Bid Package
For
Westside Neighborhood Park

CITY OF SPARTANBURG

JOB NO. 1608

April 9, 2017

Proposal No 1617-05-02-01

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City of Spartanburg
Procurement and Property Division
Post Office Drawer 1749, SC 29304-1749
Phone (864) 596-2049 - Fax (864) 596-2365

Legal Notice

Request for Proposal for

Westside Neighborhood Park

April 9, 2017

NOTICE IS HEREBY GIVEN – The City of Spartanburg is seeking proposals from vendors to provide construction services for the Westside Neighborhood Park at the Spartanburg Downtown Airport.
Bids are invited upon the several items and quantities of work as follows:

This project will include site grading, installation of storm drainage, 18" concrete curb & gutter (800 L.F.), setup of stone base for asphalt paving (5000 S.Y.). Also haul in and spread top soil for the installation of a multi-use sports with irrigation and Bermuda sod (280' by 150'), Relocation of approximately 650' of 6' chain link fence and installation of approximately 1000' of 5' black vinyl coated chain link fence.

There will be a mandatory pre-bid meeting on site Tuesday April 18, 2017 at 10:00 AM at the Spartanburg Downtown Airport located at 500 Ammons Rd, Spartanburg, SC 29306.

Proposal No: 1617-05-02-01

The City of Spartanburg, hereby, notifies all proposers that it will affirmatively ensure that all disadvantaged and women's business enterprises will be afforded full opportunity to submit proposals in response to this invitation and will not be discriminated against on the grounds of gender, race, color, or national origin in consideration for an award.

The City of Spartanburg reserves the right to reject any or all proposals or to waive any informality in the qualifications process. Proposals may be held by the City of Spartanburg for a period not to exceed sixty (60) days from the date of the opening of Proposals for the purpose of reviewing the Proposals and investigating the qualifications of prospective parties, prior to awarding of the Contract. The vendor that is awarded the proposal will be required to obtain a "City of Spartanburg Business License and Permits". Vendors must have the insurance requirements in described in the bid documents.

Each bid must be accompanied by a Bid Bond or Bank Cashier's Check payable to the Owner for five (5) percent of the total amount of the Bid. Please seal your bid bond or Cashier's Check in a separate envelope titled *BID BOND* to be opened first.

Drawings and Specifications may be purchased from ARC, Construction Documents, including Drawings and Technical Specifications are on file and can be purchased at ARC located at 7092 Howard Street #K, Spartanburg, SC 864 585-8388.

Contract documents may be examined at the offices of the Owner, (City of Spartanburg), or Associated General Contractors in Greenville, South Carolina and Charlotte.

Technical questions regarding the scope of services should be directed to Tim Carter, Engineering Administrator, 864-596-2838 or by email at tcarter@cityofspartanburg.org . Questions regarding the bid should be directed to Carl Wright, Procurement and Risk Manager at 864-596-2790 and 864-596-2049 or by email at cwright@cityofspartanburg.org. Questions regarding Minority and Women Business participation should be directed to Natasha Pitts, Minority Business Development Coordinator, at 864-596-3449 or by email at npitts@cityofspartanburg.org.

Sealed Proposals shall be submitted to Carl Wright, Procurement and Property Manager, on or before **May 2, 2017 at 3:00,** City Hall, 145 W. Broad Street, at which time they will be publicly opened and read aloud in the Training Room, same location. Complete proposal package also available at www.cityofspartanburg.org by following the links for bid opportunities.

Proposals can be hand delivered or mailed to the following address:

City of Spartanburg
P.O. Box 5107
145 W. Broad Street
Spartanburg, SC. 29304

Attn: Procurement and Property Division

For further information and complete Proposal Package, please contact the Procurement and Property office at (864) 596-2049. Complete proposal package also available at www.cityofspartanburg.org by following the links for Invitations for bids.

Proposal No: 1617-05-02-01

INFORMATION FOR BIDDERS

Bids will be received and opened as specified in the advertisement.

1. Bids

Each Bid must be submitted in a sealed envelope, as advertised. Each sealed envelope containing a BID must be plainly marked on the outside as BID for City of Spartanburg for **Westside Neighborhood Park**, *and the envelope should bear on the outside the Bid Number, name of BIDDER, his/her address, all license information, etc., typed thereon and sealed. If forwarded by mail, the sealed envelope contained in the BID must be enclosed in another envelope addressed to the OWNER as advertised.*

The Owner may consider informal any bid not prepared and submitted in accordance with the provisions herein and may waive any informality or reject any and all bids. Any bid may be withdrawn prior to the above scheduled time for the opening of bids or authorized postponement thereof. Any bid received after the time and date specified will not be considered.

All bids shall be on the printed form contained herein or on copies thereof, and shall be for all labor, material and equipment required to complete the work embraced in the contract in accordance with the plans and specifications. Bid Documents shall include the Bid, the Bid Quantity, the Non-Collusion Affidavit and the Statement of Bidder's Qualification. Bids shall be typewritten or completed in ink. All blank spaces for bid prices must be filled in, in figures, or in both words and figures if so indicated in the bid form. In addition, any other information requested in the bid form must be completed.

Each BIDDER is required to state in his proposal his/her name and place of residence and the names of all persons interested with him; in case of a corporation, the names of other than the president and secretary need not be given. Reference shall be furnished to establish the skill and business standing of the BIDDER.

If the Contract is awarded, it will be awarded by the Local Public Agency to a responsible Bidder on the basis of the lowest Bid and the selected Alternative Bid items, if any. The Contract will require the completion of the work according to the Contract Documents.

If called for in the bid, each bidder shall submit a price for all alternates listed therein. Failure to do so will result in the bid being considered incomplete and may result in rejection of the bid.
On the first sheet of the bid form, the bidder shall write his/her name and address, his/her bidder's license number; and contractor's license number, if required. In South Carolina, where a mechanical contract amounts to $10,000 or more, the name and license number of the sub-contractor, where his/her bid is used, shall also be shown.

Following the BID opening, the OWNER shall determine the Items, Alternates, and Additions to be performed. Total BIDS will be calculated by adding the amounts BID by each BIDDER for such ITEMS, Alternates, and Additions, less the Deductions, so selected by the Owner in determining the low responsive, responsible BID. The OWNER reserves the right to reject any and all BIDS.

The successful BIDDER will be further required to furnish the OWNER with a complete breakdown of the total sum BID items to the satisfaction of the ENGINEER, before signing the contract documents.

The Owner reserves the right to hold bids for a period of sixty (60) days after date of opening and to award the contract at any time during that period.

2. INTERPRETATIONS OR ADDENDA

No oral interpretation will be made to any Bidder as to the meaning of the Contract Documents or any part thereof. Every request for such an interpretation shall be made in writing to the Local Public Agency. Any inquiry received seven or more days prior to the date fixed for opening of Bids will be given consideration. Every interpretation made to a Bidder will be in the form of an Addendum to the Contract Documents, and when issued, will be on file in the office of the Local Public Agency and the office of the Engineer at least five days before Bids are opened. In addition, all Addenda will be mailed to each person holding Contract Documents, but it shall be the Bidder's responsibility to make inquiry as to the Addenda issued. All such Addenda shall become part of the Contract and all Bidders shall be bound by such Addenda, whether or not received by the Bidders.

Each bidder shall acknowledge receipt of all addenda in the spaces provided in the bid form. It shall be each bidder's responsibility to assure him that all addenda have been received. No claim for failure to receive addenda will be considered.

3. INSPECTION OF SITE

Each Bidder should visit the site of the proposed work and fully acquaint himself/herself with the existing conditions there relating to construction and labor, and should fully inform himself/herself as to the facilities involved, the difficulties and restrictions attending the performance of the Contract. The Bidder should thoroughly examine and familiarize himself/herself with the Drawings, Technical Specifications, and all other Contract Documents. The Contractor by the execution of the Contract shall in no way be relieved of any obligation under it due to his/her failure to receive or examine any form or legal instrument or to visit the site and acquaint himself/herself with the conditions there existing and the Local Public Agency will be justified in rejecting any claim based on facts regarding which he/she should have been on notice as a result thereof.

4. ALTERNATIVE BIDS

No alternative bids will be considered unless alternative bids are specifically requested by the technical specifications.

5. BID GUARANTY

Each Bid must be accompanied by a BID BOND payable to the OWNER for five percent of the total amount of the Bid. As soon as the BID prices have been compared, the OWNER will return the bonds of all except the three lowest responsible BIDDERS. When the Agreement is executed the bonds of the two remaining unsuccessful BIDDERS will be returned. The BID BOND of the successful BIDDER will be retained until the payment bond and performance bond have been executed and approved, after which it will be returned. A Certified check may be used in lieu of a BID BOND. A performance bond and payment bond, each in the amount of 100 percent of the CONTRACT PRICE, with a corporate surety approved by the OWNER, will be required for the faithful performance of the contract in the form attached hereto. Attorneys-in-fact who sign BID BONDS or payment bonds and performance bonds must file with each bond a certified and effective dated copy of their power of attorney.

6. COLLUSIVE AGREEMENTS

Each Bidder submitting a Bid to the Local Public Agency for any portion of the work contemplated by the documents on which Bidding is based shall and attach thereto, an affidavit substantially in the form herein provided, to the effect that he/she has not entered into a collusive agreement with any other person, firm, or corporation with regard to any Bid submitted.

Before executing any subcontract the successful Bidder shall submit the name of any proposed subcontractor for prior approval.

7. STATEMENT OF BIDDER'S QUALIFICATIONS

Each Bidder shall upon request of the Local Public Agency submit on the form furnished for that purpose (a copy of which is included in the Contract Documents), a statement of the Bidder's qualifications, his/her experience record in constructing the type of improvements embraced in the contract, his/her organization and equipment available for the work contemplated, and when specifically requested by the Local Public Agency, a detailed financial statement. The Local Public Agency shall have the right to take such steps as it deems necessary to determine the availability of the Bidder to perform his/her obligations under the Contract and the Bidder shall furnish the Local Public Agency all such information and data for this purpose as it may request. The right is reserved to reject any Bid where an investigation of the available evidence or information does not satisfy the Local Public Agency that the Bidder is qualified to carry out properly the terms of the Contract.

8. UNIT PRICES

The unit price for each of the several items in the proposal of each Bidder shall include its pro-rata share of overhead so that the sum of the products obtained by multiplying the quantity shown for each item by the unit price Bid represents the total Bid. Any Bid not conforming to this requirement may be rejected as informal. The special attention of all Bidders is called to this provision, for should questions make it necessary to revise the quantities, no limit will be fixed for such increased or decreased quantities nor extra compensation allowed, provided the net monetary value of all such additive and subtractive changes in quantities of such items of work (i.e., difference in cost) shall not increase or decrease the original contract price by more than twenty-five (25%) percent, except for work not covered in the Drawings and Technical Specifications.

The quantities listed in the proposal form are to be considered as approximate and are to be used only for the comparison of the BIDS and as basis for computing amounts of security or penal sums of bonds to be furnished. The unit prices to be tendered by the BIDDERS are to be tendered expressly for the scheduled quantities as they may be increased or decreased. Payments, except for lump sum contracts, and except for lump sum items in unit price contracts, will be made to the CONTRACTOR for the actual quantities only of work performed or materials furnished in accordance with the plans and specifications, and it is understood that the scheduled quantities of work to be done and materials to be furnished may each be increased or diminished without in any way invalidating the unit BID prices.

9. CORRECTIONS

Bids which are incomplete, unbalanced, conditional or obscure, or which contain additions not called for, erasures, alterations or irregularities of any kind or which do not comply with the contract documents may be rejected at the option of the Owner.

Erasures or other changes in the Bids must be explained or noted over the signature of the Bidder.

10. TIME FOR RECEIVING BIDS

Bids received prior to the advertised hour of opening will be securely kept, sealed. The officer whose duty it is to open them will decide when the specified time has arrived, and no Bid received thereafter will be considered: except that when a Bid arrives by mail after the time fixed for opening, but before the reading of all other Bids is completed, and it is shown to the satisfaction of the Local Public Agency that the non-arrival on time was due solely to delay in the mail for which the Bidder was not responsible, such Bid will be received and considered.

11. OPENING OF BIDS

At the time and place fixed for the opening of Bids, the Local Public Agency will cause to be opened and publicly read aloud every Bid received within the time set for receiving Bids, irrespective of any irregularities therein. Bidders and other persons properly interested may be present, in person or by representative.

12. WITHDRAWAL OF BIDS

Bids may be withdrawn on written or telegraphic request dispatched by the Bidder in time for delivery in the normal course of business to the time fixed for opening; provided, that written confirmation of any telegraphic withdrawal over the signature of the Bidder is placed in the mail and postmarked prior to the time set for Bid opening. The Bid guaranty of any Bidder withdrawing his/her Bid in accordance with the foregoing conditions will be returned promptly.

13. AWARD OF CONTRACT: REJECT OF BIDS

The Contract will be awarded to the responsible Bidder submitting the lowest Bid complying with the conditions of the Invitation for Bids. The Bidder to whom the award is made will be notified at the earliest possible date. The Local Public Agency, however, reserves the right to reject any and all Bids and to waive any informality in Bids received whenever such rejection or waiver is in its interest. The Local Public Agency reserves the right to consider as unqualified to do the work of general construction any Bidder who does not habitually perform with his/her own forces the major portions of the work involved in construction of the Improvements embraced in this Contract.

14. EXECUTION OF AGREEMENT: PERFORMANCE BOND, PAYMENT BOND, BUSINESS LICENSE

Subsequent to the award and within ten (10) days after the prescribed forms are presented for signature, the successful Bidder shall execute and deliver to the Local Public Agency an Agreement in the form included in the Contract Documents such number of copies as the Local Public Agency may require.

Having satisfied all conditions of award as set forth elsewhere in these documents, the successful Bidder shall, within the period specified in this document, furnish a surety bond in a penal sum not less than the amount of the Contract as awarded, as security for the faithful performance of the Contract, and for the payment of all persons, firms, or corporations to whom the Contractor may become legally indebted for labor, materials, tools, equipment, or services of any nature including utility and transportation services, employed or used by him/her in performing the work. Such bond shall be in the same form as that included in the Contract Documents and shall bear the same date as, or a date subsequent to that of the Agreement. The current power of attorney for the person who signs for any surety company shall be attached to such bond. This bond shall be obtained from companies holding certificates of authority as acceptable sureties (31 CFR 223).

The failure of the successful Bidder to execute such Agreement and to supply the required bond or bonds within ten days after the prescribed forms are presented for signature, or within such extended period as the Local Public Agency may grant, based upon reasons determined sufficient by the Local Public Agency, shall constitute a default, and the Local Public Agency may either award the Contract to the next lowest responsible Bidder or re-advertise for Bids, and may charge against the Bidder the difference between the amount of the Bid and the amount for which a Contract for the work is subsequently executed, irrespective of whether the amount thus due exceeds the amount of the Bid Bond. If a more favorable Bid is received by re-advertising the defaulting Bidder shall have no claim against the Public Agency for a refund.

The NOTICE OF AWARD shall be accompanied by the necessary Agreement and bond forms.

15. NOTICE TO PROCEED

The NOTICE TO PROCEED shall be issued within 10 days of the execution of the Agreement by the OWNER. Should there be reasons why the NOTICE TO PROCEED cannot be issued within such period; the time may be extended by mutual agreement between the OWNER and CONTRACTOR. If the NOTICE TO PROCEED has not been issued within the 10 day period or within the period mutually agreed upon, the CONTRACTOR may terminate the Agreement without further liability on the part of either party.

16. WAGES AND SALARIES

Attention of Bidders is particularly called to the requirements concerning the payment of not less than the prevailing wage and salary rates specified in the Contract Documents and the conditions of employment with respect to certain categories and classifications of employees.

The rates of pay set forth under the General Wage Determination for the State of South Carolina are the minimums to be paid during the life of the Contract. It is therefore, the responsibility of Bidders to inform themselves as to local labor conditions, such as the length of work day and work week, overtime compensation, health and welfare contributions, labor supply and prospective changes or adjustments of rates.

17. EQUAL EMPLOYMENT OPPORTUNITY

Attention of Bidders is particularly called to the requirement for ensuring that employees and applicants for employment are not discriminated against because of their race, color, religion, sex, or national origin.

Notice of Requirement for Affirmative Action to Ensure Equal Employment Opportunity (Executive Order 11246)

The offerer's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth herein.

18. ILLEGAL ALIENS/WORKERS

Attention to bidders is also called to requirements to verify the hiring eligibility of its employees as required under South Carolina's Eligible Immigration Reform Act, S. C. Code Ann., 41-8-10, et seq. by either registering and participating in the Federal Work Authorization Program (e-verify) pursuant to the Statute or employ only workers who at the time of their employment possess a valid South Carolina Driver's License or Identification Card or are eligible to obtain same or possess a valid Driver's License or Card from another state deemed by the Director of the Department of Motor Vehicles to have requirements at least as strict as those in South Carolina. Bidder also understands that he/she will comply with the Statute in its entirety and agrees to provide the Public Agency with documentation to establish applicability of the Statute.

19. GENERAL GUARANTY

Neither the final certificate of payment nor any provision in the Contract nor partial or entire use of the Improvements embraced in this Contract by the Local Public Agency or the public shall constitute an acceptance of work not done in accordance with the Contract or relieve the Contractor of liability in respect to any express warranties of responsibility for faulty materials or workmanship. The Contractor shall promptly remedy any defects in the work and pay for any damage to other work resulting there from which shall appear within a period of 12 months from the date of final acceptance of the work. The Local Public Agency will be given notice of defective materials and work with reasonable promptness.

20. LOCAL PUBLIC AGENCY

Wherever the term "Local Public Agency" is referenced in the contract documents, it shall mean the Owner which is the City of Spartanburg.

21. TAXES

Attention is called to the following provisions of the South Carolina Tax laws: South Carolina law requires that a withholding tax of two percent (2%) be withheld from payments made to non-resident contractors performing a business of temporary nature in South Carolina, and provided the contract exceeds $10,000. The withholding of two percent (2%) may be waived provided the nonresident taxpayer posts with the South Carolina Tax Commission a non-resident withholding tax bond. This provision insures the South Carolina Tax Commission that the non-resident contractor will comply with applicable provisions of the Income Tax Act of 1926, as amended. The prime contractor or employer of the non-resident contractor is held responsible for the tax due to
be withheld and must withhold the tax unless he is notified by the South Carolina Tax Commission that a non-resident withholding bond has been posted covering the contract in question.

In addition to the above, the non-resident contractor is required to act as withholding agent for the State of South Carolina and withhold tax from wages paid to his employees working in South Carolina. It is the responsibility of the non-resident contractor to apply for an employer account number and file the quarterly withholding reports on or before the appropriate due dates.

22. ENGINEER

Wherever the "Engineer" is referenced in the contract documents, it shall mean the City Engineering Administrator, P. O. Drawer 1749, Spartanburg, S. C. 29304, telephone (864) 596-2838.

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PROPOSAL FOR

WESTSIDE NEIGHBORHOOD PARK
PROPOSAL # 1617-05-02-01

CITY OF SPARTANBURG

Job No. 1608

BID

FROM:

BIDDER_____**Date**_____

Address _____**Telephone**_____

Bidder's License No._____

Contractor's License No._____

TO: CITY OF SPARTANBURG (OWNER)
145 West Broad Street
Post Office Drawer 5107
Spartanburg, S. C. 29304

The undersigned, as bidder, hereby declares that the only person, or persons, interested in this bid as principal(s) is, or are, named herein, and that no other person has any interest in the bid or the contract to be entered into; that this bid is made without connection with any person, company or parties making a bid; and that it is in all respects fair and in good faith without collusion or fraud.

The bidder further declares that he has examined the site of the work and informed himself/herself fully in regard to all conditions pertaining to the place where the work is to be done; that he has examined the contract documents relative thereto; and that he/she has satisfied himself/herself as to the work to be performed.

The bidder further proposes and agrees, if this bid is accepted, to contract with the Owner in the attached form of agreement, to furnish all material, equipment, tools, apparatus means of transportation, and labor necessary to complete the project in full and complete accordance with the contract documents, to the full and entire satisfaction of the Owner, at the prices and amounts listed below.

The bidder further agrees to commence work on the date stipulated in the notice to proceed and to fully complete the project within the number of consecutive calendar days thereafter as listed below. The bidder also agrees to pay as liquidated damages, the sum as listed below for each consecutive calendar day thereafter the project remains incomplete.

Completion Time: 60 days

Liquidated Damages: $300.00 per day

The undersigned Bidder agrees that if this Proposal shall be accepted, the undersigned will, within ten (10) days after notifications of such acceptance, enter into the contract for their performance of all work proposed under this improvement within the number of calendar days as stated herein, and, as a guaranty of the faithful performance thereof, to furnish at the time of executing the contract a performance bond in an amount not less than one hundred

percent (100%) of the total amount bid, and with sureties subject to the approval of the Owner. Upon failure to execute the contract and bond as aforesaid, it is agreed that the undersigned shall forfeit check accompanying this proposal to the Owner as liquidated damages caused by such failure.

The work consists of the approximate quantities shown herein which will be used as a basis for comparison of bids and not for final estimate. The Owner does not, by expression or by implication, agree that the actual amount of work will correspond with the estimated quantities.

In case of error in extension, the unit price shall govern rather than the amount. For lump sum items, the individual amounts shall govern the total of the bid in case of discrepancy.

The Owner may delete from the contract any or all of the alternates listed in the bid form.

The prices and amounts listed below include all labor, materials, tools, equipment, transportation, removal, overhead, profit, insurance, taxes, etc., to cover the finished work in place.

Bidder acknowledges receipt of the following Addenda:

Addenda Received: No._____ _____ _____ _____ _____ _____

Date_____ _____ _____ _____ _____ _____

The undersigned further agrees that in case of failure on his part to execute the said contract and bonds within 10 consecutive calendar days after written notice has been given of the award of the contract, the check and/or bid bond accompanying this bid and the monies payable thereon will be paid into the funds of the Owner as liquidated damages for such failure; otherwise, said check or bid bond will be returned to the undersigned.

The bidder further purposes and agrees hereby to commence the work with adequate forces and equipment within 10 days after being notified by the Owner or Engineer to proceed, and to complete the work within the specified time.

ATTACHED HERETO is a certified check on the _____

_____ **Bank of** _____ **and/or bid bond**

with the _____ **Company for the sum of** _____

Dollars (_____**), made payable to the Owner as a bid guarantee.**

The attached completed and executed Debarred Firms certification is hereby made a

part of this bid.

Address:

_____ **Firm**_____

_____ **By**_____**(L.S.)**

Title _____

(SEAL is bid is by a corporation)

NON-COLLUSION AFFIDAVIT OF PRIME BIDDER

State of South Carolina)

ss.

