of $100,000: In addition to all other requirements set forth with regard to performance bonds and payment bonds, any performance bond or payment bond in an amount exceeding One Hundred Thousand Dollars ($100,000) must be issued by a surety that is qualified as a surety on obligations permitted or required under federal law as indicated by publication of the surety's name in the current U.S. Treasury Department Circular 570. In the alternative, an otherwise acceptable surety company that is authorized and admitted to write surety bonds in Texas must obtain reinsurance on any amounts in excess of One Hundred Thousand Dollars ($100,000) from a reinsurer authorized and admitted as a reinsurer in Texas who qualifies as a surety or reinsurer on obligations permitted or required under federal law as indicated by publication of the surety's or reinsurer's name in the current U.S. Treasury Department Circular 570.

3. Insurance: Contractor shall, at his own expense, purchase, maintain and keep in force during the term of this contract such insurance as set forth below. Contractor shall not commence work under this contract until he has obtained all the insurance required under the contract and such insurance has been approved by the City, nor shall the Contractor allow any subcontractor to commence work on his subcontract until all similar insurance of the subcontractor has been obtained and approved. All insurance policies provided under this contract shall be written on an "occurrence" basis. The policy limits stated below are at a minimum. (Rev. 4/2012)

Note: *Coverage limits (highlighted amount) needs to be adjusted if the estimated cost of project exceeds coverage limits. Amount to increase will be determined by Risk Mgmt.*

Liability Insurance

Commercial General Liability (No standard coverages are to be excluded by endorsement. XCU and contractual liability are not to be excluded)	$1,000,000 Per Occurrence/ $2,000,000 Aggregate

(Rev. 7/2013)

Add Pollution Liability or Technology Liability if applicable

<u>Automobile Liability Insurance</u> Commercial Auto Liability Policy (Any Auto, including hired, and non-owned autos)	$ 1,000,000 Combined Single Limit (Rev. 4/2012)
<u>Umbrella Liability</u> (Following Form and Drop Down Provisions Included)	$2,000,000 Each Occurrence
<u>Compensation Insurance</u> Workers' Compensation Employer's Liability	 Statutory Limit $1,000,000 Each Occurrence $1,000,000 Disease - Each Employee $1,000,000 Disease – Policy Limit (Rev. 4/2012)

B. It is agreed by all parties to this contract that the insurance policies required under this contract shall be endorsed to provide: (Rev. 4/2012)

1. The City of Arlington as an additional insured on all applicable policies. The additional insured shall extend to premises/operations and products/completed operations; (Rev. 6/2016)

2. Provide for thirty days notice of cancellation to the City, for nonpayment of premium, material change, or any other cause;

3. Be written through companies duly authorized to transact that class of insurance in the State of Texas with an A.M. Best rating of A:VII or better; and, (Rev. 4/2012)

4. Waive subrogation rights for loss or damage so that insurers have no right to recovery or subrogation against the City of Arlington, it being the intention that the required insurance policies shall protect all parties to the contract and be primary coverage for all losses covered by the policies.

5. Provide one copy of a Certificate of Insurance on an Acord form or other State-approved form evidencing the required coverages to:

   Department of Public Works and Transportation, MS01-0220
   Attention: Jenette T. Hull, Engineering Coordinator
   City of Arlington
   P.O. Box 90231
   Arlington, TX 76004-3231 (Rev. 4/2012)

C. Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the engineer (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the work for which the City of Arlington or the City of Arlington's property might be responsible or encumbered (less

amounts withheld by City of Arlington) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the contract documents to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least 30 days prior written notice has been given to the City of Arlington, (3) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the contract documents, (4) consent of Surety, if any, to final payment and (5) if required by the City of Arlington, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the contract, to the extent and in such form as may be designated by the City of Arlington. If a subcontractor refuses to furnish a release or waiver required by the City of Arlington, the Contractor may furnish a bond satisfactory to the City of Arlington to indemnify the City of Arlington against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall refund to the City of Arlington all money that the City of Arlington may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.

D. In addition to the requirements contained above, the Contractor shall comply with the following in its provision of workers' compensation insurance.

1. Definitions:

   Certificate of coverage ("certificate") - A copy of a certificate of insurance, a certificate of authority to self-insure issued by the commission, or a coverage agreement (TWCC-81, TWCC-82, TWCC-83, or TWCC-84), showing statutory workers' compensation insurance coverage for the person's or entity's employees providing services on a project, for the duration of the project.

   Duration of the project - includes the time from the beginning of the work on the project until the Contractor's/person's work on the project has been completed and accepted by the governmental entity.

   Persons providing services on the project ("subcontractor" in §406.096) - includes all persons or entities performing all or part of the services the Contractor has undertaken to perform on the project, regardless of whether that person contracted directly with the Contractor and regardless of whether that person has employees. This includes, without limitation, independent Contractors, subcontractors, leasing companies, motor carriers, owner-operators, employees of any such entity, or employees of any entity which furnishes persons to provide services on the project. "Services" include, without limitation, providing, hauling, or delivering equipment or materials, or providing labor, transportation or other service related to a project. "Services" does not include activities unrelated to the project, such as food/beverage vendors, office supply deliveries and delivery of portable toilets.

2. The Contractor shall provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements, which meets the statutory requirements of Texas Labor Code, Section 401.011(44) for all employees of the Contractor providing services on the project, for the duration of the project.

3. The Contractor must provide a certificate of coverage to the governmental entity prior to being awarded the contract.

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

5. The Contractor shall obtain from each person providing services on a project, and provide to the governmental entity:
   a. a certificate of coverage, prior to that person beginning work on the project, so the governmental entity will have on file certificates of coverage showing coverage for all persons providing services on the project; and

   b. no later than seven (7) days after receipt by the Contractor, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the project.

6. The Contractor shall retain all required certificates of coverage for the duration of the project and for two year thereafter. (Rev 5/2011)

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

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

9. The Contractor shall contractually require each person with whom it contracts to provide services on a project, to:
   a. provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements, which meets the statutory requirements of Texas Labor Code, Section 401.011(44) for all of its employees providing services on the project, for the duration of the project;

   b. provide to the Contractor, prior to that person beginning work on the project, a certificate of coverage showing that coverage is being provided for all employees of the person providing services on the project, for the duration of the project;

   c. provide the Contractor, prior to the end of the coverage period, a new certificate of coverage showing extension of coverage, if the coverage period

shown on the current certificate of coverage ends during the duration of the project;

d. obtain from each other person with whom it contracts, and provide to the Contractor:
   1. a certificate of coverage, prior to the other person beginning work on the project; and

   2. a new certificate of coverage showing extension of coverage, prior to the end of the coverage period, if the coverage period shown on the current certificate of coverage ends during the duration of the project;

e. retain all required certificates of coverage on file for the duration of the project and for one year thereafter;

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

g. contractually require each person with whom it contracts, to perform as required by paragraphs 1 – 7 above, with the certificates of coverage to be provided to the person for whom they are providing services.

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

11. The Contractor's failure to comply with any of these provisions is a breach of contract by the Contractor which entitles the governmental entity to declare the contract void if the Contractor does not remedy the breach within ten days after receipt of notice of breach from the governmental entity. (Rev. 5/2003)

E. It is understood and acknowledged by both parties that the minimum amounts for insurance, as provided for herein may be adjusted from time to time due to changing conditions to cover City's needs as determined by its Risk Manager (Rev. 7/2013)

<u>11-4 INDEMNIFICATION</u>: Contractor does hereby agree to waive all claims, release, indemnify, defend and hold harmless the City of Arlington and all of its officials, officers, agents, employees, in both their public and private capacities, from and against any and all

liability, claims, losses, damages, suits, demands or causes of action including all expenses of litigation and/or settlement, court costs and attorney fees which may arise by reason of injury to or death of any person or for loss of, damage to, or loss of use of property occasioned by error, omission, or negligent act of Contractor, his officers, agents, employees, subcontractors, invitees or any other persons, arising out of or in connection with the performance of this contract, and Contractor will at his or her own cost and expense defend and protect City of Arlington from any and all such claims and demands. Contractor does hereby agree to waive all claims, release, indemnify, defend and hold harmless City of Arlington and all its officials, officers, agents, and employees, from and against any and all claims, losses, damages, suits, demands or causes or action, and liability of every kind including all expenses of litigation and/or settlement, court costs and attorneys fees for injury or death of any person or for loss of, damage to, or loss of use of any property, arising out of or in connection with the performance of this contract. Such indemnity shall apply whether the claims, losses, damages, suits, demands or causes of action arise in whole or in part from the negligence of the City of Arlington, his officers, officials, agents or employees. It is the express intention of all the parties that the indemnity provided for in this paragraph is indemnity by Contractor to indemnify and protect City of Arlington from the consequences of City of Arlington's own negligence, whether that negligence is a sole or concurring cause of the injury, death or damage and whether said negligence is characterized as sole, contractual comparative, concurrent, joint, gross, active, passive, or any other form of negligence.

In any and all claims against any party indemnified hereunder by any employee of the Contractor, any subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, this indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any sub-contractor under workmen's compensation acts or other employee benefit acts. (Rev. 12/2000)

11-5 ADDENDUM: This section has been moved to "Instructions to Bidders." (Rev. 2/2001)

11-6 TIME FOR COMPLETION AND LIQUIDATED DAMAGES: Since time is of the essence, the City has seen fit to establish the time required to complete this project. The time, as set out in SECTION 5 of this contract, will be the maximum number of **calendar** days allowed to substantially complete this project. Substantially complete is defined as having completed all bid items included in the contract to allow the facilities to function as designed. Failure of the Contractor to complete the work within this time will result in damages being sustained by the City of Arlington. Such damages are, and will continue to be, impracticable and extremely difficult to determine. The Contractor will pay the City of Arlington five hundred dollars **($500)** for each **calendar** day of delay (including Sundays and holidays**)** in finishing the work in excess of time specified for completion, plus any authorized time extensions. Execution of the contract under these specifications shall constitute agreement by the City of Arlington and Contractor that five hundred dollars **($500)** is the minimum value of the costs and actual damage caused by failure of the Contractor to complete the work within the allotted time, that such sum is liquidated damages and shall not be construed as a penalty, and that such sum may be deducted from payments due the Contractor if such delay occurs. (Rev. 1/1995)

Note to staff – change amount if project is less than $1M

Note to staff – change amount if project is less than $1M

11-6A BONUS: Should the Contractor substantially complete the contract prior to the time specified in this contract, the Contractor will be awarded a bonus. Substantially complete is defined as having completed all bid items included in the contract to allow the facilities to function as designed, including seeding and landscaping. That bonus shall be in the amount of five hundred dollars **($500)** for each **calendar** day remaining upon the completion of the contract. However in no case shall the Contractor's bonus exceed five hundred dollars **($500)** times half the **calendar** days set out in the bid documents for the project. (Rev. 6/1995)

11-7 COMPUTATION OF CONTRACT TIME FOR COMPLETION: The engineer will furnish the Contractor a monthly statement on forms furnished by the City, showing number of calendar days during the month, the number of calendar days allowed in the contract and the calendar days remaining under the contract. If the satisfactory completion of the contract shall require unforeseen work or work and materials in greater amounts than those set forth in the contract, then additional calendar days will be considered, equal to the time which, in the opinion of the engineer, the work as a whole is delayed. However, the completion time can only be changed by the execution of a supplemental agreement.

Time will be charged for all calendar days regardless of weather conditions, material supplies, or other conditions not under the control of the Contractor, which could impede the prosecution of the work. Time will also be charged for Sundays and holidays.

Prior to beginning construction operations, the Contractor shall submit to the engineer a critical path method (CPM) chart progress schedule showing the manner of prosecution of the work that he intends to follow in order to complete the contract within the allotted time. The purpose for this schedule is to assure adequate planning and execution of the work. The progress schedule must present a reasonable approach to completing the work within the allotted time.

Payment of partial monthly estimates shall not be commenced until the CPM chart progress schedule has been approved by the engineer.

The Contractor shall be entirely responsible for maintaining the progress of the work in accordance with the approved schedule. Should it become evident, in the opinion of the engineer, any time during the construction that the progress of the work has not been maintained in accordance with the approved schedule, the Contractor shall, upon written request of the engineer, promptly submit a revised schedule. This revised schedule shall set out operations, methods, equipment, added labor, and additional work shifts by which time lost shall be made up. At the end of each estimate period, the engineer will determine whether the Contractor is in compliance with the approved schedule, or the approved revised schedule. In the event the Contractor is determined not to be in compliance, he will be notified immediately in writing. If the Contractor does not correct the work progress to comply with the approved revised schedule by the end of the month of notification, payment for work performed during the period of non-compliance will be reduced according to the following:

1st Month - Reduction = 30% X work performed (Month Only)
2nd Month - Reduction = 40% X work performed (Month Only)

3rd Month - Reduction = 50% X work performed (Month Only)
Subsequent Month - Reduction = 50% work performed (Month Only)

The first month (the month of notification) is that month in which notification is made. Each month's reduction will be assessed only for that work performed during that specific month. The reduction will be cumulative for the entire period of non-compliance; i.e., 30% payment reduction for the work performed during the first month, plus 40% payment reduction for work performed during the second month, plus 50% payment reduction for work performed during the third month, and plus 50% payment reduction for work performed in each succeeding month of non-compliance thereafter. When the work progress becomes in compliance with the approved schedule, or the approved revised schedule, all withheld monies will be paid to the Contractor with the next regular estimate.

The Contractor shall anticipate possible delays and shall be prepared to supplement and revise his construction methods accordingly.

Prior to any construction activities, the Contractor shall install erosion control measures. The Contractor shall then begin the work to be performed under the contract within 10 days after the date of the authorization to begin work and shall continuously prosecute same with such diligence as will enable him to complete the work within the time limit specified. He shall not open up work to the detriment of work already begun. The Contractor shall conduct his operations so as to impose a minimum interference to traffic. (Rev. 12/2000)

11-7A SATURDAY OR CITY HOLIDAY INSPECTION: Any Contractor requiring the services of an Inspector on Saturdays will be charged a flat rate of $40.00 per hour for inspection services. In addition, the Contractor will also be required to deliver a non-refundable $100.00 deposit to the Department of Public Works and Transportation by 12:00 noon on the preceding Friday. (Rev 5/2014)

Following the performance of inspection services, an invoice will be prepared and mailed to the Contractor via the U.S. Postal Service. The $100.00 deposit will be deducted from the total invoice amount. All invoices must be paid in order for the Contractor to receive the retained funds at the termination of a project, and/or to receive a final project acceptance.

The Contractor will be charged only for the hours worked. If the Contractor works only 2.5 hours, no invoice will be generated (2.5 hours x $40 = $100 deposit already received). If an Inspector watches several projects and the remitted deposits equal or surpass the amount needed to pay for his or her hours, no invoices will be delivered. However, if the $100.00 deposit is delivered and the Contractor is unable to work for any reason, including weather, the $100.00 fee will not be refunded.

Construction Services management will determine the appropriate number of Inspectors necessary and which Inspectors will work on each Saturday.

No money will be exchanged in the field.

A. SUMMARY OF PROCESS

1. Contractor delivers the $100.00 non-refundable deposit to the Department of Public Works and Transportation before 12:00 noon on the preceding Friday prior to the Saturday that is to be worked. If the deposit is not time stamped by the deadline, the contractor will not be able to work on that Saturday. (Rev. 7/2014)

2. Contractor works desired number of hours and is invoiced at $40.00 per hour for the number of hours worked by the Inspector minus the previously remitted $100.00 deposit.

3. Contractor pays invoice that he receives in the mail.

Overtime during the work week is not subjected to the required process listed above. Night time tie-ins are also exempt from these rules when they are done in an effort to reduce the impact of water outages to customers. (Rev 5/2014)

B. HOLIDAY SCHEDULE

Below are holidays observed by the City of Arlington. No work will be permitted except in the most extreme circumstances and with prior approval from the Construction Services Manager. If approved to work on a holiday, the Saturday inspection rates will apply. (Rev 5/2014)

- Martin Luther King Day (third Monday in January)
- President's Day (third Monday in February)
- Good Friday (Friday preceding Easter)
- New Year's Day (January 1)
- Memorial Day (Last Monday in May)
- Independence Day (July 4)
- Labor Day (First Monday in September)
- Thanksgiving Day (Fourth Thursday in November)
- Thanksgiving Friday (Friday after Thanksgiving Day)
- Christmas Eve (December 24)
- Christmas Day (December 25)

In addition to the above, any holiday that falls on a Saturday will be observed on the preceding Friday. Any holiday that falls on Sunday will be observed on the following Monday. If a holiday falls on a Friday or on a Monday, the contractor will not be permitted to work on the Saturday after or preceding the holiday. (Rev. 5/2014)

11-7B WORK PERFORMED WITHOUT BENEFIT OF INSPECTION: Contractor shall provide the City 24 hours notice prior to any construction. Any time that work is being performed on bid items, work that supports bid items, or work that requires lane closures, an Inspector must be present. Work performed without the proper inspection shall be performed at the Contractor's risk. This work will be consider unauthorized, and at the option of the Construction Services Manager may not be measured and paid for and may require removal at the Contractor's expense. If the Contractor fails to satisfactorily repair, replace or remove the

unauthorized work or materials immediately upon receipt of written notice, the City will have authority to cause such remediation to be performed and to deduct the cost thereof from any monies due or to become due to the Contractor. If there is ever any question as to what requires inspection, please check with the assigned Inspector, Inspector Supervisor, or Construction Services Manager. General clean-up and similar items of work that have no direct pay can be performed without the benefit of inspection. (Rev. 12/2011)

11-8 DELAYS: The Contractor assumes the risk of all suspensions of or delays in performance of the contract, regardless of length thereof, arising from all causes whatsoever, whether or not relating to this contract, including wrongful acts or omissions of City of Arlington or its Contractors or subcontractors except only to the extent, if any, that compensation or an extension of time may be due as expressly provided for elsewhere in this contract for such suspension or delays, and, subject only to such exception, the Contractor shall bear the burden of all costs, expenses and liabilities which he may incur in connection with such suspensions or delays, and all such suspensions, delays, costs, expenses and liabilities of any nature whatsoever, whether or not provided for in this contract, shall conclusively be deemed to have been within the contemplation of the parties.

Notwithstanding any provisions of this contract, whether relating to time of performance or otherwise, City of Arlington makes no representation or guarantee as to when the construction site or any part thereof will be available for the performance of the contract, or as to whether conditions at the construction site will be such as to permit the contract to be performed thereon without interruption or by any particular sequence or method or as to whether the performance of the contract can be completed by the time required under this contract or by any other time.

Wherever in connection with this contract it is required, expressly or otherwise, that City of Arlington shall perform any act relating to the contract, including making available or furnishing any real property, materials or other things, no guarantee is made by the City of Arlington as to the time of such performance and the delay of City of Arlington in fulfilling such requirement shall not result in liability of any kind on the part of City of Arlington except only to the extent, if any, that an extension of time or compensation may be due as expressly provided for in this contract. (Rev. 7/1989)

An extension of time will only be considered when a claim for such extension is submitted to the City in writing by the Contractor within fourteen (14) calendar days from the time when any alleged cause of delay occurs. (Rev. 7/2008)

11-9 MONTHLY ESTIMATE: Monthly pay estimates will be processed at the beginning of each month for work performed during the prior month. Assuming there are no issues encountered during the standard process, payment will be processed within 30 days from the end of the prior month.

Where multiple locations are included in the contract, City may require measurements to be performed on a daily basis. Invoices shall be submitted for the actual work performed. (Rev. 12/2011)

11-9A RIGHT TO AUDIT: Contractor agrees that City shall, until the expiration of three (3) years after final payment under this contract, have access to and the right to examine any directly pertinent books, documents, papers and records of Contractor involving transactions relating to this contract. Contractor agrees that City shall have access during normal working hours to all necessary Contractor facilities and shall be provided adequate and appropriate work space in order to conduct audits in compliance with the provisions of this section. City shall give contractor reasonable advance notice of intended audits. (Rev. 3/2003)

11-10 PREVAILING WAGE RATES: The Contractor shall comply with V.T.C.A., Government Code, Chapter 2258, in performing this project. In accordance with V.T.C.A., Government Code, Chapter 2258, the prevailing wage rates as set forth in Section 2 of the contract documents shall be paid on this project. For overtime work and legal holidays, the hourly rate shall be one and one-half times the basic hourly rate set forth in Section 2. The City will require an affidavit stating that the Contractor has complied with the prevailing wage rate provision of the contract documents, prior to acceptance of the project. The City reserves the right to conduct interviews with the Contractor's employees to insure compliance with Section 2 of the contract documents in accordance with applicable State and Federal Laws.

Upon written request by the City, the general contractor shall be responsible for submitting payroll information to the City of Arlington for all employees performing work on the project, whether employed by the general contractor or a subcontractor to the general contractor. Each submittal shall be certified by the general contractor as to completeness and accuracy.

A Contractor or subcontractor in violation of V.T.C.A., Government Code, Chapter 2258 is liable for a penalty. That Contractor or subcontractor shall pay to the City sixty dollars ($60.00) for each laborer, workman, or mechanic employed for each calendar day, or portion thereof, such laborer, workman, or mechanic is paid less than the said stipulated rates for work done under the contract.

The Contractor or subcontractor violating a requirement of this Special Provision may be determined ineligible to bid on or receive any additional work during the calendar year following the year in which the violation of this Special Provision occurred. (Rev. 5/2011)

11-11 CONSTRUCTION WATER: Contractor is responsible to provide all water necessary for the construction of this project. All construction water will be metered by City owned meters. A fee and a deposit must be paid before the meter is released to the contractor. Payment and meter pick up locations are the South Service Center, 1100 S.W. Green Oaks, or City Hall Customer Care, 101 W. Abram. The meter readings will be submitted online by the contractor and billed each month in accordance with the current Customer Care and Business Services Policy. Any damage that occurs to the meter during this time will be repaired by the City of Arlington at the expense of the Contractor. The cost of the repairs will be deducted from the deposit and the remaining deposit will be returned to the Contractor. This procedure will be followed wherever construction water is needed. If the meter is set on a fire hydrant, the meter assembly shall be provided with an approved backflow prevention device, provided by the contractor in accordance with the standard detail and the Fire Hydrant Meter Agreement requirements located under http://www.arlington-tx.gov/water/builder-services/construction-

meters-backflow-prevention/. (Rev. 6/2016)

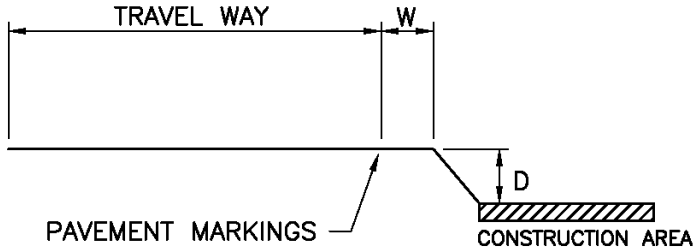
11-11A CONSECUTIVE STREET CONSTRUCTION: The rate of progress shall be such that at no time shall more than three (3) streets be under construction at the same time without prior approval by the project engineer or inspector. (Rev. 8/2012)

11-12 DETOURS AND BARRICADES: The Contractor shall submit one (1) copy of a Traffic Control Plan together with the checklist, two (2) weeks prior to closing any street or causing any obstruction to traffic on any street to the City's Traffic Engineering Division (located at 1011 W. Main Street). The Contractor shall not proceed with the implementation of the Traffic Control Plan until notified by the City that the plan has been accepted. The Traffic Control Plan shall be drawn at a scale not less than 1″=200′ unless approved by the Traffic Engineer and such that it is legible and shall include proposed street closings, detours, barricade placements, and sign placement, including advance warning signs, temporary signals, portable message boards and pavement markings, if necessary. The Contractor shall furnish and erect suitable barricades, signs, signals and appropriate pavement markings to protect motorists and pedestrians, as set forth in the CITY OF ARLINGTON WORK AREA TRAFFIC CONTROL MANUAL and/or the latest edition of the TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. However, vertical panels will not be allowed unless approved by the Traffic Engineer. The barricades, signs, signals and pavement markings shall be constructed, placed, and adequately maintained as set forth in the Traffic Control Plan or as directed by the engineer or his/her authorized representative. Unless otherwise approved by the engineer or his/her authorized representative, two-way traffic shall be maintained on all roadways under construction at all times. If it becomes necessary to detour traffic off the existing paved roadway for more than seven (7) days, a hard surface driving lane, such as asphalt, shall be properly constructed and maintained by the Contractor throughout the duration of the detour. All temporary tie-ins shall be constructed of 4-inch Type B asphalt over a compacted subgrade (standard compaction). Subsequent maintenance of all detours and tie-ins shall be considered subsidiary to the unit prices bid for temporary asphalt. Cutting, removing, and replacing the asphalt for utility installations, excavation, and/or liming operations shall be considered subsidiary to the initial placement of asphalt and will not be paid for each re-installation. Asphalt shall be replaced within seven (7) days of removal for these activities. A bid item shall be included for furnishing, installing, maintaining and final removal of the asphalt. (Rev. 6/2014)

Where pavement drop-offs occur, traffic control plans shall be in accordance as illustrated on the following "Traffic Control Device Detail," which is enclosed as part of these specifications. These guidelines are applicable to construction work where continuous pavement edges or drop-offs exist parallel and adjacent to a lane used for traffic.

