Bid Package
For
Butterfly Branch Linear Park Project

C I T Y OF S P A R T A N B U R G

JOB NO. SW 1701

January 26, 2017
Proposal No. 1617-02-14-01

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Section

Exhibit List

City of Spartanburg

Procurement and Property Division

Post Office Drawer 1749, SC 29304-1749 P (864)-596-2049 F (864) 596-2365

Legal Notice
Request for Bid
Butterfly Branch Linear Park Project
Improvement Project

January 26, 2017

NOTICE IS HEREBY GIVEN –that The City of Spartanburg will receive sealed bids from Contractors to provide construction services for the Butterfly Branch Linear Park located between College Street and Preston Street.

Bids are invited upon the several items and quantities of work as follows:

The general scope of the project in Division 1 will include site clearing, asphalt removal, rough/fine grading, erosion control, 10' pedestrian trail, asphalt hammerheads, permeable pavers, fencing, site amenities (trash receptacles, benches, bike racks, etc.), bollards, informational kiosks, entrance signs, entrance columns, pavilions, including shop drawings, electrical, irrigation, and landscaping. (3) add alternates will be included in Division 1 – Arch Street streetscape, College Street streetscape, and 10' asphalt trail in lieu of concrete.

The general scope of work for Division 2 will include rough/fine grading, manufactured pedestrian bridge, bridge installation, abutment and column installation, abutment and column stone veneer, and scour protection.

All pipe, catch basin installation, road repair, and resurfacing must be completed per SCDOT and supplied specifications. Contractor will also be responsible for stockpiling of all excavated material. Contractor will be responsible for all traffic control, utility locates/repairs, and any applicable permits and fees.

Proposal No: 1617-02-14-01

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%.

The City of Spartanburg reserves the right to reject any and all Bids or to waive any informality in the bidding. Bids may be held by the City of Spartanburg for a period not to exceed sixty (60) days from the date of the opening of Bids for the purpose of reviewing the Bids and investigating the qualifications of Bidder(s), prior to awarding of the Contract.

A certified check or bank draft, payable to the City of Spartanburg, negotiable U. S. Bonds (at par value) or a satisfactory Bid Bond executed by the Bidder and an acceptable surety in an amount equal to five percent (5%) of the total bid shall be submitted with each bid.

A Mandatory pre-bid meeting will be scheduled for Tuesday February 7 @ 10 a.m. @ project site.

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

The Bidder to whom the contract is awarded will be required to furnish a corporate surety bond in a sum equal to one hundred percent (100%) of the amount of the proposal or bid.

Questions regarding bid procedures should be directed to Carl Wright, Procurement and Property Manager at 864-596-2790 or cwright@cityofspartanburg.org.Technical questions regarding the scope of services should be directed to Jay Squires, Streets & Storm Water Manager, and (864) 596-2089 or by email at jsquires@cityofspartanburg.org

Sealed Proposals shall be submitted to Carl Wright, Procurement and Property Manager, on or before **February 14, 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.**

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.

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

City of Spartanburg
P. O. Box 5107
Spartanburg, S. C. 29304

Attention: Procurement and Property Division

The following Proposal Number must be placed on the left corner of the outer envelope in order for the bid to be stamped in as accepted on time: Proposal No: 1617-02-14-01

PROPOSAL FOR

Butterfly Branch Linear Park Project

CITY OF SPARTANBURG

Job No. 1701

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 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 has satisfied himself 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: 120 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 ac-companying 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)

INFORMATION FOR BIDDERS

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

1. Bids

a) *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 Butterfly Branch Linear Park Project, Job No. 1701,*** *and the envelope should bear on the outside the Bid Number, name of BIDDER, his 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.*

b) *The Owner may consider informal any bid not prepared and submitted in accordance with the provisions herein and may waive any informalities 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.*

c) *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.*

d) *Each BIDDER is required to state in his proposal his 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.*

e) *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.*

f) *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.*

g) *On the first sheet of the bid form, the bidder shall write his name and address, his 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 bid is used, shall also be shown.*

h) *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.*

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

j) *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.*

k) *Five (5) sets of plans and specifications will be furnished the successful Contractor at no cost and any additional sets requested will be furnished at cost.*

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 himself 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 with the existing conditions there relating to construction and labor, and should fully inform himself as to the facilities involved, the difficulties and restrictions attending the performance of the Contract. The Bidder should thoroughly examine and familiarize himself 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 failure to receive or examine any form or legal instrument or to visit the site and acquaint himself with the conditions there existing and the Local Public Agency will be justified in rejecting any claim based on facts regarding which he 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

a) 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 has not entered into a collusive agreement with any other person, firm, or corporation with regard to any Bid submitted.

b) Before executing any subcontract the successful Bidder shall submit the name of any proposed subcontractor for prior approval and an affidavit substantially in the form provided in Section SUBCONTRACTS under GENERAL CONDITIONS PART I hereof.

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 experience record in constructing the type of improvements embraced in the contract, his 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 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 prorata 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 as provided for in Section CHANGES IN THE WORK under GENERAL CONDITIONS Part I hereof.

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

a) *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 Bid in accordance with the foregoing conditions will be returned promptly.

13. *AWARD OF CONTRACT: REJECT OF BIDS*

a) *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.*

b) *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 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*

a) *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.*

b) *Having satisfied all conditions of award as set forth elsewhere in these documents, the successful Bidder shall, within the period specified in paragraph "a" above, 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 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).*

c) *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.*

d) *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* Not Applicable

a) *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. See GENERAL CONDITIONS PART II.*

b) *The rates of pay set forth under GENERAL CONDITIONS, PART II, 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*

a) *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. (See Section EQUAL EMPLOYMENT OPPORTUNITY under GENERAL CONDITIONS PART I hereof).*

b) *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.

The goals for minority and female participation are applicable to the entire Contractor's Construction work (whether or not it is Federal or federally assisted) performed in the covered areas.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a). And its efforts to meet the goals established for the geographical area where the contract resulting from this solicitation is to be performed. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulation in 41 CFR, Part 60-4. Compliance with the goals will be measured against the total work hours performed.

1. *The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 days of award of any construction subcontract in excess of $10,000.00 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number of the subcontractor; employer identification number; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the contract is to be performed.*

2. *As used in this Notice, and in the contract resulting from this solicitation, the "covered area" is (insert description of the geographical areas where the contract is to be performed giving the state, county, and city, if any).*

GENERAL GUARANTY

3. *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.*

18. 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, S. C.

19. 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.

a) *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.*

20. ENGINEER

Wherever the "Engineer" is referenced in the contract documents, it shall mean the City Storm Water Manager, P. O. Drawer 1749, Spartanburg, S. C. 29304, telephone (864) 596-2089.

NONCOLLUSION AFFIDAVIT OF PRIME BIDDER

State of South Carolina)
ss.
County of Spartanburg)

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

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

2) *He 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[5]

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***

(continued next page)

[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. –1-*

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.*

STATEMENT OF BIDDER'S QUALIFICATIONS

(To be submitted by the Bidder only upon the specific request of the Local Public Agency.)

All questions must be answered and the data given must be clear and comprehensive. This statement must be notarized. If necessary, questions may be answered on separate attached sheets. The Bidder may submit any additional information he desires.

1. Name of Bidder.

2. Permanent main office address.

3. When organized.

4. If a corporation, where incorporated.

5. How many years have you been engaged in the contracting business under your present firm or trade name?

6. Contracts on hand: (Schedule these, showing amount of each contract and the appropriate anticipated dates of completion.)

7. General character or work performed by your Company.

8. Have you ever failed to complete any work awarded to you?

9. Have you ever defaulted on a contract?

10. List the more important projects recently completed by your Company, stating the approximate cost for each, and the month and year completed.

11. List your major equipment available for this contract.

12. Experience in construction work similar in importance to this project.

13. Background and experience of the principal members of your organization, including the officers.

14. Credit Available: $_____.

15. Give Bank Reference:_____.

16. Will you, upon request, fill out a detailed financial statement and furnish any other information that may be required by the City of Spartanburg?

17. The undersigned hereby authorizes and requests any person, firm, or corporation to furnish any information requested by the City of Spartanburg in verification of the recitals comprising this Statement of Bidder's Qualifications.

Dated at _____ this _____ day of, 20____.

_____

By:_____

Title:_____

State of _____)
)
County of _____)

_____ being duly sworn, deposes and says that he/she is _____ of _____ _____ and that the answers to the fore-going questions and all statements therein contained are true and correct.

Subscribed and sworn to before me this the _____ day of _____, 20___.

_____
(Name) Notary Public for (State)

My Commission Expires_____

CERTIFICATION OF NONSEGREGATED FACILITIES

The Bidder certifies that he does not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not permit his employees to perform their services at any location, under his control where segregated facilities are maintained. The bidder certifies further that he will not maintain or provide for his employees any segregated facilities at any of his establishments, and that he will not permit his employees to perform their services at any location under his control where segregated facilities are maintained. The Bidder agrees that a breach of this certification will be a violation of the Equal Opportunity clause in any contract resulting from acceptance of this Bid. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants, and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, or national origin, because of habit, local custom, or otherwise. The Bidder agrees that (except where he has obtained identical certification from proposed subcontractors for specific time periods) he will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding $10,000.00 which are not exempt from the provisions of the Equal Opportunity clause, and that he will retain such certification in his files.

Note: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.

_____

By: _____

Title: _____

Date_____, 20__

Official Address (including Zip Code).

_____

EXHIBIT A

EXHIBIT A
SCOPE OF WORK
(BY OWNER)

The general scope of the project in Division 1 will include site clearing, asphalt removal, rough/fine grading, erosion control, 10' pedestrian trail, asphalt hammerheads, permeable pavers, fencing, site amenities (trash receptacles, benches, bike racks, etc.), bollards, informational kiosks, entrance signs, entrance columns, pavilions, including shop drawings, electrical, irrigation, and landscaping. (3) add alternates will be included in Division 1 – Arch Street streetscape, College Street streetscape, and 10' asphalt trail in lieu of concrete.

The general scope of work for Division 2 will include rough/fine grading, manufactured pedestrian bridge, bridge installation, abutment and column installation, abutment and column stone veneer, and scour protection.

All pipe, catch basin installation, road repair, and resurfacing must be completed per SCDOT and supplied specifications. Contractor will also be responsible for stockpiling of all excavated material. Contractor will be responsible for all traffic control, utility locates/repairs, and any applicable permits and fees.

WORK TO BE COMPLETED IN 120 DAYS.

EXHIBIT A-1
SPECIFICATIONS

SECTION SC
SPECIAL CONDITIONS

1. **SCOPE OF WORK**

The project referred to in the Agreement shall consist of the following major elements:

The general scope of the project in Division 1 will include site clearing, asphalt removal, rough/fine grading, erosion control, 10' pedestrian trail, asphalt hammerheads, permeable pavers, fencing, site amenities (trash receptacles, benches, bike racks, etc.), bollards, informational kiosks, entrance signs, entrance columns, 24'x36' pavilion including shop drawings, electrical, irrigation, and landscaping. (3) add alternates will be included in Division 1 – Arch Street streetscape, College Street streetscape, and 10' asphalt trail in lieu of concrete.

The general scope of work for Division 2 will include rough/fine grading, manufactured pedestrian bridge, bridge installation, abutment and column installation, abutment and column stone veneer, and scour protection.

2. **ENUMERATION OF THE CONTRACT DRAWINGS**

DIVISION 1

Sheet 1.0	Cover Sheet
Sheet 2.0	Existing Conditions Plan
Sheet 2.1	Demolition Plan
Sheet 2.2	Erosion Control Plan
Sheet 2.3	Overall Grading Plan
Sheet 2.4	Grading Enlargement Plan
Sheet 3.0	Overall Trail Layout Plan
Sheet 3.1	Trail Layout Plan (1)
Sheet 3.2	Trail Layout Plan (2)
Sheet 3.3	Pavilion Layout (1)
Sheet 3.4	Construction Details (1)
Sheet 3.5	Construction Details (2)
Sheet 4.0	Landscape Plan (1)
Sheet 4.1	Landscape Plan (2)
Sheet 4.2	Landscape Plan (3)
Sheet 4.3	Landscape Plan (4)
Sheet 5.0	Conduit Plan
Sheet 6.0	Irrigation Plan (1)
Sheet 6.1	Irrigation Plan (2)
Sheet 6.2	Irrigation Plan (3)
Sheet 6.3	Irrigation Plan (4)
Sheet 6.4	Irrigation Plan (5)
Sheet E-1	Electrical Plan (1)
Sheet E-2	Electrical Plan (2)
Sheet E-3	Electrical Plan (3)
Sheet E-4	Electrical Plan (4)
Sheet E-5	Electrical Plan (5)

DIVISION 2

Sheet 7.0	Bridge Layout Plan
Sheet 7.1	Pedestrian Bridge Details (1)
Sheet 7.2	Pedestrian Bridge Details (2)
Sheet 7.3	Pedestrian Bridge Details (3)
Sheet 7.4	Pedestrian Bridge Details (4)
Sheet 7.5	Pedestrian Bridge Details (5)
Sheet 7.6	Pedestrian Bridge Details (6)
Sheet 7.7	Pedestrian Bridge Details (7)

3. **PROTECTION OF THE ENVIRONMENT**

The Contractor will carefully schedule his work so that a minimum amount of the exposed earth will be subject to erosion by rainfall or wind, and he will provide means satisfactory to the Landscape Architect to minimize the transportation of silt and other deleterious material into the stream beds and lakes below the project. Construction shall proceed according to the erosion and sedimentation control standards dictated by the CEPSCI (Certified Erosion Control Prevention and Sediment Control Inspector) Manual.

4. **RECORD DRAWINGS**

The Contractor will maintain in his office one complete set of drawings (including any supplemental sketches) pertaining to the project upon which, at the end of each day's work any deviations from the construction lines shown thereon and all changes ordered by the Landscape Architect will be shown accurately in red pencil. If necessary, supplemental drawings will be made to show details of deviations or changes, and these will be kept with the marked set. The drawings will be available to the Landscape Architect for inspection during construction and at the completion of construction; prior to submitting his estimate for final payment, the drawings will be transmitted to the Landscape Architect for preparation of record drawings.

5. **SPECIFIED MATERIALS**

Attention is drawn to the specification of certain brands or manufacturers of construction materials on the drawings. Unless the phrase "or approved equal" appears in the specification thereof, no substitution or deviation from the product specified will be allowed.

END OF SPECIAL CONDITIONS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. General Submittal Requirements for material, equipment, units of work or finish samples.

2. Submittals.

B. Related Sections:

1. General Conditions and Supplementary Conditions.

2. Division 1 through Division 48.

1.2 GENERAL SUBMITTAL REQUIREMENTS

A. Coordination and Sequencing: Coordinate preparation and processing of submittals with performance of the work so that work will not be delayed by submittals.

1. General: Submittals will be made as directed by the L. A. Prior to submittal for approval, use all means necessary to fully coordinate material including, but not necessarily limited to:

a. Determine and verify interface conditions, catalog numbers, and similar data.

b. Coordinate with other trades as required.

c. Clearly indicate deviations from requirements of the Contract Documents.

2. Grouping of Submittals: Unless otherwise specified, make submittals in groups containing associated items to ensure that information is available for checking each item when it is received. Partial submittals may be rejected as not complying with the provisions of the Contract Documents and the Contractor shall be strictly liable for delays as a result.

B. Preparation of Submittals: Provide permanent marking on each submittal to identify project, date, Contractor, subcontractor, submittal type and similar information to distinguish it from other submittals. Show Contractor's executed review and approval marking and provide space for Landscape Architect's/Owner's "Action" marking. Package each submittal appropriately for transmittal and handling.

C. Identification of Submittals:

1. General: Consecutively number submittals. Accompany each submittal with a letter of transmittal containing pertinent information required for identification and checking of submittals.

2. Internal Identification: On at least the first page of each copy of each submittal, and elsewhere as required for positive identification, clearly indicate the submittal number in which the item was included.

3. Resubmittals: When material is resubmitted for any reason, transmit under a new letter of transmittal and with new submittal number.