County of Spartanburg)

_____, *being first duly sworn, deposes and says that:*

1) *He/She is* _____ *OF* _____, *the Bidder that has submitted the attached Bid:*

2) *He/she is fully informed respecting the preparation and contents of the attached Bid and of all pertinent circumstances respecting such Bid:*

3) *Such Bid is genuine and is not a collusive or sham Bid:*

4) *Neither the said Bidder nor any of its officers, partners, owners, agents, representatives, employees or parties in interest, including this affiant, has in any way colluded, conspired, connived or agreed, directly or indirectly with any other Bidder, firm or person to submit a collusive or sham Bid in connection with the Contract for which the attached Bid has been submitted or to refrain from bidding in connection with such Contract, or has in any manner, directly or indirectly, sought by agreement or collusion or communication or conference with any other bidder, firm or person to fix the price or prices in the attached Bid or of any other Bidder, or to fix any overhead, profit or cost element of the Bid price or the Bid price of any other Bidder, or to secure through any collusion, conspiracy, connivance or unlawful agreement any advantage against the City of Spartanburg, S.C. or any person interested in the proposed Contract; and*

5) *The price or prices quoted in the attached Bid are fair and proper and are not tainted by any collusion, conspiracy, connivance or unlawful agreement on the part of the Bidder or any of its agents, representatives, owners, employees, or parties in interest, including this affiant.*

*(signed)*_____

Title

Subscribed and sworn to before me this

_____ *day of* _____, *20*____

_____

_____

Title

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we the undersigned,

_____ *as PRINCIPAL, AND*
_____ *as SURETY are held and firmly bound unto* _____ *hereinafter called the "Local Public Agency", in the penal sum of* _____ *Dollars, ($_____) lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.*

THE CONDITION OF THIS OBLIGATION IS SUCH, that Whereas the Principal has submitted the Accompanying Bid,

dated _____, *20*_____, *for* _____

_____

NOW, THEREFORE, if the Principal shall not withdraw said Bid within the period specified therein after the said opening, and shall within the period specified therefore, or if no period be specified, within the (10) days after the prescribed forms are presented to him for signature, enter into a written Contract with the Local Public Agency in accordance with the Bid as accepted, and give bond with good and sufficient surety or sureties, as may be required, for the faithful performance and proper fulfillment of such Contract: or in the event of the withdrawal of said Bid within the period specified, or the failure to enter into such Contract and give such bond within the time specified, if the Principal shall pay the Local Public Agency the difference between the amount specified to said Bid and the amount for which the Local Public Agency may procure the required work or supplies for both, if the latter be in excess of the former, then the above obligation shall be void and of no effect, otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above-bounded parties have executed this instrument under their several seals this _____ *day of* _____, *20*___, *the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.*

_____

_____ _____ ***(Seal)***
_____ ***(Seal)***

Attest: ***By:*** _____

_____ _____

_____

By: _____ ***Affix Corporate Seal***

[5]*Forms of Bid Bonds prepared to meet the requirements of local or State laws or the needs of the Local Public should be substituted for this form where necessary.*

(continued next page)

Attest:

_____ _____

By: _____ *Affix Corporate Seal*

_____ _____

Countersigned

*by*_____

[6]*Attorney-in-Fact, State of* _____

CERTIFICATE AS TO CORPORATE PRINCIPAL

I, _____, *certify that I am the* _____, *Secretary of the Corporation named as Principal in the within bond: that* _____ *who signed the said bond on behalf of the Principal was then* _____ *of said corporation: that I know his signature, and his signature thereto is genuine: and that said bond was duly signed, sealed, and attested to, for and in behalf of said corporation by authority of this governing body.*

_____ *(Corporate Seal)*

*Title:*_____

[6]*Power-of-attorney for person signing for surety company must be attached to bond.*

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: that

_____
(Name of Contractor)

_____
(Address of Contractor)

a _____,
(Corporation, Partnership or Individual)

hereinafter called Principal, and

_____
(Name of Surety)

_____
(Address of Surety)

hereinafter called Surety, are held and firmly bound unto _____

CITY OF SPARTANBURG
(Name of Owner)

145 WEST BROAD STREET, SPARTANBURG, SOUTH CAROLINA 29306
(Address of Owner)

hereinafter called OWNER, in the penal sum of _____

Dollars, $_____ in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain contract with the OWNER, dated the _____ day of _____, 20____, a copy of which is hereto attached and made a part hereof for the construction of:

_____

_____

_____

_____

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term thereof, and may extensions thereof which may be granted by the OWNER, with or without notice to the Surety during the one year guaranty period, and if he shall satisfy all claims and demands incurred under such contract, and shall fully indemnify and save harmless the OWNER from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the OWNER all outlay and expenses which the OWNER may incur in making good any default, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said surety, for value received hereby stipulate and agrees that no change, extension of time, alteration or addition to the terms of the contract or to WORK to be performed thereunder or the SPECIFICATIONS accompanying the same shall in any wise affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the WORK or to the SPECIFICATIONS.

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

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

ATTEST:

_____
Principal

_____
(Principal Secretary)

(SEAL) **BY**_____**(s)**

_____
(Address)

_____

_____
(Witness as to Principal)

_____
(Address)

_____ _____
(Surety)

ATTEST: **BY**_____
Attorney-in-Fact

_____ _____
Witness as to Surety **(Address)**

_____ _____
Address

_____ _____

NOTE: Date of BOND must not be prior to date of Contract.
If CONTRACTOR in Partnership, all partners should execute BOND.

IMPORTANT: Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the State where the PROJECT is located.

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: that

_____
(Name of Contractor)

_____
(Address of Contractor)

a _____
(Corporation, Partnership or Individual)

and _____
(Name of Surety)

_____
(Address of Surety)

hereinafter called Surety, are held and firmly bound unto _____

CITY OF SPARTANBURG
(Name of Owner)

145 WEST BROAD STREET, SPARTANBURG, SOUTH CAROLINA 29306
(Address of Owner)

hereinafter called OWNER, in the penal sum of _____

Dollars, $_____ in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain contract with the OWNER, dated the _____ day of _____, 20____, a copy of which is hereto attached and made a part hereof for the construction of:

_____

_____

_____

_____

NOW, THEREOF, if the Principal shall promptly make payment to all persons, firms, SUBCONTRACTORS, and corporations furnishing materials for or performing labor in the prosecution of the WORK provided for in such contract, and any authorized extension or modification thereof, including all amounts due for materials, lubricants, oil, gasoline, coal and coke, repairs or machinery, equipment and tools, consumed or used in connection with the construction of such WORK, and all insurance premiums on said WORK, and for all labor, performed in such WORK whether

by SUBCONTRACTOR or otherwise then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said surety, for value received hereby stipulate and agrees that no change, extension of time, alteration or addition to the terms of the contract or to WORK to be performed there under or the SPECIFICATIONS accompanying the same shall in any wise affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the WORK or to the SPECIFICATIONS.

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

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

ATTEST:

_____
Principal

_____
(Principal Secretary)

BY_____(s)

(SEAL)

_____
(Witness as to Principal)

_____
(Address)

_____
(Address)

_____
(Address)

_____
(Surety)

ATTEST:

_____
(Surety) Secretary

(SEAL)

_____
Witness to Surety

BY_____
Attorney-in-Fact

_____
(Address)

_____
(Address)

NOTE: Date of BOND must not be prior to date of Contract.
If CONTRACTOR in Partnership, all partners should execute BOND.

IMPORTANT: Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the State where the PROJECT is located.

General Provisions Index

00700-01. SCOPE OF DRAWINGS AND SPECIFICATIONS:

A. Any provisions contained in the specifications or shown on standard drawings which are not applicable to the work under this contract shall be disregarded.

B. The Owner will be responsible for the adequacy of the general design of the finished work. The design of standard products used in the work; temporary work required to protect existing work or adjoining property; and temporary work required to keep existing or new facilities in operation shall be the sole responsibility of the Contractor.

C. Reference to standard Specifications (ASTM, AWWA, ANSI, etc.), national codes, local or state codes, and laws and ordinances shall mean the latest edition of said document in effect at the time of taking bids, unless specifically stated otherwise.

D. It is the intent that the work under this contract shall result in a complete, properly usable and operating installation, structure, or plant; and that workmanship shall be of the best quality consistent with the materials and construction methods shown on drawings and as specified.

E. The words "furnish", "furnish and install", "install" and "provide" or similar words shall mean, unless otherwise specifically stated, "furnish and install complete in place and ready for service".

F. Incidental work and miscellaneous accessories not specifically mentioned or shown, but necessary for the proper completion of the work, shall be provided without change in the contract price. Such incidental work and accessories shall be of the same quality as specified for the major component of which the incidental work or accessory is an essential part.

G. The work of all trades under this contract shall be coordinated by the Contractor in such a manner as to obtain the best workmanship possible for the entire project. All components of the work shall be installed or erected in accordance with the best practices of the particular trade.

H. The Contractor shall be responsible for making the construction of habitable structures completely weatherproof, and for making equipment and utility installations properly perform the specified function. If he is prevented from so doing by any limitations of the drawings or specifications, the Contractor shall immediately notify the Engineer in writing of such limitations before proceeding with construction in the area where the problem or limitation exists.

I. Materials or methods described by words which have a well known technical or trade meaning shall in fact refer to that recognized standard. Standard specifications or manufacturer's literature, when referenced, are intended to establish the minimum acceptable requirements.

J. Any reference to manufacturer's brand or trade names or model numbers is intended merely to establish the standard of quality required for the particular product or material. Products or materials of other manufacturers, which in the opinion of the Engineer are equal to that specified with respect to quality, workmanship and economy of operation, and are suitable for the purpose intended, will be acceptable.

K. The Contractor shall be responsible for making all necessary arrangements with governmental departments, public utilities, public carriers, service companies and corporations owning or controlling roadways, railways, water, sewer, gas, electrical, telephone and telegraph facilities, such as pavements, track, piping, wires, cables, conduits, poles, guys, etc., including incidental

structures connected therewith, that are encountered in the work in order that such items may be properly shored, supported, protected or relocated. He shall give all proper notices, shall comply with the requirements of such parties in the performance of his work, shall permit entrance of such parties on the project in order that they may perform their necessary work, and shall pay all charges and fees made by such parties for this work.

L. *The Contractor's attention is called to the fact that there may be delays on the project due to work to be done by governmental agencies, public utilities and others in repairing or moving poles, conduits, etc. The Contractor shall cooperate with the above parties, in every way possible, so that construction can be completed in the least possible time.*

M. *Unless otherwise specified, the Contractor shall provide at his expense all tests and testing services required by the contract documents.*

00700-02. PERMITS:

The Contractor shall be responsible for procuring any permits for the use of property beyond the limits of the Owner's property or a permanent rights-of-way as necessary for working or storage space during the prosecution of the work.

00700-03. SUBMISSIONS, REPORTS, RECORDS AND DATA:

A. *The Contractor shall submit all schedules, quantities, costs, payrolls, reports, estimates, records, shop drawings, details and other data as required by the contract documents or as may be specifically requested.*

B. *The apparent successful bidder shall furnish to the Engineer for approval a complete cost breakdown of his bid, within 10 days after submission of bids. The breakdown shall include all items for each unit of construction, and shall show the cost for labor, materials and equipment, other necessary costs, and the total cost for each unit of work. Bidders shall consult with the Engineer prior to submitting the breakdown to insure a complete understanding of the requirements. Names of the project superintendent and others responsible for the work shall be included.*

C. *The Contractor shall furnish periodic itemized estimates for work done for the purpose of making partial payments thereon. The costs employed in making up these estimates will be used only for determining the basis of partial payments and will not be considered as a basis for changes in the contract price.*

D. *The Contractor shall notify the Engineer of the source of all materials and equipment required for the work, and shall supply samples of materials as specified in the technical sections or at the Engineer's request. Samples shall be submitted for approval by the Engineer prior to purchase and delivery to the job. Unless otherwise specified, three samples of each type or grade of material, showing construction, color, finish, etc., shall be submitted.*

E. *Prior to submittal of any shop drawings, the Contractor shall prepare a list of all materials, equipment and items that require shop drawings and submit this list to the Engineer. The list shall include each specific item along with the applicable specification section. The Engineer reserves the right to require shop drawings on any item, whether or not specified. Shop drawings will not be reviewed until this list is submitted to the Engineer.*

00700-04. JOB SITE DRAWINGS AND SPECIFICATIONS:

A. The Contractor shall maintain, in good and legible condition at the job site, one complete set of working drawings and specifications for the work, including all shop drawings. Such drawings and specifications shall be available for use by the Engineer or his/her representative at all times.

B. The drawings and specifications shall be marked, or notes acceptable to the Engineer provided, in order to reflect as-built conditions. Changes indicating such conditions shall be kept current at all times. Upon completion of the project, this complete set of drawings and specifications or notes, showing as-built conditions, shall be returned to the Engineer.

00700-05. PROHIBITED INTEREST:

No official of the Owner who is authorized by the Owner to negotiate, make, accept or approve or to take part in negotiating, making, accepting or approving any architectural, engineering, inspection, construction or material supply contract or any subcontract in connection with the construction of the project, will become directly or indirectly interested personally in this matter or in any part thereof. No officer, employee, architect, attorney, engineer or representative of or for the Owner who is authorized by the Owner to exercise any legislative, executive, supervisory or other similar functions in connection with the construction of the project, will become directly or indirectly interested personally in this contract or in any part thereof, any material supply contract, subcontract, insurance contract, or any other contract pertaining to the project.

00700-06. MUTUAL RESPONSIBILITY OF CONTRACTORS:

If, through acts of neglect on the part of the Contractor, any other contractor or subcontractor suffers loss or damage on the work, the Contractor agrees to settle with the other contractor or subcontractor by agreement or arbitration if the other contractor or subcontractor agrees. If any other contractor or subcontractor asserts any claim against the Owner on account of damage alleged to have been sustained, the owner will notify the Contractor, who shall indemnify and save harmless the Owner against any such claim.

00700-07. ORDER AND PROSECUTION OF WORK:

A. The Contractor shall not begin any work on the project without first notifying the Owner and the Engineer. The notice shall be in writing and shall be received by the Owner and the Engineer at least three days prior to the beginning of work. Any work done without prior notice will not be accepted. Upon request, the Contractor shall meet with the Owner and Engineer prior to beginning work in order to discuss and clarify all phases of the work.

B. The Contractor shall be solely responsible for the means, methods and sequence of construction, and for the safety of workers and other persons on the construction site and of all materials and equipment to be incorporated in the work. The work shall be prosecuted at as many different points, at such times, in such sections and with such forces as may be necessary to secure its completion within the contract time. The Contractor shall not suspend work without the prior approval of the Owner or Engineer.

C. Pipeline work shall be prosecuted in such a manner that completed portions of the work can be

D. *properly dressed off as work progresses. In case of work on streets and highways, two or more crews shall not work on contiguous areas at the same time. Streets and roads shall be dressed off as soon as work is completed therein.*

00700-08. PUBLIC CONVENIENCE AND PROTECTION:

A. *During progress of the work, the convenience and protection of the public must be provided for and interference held to a minimum.*

B. *The Contractor shall, at all times, conduct the work in such a manner as to insure the least practicable obstruction to public travel. The convenience of the general public and of the residents along and adjacent to the area of the work shall be provided for in a satisfactory manner, consistent with the operation and local conditions. Roads and streets shall be kept open at all times or suitable detours provided. When necessary to close streets, suitable signs and barriers shall be placed immediately adjacent to the work, at such locations as traffic demands, and the Owner, law enforcement agencies, fire departments and parties operating emergency vehicles shall be notified before the street is closed and again as soon as it is opened. Access to fire hydrants and other fire fighting equipment shall be maintained at all times.*

C. *When necessary, the Contractor shall provide watchmen, and lights to burn between twilight and sunrise, and shall erect and maintain barriers and all other necessary protection about the work at his own expense. He/She shall also take other precautions necessary to protect life, limb and property. The owner reserves the right to remedy any neglect on the part of the Contractor in connection with protection of the work after 24 hours notice in writing; and, in cases of emergency, the Owner will have the right to remedy any neglect without previous notice; and in either case deduct the cost of such remedy from money due to the Contractor.*

00700-09. SANITARY PROVISIONS:

The Contractor shall provide temporary toilet facilities for the use of construction personnel. These facilities shall be maintained in a clean and sanitary condition, and shall comply with all applicable codes and regulations. Temporary sanitary facilities shall be removed upon completion of the work and the premises left clean. Construction personnel shall not use permanent washroom facilities in existing facilities or new work except by written permission of the Owner.

00700-10. EXISTING FACILITIES:

A. *Dimensions and elevations indicated on the drawings in reference to existing structures, location of utilities, sewer inverts, or other information on existing facilities, are based on the best available data, but are not guaranteed by the Owner. The Owner will not be responsible for their accuracy. Before proceeding with any work dependent upon such data, the Contractor shall field check and verify all dimensions, grades, inverts, lines, elevations, or other conditions or limitations at the site of the work to avoid construction errors or damage to existing facilities. If work is performed by the Contractor, or any subcontractors, prior to adequate verification of applicable data, any resultant extra cost for adjustment of work necessary to conform to existing conditions, or to repair damage to existing facilities, shall be assumed by the Contractor without additional cost to the Owner.*

B. In executing the work, the Contractor shall exert every effort not to damage existing facilities or to break into them. Damage that is done thereto shall be promptly repaired by the Contractor at his own expense. He/She shall not interrupt or interfere with operation of the existing facilities during construction except when absolutely necessary. Whenever existing facilities or utilities must be taken out of service, the Contractor shall consult with the Engineer and the Owner as to procedure, and shall be governed by their decision.

C. The Owner does not guarantee that all existing buildings, structures, fences, pipelines, electrical lines, conduit, telephone cable, service connections or other facilities are shown on the drawings. It shall be the Contractor's responsibility to locate and protect all such existing facilities prior to beginning construction.

D. Existing surface or subsurface improvements, such as pavement, curbs, sidewalks, pipes, utilities, footings, structures (including portions thereof), trees and shrubbery, not indicated on the drawings or specified to be removed or altered, shall be protected from damage at all times during construction.

E. All such improvements damaged during construction shall be restored to a condition equal to that existing at the time of award of contract.

F. The Contractor shall connect his/her work to each part of the existing work or work previously installed in accordance with the drawings and specifications to provide a complete installation.

G. The Contractor shall do all cutting and patching of the work required to make the several parts fit together properly and to receive the work of others. The Contractor shall not endanger the work of others by cutting, excavating or otherwise altering their work, and shall not cut or alter the work of others without the written consent of the Engineer. All cut and patched work shall be restored to the satisfaction of the Engineer.

H. The Contractor shall be responsible for removing and disposing of obstructions or obstacles at the job site or along the right-of-way to the satisfaction of the Engineer. Minor obstructions shall be removed and properly disposed of or protected and re-erected in as good condition as existing, at the same or other locations, and directed by the Engineer.

I. Fences, at the site or along the right-of-way, which interfere with construction operations, shall be maintained by the Contractor until completion of work, unless written permission is obtained from the Owner to leave the fence dismantled until construction is completed. The Contractor shall remove, rebuild and extend fences as necessary to keep livestock away from the construction area or from straying away. Upon completion of work, all fences shall be restored to their original location and condition, unless otherwise noted. The Contractor shall purchase new material, if necessary, to replace all materials damaged, lost or destroyed.

00700-11. WORK DURING INCLEMENT WEATHER:

No work shall be done except by permission of the Engineer when the weather is unfit for good and careful work to be performed. If the severity of the weather continues, the Contractor, upon the direction of the Engineer, shall suspend all work until instructed to resume operations by the Engineer, and the contract time will be extended as required to cover the duration of the order. Work damaged during periods of suspension due to inclement weather shall be repaired and/or replaced by the Contractor at his/her own expense.

00700-12. RIGHTS-OF-WAY:

A. The Owner will obtain all land and rights-of-way necessary for all work under this contract. If all land and rights-of-way are not obtained before construction begins, the Contractor shall start work only upon such land and rights-of-way previously obtained by the Owner, and no claim for damages will be allowed because of such delay. If the Owner is unable, for any reason, to obtain the land and rights-of-way necessary for the work, the contract time will be extended as required to cover the time lost by such delay.

B. The Contractor shall confine his construction operations to the immediate vicinity of the locations shown on the drawings, and in no case shall he/she encroach beyond the limits of the Owner's property or rights-of-way. He/She shall place materials, equipment, supplies, etc., so as to cause the least possible damage to property and interference with traffic.

C. The Contractor shall locate the limits of the rights-of-way, or property lines, prior to beginning construction. He/She shall be responsible for damage to trees, crops or other property outside the limits of the right-of-way, and shall make satisfactory settlement for damage directly with the property owner involved.

D. Where timber is located on the property or right-of-way, the Contractor shall preserve and protect from damage all trees that do not directly interfere with the prosecution of the work. The Contractor shall not cut any tree greater than 6 inches in diameter and located more than 8 feet from the centerings of the ditch or structure without first consulting the Engineer.

E. Except where specifically directed otherwise by the property owner, all grassed areas within the construction right-of-way and adjacent disturbed areas shall be restored to original or better condition. Within 30 days after backfilling, topsoil shall be replaced and seed planted, fertilized and watered until a permanent grass cover satisfactory to the Engineer and property is obtained. If necessary, a temporary grass cover shall be provided until a permanent cover can be established. If required by the property owner, shrubbery shall be replaced to the satisfaction of the Engineer and property owner.

00700-13. WORK ON HIGHWAY RIGHT-OF-WAY:

A. The Contractor shall not begin work in the right-of-way of any State, County or City Department of Transportation until he has secured the necessary permits. He shall conform to all requirements of the Department of Transportation in the prosecution of this portion of the work. Each bidder shall contact the local Department of Transportation representative to determine the exact requirements for work to be done.

B. The Contractor shall provide full time flagmen, with appropriate red flags, at all times when work is in progress along highways. Suitable warning and descriptive signs shall be placed at each end of the working area while work is in progress along highways. These signs shall be well tended, and shall be placed at sufficient distances from the work so that ample warning is given to approaching traffic. Signs shall be adequately lighted at night.

C. Where pipe is installed in open cut across a highway, the cut shall be immediately backfilled and all work of repairing the pavement completed immediately. The Contractor shall keep at least one full lane open for traffic at all times. Any subsequent settlement shall be immediately corrected and repaired.

D. Where a pipeline crossing under a highway is installed within encasement pipe as shown, the encasement pipe shall be provided as specified in the technical sections.