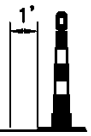
When performing maintenance on major arterials or as directed by the Traffic Engineer, Contractor shall use portable message boards to inform the public of the construction date, length of project, and to expect delays. The signs shall be operational 24 hours a day. Portable message boards shall be erected three (3) working days prior to beginning work, and all verbiage shall be approved by the City Traffic Engineer. (Rev 6/2014)

No direct compensation (unless bid item included) will be made to the Contractor for furnishing, installing, and maintaining any Traffic Control Devices, including but not limited to message boards, barricades, warning signs, signals, pavement markings, and detours and their subsequent maintenance and removal. This is to be considered subsidiary to the several items for which unit prices are requested in the PROPOSAL. Should it be necessary for the City to provide and/or maintain signs, barricades, signals, and markings the cost of such shall be deducted from the monthly estimate. (Rev. 12/2011)



"W" GREATER THAN OR EQUAL TO 30' NO DEVICE NEEDED

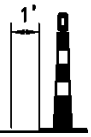
"W" LESS THAN 30' BUT GREATER THAN OR EQUAL TO 12' WITHOUT CURB OR 2' WITH CURB



SPACING OF 36" TALL REFLECTORIZED CHANNELIZER DEVICE SHALL COMPLY WITH THE LATEST EDITION OF THE TEXAS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES

"W" LESS 12' WITHOUT CURB OR 2' WITH CURB AND:

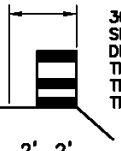
(A) "D"=2" TO 6"



SPACING OF 36" TALL REFLECTORIZED CHANNELIZER DEVICE SHALL COMPLY WITH THE LATEST EDITION OF THE TEXAS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES

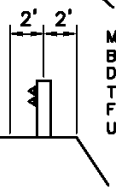
(B) "D" GREATER THAN 6" TO 24"

4'MIN. (6'DESIRED)



30 OR 55 GALLON DRUMS SPACING OF 30 OR 55 GAL. DRUM SHALL COMPLY WITH THE LATEST EDITION OF THE TEXAS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES

(C) "D" GREATER THAN 24"



MBGF, CONCRETE MEDIAN BARRIER OR "W" SECTION ON DRUMS FOR SLOPES STEEPER THAN 2:1 (IF SLOPE IS 2:1 OR FLATTER DETAIL B MAY BE USED)

TRAFFIC CONTROL DEVICE DETAIL

(Rev. 6/2014)

11-12A TEMPORARY TRAFFIC SIGNALS:

A. DESCRIPTION: Temporary signals shall be considered for all existing signalized intersections within the limits of this project. This section describes furnishing, installing, maintaining, and removing intersection temporary traffic signals. Temporary traffic signals are considered a part of the Traffic Control Plan and no additional pay will be made to the contractor for this work. (Rev. 10/2010)

B. GENERAL:

1. Contractor shall furnish, install, maintain, reconfigure, and remove temporary traffic signals in accordance with the Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges as published by the Texas Department of Transportation, latest edition. All traffic signal installations shall conform to the latest Texas Manual on Uniform Traffic Control Devices (TMUTCD). (Rev. 4/2015)

2. City will supply signal controller cabinet, signal controller and necessary video imaging video detection systems (VIVDSs), and VIVDS cable. Contractor shall contact the Traffic Operations Division to arrange for pickup of equipment. (Rev. 4/2015)

3. The contractor will transfer VIVIDS from any signalized intersection with existing VIVIDS to the temporary facilities. This transfer includes reuse of existing VIVDS cable where feasible. The City of Arlington Field Operations Division will provide (loan) VIVIDS to the contractor for installation and use on the temporary signal(s) for any signalized intersection without VIVIDS. (Rev. 4/2015)

4. The engineer may request changes to the timing intervals during the project as required by construction or traffic conditions. All engineer-requested changes shall be completed within 24 hours. (Rev. 4/2015)

5. Furnish and install the temporary electrical service for temporary traffic signals according to the requirements of the City of Arlington. Contractor is responsible for all necessary permits, inspection, and coordination as needed between the City and the utility regarding billing. (Rev. 4/2015)

6. Request a signal inspection of the complete temporary traffic signal installation. Make this request to the inspector at least 3 working days before the requested inspection. The engineer will not grant turn on approval until the contractor corrects all discrepancies identified in the inspection. (Rev. 4/2015)

7. Verify the span heights throughout the project duration. (Rev. 4/2015)

8. Place all signal faces as directed by the engineer. Make every effort to give maximum visibility to all signals intended for view by the motoring public. (Rev. 4/2015)

9. Provide the name and telephone number of the persons qualified and assigned to maintain the temporary traffic signal to the engineer. Ensure this persons is available 24 hours a day, 7 days a week, from the start of the project until the temporary traffic signal is no longer needed. Ensure that emergency calls are received by an individual and not by an answering machine. (Rev. 4/2015)

10. Upon acceptance of new signal and completion of work, the contractor will switch control of the intersection over to the permanent cabinet installation including relocating the VIVIDS. Upon deactivation of the temporary signal, call the electrical utility immediately for the temporary electrical service disconnect. (Rev. 4/2015)

11. Upon acceptance of new signal, completely remove poles and other supports used for temporary signals. Remove the temporary traffic signal faces the same day the permanent traffic signal is turned on. Removal of remaining temporary signal components shall be completed within 3 days of activation of the permanent signal. When approved, concrete foundations may be left 2 feet or more below finish grade. Backfill and surface restoration is the responsibility of the contractor. (Rev. 4/2015)

12. Any equipment furnished by the city shall be returned to the city, unless the city desires to use the equipment in the permanent signal system. All other temporary signal components shall be completely removed and retained by the Contractor. (Rev. 4/2015)

C. MAINTENANCE:

1. Contractor shall immediately correct lamp/LED outages within 24 hours of the reported outage.

2. Respond within one hour of notification to provide corrective action to any emergency such as but not limited to signal cable problems and equipment failures. If equipment becomes damaged or faulty beyond repair, replace it within one working day. In order to fulfill this requirement, maintain, in stock, sufficient amounts of materials and equipment to provide repairs.

3. The City of Arlington will maintain all emergency vehicle pre-emption devices.

4. The City of Arlington Field Operations Division will make every effort to have permanent signals relocated, in place, and in working order as required by the time the project is accepted. If this does not occur, it will not delay project acceptance; and a separate agreement between the general contractor, sub-contractor, and the City of Arlington may be written so the City of Arlington takes over responsibility of payments to the traffic control sub-contractor for on-going maintenance and removal of the temporary signals. (Rev. 4/2015)

11-13 SALES TAX EXEMPTION: The Contractor is responsible for understanding Texas law regarding tax exemption for City projects and bidding accordingly. Latest information can be obtained from the State Comptroller's Office and/or other appropriate entities. (Rev. 8/2012)

11-14 ACCESS TO PRIVATE PROPERTIES: The Contractor shall maintain all private drives in an accessible condition to allow residents ingress and egress before leaving the job site, except during the placing and curing of drive approaches. All commercial drives and other locations with high traffic volumes, as directed by the engineer, shall be maintained with 4-inch Type B asphalt over a compacted subgrade (standard compaction). Subsequent maintenance of drives shall be considered subsidiary to the unit prices bid. Cutting, removing, and replacing the asphalt for utility installations, excavation, and/or liming operations shall be considered subsidiary to the initial placement of asphalt and will not be paid for each re-installation. Asphalt shall be replaced within seven (7) days of removal for these activities.

The Contractor will leave with the engineer the phone numbers of responsible persons available twenty-four (24) hours a day to handle emergencies concerning egress and ingress. If a vehicle becomes stranded due to an inaccessible condition, any legitimate claims arising from such conditions shall be the sole responsibility of the Contractor. If such claims are not settled prior to the monthly pay estimate, they shall be deducted from that estimate. (Rev. 10/2002)

11-14A CRUSHED ROCK BAD WEATHER PROTECTION: During periods of bad weather, the Contractor shall put in place, on excavated streets, an amount of Type A, Grade 1, flex base sufficient to provide temporary access to private non-commercial property. Crushed concrete flexible base meeting TxDOT Item 247, Grade 1 is also acceptable to provide temporary access to private property. All flex base will be removed and stockpiled for future use at other locations as necessary. Any base removed and hauled off the project site without approval from the engineer will be replaced by an equal quantity at the Contractor's expense. Special care will be taken by the Contractor during placement and removal of the flex base, not to unnecessarily combine the flex base with native material on the project. If special care is not taken by the Contractor, an equal quantity of flex base will be replaced at the Contractor's expense. Daily tickets will be submitted and signed by the inspector or his representative no later than one (1) week after delivery. Any tickets not submitted within this time frame or signed by the inspector shall not be paid.

NOTE: The use of flex base as a means to detour traffic or maintain two lanes of traffic will not be paid under this item.

The tons in the bid quantity is a rough estimate as the actual amount used will be determined by the need for temporary and/or emergency access during construction. (Rev. 12/2000)

11-15 USE OF PRIVATE PROPERTY: The Contractor shall not at any time use private property to park or turn around construction vehicles or store equipment and/or materials without the written permission of the property owner involved. The Contractor shall not at any time use water metered by meters set for the property owner's use without written permission of the property owner. Contractor is responsible for any and all damages to private property used for construction purposes. (Rev. 12/2000)

11-16 PROTECTION OF THE PUBLIC: (COG 107.18) The Contractor shall at all times conduct the work in such manner as to ensure the least possible obstruction to public traffic and protect the safety of the public. Any provisions necessary for the work being performed to provide public safety and convenience shall be the direct responsibility of the Contractor and shall be performed at his entire expense.

Materials placed on the site, materials excavated and construction materials or equipment shall be located so as to cause as little obstruction to the public as possible.

The City of Arlington reserves the right to remedy any neglect on the part of the Contractor in regard to public convenience and safety which may come to its attention. The cost of such work done or material furnished by the City of Arlington shall be deducted from monies due or to become due to the Contractor. (Rev. 7/2003)

For protection and convenience of the public and emergencies, the Contractor shall furnish the City with a telephone number at which the Contractor can be contacted 24 hours a day during the entire construction period of this project. This telephone number shall be furnished to the City in writing prior to the beginning of construction. (Rev. 6/2009)

11-17 PROTECTION OF ADJACENT PROPERTY: The Contractor shall be responsible for the protection of all fences, trees, curb and gutter, and other improvements on the property adjoining the construction sites from damage by the Contractor's equipment and personnel. The Contractor shall be responsible for notifying the property owners in advance of any trimming to be done on trees. The Contractor will notify the City of any trees, shrubs, or bushes that must be removed by the construction. No trees will be removed by the Contractor until permission is granted by the engineer or his designated representative. The Contractor will not be allowed to place excess material, forms, equipment, or any other material outside the street right-of-way without written permission of the property owner and approval of the Engineer. No dumping will be allowed in floodplains or below the 100-year flood elevation of drainage ways. (Rev. 12/2000)

For documentation purposes, Contractor will be responsible to video the job site prior to commencing work and to provide the Inspector with a date stamped copy of the video. Contractor will be responsible for any damages caused by the Contractor or his subcontractors. Damages shall be repaired or resolved promptly upon notification by the Inspector. Damages to irrigation by negligence of the contractor shall be repaired by a licensed irrigator within 48 hours of being damaged. Contractor will be responsible for any cost incurred if City forces or City contractor repairs the damages due to lack of response from the Contractor. Such cost shall be deducted from the monthly pay estimates. (Rev. 3/2012)

11-18 TESTING: The Assistant Director of Public Works, as he/she deems necessary, shall have the authority to test materials, equipment and in-place construction to verify compliance with project specifications. The expense of tests shall be paid for by the City except as specifically noted within this Special Provision. The failure of the City to make any tests shall in no way relieve the Contractor of his responsibility to provide materials, equipment, and in-place construction which comply with project specifications. The Contractor shall provide such facilities as the engineer may require for collecting and forwarding samples and shall not,

without specific written permission of the engineer, use the materials represented by the samples until tests have been made and materials approved for use. The Contractor will furnish adequate samples without charge to the City of Arlington.

In case of concrete, the aggregates, design minimum and the mixing and transporting equipment shall be approved by the engineer before any concrete is placed, and the Contractor shall be responsible for replacing any concrete which does not meet the requirements of the contract documents. (Rev. 5/2003)

11-19 DEFECTIVE MATERIALS, EQUIPMENT OR, IN-PLACE CONSTRUCTION:

A. Materials and equipment not conforming to the requirements of these specifications will be rejected and shall be removed immediately from the site of the work, unless permitted to remain by the engineer. Rejected materials, the defects of which have been subsequently corrected, shall have the status of new material.

B. In-place construction not conforming to the requirements of these specifications will be removed and replaced at the Contractor's expense or reworked at the Contractor's expense as deemed appropriate by the engineer. Tests made on in-place construction which has been replaced or reworked due to failure to meet project specifications will be authorized by the engineer and the cost of such tests will be the expense of the Contractor. Testing will be performed by testing company under contract with the City of Arlington at the rates specified by that contract. (Rev. 1/1995)

C. If the Contractor fails to satisfactorily repair, replace or remove the defective work or materials immediately upon receipt of written notice, the City will have authority to cause such remediation to be performed and to deduct the cost thereof from any monies due or to become due to the Contractor. (Rev. 6/2009)

11-19A MATERIALS AND WORKMANSHIP: WARRANTIES AND GUARANTEES:

Under the terms of the warranties which arise from these contract documents and/or by the terms of any applicable special warranties required by the contract documents, if any of the work in accordance with this contract is found to not be in accordance with the requirements of the contract documents, the Contractor shall correct such work promptly after receipt of written notice from the City of Arlington or the architect, engineer or other entity as the contract documents may provide. This obligation shall survive acceptance of the work under the contract and termination of the contract. In order to facilitate a prompt response, Contractor agrees to provide for warranty service to the extent practical, from local businesses, including goods and services, when such goods and services are comparable in availability, quality and price. If Contractor fails within a reasonable time after written notice to correct defective work or to remove and replace rejected work, or if Contractor fails to perform the work in accordance with the contract documents, or if Contractor fails to comply with any provision in the contract document, either the City of Arlington or its designee may, after seven (7) days written notice to Contractor, correct and remedy any such deficiency at the expense of the Contractor. (Rev. 6/1992)

11-20 EXISTING UTILITIES: The Contractor shall make every effort to protect existing utilities and other lines or structures. The Contractor shall not adjust, remove, or operate existing utilities unless specifically requested to do so in these specifications or authorized to do so by the engineer or his representative.

Contractor shall protect all utility pole(s) impacted by the construction. Protection shall include temporary bracing of the utility poles where adjacent excavation could reasonably compromise the stability of the utility pole(s). Contractor shall coordinate the utility pole bracing with the owner of the utility pole(s) and the City of Arlington's project Engineer. Unless there is a specific pay item for temporary pole bracing of utility pole(s), bracing of utility poles shall be incidental to other pay items included in the contract. Any utility damaged by the Contractor during the construction shall be suitably replaced at the Contractor's expense. (Rev 3/2015)

The Contractor should not assume the City has Surface Utility Engineering (SUE) maps for any of the proposed locations. Contractor will be responsible for calling for ALL locates (1-800-DIGTESS) in a timely matter so that all utility issues may be addressed and resolved within the allotted contract time. For City's water & sewer locates, submit the requests at http://www.arlington-tx.gov/contact/report-a-new-issue/water-utilities. For City's streetlights, signals and fiber, call (817) 459-5434. (Rev 8/2016)

The Contractor shall contact the proper utility representative for questions or coordination of construction related to existing utilities. (Rev. 10/2004)

11-20A DUTY OF AN EXCAVATOR RELATING TO EXCAVATION OPERATIONS THAT MAY DAMAGE UNDERGROUND FACILITIES:

A. A person who intends to excavate shall notify a one call notification center not earlier than the 14th day before the date the excavation is to begin or later than the 48th hour before the time the excavation is to begin, excluding Saturdays, Sundays, and legal holidays. Provided, however, if an excavator makes a Saturday notification, the excavator may begin the excavation the following Tuesday at 11:59 a.m. unless the intervening Monday is a holiday. If the intervening Monday is a holiday, the excavator may begin the excavation the following Wednesday at 11:59 a.m.

B. The notice required under this section shall include:

1. the name of the person serving the notice;

2. the location of the proposed area of excavation, including:
   a. the street address, if available, and the location of the excavation at the street address; or

   b. if there is no street address, an accurate description of the excavation area using any available designations such as the closest street, road, or intersection;

3. the name, address, and telephone number of the excavator or the excavator's company;

4. the excavator's field telephone number, if one is available;

5. the starting date and time, and the anticipated completion date of excavation; and

6. a statement as to whether explosives will be used.

C. To have a representative present during the excavation, the utility owner shall contact the excavator and advise the excavator of the utility owner's intent to be present during excavation and confirm the start time of the excavation. If the excavator wants to change the start time, the excavator shall notify the operator to set a mutually agreed-to time to begin the excavation. (Rev. 12/2000)

11-21 PROTECTION & CLEANING OF EXISTING SEWERS: If the Contractor, through carelessness or negligence, obstructs the flow of any existing sanitary sewer or deposits any materials in the sanitary sewer within the limits of the project, the Contractor shall provide the necessary equipment and labor (or hire a subcontractor approved by City of Arlington Water Utilities Field Operations) to clean and televise the affected sewers. The limits of the sewer lines to be cleaned and televised will be determined by Water Utilities Field Operations staff. The identified lines shall be cleaned within 48 hours of notification. After cleaning, the Contractor shall televise and videotape the sewer line. Video tapes shall be delivered to Arlington Water Utilities South Service Center, 1100 SW Green Oaks Blvd., so they can be reviewed and approved for acceptance of the cleaning work. (Rev. 12/2004)

11-22 LOCATION & PROTECTION OF EXISTING STRUCTURES & UTILITIES: In the preparation of plans and specifications, the engineer has endeavored to indicate the location of existing underground utility lines which are known to the engineer. No attempt has been made to show minor lines or service lines however, and it is not guaranteed that all major lines or structures have been shown on the plans. Prior to the start of construction, the Contractor shall communicate with the local representative of all utility companies and advise said representatives of the route of the proposed construction in order to obtain the assistance of the utility companies in the location of and in the avoidance of the conflicts with utility lines. It is the Contractor's responsibility to uncover and determine the elevation and location of all potential conflicts well ahead of the excavation. (Rev. 12/2000)

11-23 RIGHT-OF-WAY/EASEMENT PREPARATION: Right-of-way and/or easement preparation shall be in accordance with C.O.G. Specification Item 203.3, General Site Preparation. "Preparing right-of-way" shall be measured on a lump sum basis unless indicated otherwise. In addition to the items described in the C.O.G. Specifications, removal of all pavements (concrete and asphalt), trees less than six-inches (6") in diameter (as measured at 4-feet above ground level), and crape myrtle less than six-feet (6') tall (as measured vertically), shall be included in the lump sum bid item. The contractor shall clear and grub areas necessary for construction operations. All trees, branches, limbs, and roots shall be removed and disposed of by the contractor leaving the right-of-way and/or easement in a neat and presentable condition. Clearing and grubbing shall be done in a matter that will not damage adjacent property. (Rev. 1/2017)

The lump sum bid for this item shall not exceed 10 percent of the total amount bid for the entire project. A prorated portion of the lump sum bid shall be paid monthly until such work is completed. The Contractor should take special precautions to avoid damaging any trees outside the construction limits and any other trees which the City may designate to remain. (Rev. 1/2017)

11-24 ROADWAY EXCAVATION: All roadway excavation on this project shall be unclassified and shall be performed in full accordance with the C.O.G. SPECIFICATIONS, Division 200, 203.4, "Unclassified Street Excavation."

Payment for excavation is based on plan quantity. Contractor shall verify excavation/fill quantities and shall notify City of Arlington in writing of concurrence or disagreement with plan quantities prior to start of construction. Any discrepancies in quantities shall be resolved prior to beginning excavation. No adjustments to plan quantities shall be allowed once excavation/fill activities have begun.

The placement and compaction of fill material in roadway fill areas on this project shall be measured by the cubic yard in place and paid separately from roadway excavation as specified in the item "Compacted Roadway Fill & Embankment". It shall be the responsibility of the Contractor to locate a suitable disposal site outside the right-of-way limits to dispose of both excess and unsuitable material from roadway excavation not needed in roadway fill and embankment. No separate payment shall be made for disposal of excess or unsuitable material. No dumping or disposal of excess material will be allowed in floodplains or below the 100-year flood elevation of drainage ways. Disposal shall be performed in accordance with appropriate laws and ordinances. (Rev. 7/2003)

***Note** – This is generally applied to Mill/ Overlay and reclamation project*

~~11~~-24A BASE FAILURE REPAIR: N/A

All base failures will be repaired with Type "B" HMAC, or as specified by the Inspector. Material will be placed and compacted in four inch (4") lifts and shall be flush with the existing milled surface. Minimum depth is eight inches (8") and final depth will be achieved once solid subgrade is reached.

Base failures that appear in front of citizen's driveways will be repaired the same day the street is milled. Base failures on the remainder of the road surface must be made safe for vehicular traffic the same day the street is milled until permanent repairs are made. Contractor must complete all

base failures on each street within 3 working days or a penalty of $1,000 per day for each day in excess of the 3 working days.

On residential streets, Contractor will be required to use a gradall type excavator or backhoe to excavate the base failure.

Contractor shall immediately load excavated material into a truck. Excavated material shall not be placed on top of the milled surface at any time.

Asphalt shall be delivered to the job site and placed in the prepared area for repair. Contractor shall not dump loads of asphalt in the street.

Areas that require repair or asphalt reclamation will be determined by the Inspector. If the Inspector determines that more than thirty percent (30%) of the street has base failures, or determines that the weight of the excavation equipment will cause more than thirty percent (30%) of the street to fail, asphalt reclamation will be performed instead of a base failure repair.

Depth required for excavation of base failures will be determined by the project Inspector. Measurements for base failure repairs will be verified by the Contractor and Inspector at the end of each working day.

The City of Arlington will pay for areas agreed upon by the Contractor and Inspector. (Rev. 9/2013)

11-25 UNCLASSIFIED STRUCTURAL EXCAVATION: The excavation for the construction of the inlets, box culverts, and junction boxes is not classified. Payment for the excavation shall be subsidiary to the unit price bid for each structure in the bid proposal.(Rev. 8/1989)

11-26 SITE GRADING: All vegetation shall be removed from areas where fill is to be placed. Topsoil shall be grubbed, removed, and stockpiled. After the fill has been placed and compacted, the topsoil shall be spread to a thickness of four inches (4″) in all proposed areas that require it. The topsoil shall be free from grass, roots, sticks, stones, or other foreign materials. After placement is complete, the surface of the topsoil shall be finished to a reasonably smooth surface so grass may be planted and maintained. (Rev. 10/2010)

Site grading will be based on the elevations and grades shown on the Grading and Paving Drawings. Filling, construction of embankments, removal, stockpiling, and spreading topsoil and offsite disposal of excess material will be considered incidental and subsidiary to excavation and shall not be a separate pay item.

No extra payment shall be made for rock excavation or crushing rock material for placement in fill areas. This work shall be considered incidental to site grading and shall not be a separate pay item. (Rev. 8/1989)

11-27 COMPACTED ROADWAY FILL & EMBANKMENT: All compacted roadway fill and embankments constructed on this project shall be in accordance with the C.O.G.

SPECIFICATIONS, Division 200, 203.7, "Embankment", except as amended herein or a shown on the plans.

All fill material shall be compacted in lifts of loose depth not exceeding eight (8") inches and compacted to at least 95% of Standard Proctor Density at optimum moisture content, ± two percentage points, as determined by ASTM D 698. Each lift shall be tested before a subsequent lift is allowed to be placed. It shall be the responsibility of the Contractor to locate a suitable disposal site outside the right-of-way limits and to dispose of any excess material not needed for constructing embankments to the established grade, shape of the typical sections shown on the plans, and detailed sections or slopes. No dumping or disposal of excess material will be allowed in floodplains or below the 100-year flood elevation of drainage ways. Disposal shall be performed in accordance with appropriate laws and ordinances.