4. Submittal Log: Maintain an accurate submittal log for the duration of the Contract, showing current status of submittals at all times. Make the submittal log available for the Landscape Architect's review upon request.

D. Timing of Submittals:

1. General: Make submittals far enough in advance of scheduled dates for installation to provide time required for reviews, for securing necessary approvals, for possible revisions and resubmittals, and for placing orders and securing delivery.

2. Landscape Architect's Review Time: In scheduling, allow at least five (5) calendar days for review by the Landscape Architect following receipt of the submittal.

3. Delays: Delays caused by tardiness in receipt of submittals will not be an acceptable basis for extension of the Contract completion date.

E. Transmittal Form: AIA Form G810 or approved equal.

F. General Distribution: Provide additional distribution of approved submittals to subcontractors, suppliers, fabricators, installers, governing authorities and others as necessary for proper performance of the work. Include such additional copies in initial transmittal where required to receive "Action" marking before final distribution. Record distributions on transmittal forms.

G. Landscape Architect's Review: Review by the Landscape Architect shall not be construed as a complete check, but only that the material, equipment, finish or general method of construction and detailing is satisfactory. Review shall not relieve the Contractor from responsibility for errors which may exist.

H. Action on Submittals:

1. Where submittal must be held for coordination, Contractor will be so advised without delay.

2. Landscape Architects action:

a. Approved: No corrections. Work may proceed.

b. Approved As Noted: Minor amount of corrections. Work may proceed, provided it complies with notations and corrections on submittal. Resubmission not required.

c. Approved Except As Noted: Minor amount of corrections. Items noted are to be clarified further before full approval can be given. Items not noted may proceed. Resubmission required.

d. Disapproved, Resubmit: Do not proceed with work. Revise submittal in accordance with notations thereon, and resubmit without delay to obtain a different action marking.

1.3 SUBMITTALS

A. Shop Drawings:

1. Shop drawings include specially-prepared technical data for this project, including drawings, diagrams, performance curves, data sheets, schedules, templates, patterns, reports, calculations, instructions, measurements and similar information not in standard printed form for general application to a range of similar projects.

2. Provide newly-prepared information, on reproducible sheets, with graphic information at accurate scale (except as otherwise indicated), with name of preparer indicated (firm name). Show dimensions and note which are based on field measurement. Identify materials and products in the work shown. Indicate compliance with standards, and special coordination requirements. Do not allow shop drawing copies to be used in connection with the work without appropriate final "Action" markings by the Landscape Architect.

   a. Scale and measurements: Make shop drawings accurately to a scale sufficiently large to show pertinent aspects of the item and its relationship to the Work.

   b. Initial Submittal: 2 blue-line or black-line prints; one will be returned.

   c. Final Submittal: 3 prints, plus 2 additional prints where required for maintenance manuals; plus number of prints needed for distribution to others (other than Landscape Architect); 2 will be retained and remainder will be returned, one of which is to be marked-up and maintained by the Contractor as "Record Document".

B. Product Data:

1. Product data shall include standard printed information on materials, products, and systems.

2. Collect required data into one submittal for each unit of work or system.

3. Mark each copy to show which choices and options are applicable to project. Include manufacturer's standard printed recommendations for application and use, compliance with standards, application of labels and seals, notation of field measurements which have been checked, and special construction requirements.

4. Maintain one set of product data (for each submittal) at project site, available for reference by Landscape Architect and others.

5. Submittals: Do not submit product data, or allow its use on the project, until compliance with requirements of contract documents has been confirmed by Contractor. Submittals are for information and record, unless otherwise indicated. Submit 2 copies, plus 2 additional copies (which will be returned) where required for maintenance manuals.

   a. At Contractor's option, provide a preliminary single-copy of product data for Landscape Architect's review and "Action".

   b. Installer's Copy: Do not proceed with installation of materials, products, or systems until final copy of applicable product data is in possession of Installer.

C. SAMPLES

1. Samples include both fabricated and unfabricated physical examples of materials (including plant material), products and units of work; both as complete units and as smaller portions of units of work; either for limited visual inspection or (where indicated) for more detailed testing and analysis.

2. Provide units identical with final condition of proposed materials or products for the work. Include "range" samples (not less than 3 units) where unavoidable variations must be expected, and describe or identify variations between units of each set. Provide full set of optional samples where Landscape Architect's selection is required. Prepare samples to match Landscape Architect's sample where so indicated.

3. Include information with each sample to show generic description, source or product name and manufacturer, limitations, and compliance with standards.

4. Samples are submitted for review and confirmation of color, pattern, texture, and "kind" by Landscape Architect. Landscape Architect will not "test" samples (except as otherwise indicated) for compliance with other requirements, which are therefore the exclusive responsibility of Contractor.

   a. Submittal: At Contractor's option, provide preliminary submittal of a single set of samples for Landscape Architect's review and "Action". Submit 3 sets of samples in final submittal; one set will be returned.

   b. Quality Control Set: Maintain returned final set of samples at project site, in suitable condition and available for quality control comparisons by Landscape Architect, and by others.

   c. Reusable Samples: Returned samples which are intended or permitted to be incorporated in the work are so indicated in the individual work sections, and must be in undamaged condition at time of use.

D. Mock-Ups

1. Mock-ups are a special form of samples, which are too large or otherwise inconvenient for handling in specified manner for transmittal of sample submittals.

2. Comply with requirements for “samples” to greatest extent possible and process transmittal forms to provide a record of activity.

E. Inspection and Test Reports: Furnish 2 executed copies, except furnish 2 additional copies where required for maintenance manuals. Furnish additional copies desired for Contractor's use.

F. Warranties: Furnish 2 executed copies, except furnish 2 additional copies where required for maintenance manuals. Furnish additional copies desired for Contractor's use.

PART 2 - PRODUCTS

PART 3 - EXECUTION

END OF SECTION 01 33 00

DIVISION 107300

SPECIALTIES MANUFACTURERS OF PROTECTIVE COVERS

PART 1 - GENERAL

[reference CSI 2004 MasterFormat™ Division 10
(Specialties Manufacturers) category 7300 (Protective Covers)]

1.1 DESCRIPTION OF PRODUCT

A. **[WLG][24' x 36'] (Poligon Wood Rectangle) with [Multi-Rib Metal Roof "R" Panel] over Tongue and Groove roof.**

B. ROOF SLOPE: **[3/12]**.

C. Minimum Clearance Height (MCH): **[8] ft**. Minimum clearance height under the structure indicates the lowest height of a member from finish grade for clearance under the structure. This is generally the clearance under roof eave or frame, whichever is lower.

D. GLULAM: Glue Laminated structural beam engineered for the structure and manufactured by a certified member of the American Institute of Timber Construction.

1.2 REFERENCES

A. REFERENCE STANDARDS:
   1. ASTM - American Society for Testing and Materials.
   2. AITC - American Institute of Timber Construction

1.3 SUBMITTALS

A. GENERAL SUBMITTAL:
   Submit [2] sets of submittal drawings and [2] sets of calc books, both signed and sealed by a Professional Engineer licensed in the State of [South Carolina].

B. PRODUCT DESIGN REQUIREMENTS:
   The building shall meet the following design requirements as shown on the drawings:
   1. Building Code: See drawings.
   2. Ground Snow Load (Pg): See drawings.
   3. Basic Wind Speed (V): See drawings.
   4. Seismic Design: See drawings.

C. SUBMITTAL REQUIREMENTS:
   Calculations and Submittal drawings shall include, at a minimum:
   1. Calculations:
      Structural and foundation designs are to be provided by an engineer licensed in the state for which the structure is to be erected in accordance to the governing building codes.
   2. Submittal Drawings:
      a. Buried Column layout or if applicable, the Anchor bolt layout.
      b. Foundation design.
      c. Member sizes and locations.

d. Structural connection details, including bolt sizes and plate thicknesses.
e. Roof trim and connection details for installation clarity.

D. FOUNDATION DESIGN:
1. The shelter shall be set with foundations designed by manufacturer.
2. Foundation materials shall be provided by contractor.
3. Owner shall provide manufacturer with complete information about the site including soil bearing capacity and lateral load capacity.
4. If soil data are not provided, foundations will be designed to the minimum values identified in the governing building code.

E. ANCHOR BOLTS:
Anchor bolts shall be provided by manufacturer.

1.4 QUALITY ASSURANCE

A. MANUFACTURER QUALIFICATIONS:
1. Minimum of (10) years in the shelter construction industry.
2. Manufacturer shall be a member of and hold full certification from the American Institute of Timber Construction (AITC).
3. Quality control shall be provided in accordance with ANSI/AITC A190.1-latest edition, American National Standard for Wood Products-Structural Glued Laminated Timber, and the American Institute of Timber Construction Inspection Manual AITC-200.
4. Laminating lumber shall be kiln-dried, with 15% moisture content, Southern Yellow Pine graded to meet the requirements of Standard Specifications for Structural Glued Laminated Timber, AITC 117. Lumber combination shall be determined by the design requirements for each component and designated on the fabricator's shop drawings.

1.5 FIELD OR SITE CONDITIONS

A. Foundations shall be at the same elevation unless specifically noted otherwise on the drawings.

1.6 MANUFACTURER WARRANTY

A. Shelter will have a (1) year limited warranty on glulam frame members against any failure due to faulty laminating end-joints, delamination of glue lines, faulty workmanship, and defective raw materials that would adversely affect the structural integrity of the products.

B. Pass through warranty of Metal Roof manufacturer shall be provided upon request.

PART 2 - PRODUCTS

2.1 SHELTER SYSTEM AND MATERIALS

A. SUPPLIERS:
1. Acceptable Supplier: Poligon, a Product of Porter Corp, 4240 N 136th Ave., Holland, MI 49424; 616.399.1963; E-mail: info@poligon.com; www.poligon.com. Receive pricing from Sue Churchich at 843-290-5755.
2. The product shall be provided by a supplier who has a minimum of (10) years in the

business making pre-manufactured shelters.

B. SUBSTITUTION LIMITATIONS:
   1. Substitutions must be approved a minimum of (10) days before bid. All approved manufacturers shall be notified in writing before the bid date and shall not be allowed to bid without written notification.
   2. Alternate suppliers must meet the qualifications listed under Section 1.4 QUALITY ASSURANCE.
   3. Staff members' cumulative experience in fabrication will not be an acceptable alternative for manufacturer's experience in the shelter construction industry.

C. PRODUCT REQUIREMENTS AND MATERIALS:
   1. GENERAL: The pre-engineered package shall be pre-cut unless otherwise noted and pre-fabricated which will include all parts necessary to field construct the shelter. The shelter shall be shipped knocked down to minimize shipping expenses. Field labor will be kept to a minimum by pre-manufactured parts. Onsite welding shall not be necessary or onsite drilling of the structural components shall not be necessary.
   2. REINFORCED CONCRETE:
      a. Concrete shall have minimum 28-day compressive strength of 3,000 psi and slump of 4" (+/- 1"), unless otherwise noted on the drawings.
      b. Reinforcing shall be ASTM A615, grade 60.
   3. COLUMNS
      Shelter to have surface mounted glued laminated wood columns with hot dipped galvanized steel column boots. Glulam columns to be pressure-treated at .6 lbs per cubic foot with pentachlorophenol Type "C" prior to gluing, in accordance with America Wood Preservers Association Standards. Waterborne treatment substitution will not be accepted. Columns shall be individually wrapped for weather protection.

      SEE DRAWINGS FOR COLUMN DETAILS

   4. STRUCTURAL FRAMING:
      Beams and Purlins shall be fabricated with #1 Grade, kiln-dried, with 15% moisture content, Southern Yellow Pine. Frame will have a factory-applied stain with color chosen from manufacturer's standard color chart: **Staincolor: Natural**. Beams and purlins shall be individually wrapped for weather protection.
   5. COMPRESSION MEMBERS:
      Compression rings of structural channel or welded plate shall be minimum ASTM A36 or compression tubes or structural steel tube shall only be ASTM A500 grade B.
   6. CONNECTION REQUIREMENTS:
      a. If anchor bolts are used, they shall be ASTM F1554 (Grade 36) unless otherwise noted.
      b. Structural fasteners shall be hot dipped galvanized ASTM A325 high strength bolts and A563 high strength nuts.
      c. No field welding shall be required to construct the shelter.
      d. All factory welds shall be free of burrs and inconsistencies.
   7. ROOFING MATERIALS:
      a. PRIMARY ROOF DECK OF TONGUE AND GROOVE (T&G):
         1) T&G shall be of two-inch nominal #1 Grade, end matched, single tongue and groove with v-joint bottom face, kiln-dried to an average of 15% moisture content, Southern Yellow Pine.

2) Manufacturer shall supply 30 pound felt and drip edge if both primary and secondary roofs are being supplied by the manufacturer.
3) Contractor shall cut T&G down to required lengths from boards that received the factory applied stain with color supplied from manufacturer's color chart: **Staincolor: Natural.**

b. SECONDARY ROOF SYSTEM OF "R" PANEL METAL ROOFING (MR):
1) Roofing shall be 24 gauge ribbed galvalume steel sheets, with ribs 1 3/16" high and 12" on center.
2) Roof surface shall be painted with Kynar 500 to the manufacturer's standard color: **[ColorName]**.
3) Roof panels shall be factory precut to size and angled to provide ease of one-step installation.
4) Metal roofing trim shall match the color of the roof and shall be factory made of 26 gauge Kynar 500 painted steel.
5) Trim shall include panel ridge caps, hip caps, eave trim, splice channels, rake trim, roof peak cap, and corner trim as applicable for model selected. Trim may need to be cut to length and notched. Installation drawings shall have detailed information on how to cut and affix roof trim.
6) Ridge, hip, and valley caps shall be pre-formed with a single central bend to match the roof pitch and shall be hemmed on the sides.
7) Roof peak cap shall be pre-manufactured.
8) Manufacturer shall supply painted screws and butyl tape.

8. FINISHES:
a. HOT DIPPED GALVANIZED FINISH ON PLATES:
1) Steel connections, fabrications and assemblies shall be galvanized after manufacturing by the hot dip process in accordance with ASTM A123. The composition of metal in the galvanizing bath shall be no less than 98% zinc.
2) The galvanized coating shall be continuous, adherent, and free from any detrimental defect.
3) Appearance of galvanized members shall be consistent with ASTM A123.

PART 3 - EXECUTION

3.1 INSTALLERS STORAGE AND HANDLING

A. Protect building products after arrival at destination from weather, sunlight, and damage. Members shall be placed on blocks well off the ground and separated with wood strips so that air can circulate around each member. Cover top and bottom with moisture-resistant paper.

B. Installer shall store product elevated from soils to allow air circulation and to not introduce mold, fungi decay or insects to the product.

B. Product must be handled with protective straps or padded forks if lifting with mechanical equipment. Use of chain or cable to lift product into place will not be accepted and may void manufacturer's warranty.

D. To curtail warping of lumber, all units shall remain packaged while being stored.

E. The secondary roof shall be installed immediately after the primary roof to prevent moisture damage to wood.

3.2 ERECTION

A. FOUNDATIONS:
The shelter shall be placed on foundations designed by the manufacturer, with materials by others. Design approved by the Engineer of Record identified in Section 1.3 D. FOUNDATION DESIGN.

SEE DRAWINGS FOR CONSTRUCTION DETAILS

B. INSTALLATION:
Install all components according to manufacturer's installation instructions and these specifications.

C. GENERAL CONTRACTOR:
Interface with other work is to be coordinated by the customer or the customer's agent. Certain designs have electrical or other plumbing requirements that are not supplied by Poligon.

D. TOLERANCES:
Tolerances on structural members are set according to AITC construction practices, abided in the factory, and cannot be increased. No field slotting or opening of holes will be allowed. It is therefore essential that contractors conform to the tolerances specified on the installation drawings for anchor bolt or column layout details.

3.3 REPAIR

A. Do not attempt any field changes without first contacting Poligon.

3.4 FIELD OR SITE QUALITY CONTROL

A. Field or Site Tests and Inspections are not required by Poligon but may be required by the customer or by the local building inspector.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Bench
2. Trash Receptacle
3. Picnic Table
4. Bike Rack
5. Bollards

B. Related Sections:

1. Division 1: General Requirements
2. Section 03 30 53: Miscellaneous Cast-In-Place Concrete
3. Section 31 22 00: Earthwork

1.2 SUBMITTALS

A. Submit manufacturers' recommendations for installation of site furnishings.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Immediately upon delivery to site, place materials in area protected from weather and damage.