E. *Unless otherwise indicated, no excavated material shall be placed on the pavement side of the ditch along highways. The least possible amount of ditch shall be left open when work is not in progress, and equipment shall be removed from the pavement and shoulders during shutdown periods. Shoulders of roadways shall be left in good acceptable condition, and all disturbed topsoil and grass shall be replaced.*

00700-14. WORK ON RAILROAD RIGHT-OF-WAY:

A. *The Contractor shall not begin work on railroad property until he has secured the necessary permits. He/She shall conform to all requirements of the railroad in the prosecution of this portion of the work.*

B. *Where a pipeline crosses under a railroad, a larger encasement pipe shall first be installed and the pipe laid in it. The work shall be done in accordance with requirements of the railroad company. Encasement pipe shall be provided as specified in the technical sections, and shall be of the size shown on the drawings.*

C. *The Contractor shall furnish the railroad company the following:*

1) *Certificate of Workman's Compensation or Employer's Liability insurance according to state law.*

2) *Certificate of the Contractor's Public Liability Insurance, to protect the Contractor and subcontractor:*

a) *For loss of life or injury to person in an amount not less than $150,000 for any one person, and not less than $300,000 for any one accident.*

b) *For property loss or damage in an amount not less than $150,000 for any one accident, and not less than $300,000 aggregate.*

3) *The original policy of Railroad Protective Liability insurance naming the railroad company as the insured:*

a) *For loss of life or injury to person in an amount not less than $150,000 for any one person, and not less than $300,000 for any one accident.*

b) *For property loss or damage in an amount not less than $150,000 for any one accident, and not less than $300,000 aggregate.*

c) *The Railroad Protective Liability policy shall show the location and description of the work and the name of the Owner for whom the work is done.*

D. *The Contractor shall pay the cost of flagmen and other expenses of the railroad in protecting traffic. He shall notify the railroad of the time that the work will be done and shall not begin work until authorized by railroad officials.*

00700-15. USE OF PREMISES:

A. *The Contractor shall confine his equipment, the storage of materials and equipment, and his/her*

operations to areas permitted by law, ordinances, permits, the requirements of the contract documents, and as directed by the Owner and Engineer, and shall not unreasonably encumber the premises with materials or equipment.

B. *The Contractor shall not overload any part of any structure with weights that will endanger its safety, nor shall he subject any part of the work to stresses or pressures that will endanger it.*

C. *The Contractor shall comply with and enforce the Owner's rules and instructions in connection with signs, advertisements, fires, smoking, and the routing and parking of vehicles on the premises.*

D. *Unless otherwise directed by the Engineer, the Contractor shall notify the Engineer, with a copy to the Owner, of all blasting operations at least 48 hours before such operations begin.*

00700-16. LINES AND GRADES:

A. *The Engineer will establish control points and base lines for control of the work, and will establish bench marks and determine their elevation. The Contractor shall provide such stakes and non-technical assistance as the Engineer may require for the work.*

B. *The Contractor shall have on the job, at all times, a man who is capable of setting stakes and replacing damaged stakes, and who understands the value and use of stakes and cut sheets, to whom the Engineer may deliver information. The Contractor shall furnish and set necessary batter boards and other means of control and shall be fully responsible for their accuracy. Lines and grades will be established as follows:*

1) *For sewers and storm drains, the Contractor shall stake all offset lines with trench centers. These shall be set sufficiently off from the center line to allow for construction, and not over 50 feet apart when using batter boards. The Contractor shall be responsible for protecting all stakes and shall make necessary replacements. After stakes have been set, the Contractor shall determine necessary elevations and furnish necessary cut sheets for field use. Copies of all cut sheets shall be furnished to the Engineer.*

2) *For water mains, the Engineer will stake necessary control points to establish the center line of the main, which is to be located by the Contractor. The Engineer will also indicate locations of fire hydrants and valves.*

3) *For plant or building work, the Engineer will stake a construction base line, establish a bench mark and give its elevation to the Contractor. The Contractor shall stake all individual structures, provide batter boards, and set elevations for the work.*

C. *The Contractor shall establish all necessary lines and reference points for partitions, walls, floors, ceilings, openings, etc., both before and after concrete, masonry and other "roughing-in" materials are placed. Locations of all lines and points shall be verified by and overall distance check, end to end or side to side as applicable, of all intermediate dimensions.*

00700-17. SITE DATA:

The Owner will make available to all prospective bidders, prior to the receipt of bids, information that he/she may have as to sub-surface conditions in the vicinity of the work, topographical maps, or other information that may assist the bidder in properly evaluating the amount and character of the work required for construction. Such information is given, however, as being the best information available to the Owner at the specific location without

the assumption of responsibility for its accuracy or for any conclusions that the Contractor might draw therefrom. The Contractor shall satisfy himself as to the nature of the work, shall investigate all other matters which may in any way affect the work under this contract, and shall determine the character of equipment and facilities needed preliminary to and during the prosecution of work. No verbal agreement or conversation with any officer, agent or employee of the Owner or the Engineer, either before or after the execution of this contract, shall affect or modify any of the terms or obligations contained herein.

700-18. EQUIPMENT INSTALLATION:

When equipment of any kind is to be installed in a building or structure, and minor changes are necessary in the building or structure to accommodate the equipment, such changes shall be considered incidental to the proper completion of the work, and shall be made by the Contractor without additional compensation therefore.

00700-19. QUANTITIES OF ESTIMATES: *The estimated quantities of work to be done and materials to be furnished under this contract shown in any of the documents, including the bid, are given for use in comparing bids and to indicate approximately the total amount of the contract. The Owner reserves the right to increase or decrease the amount of work under this contract as specified elsewhere in these contract documents.*

00700-20. CLEANING UP:

A. During construction, the Contractor shall maintain the site and adjacent public and private property, including streets and highways, free from accumulations of waste, debris, rubbish and dirt caused by his operations. Dry materials and rubbish shall be wet down as necessary to prevent blowing dust.

B. At completion of the work, the Contractor shall remove all waste materials, rubbish, tools, construction equipment and machinery, surplus materials and temporary facilities, and shall clean all exposed finished surfaces to prepare the project for occupancy by the Owner.

1) Grease, dust, dirt, stains, labels, fingerprints and other foreign materials shall be removed from all exposed finished surfaces. All surfaces so designated shall be polished to a shine finish.

2) Marred or damaged surfaces shall be repaired, patched or touched up to the specified finish or to match adjacent surfaces.

3) Floors and paved surfaces shall be broom clean. Other surfaces of the grounds shall be raked clean.

4) Both sides of all glass surfaces shall be cleaned.

C. Cleaning and disposal operations shall be conducted in accordance with local ordinances and anti-pollution laws. Wastes shall not be disposed of into streams or waterways.

00700-21. INSPECTION CERTIFICATES, BONDS AND GUARANTEES:

Upon final completion of the work and prior to submission of certificate for final payment, the Contractor shall have had electrical plumbing, heating and other work, as applicable inspected by the proper authorities as required by the technical sections of the specifications and all applicable codes, laws and ordinances. Before final payment is made, the Contractor shall submit all inspection certificates to the Engineer covering such work, signed by the proper authorities, together with all required bonds and guarantees.

00700-22. ESTIMATES NOT TO PREVENT FINAL REJECTION:

Final inspection and acceptance of the work will take place at completion of the work under this contract. Any inspection or acceptance of materials and workmanship at mills, shops or elsewhere to facilitate the progress of the work will not preclude rejection of such materials or workmanship thereafter if the same is found unsuitable or not in complete accordance with the contract documents.

00700-23. FINAL INSPECTION:

Upon written notice from the Contractor that the work is complete, the Engineer, Owner and applicable jurisdictional agencies will make a final inspection, and will notify the Contractor in writing of all defective, incomplete or otherwise unacceptable work revealed by the inspection. The Contractor shall immediately correct all such deficiencies to the satisfaction of the Engineer.

00700-24. GUARANTEES:

A. If, in fulfilling the requirements of this contract, the Contractor disturbs any work guaranteed under another contract, he/she shall restore such disturbed work to a condition satisfactory to the Engineer, and shall guarantee such restored work to the same extent as it was guaranteed under the other contract.

B. All special guarantees applicable to specific parts of the work that may be stipulated in the contract documents shall be subject to the terms of the general one-year guaranty (see General Conditions) during the first year of the life of such special guarantee.

00700-26. TEMPORARY UTILITIES:

A. The Contractor shall provide all equipment, fuel, supplies, services and attendance for interim heating as required during construction to protect the work against damage from cold weather. Unless otherwise specified, the permanent heating system shall not be used to provide temporary heat. The Contractor's proposed methods of heating shall be submitted to the Engineer for approval.

B. During construction, the Contractor shall provide all interim electrical power and wiring required for operation of power tools, equipment and machinery and for temporary lighting. Lighting shall be provided where necessary for proper workmanship, inspection and safety. Temporary electrical service shall be installed and maintained by a qualified electrical contractor approved by the Engineer. The Contractor shall pay all charges for electrical service required for temporary power and lighting.

00700-27. UNAUTHORIZED DISCHARGES:

During construction, the Contractor shall be solely responsible for prevention of unauthorized discharges of wastewater and sludge which may result in such environmental problems as fish kills, contaminated water supplies and the interruption of the intended use of certain stream segments. Such unauthorized discharges are a violation of state law and will be strictly enforced in accordance with all applicable laws and regulations. The Contractor shall be liable for all civil penalty assessments as prescribed for such violations.

End of Section

SECTION 02260
EROSION AND SEDIMENT CONTROL

PART 1. GENERAL

1.1 DESCRIPTION

A. Work included: Provide protection of the environment during the construction of this project to reduce soil erosion and siltation to the lowest reasonably achievable level.

1.2 GENERAL

A. Exercise every reasonable precaution, throughout the life of the project, to prevent the eroding of soil and the silting of rivers, streams, lakes, reservoirs, other water impoundments, ground or roadway surfaces, or other property. Erosion control practices to be used for this project are shown on the drawings and are to conform to City of Spartanburg and South Carolina Department of Health and Environmental Control regulations.

PART 2. PRODUCTS

2.1 CRUSHED STONE

A. Provide #57 crushed stone for project entrance and exit.

B. Provide #57 crushed stone for temporary sediment barriers around inlets.

2.2 GRASSING

A. Comply with Section 02930: Grassing.

2.3 SILT FENCE

A. Posts:

1. Steel posts shall be self-fastener angle steel type, 5' in length.

2. Wood posts shall be 1 1/2" diameter or 1 1/4" square.

B. Provide not less than No. 9 wire staples, 1.5" long for fastening wire mesh.

C. Woven wire shall conform to the requirements of ASTM A116, Class I zinc coating for wire. Each woven square shall measure 5.33" X 12". The top and bottom wires shall be 10 gauge. All other wires shall be 12 gauge.

D. Wire mesh is not required with synthetic, extra strength filter fabric providing a puncture strength of 50 psi in accordance with ASTM D4833.

E. Filter fabric shall be burlap or synthetic.

1. If silt fencing is used more than 5 days, synthetic type shall be used.

F. Burlap shall be 7.5 ounces weight and a minimum 32" wide.

G. Filter fabric shall be Mirafi 100X as manufactured by Celanese Fibers Co., Bidim C34 as manufactured by DuPont or equivalent.

2.4 EROSION CONTROL BLANKET

A. Use erosion control blanket S150, from North American Green or approved equal.

PART 3. EXECUTION

3.1 GENERAL

A. Construct and maintain all erosion control measures until the substantial completion of the project.

3.2 CONSTRUCTION ENTRANCE

A. Construct a gravel area or pad at points where vehicles enter and leave a construction site.

B. Clear the entrance and exit area of all vegetation, roots, and other objectionable material and properly grade and place gravel to the grade and dimensions shown on the plans.

C. Construct drainage channels to carry water to a sediment trap or other suitable outlet.

D. Use geotextile fabrics to improve stability of the foundation in locations subject to seepage or high water table.

E. Maintain the gravel pad in a condition to prevent mud or sediment from leaving the construction site by periodic top dressing with two inches of stone.

F. After each rainfall, inspect any structure used to trap sediment and clean it out as necessary.

G. Immediately remove objectionable materials spilled, washed, or tracked onto public roadways.

3.3 TEMPORARY GRASSING

A. Provide a temporary cover for erosion control on disturbed areas that will remain unstabilized for a period of more than 21 days in accordance with Section 02930.

B. This practice applies to cleared areas, diversions, dams, temporary sediment basins, temporary road banks, and topsoil stockpiles where vegetation is needed for less than 1 year.

C. Provide grassing on slope 5% or greater within 14 days of disturbance.

1. Comply with Section 02930: Grassing.

3.4 SILT FENCE

A. Provide silt fence barrier where shown on the plans and on utility construction parallel to the disturbed trench where perpendicular sheet flow runoff occurs on disturbed areas with slopes greater than 4%.

B. Place at the extreme limits of the area to be disturbed as shown.

C. Construct temporary sediment barriers of filter fabric, buried at the bottom, stretched and supported by posts and install below small disturbed areas as indicated on the drawings to retain sediment by reducing the flow velocity to allow sediment deposition.

D. Provide spacing between posts 6'0" on center, minimum.

E. Fasten wire mesh to wood posts with wire staples.

F. Remove sediment deposits prior to reaching one-third height of the fence.

G. Monitor site frequently and place additional silt fencing should evidence indicate that erosion is about to occur at locations other than those shown on plan.

3.5 CURB INLET PROTECTION

A. Construct temporary sediment barriers around storm drain curb inlets using block and gravel or silt fence as indicated on the drawings.

B. Inspect structure after each rainfall and repair as required.

C. Remove sediment when trap reaches one-half capacity.

D. Remove structure when protected areas have been stabilized.

3.6 EROSION CONTROL BLANKET

A. Provide on areas as shown on the plans or on all embankments with slopes equal to or steeper than 2:1.

3.7 TEMPORARY SEDIMENT TRAPS

A. Utilize temporary sediment traps at the bottom of all disturbed slopes where runoff is parallel to the utility trench and draining into an existing ditch or stream and where slopes are 5% or greater along the trench.

B. Provide at intervals of 75'.

3.8 MAINTENANCE

A. Place all erosion control devices or measures prior to any land disturbing activity within the drainage area they are located.

B. Periodically check erosion control devices and clean or otherwise remove silt build-up as necessary to maintain them in proper working order.

3.9 REMOVAL

A. Remove temporary structures after protected areas have been stabilized.

3.10 MEASUREMENT AND PAYMENT

A. No measurement and payment will be made for the work under this Section and all costs for same shall be included in the price bid for the items to which it pertains.

END OF SECTION

SECTION 02200
EARTHWORK

PART 1. GENERAL

1.1 RELATED WORK

A. Construction Quality Assurance (CQA) Plan

B. Section 02221 - Trenching, Backfilling, and Compacting

C. Section 02250 - Soil Compaction Control and Test

D. Section 02270 - Erosion Control

E. Section 02271 – Geotextiles

F. Section 02775 – HDPE Geomembrane

1.2 Work under this section generally consists of furnishing all labor, equipment, materials, and incidentals necessary to complete the excavation and fill operations required for the installation of sediment and erosion control features, construction of perimeter ditches, grading/shaping of site and the installation of storm drainage as shown on the drawings, as specified herein, and in accordance with the CQA Plan.

1.3 Before beginning any work specified in this section, ensure that all soil erosion and sediment control specifications are complied with and the proper state, county, or local authorities have been duly informed of the construction schedule. All erosion control features shall be installed prior to commencing earthwork operations and maintained throughout the duration of the work.

1.4 Subsurface soil explorations have been made and reports of results are available for inspection upon request to the OWNER. The OWNER makes no guarantee with respect to surface or subsurface soil conditions.

1.5 QUALITY ASSURANCE CONSULTANT AND QUALITY CONTROL CONSULTANT

A. **(N/A)** The CONTRACTOR will retain a qualified construction quality control (CQC) consultant to determine the suitability or unsuitability of soils encountered during earthwork operations, conduct tests, and make recommendations. The CQC consultant shall inspect all earthwork for conformance to the specifications.

B. **(N/A)**The OWNER will retain a qualified quality assurance (CQA) consultant to implement the project Construction Quality Assurance Plan.

1.6 FIELD ENGINEERING

A. The CONTRACTOR shall establish all lines and grades necessary to accomplish the work.

1.7 Examine the site and the plans thoroughly to determine the existing conditions and the difficulty of the work to be performed and to establish a schedule for the grading operations.

1.8 PROTECTION

A. Existing facilities, services, and pipelines on, above, or under the surface of the area where earthwork operations are to be performed and which are not designated for abandonment, relocation or removal shall be protected from damage during construction operations. If such facilities are damaged, they shall be repaired to the satisfaction of the OWNER and at no expense to the OWNER.

B. All benchmarks, permanent monuments, and property corners shall be protected from disturbance or destruction. Any such point disturbed or destroyed shall be immediately replaced by qualified surveyors at no expense to the OWNER. Documentation of any such relocation shall be given to the OWNER and CQA CONSULTANT.

C. Protect from any movement, damage or settlement all existing or new construction, utilities, piping, monitoring wells, conduit, or any other structure designated to remain. Provide bracing, sheeting, shoring, underpinning or other retaining structures necessary to provide proper protection.

1.9 Excavation shall include the satisfactory removal, loading, hauling, placing either in areas to be filled or other designated area depending on the classification of the material excavated, and spreading of all materials encountered regardless of the nature of the materials.

1.10 Fill shall include any adjustment to moisture content required as specified herein, compaction and shaping of suitable fill material to form finished surfaces suitable for their intended use. Fill shall include backfill of areas excavated of unsuitable material, embankments, berms, and general fill.

1.11 Excavation and filling operations shall be performed in a manner and sequence that will provide adequate drainage at all times. When required, provide temporary drains, ditches, pumps, drainage lines, or other equipment to intercept, divert, or remove water that may affect the execution or condition of the work. Water shall be satisfactorily removed from the site. The operation of earthwork shall be suspended at any time when satisfactory results cannot be obtained because of inclement weather, or other unsatisfactory conditions in the field. At all times provide and maintain proper drainage for the working area limits.

1.12 If it is necessary during the execution of the work to interrupt existing surface drainage, or utilities, all necessary precautions to protect and preserve or provide temporary services for same shall be taken.

1.13 Construction Quality Assurance

A. All earthwork activities shall be performed as specified on the construction documents or as defined by the City inspector or engineer.

PART 2. PRODUCTS

2.1 MATERIALS

A. General Fill Material

Non-waste material from on-site earthwork operations or borrow material of such type and characteristics approved by City or the CQA CONSULTANT. It shall have a plasticity index of less than 30 and a maximum dry density of at least 90 pounds per cubic foot. No broken concrete, demolition material, frozen material, topsoil, nor any material designated as unsuitable material shall be used for general fill material.

B. Unsuitable Fill Material

Non-waste material from on-site earthwork operations including grass, weeds, vegetation of any type, roots, trash, boulders, debris, demolition materials, or any layer, strata, formation, or deposit of soil determined by the City or CQC CONSULTANT to be unsuitable for use as select clay fill, topsoil, topsoil substitute, general fill for embankments, roadways, or any other intended purpose. No material will be classified as unsuitable solely on the basis of excessive moisture content.

C. Borrow Material

Borrow material shall be selected to meet requirements and conditions of the particular fill or embankment for which it is to be used. Borrow material shall be obtained from the project site or offsite if necessary. CONTRACTOR shall be responsible for placing and compacting any borrow material required.

PART 3. EXECUTION

3.1 All erosion and sediment control measures shall be in accordance with applicable state and local regulations and as shown on the drawings. All erosion control features shall be in place prior to commencing earthwork operations.

3.2 Existing sloped ground surfaces steeper than 4 horizontal to 1 vertical on which general fill is to be placed shall be plowed, stepped, or benched as shown on the drawings, in such manner that the fill material will bond with the existing surface. Prepared surfaces on which compacted

general fill is to be placed shall be wetted or dried as may be required to obtain the compaction specified herein.

3.3 EXCAVATION

A. Excavation shall be classified as "common excavation."

B. Excavation of every description regardless of material encountered within the grading limits of the project shall be performed to the lines and grades indicated on the drawings. Excavated material suitable for its intended use shall be transported to and placed in fill areas within limits of the work. In the event water is encountered during excavation, all necessary measures to control ground water shall be implemented.

C. Borrow operations: Borrow material shall be selected to meet the requirements and conditions of the particular fill or embankment for which it is to be used. Borrow material shall be obtained from borrow areas as directed by the City or CQC CONSULTANT. Excavation, loading, hauling and placing the material shall also be considered related operations to the cost of borrow material. The City CQC CONSULTANT shall examine the borrow material at the borrow pit. Only material approved as general fill by the City or CQC CONSULTANT shall be delivered to the landfill site.

D. Utilization of Excavated Materials: Material removed during borrow operations and classified as unsuitable for General Fill or Topsoil shall be retained within the limits of the borrow area for use in the final grading of the borrow areas.

Material classified as Topsoil shall be stripped and stockpiled for use as part of the revegetation operation for all disturbed areas.

Material classified as General Fill shall be used in embankments, construction of fills, as backfill or similar purposes indicated on the drawings. Excess excavated material suitable for general fill shall remain in the Borrow Area until used in the final grading operation or stockpiled for future use.

3.4 GENERAL FILL PLACEMENT

A. Fills and embankments shall be constructed at the locations and to the lines and grades indicated on the drawings. Approved material shall be used in forming the fill. Soil material for fill shall be placed in successive horizontal layers of not more than 8 inches in loose depth for the full width of the fill embankment cross section. Each layer shall be spread uniformly on a prepared surface, *i.e.*, a soil surface that has been moistened or aerated as necessary to maintain the percentage of optimum moisture content as specified herein and scarified, or otherwise broken up in such a manner that the fill will bond with the surface on which it is being placed.

B. The CONTRACTOR shall place general fill to 95% of the maximum dry density as determined by Standard Proctor (ASTM D698), at $\pm$3 percent of the optimum moisture content.

C. Backfill around headwalls and other drainage structures shall be compacted, by hand within 4 feet of the structure, to a density of 95% of maximum dry density based on the Standard Proctor Test (ASTM D 698 or ASHTO T99).

D. Provide sufficient water to obtain and maintain the specified moisture content. Material with excessive moisture content shall be dried prior to compaction operations.

3.5 FIELD QUALITY CONTROL

A. The following tests will be performed under provisions of Section 02250:

B. A. Subgrade

1. Moisture/density curves will be developed from samples obtained from the borrow source and when noticeable material changes occur.

2. One field density test and as-placed moisture content test (ASTM D 2922 method B and ASTM D 3017) will be performed for every 500 cubic yards of fill placed, but not less than one test per lift, per area of fill placed, per day, under provisions of Section 02250 or as directed by the City.

C. Aggregate Fill

1. Compaction testing will be performed at the discretion of the OWNER under the provisions of Section 02250. In the event that inadequate compaction is indicated, the material shall be reworked until a passing test is obtained. All costs of the additional testing will be the responsibility of the CONTRACTOR.

D. General Fill:

1. One field density test will be performed for every 500 cubic yards of fill placed, but not less than three tests, under provisions of Section 02250.

2. Representative soil samples will be collected for every 10,000 cubic yards of fill placed and when noticeable material changes occur. Moisture/density relationships for each sample will be established using Standard Proctor Compaction ASTM D698.

3.6 OVEREXCAVATION

A. Should excavations extend below design depths, backfill these excavations without extra cost to the OWNER.

3.7 DRAINAGE

A. Drainage, both temporary and permanent, shall be constructed and maintained during the performance of the work. Existing drains, culverts, and ditches not interfering with new work shall be kept clean and operating during construction operations. The surface of unfinished fills shall be bladed smooth to a crown or grade at the conclusion of the day's work, or before shutdown for any cause, to permit water runoff. Fill, which has become saturated with water because of improper drainage, shall be dried out in place if only wet to a maximum depth of one lift, or removed to a depth determined by the soils engineer. Such saturated fill shall be disposed of as directed, or reconditioned to conform to these specifications. Control grading so that ground is pitched to prevent water from running into excavated areas and provide all pumping required to keep excavation free of water. Should springs or running water be encountered in excavation, the ENGINEER shall be

notified immediately. Dispose of running water by providing trenching which shall drain to an appropriate point of disposal.