No recycled soil will be allowed for use on this project without prior consent from the engineer.

The placement and compaction of fill material in roadway and embankment areas on this project shall be measured and paid for separately from the "Roadway Excavation". However, no separate payment will be made for the disposal of excess materials as mentioned above. Measurement for compacted roadway fill and embankment shall be for in-place embankment after compaction to the density specified on the plans. Measurement shall be in cubic yards as determined on the basis of the natural ground cross-section and the finished lines and grades as shown in the plans and computed by the method of average end areas from the project cross-section.

The price bid per cubic yard for "Compacted Roadway Fill and Embankment" shall be full compensation for furnishing all labor, materials, tools, equipment, and incidentals necessary to complete the embankment, including cost of water, sprinkling, wetting, and rolling in accordance with the plans and specifications. (Rev. 7/2003)

11-27A BORROW: There is insufficient material from the street excavation to complete all fills as shown on the construction plans. Therefore, it is the Contractor's responsibility to locate a suitable source of select borrow material for completing the fills on the project. Prior to using any offsite borrow material, the material must be approved by the City of Arlington. The following will be required prior to approval:

A. The Contractor must obtain a written, notarized certification from the landowner of each proposed borrow source stating that to the best of the landowner's knowledge and belief there has never been contamination of the borrow source site with hazardous or toxic materials.

B. The Contractor shall provide adequate testing to determine that the borrow source material is not contaminated with hazardous or toxic materials. The geotechnical engineer performing the testing for the Contractor shall notify the City in writing of his/her approval of the material. No recycled soil will be allowed for use on this project without prior consent from the engineer.

C. Based on geotechnical testing performed on existing soil from the project site, a lime/cement application rate has been determined for subgrade stabilization as set forth in these Special Provisions. The quantities included in the PROPOSAL are based on the determined application rate. Before using any offsite borrow material for subgrade purposes, the Contractor shall provide necessary testing to determine the lime/cement application rate for the proposed borrow material. The results of these tests shall be submitted to the City in writing by the geotechnical engineer performing the testing for the Contractor. If the lime/cement application rate required for the offsite borrow material is greater than the rate specified in these Special Provisions, the Contractor shall be responsible for the cost of the additional lime/cement required or locate an alternative borrow source. If the application rate required for the borrow material is less than the rate specified in these Special Provisions, the Contractor will be paid for the actual quantity of lime/cement used on the project.

D. The Contractor shall provide testing (ASTM D 698) to determine the optimum density and moisture content for the borrow material if used as treated subgrade.

E. The borrow material shall be tested for the presence of soluble sulfates. Any soil with a content of soluble sulfate in excess of 2000 ppm will not be approved.

F. No organic material, trash, debris, trees, clippings or other deleterious material will be allowed in offsite borrow material. (Rev. 12/2000)

G. Payment for Borrow is based on plan quantity. Contractor shall verify excavation/fill quantities and shall notify City of Arlington in writing of concurrence or disagreement with plan quantities prior to start of construction. Any discrepancies in quantities shall be resolved prior to beginning excavation. No adjustments to plan quantities shall be allowed once excavation/fill activities have begun. (Rev. 2/2011)

11-28 FILLING: Fills shall be constructed at the locations and to the lines and grades indicated on the drawings. When rock excavation is used, it shall be broken or crushed so that the maximum dimension is four (4") inches. No rock will be allowed in the upper twelve (12") inches of the fill.

Equipment for compacting fills shall be sheepsfoot rollers, rubber-tired rollers, and other approved equipment capable of obtaining required density.

The combined excavation and fill placing operation shall be blended sufficiently to secure the best practicable degree of compaction. Fill shall be compacted to at least ninety-five percent (95%) Standard Proctor Density at optimum moisture content, ± two percentage points, as determined by ASTM D 698. The suitability of the materials shall be subject to approval of the City of Arlington's laboratory. Dump, then spread and mix successive loads of material to give a horizontal layer of not more than eight (8") inches in depth, loose measurement. After each layer of fill has been spread to the proper depth, it shall be thoroughly manipulated with a disc plow or other suitable and approved equipment until the material is uniformly mixed, pulverized, and brought to a uniform approved moisture content.

No fill material shall be rolled until the layer of material has a uniform moisture content which will permit the proper compaction under that degree of moisture content which is the optimum for obtaining the required compaction.

Dry any material having a moisture content too high for proper compaction by aeration until the moisture content is lowered to a point where satisfactory compaction may be obtained. If the moisture of the fill material is too low, add water to the material and thoroughly mix by blading and discing to produce a uniform and satisfactory moisture content.

If, in the opinion of the City of Arlington's laboratory or inspector, the rolled surface of any layer or section of the fill is too smooth to bond properly with the succeeding layer or adjacent section, roughen by discing or scarifying to the satisfaction of the City of Arlington's laboratory before placing succeeding layer or adjacent sections.

No recycled soil will be allowed for use on this project without prior consent from the engineer. (Rev. 12/2000)

11-29 DRAINAGE: Contractor shall maintain adequate drainage at all times during construction. Changing of natural runoff flow locations or concentrating flows to a point of potential harm to the adjacent property shall not be allowed. (Rev. 10/1990)

11-30 REMOVAL ITEMS: The removal of existing concrete curb and gutters, concrete valley gutters, concrete drive, and existing drainage features, approaches shall be at the locations indicated by the engineer and shall be paid for under the right-of-way preparation pay item (See Special Provision 11-23) unless a separate bid item is included in the PROPOSAL. All concrete curb and gutter and drive approaches removed will be broken out at existing construction expansion joints if possible. Where existing concrete is removed at a location other than a joint, the slab will be sawed in a neat straight line the full depth of the slab. The cost for sawing and breaking shall be considered subsidiary to the unit price bid for concrete removal. The Contractor shall make every effort to protect all concrete surfaces that will remain. Any remaining surfaces damaged during removal operations by the Contractor will be replaced at the Contractor's own expense.

Disposal of excess materials and debris resulting from construction, including but not limited to concrete, excess soil, forms, and rebar shall be removed and disposed of on a daily basis, unless other disposal schedule is approved by inspector. Depending on type of material or debris, dump trucks should be the primary source of disposal. Contractor will be responsible for providing the necessary equipment or vehicle for such task. (Rev. 12/2011)

Dump trucks must be tarped while in transit to disposal sites. Tarps must be secured and not torn or tattered. All applicable State and local laws and ordinances relating to hauling, handling, and disposal of such materials shall be complied with. Use of Roll Off Box shall meet the City's Ordinances. (Rev. 12/2011)

The responsibility of locating suitable disposal sites for removal items on this project will be solely a function of the Contractor. The City of Arlington will in no way be responsible for the actions of the Contractor if he disposes of excess material in locations that are not approved. No dumping or disposal of excess material will be allowed in floodplains or below the 100-year flood elevation of drainage ways. (Rev. 12/2000)

11-31 HYDRATED LIME: The hydrated lime to be used on this job shall conform to COG Specification Item 301.2 with the exception of 301.2.1.2 Quicklime. No Quicklime will be allowed on this project. (Rev. 7/2003)

11-32 LIME STABILIZATION OF SUBGRADE: **N/A**

Note: Parks Dept sometimes uses this. Not used for typical CIP projects

A. Prior to beginning any lime modification, the subgrade shall be brought to the required line, grade, cross-section, and proof rolled in accordance with specification requirements. Proof rolling shall be in accordance with Texas Department of Transportation Standard Specification for Construction of Highways, Streets and Bridges, 1993, Item 216. The cost of proof rolling shall be considered subsidiary to this item.

B. After the subgrade has been shaped, the roadway will be scarified to full depth and width of modification. Full depth will be eight (8") inches below finished grade and full width will be that distance from one (1') foot behind the back of curb on each side of the roadway.

C. Lime will be applied to that area defined in Part B of this section so that the initial mixing operation can be completed during the same working day. Lime will be applied by the "slurry method". (Rev. 9/2011)

1. Lime and water shall be combined to form a mixture for the lime application. Past experience has proven that approximately 3200 pounds of lime to 500-600 gallons of water will produce the satisfactory mixture. (Rev. 9/2011)

2. The slurry will be applied with an approved distributor or water truck by making multiple passes, if necessary, to apply the correct amount of lime. The distributor or water truck will be equipped with an agitator to keep the slurry in a consistent mixture.

3. For applications greater than or equal to 40 pounds per square yard, the initial application shall be applied in halves (two equal parts) on day one (1) and day two (2). This is subsidiary to the lime stabilization item.

4. Mixing with a pulvimixer will immediately follow the lime application(s) until 100% of all material will pass a two (2") inch sieve. The lime treated subgrade shall then be sealed with a pneumatic roller and left for an initial curing (mellowing) period of no less than 72 hours (3 days) and no more than 168 hours (7 days) measured from day one (1) of the initial application. During the initial curing (mellowing) period, the lime treated subgrade shall be maintained at the optimum moisture content to plus (+) four percentage points. *The final remix and*

compaction shall be completed within 168 hours (7 days) measured from day one (1) of the initial application. If the final remix and compaction are not complete within 168 hours (7 days) measured from day one (1) of the initial application then an additional lime application will be required. The additional lime application amount shall be 50 % of the original total application rate and shall be added to the lime treated subgrade in accordance with Section 11-32. Further, the moisture content of the prepared subgrade shall be maintained at optimum or above until the next subsequent pavement course is installed. If this moisture decreases below optimum, the incorporation of additional moisture by scarifying and re-compaction the prepared grade will not be permitted. If at any time the prepared subgrade needs to be disturbed to incorporate moisture, an additional application of lime at 50% of the original application rate will be required. NO additional payment shall be made if these additional lime applications are required.

5. For the final remix the subgrade shall be re-scarified to a depth of six (6") inches and pulverized until all material conforms to the following:

Passing 1" Sieve	100%
Passing #4 Sieve	60%

Final compaction shall be accomplished in two (2) three (3") inch lifts and compacted to at least 95% of Standard Proctor Density as defined by TEX 113-E. The allowable field moisture content at 95% Standard Proctor Density shall be maintained at optimum to plus (+) four percentage points. A curing seal of emulsified asphalt, MS-1, shall be applied to the compacted subgrade at a rate of 0.15 gallons per square yard within 24 hours of passing density tests. This is subsidiary to the lime stabilization item.

D. No stabilizer, either concentrated or diluted, shall be allowed to enter a storm drain system or a natural waterway. The stabilizer shall be applied in a manner that prevents puddling and/or runoff. Runoff will be considered a spill. All spills shall be immediately reported to the City of Arlington's Environmental Management Division at (817) 459-6550 during City Hall working hours and to the Arlington Fire Department Dispatcher (817) 543-5920 during evenings and weekends. The spill shall be contained, neutralized, cleaned up, and removed from the site. Washing down the spill is not allowed. This is subsidiary to the lime stabilization item. (Rev. 2/2002)

11-33 FLEXIBLE BASE: All flexible base shall be in accordance with Item 247 of the 1993 edition of the Texas Department of Transportation Standard Specifications for the Construction of Highways, Streets, and Bridges.

Type "A" Grade 1 Flex Base shall be used as subgrade material under the proposed HMAC pavement. An acceptable alternative to Type "A" Grade 1 Flex Base is crushed concrete. Crushed concrete shall be categorized as Type "D" Grade 1 Flex Base. Flex Base shall be thoroughly compacted and placed to a depth specified on the plans.

Type "A" Crushed or Broken Aggregate	Retained on Sq. Sieve	%
	1 3/4 in.	0
	7/8 in.	10 - 35
	3/8 in.	30 - 50
	No. 4	45 - 65
	No. 40	70 - 85
	Max LL	35
	Max PI	10
	Wet Ball Mill, Max Amt.	40
	Max Increase in passing No. 40	20

Payment for Flexible Base shall include all materials, labor, equipment, hauling and placement. Measurement shall be compacted in-place plan quantities by the square yard to the thickness specified on the plans.

Daily tickets will be submitted by the Contractor and signed by the inspector or his representative no later than one week after delivery of the flexible base. (Rev. 12/1995)

11-33A CEMENT TREATED BASE (CTB): Cement Treated Base shall be in accordance with TxDOT's Standard Specification, Item 276. Use strength "L". In any areas where the City determines the subgrade is unstable or unsuitable, the subgrade material shall be removed and be replaced with CTB compacted to 95% of TEX-113E. Unless a separate item is included in the PROPOSAL, CTB shall be subsidiary. (Rev. 12/2011)

11-34 CONCRETE CURB AND GUTTER: Concrete curb and gutter shall be placed at locations along the project where portions of the existing curb and gutter is removed. Curb and gutter shall be replaced at a minimum thickness of 6 inches (6") or shall match existing curb and gutter thickness, whichever is greater. Contractor shall remove additional 8" of existing material under new curb and gutter limits and replace with 8" CTB compacted to 95% TEX-113E. In cases where 100% of the existing curb and gutter is to be removed, it shall be replaced with the Standard 30 inch curb and gutter section. All concrete used for curb and gutter in the City of Arlington will have a cement content of not less than five and a half (5.5) sacks of cement per cubic yard of concrete, 4.5% entrained air (± 1.5%), and a minimum compressive strength at 28 days of 3,600 pounds per square inch. The unit price bid for curb and gutter shall include all reinforcing steel, including -#4 "L" bars at every eighteen inches (18"). Curb & gutter, including additional excavation and CTB will be paid by the linear foot. Expansion joints shall be placed at all intersections, P.Cs, P.Ts, driveways, inlets, other curb and gutter or every 200 feet. All expansion joints shall not be less than one-half inch (1/2") in thickness with longitudinal dowels. Dowel shall be three No. 4 smooth bars, 24 inches in length. One-half of the dowel shall be coated with asphalt and terminated with an expansion cap. All work shall be in compliance with C.O.G. Section 305.1. All loose material between the forms will be removed and the grade wetted prior to the placing of the concrete. An approved curing compound shall be applied to the surface in accordance with the Curing Specification. All curbs shall be vibrated to eliminate

"honeycomb" appearance. If "honeycombed" appears, the contractor shall grout back side to smooth out the surface. (Rev. 1/2016)

Locations where homeowners have installed drain pipes that run through the curb, curb opening casting will be required to discharge water through the curb. Drain outfall shall be installed flush with the curb. It is the Contractor's responsibility to connect existing pipe to the curb opening casting and ensure connection is secure with no water leaks or dirt infiltration. (Rev. 12/2011)

11-35 EPOXY BONDING AGENT: Epoxy used for tie bars drilled into existing concrete shall be submitted to the project inspector for approval. (Rev. 10/1995)

11-36 HOT MIX ASPHALTIC CONCRETE:

A. PAVING MIXTURES:

1. Mixture Design: The Job Mix Formula shall be designed by the Contractor in accordance with the requirements of this Special Provision, TXDOT Bulletin C-14 and TXDOT Test Method Tex-204-F and tested in accordance with TXDOT Test Methods Tex-201-F and Tex-202-F, with the exception that the laboratory density will be determined as a percentage of the mixture maximum theoretical density. The maximum theoretical specific gravity shall be determined in accordance with TXDOT Test Method Tex-227-F on trial samples of the mixture near optimum asphalt content and conform to the requirements herein. The Contractor shall submit the Job or Plant Mix Formula for review on forms acceptable to the City for each source of supply and type of mixtures specified. Total sand content shall not exceed 18% for Type "D" mix. The bulk specific gravity will be determined for each aggregate to be used in the design mixture. The mixture shall be designed to produce a mixture within the density and stability requirements shown below. In addition, washed gradations of the aggregate in the job mix formula shall be plotted on the 0.45 power chart for comparison with the maximum density line.

2. Stability and Density: The mixture shall be designed to produce an acceptable mixture within tolerance, at or near optimum density. The mixture molded in the laboratory in accordance with TXDOT Test Method Tex-206-F and the bulk specific gravity of the laboratory compacted mixture determined in accordance with TXDOT Test Method Tex-207-F should have the following percent of maximum theoretical density as measured by TXDOT Test Method Tex-227-F and stability conforming to TXDOT Test Method Tex-208-F:

Optimum Density Range	Stability, Percent
95 to 97 Percent	Not Less than 42

3. Types: The paving mixtures shall consist of a uniform mixture of coarse aggregate, fine aggregate and asphaltic material. Mineral filler may also be required.

When properly proportioned, the mineral aggregate shall produce a gradation which will conform to the limitations for master grading given for the type specified unless otherwise shown on plans. The gradation will be determined in accordance

with TXDOT Test Method Tex-200-F (Dry Sieve Analysis) and shall be based on aggregate only. The amount of asphaltic material shall conform to the limitations shown for the paving type specified in the following tables.

Type "B" (Fine Grade Binder or Leveling-up Course):

	Percent Aggregate by Weight or Volume	Tolerance
Passing 1" sieve	100	– 2%
Passing 7/8" sieve	95 to 100	± 5%
Passing 5/8" sieve	75 to 95	± 5%
Passing 3/8" sieve	60 to 80	± 5%
Passing No. 4 sieve	40 to 60	± 5%
Passing No. 10 sieve	27 to 40	± 5%
Passing No. 40 sieve	10 to 25	± 3%
Passing No. 80 sieve	3 to 13	± 3%
Passing No. 200 sieve	1 to 6	± 3%

The asphaltic material shall form from 3.5 to 7 percent by weight or volume of the mixture (tolerances are ±0.5% by weight or ±1.2% by volume), unless specified otherwise on the plans. (Rev. 5/2013)

Type "D" (Fine Grade Surface Course):

	Percent Aggregate by Weight or Volume	Tolerance
Passing 1/2" sieve	100	– 2%
Passing 3/8" sieve	85 to 100	± 5%
Passing No. 4 sieve	50 to 70	± 5%
Passing No. 10 sieve	32 to 42	± 5%
Passing No. 40 sieve	11 to 26	± 3%
Passing No. 80 sieve	4 to 14	± 3%
Passing No. 200 sieve	1 to 6	± 3%

The asphaltic material shall form from 4 to 8 percent by weight or volume of the mixture (tolerances are ±0.5% by weight or ±1.2% by volume), unless specified otherwise on the plans. (Rev. 5/2013)

4. Sampling and Testing for Field Control: Extraction tests for bitumen content and aggregate gradation shall be made for each 500 tons produced or fraction thereof. Extraction tests shall conform to TXDOT Test Method Tex-210-F. Tests for stability of the asphalt mixture shall conform to TXDOT Test Method Tex-208-F. The mixture shall not vary from the grading proportions of the aggregate and the asphalt content by more than the respective tolerances and shall be within the limits specified for master grading.

5. Tolerances in Relation to Approved Design: The aggregate portion of the paving mixture produced shall not vary from the design gradation by more than the tolerances shown in the above tables. The material passing the No. 200 sieve is further restricted to conform to the limitations for the master grading for the type specified. The asphaltic material portion of the paving mixture shall not vary from the design amount by more than the allowed tolerance and is also restricted to conform to the master limits. The method of test for determining the aggregate gradation and asphalt content of the mixture shall be TXDOT Test Method Tex-210-F or other methods of proven accuracy.

6. Recycled Asphalt Pavement (RAP): All RAP Material must meet TxDOT item number 340. Do not exceed 15% RAP by weight in Type "B" mixtures; or 5% RAP by weight in Type "D" mixtures. (Rev. 5/2013)

B. IN-PLACE COMPACTION CONTROL: In-place compaction control is required for all mixtures.

1. Asphaltic concrete should be laid and compacted to contain not more than 8 percent nor less than 3 percent air voids unless otherwise indicated. The percent air voids will be calculated using the maximum theoretical specific gravity of the mixture determined according to TXDOT Test Method Tex-227-F. Roadway specimen, which shall either be cores or sections of asphalt pavement, will be tested according to TXDOT Test Method Tex-207-F. The same specimen shall be used for determining both the maximum theoretical density and field density. Specimens used for field density determinations shall be carefully crumbled, using heat, if necessary, and the maximum theoretical density determined as specified. If heating is necessary, the specimen shall be heated to the lowest temperature required for proper preparation of the sample. The use of nuclear field density determinations shall not be accepted as the basis for acceptance with respect to density. However, an approved nuclear gauge may be used to establish a rolling pattern.

2. The Contractor shall be responsible for assuring that the compaction of the asphaltic concrete being laid will attain between 3 and 8 percent air voids. The Contractor's responsibility for the required compaction includes the selection of rolling equipment and the selection of rolling patterns to achieve the required compaction within the guidelines provided herein. The above selections of equipment and procedures must provide the required qualities of profile, smooth riding surface, and consistent workmanship in appearance. (Rev. 12/2011)

Initial testing will be the responsibility of the City of Arlington. Any retest will be the responsibility of the Contractor. Additional information is provided in Section 11-18 of these Special Provisions. (Rev. 12/2000)

C. ASPHALT TRANSITIONS: Transitional asphalt shall have a minimum thickness of six inches (6") or shall match existing pavement thickness, whichever is greater. Transition width shall be a minimum two feet (2') for temporary and a minimum of four feet (4') for

permanent. Unless a separate item is included in the PROPOSAL, asphalt transition shall be subsidiary. (Rev. 12/2011)

11-36A PAVING FABRIC (PETRO-MAT): Paving fabric shall be Skaps GC140, Petro-mat 4598, or approved equal. Contractor to follow manufacturer's installation procedure. Item shall include cost of fabric, tack coat materials, and labor necessary to install the paving fabric. (Rev. 10/2013)

11-37 TACK COAT: The unit bid prices for coarse graded base course and fine graded surface course shall include the application of a tack coat to each layer of asphaltic concrete before the next layer is applied and a tack coat shall also be applied to any exposed concrete edges that shall abuts any hot mix asphaltic concrete. The tack coat shall be a liquid asphalt complying with the specifications of the Asphalt Institute for SS-1h, MS-2 Emulsified Asphalt. The tack coat shall be applied to each layer at a rate not to exceed 0.05 gallons per square yard of surface. (Rev. 2/1998)

11-37A NON-TRACKING TACK COAT: The unit bid prices for coarse graded base course and fine graded surface course shall include the application of a non-tracking tack coat to each layer of asphaltic concrete before the next layer is applied and a non-tracking tack coat shall also be applied to any exposed concrete edges that shall abuts any hot mix asphaltic concrete. The non-tracking tack coat shall be applied to each layer at a rate not to exceed 0.05 gallons per square yard of surface.

Non-Tracking Tack Coat Emulsion

Property	Test Procedure	Quick Setting QS-1HH	
		Min	Max
Viscosity, Saybolt Furol, 77º F,sec	T 72	15	--
Storage stability, 1 Day, %	T 59	--	1
Settlement, 5-day, %	T 59	2	5
Sieve test, %	T 59	--	0.30
Distillation test:[1]	T 59		
Residue by distillation, % by wt.		50	--
Oil distillate, by volume of emulsion		--	1.0
Test on residue from distillation:			
Penetration, 77ºF, 100 g, 5 sec.	T 49	--	20
Solubility in trichloroethylene, %	T 44	97.5	--
Softening point, ºF	T 53	150	
Dynamic shear, G*/sin(δ), 82°C, 10 rad/s, kPa	T 315	1.0	--

1. Exception to AASHTO T-59: Bring the temperature on the lower thermometer slowly to 350ºF ± 10ºF. Maintain at this temperature for 20 min. Complete total distillation in 60 ± 5 min. from first application of heat.

(Rev. 9/2013)

11-38 ASPHALTIC PRIME COAT: A prime coat shall be used on the stabilized base material immediately after the base material has been compacted to specified density and cut to grade. The prime coat shall be a liquid asphalt complying with the specification of the Asphalt Institute for type MS-2 Emulsified Asphalt. The prime coat shall be applied to the surface of the

base at a rate of 0.20 to 0.40 gallons per square yard of surface and allowed to penetrate as far as possible. The cost of furnishing and installing the asphalt prime coat shall be considered subsidiary to the unit prices bid for hot mix asphaltic concrete. (Rev. 2/1998)

11-39 REINFORCING STEEL: All reinforcing steel used on this project shall comply in all respects to Item 440, "Reinforcing Steel" of the STANDARD SPECIFICATIONS FOR CONSTRUCTION OF HIGHWAYS, STREETS, AND BRIDGES, as adopted by the Texas Department of Transportation on 1 March 1993. Payment for reinforcing steel shall be considered subsidiary to the various bid items. (Rev. 4/1994)

11-40 TEMPORARY BATCH PLANT: If the Contractor chooses to construct a temporary batch plant, the following conditions (at a minimum) must be satisfied prior to approval from the City.