B. Damaged or defective units shall be replaced.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Bench:

1. Manufacturer: Thomas Steele
   1080 Uniek Drive
   Waunakee, WI 53597
   (800) 448-7931
   www.madrax.com
2. Model: CRBH-6(2,4,5,8) Carnival Bench, Horizontal Strap
3. Description: or Equal Type

B. Trash Receptacle:

1. Manufacturer: Thomas Steele
   1080 Uniek Drive

Waunakee, WI 53597
(800) 448-7931
www.madrax.com

2. Model: CRTRN-32 Black finish
   Carnival Trash Receptacle 32 Gal., 1.315 OD Pipe, No Top/Base Ring

3. Description: or Equal Type

C. Picnic Table:

1. Manufacturer: Thomas Steele
   1080 Uniek Drive
   Waunakee, WI 53597
   (800) 448-7931
   www.madrax.com

2. Model: CRTP-8S Carnival Picnic Table Set, 8Ft

3. Description: or Equal Type

D. Bike Rack:

1. Manufacturer: Thomas Steele
   1080 Uniek Drive
   Waunakee, WI 53597
   (800) 448-7931
   www.madrax.com

2. Model: CS200-5-IG (SF,SG) Capitol Square Bike Rack, 5 Bike, Surface or in Ground Mount

3. Description: or Equal Type

E. Bollard:

1. Manufacturer: Reliance Foundry CO. LTD.
   Unit 207, 6450 -148 Street
   Surrey, BC, Canada V3S-7G7
   Phone: (888) 735-5680
   www.reliance-foundry.com
   info@reliance-foundry.com

2. Model: R-8464-RA
   Color: BLACK SEMI GLOSS TEXTURED

3. Description: or Equal Type

PART 3 - EXECUTION

3.1 PREPARATION

A. Layout and stake locations of site furnishings. Obtain approval of Landscape Architect prior to installation.

3.2 INSTALLATION

A. Install site furnishings according to manufacturers' recommendations.

B. Coordinate installation between various trades involved in the installation.

C. Set site furnishings plumb, level, and true to line and elevations indicated on the Drawings.

D. Secure site furnishings in place according to methods indicated on Drawings.

3.3 CLEANING

A. Upon installation, remove stains using a neutral cleaner acceptable to unit manufacturer. Flush surfaces with clear water.

END OF SECTION 12 93 00

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Rough Grading.

2. Fine Grading.

B. Related Sections:

1. Division 1: General Requirements

2. Section 32 93 00: Plants

1.2 SUBMITTALS

A. Submit the following materials certifications:

1. Pre-emergent Herbicide.

B. Test Reports: submit copies of testing reports to Landscape Architect and Owner of the following:

1. Topsoil Analysis.

2. Fill and backfill analysis.

3. Field Soil Density Tests.

4. Soil Compaction Tests.

1.3 QUALITY ASSURANCE

A. Perform earthwork operations according to local codes and industry safety standards.

B. Topsoil Analysis Tests: performed by State Agricultural Experiment Station, Soil and Water Conservation District, State University, or other qualified private testing laboratory, as approved by Landscape Architect.

C. Provide and pay for soil testing and inspection for quality control testing during earthwork operations.

1.4 SITE CONDITIONS

A. Environmental Requirements:

1. Suspend fill operations when environmental conditions are unfavorable for proper compaction of soil layers. Do not use muddy or frozen fill materials. Do not place fill materials on muddy or frozen subgrade surfaces.

B. Existing Conditions:

1. Promptly notify Landscape Architect of unexpected sub-surface conditions.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Suitable Soil Materials: Inert subsoil material meeting the following requirements:

1. Maximum laboratory dry weight shall be not less than 90 pounds per cubic foot.

2. Soils weighing less than 100 pounds per cubic foot shall not be used in the top 12 inches of the sub-grade.

2. Liquid Limit: not to exceed 65 according to AASHTO T89.

3. Plasticity Index: soils with liquid limits between 40 and 65 shall have a plasticity index not less than the liquid limit minus 30 according to AASHTO T90.

C. Fill Material: Inert subsoil material free of organic matter, rubbish, debris, and rocks greater than 6 inches diameter and meeting the following requirements:

1. Meet requirements of Suitable Soil Materials above.

2. Provide imported fill material as required to complete work. Obtain rights and pay all costs for imported materials.

3. Utilize on-site borrow fill material if available, when borrow fill is required to complete the work. Verify on-site borrow fill material and locations with Landscape Architect. Regrade and restore areas used for on-site borrow fill as directed by Landscape Architect.

4. If the Contractor places more borrow than is required and thereby causes waste of excavation, the amount of such waste will be deducted from the borrow placed.

5. Proposed fill material shall be inspected, tested, and laboratory report issued prior to use in work.

6. Suitable excavated materials removed to accommodate new construction may be used as fill material subject to laboratory inspection and testing.

D. Drainage Fill: AASHTO M43 #6 (3/8 to 3/4 inch) clean uniformly graded stone or gravel.

E. Topsoil:

1. Natural, friable, loamy soil characteristic of productive soil in vicinity. It shall be reasonably free of stones larger than 1 inch, clay lumps, roots, toxic substances, debris, and other foreign matter harmful to plant growth.

a. Shall contain not less than 15 percent nor more than 40 percent organic matter by volume as determined by loss on ignition of samples oven dried to constant weight at 212 F.

b. pH range: Coordinate pH requirements with plant requirements described in Section 32 92 00 and Section 32 93 00. Imported topsoil shall have a pH range of 6.0 to 7.0.

c. Composition of Soil passing No. 10 Sieve:

i. Sand: 20 to 80 percent
ii. Silt: 10 to 75 percent

iii. Clay: 5 to 40 percent

2. Utilize on-site stockpiled topsoil as required to complete the work. Topsoil not meeting the above requirements shall be amended according to Section 32 93 00.

3. Provide imported topsoil material as required to complete the work. Obtain rights and pay all costs for imported materials.

4. Obtain soil amendment and fertilization recommendations from testing agency for the plant materials specified for the project.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify existing grades indicated on Drawings. Notify Landscape Architect of discrepancies prior to start of grading work.

B. Approval of Rough Grades:

1. Examine existing rough grades produced by other contractor's work. Report to Owner and Landscape Architect conditions that do not meet the following requirements:

a. Soil is free of materials harmful to plants and free of debris 2 inches or greater in dimension to a depth of 12 inches.

b. Surface drainage functions as indicated on Drawings.

c. Rough grade elevations are plus or minus 2 inches from proposed finish grades.

2. Perform no work of this Contract in areas not meeting the above requirements until corrections are made and resumption of work authorized by Landscape Architect.

3.2 PREPARATION

A. Protection of Existing Utilities:

1. Before starting grading and excavation, establish the location and extent of underground utilities in work area. Protect existing utilities during earthwork. Perform excavation work near utilities by hand.

2. Remove abandoned utility service lines from areas of excavation. Consult utility company prior to removal to determine if specific directions are required. Cap, plug, or seal abandoned lines and identify termination points at grade level with markers.

3. Accurately locate and record abandoned and active utility lines rerouted or extended on project record documents.

B. Protection of Persons and Property:

1. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

C. Excess Water Control

1. Provide berms or channels to prevent flooding of subgrade. Promptly remove all water collecting in depressions.

2. Replace soil softened or eroded by water and recompact.

3. Provide and maintain dewatering system components to convey water away from excavations.

3.3 ROUGH GRADING

A. Perform grading within contract limits to new elevations, levels, profiles, and contours indicated. Provide subgrade surfaces parallel to proposed finished surface grades. Provide uniform levels and slopes between new elevations and existing grades.

B. Grade surfaces to ensure positive drainage away from structures and to prevent ponding and pockets of surface drainage.

C. Provide subgrade surfaces free from irregular surface changes. Provide the following subgrade tolerances:

1. Unpaved Areas: plus or minus 0.10 feet. Maximum 0.10 feet variation in 10 feet.

2. Paved Areas: plus 0 and minus 0.04 feet. Maximum 0.04 feet variation in 10 feet.

3. Horizontal measurement of swale and ditch centerlines to structures shall not be 1 foot less than plan dimensions and locations.

4. Finish required will be that ordinarily obtained from either blade-grader or scraper operations.

5. Provide subgrade surface free of exposed boulders or stones exceeding 4 inches in greatest dimension in paved areas and 2 inches in greatest dimension in unpaved areas.

6. Lawn and planting areas: allow for 6 inches average depth of topsoil at lawn and planting areas, except as otherwise specified.

7. Slope subgrade surfaces away from building walls.

3.4 FINE GRADING

A. Uniformly distribute and spread topsoil. Provide 6 inch depth at lawn and planting areas, except as otherwise specified.

B. Fine grade topsoil to lines and elevations indicated on Drawings, eliminating rough and low areas to ensure positive drainage. Maintain levels, profiles, and contours of subgrades.

C. Set fine grade of plant beds 1 inch below adjacent walks or curbs.

D. Remove stones, roots, weeds, and debris while spreading topsoil materials. Rake surface clean of stones one (1) inch or larger in diameter.

E. Manually install topsoil at trees to remain. Avoid damage to root systems.

3.5 COMPACTION

A. Moisture Conditioning: Moisture Condition material by aerating or watering and thoroughly mix material to within plus or minus 3 percent of optimum moisture content for compaction.

B. Compact fills, backfills, and subgrades to minimum percentage of density for each area classification.

1. Unpaved Areas: compact each layer of fill and embankments to minimum of 85 percent of maximum dry density.

2. Paved Areas and Construction Foundations: compact each layer of fill and subgrade to minimum of 95 percent of maximum dry density.

C. Percentage of maximum dry density shall be determined by the AASHTO T99 and shall be within plus or minus 2 percent of the optimum moisture content.

D. Water settling, puddling, and jetting of fill and backfill materials as a compaction method are not acceptable.

3.6 VEGETATION CONTROL

A. Apply pre-emergent herbicide to subgrade surfaces in areas of proposed paving and aggregate surfaces.

B. Apply pre-emergent herbicide in strict accordance with manufacturer's installation instructions and recommended application rate.

3.7 FIELD QUALITY CONTROL

A. Obtain samples as required by testing agency.

B. Topsoil: Take representative samples of topsoil proposed for use in proposed planting areas and submit to testing laboratory. Provide the following data:

1. pH factor.

2. Mechanical analysis.

3. Percentage of organic content.

4. Recommendations on type and quantity of additives required to establish satisfactory pH factor and supply of nutrients to bring nutrients to satisfactory level for planting.

3.8 PROTECTION

A. Protect newly graded areas from traffic and erosion until work is accepted. Keep free from trash and debris.

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

C. Scarify, re-shape, and compact to required density areas disturbed by construction operations or adverse weather.

3.9 DISPOSAL

A. Remove unsuitable excavated material, surplus material, rock, trash, and debris from the site.

END OF SECTION 31 22 00

Part 1- GENERAL

1.1 DESCRIPTION

A. Section Includes

1. Final subgrade preparation and paving base
2. Asphalt paving
3. Repairing and resurfacing existing asphaltic concrete paving
4. Asphalt curbs
5. Pavement surface sealer
6. Pavement stripings and markings
7. Parking blocks

B. Related sections:

1. Division 1: General Requirements
2. Section 02 41 13: Demolition
3. Section 31 22 00: Earthwork
4. Section 32 11 00: Base Courses
5. Section 32 11 23: Site Drainage

1.2.1 REFERENCES

1. Asphalt Institute, (AI).
2. International Slurry Seal Association, (ISSA).

1.3 QUALITY ASSURANCE

A. Testing and inspection: Performed by a qualified independent testing laboratory that meets ASTM E329 standards.

B. Provide and pay for testing and inspection during paving operations. Laboratory and inspection service shall be acceptable to the Landscape Architect. (Density testing only)

C. Provide material furnished by a bulk asphaltic concrete producer regularly engaged in the production of hot-mix, hot-laid asphaltic concrete paving materials.

D. Construct street and access driveway curb cuts and entrance apron paving in accordance with SCDOT requirements.

E. Saw cut areas to be removed and protect pavement to remain.

1.4 SUBMITTALS

A. Product data

1. Submit complete materials list of items proposed for the work. Identify materials source.

2. Submit product data for the following:

a. Pavement striping paint and thermoplastic.

B. Submit reports for testing and inspection of the following:

1. Compaction operations.

C Delivery Tickets: submit copies of delivery tickets and truck weigh tickets to Landscape Architect and South Carolina Department of Transportation. Quantities requested on payment applications must have appropriate tickets submitted for consideration of payment.
The following requires a weight ticket: Graded Aggregate Base

1.5 PROJECT CONDITIONS

A. Do not apply prime and tack coat materials when temperature is 50 degrees F or below. Do not apply to wet base surface.

B. Install asphalt surface materials only when base is dry and air temperature is 40 degrees F or above.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Bituminous plant mixes shall be covered between plant and site to protect from inclement weather and excessive cooling.

B. Bituminous plant mixes shall be delivered to site at a temperature between 225 degrees F and 325 degrees F.

1.7 SEQUENCING AND SCHEDULING

A. Coordinate installation of asphaltic concrete paving with installation of site utilities and utility sleeving indicated on Drawings.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Comply with Asphalt Institute (AI) MS-3 Asphalt Plant Manual for material storage, control and mixing, and for plant equipment and operation.

B. Graded 3” asphaltic base course

C. Prime coat: MC-70 or MC-250 cut back asphalt

D. Asphaltic leveling course: Asphalt Institute (AI) SS-1 Specification PM-1 dense graded asphaltic concrete mix.

E. Asphaltic leveling course: type "F" mix

F. Asphaltic surface course: Asphalt Institute (AI) SS-1 Specification PM-1 dense graded asphaltic concrete mix.

G. Asphaltic surface course: Min.1- ½" Type "H" mix

H. Prime coat: Primer shall be an anionic asphalt emulsion suited to the purpose of providing a good, sound surface on which to apply pitch, coal tar emulsion (coating for bituminous pavements).

I. Oil spot primer: Primer shall be applied on all areas of the pavement where there are live oil and grease spots. Mixture shall be one (1) part primer to one (1) part gasoline.

J. Pavement surface sealer: Coal tar pitch emulsion meeting Federal Specification R-P-355D Requirements.

K. Pavement marking paint: Factory-mixed, quick-drying, non-bleeding paint specifically formulated for marking asphaltic concrete surfaces, white or yellow.

L. Parking Blocks: Pre-cast reinforced concrete, 8- inch width by 6- inch height by 72- inch length, with minimum of two anchor pin holes

M. Anchoring Pins: Provide ½ inch diameter by 24-inch length hot dipped galvanized finish steel pins for securing parking blocks.

PART 2- EXECUTION

3.1 EXAMINATION

A. Examine subgrades and installation conditions. Do not start asphaltic concrete paving work until unsatisfactory conditions are corrected.

3.2 PREPARATION

A. Protect adjacent work from damage, soiling, and staining during paving operations.

B. Field verify extent and location of paving scheduled for replacement, repair, and resurfacing. The work includes:

1. Removal and replacement of existing asphaltic concrete pavement surface and base materials.

2. Filling trenches in existing paving, repairing pavement seams and providing butt type joint paving.

3. Providing seal coat surface treatment.

4. Providing prime coat treatment.

5. Overlay of existing pavement surfaces.

3.3 INSTALLATION: GENERAL

A. Thoroughly clean existing pavement surfaces by air blowing, brooming or vacuuming before starting repair

or resurfacing operations.