3.8 SITE PROOFROLLING AND RECOMPACTION

A. After the site has been initially graded and prior to the placing of any fill, or facilities thereon, the site shall be proofrolled with a fully loaded tandem-axle dump truck or similar equipment to detect any unstable area. The proofrolling shall be observed by a qualified geotechnical engineer. Any areas which pump or rut excessively shall be undercut and backfilled with suitable general fill or scarified and recompacted. Following successful completion of proofrolling and remedial work, fill placement may begin.

END OF SECTION

SECTION 02210
SITE GRADING

PART 1. GENERAL

1.1 DESCRIPTION

A. Work included: Cut, fill, excavate, backfill, compact and grade the site as necessary to bring the roads, drives, building sites, paved areas and open areas to the lines and grades shown on the drawings.

1. The work includes, but is not necessarily limited to:

   a. Building site preparation.

   b. Roadway, parking area, drive, and walk subgrade preparation.

   c. Excavations and formations of embankments.

   d. Dressing of graded areas, shoulders, and ditches.

   e. Construction and lining of treatment basins.

2. Classification: All excavation is unclassified and excavation of every description, regardless of material encountered within the grading limits of the project, shall be performed to the lines and grades indicated.

ALTERNATE 2:

2. Classification: Material determined by the Engineer to be rock as defined herein will be classified as "Rock Excavation".

   a. Excavation of rock not indicated on the drawings will be paid for at the unit price indicated on the Bid Form.

   b. Where rock is shown on the drawings, excavation of this material shall be included in the lump sum price bid for the work and no additional payment will be made for this material.

   c. Where actual rock excavation required and performed is less than that which is indicated on the drawings, the Owner shall receive a deductive amount based on the unit price indicated on the bid form.

   d. Quantities for additional or deductive rock excavation shall be as determined by the Engineer from field measurements.

   e. Do not perform any additional rock excavation without prior approval of the Engineer.

B. Related work:

1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these specifications.

2. Section 02110 - Clearing and Grubbing.

3. Section 02220 - Excavating, Backfilling for Structures.

4. Section 02221 - Trenching, Backfilling for Utilities.

5. Section 02260 - Erosion and Sediment Control.

C. Definitions:

1. Open areas: Open areas shall be those areas that do not include building sites, paved areas, street right-of-way and parking areas.

2. Maximum density: Maximum weight in pounds per cubic foot of a specific material.

3. Optimum moisture: Percentage of water in a specific material at maximum density.

4. Rock excavation: Excavation of any hard natural substance which requires the use of explosives and/or special impact tools such as jack hammers, sledges, chisels or similar devices specifically designed for use in cutting or breaking rock, but exclusive of trench excavating machinery. To be considered as rock excavation, the material shall be continuous; individual boulders or rocks in soil will not be considered rock excavation.

5. Muck: Materials unsuitable for foundation because of organic content, saturation to the extent that it is somewhat fluid and must be removed by dragline, dredge or other special equipment, are designated as muck. No extra payment will be made for muck removal.

6. Unsuitable material: Unsuitable material is defined as earth material unsatisfactory for its intended use and as classified by the soils technician. In addition to organic matter, sod, muck, roots and rubbish, highly plastic clay soils of the CH and MH descriptions, and organic soils of the OL and OH descriptions, as defined in the Unified Soil Classification System shall be considered as unsuitable material.

7. Suitable material: Where the term suitable material is used in specification sections pertaining to earthwork, it means earth or materials designated as being suitable for their intended use by soils technicians or the Engineer. Suitable material shall be designated as meeting the requirements of the Unified Soil Classification System types SW, GW, GC, SC, SM, ML, CL or as designated in these specifications.

8. Select material: Select material is defined as granular material to be used where indicated on the drawings or where specified herein consisting of soils conforming to the Unified Soil Classification types SW, SM, GW or GM or as otherwise approved by the Engineer as select fill. Select material shall contain no stones or rubble larger than 1□" in diameter.

9. Crushed stone (gravel): Crushed stone shall be No. 57 aggregate or equal conforming to ASTM C-33.

10. Excavation: Excavation is defined as unclassified excavation of every description regardless of materials encountered.

D. The Contractor must determine for himself the volume of material required by the site.

1.2 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

B. Comply with requirements of governmental agencies having jurisdiction.

C. A testing laboratory retained by the Owner will make such tests as are deemed advisable. The Contractor shall schedule his work so as to permit a reasonable time for testing before placing succeeding lifts of fill material and shall keep the laboratory informed of his progress. The cost of the initial tests shall be paid for by the Owner. Subsequent tests required as a result of improper compaction shall be paid for by the Contractor.

1.3 PRODUCT HANDLING

A. Comply with pertinent provisions of Section 01640.

PART 2. PRODUCTS

2.1 SOIL MATERIALS

A. Soil material used as fill, backfill, subgrade for structures or pavements, embankments, or site grading shall consist of suitable material as found available on site until such supply of on-site material is depleted.

1. Provide suitable material free from organic matter and deleterious substances, containing no rocks or lumps over 6" in greatest dimension, and with not more than 15% of the rocks or lumps larger than 2" in their greatest dimension.

2. Do not permit rocks having a dimension greater than 1" in the upper 6" of fill or embankment.

B. Should the quantity of suitable on-site material be insufficient to complete the work, suitable borrow material as approved by the Engineer shall be provided by the Contractor. Quantities and cost for off-site material must be approved in writing before installation.

C. Select materials may be provided from on-site if acceptable material as approved by the Engineer is available on site. Otherwise approved select material shall be provided by the Contractor from an off-site source.

2.2 TOPSOIL

A. Use topsoil consisting of material removed from the top 3" to 6" of existing on-site soils.

B. Use topsoil containing no stones, roots or large clods of soil.

C. Stockpile topsoil separate from other excavated material.

2.3 **(N/A)**SPECIAL SOIL MATERIALS

A. Provide basin liner soils consisting of fine grained soils selected from excavated area or approved borrow sites, stockpiled and then placed and compacted in areas to receive liner.

B. Sufficient material for the liner, as selected by the Engineer, shall be stockpiled, kept separate from other excavated materials and piled free of undesirable materials.

2.4 **(N/A)** WEED KILLER

A. Provide a dry, free-flowing, dust free chemical compound, soluble in water, capable of inhibiting growth of vegetation and approved for use on this work by governmental agencies having jurisdiction.

2.5 EQUIPMENT

A. Use equipment adequate in size, capacity and numbers to accomplish the work in a timely manner without undue waste or damage of material.

PART 3. EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

3.2 PREPARATION

A. Clearing and grubbing: Clear and grub areas to be graded prior to commencement of the grading operations.

B. Where so directed by the Owner, protect and leave standing designated desirable trees.

C. Complete any demolition and/or removal work as may be required prior to grading operations.

D. Dispose of all clearing, grubbing and demolition debris and other deleterious material off the project site. Vegetation, roots, brush, rubbish, stumps, etc. may be burned on-site where permitted by local authorities and regulations and approved by the Engineer.

E. Topsoil: Strip topsoil to a depth of 3" to 6" without contamination from the subsoil and stockpile topsoil separate from other excavated materials.

1. Transport and deposit topsoil in storage piles convenient to areas that are to receive topsoil or in other locations as indicated or approved by the Engineer.

2. Deposit topsoil in areas that are already graded and will not be disturbed by on-going construction.

3. Dispose of unsuitable or unusable stripped material off-site or as otherwise directed by the Engineer.

3.3 FINISH ELEVATIONS AND LINES

A. Construct areas outside of building or structure lines true to grades shown.

1. Where no grade is indicated, shape finish surface to drain away from buildings or structures, as approved by the Engineer.

B. Degree of finish shall be that ordinarily obtainable from bladegrader, supplemented with hand raking and finishing.

C. Finish surfaces to within 0.10' above or below the established grade or approved cross section.

3.4 GENERAL PROCEDURES

A. Existing utilities:

1. Unless shown to be removed, locate and protect active utility lines shown on the drawings or otherwise made known to the Contractor prior to excavating. If damaged, repair or replace at no additional cost to the Owner.

2. If active utility lines are encountered and are not shown on the drawings or otherwise made known to the Contractor, promptly notify the Engineer and take necessary steps to assure that service is not interrupted.

3. If service is interrupted as a result of work under this Section, immediately restore service by repairing the damaged utility at no additional cost to the Owner.

4. If existing utilities are found to interfere with the permanent facilities being constructed under this Section, immediately notify the Engineer and secure his instructions.

5. Do not proceed with permanent relocation of utilities until written instructions are received from the Engineer.

B. Protection of persons and property:

1. Barricade open holes and depressions occurring as part of this Work, and post warning lights on property adjacent to or with public access.

2. Operate warning lights during hours from dusk to dawn each day and as otherwise required.

3. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, washout and other hazards created by operations under this Section.

C. Use means necessary to prevent dust becoming a nuisance to the public, to neighbors, and to other work being performed on or near the site.

D. Maintain access to adjacent areas at all times.

E. Excavate and backfill in a manner and sequence that will provide proper drainage at all times.

3.5 EXCAVATING (CUTS)

A. Perform excavating of every type of material encountered within the limits of the Work to the lines, grades and elevations indicated and specified herein.

B. Suitable excavated materials:

1. Use all suitable materials removed from the excavation as far as practicable in the formation of the embankments, subgrades, shoulders, building sites and other places as directed.

2. Unless otherwise indicated on the drawings or approved by the Engineer, surplus suitable material shall be removed from the site and disposed of by the Contractor.

ALTERNATE 2:

2. Surplus suitable materials from excavations shall be wasted on the site as indicated, spreading and leveling as directed.

C. Unsuitable excavated material: Remove from the site and dispose of all unsuitable material unless otherwise approved by the Engineer.

D. Rock excavation:

1. Notify the Engineer upon encountering rock or similar material which cannot be removed or excavated by conventional earth moving or ripping equipment.

2. Do not use explosives without written permission from the Engineer.

3. When explosives are permitted, use only experienced persons who are licensed or otherwise authorized to use explosives. Store, handle, and use explosives in strict accordance with all regulatory bodies and the "Manual of Accident Prevention in Construction" of the Associated General Contractors of America, Inc.

4. The Contractor shall be solely responsible for any damage resulting from the use of explosives.

5. The Contractor is responsible for securing all permits required in performing this work.

E. Unauthorized excavation:

1. Excavation of material to depths below the grades indicated unless so directed by the Engineer will be deemed unauthorized excavation.

2. Unauthorized overexcavation shall be backfilled and compacted without any additional expense to the Owner.

F. Authorized overexcavation:

1. In the event that it is necessary to remove unsuitable material to a depth greater than that shown on the drawings or otherwise specified, the Contractor shall remove, replace and compact such material with suitable material as directed by the Engineer at no additional expense by the Owner.

ALTERNATE 2:

F. Authorized overexcavation:

1. In the event that it is necessary to remove unsuitable material to a depth greater than that shown on the drawings or otherwise specified, the Contractor, upon receiving direction from the Engineer, shall remove, replace and compact such material as directed by the Engineer at the unit prices indicated in the Bid Form.

3.6 FILLING AND BACKFILLING

A. Use fills formed of suitable material placed in layers of not more than 8" in depth measured loose and rolled and/or vibrated with suitable equipment until compacted.

B. Do not place rock that will not pass through a 6" diameter ring within the top 12" of the surface of the completed fill or rock that will not pass through a 3" diameter ring within the top 6" of the completed fill.

C. Do not use broken concrete or asphaltic pavement in fills.

D. Selection of borrow material:

1. Material in excess of that available on the site shall be suitable material furnished by the Contractor from private sources selected by the Contractor. The material shall be approved by the Engineer before use. All expenses involved in securing, developing, transporting and placing the material shall be borne by the Contractor.

E. Placing and compacting:

1. Place backfill and fill materials in layers not more than 8" in loose depth.

2. Before compacting, moisten or aerate each layer as necessary to provide the optimum moisture content.

3. Compact each layer to required percentage of maximum density for the area.

4. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.

5. Place backfill and fill materials evenly adjacent to structures, to required elevations.

6. Take care to prevent wedging action of backfill against structures by carrying the material uniformly around the structures to approximately the same elevation in each lift.

F. Moisture control:

1. Do not use soil material that is either too dry or too wet to achieve proper compaction.

2. Where subgrade or layer of soil material is too dry to achieve proper compaction, uniformly apply water to surface of soil material such that free water does not appear on the surface during or subsequent to compacting operations.

3. Remove and replace, or scarify and air dry, soil material that is too wet to permit compacting to the specified density.

4. Soil material that has been removed because it is too wet to permit compacting may be stockpiled or spread and allowed to dry. Assist drying by discing, harrowing, or pulverizing until moisture content is reduced to a satisfactory value as determined by moisture-density relation tests approved by the Engineer.

G. Compaction requirements:

1. Compact soils to not less than the following percentages of maximum dry density as determined in accordance with ASTM D698, Method A (Standard Proctor).

2. Fill beneath structures and beneath an area extending 10' beyond the limits of the foundation:

a. Top 12" of subgrade 100%

b. All other fill material 98%

3. Fill beneath roadway or walking paths:

a. Top 12" of subgrade 95%

b. All other fill material 95%

4. Embankments:

a. Top 12" of subgrade 95%

b. All other fill material 95%

5. Fill beneath walkways:

a. Top 12" of subgrade 95%

b. All other fill material 90%

6. Lawn and unpaved open areas:

a. All other fill material 90%

3.7 FINISH GRADING

A. General:

1. Uniformly grade the areas within limits of grading under this Section, including adjacent transition areas.

2. Smooth the finished surfaces within specified tolerance.

3. Grade with uniform levels or slopes between points where elevations are shown on the drawings, or between such points and existing grades.

4. Where a change of slope is indicated on the drawings, construct a rolled transition section having a minimum radius of approximately 8'0", unless adjacent construction will not permit such a transition, or if such a transition defeats positive control of drainage.

B. Grading adjacent to structures: Grade areas adjacent to buildings to achieve drainage away from the structures and to prevent ponding.

C. Ditches and gutters and swales:

1. Cut accurately to the cross sections, grades and elevations shown.

2. Maintain excavations free from detrimental quantities of leaves, sticks, trash and other debris until completion of the work.

3. Dispose of excavated materials as specified herein; do not in any case deposit materials within 3'0" of the edge of a ditch.

3.8 FIELD QUALITY CONTROL

A. Secure the Engineer's inspection and approval of subgrades and fill layers before subsequent construction is permitted thereon.

B. Field density determinations will be made, at no cost to the Contractor, to insure that the specified densities are being obtained. Field density tests will be performed as determined by the Engineer, considering the following:

1. At areas to receive paving, at least one field density test for every 5,000 sq.ft. of subgrade area, but not less than three tests.

2. In each compacted fill layer, one field density test for every 5,000 sq.ft. of overlaying paved area, but not less than three tests.

3. In fill beneath structures, one field density test for every 2,500 sq.ft. in each layer.

4. Other tests as deemed necessary by the Engineer.

C. If, in the Engineer's opinion based on reports of the testing laboratory, subgrade or fills which have been placed are below specified density, provide additional compacting and testing until specified requirements are met.

1. Additional testing will be provided by the Owner's selected testing laboratory and all costs for the additional testing will be borne by the Contractor.

D. Proofrolling:

1. The Contractor shall proofroll subgrade of areas to receive paving, structures on fill or impervious lining material.

a. Make not less than 3 passes of a 25 to 50 ton rubber tired roller over the full area.

b. Unstable, soft or otherwise unsuitable materials revealed by the proofrolling shall be removed and replaced with satisfactory materials, compacted as specified herein.

3.9 PLACING TOPSOIL

A. Upon completion of site grading and other related site work, topsoil shall be uniformly spread over the graded or improved areas. Topsoil shall be evenly distributed to conform to final grade elevations shown on the plans.

B. Place, level and lightly compact topsoil to a depth of not less than 3".

C. Maintain topsoil free of roots, rocks, debris, clods of soil and any other objectionable material which might hinder subsequent grassing or mowing operations.

D. Any surplus materials shall be disposed of in approved areas on the site.

3.10 MAINTENANCE

A. Protection of newly graded areas:

1. Protect newly graded areas from traffic and erosion, and keep free from trash and weeds.

2. Repair and re-establish grades in settled, eroded and rutted areas to the specified tolerances.

B. Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify the surface, reshape, and compact to the required density prior to further construction.

3.11 MEASUREMENT AND PAYMENT

A. No separate measurement or direct payment will be made for the work under this Section and all costs for same shall be included in the price bid for the item to which it pertains.

ALTERNATE 2:

A. The work under this Section and all costs for same shall be included in the lump sum price bid for the item to which it pertains with additional or deductive payments allowed for the specified items based on the unit prices given in the Bid Form.

B. Additive or deductive items:

1. Rock excavation above or below that indicated on the drawings.

2. Removal of additional unsuitable material.

3. Backfill and compaction of suitable material to replace unsuitable material.

C. Furnishing water: The furnishing of water used for sprinkling and wetting the materials for construction operations shall be the responsibility of the Contractor and no direct payment for this item shall be included in the price bid for the project.

END OF SECTION

SECTION 02444
CHAIN LINK FENCE

PART 1. GENERAL

1.1 DESCRIPTION

A. Work included: Provide chain link fence system where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Related work:

1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

1.2 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.3 SUBMITTALS

A. Comply with pertinent provisions of Section 01340.

B. Product data: Within 30 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:

1. Materials list of items proposed to be provided under this Section.

2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.

3. Shop drawings in sufficient detail to show fabrication, installation, anchorage, and sizes of all components.

1.4 PRODUCT HANDLING

A. Comply with pertinent provisions of Section 01640.

PART 2. PRODUCTS

2.1 DIMENSIONAL DATA

A. Pipe sizes indicated are commercial pipe sizes.

2.2 GALVANIZING

A. On steel framework and appurtenances, provide galvanized finish with not less than the following weight of zinc per sq.ft.:

1. Pipe: 1.8 oz. complying with ASTM A53.

2. Hardware and accessories: Comply with Table I of ASTM A153.

3. Fabric: 2.0 oz. complying with Class II of ASTM A392, hot dipped galvanized after weaving.

4. Barbed wire:

a. Wire: 0.80 ounce per square foot.

b. Barbs: 0.65 ounce per square foot.

5. Tension wire: 1.2 ounce per square foot.

2.3 ALUMINUM COATING

A. Fabric: Provide aluminum coated steel in accordance with A491, 0.40 ounce per square foot.

1. After weaving, coat the cut ends of the wire with a clear, acrylic lacquer to retard corrosion.

B. Barbed wire: Provide aluminum coated steel in accordance with A585.

C. Tension wire: Provide aluminum coated steel in accordance with A824, Type 1, 0.40 ounce per square foot.

2.4 FABRIC

A. Provide No. 9 gauge or 0.149-inch wires in 2-inch mesh, with top and bottom selvages twisted and barbed.

B. Provide fabric in one-piece width of 72 inches.

ALTERNATE 2:

B. Provide No. 6 gauge or 0.194-inch wires in 2-inch mesh, with top and bottom selvages twisted and barbed.

C. Provide fabric in one-piece width of 96 inches.

2.5 BARBED WIRE AND EXTENSION ARMS

A. Type: Provide one of the following:

1. Three strands of twisted 12 gauge steel wire with 4 point barbs on 5" centers.

ALTERNATE 2:

1. Three strands of twisted 12 gauge steel wire with 4 point aluminum alloy barbs on 5" centers, wire to have .30 oz. aluminum alloy coating per sq.ft.

B. Extension arms:

1. Provide pressed steel arms, complete with provisions for anchorage to all posts, with Class 3 zinc coating complying with ASTM A-153.

2. Designed for attaching 3 rows of barbed wire to each arm.

3. Capable of withstanding, without failure, a 250 lbs. downward pull at outer most end of arm.

2.6 POSTS, RAILS AND ASSOCIATED ITEMS

A. Line posts: Provide 2.375" O.D. pipe, weighing 3.65 lbs. per linear foot.

B. End, corner, slope and pull posts: Provide 2.875" O.D. pipe, weighing 5.79 lbs. per linear foot.

C. Gate posts:

1. Provide gate posts for supporting single gate leaf, or one leaf of a double gate installation, for nominal gate widths as follows:

a. Up to 6' wide: Use 2.875" O.D. pipe weighing 5.79 lbs. per linear foot.

b. Over 6' wide and up to 13': Use 4" O.D. pipe weighing 9.10 lbs. per linear foot.

c. Over 13' wide and up to 18' wide: Use 6.625" outside diameter pipe weighing 18.97 lbs. per linear foot.

d. Over 18' wide: Use 8.625" outside diameter pipe weighing 28.55 lbs. per linear foot.

2. Provide dual gate posts for supporting cantilever gates for nominal gate widths as follows:

a. Up to 20' wide: Use 4" O.D. pipe weighing 9.10 lbs. per linear foot.

b. Over 20' wide: Use 6.625" outside diameter pipe weighing 18.97 lbs. per linear foot.

D. Top rails:

1. Use 1.66" O.D. pipe weighing 2.27 lbs. per linear foot.

2. Provide in manufacturer's longest lengths, with expansion type couplings approximately 6" long for each joint.

3. Provide means for attaching top rail securely to each gate, corner, pull, slope and end post.

E. Post brace assemblies:

1. Provide at end and gate posts, and at both sides of corner, slope, and pull posts, with the horizontal brace located at mid-height of the fabric.

2. Use 1.66" outside diameter pipe weighing 2.27 lbs. per linear foot for horizontal brace.

3. Use ⅜" diameter rod with turnbuckle for diagonal truss.

F. Tension wire: Provide No. 6 gauge galvanized coiled spring wire at bottom of fabric.

ALTERNATE 2:

F. Tension wire: Provide No. 6 gauge aluminized steel wire in accordance with A824, Type 1 at bottom of fabric.

G. Post tops:

1. Provide wrought iron or malleable iron, designed as weathertight closure cap.

2. Provide one cap for each post.

3. Provide caps with openings to permit through passage of top rail.

H. Stretcher bars:

1. Provide one piece lengths equal to full height of fabric, with a minimum cross section of 3/16" x 3/4".

2. Provide one stretcher bar for each gate and end post, and two for each corner, slope, and pull post, except where fabric is woven integrally into the post.

I. Stretcher bar bands:

1. Provide wrought iron or malleable iron, spaced not over 15" on centers, to secure stretcher bars to end, corner, pull, slope, and gate posts.

2. Bands may be used also with special fittings for securing rails to end, corner, pull, slope and gate posts.

J. Truss rod bends:

1. Provide wrought iron or malleable iron to secure truss rod to end, corner, pull, slope, and gate posts.

2.7 SWING GATES

A. General:

1. Fabricate gate perimeter frames of tubular members.

2. Provide additional horizontal and vertical members to assure proper operation of the gate, and for attachment of fabric, hardware and accessories.