1. Batch plant must be permitted by the City of Arlington. A copy of Notice of Intent (NOI) and approved Storm Water Pollution Prevention Plan must be on the premises. (Rev. 2/2011)

2. Location map must be provided indicating routes for raw material delivery.

3. Location map must be provided indicating that the nearest recreational area, school, or residence is located at least 300 feet away.

4. Letter of Permission must be provided by the City of Arlington of the property (on which the batch plant is to be constructed) requiring that the Contractor leave the site in as good or better condition.

5. The start and stop dates for operation of the plant must be provided.

6. It must be stated that the batch plant will be used to provide concrete for no other project(s) without written approval from the City of Arlington.

No additional pay will be made for the temporary batch plant. (Rev. 12/2000)

11-41 TESTING REQUIREMENTS: The strength of the concrete shall be determined during the construction by taking a minimum of three (3) test cylinders and/or two test beams during each fifty (50) cubic yards of continuous pouring. These tests shall be conducted by an approved testing laboratory and the initial tests shall be paid for by the City of Arlington. The cost of additional testing to isolate areas not complying with the specifications shall be paid for by the Contractor.

Beam strength tests permitted by the specifications for early form removal shall be conducted by an approved testing laboratory and the cost shall be borne by the Contractor. (Rev. 8/1989)

11-42 CONCRETE VALLEY GUTTERS: All concrete valley gutters shall have a minimum thickness of six inches (6") or shall match existing valley gutter thickness, whichever is greater. Contractor shall remove additional 8” of existing material under proposed valley gutter limits and replace with 8” CTB compacted to 95% TEX-113E. Concrete valley gutters shall be

reinforced with #4 bars on twelve inch (12") spacing in both directions. All concrete shall have a minimum cement content of 5.5 sacks per cubic yard of concrete, 4.5% entrained air (± 1.5%) and a minimum compressive strength at 28 days of 3,600 pounds per square inch. All concrete shall be vibrated and an approved curing compound shall be applied to the surface. (Rev. 1/2016)

11-43 CONCRETE DRIVEWAYS: All concrete driveways shall have a minimum thickness of five inches (5") for residential driveways and six inches (6") for commercial driveways or shall match existing driveway thickness, whichever is greater. Driveways shall be composed of concrete having a minimum cement content of 5.5 sacks per cubic yard of concrete, 4.5% entrained air (± 1.5%) and a minimum compressive strength at 28 days of 3,600 pounds per square inch. The unit bid price shall also include #3 bars on twelve inch (12") centers both ways, or #4 bars on eighteen inch (18") centers both ways. All concrete shall be vibrated and an approved curing compound shall be applied to the surface. (Rev. 1/2016)

The City will replace only those existing driveways specified. Any new drives installed by the Contractor under criteria other than the above will be at his own expense. (Rev. 12/2000)

Contractor shall notify all businesses and residents in writing 48 hours prior to removal of their driveways. (Rev. 12/2011)

11-44 RECONSTRUCT DRIVES: Existing drives which will be destroyed by proposed construction and which will be reconstructed are specifically called out on the plans and construction shall conform to this special provision. After construction operations are completed in the street area, these drives shall be reconstructed to original or better condition than existed before construction and to satisfaction of the engineer. Existing surface and base materials and storm drain pipe may be reused if approved by the engineer. Where new materials will be required in order to reconstruct drives to the required condition, the Contractor shall be aware of their need and they shall be incidental to the price requested. All work shall conform to the applicable standard and special project specifications. Payment for reconstructing drives shall be a price per square yard of typical concrete driveway or a price per square yard of exposed aggregate concrete driveway. Such price shall include all materials, labor, and supervision for the completed construction. (Rev. 8/1989)

11-45 CONCRETE SIDEWALKS:

A. MATERIALS: Sidewalks shall have a minimum thickness of four inches (4") and be constructed of concrete with a minimum cement content of 5.5 sacks of cement per cubic yard of concrete, 4.5% entrained air (± 1.5%), and a compressive strength of not less than 3,600 pounds per square inch at 28 days. Reinforcing steel shall be #3 bars on 18" centers located two inches (2") below the top surface of the sidewalk. All concrete shall be vibrated and as soon as the concrete has obtained its initial set, a white pigmented approved curing compound shall be applied to the surface. (Rev. 10/2016)

B. CONSTRUCTION PROCEDURE: In general, the grade of the sidewalks shall be established with respect to the curb. Forms shall be set for all sidewalks and shall be true to line and grade. Forms shall be set to provide a cross slope of 1/4 inch per foot

(maximum) across the sidewalk toward the street. All forms shall remain in place at least twenty-four (24) hours.

The plane of all joints shall make a right angle with the surface of the pavement. No joints shall have an error in alignment of more than one-half (1/2") inch at any point. The edges of the slab at all joints, except where the joints are sawed, shall be rounded with an edger having a radius of one-fourth (1/4") inch, except as otherwise shown on the plans. The edging shall also be done symmetrically on each section with the plane of the joint.

Longitudinal expansion joints, joints used to separate new from old concrete, and all joints around all fire hydrants shall be made of conventional three-quarter inch (3/4") asphalt expansion joint material extending completely through the concrete unless otherwise specified on the plans. (Rev 10/2016)

Transverse expansion joints shall be three-fourths (3/4") inch in width and be made of high grade redwood with removable cap strip or with pre-molded material with removable strip cap, sealed with non-sag silicon sealant, TxDOT Class 4 prequalified joint sealer. Joints shall be placed through the concrete at a spacing not to exceed forty (40') feet. No. 4 X 18" steel dowels shall be placed on eighteen inch (18″) centers through each expansion joint, one end of each dowel being wrapped or otherwise prevented from bonding to the concrete. (Rev 10/2016)

Contraction joints shall be made in the sidewalk at regular intervals, such intervals generally being equal to the width of the sidewalk.

The Contractor shall grade or fill, as necessary, along the sidewalk to match the existing ground. Care will be used to ensure that adjacent property outside the right-of-way line is protected.

When sidewalks are constructed adjacent to retaining walls, the plans shall specify if the sidewalk and retaining wall are to be constructed as separate items or as a sidewalk with wall unit. The sidewalk with wall unit shall be constructed in accordance with the City of Arlington typical details. When specified to be constructed as separate items, the limits of pay for the sidewalk shall be all of the sidewalks up to the face of the retaining wall. The retaining wall shall be paid under retaining wall on a cubic yard basis. (Rev. 5/2014)

Unless otherwise approved by the City, nothing shall be installed in the sidewalks, including but to limited to meters, meter boxes, valves, fire hydrant, manholes, and sign poles. (Rev 10/2016)

11-45A BARRIER FREE RAMPS: Sidewalks shall be constructed barrier free and fully accessible. Curb ramps are required at all intersections between sidewalks and streets. At driveways, the curb shall be laid down and the sidewalk section shall be maintained through the driveway. All concrete shall be vibrated and the ramps be constructed in accordance with the detail shown on the plans. Ramp slopes shall not exceed one inch (1") rise in twelve inches (12"). All ramps shall be constructed with an ADA compliant 2' x 4' Colonial Red (Federal Color No. 20109) Cast In Place Detectable/Tactile Warning Surface Tile as manufactured by Armor Tile or 4" x 8" x 2¼" ADA complaint detectable warning pavers in Antique (shade #32) as manufactured by Whitacre-Greer or in River Red as manufactured by Pavestone, or approved

equal. All incidentals, including but not limited to, the transition, the landings, curb, pavers and sidewalks all the way to the tie-in as necessary to meet ADA compliance, the concrete below the detectable warning device, the bedding sand shall be subsidiary to the unit price bid for each ramp. (Rev. 12/2011)

11-46 CONCRETE MEDIANS: All concrete for concrete medians and median noses shall have a minimum thickness of four inches (4"). Reinforcement shall be #3 bars on 18" centers both ways or as shown on the plans. All Class "C" concrete shall have a minimum cement content of six (6) sacks per cubic yard and a minimum compressive strength at 28 days of 3,600 pounds per square inch. All concrete shall be vibrated. Redwood expansion joints shall be placed at the end of the nose radius and at every 40 feet. Curing shall be in accordance with Special Project Specification Section 12-3 "Membrane Curing." Curing and reinforcement shall be considered subsidiary to the various bid items. (Rev. 12/2011)

11-46A CONCRETE PANEL REPLACEMENT: All concrete paving shall be replaced at a minimum thickness of 8 inches (8") or shall match existing pavement thickness, whichever is greater. Paving shall be reinforced with #4 rebar on eighteen inches (18") spacing both directions. Contractor shall dowel nine inches (9") into existing pavement to accomplish tie-in with #5 rebar, thirty inches (30") in length, every eighteen inches (18") with epoxy. (Rev. 12/2011)

Any curb replacement associated with concrete paving shall be considered integral to the paving. All expansion joints in curbs shall conform to the joint locations in the slab. All expansion joints in the slab (newly replaced paving) shall conform to existing expansion joint unless otherwise approved by the Inspector. Joint Filler material shall be used and all joints shall be filled with top seal. Contractor shall submit mix design for high early strength concrete that meets specification and cures for traffic within 48 hours. All concrete shall be vibrated. (Rev. 1/2015)

11-47 WATER METER RELOCATION OR ADJUSTMENT: If no meter replacement is required, the Contractor shall be responsible for relocating or adjusting (horizontal and vertical) water services, water meters to finished grade. This shall include the relocation or adjustment of the service line on the City's side of meter (from main to the meter), the quarter bend, the curb stop or angle valve, depending on service size, and the meter. The meter with curb stop or angle valve shall be adjusted to 7" - 10" below the final grade measured from compression fitting. Relocation or adjustment of the customer's service line shall be performed by a licensed plumber. As directed by the inspector, each meter relocation or adjustment shall be surveyed and a Grade Verification Sheet shall be completed by the Contractor and inspector**.** The contractor shall also be responsible for disconnection and reconnection of antenna for AMI meters. **All of the relocation or adjustment work including the City's side, customer's side, and the work related to antenna shall be considered subsidiary to the various bid items unless otherwise indicated in the bid proposal as a pay item.** (Rev. 12/2013)

The Contractor shall also endeavor to keep meters accessible during the project construction for reading purposes. In the event the meters are covered during construction, the Contractor shall mark their locations with stakes and shall uncover the meters within 24 hours when notified to do so by the inspector. (Rev. 11/2013)

11-47A WATER METER BOX REPLACEMENT: The City has pre-purchased the meter boxes required for this project. The Contractor shall be responsible for loading the meter boxes at the South Service Center Warehouse, 1100 SW Green Oaks Boulevard, and transporting to the job site. Water meter boxes broken by the Contractor shall be replaced at the Contractor's own expense. The Contractor shall also be responsible for disconnection and reconnection of antenna used for AMI meters. All meter boxes shall be set to the finished grade. All work related to meter boxes and antenna shall be considered subsidiary to the various bid items unless otherwise indicated in the bid proposal as a pay item. (Rev. 12/2013)

If any portion of the meter box is in concrete sidewalk, it shall be replaced with concrete box with metal lid and set to the finished grade of the sidewalk. All cast iron meter boxes shall be replaced as well. (Rev. 11/2013)

Note – This is generally for street maintenance projects or projects with no water/sewer renewals

Note – verify if Water will furnish new manhole lid and if separate pay item included. Delete where applicable

11-48 VERTICAL ADJUSTMENT OF SANITARY SEWER MANHOLES, SANITARY SEWER CLEANOUTS, AND WATER VALVES: **N/A** All water valves, sanitary sewer manholes, and cleanouts shall be clearly marked. Prior to the application of the lime slurry, all manholes, cleanouts, and water valves shall be adjusted to approximately one foot (1′) below the bottom of the proposed subgrade. Prior to the placement of any pavement, the Contractor shall verify the locations of all valves, manholes, and cleanouts. For existing manholes that are being adjusted to proposed grade, the Contractor shall replace old manhole ring and lid with new manhole ring and lid (Vulcan V-1342-1 furnished by the City of Arlington Field Operations Office at 1100 S.W. Green Oaks Boulevard), only as directed by the engineer or Inspector. Adjustments shall include replacing the cones if necessary. If needed, a separate pay item is included in the PROPOSAL. All manholes, water valves, and cleanouts shall be brought to proper grade before placement of concrete pavement. Where hot mixed asphaltic concrete is used, adjustment to proper grade shall be made after placement of the top layer of coarse grade binder. It shall then be encased in concrete for a minimum of six inches (6") in depth and the concrete shall be a minimum of twelve inches (12") wide at all points around the water valves, cleanouts, or manholes. Valve stacks shall be ductile iron only. In the event the top of the operating nut for any valve is more than six feet (6') deep from the finished ground elevation, valve stem extensions shall be furnished and installed by the Contractor to bring the operating nut to within three feet (3') of the finished ground level. Payment for the valve stem extension shall be subsidiary to other unit prices bid in the PROPOSAL. (Rev 9/2014)

It shall be the sole function of the Contractor to re-establish the location of all valves, manholes, cleanouts, etc. If the Contractor, through carelessness or negligence, damages any valve, manhole, or cleanout that has previously been located for him, it will be the Contractor's responsibility to replace the same. Should the Contractor fail to re-establish the location and adjust any valve, manhole, or cleanout, he will be required to perform the necessary work to raise the same at no additional charge to the City of Arlington.

Where manholes, cleanouts, or gate valves are to be raised within the proposed fill slopes or in areas other than a concrete or asphalt surface, the manhole, cleanout or gate valve shall be raised at least six inches (6″) higher than the proposed finished grade.

Except as called for on the plans, the Contractor shall not be responsible for the relocation of

power poles, gas meters, telephone cable boxes and signs, gas pipeline markers, fire hydrants, light poles, traffic signs and signals, or for adjustment of the top elevation of gas and telephone manholes which are in direct conflict with improvements. If these items have not been relocated and/or adjusted at the time of construction and the plans do not require the Contractor to adjust them, the Contractor shall inform the engineer and/or his representative of the problem.

Sanitary sewer manholes may be adjusted up to 12 inches in additional height above the cone section with grade rings. Adjustments over 12 inches shall be accomplished using pre-cast or cast in place manhole sections. (Rev. 12/2000)

11-49 REINFORCED CONCRETE PIPE: Pipe for storm sewers and culverts shall conform to the latest specifications for "Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe," A.S.T.M. Designations. All pipe shall be machine made by a process which will provide for uniform placement of zero slump concrete in the form of compaction by mechanical devices which will assure a dense concrete in the finished product. All excavation, bedding, jointing, and backfilling shall be done in accordance with the specifications outlined in Sections 501.6, 504.3, and 504.4 of the COG Specifications except as modified by these Special Provisions.

The Contractor will be required to furnish and use a laying schedule supplied by the manufacturer showing location of all bends, fittings, and beveled end joints required to accurately construct the system, including curves, as shown on the plans. The pipe will not be laid until the laying schedule has been reviewed and accepted by the City for construction purposes.

The laying schedule shall be based on all pipe joints constructed to the "home" or normal position and the distance between the ends of adjacent pipe sections will be essentially uniform around the periphery of the pipe. OMNI-FLEX® (or approved equal) joint sealer shall be used on all joints and the joint gap range shall not exceed the OMNI-FLEX® recommendations for curved or straight sections.

Payment for all reinforced concrete pipe shall be based on the contract unit price bid per linear foot of pipe measured along the centerline of the pipe in the trench and shall be full compensation for all labor and materials necessary to make the complete installation, including excavation, bedding, jointing, backfilling and OMNI-FLEX® (or approved equal) joint sealer. The cost of constructing concrete collars shall be considered subsidiary to the unit prices bid for reinforced concrete pipe.

After the trench has been cut to depth below the barrel of the pipe, the bedding shall be brought up to a point slightly above the grade. Bell holes shall be formed, a trough scooped out to grade and the pipe laid and jointed as specified.

The pipe shall be bedded in a minimum of six inches (6") crushed stone except in rock or in wet or unstable trenches where an additional 3 inches of crushed stone will be added to the standard bedding requirements. Crushed stone shall meet C.O.G. 504.2.2 Standard Crushed Rock - Aggregate Grade 4. River rock/gravel will be allowed as long as it meets this gradation requirement. (Rev 8/2015)

After the pipe has been laid and the joints made, crushed stone shall be placed from the bottom of the pipe to the **top** of pipe. The material shall be placed uniformly on both sides of the pipe in order to prevent disturbance of the pipe and, if necessary, blocking shall be placed against the sides of the trench to prevent displacement of the pipe. The material shall be worked under the haunches of the pipe during the time it is being placed. Filter fabric shall be placed over the full width of the embedment prior to trench backfill operations. (Rev. 10/2015)

For the specifications for the remaining backfill operations, see the Trench Backfill Special Provision. (Rev. 7/2003)

11-50 CORRUGATED METAL PIPE: Corrugated metal pipe used on this project shall be bituminous coated and smooth lined helically corrugated steel pipe and pipe-arch with a continuously welded butt seam or lock seam.

The pipe shall be fabricated from flat coils. The base metal, spelter coating, and fabrication shall meet the applicable requirements of AASHTO M-36. Each pipe shall have two annular corrugations rolled in each end. Each pipe shall have two lifting lugs welded to the outside of the pipe.

Pipe Diameter	Corrugation	Gage
72"	5" X 1" or 3" X 1"	16
66"	5" X 1" or 3" X 1"	16
60"	5" X 1" or 3" X 1"	16
54"	2-2/3" X ½"	14
48"	2-2/3" X ½"	14
42" & smaller	2-2/3" X ½"	16
Arch Pipe	2-2/3" X ½"	16

After the ends have been rolled, the pipe shall be coated with bituminous material, inside and outside, to a minimum thickness of 0.05 inches as required by AASHTO M-190 for Type "A" coating. The pipe shall be centrifugally lined on the inside with bituminous material to form a smooth surface which fills the corrugations to a minimum thickness of one-eighth inch (1/8") above the crests of the corrugations. The bituminous lining material shall meet the requirements of AASHTO M-190. All saddle branch fittings for the storm sewer laterals shall also have coating and lining as specified for pipe.

Coupling bands shall be the same base material and spelter coating as the pipe. Bands shall be 0.064 inches thick and minimum ten and one-half inches (10-1/2") wide. Bands shall be bituminous coated and shall have two (2) corrugations for indexing in annular pipe ends. Bands 12 inch diameter through 30 inch diameter shall be one (1) piece, and 36 inch diameter through 96 inch diameter shall be two (2) piece, and 102 inch diameter through 144 inch diameter shall be three (3) piece. Band laps 12 inch diameter through 48 inch diameter shall be joined by one (1) galvanized bar, bolt, and strap connector. Band laps 54 inch diameter through 144 inch diameter shall be joined by two (2) galvanized bar, bolt, and strap connectors.

The pipe shall be placed on a bedding layer of a minimum of three inches (3") of loosely placed granular material in order to provide a stable but relatively yielding cushion for the pipe. When rock excavation is encountered this bedding layer should be increased to twelve inches (12").

Where the soil encountered at the established grade is a quicksand, muck, or unstable material, such unstable soil shall be removed and replaced with suitable stable material in uniform layers of suitable depth for compaction as directed by the engineer.

Backfilling for the metal pipe structure is a critical phase of the construction, and strict adherence to construction methods is required. After metal pipe structure has been completely assembled on the proper line and grade and headwalls constructed when required by the plan details, granular material shall be placed along both sides of the completed structures equally, in uniform layers not exceeding six inches (6″) in depth (loose measurement), wetted if required and thoroughly compacted between adjacent structures and between the structures and the sides of the pipe. Granular material, as used in this section, shall be defined as a free flowing pit run sand, free of stones, clay, organic material, and debris. This material shall have a P.I. less than ten (10). Above the three-fourths point of the structure, the fill shall be placed uniformly on each side of the pipe layers not to exceed twelve inches (12").

For backfilling, until a minimum cover of twelve inches (12") is obtained, only hand operated tamping equipment will be allowed within vertical planes two feet (2') beyond the horizontal projection of the outside surfaces of the structure. Backfill shall be compacted to 90% of Standard AASHTO Density (ASTM D698).

Unless otherwise shown on the plans or permitted in writing by the engineer, no heavy earth moving equipment will be permitted to haul over the structure until a minimum of four feet (4') of permanent or temporary, compacted fill is in place. Pipe damaged by the Contractor's equipment shall be removed and replaced by the Contractor at no additional cost.

During the backfilling operations, special emphasis is placed on the need for obtaining uniform backfill material and uniform compacted density throughout the length of the structure so that unequal pressure will be avoided. Extreme care will be taken to ensure proper backfill under the structure.

Prior to adding each new layer of loose backfill material, until a minimum of twelve inches (12") of cover is obtained, an inspection will be made of the inside periphery of the structure to determine any local or unequal deformation caused by improper construction methods. If, in the opinion of the engineer, any pipe becomes deformed during backfilling operation or as result of subsequent circumstances during the project, the Contractor shall correct such deformation at his own expense and at the direction of the engineer.

Any and all scratches, scrapes or other damage to the bituminous coating and lining of the pipe shall be repaired by recoating or otherwise as directed by the engineer.

Payment for all Smooth Lined Corrugated Steel Pipe shall be based on the contract unit price bid per linear foot of pipe measured along the centerline of the pipe in the trench and shall be full compensation for all labor and materials necessary to make the complete installation. (Rev. 12/2000)

11-50A HIGH DENSITY POLYETHYLENE PIPE (HDPE): This item shall govern the furnishing and installation of all High Density Corrugated Polyethylene Smooth Wall Pipe and associated fittings necessary for constructing all storm drain facilities, all of which shall conform to AASHTO M-294 specification for High Density Corrugated Polyethylene Pipe and Fittings. The pipes shall be of the sizes, types, and dimensions shown on the plans and shall include all connections and joints to new or existing pipes, storm sewer manholes, inlets, headwalls, and other appurtenances as may be required to complete the work. High Density Polyethylene Corrugated Smooth Wall Pipe may be used when HDPE is shown on the plans or awarded as an alternative item to Reinforced Concrete Pipe (RCP).

The pipe and fittings shall be manufactured by extrusion or molding methods as called for in AASHTO M294. High density polyethylene material shall meet the requirements of ASTM D 3350 Cell Classification 335420C.

Trench width shall be the minimum for proper placement and compaction of embedment and backfill.

Embedment material shall be crushed rock with the following gradation:

0% retained on 1¼ inch
95-100% retained on #10

Depth of bedding material below the pipe shall be four inches minimum (6 inches in rock cuts) for all pipe sizes, unless otherwise directed by the engineer or shown on the plans. For specifications for the remaining backfill operations, see the Trench Backfill Special Provision.

Manufactures recommendations for connection methods and materials necessary to accomplish tight and secure joints shall be strictly followed. This includes HDPE connections or HDPE to reinforced concrete pipe. When a connection occurs between HDPE and RCP, a concrete collar shall be used as shown in Standard Construction Details.

Minimum pipe stiffness at 5% deflection shall be as stated within AASHTO M294 when tested according to ASTM D 2412. The Contractor shall provide written certification from the manufacturer that the pipe and related fittings meet the minimum requirements within AASHTO M294. The pipe and fittings may be rejected for failure to meet any of this specification, and may be retested to establish conformity in accordance with the specification.

Payment for HDPE shall be based on the contract unit price bid per linear foot of pipe measured along the centerline of the pipe in the trench and shall be full compensation for all labor and materials necessary to make the complete installation, including excavation, bedding, jointing, and backfilling. The cost of constructing concrete collars shall be considered subsidiary to the unit prices bid for HDPE. (Rev. 5/1997)

11-50B ALUMINIZED STEEL TYPE 2 COATED SPIRAL RIB METAL PIPE (SRMP):
All of the ALUMINIZED Steel Type 2 materials used in the pipe shall be manufactured to conform to the current AASHTO M36 specifications. The external helical corrugation pattern of the pipe shall be ¾" x ¾" x 7-½" and have sectional properties per Section 12.5.4.1 of Highway Bridges Division 1-Design.

The round pipe shall conform to the Type IR pipe classification per AASHTO M36: Culvert pipe, circular section, single thickness of sheet, helical ribs projecting outwardly.

Pipe-arch shall conform to the Type IIR pipe classification per AASHTO M36: Type 1R pipe which has been reformed into a pipe-arch having an approximately flat bottom.

The pipe shall be formed from an ALUMINIZED Steel Type 2 coil and conform to the current AASHTO M274 (and ASTM A819) material specification. The manufacturer of the pipe shall provide the Engineer with certification of compliance with the AASHTO M274 specification. The pipe shall be designed in accordance with the current ASTM A796 effective sectional properties.