B. Application of Primer: Primer shall be applied to all areas to receive sealer coat, except where problem areas exist. These problem areas shall be primed with oil spot primer as described below. Primer shall be applied to existing asphaltic concrete pavement following the cleaning process described Prime Coat paragraph. The rate of application shall be one gallon of undiluted material per 500 square feet of surface areas. Material to be used for prime coat and the construction procedure shall be submitted for approval in triplicate, to the Owner, no less than 10 calendar days prior to placement of these materials. Prime material shall be diluted for application at the mixing ratio from 4 to 1 up to 7 to 1 with the 4 and 7 parts water to 1 part primer. Primer material can be spread with brushes, squeegees, or spray. The primer shall be thoroughly dry before applying sealer coat. A minimum drying time shall be one-half (½) hour for sunny, warm, conditions and one (1) hour for overcast conditions. All areas primed shall be sealed the same day as primed. Care shall be used to prevent an excess accumulation of primer that can result in slippage of seal coat.

C. Grade control: Establish and maintain the required lines and grades, including crown, inverted crown, and cross-slopes, for each course during paving operations.

D. Tolerances:

1. In-place compacted thickness:

   a. Surface Course: Plus 1/4 inch maximum, minus 0 inches.

2. Finished surface smoothness:

   a. Surface Course: Maximum 1/8 inch in 10'-0", any direction.

3. Finished surface elevations: Maximum 1/2 inch plus and 1/2 inch minus. Grade deviation from proposed grades shall maintain surface drainage as indicated on Drawings.

3.4 PAVEMENT REPAIR

A. Resurfacing at existing trenches:

1. Remove and dispose of existing trench fill to subgrade level.

2. Install new pavement as specified below.

B. Pavement seams:

1. Remove and dispose of existing loose asphaltic concrete surface material.

2. Fill seams with an emulsion slurry or liquid asphalt mixed with sand.

3. Wipe treated surface with a rubber edged squeegee to eliminate build-up.

4. Install tack coat.

5. Install leveling and surface courses.

C. Pavement butt type joints:

1. Coordinate junction of new and existing pavement. Saw cut existing pavement to provide a uniform straight line transition. Meet existing surface levels and maintain drainage slopes. Feathering of transitions is not acceptable.

2. Where existing asphaltic concrete surfaces abut existing asphaltic concrete horizontal surfaces, remove and dispose of existing asphaltic concrete for a width of 24 inches.

3. Install prime or tack coat as applicable.

4. Install leveling and surface courses.

D. Repair of Existing Pavement Depressions:

1. Repair existing asphaltic pavement before installing new surface materials. Cut out depressions a minimum depth of 1" with vertical cuts. Install fresh surface materials and compact with rolling equipment. Feathering of patches is not acceptable.

3.5 INSTALLATION: BASE MATERIALS

A. Preparation of subgrade: Prepare subgrade as specified in Section 31 22 00. Proof roll subgrade surface to check for unstable areas and areas requiring additional compaction.

B. Install aggregate base.

C. Compact aggregate base material to 95% maximum dry density by med. Proctor test.

3.6 INSTALLATION: SURFACE MATERIALS

A. Remove loose and foreign material from compacted base immediately before application of surface materials. Do not start surface work until all other work which may damage the finish surface is completed.

B. Apply prime coat uniformly to aggregate base at the rate of 0.15 to 0.25 gal. per sq. yd. Allow to dry and cure as required.

C. When asphalt surface material is not installed immediately following the bituminous aggregate base course installation, apply tack coat to base course, at the rate of 0.05 to 0.10 gal. per sq. yd. Allow to dry and cure as required.

D. Apply tack coat to contact surfaces of existing pavement, curbs, and structures abutting pavement. Clean surfaces to receive tack coat of loose materials prior to application.

E. Install asphalt surface materials in single course to total compacted depth.

F. Install overlay surface materials at areas scheduled for resurfacing in single course, graded to provide positive drainage.

G. Place, spread, and strike off the asphalt concrete mixture on a properly prepared and conditioned surface. Inaccessible and small areas may be placed by hand. Place each course to the required grade, cross-section, and scheduled compacted thickness.

H. Place materials in strips as wide as possible. After the first strip has been placed and rolled, place all succeeding strips and extend rolling to overlap previous strips. Complete base course for a section before

placing surface course materials.

I. Construct joints between old and new pavement, and between successive days' work. Joints shall have the same texture, density, and smoothness as other sections of the asphalt concrete course.

J. Begin rolling operations when the asphalt concrete mixture will bear the weight of the roller without excessive displacement. Compact areas inaccessible to rollers with vibrating plate compactors.

K. Perform breakdown, second and finish rolling until the asphalt concrete mixture has been compacted to the required surface density and smoothness. Continue rolling until all roller marks are eliminated. Provide a smooth compacted surface true to thickness and elevations required.

L. After final rolling, do not permit vehicular traffic on the pavement until it has cooled and hardened and in no case sooner than 8 hours.

M. Patching: Remove and replace paving areas mixed with foreign materials and defective areas. Cut-out unsuitable areas and fill with fresh, hot asphaltic surface course. Compact by rolling to maximum surface density and smoothness.

N. Patch and repair existing street paving damaged or removed to accommodate new curbs, walks, and entrance aprons. Concrete bases, where required, will be provided under Section 03 30 53.

3.7 PAVEMENT SURFACE SEALER

A. Thoroughly clean surface of dirt and loose material before application of sealing materials.

B. Apply two coats of pavement surface sealer or in accordance with manufacturer's recommended coverage rate and application specifications. Allow first coat to dry thoroughly before applying second coat. Apply at a rate of 2 gallons per 100 square feet.

1. Materials: The coal tar emulsion used shall meet or exceed the requirements of Federal Specification R-P-355d, dated 16 April 1965.

2. Submittals: The Contractor will be required to furnish the brand name and application procedures, for approval by the Owner at least ten (10) days prior to placement of the materials. The above information shall be submitted as follows: One (1) original and three (3) copies, assembled in set.

3. Rate of Application: The approved pitch, coal tar emulsion shall be applied at the rate of 2 gallons per 100 square feet of surface covered, giving complete and uniform coverage. Invoices for materials used shall be required by the Owner to determine rate material was applied.

4. Application Procedures of Methods: The approved coating shall be applied by spreading with brushes, squeegees, or by spray application, or the combination of these methods. Care shall be exercised in preventing overspray from blowing into buildings, walks, autos, and the surrounding area if spray method is used.

3.8 PAVEMENT STRIPING AND MARKINGS

A. Thoroughly clean finished asphalt surfaces before applying striping and markings. Remove loose materials, dirt, and dust.

B. Apply marking paint, at manufacturer's recommendation rates, with mechanical equipment. Provide uniform

lines with straight edges, 4" minimum width.

C. Provide lines, lettering, and markings shown to define parking spaces and traffic flow.

1. Stencil all parking spaces noted as handicapped parking with the international symbol of access.

3.9 FIELD QUALITY CONTROL

A. When requested, perform laboratory tests on asphalt pavement mixes to determine compliance with specified requirements.

B. Test in-place asphalt base course and surface courses for compliance with density and thickness. Take not less than 4" diameter pavement specimen holes to match adjacent work.

1. Average density of in-place material: Equal to or greater than 97%, with no individual determination less than 95% of average density of laboratory specimens.

2. Perform 1 test for density for each course for each day's work.

3. Thickness: Make 1 test (minimum) for each 5,000 sq. ft. of each type of paving.

C. Test for surface smoothness with 10'-0" straight-edge. Deficient areas shall be defined, removed, and replaced, or adjusted to design thickness by methods acceptable to Landscape Architect.

D. When, during progress of work, field tests indicate that installed compacted materials do not meet specified requirements, remove defective materials, install new materials, and retest at Contractor's expense, as directed by the Landscape Architect.

3.10 CLEANING

A. Perform cleaning during installation of the work and upon completion of the work. Remove from site all excess materials, debris, and equipment. Repair damage resulting from paving operations.

B. Sweep pavement and wash free of stains, discolorations, dirt, and other foreign material immediately prior to final acceptance.

END OF SECTION 32 12 16

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PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Formwork.
2. Reinforcing and accessories.
3. Concrete walks, and paving.
4. Concrete bases.
5. Cast-in-place concrete foundations, retaining walls, and miscellaneous structural concrete.

B. Related Sections:

1. Division 1: General Requirements.
2. Section 32 22 00 Earthwork.
3. Section 32 11 00: Base Courses.

1.2 REFERENCES

A. American Concrete Institute, ACI.

1.3 SUBMITTALS

A. Product Data:

1. Submit complete materials list of items proposed for the work. Identify materials source.

B. Quality Control Submittals:

1. Submit concrete mix designs. Obtain approval before placing concrete.
2. Submit copies of concrete test reports. Test results shall be reported in writing to Landscape Architect and Owner on same day that tests are made. Reports of compressive strength shall contain the following:

a. Project identification name and number
b. Date of concrete placement
c. Name of concrete testing service
d. Concrete type and class
e. Location of concrete

f. Design compressive strength at 28 days

g. Concrete mix proportions and materials

h. Compressive breaking strength and type of break for both 7-day tests and 28-day tests.

3. Submit material certifications for aggregates, reinforcing, and joint fillers.

D. Submit concrete delivery tickets. Show the following:

1. Batch number.

2. Mix by class or sack content with maximum size aggregate.

3. Admixtures.

4. Air content.

5. Slump.

6. Time of loading.

1.4 QUALITY ASSURANCE

A. Testing and Inspection: Performed by a qualified independent testing laboratory that meets ASTM E329 standards.

B. Provide and pay for testing and inspection during concrete operations. Laboratory shall be acceptable to the Landscape Architect.

C. Maintain field records of time, date of placing, curing, and removal of forms of concrete in portion of work.

D. Field Samples: Before installing concrete work, provide a sample panel, minimum 4'-0" x 4'-0" and minimum 4 inches thick, using specified materials. Show color, texture, pattern, edging, and joint treatments. Correct and rebuild sample panel until Landscape Architect's acceptance of the work. Retain panel during construction as a standard for completed concrete work.

1. The approved sample panel may be a portion of the Work and remain in place at Contractor's own risk. Location as directed by the Landscape Architect.

2. Provide a sample panel for each type of concrete surface finish required in Work.

E. Do not change source or brands of cement and aggregate materials during the course of the Work.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store decorative exposed aggregates in segregated area to prevent mixing with foreign materials.

B. Deliver curing materials, admixtures, and retarders in manufacturer's standard unopened containers with labels legible and intact. Store and protect from freezing and damage.

C. Store cement, aggregates, and other materials in such a manner as to prevent deterioration or contamination with foreign matter. Each size aggregate is to be stored separately. Cement which has caked, partially set, or otherwise deteriorated shall not be used in the concrete.

D. Do not subject concrete to any procedure which will cause segregation.

E. Do not use concrete which becomes nonplastic and unworkable, or does not meet the required quality control limits, or which has been contaminated by foreign materials.

1.6 PROJECT CONDITIONS

A. Work Notification: Notify Landscape Architect at least 24 hours prior to installation of concrete.

B. Environmental Requirements:

1. Do not place concrete over wet, saturated, muddy, or frozen subgrade.

2. Do not install concrete when air temperature is below 40 degrees Fahrenheit and falling or when the temperature is projected to drop below 25 degrees Fahrenheit within 48 hours. Use of calcium chloride, salt, or any other admixtures to prevent concrete from freezing is prohibited.

3. Protect concrete from physical damage or reduced strength due to weather extremes during mixing, placing, and curing. After concrete placement, concrete shall be maintained between 50 and 100 degrees F. for a minimum of 3 days.

a. In cold weather comply with ACI 306, "Recommended Practice for Cold Weather Concreting". Cold weather concreting is defined as a period when for more than 3 successive days the mean daily temperature drops below 40 degrees F. When temperatures above 50 degrees F. occur during more than half of any 24 hour period, the concrete should no longer be regarded as cold weather concreting.

b. In hot weather comply with ACI 305, "Recommended Practice for Hot Weather Concreting.".

PART 2 - PRODUCTS

2.1 MATERIALS

A. Portland Cement: ASTM C150, Type 1, natural color. Provide white Portland cement for integrally colored concrete.

B. Aggregate: Provide ASTM C33 Grading #57 clean, uncoated, crushed stone or gravel coarse aggregate free of materials which cause staining or rust spots.

C. Fine Aggregate: Natural sand or a combination of natural sand and manufactured sand conforming to ASTM C33.

D. Water: Clean, fresh, and potable.

2.2 MIXES

A. Provide ASTM C94 ready-mixed concrete. Batch mixing at site is not acceptable.

1. Strength:

a. 4,000 psi minimum 28-day compressive strength; 611 lbs. cement per cu. yd. minimum; water/cement ratio, 0.44 maximum.

b. 3,000 psi minimum 28-day compressive strength; 517 lbs. cement per cu. yd. minimum; water/cement ratio, 0.58 maximum.

c. 2500 psi minimum 28-day compressive strength; 470 lbs. cement per cu. yd. minimum; water/cement ratio, 0.65 maximum.

B. Provide an approved water-reducing admixture in all concrete.

C. Provide an air-entraining admixture in all concrete. Air content 4 to 7 percent.

D. Indicate water added to mix at job site on each delivery ticket. Show quantity of water added. Site water tempered mixes exceeding specified slump range will be rejected as not complying with specification requirements.

2.3 ACCESSORIES

A. Forms: Wood or metal of sufficient strength to resist concrete placement pressure and to maintain horizontal and vertical alignment during concrete placement. Provide forms straight, free of defects and distortion, and height equal to full depth of concrete work. Minimize joints by using largest practical sizes.

1. Paving Forms: Provide 2 inch nominal thickness, surfaced plank wood forms for straight sections. Use flexible metal, 1 inch lumber or plywood forms to form radius bends.

2. Wood: Provide S4S surfaced plank wood forms where board form finish is scheduled, member sizes indicated by Drawings.

3. Provide formwork accessories and anchorages of size required and of sufficient strength to maintain formwork in proper alignment and tolerances while placing concrete.

B. Joint Filler: ASTM D1752 premolded resilient non-extruding non-staining closed cell foam polyethylene, PVC foam or sponge rubber, 25 percent wider than joint width, thickness indicated.

C. Joint Sealants: Two-component polysulfide or polyurethane elastomeric type complying with FS TT-S-00227, self-leveling, designed for foot traffic.

D. Concrete Reinforcement: Reinforcing steel for concrete shall consist of the following. Type, size, and quantity are specified on Drawings.

1. Reinforcing steel: ASTM A615, A616, or A617, Grade 40, new domestic deformed steel bars, sizes indicated.

2. Welded Wire Fabric: ASTM A185, welded plain cold-drawn steel wire fabric, 6" x 6" - 10 gauge x 10 gauge, or as indicated on Drawings.

3. Wire Ties: ASTM A82, plain, cold-drawn, steel.

E. Exposed aggregate concrete finish treatment: Clear, non-yellowing acrylic emulsion type, semi-gloss sealer formulated for use on exposed aggregate concrete.

F. Surface retarding agent: Water-insoluble concrete surface retarder.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine subgrades and installation conditions. Do not start concrete work until unsatisfactory conditions are corrected.

B. All proposed grades on the Drawings have been calculated to achieve desired drainage and visual effect; the Contractor shall verify existing elevations and grades and notify the Landscape Architect if the existing conditions vary from the existing conditions shown by the Drawings and the desired effect cannot be achieved.

3.2 PREPARATION

A. Provide center line grade stakes of walks for review by Landscape Architect prior to excavation and construction. Contractor shall be responsible for positive drainage conforming to the intent of the Drawings.

B. Subgrade preparation: Provide compacted subgrade to the lines and grades indicated on the Drawings as specified in Section 31 22 00.

C. Granular subbase: Provide compacted granular base material at walks and paving. Place granular base as specified in Section 32 11 00.

D. Formwork:

1. Verify lines, levels, and locations of formed concrete work. Verify that form dimensions comply with Drawing dimensions.

2. Design, erect, support, brace, and maintain formwork to support all applied vertical and lateral loads. Construct formwork to provide correct size, shape, alignment, elevation, and position of concrete work shown on Drawings.

3. Flexible or curved forms shall be used on curves as necessary to prevent a chord effect in the alignment of the finished work.

4. Design and erect formwork to permit removal without damage to cast-in-place concrete surfaces and adjacent materials during stripping.