3. Space so frame members are not more than 6' apart.

4. Fabricate gate frames from pipe 1.90" O.D. weighing 2.72 lbs. per linear foot.

B. Fabrication:

1. Assemble gate frames by welding, with special malleable or pressed steel fittings and rivets for rigid connections.

2. Use same fabric as used in the fence.

3. Install fabric with stretcher bars at vertical edges as a minimum.

4. Attach stretchers to gate frame at not more than 15" on centers.

5. Attach hardware with rivets or by other means which will provide security against removal and breakage.

6. Provide diagonal cross bracing consisting of ⅜" diameter adjustable length truss rods on gates where required to provide frame rigidity without sag or twist.

C. Gate hardware: Provide following for each gate:

1. Hinges:

a. Pressed or forged steel, or malleable iron, to suit the gate size; non-lift-off type, offset to permit 180° opening.

b. Provide 1 pair of hinges for each leaf over 6' in nominal height.

2. Latches:

a. Provide forked type or plunger bar type to permit operation from either side of the gate.

b. Provide padlock eye as integral part of latch.

3. Keeper: Provide keeper for vehicle gates, which automatically engages the gate leaf and holds it in the open position until manually released.

4. Double gates:

a. Provide gate stops for double gates consisting of mushroom or flush plate, with anchors.

b. Set in concrete to engage the center drop rod or plunger bar.

c. Provide locking device and padlock eyes as an integral part of the latch, requiring one padlock for locking both gate leaves.

5. All gate hardware to be hot dipped galvanized.

2.8 SLIDING GATES

A. General:

1. Provide cantilever slide gates complying with ASTM F1184, Type II and these specifications.

2. Fabricate gate perimeter frames of tubular members.

3. Provide additional horizontal, vertical and diagonal members to assure proper operation of the gate, and for attachment of fabric, hardware and accessories.

4. Space so frame support members are not more than 6' apart.

5. Provide gate frame members, dimensions and weights as follows:

Members	Outside Pipe Diameter (inch)	Lb/Ft.
Frame Perimeter	2.375	3.65
Vertical Bracing	1.90	2.72
Horizontal Bracing	1.90	2.72
Diagonal Bracing	1.90	2.72

6. Provide horizontal and two-way diagonal bracing in counterbalanced panel.

7. Gate frame width to be the width of the opening plus one gate post diameter plus a counterbalanced panel of at least 50% of the width of the opening.

B. Fabrication:

1. Assemble gate frames by welding, with special malleable or pressed steel fittings and rivets for rigid connections.

2. Use same fabric as used in the fence.

3. Install fabric with stretcher bars at vertical edges as a minimum.

4. Attach stretcher bars to gate frame at not more than 15" on center.

5. Attach hardware with rivets or by other means which will provide security against removal and breakage.

C. Gate hardware:

1. Wheels: Provide 7" diameter hot dipped galvanized malleable iron.

   a. Provide bearing mounted wheels on steel shaft.

      (1) Equip with grease fittings.

b. Mount top and bottom wheels on posts, minimum of two each required.

c. Secure wheels to gate post using two ½" hot-dipped galvanized U-bolts.

2. Provide dual bottom front wheel assembly.

a. Provide 6" diameter semi-pneumatic rubber wheels with a permanently lubricated heavy-duty internal ball bearing assembly on each wheel.

b. Shaft to be stainless steel.

c. Attach assembly to gate frame with V-groove support and ½" diameter hot-dipped galvanized U-bolts.

3. Latches:

a. Provide heavy malleable iron, forked type to permit operation from either side of the gate.

b. Provide padlock eye as integral part of latch.

4. All gate hardware to be hot dipped galvanized.

2.9 MISCELLANEOUS MATERIALS AND ACCESSORIES

A. Wire ties:

1. For tying fabric to line posts, use No. 6 gauge aluminum alloy wire ties spaced 12" on centers.

2. For tying fabric to rails and braces, use No. 6 gauge aluminum alloy wire ties spaced 24" on centers.

3. For tying fabric to tension wire, use No. 11 gauge aluminum alloy hog rings spaced 24" on centers.

4. Manufacturer's standard wire ties will be acceptable if of equal strength and durability.

B. Concrete: Comply with provisions of Section 03300 for 2500 psi concrete.

PART 3. EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct additions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 INSTALLATION

A. General:

1. Install posts at a maximum spacing of 10' on centers.

2. Install corner or slope posts where changes in line or grade exceed a 30° deflection.

B. Excavating:

1. Drill holes for post footings in firm, undisturbed or compacted soil, strictly adhering to the dimensions and spacing shown.

2. Spread soil from excavations uniformly adjacent to the fence line, or on adjacent areas of the site if so directed.

3. When solid rock is encountered near the surface, drill into rock at least 12" for line posts and at least 18" for end, pull, gate and corner posts. Drill hole at least 1" greater diameter than the largest dimension of the post to be placed.

4. If solid rock is below soil overburden, drill to full depth required, except penetration into rock need not exceed minimum depths specified above.

C. Setting posts:

1. Remove loose and foreign materials from sides and bottoms of holes, and moisten soil prior to placing concrete.

2. Center and align posts in holes.

3. Place concrete around posts in a continuous pour, and vibrate or tamp for consolidation.

4. Check each post for vertical and top alignment, and hold in position during placement and finishing operations.

5. Trowel tops of footings, and slope or dome to direct water away from posts.

6. Extend footings for gate posts to the underside of bottom hinge.

7. Set keeps, stops, sleeves and other accessories into concrete as required.

8. Keep exposed concrete surfaces moist for at least 7 days after placement, or cure with membrane curing material or other curing method approved by the Engineer.

9. Grout in those posts which are set into sleeved holes, concrete constructions, or rock excavations, using non-shrink portland cement grout or other grouting material approved by the Engineer.

D. Concrete strength:

1. Allow concrete to attain at least 75% of its minimum 28 day strength before rails, tension wires, and/or fabric is installed.

2. Do not, in any case, install such items in less than 7 days after placement of concrete.

3. Do not stretch and tension fabric and wire, and do not hang gates until concrete has attained its full design strength.

E. Rails and bracing:

1. Install fence with a top rail and bottom tension wire.

2. Install top rails continuously through post caps or extension arms, bending to radius for curved runs.

3. Provide expansion couplings as recommended by the fencing manufacturer.

4. Provide bracing to the mid point of the nearest line post or posts at all end, corner, slope, pull and gate posts.

5. Install tension wires parallel to the line of fabric by weaving through the fabric, and tying to each post with not less than No. 6 gauge galvanized wire, or by securing the wire to the fabric.

F. Installing fabric:

1. Leave approximately 2" between finish grade and bottom selvage.

2. Excavate high points in the ground to clear the bottom of the fence.

3. Place and compact fill to within 1" of the bottom of the fabric in depressions.

4. Pull fabric taut and tie to posts, rails and tension wires.

5. Install fabric on outward side facing side of fence, and anchor to framework so that the fabric remains in tension after pulling force is removed.

6. Install stretcher bars by threading through or clamping to fabric on 4" centers, and secure to posts with metal bands spaced 15" on centers.

G. Installing barbed wire:

1. Install three (3) parallel wires on each extension arm, on security side of fence, pull wire taut and secure in place.

H. Installing gates:

1. Install gates plumb, level, and secure for full opening without interference.

2. Install ground set items in concrete for anchorage in accordance with the fence manufacturer's recommendations as approved by the Engineer.

3. Adjust rollers and guides of sliding gates so that gates are level.

4. Lubricate and adjust the hardware for smooth operation.

I. Miscellaneous:

1. Use U-shaped tie wires, conforming to diameter of pipe to which attached, clasping pipe and fabric firmly with ends twisted at least two full turns.

2. Bends ends of wire to minimize hazards to persons and clothing.

3. Fasteners:

   a. Install nuts for tension band and hardware bolts on side of fence opposite fabric side.

   b. Peen the ends of bolts to prevent removal of nuts.

4. Repair coatings damaged in the shop or field erection, using a hot applied repair compound applied in accordance with its manufacturer's recommendations as approved by the Engineer.

3.3 MEASUREMENT AND PAYMENT

A. No separate measurement or direct payment will be made for the work under this Section and all costs for same shall be included in the price bid for the item to which it pertains.

END OF SECTION

SECTION 02510
STONE BASE COURSE

PART 1. GENERAL

1.1 Description

A. Work included: Provide crushed stone base (with prime) constructed on the compacted subgrade where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Related work:

1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

2. Section 02210 - Site Grading.

3. Section 02512 - Fabric Underlay Material.

1.2 Quality Assurance

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.3 Submittals

A. Comply with pertinent provisions of Section 01340.

B. Certificates, signed by materials producer, stating that materials meet the specified requirements.

1.4 Product Handling

A. Comply with pertinent provisions of Section 01640.

PART 2. PRODUCTS

2.1 Coarse Aggregate

A. Furnish a coarse aggregate (retained on No. 4 sieve) consisting of hard, durable particles of stone, reasonably free from soft, thin, elongated or laminated pieces and deleterious substances.

B. Furnish aggregate with an abrasion loss of less than 65% as measured by the Los Angeles Abrasion Test.

2.2 FINE AGGREGATE

A. Furnish a fine aggregate consisting of material produced by stone crushing operations.

B. Liquid limit shall not exceed 25 and the plasticity index shall not exceed 6 when tested in accordance with AASHO T-89 and T-90, respectively.

2.3 COMPOSITE MIXTURE

A. Produce in one crushing operation or by blending the fine and coarse aggregate in proper proportions.

B. After the materials have been mixed, laid down, and initial compaction operations begun, the composite mixture shall conform to the following:

Sieve Designation	Percent by Weight Passing
2"	100
1½"	95-100
1"	70-100
½"	48-75
No. 4	30-50
No. 30	11-30
No. 200	0-12
Liquid Limit	25 max.
Plasticity Index	6 max.

2.4 PRIME ASPHALT

A. Use either MC-30, RC-30, RC-70, or EA-P complying with requirements of Sections 406, 407 and 408 of the South Carolina Department of Transportation specifications.

PART 3. EXECUTION

3.1 PREPARATION OF SUBGRADE

A. Proofroll all areas to receive crushed stone paving.

1. Make not less than three passes over the full area, using a 35 to 50 ton rubber tired roller.

B. Remove all soft, unstable or unsuitable material that will not compact readily.

1. Remove to full depth of unsuitable material, or to a depth of 30", whichever is less.

2. Replace with satisfactory materials.

C. Fill all holes, ruts or depressions which develop in the subgrade with approved on-site material, bringing subgrade to indicated line and grades.

D. Compact subgrade using suitable construction procedures to provide not less than 95% Standard Proctor Maximum Dry Density.

E. Seal roll the subgrade surface with a steel wheel roller, sealing the surface against excessive water infiltration.

3.2 PLACING AND MIXING OF PAVING MATERIAL

A. Place aggregates using spreader boxes or other approved spreaders uniformly on one operation.

B. Take care to avoid segregation of the fine from the coarse aggregate during handling, spreading or shaping operations.

C. Mix, while at proper moisture, with motor grader or other equipment and maintain to required section and grade until thoroughly compacted.

3.3 ROLLING AND COMPACTING

A. Perform using 3-wheel steel wheel roller weighing not less than 10 tons, tandem roller weighing at least 8 tons, or other rollers approved by the Engineer.

B. Start rolling at edges and proceed toward the center, continue rolling until aggregates are firmly keyed or set.

C. When initial compaction is completed, should voids remain, place fine aggregates on the surface in an amount only sufficient to fill the voids.

D. Broom, wet and roll until coarse aggregate is set, bonded and thoroughly compacted for full width and depth.

3.4 ALLOWABLE TOLERANCES

A. Thickness tolerance: Provide the compacted thicknesses shown on the Drawings within a tolerance of minus 0.5".

1. Depth measurements will be made by digging through the base at intervals no closer than 250', nor greater than 500' apart.

2. Where thickness is less than depth specified minus ½", it shall be corrected as directed by the Engineer.

B. Smoothness tolerance: Provide the lines and grades shown on the Drawings within a tolerance of ½" in 10', parallel to the center line of the roadway nor more than ½" from a template conforming to the cross sections shown on the plans.

C. Deviations: Correct by removing materials, replacing with new materials, and reworking or recompacting as required.

3.5 PLACING PRIME COAT

A. Allow base course to season sufficiently to permit uniform penetration.

B. Do not apply to wet surfaces or when the temperature is below 60°F in the shade and falling, or below 55°F in the shade and rising.

C. Clean surfaces of all dust, dirt, clay, etc. using mechanical brooms, etc.

D. Apply prime material, using pneumatic mounted distributors, at a rate of 0.30 to 0.35 gallon per square yard.

E. Permit no traffic on primed surfaces until bituminous material has penetrated and dried sufficiently that it does not pick up under traffic.

3.6 MEASUREMENT AND PAYMENT

A. No separate measurement or direct payment will be made for this work and all costs for same shall be included in the price bid for the work to which it pertains.

END OF SECTION

SPECIFICATIONS

PART 1 – GENERAL

ARTICLE 1 – STANDARD SPECIFICATIONS

1.1 Unless otherwise specified herein the work shall be governed by the SCDOT Standard Specifications for Highway Construction.

ARTICLE 2 – PREPARATION OF SHOULDERS

2.1 This preparation work, when required, will be accomplished by the Contractor, using a grader to cut back shoulders to expose edge of asphalt and a broom tractor to sweep off loose debris.

ARTICLE 3 – PREPARATION OF EXISTING SURFACE

3.1 Before spreading materials, the surface of the pavement shall be cleaned of all debris by sweeping and other methods as necessary. A tack coat shall be applied to the pavement, using **spray bars on tack truck** before placement of mix. (Section 401.22. "Standard Specifications"). After tack coat is applied, it shall be allowed to dry to the proper condition of tackiness to receive the mix. The tack coat shall be applied only as far as necessary in advance of the mix in order to attain the proper condition of tackiness.

ARTICLE 4 –RATE OF APPLICATION

4.1 The rate of application shall be 225lbs/sqyd, to produce a minimum compacted roadway surface throughout the cross section of 2" at any given site. The tonnage estimate indicated in the Road List is 225 pounds per square yard, which includes any, leveling courses as may be required. The Contractor shall have on the site at all times a depth gauge to measure loose thickness of asphalt.

ARTICLE 5 – MATERIALS

5.1 Type C asphalt concrete surfacing shall be used. The Contractor shall provide certifications that all the materials used in the asphalt mix meet or exceed the requirements. The materials used in the mix will meet or exceed requirements and be from a S.C.D.O.T. approved source. The Contractor shall submit to the City, **prior to beginning work**, the source for all the materials used in the asphalt mix **(JOB MIX FORMULA)**. The City must approve the sources for the materials.

ARTICLE 6 – LEVELING COURSE

6.1 Roads or Streets that contain areas of non-uniform cross sections will be repaired with the self-propelled machine prior to resurfacing. The quantities of material for leveling are included with the total paving quantities and shall be paid for in the same manner. Small variances may be repaired during the normal paving pass. The contractor and the engineer prior to any resurfacing to determine where leveling courses are required shall inspect all roads.

ARTICLE 7 – DRIVEWAYS AND INTERSECTIONS

7.1 It is not the intent of this contract to tie-in driveways by paving to the right-of-way line. Feathering in the edge of the driveway shall make driveway tie-ins. Intersections shall be paved according to directions provided by the City of Spartanburg.

ARTICLE 8 – TRAFFIC CONTROL

8.1 A. The Contractor is responsible for traffic controls and shall conform with Part 6 of The FHWA (FEDERAL HIGHWAY ADMINISTRATION) Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD), latest edition. The Contractor is responsible for providing a safe work area at all times for his employees and a safe environment for the public. The Contractor shall conform to all safety laws and regulations of the Federal, State, and Local level at all times. Payment for Traffic Control shall be included in the unit price for asphalt pavement.

B. The Contractor shall designate a responsible member of his organization with sufficient qualifications whose duty shall be the prevention of accidents. This person shall be responsible for assuring that all necessary precautions are taken for the protection of the public and all workers and for assuring that the Maintenance of Traffic Provisions of the Standard Specifications are effectively administered.

C. In addition to the Contractor maintaining traffic throughout the length of this project as required by the Specifications, it will also be necessary that the Contractor, prior to beginning any work, submit to the City of Spartanburg Traffic Engineering Department for approval his traffic control plan.

D. The City of Spartanburg reserves the right to restrict construction operations when the continuance of the work would seriously hinder normal traffic flow during holidays, extended holiday periods, weekends, special events or any time traffic is unusually heavy. The City of Spartanburg's right is to restrict construction operations shall include lane closures, road closures, or any operations determined a detriment to normal traffic flow. Also, do not close lanes or streets with high volume commuter traffic in cities and urban areas during these periods unless otherwise specified.

E. The Contractor performing the work shall provide, install, remove, relocate as necessary, and maintain all traffic control devices throughout the project. When not in use, remove unnecessary traffic devices in conflict with the roadway conditions to prevent confusion of the traveling public.

F. Repair or replace damage or failed traffic control devices as specified by the standard specifications, these special provisions, all supplemental specifications, and as directed by the Engineer. The Contractor shall notify the Engineer prior to repairing or replacing substandard traffic control devices. The Contractor shall provide the Engineer with indisputable evidence that all repairs or replacements were according to manufacturers and S.C.D.O.T. specification. If the Contractor fails to provide the Engineer with proper notification and evidence of conformity with all manufacture's and City specifications, the Engineer will immediately suspend all work. The City will continue the Suspension of work until the Contractor resolves all questions regarding the repairs or replacements. Also, without proper notification and evidence of conformity with the manufacturer's and departmental specifications, the Contractor shall forfeit payment for those repair or replacement items in questions.

G. The Contractor shall conduct frequent inspections of the project to determine the adequacy, effectiveness, and maintenance requirements of the traffic control devices. Repair or remove damaged traffic control devices from the job site. Immediately replace those traffic control devices removed from the job for repairs or due to failure with duplicate devices in the proper operational condition. Maintain the required level of reflectivity, and color by keeping all signs, barricades, drums, and cones clean. MUTCD SECTION 6F.04

H. Promptly eliminate any hazardous conditions resulting from a strike by an errant vehicle or a mechanical or electronic failure of an advance warning arrow panel or a truck-mounted attenuator. The Contractor shall have no more than two hours to begin replacement or repair operations of the defective or damaged equipment. The Engineer will deal with failure by the Contractor to execute replacement or repair operations as failure to provide traffic control as outlined.

I. The Contractor shall install and conduct all flagging operations according to these special provisions and the MUTCD. Install all essential signs, including the "Advance Flagman" signs (W20-7-4), in advance of the flagman stations as directed by the MUTCD. The flagman shall conduct themselves and the operation within all requirements as set forth by the MUTCD. Erect all signs prior to beginning the operation and immediately remove or cover upon termination the operations. Station each flagger in accordance with MUTCD Section 6E.05. Equip each flagger with a Stop/Slow paddle. The City prohibits the use of flags except during emergency situations. The Engineer will deal with failure by the flagman to conduct the operation properly within all requirements of these special provisions and the MUTCD or without the necessary signs as failure to provide the traffic control as outlined. **All Flagmen must be able to speak and understand the English Language.**

J. Install all work zone signage and temporary traffic control devices as specified in the MUTCD. The City prohibits omission or substitution of these signs unless otherwise specified by these special provisions or directed by the Engineer.

K. Prior to beginning work, the Contractor and Engineer shall jointly inspect the project limits to determine the necessity for sign removal or relocation and the number of these signs and their locations. Remove, relocate, or cover any existing permanent signs in conflict with changes in traffic patterns or speed limits as a result of the installation of the Traffic Control Plan. The Contractor shall install the appropriate temporary signing to the satisfaction of the Engineer. The Contractor shall immediately remove signing and restore the permanent signing upon removal of the conflict unless otherwise directed by the plans and the Engineer. Any necessary removal, relocation, storage, protection, and re-erection of signs located within the scope located within the scope of the project are the responsibility of the Contractor. Conduct the re-erection of these signs as directed by the Engineer. The contractor is responsible for the storage of all signs removed from the project site and for the prevention of any corrosion, bending or defacing of the signs in any manner during storage. The Contractor shall replace any sign damaged due to improper protection during removal, storage, or reinstallation with one in such condition equal to that of the sign immediately prior to the sign's removal. The City will make no separate payment for removal, storage, and re-erection of these signs.

L. The Contractor shall cover unnecessary sign either in their entirety with an opaque material or remove them from the job site when not in use. The City prohibits redirection a sign instead of covering or removing the sign. The Contractor shall cover signs in a manner to prevent any perception of the message by the motorist. Use weather resistant materials to cover these signs to prevent any exposure of a covered sign due to adverse weather conditions or long periods of time. **The Contractor shall remove portable signs and their supports and all other traffic control devices from within a 30' of a travel lane when not in use.**

M. The City prohibits drop-offs greater than 2" between adjacent travel lanes open to traffic. During milling, resurfacing, or any similar operations, the City shall restrict acceptable drop-offs less than 2" on multilane facilities to no more than one drop-off between adjacent travel lanes carrying traffic in the same direction. Observe all restrictions regarding grade elevation differences and lane closures by maintaining an approved construction schedule. The Contractor shall have the Engineer's approval of the schedule for all milling, asphalt concrete binder course placement, asphalt concrete surface course placement, or any similar operations before beginning work.

N. On roadways open to public travel, the Contractor's trucks and all other construction related vehicles would travel in the direction of normal roadway traffic. However, when these vehicles are operating within a closed travel lane, they may travel in either direction as necessary. The City PROHIBITS the Contractor or any subcontractor from storing material and equipment within 30' of a travel lane unless there is guardrail or temporary concrete barrier to protect the area. Also, the City PROHIBITS the employees of the Contractor or a subcontractor from parking personal vehicles within 30' of a travel lane unless there is guardrail or temporary concrete barrier to protect the area. The Contractor shall remove portable sign supports and all other traffic control devices from within 30' of a travel when not in use.

O. The City encourages contractors to cooperate with the news media since all projects use public funds. Because the scope of this project will cause disruption of normal traffic flow, the Contractor shall notify the Public of disruptive activities such as lane closures.

P. The Contractor shall use are media to accomplish public notification of traffic disruptions.

Q. The Contractor shall deal directly with the news media and make all reasonable efforts to cooperate with the media. However, do not disrupt the safety, security and construction schedule on site to accomplish this. The Contractor may coordinate these activities with and receive guidance from the City of Spartanburg Civil Engineering Department.