Connecting bands shall be 12-inch wide hugger type bands made from same material as pipe or Contech QuickStab Joint connection band made from same material as pipe with fluted gasket. Gage shall be two less than pipe gage with a minimum of 18 gage.

Payment for all Spiral Rib Metal Pipe shall be based on the contract unit price bid per linear foot of pipe measured along the centerline of the pipe in the trench and shall be full compensation for all labor and materials necessary to make the complete installation. (Rev. 2/2002)

11-51A MECHANICALLY COMPACTED TRENCH BACKFILL SPECIFICATIONS:
After free moisture is gone from the embedment material, the ditch shall be backfilled with native material and compacted by mechanical methods. If hand pneumatic tampers are used, the backfill shall be placed in layers not exceeding six inches (6") in loose thickness and thoroughly compacted at least ninety-five percent (95%) Standard Proctor density at optimum moisture content, ± two percentage points as determined by ASTM D 698. Backfill shall be placed in uniform layers completely across the trench, and compaction shall proceed in an orderly, uniform manner. If compaction is performed by the use of heavy tamping (sheep's foot) rollers, backfill shall be placed in layers not exceeding nine inches (9") in loose thickness and compacted to at least ninety-five percent (95%) Standard Proctor density at optimum moisture content, ± two percentage points as determined by ASTM D 698.

For lines under the proposed roadway and laid prior to new street construction, the backfill shall continue to within two feet (2) of the top of subgrade. At this point the trench shall be widened a minimum of one foot (1') on each side. The remaining two feet (2') shall be native material, compacted in six inch (6") loose lifts at optimum moisture content, ± two percentage points, to a density of at least ninety-five percent (95%) of maximum dry density, as determined by ASTM D 698.

The City of Arlington shall be responsible for testing during backfill operations. If a test does not meet the requirements as outlined above, the Contractor shall be responsible for additional tests until the above requirements are met.

Payment shall be subsidiary to unit prices bid for pipe. (Rev. 12/2000)

11-51B FLOWABLE FILL TRENCH BACKFILL SPECIFICATIONS:

A. FLOWABLE BACKFILL: Flowable backfill shall consist of a mixture of native sand or a blend of native sand/manufactured sand, cement, fly ash and water which produces a material with unconfined compressive strength of between 250 and 450 psi after 28 days.

The flowable mixture shall be mixed at a concrete batch plant or a mobile transit mixer and shall have a minimum slump of five inches (5") and a minimum air content of 6 percent. The flowable mixture must be allowed to set prior to the placement of any overlying material.

B. MODIFIED FLOWABLE BACKFILL: Modified flowable backfill in areas of possible future excavation such as utility installations shall consist of a mixture of native sand or a blend of native sand/manufactured sand, cement, fly ash and water which produces a material with unconfined compressive strength of between 50 and 150 psi after 28 days.

Modified flowable backfill in permanent areas such as abandoned pipe closures, abutments and embankments shall contain the same materials with an unconfined compressive strength of greater than 150 psi after 28 days.

The flowable mixture shall be mixed at a concrete batch plant or a mobile transit mixer and shall have a minimum slump of five inches (5") and a minimum air content of 6 percent.

The flowable mixture must be allowed to set prior to the placement of any overlying material.

The Contractor shall submit to the engineer a mix design for the type of flowable backfill to be used 10 days prior to the start of the backfill operation. When the mix design has been approved by the engineer there shall be no changes or deviation from the proportions or sources of supply except as approved by the engineer.

C. Flowable backfill will be allowed for the following:

Backfill	Structural Fill	Miscellaneous Uses
•Bridge abutments	•Road base	•Abandoned sewer mains
•Box culverts	•Pipe bedding	•Soil erosion
•Sewer trenches	•Mud jacking	•Slope stabilization
•Utility trenches		•Abandoned tank fill
•Conduit trenches		

(Rev. 12/00)

11-52 CONCRETE STRUCTURES: Manholes and inlets shall be constructed to the size and location shown on the plans. Construction shall be in accordance with Item 465, "Manhole and Inlets" of the 1993 Texas Department of Transportation Specifications except as noted on the plans or in these Special Provisions. Payment shall be made for the manholes, inlets, and other drainage structures complete in place at the unit price bid in the PROPOSAL. The payment shall include all work and materials necessary to complete the structure, including excavation and backfill. No additional pay will be made for manhole ring and lid, or grade rings. No precast manholes or inlets will be allowed unless approved by the engineer prior to construction.(Rev. 12/2011)

Concrete for all concrete drainage structures, manholes, and inlets shall be Class "A" with a minimum compressive strength of 3,000 psi at 28 days. A minimum of five (5) sacks of cement (Type I) shall be used per cubic yard and the maximum water-cement ratio shall not exceed 6.5 gallons per sack.

Concrete for channel lining and rip-rap shall also be Class "A" concrete having a minimum compressive strength of 3,000 psi at 28 days.

The desired slump for Class "A" concrete shall be three inches (3") and the maximum allowable slump shall be four inches (4").

Air entrainment (4.5 %, ± 1.5%) is required for all exposed concrete. (Rev. 1/2016)

Calcium Chloride will not be permitted. Air-entraining, retarding, and water reducing admixtures must be approved and shall conform in all respects to COG Specification Item 303.2.3.

Aggregates for Class "A" concrete shall be either Grade 2 or Grade 3 for coarse aggregate, and Grade 1 for fine aggregate. Grades specified above refer to those outlined in Item 421 of the Texas Department of Transportation Specifications referenced above.

Forms used in the construction, concrete placement, and concrete finishing, shall comply in all respects to the requirements of Item 420 of the above referred Texas Department of Transportation Specifications.

All concrete shall be vibrated and be cured for a minimum of four (4) curing days. The acceptable methods for curing the concrete are as follows: (Rev. 12/2011)

A. FORM CURING: Forms left in place in contact with the concrete.

B. WATER CURING: Water curing using either wet mats, water spray or ponding.

C. MEMBRANE CURING: Compound may be used.

All weight supporting forms shall remain in place a minimum of four (4) curing days after which they may be removed if the concrete has attained a flexural strength of 500 psi as evidenced by

strength tests of beam specimens cast at the time of the pour. If beams have not reached the required strength after 4 days, the forms shall be left in place 14 days. (Rev. 7/2003)

11-53 REINFORCED CONCRETE BOX CULVERT: Reinforced box culverts may be cast in place or an approved precast reinforced box culvert. Cast in place box culvert shall be constructed in accordance with TxDOT Item 462. The precast section shall be designed in accordance with COG 501.6.2. If multiple precast box sections are used, the void space between culvert walls shall be backfilled using flowable fill of at least 600 psi concrete. Flowable fill will not be paid for directly, but will be considered subsidiary to other items of construction. (Rev. 9/2011)

Measurement for payment shall be by the linear feet of box culvert, complete in place including reinforcing steel. The linear feet shall be calculated using the length measured between the ends of the culvert barrel along the central axis as installed or constructed. (Rev. 9/2011)

See Section 11-49 REINFORCED CONCRETE PIPE for joint make-up, joint sealer, and embedment specifications. (Rev. 10/2015)

Payment shall be for box culvert complete in place. Payment shall be full compensation for furnishing all materials, labor and incidentals and performing all work necessary to complete the work including excavation and backfill.

11-54 UNCLASSIFIED CHANNEL EXCAVATION: Channel excavation shall be in accordance with COG Specifications. Any fill required to bring the channel to the required lines, grades and cross-sections will be subsidiary to this pay item.

If the channel is to be lined with concrete, the sides and bottom of the channel shall be kept at the existing moisture level after excavation and prior to placement of concrete. Moisture level shall be maintained by manual watering or other approved method. Cost of maintaining moisture level shall be considered subsidiary. (Rev. 12/2000)

11-55 MANHOLES, INLETS, AND OTHER CONCRETE DRAINAGE STRUCTURES: This section has been incorporated into Section 11-52. (Rev 12/2011)

11-56 CURB INLET: The unit prices bid for curb inlets shall include all structural excavation, Class "A" Concrete, reinforcing steel, manhole rings and covers, transition curb and gutter as shown, and backfilling. Providing neat lines can be cut in the soil, outside forms will not be required from the bottom to the construction joint. All inlets will be backfilled by mechanically tamping native material in layers not exceeding six inches (6") in compacted thickness to at least ninety-five percent (95%) of Standard Proctor density (ASTM D 698).

Inlet tops shall not be cast until pavement is complete. Manhole lids shall be tack welded in place with three to four equally spaced one-inch welds. All concrete shall be vibrated. (Rev. 12/2011)

11-57 BACKFILL & BACKFILL MATERIAL: Backfill operations shall begin immediately following removal of the forms on the permanent improvements. All loose concrete, rocks,

roots, trash, and other debris shall be removed from the excavation prior to any backfill being placed.

Backfill material shall consist of the native material obtained from the street excavation unless in the opinion of the engineer, this material is unsuitable for use. The material shall not contain trash, rock, concrete, asphalt, lime shavings, gravel or other debris. Sand shall not be used for backfill material unless the native soil in the construction area is sandy in nature. All backfill material will be considered subsidiary to the unit price bid for the permanent improvements.

Backfill shall be placed in such a manner as to eliminate voids in the backfill material. The use of power equipment to place the backfill, or to bring it to grade, shall be limited to small farm-type tractors. Bring the backfill material to within four inches (4") of proper finished grade. The top four inches (4") shall be placed in accordance with Spec 11-58 "Topsoil." (Rev. 12/2000)

11-58 TOPSOIL: A minimum of four inches (4") of topsoil shall be placed on all disturbed areas adjacent to permanent improvements within the project limits. The topsoil shall be free from stone, rock, lumps, clods of hard earth, plants or their roots, sticks and other foreign material and shall be brought to the lines and grades as established by the engineer. Under no circumstances will topsoil be accepted unless it is free from the aforementioned contaminants. Contractor may use approved means of treating the topsoil to ensure its acceptability. This item shall be considered subsidiary to the other items in this project and shall not be a separate pay item.

The existing topsoil from the project limits may be used if Contractor stockpiles and protects it properly. No trash, lime shavings or other foreign material, shall be added to this stockpile. Topsoil material shall be stockpiled at locations approved by the engineer, and after completion of permanent improvements, topsoil shall be placed on all disturbed areas so as to provide a minimum four-inch (4") depth of topsoil. The topsoil shall be tilled to a 1/2"-1" diameter size.

The City of Arlington retains the authority to require the Contractor to provide topsoil meeting the following specification should the Contractor fail to maintain the integrity of the stockpiled existing topsoil.

The soil texture shall be classified as loam or sandy loam according to the following criteria:

	(% Passing) Loam	(% Passing) Sandy Loam
Sand (0.074 to 4.76 mm diameter)	25-50%	45-85%
Silt (0.002 to 0.074 mm diameter)	30-50%	Less than 50%
Clay (Smaller than 0.002 mm) (Hydrometer analysis)	5-25%	Less than 20%

Soil texture shall be determined by utilizing processes as prescribed in ASTM D 422. (Rev. 12/2000)

11-59 5" REINFORCED CONCRETE RIPRAP: Concrete riprap shall be used, at the direction of the engineer, for slope protection as needed. This work shall be paid for at the price bid per square yard, which price shall include all excavation, slope grading and shaping, concrete, and reinforcing steel, necessary for completion of this item. Reinforcing steel shall be #3 bars on eighteen inch (18") centers both ways. (Rev. 12/2000)

11-60 HYDRO-MULCH SEEDING:

A. DESCRIPTION: This item shall consist of preparing ground, providing, and planting seed, or a mixture of seeds, of the kind specified along and across such areas as are designated by the engineer.

B. MATERIALS: The type seed used shall be in accordance with COG Specification, Section 202.6, and approved by the engineer. All seed must carry a Texas Seed Label showing purity and germination, name and type of seed and that the seed meets all requirements of the Texas Seed Law. Seed furnished shall be of the previous season's crop and the date of analysis shown on each tag shall be within 9 months of the time of delivery to the project. Each variety of seed shall be furnished and delivered in separate bags or containers. A sample of each variety of seed shall be furnished for analysis and testing when directed by the engineer. Grass seed shall equal or exceed 95% purity and 90% germination.

C. PLANTING SEASON: Planting of hulled bermuda grass seed shall be done between the months of April through September. The density of seeds planted shall be 80 pounds per acre. A blend of 30 pounds Rye grass and 40 pounds unhulled bermuda may be used between the months of September through April.

D. CONSTRUCTION METHODS: The designated areas shall be raked, leveled and fine graded as necessary to provide a smooth uniform grade, free of ruts, depressions, humps and objectionable soil clods, prior to seeding. The area shall also be free of weeds, rubbish, and building materials. Any low areas shall also be filled to prevent ponding. All particles in the seed bed shall be reduced to less than one inch (1") in diameter or they shall be removed. The area to be seeded shall be loosened or disked prior to placement of seed in areas that appear to be overly compacted or to destroy existing vegetation, at the direction of the engineer or authorized representative. The cost of any chemical treatment to the soil in order to establish a uniform stand of grass will be subsidiary to "Hydro-mulch Seeding." Seeding of the type specified shall be performed in accordance with the requirements in COG Specification 202.6 except as hereinafter described:

1. Watering: The seeded areas shall be watered as necessary to establish grass as described in Establishment and Acceptance of Seeding.

2. Hydro-Mulch Seeding: In accordance with COG Specification 202.6.4.4 alternate methods for placement of seed may be used if approved by the engineer.

E. MEASUREMENT: Work and acceptable material for "Hydro-mulch Seeding" will be measured by the unit bid, complete in place.

F. PAYMENT: The work performed and materials furnished and measured as provided under "Measurement" will be paid for at the unit price bid for "Seeding" which price shall be full compensation for furnishing all materials and for performing all operations necessary to complete the work, including fertilizer. Once a "uniform stand of grass" is provided, the City will provide payment for the seeding. See definition of "uniform stand of grass" below.

G. ESTABLISHMENT AND ACCEPTANCE OF SEEDING: Regardless of unseasonable climatic conditions or other adverse conditions affecting planting operations and the growth of the grass, it shall be the sole responsibility of the Contractor to establish a uniform stand of grass as herein specified. When adverse conditions such as drought, cold weather, high winds, excessive precipitation, or other factors prevail to such an extent that satisfactory results are unlikely, the City of Arlington may, at his own discretion, stop any phase of the work until conditions change to favor the establishment of grass.

1. Uniform Stand of Grass: A uniform stand with complete coverage of the specified grass shall be defined as not less than one hundred-fifty (150) growing plants per square foot seeded. Growing plants shall be defined as healthy grass plants of two blades or more at least two inches (2") tall.

H. POST-PLANTING MAINTENANCE: Maintenance shall begin immediately after each portion of grass area is planted. It will be the Contractor's responsibility to maintain the existing grades and leave them in a true and even condition after planting. All planted areas will be protected and maintained by watering, weed control, mowing, and replanting as necessary for at least thirty (30) days after initial planting and for as much longer as necessary to establish a uniform stand with complete coverage of the specified grass.

I. FERTILIZER: (Subsidiary to Seeding Item)

1. Description: This item shall consist of providing and distributing fertilizer over the seeded areas.

2. Materials: Shall be in accordance with COG Specification 202.4.1 and Special Provisions, Landscaping Specifications, Section 14.5.

Note to staff: *Use green text if Section 14 Landscaping is applicable to project. Use red text if Section 14 Landscaping is NOT applicable to project*

2. Materials: Shall be in accordance with COG Specification 202.4.1 and Section 11-61 below. (Rev. 8/2012)

3. Construction Methods: The fertilizer shall be pelleted or granular fertilizer and shall be applied uniformly over the entire area specified to be fertilized and in the manner directed for the particular item of work. The fertilizer shall be dry and in good physical condition. Fertilizer that is powdered or caked will be rejected. Distribution of fertilizer for the particular item of work shall meet the approval of the engineer.

Unless otherwise indicated on the plans, fertilizer shall be applied uniformly at the average rate of 400 pounds per acre for all types of seeding. (Rev. 3/2004)

11-61 SODDING: For this project, sodding shall be in conformance with Special Provisions, Section 14, Landscaping Specifications. Payment for sodding shall include the cost of all fertilizer and water. No separate payment will be made for fertilizer and sprinkling. Buffalo grass sod shall be used on all medians unless otherwise specified in the plans. (Rev. 12/2000)

11-61 SODDING/TURFGRASS PLANTING: This work includes labor, material, and equipment for soil preparation, fertilization, planting, and other requirements regarding turfgrass planting areas. Payment for sodding shall include the cost of all fertilizer and water. Grass sod variety shall match existing and adjacent property.

A. SUBMITTALS:

1. Delivery Receipts and Invoices: All delivery receipts and copies of invoices for materials used for this work shall be subject to checking by the Owner and shall be subsequently delivered to the office of the Owner.

2. Samples and Producers' Specifications: Various samples, certificates, and specifications of seed, fertilizer, sand, compost, other soil amendments and other materials shall be submitted for approval as required by subsequent sections of this specification.

B. TURFGRASS:

1. Buffalograss Sod: Turfgrass sod shall be "Buchloe dactyloides" (Buffalograss) 'Prairie Grass' variety. Sod shall consist of stolons, leaf blades, rhizomes, and roots with a healthy, virile system of dense, thickly matted roots throughout the soil of the sod for a thickness not less than three-quarters inch (3/4″). Sod shall be alive, healthy, vigorous, free of insects, disease, stones, and undesirable foreign materials and grasses. The grass shall have been mowed prior to sod cutting so that the height of the grass shall not exceed two inches (2″). Sod shall have been produced on growing beds of clay or clay-loam topsoil. Sod shall not be harvested or planted when its moisture condition is so excessively wet or dry that its survival will be affected. All sod is to be harvested, delivered, and planted within a thirty-six (36) hour period of time. Sod shall be protected from exposure to wind, sun and freezing. If sod is stacked, it shall be kept moist and shall be stacked roots-to-roots and grass-to-grass.

2. Dimensions: All sod shall be machine cut to uniform soil thickness of one inch (1″) plus or minus one-quarter inch (1/4″). All sod shall be of the same thickness. Rectangular sections of sod may vary in length, but all shall be of equal width and of a size that permits the sod to be lifted, handled, and rolled without breaking. Broken pads and torn, uneven ends will be unacceptable.

3. Solid Sodding: Prior to laying the sod, the planting beds shall be raked smooth to true grade and moistened to a depth of four inches (4″), but not to the extent causing puddling. The sod shall be laid smoothly, tightly butted edge to edge, and with staggered joints. The sod shall be pressed firmly into contact with the sod bed by rolling or by hand tamping with an approved tamper so as to eliminate all air pockets, provide a true and even surface, and insure knitting without displacement of the sod or deformation of the surfaces of sodded areas. Following compaction, fine screened soil of good quality shall be used to fill all cracks between sods. Excess soil shall be worked into the grass with suitable equipment and shall be well watered. The quantity of fill soil shall be such that it will cause no smothering of the grass.

   If sod is placed after September 15, final acceptance on the grass will not occur until after April 15. The grass shall not be over-seeded with rye. The Contractor shall water the grass until the grass is accepted.

C. FERTILIZER:

1. General: Fertilizer shall be an organic commercial product uniform in composition, free flowing, and suitable for application with approved equipment. Fertilizer shall be delivered to the site in fully labeled original containers. Fertilizer which has been exposed to high humidity and moisture, has become caked or otherwise damaged making it unsuitable for use, will not be acceptable. (Rev. 3/2009)

2. Planting Application: Fertilizer shall be an organically based product (nutrients contained in the project shall be derived solely from the remains, part of the remains, or a by-product of a once-living organism) supplying nitrogen, phosphorus and potassium in a 1-1-1 to 5-5-5 analysis, such as Green Sense (3-1-2) or Sustane (5-4-2), or approved alternate formulation. The fertilizer shall contain a variety of cultures of soil-borne bacteria and trace elements, and be high (min. 18% each) in humus and humic acid. The Contractor shall submit a sample label or specification of the fertilizer proposed to be used for the Owner's approval. The specified fertilizer shall be applied at the rate of twenty pounds (20 lbs.) per one thousand (1,000) square feet according to specific label. Fertilizer shall be applied over sodded areas after planting, but not more than two (2) days later. (Rev. 3/2009)

D. HERBICIDES:

1. General: Herbicides will be applied as necessary for the eradification of weeds. The Contractor will choose an appropriate herbicide for application with respect to the kind of turfgrass being planted, climatic conditions, site conditions, and the state of work and the approved City chemical list available through the Parks Department. The applied herbicides shall not be detrimental to the establishment of turfgrass. Herbicides shall be approved for application by relevant U.S. Government agencies such as the U.S. Department of Agriculture and the Environmental Protection Agency. A pre-emergent that will not cause root pruning of new sod must be applied when sod is laid. (Rev. 3/2009)

2. Application: The rates and methods of application shall be in strict conformance with local, state and federal laws and regulations. Applications shall follow the manufacturer's recommendations. All applications must be licensed by Texas Structural Pest Control Board or Texas Department of Agriculture.

3. Weed Control: The Contractor shall apply appropriate herbicides in the following situations:
   a. Where weeds are present in the prepared soil, prior to the commencement of planting operations.

   b. Where weeds are present in the planted turfgrass areas, prior to the establishment of the turfgrass to a uniform stand.

   c. In the planted turfgrass areas, where the presence of weeds precludes the acceptability of the turfgrass as a uniform stand.

   d. In other situations where the Owner judges that the presence of weeds is detrimental to the establishment or acceptability of the turfgrass.

E. PLACEMENT: All turfing operations shall be executed across the slope, parallel to finished grade contours.

F. SOIL PREPARATION:
1. Scarification: Scarification shall be accomplished to loosen the soil, destroy existing vegetation, and prepare an acceptable sod bed. Initial tillage shall be done in a crossing pattern for double coverage, then followed by a disc harrow. Depth of scarification shall be one to one and one half inches (1—1½″).

2. Cleaning: Soil shall be further prepared by the removal of debris, building materials, rubbish, weeds, and stones larger than two inches (2″) in diameter. During the soil preparation process, a "Rock Pick" or other approved piece of machinery shall be used to gather surface stones as small as one inch (1″) in diameter. The Contractor shall be responsible for the disposal of collected materials.

3. Fine Grading: After scarifying and cleaning, all areas to be planted shall be leveled, fine graded, and dragged with a weighted spike harrow or float drag. The required result shall be the elimination of ruts, depressions, humps, and objectionable soil clods. Unless specified by the Owner medians shall be crowned in the center with cross slopes of approximately two percent (2%). This shall be the final soil preparation step to be completed before the commencement of fertilizing and planting.

4. Owner shall approve bed preparation before grass planting begins.

G. PROTECTION: No heavy equipment shall be moved over the planted lawn area unless the soil is again prepared, graded, leveled and replanted. It will be the responsibility of this Contractor to protect all paving surfaces, curbs, utilities, plant materials, and any other existing improvements from damage. Any damage shall be repaired or replaced as soon as possible at no cost to the Owner. The Owner may repair emergency conditions or noncompliance hazards at the cost of the Contractor.

H. ESTABLISHMENT AND ACCEPTANCE: Regardless of unseasonable climatic conditions or other adverse conditions affecting planting operations and the growth of the turfgrass, it shall be the sole responsibility of the Contractor to ESTABLISH A UNIFORM STAND OF TURFGRASS AS HEREIN SPECIFIED. When adverse conditions such as drought, cold weather, high winds, excessive precipitation, or other factors prevail to such an extent that satisfactory results are unlikely, the Owner may stop any phase of the work until conditions change to favor the establishment of turfgrass.

1. Uniform Stand of Turfgrass: A uniform stand with complete coverage of the specified grass shall be defined as not less than one hundred fifty (150) growing plants per square foot. Growing plants shall be defined as healthy grass plants of two blades or more at least one and one-half inches (1½″) tall. A uniform stand of turfgrass shall be free of weeds. No payment will be made for turfgrass until a uniform stand of grass has been established. Partial projects will not be accepted. A uniform stand of grass over four inches (4″) in height will not be accepted.

2. Thirty (30) days following planting, the Owner will inspect the medians to verify establishment as described above. Contractor will be required to replant and/or maintain any areas of grass that are unacceptable to the Owner until they meet the standards above.

I. POST-PLANTING MAINTENANCE: Maintenance shall begin immediately after each portion of grass area is planted. All planted areas will be protected and maintained by watering, weed control, and replanting as necessary to establish a UNIFORM STAND WITH COMPLETE COVERAGE OF THE SPECIFIED GRASS. The entire project will continue to be replanted and maintained by the Contractor until complete coverage and acceptance are achieved over 100% of the area. Any water equipment deemed necessary by the Contractor will be provided by the Contractor.