5. Footings: Earth cuts may be used as foundation forms, when excavations are straight and true, not exposed in the finished structure and acceptable to the Landscape Architect. Any indication of excessive slope or failure of earth cuts will require side formwork. Hand-trim sides and bottoms of earth cuts and remove loose dirt before placing concrete.

6. Chamfer exposed corners and edges, as indicated on Drawings, using wood, metal, PVC, or rubber chamfer strips fabricated to produce uniform smooth lines and tight edge joints.

7. Install, align, and level forms. Support and brace forms in place. Maintain following maximum tolerances:

    a. Finished surface shall not vary more than 1/2 inch above or below the plan grade lines or elevations established and approved at the job site. Deviation of 1/2 inch from the approved grade lines and elevations will not be permitted in areas where closer conformance with planned grade and elevation is required for proper functioning of surface drainage.

    b. Finish Surface Smoothness: 1/4 inch in 10'-0".

    c. Cross sectional dimensions of slabs and walls: Plus or minus 1/4 inch.

    d. Footings:

        1 Dimensions: Minus 1/2 inch or plus 2 inches.

        2 Misplacement or Eccentricity: 2 percent of footing width in direction of misplacement but not more than 2 inches.

8. Coat form surfaces in contact with concrete with form release agent. Clean forms after each use and coat with form release agent as necessary to assure separation from concrete without damage. Apply prior to placing reinforcing steel, anchoring devices, and embedded items. Remove excess form release agent prior to placing concrete.

9. Retighten forms and bracing after concrete placement to eliminate cement paste leaks and maintain proper alignment.

E. Reinforcement:

1. Reinforcement shall be protected by the thickness of concrete indicated in the Drawings. Where thickness of concrete protection is not indicated, the thickness of concrete over the reinforcement shall be as follows:

    a. Bars larger than #5: 2 inches.

    b. Bars #5 and smaller: 1-1/2 inches.

    In any event reinforcing will be placed in the bottom 1/3 of the slab.

2. Clean reinforcement to remove loose rust and mill scale, earth, and other materials which will reduce or destroy bond with concrete.

3. Provide welded wire fabric at locations indicated on Drawings. Install in as long lengths as practicable. Lap adjoining pieces at least one full mesh. Offset end laps in adjacent widths to prevent continuous laps in either direction.

4. Provide reinforcing bars at locations indicated on Drawings, adequately supported and secured to prevent displacement.

    a. Splices: Provide standard reinforcement splices by lapping ends, placing bars in contact, and tightly wire tying. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.

b. Splice overlaps shall be according to the following schedule:

BAR SIZE	LAP LENGTH
4	1'-4"
5	1'-8"
6	2'-0"
7	2'-6"
8	3'-3"

F. Set and build into work anchorage devices and other embedded items required for other work that is attached to, or supported by cast-in-place concrete.

G. Install weep holes in walls at spacing indicated on Drawings.

H. Install, set, and build-in items furnished by other trades. Provide adequate notification for installation of necessary items.

I. Install pipe sleeves for irrigation system furnished under Section 32 80 00. Stake location of irrigation sleeve.

3.3 INSTALLATION

A. Concrete Placement:

1. Comply with ACI 304 "Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete", and as specified.

2. Do not place concrete in footings until subgrade bearing surface passes compaction tests specified in Section 31 22 00.

3. Do not place concrete until subbase and forms have been checked for line and grade by Landscape Architect.

4. Paving:

a. Moisten base to provide a uniform dampened condition at the time concrete is placed. Verify manholes or other structures are at required finish elevation and alignment before placing concrete.

b. Place and spread concrete to the full depth of the forms. Use only square-end shovels or concrete rakes for hand-spreading and consolidating concrete.

c. Place concrete in one course, monolithic construction, for the full width and depth of concrete work.

d. Place concrete in a continuous operation between expansion joints. Provide construction joints when sections cannot be placed continuously.

e. When adjacent pavement lanes are placed in separate pours, do not operate equipment on concrete until pavement has attained sufficient strength to carry loads without injury.

5. Footings: Place footings full thickness in one operation, without change in proportions, screeded to proper elevation, and float surface.

B. Joints:

1. Construct control, expansion, and construction joints properly aligned with face perpendicular to concrete surface.

2. When adjoining existing structures, place traverse joints to align with previously placed joints, unless otherwise indicated on Drawings.

3. Construction Joints:

   a. Locate and install construction joints, which are not shown on Drawings, so as not to impair strength and appearance of the structure, as acceptable to Landscape Architect.

   b. Provide standard keyed-section construction joints where indicated on Drawings. Keyways shall be at least 1-1/2 inch deep unless indicated otherwise. Provide keyed-section in construction joints in walls, slabs, and between footings and walls.

   c. Construct joints as shown on Drawings or, if not shown, use standard metal keyway-section forms.

   d. Place construction joints perpendicular to the main reinforcement. Continue reinforcement across construction joints.

4. Control Joints:

   a. Tooled Joints: Provide tooled control joints, sectioning concrete into areas indicated on Drawings. Tool joints to depth equal to not less than one-fifth of the concrete thickness. Hand tool control joints in pattern and at spacing indicated on Drawings. When not indicated, provide spacing equal to slab width and not greater than 10'-0" on center.

   b. Sawed Joints: Provide sawed control joints, sectioning concrete into areas indicated on Drawings. Saw joints to a depth equal to not less than one-fifth of the concrete thickness and of 1/4 inch width maximum. Saw cut joints as soon as surface is firm enough not to be torn or damaged by the cutting blade. Cut joints in pattern and at spacing indicated on Drawings. When not indicated, provide spacing equal to slab width and not greater than 10'-0" on center.

5. Isolation Joints: Provide 1/4 inch thick expansion joints using premolded joint filler at concrete work abutting curbs, walls, structures, walks, and other fixed objects. Install according to expansion joint filler procedures below.

6. Expansion Joints:

   a. Locate expansion joints as indicated on Drawings.

   b. Install joint fillers full-width and depth of joint. Recess top edge below finished surface where joint sealants are indicated on Drawings. Recess filler not less than 1/2 inch or more than 1 inch below finished surface.

   c. Provide joint fillers in single lengths for the full slab width, whenever possible. Fasten joint filler sections together when multiple lengths are required.

   d. Protect top edge of the joint filler during concrete placement.

3.4 Formed Surfaces Finishes:

A. Apply finishes to surfaces indicated on Drawings.

B. Rough Form Finish:

1. Provide as-cast rough form finish to formed concrete surfaces that are to be concealed in the finish Work or by any other construction.
2. Standard rough form finish shall be the concrete surface having the texture imparted by the form facing material used, with tie holes and defective areas repaired and patched, and all fins and other projections exceeding 1/4 inches in height rubbed down or chipped off.

C. Smooth Form Finish:

1. Provide as-cast smooth form finish for formed concrete surfaces that are to be exposed to view, or that are to be covered with a coating material other than cement plaster applied directly to concrete.

2. Produce smooth form finish by selecting form material to impart a smooth, hard, uniform texture and arranging them orderly and symmetrically with a minimum of seams.

3. Repair and patch defective areas with all fins and other projections completely removed and smoothed.

D. Brick forms

1. Install brick edging forms as indicated on Drawings.

2. Allow to set for 48 – 72 hours.

3. Cover brick forms with visqueen plastic (2 - 3mil.) and allow to extend 12” into concrete form area.

4. Once concrete slabs are finished and cured, cut off protective plastic, burn with blow torch to remove all excess plastic to a point below the surface.

3.5 Concrete Slab Finishes:

A. Apply finishes to surfaces indicated on Drawings.

B. After floating, test surface for trueness with a 10 foot straightedge. Distribute concrete as required to remove surface irregularities, and refloat repaired areas to provide a continuous smooth finish.

C. Upon completion of floating, and after bleed water has disappeared and concrete can sustain foot pressure with nominal indentation, cut concrete away from forms. Work edges with an edging tool. Round edges to 1/2 inch radius unless otherwise indicated on Drawings. Eliminate tool marks on concrete surface.

3.6 Curing:

A. Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Maintain concrete between 50 and 100 degrees F. for minimum of 3 days.

B. Curing Formed Surfaces: Moist cure formed concrete surfaces with forms in place for 7 days. If forms are removed prior to 7 days, apply curing compound according to manufacturer's recommendations.

C. Curing Slab and Unformed Surfaces:

1. The entire exposed surface shall be wetted with a fine spray of water and then covered with moisture-retaining cover. Sheets shall be light colored side up and overlapped 12 inches when a continuous sheet is not used. The curing medium shall be not less than 18 inches wider than the concrete surface to be cured, and shall be securely weighted down at edges and laps in the sheets. Sheets shall be satisfactorily repaired or replaced if torn or otherwise damaged during curing. The curing medium shall remain on the concrete surface for not less than 7 days. Curing compounds will not be allowed.

3.7 Joint Sealants:

A. Install joint sealants where indicated on Drawings in accordance with manufacturer's installation instructions. Clean and prime joints. Remove dirt and loose coatings.

B. Apply sealants in continuous beads, without open joints, voids, or air pockets. Hand tool and finish all joints.

C. Confine materials to joint areas with masking tape or other precautions.

D. Remove excess compound promptly as work progresses and clean adjoining surfaces.

E. In rough surfaces or joints of uneven widths, install joint sealant well back into joints.

3.8 Removal of Paving Forms:

A. Do not remove forms for 24 hours after concrete has been placed. After form removal, clean ends of joints and point-up any minor honeycombed areas. Remove and replace areas or sections with major defects, as directed by Landscape Architect.

3.9 Concrete Surface Repairs:

A. Patch and repair defective areas to match adjacent surfaces. Materials and finishes shall be consistent with installed work.

B. Cut out honeycomb, rock pockets, voids over 1/4 inch in any dimension, and holes left by tie rods and bolts, down to solid concrete but in no case to a depth of less than 1 inch. Make edges of cuts perpendicular to the concrete surface. Thoroughly clean, dampen with water and brush-coat the area to be patched with specified bonding agent. Place patching mortar after bonding compound has dried.

C. Surfaces exposed to view: Provide sample repair patches, in locations acceptable to the Landscape Architect for approval of materials, procedures, and finish results.

D. Remove and replace concrete having defective surfaces if defects cannot be repaired to satisfaction of Landscape Architect. Surface defects include color and texture irregularities, cracks, spalls, air

bubbles, honeycomb, rock pockets; fins and other projections on surface; and stains and discolorations that cannot be removed by cleaning.

3.10 FIELD QUALITY CONTROL

A. Provide field quality control testing and inspection during concrete operations.

B. Sampling from Concrete: ASTM C172, except modified for slump to comply with ASTM C94.

C. Testing:

1. Slump Test: ASTM C143. Maximum 4 inches and 2 inches minimum. One test per each day's pour per class of concrete, and for each 100 cubic yards or major fraction thereof.

2. Provide air indicator tests and air meter tests for all air-entrained concrete.

a. Perform air indicator test with a "Chase" AE35 or equal air indicator, and air meter test in accordance with ASTM C231 or C173. Test first load of concrete delivered each day.

b. Furnish copies of field records and tests reports as listed for strength tests.

3. Strength Testing:

a. Provide 1 set of 3 test specimens per each days pour per class of concrete, and for each 100 cubic yards or major fraction thereof. Secure samples in accordance with ASTM C172 and mold specimens in accordance with ASTM C31.

b. Test 1 specimen at 7 days and 2 specimens at 28 days in accordance with ASTM C39.

c. Furnish copies of field records and test reports as follows:

2 copies to Landscape Architect

1 copy to Contractor

1 copy to Ready Mix Supplies

4. Record the exact location of the concrete in the work represented by each set of cylinders and show on test reports.

5. Provide an insulated moist box for protection of the test cylinders until shipped to the laboratory.

3.11 PROTECTION

A. Protect concrete work from damage due to construction and vehicular traffic until final acceptance. Exclude construction and vehicular traffic from concrete pavements for at least 14 days.

B. After curing, backfill, grade, and compact soil to conform to the surrounding area in accordance with the lines and grades indicated shown on Drawings. Perform earthwork operations as specified in Section 31 22 00.

C. The Contractor shall repair damaged concrete and clean concrete discolored during construction. At no additional cost to the Owner, damaged concrete or wood dividers shall be removed and

reconstructed for the entire length (between regularly scheduled joints). Removed damaged portions shall be removed from the site.

3.12 CLEANING

A. Perform cleaning during installation of the work and upon completion of the Work. Remove from the site all excess materials, debris, and equipment. Repair damage resulting from concrete operations.

B. Sweep concrete sidewalks and pavement, wash free of stains, discoloration, dirt, and other foreign material immediately prior to final acceptance.

C. Use of muriatic acid for cleaning is permitted only after concrete has cured for 2 weeks and only after approval by Landscape Architect.

1. Pre-wet concrete surface with water prior to applying acid.

2. Brush the surface free of standing water and wash the surface with acid solution.

3. Flush concrete surface several times to remove acid solution residue.

END OF SECTION 03 30 53

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Mortarless paving over a rigid base.

2. Mortared paving over a rigid base.

. B. Related work:

1. Division 1: General Requirements.

2. Section 32 22 00: Earthwork.

3. Section 03 30 53: Cast-In-Place Concrete.

1.2 REFERENCES

A. Brick Institute of America, (BIA): Technical Notes on Brick Construction.

1.3 QUALITY ASSURANCE

A. Installation: Performed only by skilled workmen with satisfactory record of performance on completed projects of comparable size and quality.

B. Sample panel: Before starting unit paving, provide a sample panel using materials, patterns, and joints indicated for project work. Build panel at the site of full thickness and approximately 4'-0" x 4'-0". Provide the range of color, texture, and workmanship proposed for the work. Correct and rebuild sample panel until Landscape Architect's acceptance of the work. Retain panel during construction as a standard for completed paving work.

1. The approved sample panel may be a portion of the work and remain in place at Contractor's own risk. Location as directed by the Landscape Architect.

2. Provide a sample panel for each type of unit paving required.

C. Do not change source or brand of unit pavers, mortar, or grout material during the course of the work.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver mortar, grout, and additive materials in manufacturer's unopened and undamaged containers with labels intact and legible. Store off the ground and protect from weather damage, and deterioration. Protect liquid components from freezing.

B. Protect paving units from damage, chipping, and soiling during delivery and storage. Store off the ground on pallets or wood platforms.

C. Store loose granular materials in a well-drained area on a solid surface to prevent mixing with foreign materials.

1.5 PROJECT CONDITIONS

A. Establish and maintain required levels and grade elevations. Review installation procedures and coordinate paving work with other work affected by the paving work.

B. Cold weather:

1. Protect masonry against freezing when the temperature is 40 degrees F. and falling. Heat materials and provide temporary protection of completed portions of masonry work. Comply with the requirements of the "Construction and Protection Recommendations for Cold Weather Masonry Construction" of BIA Technical Notes on Brick Construction.

2. Do not use frozen materials or materials mixed or coated with ice or frost. Comply with BIA requirements for masonry units requiring wetting.

3. Do not build on frozen work. Remove and replace brick paving damaged by frost or freezing.

4. Do not use anti-freeze or calcium chloride in any mortar or grout.

C. Hot weather: Protect installed brick paving with windbreaks or artificial shade to prevent excessive moisture evaporation of mortar setting beds, mortar, and grout.

D. Protect partially completed unit paving against weather damage when work is not in progress.

E. Protect adjacent work from damage, soiling, and staining during paving operations.

PART 2 - PRODUCTS

2.1 MATERIALS

A. 1. Paving brick: Heartland Flashed Paver - Modular
3-5/8" X 2-1/4" X 7-5/8"
Boral® Brick
300 Airport Road, Greenville, SC 29607
Phone: (864) 235-7167

2.2 PAVING ACCESSORIES

A. Portland cement: ASTM C150, Type I, natural color.

1. Provide white portland cement for colored mortar and grout.

B. Lime: ASTM C207, Type S.

C. Sand: ASTM C144, Washed, clean, and graded.

1. Provide white sand for colored mortar and grout.

D. Water: Clean, fresh, and potable.

E. Mortar and grout colorant: Mineral oxide pigments, lime and alkali-proof compatible with additives.

F. Setting bed mortar and grout additive: Liquid latex mortar additive with a compressive strength of 3,000 psi, bond strength of 500 psi, and water absorption of 4% maximum.