ARTICLE 9 – CONSTRUCTION METHOD FOR PAVING

9.1 The construction methods shall be in accordance with Section 401, "Standard Specifications". The road widths listed are approximate and the width of City roads may vary. **Roads shall not be paved wider than the existing pavement. This requires following the edge of the pavement with the asphalt machine.**

9.2 Roads that are to be widened must be milled using a 2ft. drum. The milling shall be inset into the original pavement surface 6" and 4 inches in depth with binder. The total widening on each of the roadway will be 18 inches. The contractor will be responsible for the removal and replacement of any obstruction such as mailboxes, signs, etc. **All concrete driveways will be saw cut and in a uniform manner.**

ARTICLE 10 – CONTRACT OF ROAD WARRANTY

10.1 A. The Contractor shall be responsible for the work as accepted by the City of Spartanburg. Acceptance shall be in writing after request from the Contractor and approval by Spartanburg City. The Contractor shall furnish a one (1) year written warranty on the paving, to include materials and workmanship. This warranty shall be one (1) year from the date of acceptance.

B. The Contractor further warrants that defects in the work shall be promptly corrected at its own expense after notification from the City of Spartanburg, in writing, **within the warranty period.** In the event the Contractor fails to correct any defect, the City of Spartanburg shall be free to pursue all other remedies provided for by law

ARTICLE 11 – INSPECTION PERSONNEL

11.1 All inspection personnel will act as agents of the City of Spartanburg. The City of Spartanburg will administer the Contract and will be responsible for all payments to the Contractor. **No roads shall be paved without the City of Spartanburg inspection personnel on site.**

ARTICLE 12 – PRE-CONSTRUCTION CONFERENCE

12.1 A Pre-construction Conference between the Contractor and the City of Spartanburg Engineering Department will be held prior to the commencement of the work, at which time construction paving schedule shall be submitted and inspection of roads to determine leveling courses will be scheduled.

ARTICLE 13 – UTILITY COORDINATION

13.1 The Contractor will assist the City of Spartanburg in utility coordination by notifying the City of the roads where valve adjustments and manhole adjustments have not been completed. The Contractor will not pave over valve covers or manhole covers.

ARTICLE 14 – COMPACTION

14.1 COMPACTION OF HOT LAID ASPHALT CONCRETE BASE BINDER AND SURFACE COURSES Subsection 401.24, Compaction, of the Standard Specifications shall be revised as follows:

A. General

The Contractor may select the equipment for spreading and compacting the mixture, except that intermediate rolling shall be pneumatic roller.

B. Contractor's Monitoring Program

The Contractor shall be responsible for monitoring the compaction and process and will be responsible for making adjustments in equipment and/or roller pattern so the finished asphalt pavement will meet the specified in-place density requirement. The Contractor shall conduct in-place density tests at least every 500 feet per paving lane width by conducting nuclear gauge or non-nuclear tests at randomly selected locations approved by the Engineer and at least one foot from any unsupported edge.

The average nuclear gauges density for a lot, a day's production of asphalt mixture, should be at least 100% of the target density obtained by SC-T-65. Individual nuclear density tests should not be less than 92% of the maximum theoretical density or 96% of laboratory density as determined by AASHTO T209.

C. Documenting and Reporting Compaction Test Results

The Contractor shall have on-site at all times a nuclear density gauge with licensed personnel to operate it. Nuclear or non-Nuclear density gauge may be used to determine the density of the roadway. The Contractor shall submit all nuclear gauge compaction tests on Laboratory Form 266 which can be obtained from the
Research and Materials Engineer upon request. The Contractor shall submit his compaction test results to the Engineer at least once a week.

D. Weak Base or Poor Surface Conditions

If, in the judgment of the Engineer, a weak base or poor surface condition results in a density lower than that specified may be established by the Engineer.

E. Basis of Payment

The cost of all work determining compaction shall be included in the Unit Bid Price for asphalt mixes.

ARTICLE 15 – ALTERATION OF QUANTITIES

15.1 **The City of Spartanburg reserves the right to add or delete to the list of maintained roads and streets to be resurfaced during the contract period.** The Contractor agrees to resurface the additional roads and streets at the same price per ton as the original bid. The Contractor will be given additional time to complete the contract if additional roads and streets are added to the list. This time will be calculated based on two (2) additional days for each one (1) mile of road added. For the purpose of counting the additional days, only weekdays with temperatures above 50 degrees for the entire day will be counted. Official City of Spartanburg holidays will not be counted, nor will days with rain or wet pavements, or days not deemed suitable for paving by the City of Spartanburg. Likewise, the City of Spartanburg reserves the right to delete roads and streets from the resurfacing list or substitute Type C for Intermediate Type C if deemed in the best interest of the City of Spartanburg. Increases or decreases in the quantities of the work shall in no way invalidate the unit bid or contract prices. No claim shall be made by the Contractor for any loss of anticipated profits because of any such alteration, or by reason of any variation between the approximate quantities and the quantities of work as done.

ARTICLE 16 – WEATHER

16.1 Section 401.14 of the SCDOT Specifications shall be revised as follows:

Weather Restrictions for Paving

Lift Thickness (inches)	Minimum Surface (F)
1.0 or less	55
1.1 to 2.0	45
2.1 to 3.0	40
3.1 to 4.5	35

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The contractor is to have a hand-held infrared temperature gauge on site and monitor surface temperature. The Contractor shall not plan paving operations if the surface temperature is expected to drop below levels during the planned paving time.

ARTICLE 17 – MISCELLANEOUS TESTING

17.1 The City shall perform random plant inspections and core samples at their own expense.

ARTICLE 18- MISCELLANEOUS PAVING

The contractor shall include in the unit Price for Type C asphalt the installation of asphalt material at various sites within the section he may be currently working, to pave over areas where culverts have been replaced or bridges may have to be tied into the existing roadway.

ARTICLE 19 – PAVEMENT STRIPING

Roads and streets that are to be striped shall be striped within three days after paving. All existing pavement markings must be replaced within three days after paving. Asphalt unit pricing shall include replacement of all existing pavement markings. Most roads are to receive double yellow centerlines and white edge lines. All roads that are widened will be stripped.

ARTICLE 20- ADDITIONAL CONSTRUCTION METHODS

20.1- Contractor will be responsible for all utilities risers.

20.2- Rubber tire roller will be on the job at all times.

20.3- All roads to be widened shall be constructed first and completed in full before starting any other work.

20.4- All roads that require milling (CURB AND GUTTER) will be paved within 24 hrs. after milling due to the possibility of inclement weather. These milled roads will not be allowed to set over weekends.

20.5- Delayed Trucks: If paving operation ceases for a period of one hour or more a paper joint shall be constructed. Paper joints will be constructed on transverse joints at the end day (SCDOT 401.32).

20.6- Hand tamps, mechanical tampers, or hand roller will be on the job site at all times for small areas (SCDOT SPECS. 405.4.9)

20.7- NO PAVING AFTER DARK Do not allow a load to leave the plant so late in the day it cannot be spread, finished and compacted in daylight hours (SCDOT SPECS. 401.4.17) unless proper mechanical lighting is furnished.

SECTION 02525
CONCRETE CURB AND GUTTER, AND SIDEWALK

PART 1. GENERAL

1.1 DESCRIPTION

A. Work included: Provide cast-in-place concrete, including formwork, where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Related work:

1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

2. Section 03250 - Concrete Specialty Items.

1.2 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

B. Reference standards: Comply with the following codes, specifications and standards, except as otherwise shown or specified:

1. American Concrete Institute (ACI) Publications:

a. ACI 305 Recommended Practice for Hot Weather Concreting

b. ACI 306 Recommended Practice for Cold Weather Concreting

2. American Society for Testing and Materials (ASTM) Publications:

a. A 185 Welded Steel Wire Fabric for Concrete Reinforcement

b. C 31 Making and Curing Concrete Test Specimens in the Field

c. C 33 Concrete Aggregates

d. C 39-72 Compressive Strength of Cylindrical Concrete Specimens

e. C 94 Ready-Mixed Concrete

f. C 150 Portland Cement

g. C 260 Air-Entraining Admixtures for Concrete

C. Testing agency: A testing laboratory will be retained by the Owner to perform material evaluation tests required by these specifications.

D. Qualifications of contractors performing concrete work: Minimum of two (2) years experience on comparable concrete projects.

E. Plant qualification: Plant equipment and facilities shall meet all requirements of the Check List for Certification of Ready Mixed Concrete Production Facilities of the National Ready Mixed Concrete Association and ASTM C94.

1.3 SUBMITTALS

A. Comply with the pertinent provisions of Section 01340.

B. Within 21 calendar days after receiving the Owner's Notice to Proceed, submit proposed mix designs for approval.

1. Proportions shall be determined by means of laboratory tests of concrete made with the cement and aggregate proposed for use.

2. Provide report in detail from an approved testing laboratory showing 7-day and 28-day strengths obtained using materials proposed.

3. Required average strength above specified strength:

a. Determinations of required average strength above specified strength (f'c) shall be in accordance with ACI 318 and ACI 301.

4. Cost of this work shall be borne by the Contractor.

C. Manufacturer's data: Submit manufacturer's specification with application instructions for proprietary materials and items, including curing compound, form release agents, admixtures, patching compounds, and others as required by the Engineer.

1.4 PRODUCT HANDLING

A. Comply with pertinent provisions of Section 01640.

PART 2. PRODUCTS

2.1 FORMS

A. Use form materials conforming to ACI 347.

B. Form coatings: Form release coating shall be neat oil with surface wetting agent or chemical release agent which effectively prevents absorption of moisture, prevents bonding with concrete, is non-staining to concrete and leaves the concrete with a paintable surface.

1. On surfaces to receive an applied coating, use a residual free chemical form release agent which is compatible with the applied coating and will not prevent the applied finish from satisfactorily bonding to the concrete.

2.2 SIDEWALK REINFORCEMENT

A. Provide welded wire mesh for sidewalk reinforcement in compliance with ASTM A 185.

2.3 PREMOLDED JOINT FILLERS

A. In concrete pavements (exterior) and concrete sidewalks, use asphalt impregnated cellulose fiber joint fillers complying with ASTM D1751.

2.4 CONCRETE MATERIALS

A. Cement: Use portland cement: ASTM C150, Type I, Type I-P or Type II, low alkali.

B. Aggregates:

1. Fine aggregate: Conform to ASTM C33.

2. Coarse aggregate: Conform to ASTM C33, Size #57.

C. Water: Clean and potable and free from injurious amounts of deleterious materials.

D. Admixtures shall conform to the following:

1. Air entraining admixture: ASTM C260.

2. Water reducing, set controlling admixture: Conform to ASTM C494.

a. Type A - water reducing.

b. Type D - water reducing and retarding.

3. Do not use admixtures containing calcium chloride.

E. Curing compounds:

1. On all vertical and formed surfaces and construction joints, use a non-residual, non-staining curing compound conforming to ASTM C309 Type 1 and 1D. Acceptable products are:

a. L&M Cure by L&M Construction Chemicals, Inc.

b. Horn WB-75 by A.C. Horn Company.

c. Sonosil by Sonneborn, Inc.

d. Approved equal.

2.5 CONCRETE MIXES

A. Provide concrete with the compressive strength of 3000 psi for a 28-day strength as minimum:

B. Entrained air: 3000 psi concrete, 5% □1%

C. Slump: 3000 psi concrete, 4" □1"

D. Production of concrete:

1. General: Concrete shall be ready mixed and shall be batched, mixed and transported in accordance with ASTM C94 except as otherwise indicated.

2. Monitor time and mix proportions by plant delivery slips.

3. Air entraining admixtures: Add air entraining admixture into the mixture as a solution and measure by means of an approved mechanical dispensing device.

4. Water reducing and retarding admixture: Add water reducing and retarding admixture and measure as recommended by the manufacturer.

5. Addition of water to the mix upon arrival at the job site shall not exceed that necessary to compensate for a 1" loss in slump, nor shall the design maximum water-cement ratio be exceeded. Water shall not be added to the batch at any later time.

6. Weather conditions: Control temperature of mix as required by ACI 306 "Cold Weather Concreting" and by ACI 305 "Hot Weather Concreting".

PART 3. EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

B. Water, mud, organic, and other detrimental material shall be removed from excavations before concrete is deposited.

C. Notify the Engineer prior to placing concrete and place no concrete until the formwork, reinforcing and embedded items have been inspected by the Engineer.

3.2 FORMWORK

A. General:

1. Construct forms in conformance with ACI 347.

2. Provide formwork sufficiently tight to prevent leakage of cement paste during concrete placement.

3. Coat form contact surfaces with approved form coating compound prior to placing reinforcing steel.

B. Formwork reuse: Reuse only forms that are in good condition and which maintain a uniform surface texture on exposed concrete surfaces.

1. Apply a light sanding as necessary to obtain a uniform texture.

C. Removal of forms:

1. Do not disturb or remove forms until the concrete has hardened sufficiently to permit form removal with complete safety.

2. Exercise care in removing forms from finished concrete surfaces so that surfaces are not marred or gouged and that corners are true, sharp and unbroken.

3. Whenever the formwork is removed during the curing period, continue to cure the exposed concrete by one of the methods specified herein.

3.3 REINFORCEMENT

A. Welded wire mesh: Install welded wire fabric in as long length as practicable and lay flat before placing concrete.

1. Support and tie mesh to prevent movement during concrete placement.

2. Lap adjoining pieces at least one full mesh and lace splices with wire.

3.4 PLACING CONCRETE

A. Preparation:

1. Remove foreign matter accumulated in the forms.

2. Rigidly close openings left in the formwork.

3. Wet wood forms sufficiently to tighten up cracks. Wet other material sufficiently to maintain workability of the concrete.

4. Use only clean tools.

5. Provide and maintain sufficient tools and equipment on hand to facilitate uninterrupted placement of the concrete.

6. Before commencing concrete, inspect and complete installation of formwork and wire mesh.

B. Conveying:

1. Transport and handle concrete from the truck to the place of final deposit as rapidly as practicable by methods which will prevent segregation or loss of ingredients to maintain the quality of the concrete.

2. Provide equipment for lifting, dumping, chuting, pumping or conveying the concrete, of such size and design as to insure a practically continuous flow of concrete at the delivery and without separation of materials.

3. Do not use concrete that is not placed within 1□ hours after water is first introduced into the mix unless the slump is such that it meets the specified limits without the addition of water to the batch.

C. Placing:

1. Deposit concrete as nearly as practicable in its final location so as to avoid separation due to rehandling and flowing.

2. Place concrete at such a manner that concrete upon which fresh concrete is deposited is still plastic.

D. Hot weather placement: Place concrete in hot weather in accordance with ACI 305 "Hot Weather Concreting" and as specified herein.

1. Do not place concrete whose temperature exceeds 100□F.

2. Thoroughly wet forms and reinforcing prior to placement of concrete.

3. Use additional set retarder as necessary to increase set time.

4. Start curing as soon as the concrete is sufficiently hard to permit without damage.

E. Cold weather placement: Place concrete in cold weather in accordance with ACI 306 and as specified herein.

1. Do not place concrete when the atmospheric temperature is below 40□F.

2. Do not add salts, chemicals, or other materials to the concrete mix to lower the freezing point of the concrete.

F. Consolidation:

1. Consolidate each layer of concrete immediately after placing, by use of internal concrete vibrators supplemented by hand spading, rodding, or tamping.

a. Use vibrators having a 2" head diameter and a minimum frequency of 8000 vibrations per second.

b. Provide sufficient number of vibrators to properly consolidate the concrete, keeping up with placement operations.

c. Provide at least one spare vibrator on site.

2. Insert and withdraw vibrators at points approximately 18" apart.

3. Do not vibrate forms.

4. Do not use vibrators to transport concrete inside the forms.

3.5 PROTECTION

A. Protect the surface finish of newly placed concrete from damage by rainwater or construction traffic.

B. Do not apply design loads to structures until the concrete has obtained the specified strength.

3.6 CURING

A. Beginning immediately after placement, protect concrete from premature drying, excessively hot and cold temperatures and mechanical injury.

B. Curing compound: Apply curing compound immediately after completion of the finish on uniformed surfaces and within two hours after removal of forms on formed surfaces.

1. Spray the entire surface with two coats of liquid curing compound, applying the second coat in the direction of 90□ to the first coat.

2. Apply compound in accordance with the manufacturer's instructions to cover the surface with a uniform film which will seal thoroughly.

3.7 CONCRETE FINISHING

A. Finish schedule: Unless otherwise indicated on the drawings, finish all concrete surfaces in accordance with the following schedule:

1. Form finish: Formed surfaces not ordinarily exposed to view, including:

a. The underside of slabs not exposed to view.

2. Broom finish: Exterior, outdoor slabs exposed to view including:

a. Outdoor floor slabs and walkways.

b. Other floors that may become wet or otherwise require a non-skid surface.

c. Sidewalks and concrete pavements.

3. Edge finish: Exposed edges of slabs not receiving chamfer including:

a. Sidewalk edges and joints.

b. Pavement edges and joints.

c. Other slab edges not chamfered.

B. Finishing procedures:

1. Form finish:

a. Repair defective concrete.

b. Fill depressions deeper than □".

c. Fill tie holes.

d. Remove fins exceeding □" in height.

2. Broom finish:

a. Float finish as specified herein.

b. Provide a scored texture by drawing a broom across the surface.

3. Edge finish: Tool slab edges and joints with a □" radius edging tool.

3.8 SURFACE REPAIR

A. Patching mortar:

1. Make a patching mortar consisting of 1 part portland cement to 2□ parts sand by damp loose volume.

2. Mix the mortar using one part acrylic bonding admixture to two parts water.

B. Surface defects:

1. Remove all defective concrete down to sound solid concrete.

2. Chip edges perpendicular to the concrete surface or slightly undercut, allowing no feather edges.

3. Dampen surfaces to be patched.

4. Patch defects by filling solidly with repair mortar.

C. Allow the Engineer to inspect the work before placing the patching mortar.

D. Repair defective areas greater than 1 sq.ft. or deeper than 1□" as directed by the Engineer using materials approved by the Engineer at no additional expense to the Owner.

3.9 JOINTS

A. Construction joints:

1. Unless otherwise approved by the Engineer, provide construction joints every ten (10) feet, or as shown on the drawings.

2. Continue all reinforcing across construction joints and provide 1□" deep keyways unless indicated otherwise on the drawings.

B. Expansion joints:

1. Provide □-inch expansion joints with premolded joint filters every thirty (30) feet.

3.10 FIELD QUALITY CONTROL

A. Concrete cylinder tests:

1. During construction, prepare test cylinders for compressive strength testing, using 6" diameter by 12" long single use molds, complying with ASTM C31.

   a. Make a set of three test cylinders from each pour.

   b. Identify each and tag cylinder as to date of pour and location of concrete which it represents.

   c. Deliver cylinders to testing lab selected by the Owner.

   d. Cost for preparation and delivery of cylinders shall be borne by the Contractor. Cost for testing cylinders will be borne by the Owner.

2. Should strengths shown by test cylinders fail to meet specified strengths for the concrete represented, then:

   a. Engineer shall have the right to require changes in the mix proportions as he deems necessary on the remainder of the work.

   b. Additional curing of those portions of the structure represented by the failed test cylinders shall be accomplished as directed by the Engineer.

   c. Upon failure of the additional curing to bring the concrete up to specified strength requirements, strengthening or replacement of those portions of the structure shall be as directed by the Engineer.

   d. The Engineer may require additional testing of concrete in question by either non-destructive methods such as the Swiss Hammer, Windsor Probe or Ultrasonics or by coring and testing the concrete in question in accordance with ASTM C42. Such testing shall be performed at no additional cost to the Owner.

B. Other field concrete tests:

1. Slump tests: Either the Engineer or a testing laboratory representative will make slump tests of concrete as it is discharged from the mixer.

   a. Slump test may be made on any concrete batch at the discretion of the Engineer.

   b. Failure to meet specified slump requirements will be cause for rejection of the concrete.

2. Temperature: The concrete temperature may be checked at the discretion of the Engineer.

3. Entrained air: Air content of the concrete will be checked by a representative of the testing laboratory at the discretion of the Engineer.

C. Coordination of laboratory services: The Contractor shall be responsible for coordination of laboratory services.

1. Maintain a log recording quantities of each type of concrete placed, date and location of pour.

2. Inform the testing laboratory of locations and dates of concrete placement and other information as required to be identified in the laboratory's test reports.

D. Tests required because of extensive honeycombing, poor consolidation of the concrete or any suspected deficiency in the concrete will be paid for by the Contractor.

E. Dimensional tolerances:

1. Dimensional tolerances for allowable variations from dimensions or locations of concrete work, including the locations of embedded items shall be as given in ACI 301.

F. Concrete which fails to meet strength requirements, dimensional tolerances, watertightness criteria, or is otherwise deficient due to insufficient curing, improper consolidation or physical damage shall be replaced or repaired as instructed by the Engineer at no expense to the Owner.

3.11 MEASUREMENT AND PAYMENT

A. No measurement or direct payment will be made for the work under this Section and all costs for same shall be included in the price bid for the project.

ALTERNATE NO. 2:

B. Payment will be made at the unit prices per linear foot as stated in the Proposal, and shall include cost of excavation, finishing, backfilling, clean-up, etc.

END OF SECTION

SECTION 02221
TRENCHING & BACKFILLING FOR UTILITIES

PART 1. GENERAL

1.1 DESCRIPTION

A. Work included: Trench, backfill, and compact as specified herein and as needed for installation of underground utilities associated with the Work.

B. Related work:

1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions and Sections in Division 1 of these Specifications.

1.2 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

B. Use equipment adequate in size, capacity, and numbers to accomplish the work in a timely manner.

1.3 JOB CONDITIONS

A. Existing utilities:

1. There now exists in the construction areas, waterworks, storm drainage, sanitary sewers, street paving, gas mains and other utilities.

2. Approximate location of certain underground lines and structures are shown on the plans for information only, other underground lines or structures are not shown.

3. Locate these and other possible unknown utility lines using electronic pipe finder, or other approved means.

4. Locate, excavate and expose all existing underground lines in advance of trenching operations.

5. The Contractor will be held responsible for the workmanlike repair of any damage done to any of these utilities in the execution of his work under this Section.

6. The Contractor shall familiarize himself with the existing conditions and be prepared to adequately care for and safeguard himself and the Owner from damage.

B. Notification of intent to excavate:

1. South Carolina Underground Utility Damage Prevention Act (S.C. Code Ann, 58-35-10, CT-SEQ, Supp. 1978) requires persons to ascertain the location of underground public utility property prior to excavation or demolition in certain situations. The Act also requires such persons to give timely notice of intent to excavate or demolish prior to commencing such operations. Failure to comply could subject the violator to a civil penalty of up to one thousand dollars ($1,000) for each violation of the Act.

2. Notification of intent to excavate may be given by calling this toll free number: 1-800-922-0983.

C. Protecting trees, shrubbery and lawns:

1. Trees and shrubbery in developed areas and along the trench line shall not be disturbed unless absolutely necessary, and subject to the approval of the Engineer.

   a. Any such trees and shrubbery necessary to be removed shall be heeled in and replanted.

2. Where trenches cross private property through established lawns, sod shall be cut, removed, stacked and maintained in suitable condition until replacement is approved by the Engineer.

   a. Topsoil underlying lawn areas shall be removed and kept separate from general excavated materials.