1. Watering: Use a temporary irrigation system to irrigate the entire planted area daily for the first ten (10) days on which less than one-half inches (1/2″) of rain has fallen in the previous twenty-four hours and then two (2) times per week for the balance of the month following planting. Water trucks will be permitted as a means of irrigating the sodded areas.

2. Weed Control: Appropriate herbicides shall be applied as necessary as previously specified.

3. Grass shall be edged where it is adjacent to concrete areas.

4. All concrete areas where weeds are growing in the joints must be trimmed or chemically sprayed. These areas must have all growth removed.

5. Ant infestations must be treated with Award or Amdro.

J. GRADING: It is the Contractor's responsibility to maintain the existing grades and leave them in a true and even condition after planting turfgrass.

K. EROSION CONTROL: Throughout the project and the maintenance period for turfgrass, it is the Contractor's responsibility to maintain the topsoil in place at specified grades. Topsoil and turfgrass losses due to erosion will be replaced by the Contractor until establishment and acceptance is achieved.

L. CLEAN-UP: The Contractor shall remove any excess material or debris brought onto the site or unearthed as a result of his turfgrass operations.

M. GUARANTEE: The Contractor shall guarantee all materials used for this work to be type, quality, and quantity specified.

11-62 SLOPE EROSION CONTROL: Erosion control material shall be "Curlex Blanket" heavy jute netting such as "AMXCO Curlex Blanket," or approved equal (no plastic meshes are allowed), and shall be applied after seeding is complete. Heavy jute mesh shall be open plain weave of unbleached single jute yarn, averaging one hundred and thirty (130) pounds per spindle of 14,400 yards. Jute mesh shall be furnished in approximately ninety (90) pound rolled strips. Other criteria for jute mesh shall be as follows:

Length	- approximately seventy-five (75) yards.
Width	- forty-eight (48") inches (± one inch).
0.78 warp ends per width of cloth.	
Forty-one (41) weft ends per yard.	
Weight of cloth	- 1.22 pounds per linear yard (± 5%).

Staples shall be of No. 11 gauge steel wire formed into a "U" shape six inches (6") long.

To install erosion control material on channel slopes, bury the up-channel end in a trench six inches (6") deep. After the jute is buried, the trench shall be tamped firmly closed. Using a steel tube or three-quarter inch (3/4") pipe through the paper core of the roll with a rope on each end will enable the operator to lower the roll down the slope. The material should be applied without stretching. The material should lie smoothly, but loosely on the soil surface. In order to keep the area as smooth as possible, workers should avoid, as much as possible, walking directly on the seed bed, either before or after the jute is applied. In cases where one roll ends and another is needed, the up-channel piece should overlap the second roll by at least eighteen inches (18"). Where two or more widths are applied side by side, an overlap of at least four inches (4") shall be maintained. The material shall be brought to level area before terminating. The end shall be across the fold on twelve-inch (12") centers. Outside edges, centers, and overlaps on banks shall be stapled on two-foot (2') intervals. Each width of cloth will have a row of staples down the

center as well as along each edge. On soft or sandy soil or windy areas, apply staples in alternate slanting position and space at closer intervals (12" to 18"). For extra hard soil or shale areas, use sharp pointed, hardened steel three-inch (3") fence-type staple. Outside edges shall have loose topsoil spread over them to allow for smooth entry of water. The entire jute covered area should be rolled with a smooth roller weighing fifty (50) to seventy-five (75) pounds per foot of length.

Any clods, debris, etc., which hold the jute off the ground, shall be stamped into the soil. The netting shall completely cover all areas to be protected from erosion. Overlaps must be ample and well stapled so that no gapping can occur. The material shall be in intimate contact with the surface at all points. If some areas experience severe erosion, two layers shall be in intimate contact with the surface at all points.

The quantity shown in the PROPOSAL is a rough estimate as the actual amount and location of the jute mesh will be determined in the field as directed by the engineer in areas where excessive slopes exist. Overlapping of material will not be paid for double.

Heavy jute netting will be paid for at the unit price bid per square yard, which price will be full compensation for furnishing and placing all materials, including all labor, tools, equipment, and incidentals necessary to complete the work. (Rev. 12/2000)

11-63 STEEL GUARD RAIL: For this project, the steel guard rail shall be "Galvanized Steel Beam Guard Fence" conforming to the details shown on the plans and to the requirements of Item 560, "Metal Beam Guard Fence," of the Standard Specifications for Construction of Highways, Street, and Bridges, as adopted by the Texas Department of Transportation on March 1, 1993. (Rev. 4/1994)

11-64 CLEANUP: It is the intent of the Special Provisions to ensure that an adequate cleanup job be performed by the Contractor as soon during the construction procedure as possible. In particular, all curb and gutter and sidewalk shall be backfilled as soon as possible. Before the project is accepted by the City, all rocks, stones, and other construction debris shall be removed. All necessary cleanup work shall be considered subsidiary to the various bid items on this contract. Refer to Section 11-30 for removal and disposal of excess materials and debris. (Rev. 12/2011)

11-65 FINAL INSPECTION: The engineer will make final inspection of all work included in the contract as soon as practicable after the work is completed and ready for acceptance. If the work is not acceptable to the engineer at the time of such inspection, he will inform the Contractor as to the particular defects to be remedied before final acceptance will be made. (Rev. 8/1989)

11-66 TOWING OF VEHICLES: The Contractor shall follow applicable City of Arlington Ordinances should it be determined that vehicles parked upon a City street must be moved in order to perform street maintenance or construction. (Rev. 12/2000)

11-67 CONDUIT:

A. MATERIAL: All plastic conduit shall be schedule 40, rigid, high impact polyvinylchloride, conforming to Federal Specification W-C-1094 and Underwriters' Laboratories, Inc., Standard UL=651.

B. CONSTRUCTION METHODS: Prior to the installation of conduit, the City of Arlington shall be notified so that a representative may be present to inspect the installation of the conduit. Failure to contact the City of Arlington shall constitute grounds for rejecting conduit which has been installed without the presence of a representative of the City of Arlington.

All conduit shall be placed in accordance with line and grade, details and dimensions as shown on the plans, or as directed by the engineer. All ends of pipe shall be reamed to remove burrs. All splicing of conduit shall be done by using standard couplings manufactured for this purpose. All bare ends of conduit for future connections by others shall be capped with standard conduit caps. The location of ends of all conduit for future electric circuits in structures shall be marked by a "Y" at least three inches (3") high, cut into the face of curb, gutter or wall directly above the conduit.

All conduit shall be placed a minimum of six inches (6") below the bottom of the pavement base, ten inches (10") for non-metallic conduit and in no case shall be of a greater depth than thirty inches (30") measured from the top of curb. Installation under existing pavements may be accomplished by jacking, tunneling, or drilling. Conduit shall extend six inches (6") behind back of curb unless otherwise called for on the plans.

Conduit in medians shall be placed in the median at a depth of eighteen inches (18") to thirty inches (30") as shown on the plans. Where pull boxes or junction boxes are required in medians which are to be surfaced, they shall be installed by the Contractor at the location and grade as shown on the plans or as directed by the engineer.

All necessary fittings for proper installation of conduit in the pull-box shall be furnished and installed by the Contractor. Where it is required that pull-boxes be installed, the conduit shall be fitted with standard ninety degree (90°) ell fittings to enter the pull-box from the bottom. A nipple shall be attached to the ell of sufficient length so that the distance from the top of the pull-box to the end of the nipple shall be eight inches (8").

A No. 9 galvanized pull wire shall be placed in all conduit; and prior to the placement of paving, the wire shall be moved back and forth to ensure that the conduit is free from obstructions. Before final acceptance of the conduit work, this method of checking shall again be incorporated to ensure that the paving operations have not rendered the conduit useless. It shall be the Contractor's responsibility to remove and replace all damaged conduit at his own expense.

All plastic conduit shall have factory bends.

Conduit locations shown on the plans are for bidding purposes only and may be changed with permission of the City of Arlington to avoid underground obstacles. The Contractor shall furnish and install conduit to an electrical service point to be determined by the City of Arlington prior to the beginning of construction.

C. MEASUREMENT AND PAYMENT: Conduit of the size specified on the plans shall be measured by the linear foot along the main line of conduit. Fittings shall not be measured directly but shall be considered subsidiary to this item.

Conduit, as measured in this item, shall be paid for at the unit price bid for "conduit" of the size specified, which prices shall be full compensation for furnishing and installing all conduit, for all excavation, for all gravel backfill, for furnishing and installing all fittings, for furnishing and installing pull-boxes, and for all labor, materials, tools, equipment, and incidentals necessary to complete the work. (Rev. 8/2001)

11-68 SPRINKLER RELOCATIONS: Sprinkler relocations may be required on this project. Either the City of Arlington or the Contractor shall be responsible for sprinkler relocations. Regardless, prior to construction, the Contractor and inspector shall identify and document the sprinkler systems that will be affected by the construction of the project. The Contractor shall contact the owner of each sprinkler system and arrange to test each system. In the presence of the inspector, the Contractor shall: (1) determine if the system functions properly, (2) identify the layout of the system and, (3) document in writing the layout and function of the system. The work described above is required by the Contractor for all projects and should be considered subsidiary to the unit prices bid for other items.

If the Contractor is responsible for actual irrigation relocations, a dollar amount has been included in the PROPOSAL to reimburse the Contractor for any required sprinkler relocations. The amount is only an estimate. Prior to beginning construction, the Contractor shall contact the City of Arlington of each sprinkler system and arrange to test each system. When construction activities approach a sprinkler system, the Contractor shall cut all feed lines to the system and salvage existing sprinkler heads for re-use (if feasible). The feed lines shall be cut at the right-of-way line. All of these activities shall be coordinated with the inspector. The Contractor shall obtain a licensed irrigator to repair or replace sprinkler systems with equal or better materials as the existing system. The Contractor shall submit copies of monthly invoices from the licensed irrigator for all sprinkler work performed during the month. The amount of the invoice plus 15% will be paid on the next monthly estimate. Payment will only be made based on the invoices submitted; therefore, the full dollar amount included in the PROPOSAL for sprinkler relocations may or may not be paid. No payment will be made for adjustments except those determined necessary by the inspector. All sprinkler systems affected must be fully functional prior to final acceptance of the project.

If the City is responsible, the Contractor shall forward the documentation of the sprinkler systems to the inspector. When construction activity approaches a sprinkler system, the Contractor shall provide the inspector seven days notice to allow for relocation of the sprinkler system. (Rev. 12/2000)

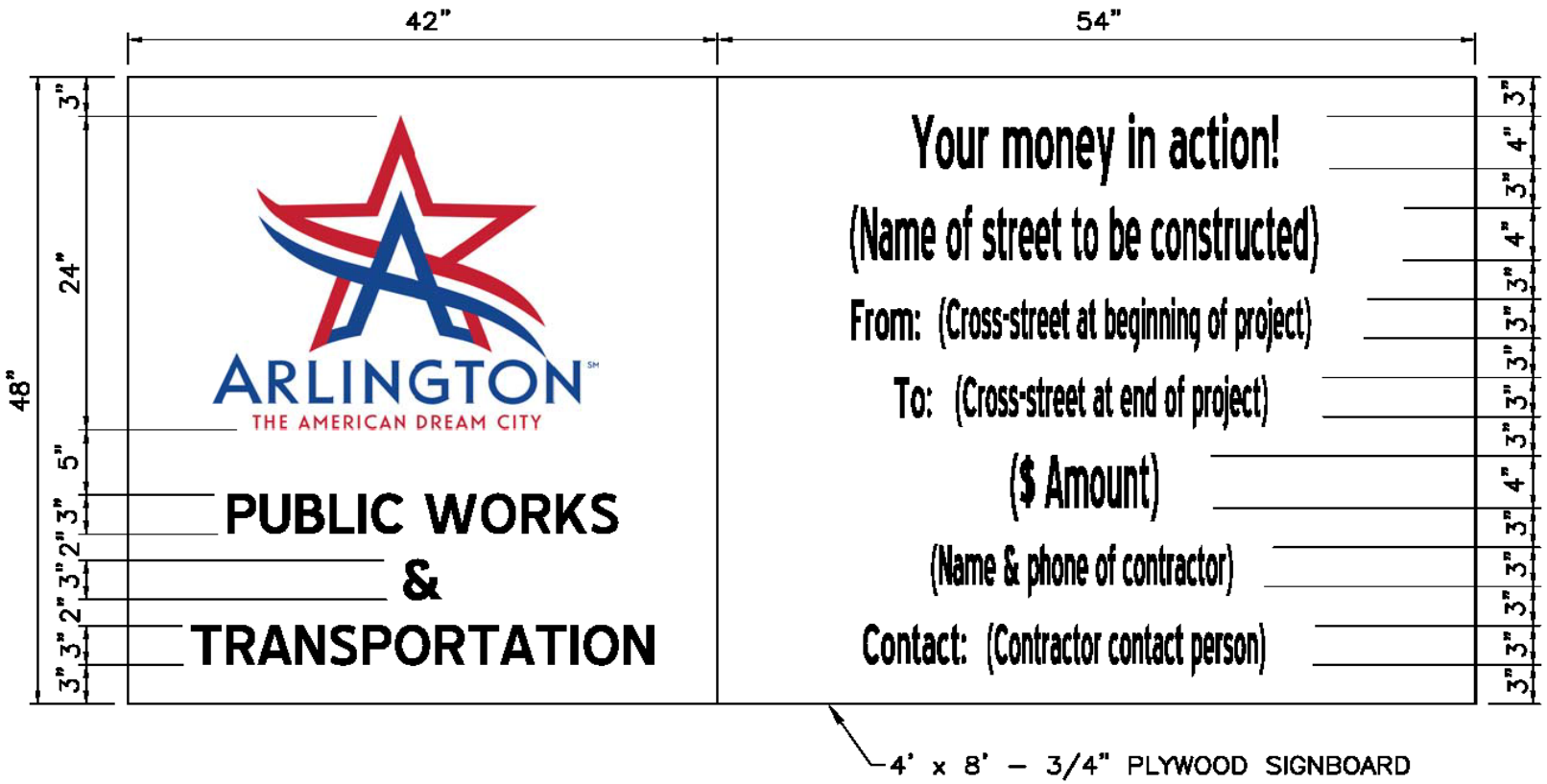
<u>11-69 PROJECT SIGNS</u>: The Contractor on this project shall provide and erect up to six (6) project signs as required.

Generally, project signs shall be located at the beginning and end of the project and on major intersecting streets. Locations of signs and specific information on signs shall be approved by the inspector prior to fabrication of signs.

Signs shall be substantially in accordance with the sample drawing enclosed as part of these Special Provisions. Construction shall be on 3/4 inch weatherproof (marine) 4′x8′ plywood and the painting shall be accomplished with good quality paint which will not weather or fade during the life of the contract. Sign colors shall be as indicated on the sample drawing.

A City of Arlington logo shall be incorporated into each project sign at the left end of the plywood signboard as indicated on the enclosed sample drawing.

Signs shall be placed in prominent locations and maintained in good condition until the completion of the project. Damaged or defaced signs will be repaired or replaced within two (2) calendar days at the Contractor's expense. The cost of the plywood sign(s) shall be considered subsidiary to the unit prices bid on this project. (Rev. 8/2002)



Change sign with funding source if project has grant funds

PROJECT SIGN DETAIL

NOTES:

1. TEXT IN PARENTHESES () INDICATES INFORMATION SPECIFIC TO THE PROJECT THAT IS TO BE APPROVED BY CITY PROJECT REPRESENTATIVE PRIOR TO SIGN FABRICATION.
2. BACKGROUND OF SIGN SHALL BE WHITE AND LETTERS SHALL BE BLACK.
3. LETTERING SHALL BE MIXED CASE, 3" HEIGHT UNLESS OTHERWISE NOTED.
4. ALL LETTERING SHALL BE STANDARD "BLUE HIGHWAY" FONT.

(REV. 6/2014)

11-69A SIGNS FOR BUSINESSES: Weatherproof signs directing motorists to adjacent business entrances shall be provided by the Contractor and used during construction at locations directed by the project engineer. The signs shall be white with red letters and include the business name, shall be approximately 18 inches by 24 inches and have lettering at least six inches tall. The sign shall be placed such that it is visible from the street to help direct patrons to adjacent businesses, but shall not obstruct traffic visibility for vehicles exiting the driveway. It will be the Contractor's responsibility to maintain the signs until such time as the project engineer agrees they can be removed. A bid item has been included which shall cover all costs related to fabricating, installing, and maintaining the signs. (Rev. 10/2002)

11-70 USE OF CITY PARKS: The Contractor shall obtain written permission from the Parks and Recreation Department prior to the use of City park property for access or for the storage of machinery, equipment, materials, and/or supplies. Any damage incurred to City park property, by unauthorized use by the Contractor, will be the responsibility of the Contractor to repair in an equal or better condition. Payment to the Contractor may be withheld until the damage is repaired and/or payment for the damages has been made. (Rev. 12/1991)

11-71 STORM WATER MANAGEMENT

A. This project is subject to the Texas Commission on Environmental Quality's (TCEQ) General Permit requirements for construction projects, through the Texas Pollutant Discharges Elimination System (TPDES) Program. On projects larger than 5 acres, the Contractor shall submit a Notice of Intent (NOI) and applicable fees to TCEQ at least 7 days (if submitted by paper) or immediately (if submitted online) prior to the start of any construction activity. Because the City is also considered by TCEQ to be a Primary Operator, the Contractor shall also prepare the Notice of Intent (NOI) for the City of Arlington and submit applicable fees to TCEQ at least 7 days (if submitted by paper) or immediately (if submitted online) prior to the start of any construction activity. The Contractor shall provide the City of Arlington a copy of the NOI's. (Rev. 3/2010)

On projects 1 acre and larger but less than 5 acres the Contractor shall be required to post a signed and certified site notice at the construction site prior to the start of any construction activity. The Contractor shall provide the City of Arlington a copy of the signed and certified construction site notice at least 2 days prior to commencement of construction activities. (Rev. 04/2008)

The information contained in the NOI's and TCEQ Site Notices shall be in accordance with the TPDES General Permit Regulations. (Rev. 04/2008)

Note to staff: delete red text if not applicable.

The Contractor shall provide to the City a site specific "Storm Water Pollution Prevention Plan" (SWPPP), in accordance with the TPDES General Permit Regulations, prior to submitting either the NOI or TCEQ site notice. An erosion control plan has been included in the construction plans for the contractor's use in preparation of the SWPPP. The SWPPP shall be prepared and certified by a licensed professional civil engineer who is familiar with the TCEQ TPDES General Permit requirements. The SWPPP shall be subject to approval by the City and/or TCEQ. The SWPPP shall contain information as required by the TPDES General Permit Regulations, including, but not limited to:

(Rev. 7/2012)

1. Site Description - including a site map, description of construction activity, estimate of disturbed area, runoff coefficient, and name of receiving waters.

2. Description of Controls - including plans for controlling erosion and sedimentation caused by construction activity by utilizing hay bales, silt fences, detention/retention structures, check dams, sand bag barriers, or other approved best management practices.

3. Construction Implementation - including phasing of construction activities and corresponding sequencing of erosion/pollution control measures. The Contractor shall perform his construction operations in accordance with best management practices to control erosion/pollutants in storm water discharges during construction.

4. Information on endangered species and critical habitat.

5. Current description of construction and waste materials stored on-site with updates as appropriate. Description of controls to reduce pollutants from these materials including storage practices to minimize exposure of the materials to storm water, spill prevention and response.

B. The following shall be maintained on the project site by the Contractor at all times:

1. Post near main entrance to project site or at project site office:
   a. NOI or TCEQ site notice depending on project size.

   b. Local contact person with phone number.

   c. Brief description of project.

   d. Location of SWPPP if site is inactive or does not have an on-site location to store the plan.

2. SWPPP including any revisions.

3. Copy of the TPDES General Permit TXR150000.

4. Inspection reports for inspections performed every 14 days and within 24 hours after every ½ inch rain.

5. Record of construction activities:
   a. Dates when grading activities will occur.

   b. Dates when construction activities will temporarily and/or permanently cease on a portion of the project.

   c. Dates when ground cover will be initiated on disturbed areas.

6. Current description of construction and waste materials stored on-site with updates as appropriate. Description of controls to reduce pollutants from these materials including storage practices to minimize exposure of the materials to storm water, spill prevention and response.

C. A Notice of Termination (NOT) must be submitted by the Contractor (for both the City and Contractor) to TCEQ within 30 days of project completion, and a copy provided to the city, on all 5 acre or larger projects. For smaller projects, the Contractor shall complete the applicable portion of the site notice related to removal of the site notice, and submit a copy of the completed site notice to the city within 30 days of project completion. (Rev. 4/2008)

D. A lump sum bid item and dollar amount has been included in the PROPOSAL to pay the Contractor for providing the physical erosion/pollution control measures throughout the duration of the construction contract, as delineated in the approved SWPPP. The dollar amount provided in the PROPOSAL is only an estimate of the total cost. The actual amount to be paid to the Contractor shall be agreed upon in writing by the Contractor and the City after the SWPPP has been submitted and approved, but prior to beginning construction. The agreed upon dollar amount for this item shall be based upon the Contractor's cost of providing materials, equipment, and labor necessary to perform the work as detailed on the SWPPP and any revisions thereof, plus 15 percent to compensate the Contractor for overhead and profit. This amount includes removal of all items and structures constructed for storm water pollution protection. Monthly payment for this item shall be based on work completed each month. (Rev. 9/2013)

E. The erosion control measures must be in place on the project prior to being authorized for any other construction activity. Any stockpiles of unusable items and/or excavated materials shall be removed from the project site within seven days. In case of failure on the part of the Contractor to control soil erosion, pollution and/or siltation, the engineer reserves the right to employ outside assistance or to use City forces to provide the necessary corrective measures. Such incurred direct costs plus project engineering costs will be deducted from any money due or to become due to the Contractor. (Rev. 4/2004)

11-71A STORM WATER MANAGEMENT:

A. This project is subject to the Texas Commission on Environmental Quality's (TCEQ) General Permit requirements for construction projects, through the Texas Pollutant Discharges Elimination System (TPDES) Program. On projects larger than 5 acres, the Contractor shall submit a Notice of Intent (NOI) and applicable fees to TCEQ at least 7 days (if submitted by paper) or immediately (if submitted online) prior to the start of any construction activity. Because the City is also considered by TCEQ to be a Primary Operator, the Contractor shall also prepare the Notice of Intent (NOI) for the City of Arlington and submit applicable fees to TCEQ at least 7 days (if submitted by paper) or immediately (if submitted online) prior to the start of any construction activity. The Contractor shall provide the City of Arlington a copy of the NOI's.

The information contained in the NOI shall be in accordance with the TPDES General Permit Regulations.

A storm water pollution prevention plan (SWPPP) has been included in the plans, and bid items for the proposed erosion/pollution control measures have been included in the bid proposal. The bid prices for the control measures shall include all costs necessary to provide materials, equipment, and labor necessary to install, maintain and remove all control measures.

The SWPPP includes all areas on the project that require protection. It is the Contractor's responsibility to install the control measures at the appropriate time to coincide with the Contractor's proposed project schedule and phasing. If the Contractor feels additional control measures not shown on the SWPPP are necessary due to phasing plans, it is the Contractor's responsibility to indicate such in a written request to modify the SWPPP prior to start of construction. The engineer will evaluate the request and, if approved, will negotiate an appropriate change order, if necessary.

B. The following shall be maintained on the project site by the Contractor at all times:

1. Post near main entrance to project site or at project site office:
   a. NPDES permit number or NOI if permit number is not assigned.

   b. Local contact person with phone number.

   c. Brief description of project.

   d. Location of SWPPP if site is inactive or does not have an on-site location to store the plan.

2. SWPPP including any revisions.

3. Copy of the NPDES General Permit as published in the *Federal Register*.

4. Inspection reports for inspections performed every 14 days and within 24 hours after every ½ inch rain.

5. Record of construction activities:
   a. Dates when grading activities will occur.

   b. Dates when construction activities will temporarily and/or permanently cease on a portion of the project.

   c. Dates when ground cover will be initiated on disturbed areas.

6. Current description of construction and waste materials stored on-site with updates as appropriate. Description of controls to reduce pollutants from these materials

including storage practices to minimize exposure of the materials to storm water, spill prevention and response.

C. A Notice of Termination (NOT) must be submitted by the Contractor to TCEQ (for both the City and Contractor) within 30 days of project completion, and a copy provided to the city.