G. Bond coat additive: High strength liquid latex mortar additive with a compressive strength of 5,000 psi, bond strength of 500 psi, tensile strength of 500 psi, and water absorption of 4% maximum.

H. Bedding and Leveling Material: ASTM C33 or AASHTO M43, #10 graded clean coarse concrete sand. Depth as indicated on Drawings.

I. Concrete: specified in Section 03 30 53.

J. Mortar setting bed: ASTM C270 Type M mortar, ASTM C270 proportions by volume. Minimum average compressive strength at 28 days of 2,500 psi.

K. Mortar setting bed: Sand-portland cement mortar gauged with liquid latex mortar additive, mixed 1 part portland cement, and 3 parts sand. Mix cement and sand dry. Add latex mortar additive as required to provide a damp paste mortar.

L. Joint Fill: Clean concrete sand or mason sand.

M. Grout: Sand-portland cement dry mixture, mixed 1 part white portland cement and 3 parts fine sand with mineral oxide pigment added.

N. Mortar: Type M mortar, ASTM C270 proportions by volume. Minimum average compressive strength at 28 days of 2,500 psi.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and installation conditions. Do not start unit paving work until unsatisfactory conditions are corrected.

B. All proposed grades on the Drawings have been calculated to achieve desired drainage and visual effect; the Contractor shall verify existing elevations and grades and notify the Landscape Architect if the existing conditions vary from the existing conditions shown by the Drawings and the desired effect cannot be achieved.

3.2 PREPARATION

A. Subgrade preparation: Provide compacted subgrade to the lines and grades indicated on the Drawings as specified in Section 31 22 00.

B. Base Course: Install base course as specified in Section 32 11 00.

C. Concrete Base: Install concrete base as specified in Section 03 30 53.

D. Do not use paving units with chips, cracks, voids, discolorations, or other visible defects.

E. Cut paving units with masonry saws to provide clean, sharp unchipped edges. Cut units as required to provide pattern shown and to fit adjoining work neatly. Use full units without cutting wherever possible. Where cutting is required, use the largest size units possible. Avoid the use of small pieces of brick or large joint spaces.

F. Set unit pavers in patterns indicated with level surface and uniform joints of width indicated on Drawings. Tolerances shall be as follows:

1. Joint spacing: joints shall be between 0 inches and 1/2 inch.

2. Smoothness: shall not exceed 1/8" in 2'-0" and 1/4" in 10'-0" from straightedge laid on paving surface.

G. Layout paving units in advance of final placement for accurate spacing of surface bond patterns, with uniform joint widths, and to properly locate openings and pattern intersections.

H. Masonry Borders:

1. Install masonry borders as indicated on Drawings. When adjacent to concrete paving install borders prior to placing concrete paving. Set borders in concrete bed. Cover masonry borders with 2 – 3 mil visqueen plastic and overlap 12" into form area prior to placing concrete.

2. Curved Borders: Lay masonry units against wood or masonite formwork to create smooth curve transitions from curve to curve or from curve to straight line. Mortar joints in curve may vary from 1/4" to 3/4" in a single joint to achieve a smooth curve. Bricks shall be cut, if necessary, to stay within above tolerances and achieve the desired curve. Remove forms upon completion.

3.3 INSTALLATION: MORTARLESS PAVING.

A. Clean concrete base. Remove dirt and debris.

B. Install ½" dry mix, leveling bed, screen level lightly and tamp leveling bed.
* Dry mix to be 4 part Mason's sand to 1 part Portland cement, thoroughly mix prior to placement.

C. Set brick pavers with hand tight joints. Make joints between paving units from 0" to maximum of 1/8".

D. Sweep dry mix over the surface to fill joint irregularities.

E. Damp cure grout joint filler for minimum 3 days.

3.4 INSTALLATION: MORTARED PAVING.

A. Clean concrete base. Remove dirt, dust, debris, sealers, or curing compounds. Saturate with clean water before installing setting bed. Remove surface water.

B. Apply a thin mortar setting bed bond coat to the damp-dry concrete base surface prior to placing the setting bed. Limit area of bond coat to area, which will be immediately covered with setting bed material. Do not exceed 1/16" thickness of bond coat.

C. Install the mortar setting bed. Provide a damp packed mix with only enough water to produce a moist surface when setting bed is ready for paver installation. Spread and screed to a uniform thickness, level in plane, or uniformly sloped for drainage as indicated. Rod and compact with a steel trowel. Mix and place only the amount, which can be covered with paver prior to initial set of bed. Cut back and discard setting bed material, which has reached its initial set prior to placing paver units.

D. Wet pavers as required before setting. Do not install paver with free water on surface.

E. Trowel or brush apply a 1/16" bond coat to the setting bed. Set paver in wet bond coat. Tamp and beat paver with a wooden block to produce a level surface and to embed the paver in the setting bed.

F. Grout joints as soon as possible after initial set of mortar setting bed. Wet dry joint surfaces prior to grouting. Fill joints solid and free of voids; strike flush and tool slightly concave. Maintain 3/8" mortar joints, except for minor variations to maintain bond alignment.

G. Remove excess grout form face of paver as work progresses. Remove spillage while grout is fresh.

H. Damp cure grout for minimum of 7 days.

3.5 PROTECTION

A. Restrict traffic from brick paving surfaces during setting of units and for at least 48 hours after installation.

B. Protect brick paving from damage until final acceptance.

3.6 CLEANING

A. Remove and replace brick paving units which are broken, chipped, stained, or otherwise damaged. Provide new matching units, install as specified and to eliminate evidence to replacement.

B. Clean brick paving not less than 6 days after completion of work using clean water, trisodium phosphate, and stiff-bristle brushes. Do not use wire brushes, acid type cleaning agents, or other cleaning compounds with caustic or harsh fillers. Proprietary cleaning agents subject to Landscape Architects approval prior to use.

C. Remove plastic protective sheeting by cutting and removing. Use blow torch on edges to remove all trace of plastic above pavement surface

D. Perform cleaning during installation of work and upon completion of the work. Remove from site all excess materials, debris, and equipment. Repair damage resulting from brick paving operations.

END OF SECTION 32 14 16

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EROSION AND SEDIMENTATION CONTROLS
SEEDING AND EROSION CONTROL MEASURES
SCDOT SUPPLEMENTAL SPECIFICATIONS

In addition to the erosion control measures specified in the Standard Specifications, the plans and these Special Provisions, the contractor is advised that all land disturbing activities (clearing and grubbing, excavation, borrow and fill) shall be subject to the requirements set forth in the following:

A. South Carolina Regulation 63-380, Standard Plan for Erosion, Sediment and Stormwater Runoff Control. (Regulation may be viewed at http://www.scstatehouse.net/.
B. Erosion and Sediment Reduction Act of 1983 (Title 48, Chapter 18 of the South Carolina Code of Laws of 1983, as amended). Section 70 of this code authorized the South Carolina Department of Health and Environmental Control (SCDHEC) to administer this regulation with respect to lands under the jurisdiction of the South Carolina Department of Transportation. (Code may be viewed at http://www.scstatehouse.net/code/t48c018.htm).
C. National Pollutant Discharge Elimination System (NPDES) General Permit Number SCR100000, effective February 1, 1998: The Environmental Protection Agency, in accordance with the Federal Clean Water Act, has granted to the South Carolina Department of Health and Environmental Control (DHEC) the authority to administer the Federal NPDES permit program in the state of South Carolina. (Permit may be viewed at http://www.scdhec.net/eqc/water/pubs/gr100000.pdf).

The General Permit listed in (3) above requires the Contractor to sign a certification statement (shown in part IV.E.2 of the General Permit). This certification has been incorporated into the proposal form for this contract. By signing the proposal form, the contractor acknowledges that upon award and execution of the contract he will become a co-permittee of the NPDES General Permit and is accountable to ensure the terms and conditions of the NPDES general permit are implemented. In addition, the contractor must certify that the NPDES certification statement and co-permittee status will be made part of all subcontracts.

The Contractor shall submit a Storm Water Pollution Prevention Plan (SWPPP) to the Engineer at the time of the preconstruction Conference. This plan shall meet the requirements of the NPDES General permit, and shall be reviewed and approved by the SCDOT prior to any land disturbing activities. Upon approval of the SWPPP, the Engineer will complete and forward a Notice of Intent (NOI) to the Department of Health and Environmental Control. The NOI must be submitted 48 hours prior to the beginning of any land disturbing activities.

Once approved, the SWPPP shall be fully implemented. The contractor shall coordinate the prompt installation of erosion control devices with construction activities in order to maintain compliance with the above regulations and NPDES general permit.

The contractor shall coordinate the prompt installation of erosion control devices with construction activities in order to maintain compliance with the above.

Erosion and sediment control inspections will be conducted every 7 calendar days and within 24 hours of the end of a storm that is 0.5 inch or greater. Representatives of the Department and the Contractor shall both participate in these inspections and shall acknowledge participation in the inspection by signing the inspection report. Deficiencies noted during these inspections shall be corrected within 7 calendar days. If deficiencies are not corrected within this timeframe, they shall be cause for stoppage of all contract work (except erosion and sediment control measures) until the deficiencies are corrected.

The contractor is advised that special attention must be given to critical areas within the project limits (i.e., running streams, water bodies, wetlands, etc.). In these areas, the Engineer may direct the contractor to undertake immediate corrective action, but in no case shall these deficiencies remain unresolved more than 7 days after being identified during the Erosion and Sediment Control inspection.

The seeding operations shall closely follow the grading operations. The slopes shall be shaped and prepared for seeding as the grading progresses. Unless prior written approval is granted by the Engineer, the amount of surface area exposed by land disturbing activities shall be limited to 750,000 square feet. Seeding operations shall commence within 7 days following completion of construction activities within an area.

If construction activities are to be temporarily suspended within an area for a period of 21 days or longer, temporary vegetation shall be placed within seven 7 days following the last construction activity in that area.

The contractor shall coordinate the installation of all other permanent erosion control items with the grading and seeding operations. These items include, but shall not be limited to, asphalt gutter and rip rap. Gutter work shall be constructed prior to or promptly after the seeding is performed. Rip rap shall be placed at ends of pipe immediately after the pipe is laid and rip rap ditch checks shall be installed promptly after ditch work has been performed.

Failure to adequately comply with the provisions as detailed above or any other required erosion control measures will result in stoppage of all contract operations (except erosion and sediment control measures) until corrective action has been taken. Additional sanctions may be invoked by the SCDHEC in accordance with their authority.

Fines assessed by these agencies to the Department as the result of the Contractor’s noncompliance or violation of said permit provisions will be paid by the Department and subsequently deducted from the Contractor’s monthly pay estimate.

END OF SECTION 32 25 00

Reliance Foundry Co Ltd
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Reliance Foundry is an award winning supplier of high quality stock and custom-designed site furnishings for architectural, traffic management and industrial applications. Reliance Foundry brings over 90 years of expertise to the design and manufacture of our products.

Reliance Foundry bollards add architectural accents to your perimeter security, landscaping, traffic control, and streetscape projects. Use bollards as design features for new and existing buildings, and as access control measures. This section includes access control bollards, including collapsible, removable, and retractable bollards.

Specification Coordination: Edit this guide specification to meet project requirements. Coordinate with other specification sections as required. If using more than one bollard type, use the same designation in both drawings and specifications. Display hidden text to see or print notes to specifier.

Drawing Coordination: Show locations, sizes, layout, and spacing of each type of bollard required. Show footing and security post details, if required. Soft metric conversion is provided for all measurements.

SECTION 32 39 13.15
METAL ACCESS CONTROL BOLLARDS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Removable bollards

B. Related Requirements:
   1. [Division 03 Sections: [Concrete] [Mortar] fill for security posts.]

1.2 REFERENCE STANDARDS

A. ASTM A36 – Standard Specification for Carbon Structural Steel.

B. ASTM A312 – Standard Specification for Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes.

C. ASTM A500 – Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.

D. ASTM A536 – Standard Specification for Ductile Iron Castings.

E. ASTM B26 – Standard Specification for Aluminum-Alloy Sand Castings.

1.3 SUBMITTALS

A. Comply with Section [01 33 00 – Submittal Procedures.]

B. Product Data: Provide for each type of bollard, component, finish, and accessory specified.

C. Color Samples: [Submit manufacturer's standard colors for selection.] [Submit sample of color specified.]

D. Setting Drawings: Show embedded items and cutouts required for work specified in other Sections.

E. Maintenance Data: Submit manufacturer's field touch-up, cleaning, and maintenance instructions.

F. Warranty Documentation: Submit sample of manufacturer's warranty.

1.4 QUALITY ASSURANCE

A. Comply with Section [01 43 00 – Quality Assurance.]

1.5 DELIVERY, STORAGE AND HANDLING

A. Comply with Section [01 66 00 – Product Storage and Handling Requirements.]

B. Protect bollards and accessories during delivery, storage, and handling.

1.6 WARRANTY

A. Comply with Section [01 78 36 – Warranties.]

B. Provide manufacturer's standard warranty against defects in materials and workmanship.
   1. Warranty Period: Five years from date of invoice, except as otherwise indicated.
      a. Coatings: Two years, against peeling, cracking, or significant color change.

PART 2 - PRODUCTS

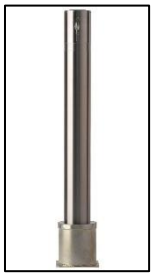
2.1 MANUFACTURERS

A. Manufacturer: Reliance Foundry Co. Ltd.
   1. Phone: 604-592-4333 or 888-735-5680
   2. Fax: 604-590-8875
   3. Website: http://www.reliance-foundry.com/bollard
   4. Email: info@reliance-foundry.com

B. Substitutions: [Not allowed.]

2.2 REMOVABLE BOLLARDS

A. Bollard [Designer's Designation]:
   1. Model: Reliance Foundry; **R-8464**[**-RA**].
   2. Height: 35.5 inches (90.2 cm)
   3. Diameter: 4.5 inches (11.4 cm) body; 6.5 inches (16.5 cm) base
   4. Weight: 26 lbs. (11.8 kg)
   5. Design: Fixed cylinder with flat top.
   6. Material: [Coated] Stainless Steel:
      a. Pipe: ASTM A312, Grade TP 316.
      b. Plate: ASTM A959, Grade TP 316.
   7. Country of Origin: China.
   8. Color Coating:
      a. Type: Polyester powder coat over epoxy primer.
      b. Color: [Black textured semi-gloss].
   9. Installation:
      a. Removable, new concrete, receiver with key



PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine paving or other substrates for compliance with manufacturer's requirements for placement and location of embedded items, condition of substrate, and other conditions affecting installation of bollards.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Comply with manufacturer's installation instructions and setting drawings.

B. Do not install damaged, cracked, chipped, deformed or marred bollards. Field touch-up minor imperfections in accordance with manufacturer's instructions. Replace bollards that cannot be field repaired.

3.3 CLEANING & PROTECTION

A. Protect bollards against damage.

B. Immediately prior to Substantial Completion, clean bollards in accordance with manufacturer's instructions to remove dust, dirt, adhesives, and other foreign materials.

C. Touch up damaged finishes according to manufacturer's instructions.

3.4 CLOSEOUT ACTIVITIES

A. Provide executed warranty.

END OF SECTION

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SECTION 32 84 00– IRRIGATION SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes piping, valves, sprinklers, controls and wiring for automatic control irrigation systems.

B. Extent of the underground irrigation system is shown in the plans, schedules and notes.

C. Provide all labor. Materials and equipment required or inferred from the Drawing and Specifications to complete the Work of this Section.

D. Provide a complete and operable system for the irrigation of all landscapes areas on the project site, unless indicated otherwise. The Drawings and specifications are intended to include all items obviously necessary and requisite for the proper irrigation of the project.

E. The contractor shall be responsible for adjusting head locations, nozzle type and size, and any other system components so that the irrigation system layout is coordinated with actual field conditions. Such adjustments shall be made at no cost to the Owner except, when authorized in writing, such adjustments which will be compensated for at an agreed upon cost.

1.3 DEFINITIONS

A. Lateral Piping: Downstream from control valves to sprinklers, specialties, and drain valves. Piping is under pressure during flow.