D. Clearing:

1. Perform all clearing necessary for installation of the complete work.

2. Clearing shall consist of removing all trees, stumps, roots, brush and debris in the rights-of-way obtained for the Work.

3. All timber of merchantable size shall remain the property of the Owner and shall be trimmed and cut in such lengths as directed and stacked along the edge of the right-of-way.

4. All other material, including trimmings from above, shall be completely disposed of in a satisfactory manner.

E. Removing and resetting fences:

1. Where existing fences must be removed to permit construction of utilities:

   a. Remove such fences and, as the Work progresses, reset the fences in their original location and condition.

   b. Provide temporary fencing or other safeguards as required to prevent stock and cattle from wandering to other lands.

F. Restoration of disturbed areas:

1. Restore all areas disturbed by, during or as a result of construction activities to their existing or better condition.

2. Do not interpret this as requiring replacement of trees and undergrowth in undeveloped sections of the rights-of-way.

G. Minimizing silting and bank erosion during construction:

1. During construction, protective measures shall be taken and maintained to minimize silting and bank erosion of creeks and rivers adjacent to the work being performed during construction.

2. Sack breakers are to be used on steep slopes along creek banks and fill slopes to prevent washing of ditch. Sack breakers are to be placed at the direction of the Engineer.

H. Blasting:

1. Store all explosives in a secure manner, complying with all laws, ordinances, and regulations.

2. Contractor shall be responsible for damage caused by blasting operations.

PART 2. PRODUCTS

2.1 EXCAVATED MATERIALS

A. Perform all excavation of every description and of whatever substances encountered to depths indicated or specified.

B. Pile material suitable for backfilling in an orderly manner at safe distance from banks or trenches to avoid overloading and to prevent slides or cave-ins.

C. Remove and deposit unsuitable or excess materials as directed by the Engineer.

2.2 BACKFILL MATERIALS

A. Provide from materials excavated for installation of utility.

1. Select soil material free from organic matter and deleterious substances, containing no rocks or lumps over 2" in greatest dimension for backfill up to 12" above top of utility being covered.

2. Do not permit rocks larger than 2" in greatest dimension in top 6" of backfill.

2.3 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Engineer.

PART 3. EXECUTION

3.1 PROCEDURES

A. Existing utilities:

1. Unless shown to be removed, protect active utility lines shown on the drawings or otherwise made known to the Contractor prior to trenching. If damaged, repair or replace at no additional cost to the Owner.

2. If active utility lines are encountered and are not shown on the Drawings or otherwise made known to the Contractor, promptly take necessary steps to assure that service is not interrupted.

3. If service is interrupted as a result of work under this Section, immediately restore service by repairing the damaged utility at no additional cost to the Owner.

4. If existing utilities are found to interfere with the permanent facilities being constructed under this Section, immediately notify the Engineer and secure his instructions.

5. Do not proceed with permanent relocation of utilities until written instructions are received from the Engineer.

B. Protection of persons and property:

1. Barricade open holes and depressions occurring as part of the Work, and post warning lights on property adjacent to or with public access.

2. Operate warning lights during hours from dusk to dawn each day and as otherwise required.

3. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, washout and other hazards created by operations under this Section.

C. Dewatering:

1. Remove all water, including rain water, encountered during trench and sub-structure work to an approved location by pumps, drains, and other approved methods.

2. Keep trenches and site construction area free from water.

D. Use means necessary to prevent dust becoming a nuisance to the public, to neighbors, and to other work being performed on or near the site.

E. Maintain access to adjacent areas at all times.

3.2 TRENCH EXCAVATION (Unclassified)

A. Remove all materials of whatever substance encountered.

B. Comply with pertinent OSHA regulations in regards to the excavation of utilities.

3.3 BACKFILLING

A. General:

1. Backfill trenches and excavations immediately after the pipes are laid, unless other protection is directed or indicated.

2. Select and deposit backfill materials with special reference to the future safety of the pipes.

3. Reopen trenches which have been improperly backfilled, to a depth as required for proper compaction. Refill and compact as specified, or otherwise correct to the approval of the Engineer.

4. Surplus material shall be disposed of as directed by the Engineer.

5. Original surface shall be restored to the approval of the Engineer.

B. Lower portion of trench:

1. Deposit approved backfill and bedding material in layers of 6" maximum thickness, and compact with suitable tampers to the density of the adjacent soil until there is a cover of not less than 24" over sewers and 12" over other utility lines.

2. Take special care in backfilling and bedding operations not to damage pipe and pipe coatings.

C. Remainder of trench:

1. Except for special materials for pavements, backfill the remainder of the trench with material free from stones larger than 6" or □ the layered thickness, whichever is smaller, in any dimension.

2. Deposit backfill material in layers not exceeding the thickness specified, and compact each layer to the minimum density directed by the soil engineer.

D. Adjacent to buildings: Mechanically compact backfill in 6" layers within ten (10') feet of buildings.

E. Under roads, streets and other paved areas:

1. Mechanically tamp in 6" layers using heavy duty pneumatic tampers or equal.

2. Tamp each layer to a density equivalent of not less than 95% of an ASTM D698 Proctor Curve.

3. Provide additional compaction by leaving the backfilled trench open to traffic while maintaining the surface with crushed stone.

4. Refill any settlement with crushed stone and continue such maintenance until replacement of pavement is authorized by the Engineer.

F. Undeveloped areas:

1. Backfill in wooded, swampy or undeveloped areas shall be as specified hereinbefore, except that tamping of the backfill above a level 2' over the top of the pipe will not be required.

2. Mound excavated material neatly over the ditch to provide for future settlement.

3.4 MEASUREMENT AND PAYMENT

A. Unclassified excavation:

1. No measurement or direct payment will be made for the Work under this Section and all costs for same shall be included in the price bid for the utility line to which it pertains.

END OF SECTION

SECTION 02618
HIGH-DENSITY POLYETHYLENE (HDPE) PIPE AND FITTINGS

PART 1. GENERAL

1.1 WORK INCLUDED

A. Leachate collection piping (solid and perforated)

B. HDPE Cleanouts

C. HDPE Manholes

1.2 RELATED WORK

A. Section 02221 - Trenching, Backfilling, and Compacting

B. Section 02200 - Earthwork

C. Section 02271 - Geotextiles

1.3 REFERENCES

A.	ASTM D 638	Test Method for Tensile Properties of Plastics
B.	ASTM D 790	Test Method for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
C.	ASTM D 1239	Test Method for Flow Rates of Thermal Plastics by Extrusion Plastometer
D.	ASTM D 1248	Specification for Polyethylene Plastics Molding and Extrusion Materials
E.	ASTM D 1505	Test Method for Density of Plastics by the Density Gradient Technique
F.	ASTM D 1599	Test Method for Short Time Hydraulic Failure Pressure of Plastic Pipe, Tubing and Fittings
G.	ASTM D 1693	Test Method for Environmental Stress Cracking of Ethylene Plastics
H.	ASTM D 2122	Method for Determining Dimensions of Thermal Plastic Pipe and Fittings
I.	ASTM D 2837	Method for Obtaining Hydrostatic Design basis for Thermal Plastic Pipe Materials
J.	ASTM D 3350	Specification for Polyethylene Plastics Pipe and Fittings Material
K.	ASTM F 1248	Determination of Environmental Stress Crack Resistance (ESCR) of Polyethylene Pipe
L.	ASTM D 4219	Test Method of Carbon Black Content in Polyethylene Compounds by the Muffle-Furnace Technique

M. ASTM F 714 Standard Specification for Polyethylene Plastic Pipe Based on Outside Diameter

1.4 DELIVERY, STORAGE, AND HANDLING

A. Protect pipe from sun, elements, and weather changes.

B. Store pipe in areas that are safe from construction activities.

C. Handle pipe to prevent scratches or mars. No rocks or other materials which scratch or gouge pipe shall be in storage area.

1.5 SUBMITTALS

A. Submit product data using MANUFACTURER'S product tracking system to include the information required in Subsection 2.1 A through I.

B. Include specifications, shop drawings, dimensions, joint details, design and installation details, and descriptive literature on pipe materials, manholes, pipe fittings, and accessories.

C. Submit "flat sketches" of the piping systems and components.

D. Verify to CQA CONSULTANT that the specified pipe bedding and backfill materials and requirements are acceptable to the pipe manufacture, or submit alternative installation recommendations from the pipe manufacturer.

E. Inspect material a minimum of 7 days prior to installation, and indicate in writing any deficiencies to CQA CONSULTANT.

PART 2. PRODUCTS

2.1 GENERAL REQUIREMENTS

Piping and accessories shall be high quality, durable materials manufactured and installed with good commercial practices that conform to the manufacturer's "Design and Installation Guidelines". It is not the intent of the drawings and specifications to give every detail needed for a complete piping system, or that may be recommended for the project by experienced piping vendors. However, the CONTRACTOR shall furnish and install the piping system with every detail needed for the work to be free from faults and defects. Any design modifications or additions to any part of the piping system recommended by the CONTRACTOR to prevent faults or defects under the intended use shown on the drawings shall be submitted to the OWNER in writing before the Agreement is executed.

2.2 ACCEPTABLE MANUFACTURERS/SUPPLIERS

A. HDPE Materials:

1. ISCO
3435 Stanwood Blvd.
Huntsville, AL 35811
(800) 462-0860

2. Plexco/Spirolite
Chevron Chemical CO.
1050 Busse Highway,
Suite 200
Bensenville, IL 60106
(708) 350-3700

3. Plastic Fusion Fabricators, Inc.
2455 Stanwood Blvd.
Huntsville, AL 35811
(205) 852-0378

4. Phillips Driscopipe, Inc.
2929 North Central Expressway
Richardson, TX 75083
(800) 527-0662

5. Poly Pipe Industries, Inc.
Drawer HH
Gainesville, TX 76240
(800) 433-5632

2.3 HIGH DENSITY POLYETHYLENE PIPE (HDPE)

A. Material Physical Properties: Materials used for the manufacture of polyethylene pipe and fittings shall meet the following physical property requirements:

PROPERTY	UNIT	TEST PROCEDURE	EXTRUDED PIPE TYPICAL VALUE
Material Designation	-	PPI/ASTM D-2837	PE 3408
Hydrostatic Design Basis	-	PPI TR-4	800 psi
Material Classification	-	ASTM D-1248	III C 5 P34
Cell Classification	-	ASTM D-3350	345434C
Density (3)	g/cm^3	ASTM D-1505	0.955
Melt Index (4)	g/10 min	ASTM D-1238	0.11
Flexural Modulus (5)	psi	ASTM D-790	133,000
Tensile Strength (4)	psi	ASTM D-638	3200 - 3500
EXCR (3)	fail % hr.	ASTM D-1693	for > 5000
HDB (4)	psi	ASTM D-2837	1600 (23°C)
UV Stabilizer (C)	% Carbon Black	ASTM D-1603	2 to 3
Elastic Modulus	psi	ASTM D-638	110,000 -159.,000

PROPERTY	UNIT	TEST PROCEDURE	EXTRUDED PIPE TYPICAL VALUE
Brittleness Temperature	°F	ASTM D-746	<- 180
Vicat Softening Temperature	°F	ASTM D-1525	+255
Thermal Expansion	in/in/°F	ASTM D-696	8×10^{-5}
Hardness	Shore D	ASTM D-2240	64

B. Material Testing, Certification, and Listing: The pipe and fitting manufacturer shall certify that samples of his production pipe have undergone stress regression testing, evaluation, and validation in accordance with ASTM D-2837 and PPI TR-3. Under these procedures, the minimum hydrostatic design basis shall be certified by the pipe and fitting manufacturer to be 1600 psi at 73.4°F and 800 psi at 140°F.

Material shall be Listed in the name of the pipe and fitting manufacturer by the Plastics Pipe Institute (PPI) in PPI TR-4 with the following Standard Grade ratings:

	73.4°F	140°F
Hydrostatic Design Basis (HDB)	1600 psi	800 psi
Hydrostatic Design Stress (HDS)	800 psi	400 psi

C. Pipe and Fittings. Pipe and fittings shall be the same manufacturer from identical materials meeting the requirements of this specification.

Pipe and fittings shall be pressure rated to meet the service pressure requirements specified by the OWNER. Whether molded or fabricated, fittings shall be fully pressure rated to at least the same service pressure rating as the pipe to which joining is intended.

Molded fittings shall meet the requirements of ASTM D-3261 and this specification. Fittings shall be molded unless otherwise approved by the ENGINEER. At the point of fusion, the outside diameter and minimum wall thickness of fitting butt fusion outlets shall meet the diameter and wall thickness specifications of the mating system pipe. Fitting markings shall include a production code from which the location and date of manufacture can be determined. Upon request, the manufacturer shall provide an explanation of his production code.

Fittings shall be manufactured in facilities designed for that purpose. Field fabricated fittings are not allowed.

Outside diameter controlled pipe shall be manufactured in accordance with ASTM F 714 or ASTM D-3035. Inside diameter controlled pipe shall be manufactured to ASTM F-894 and the specifications provided by the manufacturer. Printline markings shall include a production code from which the location and date of manufacture can be identified. Upon request, the manufacturer shall provide an explanation of his production code.

D. STANDARD DIMENSION RATIO (SDR). The SDR's shall be as follows:

Pipe Inside Diameter (inches)	SDR
3	17
4 (Carrier)	17
6 (Solid and Perforated)	17
8 (Solid and Perforated)	17

E. PIPE MARKING: During extrusion production, the HDPE pipe shall be continuously marked with durable printing on the pipe outside surface following this format:

1.1.1.1	**Nominal Size**	**6 inches**
1.1.1.2	**Dimension Ratio**	**SDR 17**
1.1.1.3	**Pressure Rating**	**160 psi**
1.1.1.4	**Type**	**(Trade Name)**
1.1.1.5	**Material Classification**	**PE3408**
1.1.1.6	**Certification Bases**	**ASTM F714**
1.1.1.7	**Blank Position for NSF/FM Use**	**NSF-PW**
1.1.1.8	**Pipe Test Category**	**C3**
1.1.1.9	**Plant**	**P . . . for Pryor**
1.1.1.10	**Extruder Number**	**#5**
1.1.1.11	**Date**	**06 Feb 89**
1.1.1.12	**Operator Number**	**55**
1.1.1.13	**Shift Letter**	**A**
1.1.1.14	**Resin Supplier Code**	**P**

EXAMPLE: 6" IPS SDR 17 160 psi (Trade Name) PE 3408 ASTM F-714 NSF-PW C3 P5 06FEB89 55A P

F. MANUFACTURER'S QUALITY CONTROL. The pipe and fitting manufacturer shall have an established quality control program responsible for inspecting incoming and outgoing materials. At minimum, incoming polyethylene materials shall be inspected for density per ASTM D 1505, melt flow rate per ASTM D 1238, and contamination. All incoming polyethylene materials shall be certified by the supplier. Certifications shall be verified by Quality Control. Incoming materials shall be approved by Quality Control before processing into finished goods.

The pipe shall be produced with the nominal physical properties outlined in Section A, and to the dimensions and tolerances specified in ASTM F-714. Additionally, the pipe shall be inspected per industry accepted manufacturer standards for:

- Diameter
- Wall Thickness
- Concentricity
- Quick Burst Pressure and Ductability
- Joint Length
- Straightness
- Ovality
- Toe-In
- Overall Workmanship Inspection on ID & OD
- Print Line

G. MANUFACTURER'S QUALITY ASSURANCE. The pipe and fitting manufacturer shall have an established quality assurance program responsible for assuring the long term performance of materials and products. Representative samples of polyethylene materials shall be tested against the physical property requirements of this specification.

Tests required on pipe samples for this section are:

• Compressed Ring (Pipe)	ASTM F-1248	F50, Hr	>1000
• Slow Crack Growth	Battelle method	Days to failure	F0 >32
• Hydrostatic Design Basis	ASTM D-2837-90	800 psi	1,600 psi

(MANUFACTURER to provide certification that the stress regression testing has been performed on the specific product.)

H. QUALITY CONTROL AND QUALITY ASSURANCE RECORDS. The pipe and fittings MANUFACTURER shall maintain QA/QC records for a minimum of one year from date of production.

I. MANUFACTURER'S CERTIFICATION OF MATERIALS AND PRODUCTS. If requested by the CQA CONSULTANT, the pipe and fitting MANUFACTURER shall provide certified copies of the quality control data taken during product manufacture.

J. JOINING AND FUSION TRAINING. Pipe and fittings shall be butt fusion joined in accordance with the MANUFACTURER'S recommended procedure. The CONTRACTOR must have a factory trained fusion technician to fuse pipe. If the CONTRACTOR elects to fuse pipe with his operators, training from an authorized representative, trained by the manufacturer, must be obtained for at least two days on-site regardless of prior job experience. Training must be provided by a factory trained and authorized representative of the MANUFACTURER.

K. FLANGE CONNECTIONS. Where flange connections are used, the MANUFACTURER'S procedure for tightening flanges must be followed. In general, the bolts will be tightened on one day and retightened on the following day. A written copy of this procedure will be required and approved prior to starting the job.

L. HANDLING, CONSTRUCTION, AND INSTALLATION. The pipe and fitting MANUFACTURER shall package products for shipment in a manner suitable for safe transport by commercial carrier. When delivered, a receiving inspection shall be performed, and any shipping damage reported to the pipe and fitting MANUFACTURER within 7 days. Pipe and fittings shall be handled, installed, and tested in accordance with MANUFACTURER'S recommendations, and the requirements of this specification.

M. FIELD TESTING OF PRESSURE PIPING

1. Test Restrictions: Test pressure shall be 90 psi. The CONTRACTOR shall provide temporary plugs at open pipe ends, or other locations at the CONTRACTOR'S expense.

Every effort shall be made to keep lines clean during installation. Flush pipelines prior to a pressure test lines shall be flushed by partially opening and closing valves and hydrants

several times under expected line pressure, with flow velocities adequate to flush foreign material out of the valves and hydrants.

Joints shall not be backfilled until after the pressure test is completed.

2. Test Procedure: The test procedure shall consist of initial expansion and test phases. For the initial expansion phase, add makeup water as required to maintain the test pressure for three hours. For the test phase, reduce the test pressure by 10 psi. If the pressure remains steady (within 5 percent of the initial value) for an hour, the test will be satisfactory.

3. Pressurization: After the pipe has been laid, all newly laid pipe or any valved section thereof shall be subjected to the specified hydrostatic pressure. Each valved section of pipe shall be slowly filled with water, and the specified test pressure, based on the elevation of the highest point of the supply and return lines or section under test and corrected to the elevation of the test gauge, shall be applied by means of a pump connected to the pipe in a manner satisfactory to the ENGINEER. Valves shall not be operated in either the opening or closing direction at differential pressures above the rated pressure. Allow the system to stabilize at the test pressure before conducting the test.

4. Air Removal: Before applying the specified test pressure, air shall be expelled completely from the pipe, valves, and hydrants. If permanent air vents are not located at all high points, the CONTRACTOR shall install corporation cocks at such points so that the air can be expelled as the line is filled with water. After all the air has been expelled, the corporation cocks shall be closed and the test pressure applied. At the conclusion of the pressure test, the corporation cocks shall be removed and plugged or left in place at the discretion of the OWNER.

5. Examination: Any exposed pipe, fittings, valves, hydrants, and joints shall be examined carefully during the test. Any damaged or defective pipe, fittings, valves, hydrants, or joints that are discovered following the pressure test shall be repaired or replaced with sound material, and the test shall be repeated until it is satisfactory to the CQA CONSULTANT.

6. All visible leaks are to be repaired, regardless of the amount of leakage.

2.4 HIGH DENSITY POLYETHYLENE MANHOLES AND INSERTS

A. GENERAL

1. This specification covers the requirements of solid wall High Density Polyethylene (HDPE) manholes, valve box, and inserts as indicated on the drawings.

2. The manhole shall be manufactured by the fabrication of HDPE as defined in Section 2.4. The pipe used to make the structure shall be made to the requirements of ASTM F-714. An SDR 32.5 shall be used for the manhole body. The inlet and outlet piping shall be the same as the inlet and outlet piping.

3. The bottom of the manhole shall be made of 1-inch sheet for manholes and valve boxes 36 inches or smaller. For manholes or valve boxes larger than 36 inches, 1.5-inch sheet shall be used for the bottom.

PART 3. EXECUTION

3.1 TRENCH, EXCAVATION, BEDDING, BACKFILLING AND COMPACTION

Unless otherwise specified or indicated, trench excavation, pipe bedding, trench backfilling, and compaction shall be accomplished in accordance with Section 02221.

3.2 INSPECTION

A. Inspect pipe, fittings, and other appurtenances before installation to verify quality of material.

B. Bends to be fabricated in the field, prefabricated, or made by straight sections of pipe.

3.3 PREPARATION

A. Ream pipe and tube ends. Remove burrs.

B. Remove dirt and foreign material, inside and outside, from pipe and fitting materials before assembly.

C. Make straight field cuts without chipping or cracking pipe.

3.4 INSTALLATION

A. Make heat butt fusion joints in accordance with manufacturer's specifications.

B. Install pipe and fittings to the line and grade specified on the drawings.

C. Lay pipe from the low end toward the high point. Provide continuous smooth invert.

D. The maximum allowable tolerance for grade is 0.05 foot.

E. Install bedding and backfill material with care to avoid damage to pipe. Minimize traffic and turning of traffic over pipe.

F. Provide a yellow warming ribbon and 12-gauge metallic tracing wire in all pipe trenches.

3.5 FIELD QUALITY CONTROL

A. When fusing joints and fittings, follow supplied manufacturer's directions and procedures for heat jointing pipes and fittings.

END OF SECTION

SECTION 02220
EXCAVATING, BACKFILLING FOR STRUCTURES

PART 1. GENERAL

1.1 DESCRIPTION

A. Work included: Excavating, backfilling, compacting and grading to build the structures as shown on the Drawings, as specified herein, and as needed to meet the requirements of the construction shown in the Contract Documents.

B. Related work:

1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

2. Section 02210: Site Grading.

C. Classification: All excavation is unclassified and excavation of every description, regardless of material encountered within the excavation limits of the structure, shall be performed to the lines and grades indicated.

ALTERNATE 2:

C. Classification: Material determined by the Engineer to be rock as defined herein will be classified as "Rock Excavation:.

1. Excavation of rock not indicated on the drawings will be paid for at the unit price indicated on the Bid Form.

2. Where rock is shown on the drawings, excavation of this material shall be included in the lump sum price bid for the work and no additional payment will be made for this material.

3. Where actual rock excavation required and performed is less than that which is indicated on the drawings, the Owner shall receive a deductive amount based on the unit price indicated on the Bid Form.

4. Quantities for additional or deductive rock excavation shall be as determined by the Engineer from field measurements.

5. Do not perform any additional rock excavation without prior approval of the Engineer.

D. Definitions:

1. Open areas: Open areas shall be those areas that do not include building sites, paved areas, street right-of-way, and parking areas.