D. The erosion control measures must be in place on the project prior to being authorized for any other construction activity. Any stockpiles of unusable items and/or excavated materials shall be removed from the project site within seven days. In case of failure on the part of the Contractor to control soil erosion, pollution and/or siltation, the engineer reserves the right to employ outside assistance or to use City forces to provide the necessary corrective measures. Such incurred direct costs plus project engineering costs will be deducted from any money due or to become due to the Contractor. (Rev. 12/2000)

11-71B STORM WATER MANAGEMENT: This construction project disturbs less than one (1) acre and is not part of a Larger Common Plan of Development; and therefore does not require permit coverage under the Texas Commission on Environmental Quality's (TCEQ) General Permit requirements for construction activities through the Texas Pollutant Discharges Elimination System (TPDES) Program. However, the Contractor shall use Best Management Practices (BMPs) to prevent or reduce discharge of pollutants due to construction activities. The Contractor shall provide the City inspector and project engineer a site map showing a plan for controlling erosion and sedimentation caused by construction activities. Inspection and maintenance of BMPs shall be in accordance with standards set forth in the TPDES General Permit Number TXR150000, Part III, Section, F.6 and F.7.

A lump sum bid item and dollar amount has been included in the PROPOSAL to pay the Contractor for providing, installing, and maintaining the physical erosion/pollution control measures throughout the duration of the construction contract. The dollar amount provided in the PROPOSAL will be paid in full on the final construction estimate. This amount includes removal of all items and structures constructed for storm water pollution protection once vegetation is established. (Rev. 5/2014)

11-71C NONWOVEN FILTER FABRIC FOR INLET PROTECTION: Contractor shall only use surface course inlet filters that have a minimum height or diameter of 9-inches and have a minimum length that is 2-feet longer than the length of the curb opening. See diagram below. Surface course inlet filters shall not be designed to completely block the inlet opening.

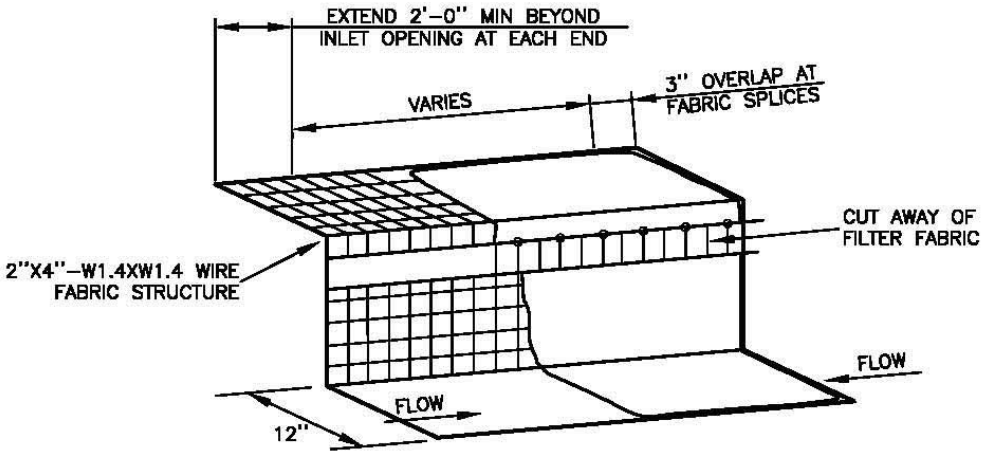
The filter fabric shall be of a synthetic material that will allow stormwater to freely flow through while trapping sediment and debris. The geotextile shall be non-biodegradable and resistant to degradation by ultraviolet exposure and resistant to contaminants commonly encountered in storm water. Use filter fabric that is capable of reducing effluent sediment concentrations by no less than 80% under typical sediment migration conditions.

Straw, straw fiber, straw bales, pine needles, straw logs, and leaf mulch are not permissible filter materials.

When applicable, the filter fabric of curb inlet filters has the following Minimum Average Roll Values (MARV) for physical properties:

Weight	ASTM D 3776	oz/yd2	3.0
Grab Tensile Strength	ASTM D 4632	lbs	80
Grab Tensile Elongation	ASTM D 4632	%	50
Puncture Strength	ASTM D 4833	lbs	40
Mullen Burst Strength	ASTM D 3786	psi	150
Trapezoid Tear Strength	ASTM D 4533	lbs	30
Fabric Opening Size	ASTM D 4751	US Std Sieve (max)	50
Permittivity	ASTM D 4491	sec-1	1.5
Water Flow Rate	ASTM D 4491	gal/min/ft2	100
Ultraviolet Resistance	ASTM D 4355 (500 hrs)	%	70

(Rev. 4/2013)



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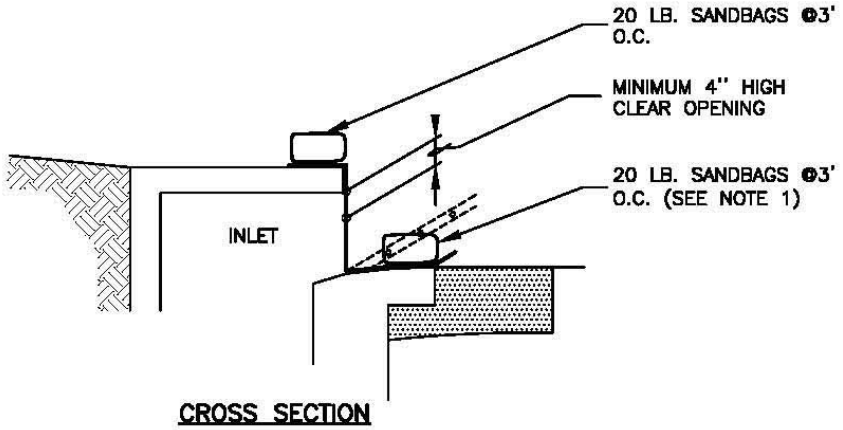

CROSS SECTION

NOTES:

1. WHERE MINIMUM CLEARANCES CAUSE TRAFFIC TO DRIVE IN THE GUTTER, THE CONTRACTOR MAY SUBSTITUTE A 1" X 4" BOARD SECURED WITH CONCRETE NAILS 3' O.C. NAILED INTO THE GUTTER IN LIEU OF SANDBAGS TO HOLD THE FILTER DIKE IN PLACE. UPON REMOVAL, CLEAN ANY DIRT/DEBRIS FROM NAILING LOCATIONS, APPLY CHEMICAL SANDING AGENT AND APPLY NON-SHRINK GROUT FLUSH WITH SURFACE OF GUTTER.
2. A SECTION OF FILTER FABRIC SHALL BE REMOVED AS SHOWN ON THIS DETAIL OR AS DIRECTED BY THE ENGINEER OR DESIGNATED REPRESENTATIVE. FABRIC MUST BE SECURED TO WIRE BACKING WITH CLIPS OR HOG RINGS AT THIS LOCATION.
3. DAILY INSPECTION SHALL BE MADE BY THE CONTRACTOR AND SILT ACCUMULATION MUST BE REMOVED WHEN DEPTH REACHES 2".
4. CONTRACTOR SHALL MONITOR THE PERFORMANCE OF INLET PROTECTION DURING EACH RAINFALL EVENT AND IMMEDIATELY REMOVE THE INLET PROTECTIONS IF THE STORM-WATER BEGINS TO OVERTOP THE CURB.
5. INLET PROTECTIONS SHALL BE REMOVED AS SOON AS THE SOURCE OF SEDIMENT IS STABILIZED.

11-72 GPS MONUMENT: Contractor shall Furnish and Install 2 Berntsen Top Security Rod Monuments with logo # 200016 or 2 Berntsen C35D - 3 1/2" Aluminum concrete markers with E logo #E432 or any combination of both (at the City Surveyors discretion) complete and in place. Location of said Monuments/Markers shall be marked by the City Surveyor. Contractor shall notify the City Surveyor two weeks before planned installation date. Contractor shall have a Registered Professional Land Surveyor survey the Berntsen Monuments/Markers, publish and certify GPS data sheets that meet and/or exceed Second Order Specifications using the Global Positioning System (GPS). Data Sheet horizontal coordinates shall be NAD 83 (2007 Adjustment) or be based on the latest adjustment of the City's GPS Monument Manual (located on Public Works & Transportation's web page). Please specify which adjusted datum is used for the project. Data Sheet vertical datum for the Berntsen Monuments/Markers shall be based on NAVD88 derived from calculating by applying vertical shifts derived from Geoid model 2012A or Geoid model 2003 or Geoid model 2009 to ellipsoid heights calculated from GPS/GNSS observations referenced to the North American Datum of 1983 (2007) or later datum or meet and/or exceed Third Order Specifications using conventional leveling methods.. Contractor shall notify City Surveyor beforehand of exact date of installation of Berntsen Monuments/Markers so City Surveyor can inspect procedures of the installation of Berntsen Monuments/Markers.

(Rev. 07/2013)

11 -73 FINAL QUANTITIES: The Contractor is required to be present when final quantities are measured by the inspector. The inspector will coordinate with the Contractor to schedule a mutually agreeable date and time (including Saturdays) to perform the final measuring. If the Contractor chooses not to be present when final quantities are measured by the inspector, the Contractor agrees to accept the inspector's measurements or reimburse the City for time the inspector spends remeasuring any portion of the project. (Rev. 12/2000)

11-74 PUBLIC MEETING: Prior to start of construction, a public meeting will be held for this project. The purpose of the meeting will be to explain the project to affected citizens and answer questions. A representative of the Contractor, knowledgeable of the project, shall attend the public meeting. The representative will be introduced and will be called on as necessary to assist in answering questions. (Rev. 12/2000)

11-74A PARTNERING MEETING: A Partnering Meeting shall take place prior to construction. This meeting will cover all of the aspects usually covered in the pre-construction meeting, but is also designed to build relationships between the City of Arlington representatives and the Contractor's representatives who will work together on a daily basis. Issues will be discussed related to the chain-of-command, areas of special concern, and coordination expectations. It is the City of Arlington's hope that this meeting promotes a partnership between the Contractor and the City that lasts throughout this project, making the project more pleasant for the Contractor, the City of Arlington, and the affected property owners/occupants. (Rev. 10/2002)

11-74B CONSTRUCTION MEETING: Once construction begins, project construction meetings may be held for this project. A representative of the Contractor, knowledgeable of the project, shall attend the construction meetings. The engineer will schedule the time and location, and determine the frequency of these meetings. (Rev. 10/2002)

11-75 TEMPORARY STREET REPAIR FOR TRENCHES: This specification is applicable when the roadway is to be completely excavated and rebuilt. A temporary driving surface shall be required on all street cut openings. It shall be composed of permanent type paving material, specifically excluding gravel or flexbase as the surface material, unless approved by the engineer. For residential streets, a 2-inch (2") hot mix asphaltic concrete (Type D) over 6-inch flexbase (TxDOT Type "A" – Grade 1) on compacted native material shall be used. For collectors and arterials, a 4-inch (4") hot mix asphaltic concrete (Type D) over 6-inch flexbase (TxDOT Type "A" – Grade 1) on compacted native material shall be used. Installation of temporary street repairs will be completed by the Contractor as soon as possible after completing the backfill, but always within 5 working days after completion of the work involving the cut. Road plates may not be used for more than 5 working days. Any temporary driving surface that fails to provide an acceptable driving surface shall be removed and replaced at the Contractor's expense, as directed by the Inspector. (Rev. 6/2016)

11-75A TEMPORARY STREET REPAIR FOR TRENCHES: This specification is applicable when the roadway is to be rehabilitated by mill and overlay or by reclamation. A temporary driving surface shall be required on all street cut openings and shall be in accordance with the Existing Street Backfill and Repair Details. The driving surface shall be placed by the Contractor as soon as possible after completing the backfill, but always within 5 working days after completion of the work involving the cut. Any temporary driving surface that fails to provide an acceptable driving surface shall be removed and replaced at the Contractor's expense, as directed by the engineer. (Rev. 12/2005)

11-76 PROTECTION OF ADJACENT LANDSCAPING IMPROVEMENTS: The Contractor shall be responsible for the protection of any existing landscaping improvements in the medians and parkways adjacent to the project including but not limited to trees, shrubs and irrigation from damage by Contractor's equipment or personnel. If the Contractor damages any of the landscaping improvements, the Contractor shall be responsible for replacing and/or repairing the improvements prior to processing the final pay estimate for the project. If the Contractor feels any of the landscaping improvements are in conflict with the project and must be removed or have prior damage, the Contractor shall coordinate this with the project inspector prior to removal of any landscaping improvements. (Rev. 12/2000)

11-77 RESTORATION OF EXISTING PAVED SURFACES: The Contractor shall be responsible for maintenance of existing paved roadway surfaces within the project limits throughout the duration of the project. The Contractor shall perform daily inspections and restoration work required to provide an acceptable driving surface, as determined by the engineer. Restoration of paved surfaces shall be of asphalt, unless otherwise approved by the engineer. Should the Contractor be notified by the City of unacceptable roadway conditions, the Contractor shall restore the surface within 24 hours. Should it become necessary for the City to provide for the restoration of the surface, the cost of such shall be deducted from the monthly estimate. All asphalt for restoration of existing paved surfaces shall be considered subsidiary to the various bid items on this contract. (Rev. 10/2002)

11-78 PORTLAND CEMENT TREATED SUBGRADE:

Applicable to real sandy areas only

A. DESCRIPTION: This item shall govern for treating subgrade, by the addition of portland cement and mixing and compacting the treated material to the required density, as herein specified and in conformity with the typical sections, lines, grades and thickness as shown on the plans or as established by the engineer.

Portland cement shall be Type I of a standard brand, unless otherwise directed by engineer.

B. EQUIPMENT: The machinery, tools, and equipment necessary for proper prosecution of the work shall be on the project and approved by the engineer prior to beginning work on this item. All machinery, tools, and equipment used shall be maintained in a satisfactory working condition.

C. CONSTRUCTION METHODS:

1. General. The completed course shall be uniformly treated, free from loose or segregated areas, of uniform density and moisture content, well bound for its full depth and shall have a smooth surface.

2. Preparation of Subgrade or Existing Base

   a. Prior to scarifying or pulverizing existing material, the subgrade or existing base shall be shaped to conform to the typical sections as shown on the plans or as established by the engineer. This work shall be done in accordance with the provisions of the applicable bid Items. When shown on the plans, any existing asphaltic concrete pavement shall be removed and paid for in accordance with the applicable bid items.

   b. When shown on the plans and when directed by the engineer, the Contractor shall proof roll the roadbed before pulverizing or scarifying existing material. Soft spots shall be corrected as directed by the engineer.

   c. When the Contractor elects to use a cutting and pulverizing machine that will process the material to the plan depth, the Contractor will not be required to excavate to the secondary grade or windrow the material. This method will be permitted only if a machine is provided which will insure that the material is cut uniformly to the proper depth and which has cutters that will plane the secondary grade to a smooth surface over the entire width of the cut. The machine shall be of such design that a visible indication is given at all times that the machine is cutting to the proper depth.

   d. In lieu of using the cutting and pulverizing machine, the Contractor shall excavate and windrow the material to expose the secondary grade to the typical sections, lines and grades as shown on the plans or as established by the engineer. Then the windrowed material shall be uniformly replaced before cement is applied.

3. Pulverization

a. The existing material as shown on the typical section shall be pulverized so that a minimum of 80 percent shall pass the No. 4 sieve.

b. When shown on the plans or approved by the engineer, this pulverization requirement may be waived when the material contains a substantial amount of aggregate.

4. Application of Cement

a. The amount of cement to be added will be shown on the plans.

b. Cement shall be spread only in that area where the mixing, compacting, and finishing operations can be completed during the same working day.

c. Unless otherwise approved by the engineer, the cement treatment operation shall not be started when the air temperature is below 40 F and falling, but may be placed when the air temperature is above 35 F and rising. The temperature will be taken in the shade and away from artificial heat. Cement shall not be placed when weather conditions in the opinion of the engineer are unsuitable.

d. The cement shall be spread by an approved spreader or by bag distribution. It shall be distributed at a uniform rate and in such a manner as to reduce to a minimum the scattering of cement by wind. Cement shall not be applied when wind conditions, in the opinion of the engineer, are such that blowing cement becomes objectionable to adjacent property owners or dangerous to traffic.

5. Mixing

a. Only single or multiple soil stabilizer mixers shall be used.

b. After any required mixing of the material(s), the cement shall be dry mixed with the material(s) prior to the addition of water. Immediately after dry mixing, water shall be uniformly applied. After mixing, the mixture shall be in a loose evenly spread state ready for compaction. The mixture shall be mixed and compacted in one (1) lift.

6. Compaction Methods

a. Compaction shall continue until the entire thickness of the mixture is uniformly compacted.

b. Compaction shall be completed within two (2) hours of the addition of water to the dry mixed material.

c. The treated material shall be sprinkled and rolled as directed by the engineer. All irregularities, depressions or weak spots which develop shall be corrected immediately by scarifying the areas affected, adding or removing treated

material as required, reshaping, and re-compacting at the Contractor's expense.

d. Should the material lose the required stability, compaction or finish before the next course is placed or the project is accepted, it shall be removed and replaced, unless otherwise approved by the engineer. Removal and replacement will be at the Contractor's expense

7. Density Control.

a. Unless otherwise shown on the plans, the course shall be sprinkled as required herein and compacted to the extent necessary to provide not less than 95 percent standard Proctor Density.

b. When the material fails to meet the density requirements or should the material lose the required stability, density or finish before the next course is placed or the project is accepted, the treated material shall be removed and replaced, unless otherwise approved by the engineer. Removal and replacement with acceptable treated material will be at the Contractor's expense.

8. Finishing

a. Immediately after compaction, the surface of the mixture shall be clipped, skinned, or tight bladed by a maintainer or subgrade trimmer to a depth of approximately 1/4", removing all loosened materials. The loosened materials shall be disposed of at the Contractor's expense and at a location approved by the engineer. The surface shall then be rolled with a pneumatic tire roller, adding small increments of moisture as needed during rolling.

b. Throughout this operation, the shape of the course shall be maintained and the surface upon completion shall be smooth and in conformity with the typical sections, lines and grades as shown on the plans or as established by the engineer.

9. Curing. The completed section shall be moist cured for three (3) days or prevented from drying by addition of an asphalt material at the rate of 0.05 to 0.20 gallon per square yard as determined by the engineer. The asphalt used shall be of the type and grade shown as on the plans or as approved by the engineer.

D. TOLERANCES. Tolerances shall conform to the following:

1. Density Tolerances. The engineer may accept the work providing not more than one (1) out of the most recent five (5) density tests performed is below the specified density, provided the failing test is no more than three (3.0) pounds per cubic foot below the specified density.

2. Moisture Tolerances. The percentage of moisture in the mixture at the beginning of compaction shall be within $\pm$ two (2.0) percentage points of optimum unless

otherwise approved by the engineer. If the percentage of moisture is outside the allowable tolerance, the Contractor shall adjust operations to meet this requirement.

3. Grade Tolerances. In areas on which pavement is to be placed, any deviation in excess of 1/4 inch in cross section and 1/4 inch in 16 feet measured longitudinally shall be corrected by loosening, adding, or removing material, reshaping, and compacting by sprinkling and rolling.

E. MEASUREMENT. This item will be measured as follows:

1. Cement treated subgrade will be measured by the square yard of the surface area to the lines and grades shown on the typical sections.

2. Cement will be measured by the ton of 2000 pounds, dry weight.

F. PAYMENT. The work performed and materials furnished in accordance with this Item will be paid for at the unit price bid for "Cement treated subgrade". "Cement" will be paid for at the unit price bid per ton of 2000 pounds, dry weight. This price shall be full compensation for shaping existing material, loosening, proof rolling, pulverizing, providing cement, spreading, road mixing, compacting, blading, shaping, finishing, curing including curing materials, replacing if required, and for all mixing water, labor, tools and incidentals necessary to complete the work except as otherwise provided for in this specification. (Rev. 06/2005)

11-79 CONSTRUCTION CONTINGENCY ALLOWANCE: A construction contingency allowance, in the amount designated in the Proposal, is provided to allow for expeditious handling of unforeseen conditions that may arise during the course of the Project, and may only be used with the concurrence of the Engineer and applicable City Department Director or designee. Before contingency work is performed, the Contractor shall submit a proposed price for the work to the Engineer and shall obtain written approval before proceeding with the additional work. Any balance of funds remaining in the construction contingency allowance at the close of the project belongs to and shall remain with the City of Arlington. (Rev. 10/2005)

11-80 LIME AND CEMENT MODIFICATION OF SUBGRADE SOILS: Prior to beginning any lime modification, the subgrade shall be brought to the required line, grade, cross-section, and proof rolled in accordance with specification requirements. Proof rolling shall be in accordance with Texas Department of Transportation Standard Specification for Construction of Highways, Streets and Bridges, 1993, Item 216. The cost of proof rolling shall be considered subsidiary to this item. (Rev 11/2012)

This item shall consist of treating the subgrade by scarifying, addition of lime slurry, initial mixing and curing, re-scarifying, addition of cement slurry, final mixing and compacting the material to the required density. This item applies to the subgrade, i.e., natural ground, embankment or existing pavement structure and shall be constructed as specified herein and in conformity with the typical sections, lines and grades as shown on the Plans or as established by the Engineer.

A. MATERIALS:

1. Soil. Soil shall consist of approved material free from roots, vegetation or other objectionable matter encountered in the subgrade. Rocks or similar debris larger than four (4) inches shall be removed from the subgrade prior to treatment. Acceptable material shall also be used in preparation of the roadbed in accordance with this specification. Prior to beginning subgrade treatment, the area to be treated shall be proof rolled to identify any soft or unstable areas. Any soft or unstable areas shall be excavated and re-compacted with acceptable material to 95 percent of Standard Proctor density at 0 percent to +4 percent wet of optimum moisture content. Any unsuitable or deleterious material found during proof rolling shall be removed and disposed of.

2. Lime. The Contractor can use Type A, Hydrated Lime (a dry powdered material consisting essentially of calcium hydroxide) or Type C, Quicklime-Grades DS and S (a dry material consisting essentially of calcium oxide), to produce a lime slurry or he may use Type B, Commercial Lime Slurry (a liquid mixture of essentially hydrated lime solids and water in slurry form). The lime and lime slurry shall meet the following chemical and physical requirements:

Chemical:	Type		
	A	B	C
Total "active" lime content, % by mass-- (i.e., % by mass $Ca(OH)_2$ + % by mass CaO, if present)	90.0 min.[1]	87.0 min.[2]	--
Unhydrated lime content, % by mass CaO----------	5.0 max.	--	87.0 min.
"Free Water" content, % by mass H_2O---	5.0 max.	--	--
Physical:			
Wet sieve requirement, as % by mass residue:			

Retained on 3.35mm sieve----------	0.2 max.	0.2 max.[2]	8.0 max.[3]
Retained on 600ìm sieve----------	4.0 max.	4.0 max.[2]	--
Dry sieve requirement, as % by mass residue:			
Retained on 25.0mm sieve----------	--	--	0.0
Retained on 19.0mm sieve----------	--	--	10.0 max.
Retained on 150ìm sieve----------	--	--	Grade DS 80% min. Grade S No limits

Note 1: No more than 5.0 percent by mass CaO (unhydrated lime) will be allowed in determining the total "active" lime content.

Note 2: In "solids content" of slurry.

Note 3: The amount of total "active" lime content, as CaO, in the material retained on the 3.35 mm sieve must not exceed 2.0 percent by mass of the original Type C lime.

All slurry shall be furnished at or above the minimum "Dry Solids" content as approved by the Engineer and must be of a consistency that can be handled and uniformly applied without difficulty. The slurry shall be free of liquids other than water and any materials of a nature injurious of objectionable for the purpose intended.

Hydrated lime shall be stored and handled in closed weatherproof containers until immediately before distribution on the roadway subgrade. If storage bins are used, they shall be completely waterproof. If lime is furnished in trucks, each truck shall have the weight of lime certified on public scales or the Contractor shall place a set of standard platform truck scales or hopper scales at the location provided by the Engineer.

3. Portland Cement. The Contractor shall use bulk cement, Type I Portland conforming to ASTM C 150 or Type I/II cement, as directed by Engineer. All apparatus for handling, weighing and spreading the cement shall be approved by the Engineer in writing before use on the project. Cement weighing and distribution equipment shall be as specified below (Section 3, Equipment).

   Portland cement shall be stored and handled in closed weatherproof containers until immediately before distribution on the roadway subgrade. If storage bins are used, they shall be completely waterproof. If cement is furnished in trucks, each truck shall have the weight of cement certified on public scales or the Contractor shall place a set of standard platform truck scales or hopper scales at the location provided by the Engineer.