B. Drain Piping: Downstream from circuit-piping drain valves. Piping is not under pressure.

C. Mainline Piping: Downstream from point of connection to water distribution piping to, and including, control valves. Piping is under water-distribution-system pressure.

D. The following are industry abbreviations for plastic materials:

1. ABS: Acrylonitrile-butadiene-styrene plastic.
2. FRP: Fiberglass-reinforced plastic.
3. PA: Polyamide (nylon) plastic.
4. PE: Polyethylene plastic.
5. PP: Polypropylene plastic.
6. PTFE: Polytetrafluoroethylene plastic.
7. PVC: Polyvinyl chloride plastic.
8. TFE: Tetrafluoroethylene plastic.

9. HDPE: High Density Polyethylene plastic.

1.4 PERFORMANCE REQUIREMENTS

A. Head to head coverage irrigation system for lawns and exterior plants as shown or indicated on associated plans.

B. Drawings are diagrammatic and generally indicate the Work to be installed. The Drawings do not indicate all off-set fittings that may be necessary. The Contractor shall furnish such items as may be required to complete the work.

C. Location of Sprinklers and Specialties: Design location is approximate. Make minor adjustments necessary to avoid plantings and obstructions such as signs and light standards. Maintain 100 percent irrigation coverage of areas indicated.

D. Minimum Working Pressures: The following are minimum pressure requirements for piping, valves, and specialties unless otherwise indicated:

1. Irrigation Main Piping: 200 psi.
2. Lateral Piping: 200 psi.

1.5 SUBMITTALS

A. Approval: Obtain approval from Landscape Architect for all submittals prior to the beginning of Work, unless otherwise approved.

B. Product Data: Individual copies for product data shall be submitted with each product identified within the data by highlighting, circling or other method of identification. Include pressure ratings, rated capacities, and settings of selected models, if applicable, for the following:

1. Electrical Control Valves.
2. Quick Coupler Valves.
3. Isolation Valves.
4. Valve boxes.
5. Sprinklers.
6. Controllers and associated communication equipment.
7. Control cables. Include splice kits.
8. Decoders.
9. Grounding equipment.
10. Master Valve
11. Flow Sensor
12. PVC fittings.
13. PVC Primer and Cement.
14. Mainline, Lateral and Sleeve piping.
15. Mainline and Lateral pipe fittings.
16. Inline Drip Tubing and Fittings.

C. As-Built Drawings: Any changes in the layout and or arrangements of the proposed irrigation system, or any other differences between the proposed system and actual installed conditions are to be recorded by the Irrigation Contractor in the form of an “As-Built” Drawing. As-Built Drawing to be produced in an electronic format using AutoCAD. Provide the Owner and the Landscape Architect and AutoCAD & PDF

file along with five (5) hard copies of the As-Built Drawings before Work under this Contract will be considered for Acceptance. All automatic and manual valves, hose bibs or quick couplers, wire splice, and pressurized mainline locations shall be show with actual field dimensions in feet and inches from tow permanent reference points so they may be located easily in the field. Submittals of approved As-Built Drawing will precede any Application for Final Payment by the Contractor.

D. Operation and Maintenance Data: For irrigation systems, to include in emergency, operation, and maintenance manuals, including data for the following:

1. Automatic control valves.
2. Isolation valves.
3. Sprinklers.
4. Control systems.

E. Test Reports: Field test results of the irrigation supply well to include flow rates, and recovery rates.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Engage a firm or firms specializing in irrigation system installation. Installer shall have successfully completed five 2 wire control system projects similar in material, size, scope and complexity to that indicated for this Project that have resulted in construction with a record of successful in-service performance.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a qualified testing agency, and marked for intended use.

C. Codes and Standards: Perform the work in compliance with applicable requirements of governing authorities having jurisdiction. County regulations supersede these specifications. Notify Landscape Architect in writing of all discrepancies immediately.

D. Approval and Selection of Materials and Work: The selection of all materials and the execution of all operations required under the Drawings and Specifications is subject to the approval of the Owner and Landscape Architect. The have the right to reject any and all materials and any and all work which, in their opinion, does not meet the requirements of the Contract Documents at any state of the operations. Remove rejected Work and or materials from the project site and replace promptly.

E. Do Not Make Substitutions: If the Contractor desires to make substitutions of materials, sufficient descriptive literature and material samples must be furnished to establish the material as an equal substitute. In addition, the Contractor must state his reasons for desiring substitute materials and any potential cost savings. Submit this request and information to the Landscape Architect.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver piping with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe-end damage and to prevent entrance of dirt, debris, and moisture.

B. Store plastic piping protected from direct sunlight. Support to prevent sagging and bending.

1.8 PROJECT CONDITIONS

A. The irrigation system is designed to operate under the following conditions. A minimum of 50 psi water pressure at the tap, and at least a 21 gpm available water supply.

B. Insurance on irrigation materials or equipment stored or installed is the responsibility of the Contractor. Such insurance shall cover fire, theft and vandalism. Should the Contractor elect not to provide for such insurance, he will in no way hold the Owner responsible for any losses incurred by the aforementioned acts. The Contractor is responsible for all costs incurred in replacing damaged or stolen materials or equipment prior to Substantial Completion of the Work.

C. Obtain all required permits and pay all required fees, at no additional cost to the Owner. Any penalties imposed due to the failure to obtain permits or pay fees are the responsibility of the Contractor.

D. Provide and maintain all passageways, guard fences, warning lights and other protective devices required by the local authorities.

E. Existing grades: Existing grades will be within .2 feet of grades shown on the Civil Engineering Drawings at the time of work. Determine conditions of existing grades prior to beginning the Work. When irregular or incomplete grading conditions are encountered, notify the Owner in writing before beginning the Work. Determine location of existing drainage patterns and maintain patterns in completed Work. Perform Work in a manner which will avoid damage to finished grading and drainage patterns. All damage to finished grading and drainage resulting from Work covered in these Contract Documents shall be repaired at the Contractor's expense.

F. Existing Utilities: Determine location of underground utilities. Perform Work in a manner which will avoid possible damage. Excavate as required. Maintain grade stakes set by other unless removal is mutually agreed upon by parties concerned. All damage to utilities resulting from Work covered in these Contract Documents shall be repaired at the Contractor's expense.

G. Existing Conditions: Perform irrigation Work in Tree Protection zones and in existing or previously completed landscape areas to avoid damage and disturbance to these areas. Limit work in these areas to only that necessary to perform work specified herein and shown on the Drawings. Return and repair any areas damaged or disturbed while performing the Work to the existing conditions encountered prior to the Work.

H. Interruption of Existing Water Service: Do not interrupt water service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary water service according to requirements indicated:

1. Notify Owner's Representative no fewer than two (2) days in advance of proposed interruption of water service.
2. Do not proceed with interruption of water service without Owner's Representative's written permission.

I. Removal of Hardscape: Do not remove hardscape surface unless permitted under the following conditions:

1. Coordinate with Owner's Representative no fewer than two (2) days in advance of proposed hardscape removal.
2. Hardscape removal must not interrupt normal traffic flow on hardscape area.
3. Area of removal must be useable prior to close of work day and completely repaired within 2 days of removal.

1.9 COORDINATION

A. Coordinate installation of irrigation system with Owner's Representative and/or all other trades on site to insure irrigation system or other work on site will not be damaged. Should contractor fail to coordinate and damages occur it will be the contractor's responsibility to repair damages at his own costs.

1.10 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents:

1. Rotary Sprinkler Units: Equal to two (2) percent of amount installed for each type and size indicated, but no fewer than 10 units.
2. Spray Sprinkler Units: Equal to two (2) percent of amount installed for each type and size indicated, but no fewer than 10 units.
3. Electric Control Valve Units: Equal to five (5) percent of amount installed for each type indicated, but no fewer than ten (5) units of each size and type.
4. Isolation Valves: Equal to five (5) percent of amount installed for each type indicated, but no fewer than two (2) units of each type.
5. Inline Drip Tubing: 100LF of each type of inline drip tubing used on the site.

1.11 PRE-INSTALLATION MEETING

A. Conduct a conference\meeting at the Project site. Review methods and procedures related to the site landscape irrigation system including, but not limited to the following:

1. The General Contractor is to contact the Irrigation Consultant and Owner Representative a minimum of 60 days prior to the schedule date of commencement of the irrigation installation.
2. Meet with Owner Representative and Irrigation Consultant to review Contract documents.
3. Verify current drawing release date with contractor's documents.
4. Review submittal procedure including codes, substitutions, product data, qualifications, and As-Built procedures and formats.
5. Review project conditions including tap & meter Size, permits, utility locations and water conditions.
6. Review methods and procedures related to irrigation installation.
7. Review and finalize construction schedule and verify availability of materials, contractor's personnel, equipment, and facilities needed to make progress and avoid delays.
8. Review warranty guidelines.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

2. Manufacturers: Subject to compliance with requirements, provide and warrantee products by one of the manufacturers specified.

2.2 PIPES, TUBES, AND FITTINGS

A. Steel Pipe: ASTM A 53/A 53M, Schedule 40, Type S or E, Grade A or B, galvanized with threaded ends.

1. Steel Pipe Nipples: ASTM A 733, made of ASTM A 53/A 53M or ASTM A 106/A 106M, Standard Weight, seamless-steel pipe with threaded ends.
2. Malleable-Iron Unions: ASME B16.39, Class 150, hexagonal-stock body with ball-and-socket, metal-to-metal, bronze seating surface, and female threaded ends.
3. Gray-Iron Threaded Fittings: ASME B16.4, Class 125, galvanized, standard pattern.
4. Cast-Iron Flanges: ASME B16.1, Class 125.
5. Cast-Iron Flanged Fittings: ASME B16.1, Class 125, galvanized.

B. Soft Copper Tube: ASTM B 88, Type L, water tube, annealed temper.

1. Copper Pressure Fittings: ASME B16.18, cast-copper-alloy or ASME B16.22, wrought-copper solder-joint fittings. Furnish wrought-copper fittings if indicated.
2. Bronze Flanges: ASME B16.24, Class 150, with solder-joint end.
3. Copper Unions: MSS SP-123, cast-copper-alloy, hexagonal-stock body, with ball-and-socket, metal-to-metal seating surfaces and solder-joint or threaded ends.

C. Hard Copper Tube: ASTM B 88, Type L, water tube, drawn temper.

1. Copper Pressure Fittings: ASME B16.18, cast-copper-alloy or ASME B16.22, wrought- copper, solder-joint fittings. Furnish wrought-copper fittings if indicated.
2. Bronze Flanges: ASME B16.24, Class 150, with solder-joint end.
3. Copper Unions: MSS SP-123, cast-copper-alloy, hexagonal-stock body, with ball-and-socket, metal-to-metal seating surfaces and solder-joint or threaded ends.

D. PVC Pipe: ASTM D 1785, PVC 1120 compound, SCH 40.

1. PVC Socket Fittings, Schedule 40: ASTM D 2466, 3” and smaller
2. PVC Threaded Fittings: ASTM D 2464.

2.3 GENERAL DUTY VALVES

A. AWWA, Cast-Iron Gate Valves: AWWA C509, resilient-wedge nonrising-stem, gray- or ductile-iron body and bonnet gate valve, epoxy coated; with steel stem and 2”operating nut.

1. Minimum: Working Pressure: 200 psig.
2. End Connections: Mechanical join flanged or ring-tite.
3. Interior Coating: Complying with AWWA C550.
4. Manufacturers:

    a. Matco.
    b. Leemco.
    c. Approved Equal.

B. Isolation Valve Boxes: Ten inch circular valve box with 6" SDR 21 PVC pipe riser from top of valve to center line of valve box. Pipe to be centered on operating nut to allow easy access.

1. Operating Wrenches: Furnish total of two (2) steel, tee-handle operating wrenches with one pointed end, stem of length to operate deepest buried valve, and socket matching valve operating nut.

C. Bronze Gate Valves: MSS SP-80, Class 125, Type 1, non-rising stem, bronze body with solid wedge, threaded ends, and malleable-iron hand wheel.

1. Manufacturers:

a. NIBCO, Inc.
b. Approved Equal.

2.4 SPECIALTY VALVES

A. Quick-Couplers: Factory-fabricated, bronze or brass, two-piece assembly. Include coupler water-seal valve; removable upper body with spring-loaded or weighted, rubber-covered cap; hose swivel with ASME B1.20.7, 3/4-11.5NH threads for garden hose on outlet; and operating key.

1. Locking-Top Option: Vandal-resistant, locking feature. Include four matching keys with hose swivel for each key.
2. Manufacturers:

a. Rain Bird.

b. Or Approved Equal

2.5 CONTROL VALVE BOXES

A. Plastic Control-Valve Boxes: Box and cover, with open bottom and openings for piping; designed for installing flush with grade. Size for all valves to be standard 14" rectangular.

1. Shape: Rectangular.
2. Sidewall Material: ABS or HDPE.
3. Cover Material: ABS or HDPE.

a. Lettering: IRRIGATION.
b. Green in color.
c. Lockable with hex key mechanism or similar.

4. Manufacturers:

a. Rain Bird.
b. Or Approved Equal.

2.6 SPRINKLERS

A. Description: Plastic housing and corrosion-resistant interior parts designed for uniform coverage over entire spray area indicated, at available water pressure.

1. Manufacturers: :

    a. Rain Bird

    b. Hunter Industries for the MP Rotator nozzles.
    c. Or Approved Equal.

2. Pop-up Spray Sprinklers: Fixed or adjustable pattern with screw-type flow adjustment, stainless-steel retraction spring, drain check valve, pressure regulation, co-molded riser seal that seals cap to body and pop-up heights of 6", 12".
3. Pop-up, Rotary Sprinklers: Gear drive, full-circle and adjustable part-circle types with screw-type flow adjustment, stainless-steel retraction spring, stainless steel riser, drain check valve, flow stop valve, minimum of 8 nozzles available, integral rubber cover, adjustable from the top of the sprinkler and pop-up heights of 6", 12".

2.7 ELECTRIC CONTROL VALVES

A. Description: Electrically controlled hydraulically actuated control valves.

1. Manufacturers:

    a. Rain Bird.
    b. Or Approved Equal.

2.8 AUTOMATIC CONTROL SYSTEM

A. Manufacturers:

1. Rain Bird.
2. Or Approved Equal.

B. Exterior Control Enclosures: NEMA 250, Type 4, weatherproof, with locking cover and two matching keys; include provision for grounding.

1. Material: Enameled-steel or stainless steel.
2. Mounting: Surface type for wall mounting, concrete mounting base for pedestal.

C. Control Transformer/Decoder Output: 24VAC 4A secondary, with overload protection and or primary fuse.

1. Decoder Line Output: 32 VAC RMS over 2-wire path
2. Solenoid Capacity: 2 standard 24VAC solenoids per output, maximum output of 15 simultaneously.

D. Controller Stations for Automatic Control Valves: Each station is variable from approximately 1 minute to 23.9 hours. Include switch for manual or automatic operation of each station.

E. Timing Device: Adjustable, 24-hour, 365 day clock, with automatic operations to skip operation any day in timer period, to operate every other day, odd-even days, interval days, to operate 8 or more times daily.

1. Manual or Semi-automatic Operation: Allows this mode without disturbing preset automatic operation.

2. Minimum 30 day internal power storage: Automatically powers timing device during power outages.
3. Eight (8) start times.
4. Simultaneous program operation.
5. Test program.
6. One button manual start.
7. Seasonal adjust 25% to 200%.
8. Internal self-diagnostics of controller, bicoders and solenoids.
9. Ten (10) independent programs.
10. Surge Protection: Metal-oxide-varistor type on each station and primary power.
11. Climate Sensor compatible with over-ride capabilities.
12. Remote control capabilities.

F. Wiring:

1. Manufacturers:

    a. Rain Bird
    b. Or Approved Equal

2. Feeder-Circuit Cables: No. 14 AWG minimum, between building and controllers.
3. Decoder Output Cable: No. 14 Rain Bird "Maxi" cable.
4. Splicing Materials: 3M DBR-Y6 as required by manufacturer.