2. Maximum density: Maximum weight in pounds per cubic foot of a specific material.

3. Optimum moisture: Percentage of water in a specific material at maximum density.

4. Rock excavation: Excavation of any hard natural substance which requires the use of explosives and/or special impact tools such as jack hammers, sledges, chisels or similar devices specifically designed for use in cutting or breaking rock, but exclusive of trench excavating machinery. To be considered as rock excavation, the material shall be continuous; individual boulders or rocks in soil will not be considered rock excavation.

5. Muck: Materials unsuitable for foundation because of organic content, saturation to the extent that it is somewhat fluid and must be moved by dragline, dredge, or other special equipment, are designated as muck. No extra payment will be made for muck removal.

6. Unsuitable material: Unsuitable material is defined as earth material unsatisfactory for its intended use and as classified by the soils technicians. In addition to organic matter, sod, muck, roots, and rubbish, highly plastic clay soils of the CH and MH descriptions, and organic soils of the OL and OH descriptions, as defined in the Unified Soil Classification System shall be considered as unsuitable material.

7. Suitable material: Where the term suitable material is used in specification sections pertaining to earthwork, it means earth or materials designated as being suitable for their intended use by soils technicians or the Engineer. Suitable material shall be designated as meeting the requirements of the Unified Soil Classification System types SW, GW, GC, SC, SM, ML, CL or as designated in these specifications.

8. Select material: Select material is defined as granular material to be used where indicated on the drawings or where specified herein consisting of soils conforming to the Unified Soil Classification types SW, SM, GW, or GM or as otherwise approved by the Engineer as select fill. Select material shall contain no stones or rubble larger than 1½ inch in diameter.

9. Crushed stone (gravel): Crushed stone shall be No. 57 aggregate or equal conforming to ASTM C-33.

10. Excavation: Excavation is defined as unclassified excavation of every description regardless of materials encountered.

1.2 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

B. Comply with requirements of governmental agencies having jurisdiction.

C. Testing: A testing laboratory retained by the Owner will make such tests as are deemed advisable.

1. Schedule fill and backfill operations so as to permit a reasonable time for inspection and testing before placing succeeding lifts and keep the laboratory and Engineer informed of progress.

2. Notify the Engineer and allow sufficient time for inspection and/or testing of foundation subgrades prior to commencing any work on the exposed excavation.

1.3 JOB CONDITIONS

A. If conditions encountered during construction warrant additional removal of unsuitable material below foundation subgrades, then remove unsuitable material and replace it as specified at no additional expense to the Owner.

ALTERNATE 2:

A. If, in the opinion of the Engineer, conditions encountered during construction warrant a change in the footing elevation, or in the depth of removal of unsuitable material from that indicated on the drawings, an adjustment will be made in the contract price based upon unit prices for additional work as contained in the bid form.

1.4 PRODUCT HANDLING

A. Comply with pertinent provisions of Section 01640.

PART 2. PRODUCTS

2.1 SOIL MATERIALS

A. Soil material used as fill, backfill or subgrade for structures shall consist of suitable material.

1. Provide suitable material free from organic matter and deleterious substances, containing no rocks or lumps over 6" in greatest dimension, and with not more than 15% of the rocks or lumps larger than 2□" in their greatest dimension.

2. Do not permit rocks having a dimension greater than 1" in the upper 6" of fill or subgrade.

B. Where select material is indicated on the drawings or specified, use select granular material as defined herein and approved by the Engineer.

C. Where indicated on the drawings or specified, use gravel or crushed stone as defined herein.

D. Where indicated on the drawings, provide a lean concrete "mud slab" beneath foundations.

1. Use 2000 psi concrete and a minimum thickness of 2□".

2. With prior approval of the Engineer, a "mud slab" may be substituted for gravel base material except where the gravel base is required for drainage or for use with pressure relief valves.

PART 3. EXECUTION

3.1 EXCAVATION

A. Protection of persons and property:

1. Protect structures, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, washout and other hazards created by operations under this Section.

2. Unless shown to be removed, locate and protect active utility lines shown on the drawings or otherwise made known to the Contractor prior to excavating. If damaged, repair or replace at no additional cost to the Owner.

3. If active utility lines are encountered and are not shown on the drawings or otherwise made known to the Contractor, promptly notify the Engineer and take necessary steps to assure that service is not interrupted.

4. Barricade open holes and depressions occurring as part of this work, and post warning lights on property adjacent to or with public access. Operating warning lights during hours from dusk to dawn each day and as otherwise required.

5. Side slopes: Slope, bench and/or shore sides of excavations and trench walls to maintain stability of the wall or sides. Pile materials obtained from the excavation a minimum of four feet from the edge of the excavation.

6. Shoring and sheeting: Where necessary, shore and sheet excavations with members of sizes and arrangement sufficient to prevent injury to persons, damage to structures or injurious caving or erosion.

    a. Furnish, put in place, and maintain such sheeting and bracing as may be required to support the sides of excavations, to prevent any movement which could in any way diminish the width of the excavation below that necessary for proper construction, and to protect adjacent structures from undermining or other damage. Any movement or bulging which may occur shall be corrected immediately by the Contractor. Care shall be taken to prevent voids outside of the sheeting, but if voids are formed, they shall be immediately filled and compacted.

    b. Take all precautions to prevent distress of existing structures because of sheeting installation or removal. Where the removal of sheeting may cause damage to existing or newly constructed structures, such sheeting shall be left in place at no expense to the Owner.

    c. All sheeting and shoring operations and maintenance thereof shall be the responsibility of the Contractor.

B. Excavating: Perform excavating of every type of material encountered to the lines, grades and elevations indicated or as necessary for construction of the structures shown.

1. Conform to elevations and dimensions shown within a tolerance of 0.10', and extending a sufficient distance from footings and foundations to permit placing and removing concrete formwork, installation of services, other construction required and for inspection.

2. Where earth will stand, shallow footing excavations may be cut to the exact size of the footing.

3. Separate suitable materials and stockpile for future use.

4. Dispose of unsuitable material and excess suitable material.

C. Foundation subgrades: Excavate foundations and footings to a level bottom in firm, solid, suitable material.

1. Take care not to disturb the bottom of the excavation unless further compaction of the subgrade is required.

2. Notify the Engineer in due time to permit inspection of the completed excavation prior to performing work on the foundation subgrade.

3. Should unsuitable or soft material be encountered at subgrade elevation, remove such material and replace with compacted suitable material or crushed stone from firm earth up to the indicated elevation.

a. In wet excavations or where groundwater is normally present, replace unsuitable material with crushed stone or lean concrete.

b. In dry excavations above the normal groundwater level, replace unsuitable material with compacted suitable material.

c. Unsuitable material shall be removed and replaced at no expense to the Owner.

ALTERNATE 2:

c. Removal and replacement of unsuitable material shall be paid for at the unit prices for such work as stated in the Bid Form.

4. Where rock is encountered at foundation level:

a. Use drilling, picking, wedging or similar methods leaving the foundation rock in an entirely solid and unshattered condition.

b. Roughen approximately level surfaces to provide satisfactory bond with concrete.

c. Cut steps or benches in sloped surfaces to provide satisfactory bond.

D. Drainage: Provide drainage and control grading in the vicinity of the work to prevent drainage into the excavation.

E. Rock excavation:

1. Notify the Engineer upon encountering rock or similar material which cannot be removed or excavated by conventional earth moving or ripping equipment.

2. Do not use explosives without written permission from the Engineer.

3. When explosives are permitted, use only experienced powdermen or persons who are licensed or otherwise authorized to use explosives. Store, handle and use explosives in strict

accordance with all regulatory bodies and the "Manual of Accident Prevention in Construction" of the Associated General Contractors of America, Inc.

4. The Contractor shall be solely responsible for any damage resulting from the use of explosives.

5. The Contractor is responsible for securing all permits required in performing this work.

6. Do not use blasting adjacent to existing buildings or structures.

   a. Remove rock at such locations using jack hammers and bull points.

F. Unauthorized excavation:

1. Excavation of material to depths below the grades indicated unless so directed by the Engineer will be deemed unauthorized excavation.

2. Backfill and compact unauthorized over excavation at no expense to the Owner.

   a. In wet excavations or excavations below normal groundwater elevations: Use crushed stone or lean concrete as directed by the Engineer.

   b. In dry excavations above normal groundwater elevations: Use compacted suitable material.

3.2 DEWATERING

A. Remove all surface and subsurface waters from excavations and maintain the excavation in a dry condition during construction operations.

B. Maintain the water level below the excavation subgrade during excavation and construction.

1. Material disturbed below the foundation subgrade due to improper dewatering shall be removed and replaced with crushed stone or lean concrete at no expense to the Owner.

2. Use sumps, pumps, drains, trenching or well point system as necessary to maintain a dry excavation.

3. Dewatering by trench pumping will not be permitted if migration of fine grained natural material (running sand) from bottom, side walls or bedding material will occur.

C. Dispose of water pumped from excavations in storm drains having capacity, canals, trenches or other approved locations.

1. Contractor is responsible for acquiring all permits required to discharge the water and shall protect waterways from turbidity during the operation.

2. Prevent flooding of streets, roadways, or private property.

3. Provide engines driving dewatering pumps with residential type mufflers.

3.3 BACKFILLING, FILLING AND COMPACTION

A. Use suitable material for all filling and backfilling operations.

B. Fill under structures: Deposit suitable material in layers not exceeding 8" in depth and compact each layer using proper equipment.

1. Do not place rock that will not pass through a 6" diameter ring within the top 12" of the surface of the completed fill or rock that will not pass through a 3" diameter ring within the top 6" of the completed fill.

2. Do not place broken concrete, bricks, or asphaltic pavement in fills.

3. Where indicated on the drawings, provide select granular material.

C. Backfill excavations as promptly as progress of the Work permits, but not until completion of the following:

1. Inspection and acceptance of construction below finish grade including, where applicable, dampproofing and waterproofing.

2. Inspecting, testing, approving and recording locations of underground utilities.

3. Removing concrete formwork.

4. Removing shoring and bracing, and backfilling of voids with satisfactory materials.

5. Removing trash and debris.

6. Foundation walls have been in place seven days.

D. Placing and compacting:

1. Place backfill and fill materials in layers not more than 8" in loose depth.

2. Before compacting, moisten or aerate each layer as necessary to provide the optimum moisture content within □2%.

3. Compact each layer to required percentage of maximum density for area.

4. Do not place backfill or fill material on surfaces that are muddy, frozen, or containing frost or ice.

5. 5. Place backfill and fill materials evenly adjacent to structures, to required elevations.

6. Take care to prevent wedging action of backfill against structures by carrying the material uniformly around the structure to approximately the same elevation in each lift.

7. Do not operate heavy equipment closer to foundation or retaining walls than a distance equal to height of backfill above the footing.

   a. Compact remaining area using power driven hand tampers.

8. Where the construction includes basement or other underground walls having structural floors over them, do not backfill such walls until the structural floors are in place and have attained sufficient strength to support the walls.

E. Compaction requirements:

1. Compact soils to not less than the following percentages of maximum dry density as determined in accordance with ASTM D698 (Standard Proctor).

2. Existing in place subgrade below structures where subgrade has been disturbed by water, improper dewatering, or construction traffic.

   a. Top 12" of subgrade 100%

   b. Below top 12" of subgrade 98%

3. Fill beneath structures and beneath an area extending 10 feet beyond the limits of the foundation:

   a. Top 12" of subgrade 100%

4. Compaction of suitable material used to replace unsuitable material below foundation subgrades:

   a. Top 12" of subgrade 100%

   b. Below top 12" of subgrade 98%

3.4 FIELD QUALITY CONTROL

A. Secure the Engineer's inspection and approval of subgrades and fill layers before subsequent construction is permitted thereon.

B. Field density determinations will be made, at no cost to the Contractor, to insure that the specified densities are being obtained. Field density tests will be performed as determined by the Engineer, considering the following:

1. At areas to receive paving, at least one field density test for every 5000 sq.ft. of subgrade area, but not less than three tests.

2. In each compacted fill layer, one field density test for every 5000 sq.ft. of overlaying paved area, but not less than three tests.

3. In fill beneath structures, one field density test for every 2,500 square feet in each layer.

4. Other tests as deemed necessary by the Engineer.

C. If, the Engineer's opinion based on reports of the testing laboratory, subgrade or fills that have been placed are below specified density; provide additional compacting and testing until specified requirements are met.

1. Additional testing will be provided by the Owner's selected testing laboratory and all costs for the additional testing will be borne by the Contractor.

D. Proofrolling:

1. Upon request by the Engineer, proofroll the subgrade of structure foundations.

a. Make not less than three passes of a 25 to 50 ton rubber tired roller over the full area.

b. Unstable, soft or otherwise unsuitable materials revealed by the proofrolling shall be removed and replaced with satisfactory material and compacted as specified herein.

3.5 MEASUREMENT AND PAYMENT

A. No separate measurement or direct payment will be made for the work under this section and all costs for same shall be included in the price bid for the item to which it pertains.

ALTERNATE 2:

A. The work under this section and all costs for same shall be included in the lump sum price bid for the item to which it pertains, with additional or deductive payments allowed for the specified items based on the unit prices given in the Bid Form.

B. Additive or deductive items:

1. Rock excavation above or below that indicated on the drawings.

2. Removal of additional unsuitable material.

3. Backfill and compaction of suitable material to replace unsuitable material.

END OF SECTION

INSURANCE REQUIREMENTS

CONTRACTOR INSURANCE REQUIREMENTS

Contractor shall provide, pay for and maintain in full force and effect, all insurance outlined herein with limits of liability not less than the limits of liability shown covering Contractor's activities, those of any subcontractors or anyone directly or employed by any of them, or by anyone for whose acts any of them might be liable.

Insurer Qualifications

All insurance should be provided through insurance companies authorized to do business in South Carolina with an A M Best's Rating of no less than A and shall be approved by and acceptable to Owner.

Certificates of Insurance

Within **5 (five) days** of execution of Contract but **PRIOR** to commencing Work, Contractor's insurer shall provide to Owner a Certificate of Insurance issued by an authorized representative of its insurer certifying that the insurance as required in this Exhibit is in full force and effect. Certificates should be sent via fax or mail to the following:

Risk Coordinator
City of Spartanburg
P. O. Box 1749
Spartanburg, SC 29304
Fax:# 864-596-2262
Email: kbooker@cityofspartanburg.org

The original of the Certificate is to be sent as well. The Certificate shall include a statement that the policies will not be canceled or non-renewed without 30 days advance written notice to Owner.

Primary Insurance

All insurance coverage required of the Contractor shall be primary over any insurance or self insurance carried by City of Spartanburg.

Duration of Coverage

All required insurance coverage shall be maintained without interruption during the entire term of the Contract plus an additional 3 years for Products and Completed Operations Coverage following final acceptance of the Work by Owner.

Subcontractor's Insurance

The Contractor shall require any Subcontractor to purchase and maintain insurance of same types and limits required herein.

Waiver of Subrogation

The Contractor shall require all policies of insurance as required herein to be endorsed to provide that the insurance company shall waive all of its right of recovery or subrogation against Owner. The Contractor shall require similar waivers from any Sub-contractors.

Additional Insured

The Contractor's insurance policies as required herein with the exception of Workers Compensation shall be endorsed to name Owner as an additional insured.

Insurance Coverage and Limits

Workers' Compensation: The Contractor shall provide and maintain Workers Compensation insurance in each jurisdiction in which the Work is located.

Limits:

Coverage A – State Statutory Benefits	
Coverage B - Employers Liability	$1,000,000

Specific Coverage:

-United States Longshoremen and Harbor Workers Act
-Coverage endorsement must be provided if any work is to be performed on or around navigable water.

Automobile Liability: Contractor shall provide and maintain Business Auto

Liability insurance covering bodily injury and/or property damage liability arising out of the use of any auto (including owned, hired, and non-owned autos).

Limits:

Combined Single Limit Each Accident:	$1,000,000

Commercial General Liability: Contractor shall provide and maintain in full force and effect Commercial General Liability Insurance covering all operations by or on behalf of Contractor on an occurrence basis against claims for bodily injury, personal in-jury, and/or property damage (including loss of use).

Limits:

Each Occurrence	$1,000,000
General Aggregate	$2,000,000
Products/Completed Operations	$2,000,000

Specific Coverage:

Occurrence Form
Blanket Contractual Liability
Underground Explosion and Collapse

Umbrella/Excess Liability: Contractor shall provide and maintain Umbrella/Excess Liability Insurance on an occurrence basis with coverage as broad a underlying policies.

Limits:

Each occurrence:	$2,000,000
Annual Aggregate:	$2,000,000

Specific Coverage:

Blanket Contractual Liability
Follow Form Primary

Other Insurance: Any other insurance as specified by Owner in the Contract Documents.

Changes: Exceptions to specified insurance requirements shall be submitted at time of any bid.

CITY OF SPARTANBURG

BUSINESS LICENSE APPLICATION

(864) 596-2055 (864) 596-2424 Fax

P O Box 1749 Spartanburg, SC 29304

Year _____ *Bus Lic#_____*

*****All City of Spartanburg Business License expire December 31st of each year*****

___ New Business ___ Renewal of License ___ Change of Ownership ___ Change of Location

*Name of Business:*_____

*Mailing Address:*_____

*Business Location:*_____ *Start Date:*_____

*Telephone number: Business ( )*_____ *or ( )*_____

*Federal Tax ID No.*_____ *Social Security No.*_____

Type of ownership: __ Sole Proprietor __ Partnership __Corporation __ Other

Are you a Contractor? ___ Yes ___ No Are you located ____ inside or ____ outside the city limits?

*State Contractors License No.*_____ *SC State Sale Tax No.*_____

*Do you have Coin Operated Machines? ___ Yes ___ No How many?*_____

*Do you own the Machines? ___Yes ___ No What type of Machines?*_____

Types of Business or Profession - Please describe in detail products sold or services provided.

_____

_____

Computation of Fees

A. New Business - (Fees are due Prior to beginning operation in the City)

1. *Estimated total gross sales/revenue for remaining of the year ending December 31, ____* $_____
2. *Calculate and enter fee based on A1.* $_____

B. Existing Business (After 2nd year of operation)

*****Bus License fee is due/payable by last day of February*****

1. *Total actual gross sales/revenue for preceding December 31, _____* $_____
2. *Total Gross receipts* $_____
3. *Calculate fee based on B3.* $_____
4. *Penalties due (Delinquent after end of February)* _____% $_____
5. ***Total Fees*** $_____

Owner Information

*Name of Owner*_____ *Social Security No.*_____

*Telephone number: ( )*_____ *Home ( )*_____

I UNDERSTAND THAT ISSUANCE OF A CITY BUSINESS LICENSE DOES NOT RELIEVE ME OF THE RESPONSIBILITY OF MEETING ALL CITY OF SPARTANBURG ZONING AND BUILDING CODE REQUIREMENTS. I AM SUBJECT TO ALL PROVISIONS OF THE BUSINESS LICENSE ORDINANCE OF THE CITY OF SPARTANBURG.

I CERTIFY THAT THE INFORMATION GIVEN IN THIS APPLICATION IS TRUE.

_____ *TITLE*_____ *DATE*_____

owner

NOTE: AN ORIGINAL CITY OF SPARTANBURG BUSINESS LICENSE APPLICATION IS INCLUDED IN THIS BID PACKET FOR YOU TO COMPLETE

GOOD FAITH DOCCUMENTATION MUST ACCOMPANY THE BID DOCUMENT

City of Spartanburg, hereby, notifies all proposers that it will affirmatively ensure that all disadvantaged and women's business enterprises will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of gender, race, color, or national origin in consideration for an award. Each proposer shall attest that they engaged in good faith efforts in an endeavor to achieve the City's M/WBE goal of 10%.

Any questions or any assistance please contact Mrs. Natasha Pitts.

Contact Information
Phone 864-596-3449
Email npitts@cityofspartanburg.org

INTENT TO PERFORM CONTRACT WITH OWN WORKFORCE

I HERBY CERTIFY THAT IT IS OUR INTENT TO PERFORM 100% OF THE WORK REQUIRED FOR THE ABOVE PROJECT. IN MAKING THIS CERTIFICATION, THE BIDDER STATES THAT THE BIDDER DOES NOT CUSTOMARILY SUBCONTRACT ELEMENTS OF THIS TYPE OF PROJECT, AND NORMALLY PERFORMS AND HAS THE CAPACITY TO PERFORM AND WILL PERFORM **ALL ELEMENTS OF THE WORK** PROJECT WITH HIS/HER OWN CURRENT WORK FORCES; AND IF THE BIDDER DOES NOT PERFORM 100% OF THE WORK REQUIRED, THE BIDDER WILL PROVIDE A LIST OF SUBCONTRACTORS

THE BIDDER AGREES TO PROVIDE ANY INFORMATION OR DOCUMENTATION TO THE CITY OF SPARTANBURG IN SUPPORT OF THE ABOVE STATEMENT.

THE UNDERSIGNED HEREBY CERTIFIES THAT HE OR SHE HAS READ THIS DOCUMENTATION AND IS AUTHORIZED TO BIND THE BIDDER TO THE COMMITMENTS HEREIN SET FORTH.

The listing of an MWBE shall constitute a representation by the bidder/responder to City of Spartanburg that such MWBE has been contacted and properly apprised of the upcoming City of Spartanburg project. Bidders/Responders are advised that the information contained herein is subject to verification by the Minority & Women Business Enterprise Program Coordinator and that submission of said information is an assertion of its accuracy. These documents are a part of this solicitation and contract. You are required to fill out this information.

I certify that the above information is true to the best of my knowledge:

Signature: _____

Title: _____

Date: _____

Subscribed and sworn to before me this _____ day of _____ 20___.

_____

Notary Signature

Notary Seal

THIS DOCUMENT MUST BE PROVIDED WITH THE SUBMITTAL AND SIGNED BY THE PERSON SIGNING THE SUBMITTAL

MWBE Good Faith Effort Participation Commitment Contract

This form should be filled out completely and ***included in your bid document***. This form should also be accompanied by an executed Letter of Intent from each Sub-Contractor firm listed in this form. You may use additional sheets if necessary.

BID NO:	**DATE:**

PROJECT NAME:	**ADDRESS:**	
PRIME CONTRACTOR:	**CITY:**	**STATE:**
CONTACT PERSON:	**EMAIL:**	
TELEPHONE: ( )	**FAX: ( )**	

MWBE SUBCONTRACTORS

COMPANY	MWBE CLASS	CITY, STATE	CONTACT	PHONE	TYPE OF WORK TO BE PERFORMED	SUBCONTRACT AMOUNT	% OF WORK
						$	%
						$	%
						$	%
						$	%
					Total MWBE Participation	$	%
					Total Contract Amount	$	

MWBE CLASSIFICATION

MBE-B - African American **MBE-S** - Asian American **MBE-H** - Hispanic American **WBE** - American Woman **MBE N/A** - Native American

NON-MWBE SUBCONTRACTORS

COMPANY	MWBE CLASS	CITY, STATE	CONTACT	PHONE	TYPE OF WORK TO BE PERFORMED	SUBCONTRACT AMOUNT	% OF WORK
						$	%
						$	%
						$	%
						$	%
					Total Non-MWBE Participation	$	%
					Total Contract Amount	$	