4. Water. Water shall be clean and free of oil, acid, alkali, organic matter, or other deleterious substances. Water which is suitable for drinking or ordinary household uses may be accepted for use without being tested.

B. EQUIPMENT:

1. The machinery, tools and equipment necessary for proper execution of the work shall be on the project and approved by the Engineer prior to the beginning of the construction operations, and be maintained in good working order.

2. Slurry distribution trucks must be equipped with an agitator to keep the additive (Hydrated Lime or Cement, as appropriate) and water in a homogeneous suspension. Mixture shall be uniform in consistency from beginning to end of the distribution operation.

3. Equipment used shall be of a type sufficient to insure that the soil subgrade is cut uniformly to the proper depth and shall have cutters that will plane the secondary grade to a smooth surface over the entire width of the cut. The machine shall be of such a design that a visible indication is given at all times the machine is cutting to the proper depth.

C. CONSTRUCTION METHODS:

1. General. It is the primary requirement of this specification to secure a completed course of treated material containing a uniform blend of lime and cement, free from loose or segregated areas, of uniform density and moisture content, well bound for its full depth and with a smooth surface suitable for placing subsequent courses. It shall be the responsibility of the Contractor to regulate the sequence of his work, to use the proper amount of lime and cement, maintain the work and rework the courses as necessary to meet the above requirements.

   The roadbed shall be constructed and shaped to conform to the typical sections, lines, and grades as shown on the Plans or as established by the Engineer. The subgrade shall be firm and able to support, without significant displacement, the construction equipment and obtain the compaction herein specified. Soft or yielding subgrade shall be corrected and made stable before construction proceeds (Section 2, Soil).

2. Lime Modification. Prior to beginning any lime modification, the subgrade shall be brought to the required line, grades and cross-section in accordance with the specification requirements.

   After the subgrade has been shaped, the roadway will be scarified to full depth and width of modification. Full depth will be eight (8") inches below finished grade or as indicated on the Plans and full width will be that distance from one (1') foot behind the back of curb on each side of the roadway. Scarification shall be accomplished using a motor grader with short teeth, or other appropriate means assuring accurate depth of scarification.

   a. Lime Slurry Placement

Lime shall be spread only on that area where the mixing and sealing operations can be continuous and completed in one operation. Lime will be applied by the "slurry" method when application is in the corporate limits of the City of Arlington, Texas.

The lime slurry will be applied with an approved distributor truck by making multiple passes, if necessary, to uniformly apply the correct amount of lime as specified in the Plans. The distributor truck will be equipped with an agitator to keep the lime slurry in constant mixture.

b. Application

For applications greater than or equal to 40 pounds per square yard, the initial application shall be applied in halves (two equal parts) on day one (1) and day two (2). This is subsidiary to the lime stabilization item. (Rev 9/2013)

c. Initial Mixing

Immediately following lime application, thoroughly mix the slurry into the subgrade with a pulvimixer until 100% of all material will pass a two (2") inch sieve. If necessary, make passes at various angles across the site to facilitate breaking up of large clods. The lime modified material shall then be rolled with pneumatic roller to seal the lift, and left to cure for a minimum of 24 hours. During the curing period, the subgrade shall be kept at least two percent (2%) above its optimum moisture content.

3. Cement Stabilization

Prior to beginning any cement stabilization, the previously treated subgrade shall be re-scarified to full depth and width of modification. Full depth will extend to the underlying untreated material but must not extend into the underlying untreated material. Full width will be that distance from one foot (1') behind the back of curb on each side of the roadway. Scarification shall be accomplished using a motor grader with short teeth, or other appropriate means assuring accurate depth of scarification.

a. Cement Slurry Placement

Cement shall be spread only on that area where the mixing and compaction can be continuous and completed in one operation. Cement shall be applied by the "slurry" method. The cement shall be mixed with water to form a slurry of the solids content designated by the Engineer. (Rev. 9/2012)

Cement slurry shall be applied with an approved distributor truck by making multiple passes, if necessary, to uniformly apply the correct amount of cement as specified in the Plans. The distributor truck shall be equipped with an agitator to keep the cement slurry in a consistent mixture. The cement slurry must be dispensed as soon as practical, but within a maximum of 45 minutes from the addition of cement to the slurry water. (Rev. 9/2012)

Unless otherwise approved by the Engineer, the cement treatment operation shall not be started when the air temperature is below 40 degrees F and falling, but may be placed on unfrozen ground when the air temperature is above 35 degrees F and rising. The temperature will be taken in the shade and away from artificial heat. Cement shall not be placed when weather conditions are unsuitable in the opinion of the Engineer.

b. Final Mixing

Immediately following cement slurry application, thoroughly mix the slurry into the subgrade with a pulvimixer. If necessary, make passes at various angles across the site to facilitate breaking up of oversized clods. The previously lime treated material and cement slurry shall be thoroughly mixed until, in the opinion of the Engineer, a homogeneous, friable mixture of material and cement is obtained, free of all clods or lumps. Materials shall be mixed as thoroughly as possible at the time of the cement application and brought to a minimum of two (2) percent above its optimum moisture content. The material shall be kept moist as directed by the Engineer.

If the cement-modified soil mixture contains clods, they shall be reduced in size by raking, blading, discing, harrowing, scarifying or the use of other approved pulverization methods so that when all non-slaking aggregates retained on the No. 4 sieve are removed, the remainder of the soil material without cement mixed throughout shall meet the following requirements when tested in the moist condition by laboratory sieves:

Minimum Passing 1-1/2" Sieve	100%
Minimum Passing No. 4 Sieve	60%

4. Final Compaction

Compaction of the subgrade shall begin immediately after final mixing and after final gradation has been met. Final compaction of the subgrade shall be complete within six (6) hours of initial cement slurry placement.

The course shall be sprinkled, if necessary, and compacted to provide the density specified below as determined by the use of the Standard Proctor (TEX 113-E) Moisture / Density Relationship. Testing shall occur after the subgrade is brought to the required lines and grades shown on the Typical Sections and Plans.

Description	Density, Percent	Moisture, Percent
For cement-modified subgrade that will receive subsequent courses	Not less than 95, except when shown otherwise on the Plans.	Optimum to plus 4% unless otherwise shown on the Plans

The testing will be as outline in Test Method ASTM D 2922 and ASTM D3017 or other approved methods. In-place density tests shall be performed at the rate of one per 300 linear feet of paving for two (2) lanes. If the material fails to meet these density requirements it shall be reworked as necessary to meet said requirements. Reapplication of cement slurry will be required by the Engineer to aid in recovering lost strength from reworking. Throughout this entire operation the shape of the course shall be smooth and in conformity with the Typical Sections shown on the Plans and to the established lines and grades. Should the material due to any reason or cause lose the required stability, density and finish before the next course is placed or the work is accepted, it shall have cement incorporated at originally specified rate, repulverized, and be recompacted and refinished at the sole expense of the Contractor.

Finishing of the completed section shall be accomplished by rolling as directed with a pneumatic tire or other suitable roller sufficiently light to prevent hair cracking.

D. MAINTENANCE OF SUBGRADE CONDITION:

1. The Contractor shall make provisions for maintaining the compacted subgrade in a moist condition for a secondary curing time. The requirement is to maintain the in situ moisture at least two (2) percentage points above optimum conditions throughout the treated section. This is to be accomplished by frequent light sprinkling of the surface. During this secondary curing time, all construction vehicles shall be prohibited from the subgrade for a minimum of two (2) days.

2. The Contractor shall maintain the completed subgrade within the limits of his contract in good condition, satisfactory to the Owner as to grade, crown and cross section until such time as the surface course is constructed. All irregularities or other defects that may occur shall be repaired by the Contractor as his expense.

3. All over-excavated areas (shy grade) will require additional depth of pavement. No additional cement treated subgrade will be allowed on top of the initially processed grade (no scabbing).

4. The moisture content of the prepared subgrade shall be maintained at optimum or above until the next subsequent pavement course is installed. If this moisture decreases below optimum, the incorporation of additional moisture by scarifying and re-compaction the prepared grade will not be permitted. If at any time the prepared subgrade needs to be disturbed to incorporate moisture, an additional application of cement at 100% of the original application rate of cement will be required. NO additional payment shall be made if these additional cement applications are required. (Rev. 9/2012)

E. MEASUREMENT AND PAYMENT:

1. This work shall be measured by the square yard of completed and accepted lime modified / cement stabilized treated subgrade. Measurement of both the lime and cement shall be by the ton, 2,000 pounds of dry weight, as determined by certified

weight tickets. No allowance shall be made for any materials used or work done outside the limits shown on the Plans and Typical Sections. The work performed and material furnished as prescribed by this item and measured as provide in this item shall be paid for at the unit price bid for lime modified / cement stabilized soil, which price shall be full compensation for scarifying the soil materials; for handling; hauling and spreading the lime slurry; for mixing the lime slurry into the subgrade through pulverization; for roll sealing and curing the subgrade; for re-scarifying the lime modified subgrade; for handling; hauling and spreading the cement slurry; for mixing the cement slurry into the lime modified subgrade through pulverization; for establishing final gradation; for spreading and shaping the mixture; compacting the mixture, including all rolling required for this compaction; surface finishing; and for all manipulation, labor, equipment, appliances, tools and incidentals necessary to complete the work and carry out the maintenance provisions in this specification.

2. Lime and cement materials measured as provided in this item shall be paid for at the unit price bid for lime and cement materials, which price shall be compensation for furnishing the material; for all freight involved, for all unloading and storing; and for all labor, equipment, fuels, tools and incidentals necessary to complete the work, all in accordance with the Plans and these Specifications.

11-81 TREE REMOVAL: All trees and bushes that are cut down shall be hauled off the same day. Tree and crape myrtle removal shall be in accordance with C.O.G. Specification, General Site Preparation, unless a separate bid item has been included in the proposal. (Rev. 1/2017)

Contractor will fully comply with any and all federal, State and local laws related to the removal of trees including but not limited to the Migratory Bird Treaty Act. Contractor will be responsible for any fines, penalties, or damages due to any such violations of law and any such fines, penalties, or damages will be subject to the indemnification provision of this contract. (Rev. 01/2006)

11-81A TREE TRIMMING: While maintaining a healthy tree crown, the lower branches of all trees that overhang the sidewalk shall be trimmed to a height of eight (8) feet above proposed sidewalk. Trimming shall also be done to protect trees from damage by construction equipment. All cuts shall be clean and smooth, with the bark intact with no rough edges or tears. Tree trimming shall be done in accordance with the International Society of Arborists or National Association of Arborists Standards. Payment for tree trimming and protection is considered subsidiary to the contract unless otherwise noted. (Rev. 12/2010)

11-82 MOBILIZATION AND BONDS: A lump sum bid item has been included for compensation for mobilization and bonds. This item is a one-time pay item per project and will not be paid per location. Upon presentation of a paid invoice for the required bonds, the Contractor will be paid that amount from the amount stated in the proposal. However, a monthly pay estimate will not be processed solely for paying these items. Work on other pay items must be initiated prior to processing the first monthly pay estimate. The remaining amount of the lump sum will be paid when 10 percent of the amount for the original construction items is earned. (Rev. 12/2011)

11-83 GALVANIZED GABIONS WITH PVC COATING: Gabion structures consist of rectangular, compartmented, woven wire mesh baskets filled with stone used to build earth retaining and erosion control structures such as: retaining walls, channel linings, headwalls and flexible aprons for pipes, slope protection, bridge revetments and weirs.

A. MATERIALS:

1. Gabions:

Gabions shall be prefabricated in *accordance* with ASTM A975-97 to the size called for on the plans, or as otherwise approved. Gabions shall consist of galvanized wire with an additional PVC coating woven into a uniform, hexagonal-shaped double twist pattern with openings approximately 3-1/4" x 4-1/2". The mesh shall be fabricated in such a manner as to be non-raveling and to provide the required flexibility and strength.

All wire used for gabions, including lacing wire, shall have a tensile strength of 54,039-68,259 psi in accordance with ASTM A641-92 Class 3, soft temper. Elongation shall not be less than 12% in accordance with ASTM A370-92. The zinc coating shall meet the requirements of ASTM A641-92, Class 3, soft temper coating and shall be a minimum quantity of 0.70 oz/ft^2 for wire 0.087" in diameter, 0.80 oz/ft^2 for wire 0.106" in diameter, 0.85 oz/ft^2 for wire 0.120" and 0.134" in diameter and 0.90 oz/ft^2 for wire 0.154" in diameter.

Mesh wire, selvage wire and lacing wire diameters for galvanized gabions with a PVC coating shall be in *accordance* with the nominal diameters listed in Table 1. Tolerances of all wire diameters shown shall be +/- 0.004". All testing of wire diameters shall be prior to fabrication.

TABLE 1 - NOMINAL GABION WIRE DIAMETERS		
	Galvanized Wire	***Galvanized Wire with PVC Coating***
MeshWire	0.120" (US 11 gauge)	0.106" (US 12 gauge)
SelvageWire	0.154" (US 9 gauge)	0.134" (US 10 gauge)
Lacing Wire	0.087" (US 13-1/2 gauge)	0.087" (US 13-1/2 gauge)

Polyvinyl Chloride (PVC) used to coat gabion wire shall meet the following specifications:
Color - gray; *Nominal Thickness* - 0.020 inches; *Minimum Thickness* - 0.015 inches; UV *Resistance* - 3000 hours using apparatus Type E when tested according to ASTM D1499 and ASTM G23; *Salt Spray Test* - 3000 hours when tested according to ASTM Bl17; *Abrasion Resistance* - weight loss not more than 12% according to ASTM D1242. The PVC coating shall be uniformly applied and shall be free from

cracks, splits, stretched or stressed areas.

Assembled gabions will form a rectangular unit with a minimum thickness of twelve inches (12"). The base and sides are to be woven into a single unit. The bottom of the end panels shall be factory connected to the body in such a manner that the strength and flexibility at the point of connection is approximately equal to that of the mesh. The lid for specially fabricated gabions may be separate construction. The gabion shall be divided into cells of approximately equal size by factory connected diaphragm panels using mesh of the same type and gauge as the body of the gabion. The diaphragm panels shall be secured in proper position on the base in such a manner that no additional tying is necessary. The length of the cell shall not exceed its horizontal width. All perimeter edges of the wire mesh forming the body, end and diaphragm panels shall have a heavier gauge selvage wire woven into the edge of the mesh panel. All cut edges of the mesh panels forming the body, tops of ends and diaphragms shall be securely attached to a heavier gauge selvage wire by a minimum of two complete turns of the wire mesh around the selvage wire.

Lacing wire shall be supplied for securely fastening the gabions during all steps of assembly and construction. Lacing wire shall be included with the gabions in sufficient quantity for tying gabions in accordance with the specifications. No other wire except of the type supplied with the gabions may be used.

Gabions furnished by a manufacturer shall be of uniform size and subject to dimension tolerance limits of +/- 5%. The gabions shall be certified by a notarized, sworn affidavit from the manufacturer showing compliance with the specification requirements.

2. Gabion Rock. Used to fill the gabions shall be clean, hard, durable, 4" to 8" well-graded crushed limestone. Not more than 15% of the rock (by weight) shall pass a 4" opening. The rock shall be clean and shall be stored and handled in a manner to prevent contamination. Prior to placing the rock, samples shall be delivered to site and shall be approved for gradation and appearance by the engineer.

3. Geotextile Fabric. Used as a filter media, when specified on the plans, shall be placed along the gabion structure as shown in the plans. The fabric to be used shall be: Mirafi 140N or equal.

B. CONSTRUCTION:

1. General: The gabions shall be installed in accordance with the size, type, and alignment as shown on the plans. PVC coated gabions shall be used in the areas as specified and shown on the plans. The placement of the gabions shall be in close conformity to the lines and grades shown on the plans and shall be in strict accordance with these specifications.

2. Geotextile Fabric Placement: After excavation to the subgrade elevation has been performed, the geotextile fabric (when specified) shall be placed to the limits as

shown on the plans. Care shall be taken not to place the fabric in a manner exceeding the limits shown on the plans. Where splices occur, adjacent pieces of geotextile shall be overlapped a minimum of eighteen inches (18"). Fabric shall be secured, when necessary, by pins or other suitable means before placing the gabions. Excess fabric protruding past the finished gabions shall be cut off.

3. Gabion Assembly: Gabions are assembled in the following steps:
1 - Unfold the baskets on a hard, flat surface and stamp out all kinks.
2 - Fold up the front, back, and end panels and fasten the panels together with the projecting heavy gauge selvage wire by twisting the selvage wire around the selvage wire of the other panel two complete turns.
3 - Fold the inner diaphragm panels up and secure in the same manner.
4 - Tie all edges of the diaphragms and end panels to the sides of the gabion by the tying method as specified below.

4. Tying Method: PROPER TYING OF GABIONS AT ALL STEPS IN THE ASSEMBLY AND CONSTRUCTION OF THE GABION STRUCTURE IS CRITICAL TO THE PERFORMANCE OF THE FINISHED GABION STRUCTURE.

   a. Gabions must be tied in the specified manner at each step of construction:

      1 - Initial assembly
      2 - Tying to adjacent gabions along all contacting edges
      3 - Tying of lid to sides
      4 - Tying of lid to top of diaphragms
      5 - Re-tying of the cut gabions

   b. All tying of gabions shall be performed in the following manner:
      1 - Cut a length of lacing wire approximately five feet long.
      2 - Secure the lacing wire onto the gabion at the end by looping and twisting the tie wire together.
      3 - Proceed tying with double loops (made at the same point) every five inches apart. The basket pieces should be pulled tightly together during the tying operation.
      4 - Secure the other end of the lacing wire by again looping and twisting the wire around itself. No other wire except of the type supplied with the gabions may be used for tying the gabions.

5. Gabion Placement: After each gabion has been assembled, it shall be placed in position empty and shall be tied to adjacent gabions along all contacting edges in order to form a continuously connected structural unit.

6. Filling Gabions: IT IS CRITICAL TO THE PERFORMANCE OF THE FINISHED GABION STRUCTURE THAT GABIONS ARE FILLED TO THEIR MAXIMUM DENSITY WITH VOIDS IN THE GABION MINIMIZED.

When the assembled empty gabions have been installed and tied together, the gabions shall be filled in the following manner:

a. The gabions may be filled by machine, but shall be filled in layers or lifts not exceeding twelve inches (12"). Care shall be taken when placing the rock into the gabions to insure that the gabions are not damaged or bent. Do not drop rock from a height greater than three feet (3'). Suitable sized and appropriate machinery will help prevent damage to the gabions during the filling operation. Edges of gabions and diaphragms may be protected when necessary by tying steel reinforcement to the edges of the gabions or other suitable guard mechanisms to prevent damage or deformation of the gabions.

b. After a twelve inch (12") layer of rock has been placed in the cell, sufficient hand manipulation for the rock shall be performed to minimize voids and result in a maximum density of rock in the gabion.

c. Gabions that are three feet (3') high shall have a looped inner tie wire installed in each cell connecting the front and back faces of any unsupported face at the vertical third points, or 12" and 24" from the base of the gabions. Individual cells may not be filled to a height greater than twelve inches (12") above any adjacent cell unless looped inner tie wires are installed in both directions.

d. Each gabion shall be filled to its maximum density, which is slightly higher than the sides and the surface smoothly leveled minimizing voids.

7. Closing Gabions: After the rock has been leveled, the lids shall be pried down and over with a bar or lid closing tool until the edge of the lid and the edge of the gabion are together. Care shall be taken so that the mesh is not excessively deformed. It should require a light stretching in order to bring the two gabion pieces together. The heavy projecting selvage wire of the lid shall then be twisted around the heavy selvage wire on the sides two (2) complete turns. The lid shall then be tied to the sides of the gabions and the tops of the diaphragms in the specified tying method. The lids of the gabions shall also be tied to adjacent gabions along all contacting edges to insure the formation of a continuous, connecting structural unit. Special attention shall be given that all projecting sharp ends of wire are turned in on the completed gabion structure.

8. Cutting Gabions: Gabions may be cut to form curves or bevels. Overlap the cut pieces and re-tie in the specified manner. Re-tying shall be in a manner so as to produce a closed cell when completed. Excess mesh wire shall be cut off or shall be tightly and neatly laced down. Care shall be taken that all projecting wire ends are turned inwards or cut off.

C. QUALITY CONTROL: ***Proper tying of gabions during all steps of construction and gabions being filled to their maximum density with a minimum amount of voids is critical to the performance of the finished gabion structure.*** Therefore, compliance with the technical specifications will be closely and thoroughly inspected. Any work not meeting the implied quality will be rejected.

D. MEASUREMENT AND PAYMENT: Measurement of gabion structures shall be based on the volume in cubic yards of gabions installed and filled to their maximum density with a minimum of voids and shall include the volume of embedded items when applicable. Gabion structures shall be paid for at the contract unit price per cubic yard. The unit price shall include full compensation for placing all materials (gabions, rock, geotextile and/or granular filter media) and for furnishing all tools, labor, equipment, and other incidentals necessary to complete and install the gabion structure in accordance with the intent of the plans and specifications. Excavation and removal items will be paid for separately. Filling required to prepare finish grade for gabion placement will be incidental to payment for excavation. Areas over excavated beyond the limits of proposed gabions or natural rock will be backfilled with excavated material free of large rocks, stones, vegetation or debris. This backfilling will not be paid for separately but shall be incidental to items bid. (Rev. 4/2006)

11-84 CEMENT: Cement is defined as raw cement and for items where concrete is placed or cast-in-place (examples: pavement, driveways, cement for stabilization, sidewalk, barrier free ramps, curb inlets, curb and gutter, flumes, and channel lining; and is generated from a kiln whose emission rates: (Rev 8/2015)

1. Are in compliance with all applicable state and federal environmental standards relating to the emission of NOx, including all applicable TCEQ and EPA rules and regulations; and

2. Operate kilns that exceed the standards for NOx emissions set out in 30 Tex. Admin. Code § 117.3110(a)(1)-(4) (as provided presently and as may be amended in the future) by the following percentage amounts:

   a. For each long wet kiln, 10 percent lower than the standard for long wet kilns located in Ellis County, Texas as set out in 30 Tex. Admin. Code § 117.3110(a)(1)(B);
   b. For each long dry kiln, 20 percent lower than the standard for long dry kilns, as set out in 30 Tex. Admin. Code § 117.3110(a)(2);
   c. For each preheater kiln, 20 percent lower than the standard for preheater kilns, as set out in 30 Tex. Admin. Code § 117.3110(a)(3); and
   d. For each preheater-precalciner kiln or precalciner kiln, 35 percent lower than the standard for preheater-precalciner or precalciner kilns, as set out in 30 Tex. Admin. Code § 117.3110(a)(4).

11-85 GPS DATA ON STORMWATER ATTRIBUTES: N/A

11-86 TRENCHLESS TECHNOLOGY/BORING: In using trenchless technology or boring, the following applies:

A. Prior to construction, all existing public facilities shall be physically located in the field when crossing over or under water lines, sanitary sewer, or storm drains or where the

existing facility is running in the same direction and is within 5 feet of the proposed facility.

B. Construction shall be made in such a manner that will minimize interference with vehicular traffic and shall not weaken or damage the existing street.

1. The location of the boring pits shall be a minimum of five feet from the roadway to prevent undermining of the curb, gutter, or shoulder section.

2. The pit shall be dug to a depth sufficient to maintain a minimum boring depth of 48 inches below the traffic surface. Jetting types of boring equipment are not allowed.

3. All overcutting shall be remedied by pressure grouting the entire length of the installation.

4. The pits or trenches excavated to facilitate this operation shall be backfilled and compacted immediately after work is completed.

C. The contractor shall be able to locate the bore head at all times in accordance with the latest technologies and provide the location of the bore to the director upon request.

D. All directional boring shall have the locator place bore marks and depths while the bore is in progress. Locator shall place a mark at each stem with a paint dot and indicate the depth at every other stem. (Rev. 12/2011)

11-87 MOWING DURING CONSTRUCTION: Contractor shall maintain existing parkways and medians at all times during construction by providing periodic mowing to meet the applicable City Ordinances. Any code violation or citation issued for not maintaining these areas will be the responsibility of the contractor. Contractor will also be responsible for any cost incurred if city forces or city contractor performs the mowing due to lack of response from the contractor. Such cost shall be deducted from the monthly pay estimate. (Rev. 12/2011)

11-88 SAFETY DATA SHEET: Contractor shall provide a copy of the Safety Data Sheet (SDS), product specifications, Manufacturer's warranty, and application instructions to City for approval prior to commencing work, if applicable. (Rev. 12/2016)

END OF SECTION