2.9 DRIP IRRIGATION SPECIALTIES

A. Drip Irrigation Emitters: Inline self-cleaning, pressure compensating variety with individual check valves as indicated. In-line emitters will be spaced as per Irrigation Schedule on center. Manual flush valves will be required at all locations necessary for maintenance flush and winterization blow out to assure water has been evacuated prior to freezing temperatures that would cause damage to the tubing or inline emitters.

1. Acceptable Manufacturers:
    a. Rain Bird XFCV
    b. Or Approved Equal

B. Drip Control Zone Kit: Electric control valve, in-line pressure regulator and wye or disc filter, pre-assembled by the manufacture, as shown in the irrigation schedule.

1. Acceptable Manufacturers:
    a. Rain Bird
    b. Or Approved Equal

C. Manual Flush Valves: All drip zones shall be installed with manual flush valve(s), number of valves will be based on the zone size and the number of dead ends.

D. Drip Tubes with Direct-Attach Emitters:

1. Tubing: Flexible PE with plugged ends
2. Emitters: Devices to deliver water at approximately 15 psi.

    a. Body Material: PE or vinyl, with flow control.
    b. Mounting: Inserted directly into tubing at set intervals, on emitter stake, on PE riser.

PART 3 - EXECUTION

3.1 GENERAL

A. Observation of Work in Progress: During the installation the Landscape Architect\Irrigation Consultant will make regular site visits and reject any work and materials which do not meet the requirements called for in the Contract Documents.

B. Inspect project site prior to start of Work to determine that all site conditions are acceptable for Work to begin. Inform Landscape Architect\Irrigation Consultant of unsuitable conditions. Do not proceed with installation of the irrigation system until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

C. Locate all existing underground utilities prior to trenching and\or boring operations and protect them against damage during the Work. Obtain utility location from Owner and\or General Contractor and utilize utility locating services when necessary.

3.2 EXAMINATION

A. Investigate and determine available water supply, water pressure and flow characteristics.

B. When unanticipated utilities that conflict with the intended function or design are encountered, investigate and measure the nature and extent of the conflict. Promptly submit a written report to the Owner for action.

3.3 EARTHWORK

A. Install warning tape directly above pressure piping, 12 inches below finished grades, except 6 inches below subgrade under pavement and slabs.

B. Install piping and wiring in sleeves under sidewalks, roadways, parking lots, and railroads.

1. Install piping sleeves prior to hardscape sub-base being installed if possible.
2. Sleeving installed in open trench to be completely backfilled crushed limestone, approved by owners representative and compacted to insure no future settling.
3. Pipe sleeves are to be a minimum of two times the diameter of the pipe in the sleeve.

C. Provide minimum cover over top of underground piping according to the following:

1. Irrigation Main Piping: Minimum depth of 18 inches from top of pipe to finished grade.
2. Circuit Piping: 12 inches from top of pipe to finished grade within general landscape areas, piping to be a minimum of 3 inches laterally from mainline at all times.
3. Drain Piping: 12 inches.
4. Sleeves: 10 inches from top of pipe for mainlines and 10 inches from top of pipe for laterals.

3.4 EXCAVATION PREPARATION

A. Set stakes to identify locations of proposed irrigation system. Obtain Owner’s Representative’s approval before excavation.

B. Excavate area for pipe installation 4" wider than diameter of pipe.

1. Level trench base to insure consistent contact of pipe to trench bottom.
2. Remove all rocks and other sharp objects.
3. Place pipe in trench snaking from side to side if possible.
4. Backfill to the top of pipe compacting the sides.
5. Backfill in 8" lifts compacting to 90% between lifts until complete.
6. All trenches greater than 4" in width to be restored to grade, +- ¼", with sod as approved by Owner's Representative.
7. All trenches 4" or small in width to be restored to grade, +- ¼" with a minimum of 3" of topsoil as approved by Owner's Representative.
8. Whenever possible trenching should be outside of a tree dripline. If trenching is done within the dripline it should be at least 10' from existing tree, if 10' is not possible the trenching must be done by hand and all tree roots greater than 1" to be left in place. All tree roots 1" or less may be removed by saw cutting root on either side of the excavation and root removal.

3.5 PIPING APPLICATIONS

A. Install components having pressure rating as shown on the plan.

B. Piping above ground may be joined with flanges instead of joints indicated.

C. Aboveground Irrigation Main Piping: Use the following piping materials for each size range:

1. NPS 3 and Larger: Steel pipe; malleable-, gray-, or cast-iron fittings; and threaded joints.
2. NPS 25 and Smaller: Hard copper tube, wrought- or cast-copper fittings, and soldered joints.

D. Underground Irrigation Main Piping: Use the following piping materials for each size range:

1. NPS 25 and Smaller: SCH 40, PVC, pressure-rated pipe; Schedule 40, PVC socket fittings; and solvent-cemented joints.
2. NPS 3 and larger: SCH 40, pressure rated pipe with gasket joint ends, Ductile Iron gasket joint fittings with manufacturer's recommended joint restraint.

E. Circuit Piping: Use the following piping materials for each size range:

1. NPS 4 and Smaller: SCH 40, PVC, pressure-rated pipe; Schedule 40, PVC socket fittings; and solvent-cemented joints.

F. Underground Branches and Offsets at Sprinklers and Devices:

1. Option: Plastic piping manufactured for this application may be used on sprinkler inlets of 1/2" or smaller instead of pipe and fittings specified, "swing pipe and spiral barbed elbows). If this is to be used the offset must be more than 12" and less than 18" as per detail.

G. Risers to Aboveground Sprinklers and Specialties: Type L hard copper tube, wrought-copper fittings, and soldered joints.

H. Sleeves: SCH 40 PVC pipe and socket fittings; and solvent-cemented joints.

I. Transition Fittings: Use transition fittings for plastic-to-metal pipe connections according to the following:

1. Couplings:
   a. Underground Piping NPS 2-1/2 and Smaller: Manufactured fitting or coupling.
   b. Underground Piping NPS 3 and Larger: PVC Flange with stainless steel bolts and rubber gasket.

2. Fittings:

   a. Aboveground Piping: Plastic-to-metal transition fittings.
   b. Underground Piping: Union with plastic end of same material as plastic piping.

J. Dielectric Fittings: Use dielectric fittings for dissimilar-metal pipe connections according to the following:

1. Underground Piping:

   a. NPS 2 and Smaller: Dielectric coupling or dielectric nipple.
   b. NPS 2-1/2 and Larger: Prohibited except in control-valve box.

2. Aboveground Piping:

   a. NPS 2 and Smaller: Dielectric couplings or dielectric nipples.
   b. NPS 2-1/2 to NPS 4: Dielectric flange.

3. Piping in Valve Boxes or Vaults:

   a. NPS 2 and Smaller: Dielectric union.
   b. NPS 2-1/2 to NPS 4: Dielectric flange.

3.6 VALVE APLICATIONS

A. Aboveground, Shutoff-Duty Valves:

1. NPS 2-1/2 and Smaller: Bronze gate valve.
2. NPS 3 and Larger: Cast-iron, non-rising stem gate valve.

B. Isolation Valves:

1. NPS 2-1/2 and Smaller: Bronze non-rising stem gate valve.
2. NPS 3 and Larger: Cast-iron, non-rising stem gate valve with 2” operating nut.

3.7 PIPING INSTALLATION

A. Location and Arrangement: Drawings indicate location and arrangement of piping systems. Install piping as indicated unless deviations are approved on Coordination Drawings.

B. Install piping free of sags and bends.

C. Install groups of pipes parallel to each other with a space between minimum of 4”, spaced to permit single valve removal and or servicing.

D. Install fittings for changes in direction and branch connections.

E. Install dielectric fittings to connect piping of dissimilar metals.

F. Install underground thermoplastic piping according to ASTM D 2774 and ASTM F 690.

G. Lay piping on solid sub-base, uniformly sloped without humps or depressions.

H. Install PVC piping in dry weather when temperature is above 32 deg F. Allow joints to cure at least 24 hours at temperatures above 32 deg F before testing unless otherwise recommended by manufacturer.

I. Install water regulators with shutoff valve and strainer on inlet and pressure gage on outlet. Flush the line prior to installation to remove debris. Install the valve so that the flow arrow marked on the valve body tag corresponds to the flow through the line. Install shutoff valve on outlet.

3.8 VALVE INSTALLATION

A. Electrical Control Valves: Install in valve box with top flush with and perpendicular to grade.

1. Electrical control valve boxes to be 14" rectangular valve box for standard valves and "Jumbo" valve boxes for drip zone kits.
2. From bottom of valve to a depth of 6" install washed stone or gravel sized between ¾" and 1" in diameter to create sump and stabilize valve box.
3. Install valve box extensions as necessary to bring lid level with finished landscape grade.
4. Control Valves to be installed with center line of valve 12" below finished grade.

B. Underground, Manual Control Valves: Install with 6" SDR 21 PVC riser from top of pipe to center line of valve box finishing with 10" round valve box level with finished landscape grade.

1. Install valves and PVC pipe with restrained, gasketed joints as necessary at the same depth as the mainline pipe.

3.9 SPRINKLER INSTALLATION

A. Flush circuit piping with full head of water prior to installing sprinklers.

B. Install sprinklers at manufacturer's recommended heights perpendicular to grade.

C. Locate part-circle sprinklers to maintain a minimum distance of 4 inches from walls and 2 inches from other boundaries unless otherwise indicated.

D. Adjust all sprinklers to irrigated plant material indicated for the station.

3.10 AUTOMATIC CONTROL SYSTEM INSTALLATION

A. Obtain approval of controller location from owner's representative prior to installation. Install wall mount controllers approximately 48" -60" above FFE. Securely fasten controller to wall with metallic fasteners appropriate for wall type or install pedestal controller on concrete pad with all necessary conduit installed through the pad to accommodate all wire to controller. All irrigation control wire between controller and control valves to be in 1" SCH 40 PVC electrical conduit.

B. Install control wire conduit in same trench as mainline piping and at least 4 inches to the side of the piping. Provide conductors of size not smaller than recommended by controller manufacturer. All wire splices not in a valve box to be located in minimum 10" round valve box.

3.11 CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Ground equipment according to ASIC Grounding Guidelines www.aisc.org. Resistance readings to ground to be as recommended by the manufacturer. If there are no manufactures requirements then the controller should have a resistance of 10 ohms or less.

C. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

3.12 FIELD QUALITY CONTROL

A. Perform the following field tests and inspections and prepare test reports:

1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
2. Operational Test: After electrical circuitry has been energized, operate controllers and automatic control valves to confirm proper system operation.
3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
4. Remove and replace units and retest and re-inspect as specified above.

3.13 STARTUP SERVICE

A. Engage a factory-authorized service representative to perform startup service of control system.

B. Verify that controllers are installed and connected according to the Contract Documents.

C. Verify that electrical wiring installation complies with manufacturer's submittal and installation requirements in Division 16 Sections.

D. Complete startup checks according to manufacturer's written instructions.

3.14 ADJUSTING

A. Program controller(s) to insure adequate moisture is available for the root zone of the plant. Insure there is no run-off, over watering or deep percolation. Insure controller operates within irrigation window as defined by Owner's Representative or local governing authorities. See additional controller programming notes on plans provided.

B. Adjust automatic control valves to provide flow rate at rated operating pressure required for each sprinkler circuit. Use pressure regulation for each control valve if pressure is higher than recommended for the sprinklers in the circuit.

C. Adjust sprinklers so they will be 1/8 inch above finish grade in sodded lawns and 1/2 inch above grade in seeded lawns. In shrub beds adjust sprinklers to insure top of sprinkler is at finished mulch levels.

D. Adjust sprinklers arc and radius to insure no water is sprayed outside of the irrigated area.

3.15 CLEANING

A. Flush dirt and debris from piping before installing sprinklers and other devices.

3.16 DEMONSTRATION

A. It is contractors' responsibility to train Owner's maintenance personnel to adjust, operate, and maintain sprinklers, isolation valves, controllers and automatic control valves.

3.17 OBSERVATION AND ACCEPTANCE

A. Periodic site visits will be made by the Landscape Architect\Irrigation Consultant to review the quality and progress of the work. Work found to be unacceptable must be corrected within five (5) calendar days. Remove rejected materials promptly from the project.

B. Upon completion of the Work, the Contractor shall notify the Landscape Architect and Owner at least ten (10) days prior to requested date of the site visit for Substantial Completion of all portions of the Work. Landscape Architect\Irrigation Consultant will issue a punch list for all work to be corrected. All work on the punch list must be complete within five (5) working days from the date of the site visit. Where Irrigation Work does not comply with the requirements, replace rejected Work. If such replacements are not completed within the time specified, the Irrigation Contractor may be considered to be in default of the Contract, and the Owner may use the Contract Retainage to hire other Contractors to finish the work.

C. It will be the responsibility of the Irrigation Contractor to provide reliable communication system (remote control or two way radios) for Substantial Completion and all periodic site visits.

D. If a site visit to verify Substantial Completion has been scheduled and the Landscape Architect\Irrigation Consultant arrives at the site and determines that the irrigation system is not substantially complete (all system components in place, operational and checked) the Contractor will be responsible for all expenses included but are not limited to the following: mileage, airfare, consultant's time, parking fees, meals, car rental, etc. All incurred expenses will be deducted from the final contract amount.

END OF SECTION 328400

SECTION 32 92 00 – SEEDING AND SODDING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Soil preparation
2. Sodding lawns
3. Plugging lawns
4. Sprigging lawns
5. Seeding lawns
6. Hydroseeding lawns
7. Reconditioning existing lawns
8. Maintenance of lawns

B. Related Sections:

1. Division 1: General Requirements
2. Section 32 80 00: Irrigation
3. Section 32 93 00: Plants

1.2 REFERENCES

A. "Standardized Plant Names" as adopted by the latest edition of the American Committee of Horticultural Nomenclature.

1.3 SUBMITTALS

A. Quality Control Submittals:

1. Submit the following materials certification:
    a. Submit sod growers certification of grass species. Identify source location.
    b. Submit seed vendor's certification for required grass seed mixture, indicating percentage by weight, and percentages of purity, germination, and weed seed for each grass species.
    c. Plant fertilizer(s) analysis.
2. Submit soil test reports.

3. Submit materials invoices for the following:

   a. Seed.

   b. Soil Amendments.

B. Contract Closeout Submittals:

1. Prior to plant material acceptance, submit written maintenance instructions recommending adequate and reasonable procedures for maintenance of grassed areas.

1.4 QUALITY ASSURANCE

A. Grass types indicated on Drawings comply with "Standardized Plant Names". Names of varieties not listed conform generally with names accepted by the nursery trade.

B. Qualifications: Grassing shall be performed by experienced workers familiar with grass installation.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Cut, deliver, and install sod within a 48 hour period.

1. Do not harvest or transport sod when moisture content may adversely affect sod survival.

2. Protect sod from sun, wind, and dehydration prior to installation.

3. Do not tear, stretch, or drop sod during handling and installation.

1.6 PROJECT CONDITIONS

A. Protect existing utilities, paving, and other facilities from damage caused by landscaping operations.

B. Restrict traffic from lawn areas until grass is established. Erect signs and barriers as required.

C. The irrigation system shall be installed prior to grassing. Locate, protect, and maintain the irrigation system during planting operations. Repair irrigation system components, damaged during planting operations, at Contractor's expense.

1.7 SCHEDULING

A. Perform grass installation only after other work affecting ground surface has been completed.

B. Time of Grass Installation: Plant under favorable weather conditions and recommended season for grass survival and establishment. At option and under full responsibility of Contractor, planting operations may be conducted under unseasonable conditions, but without additional compensation.

1.8 WARRANTY

A. Contractor shall warranty turf for a period of sixty (60) days. At the end of the sixty day period, any turf that has not been established or has died must be replaced by the Contractor at the Contractor’s expense.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Sod: An "approved" nursery grown sod composed of grass species indicated on plant schedule. Sod shall be minimum 2 years old. Provide well-rooted, healthy sod, free of diseases, nematodes, and soil borne insects. Provide sod uniform in color, leaf texture, density, and free of weeds, undesirable grasses, stones, roots, thatch, and extraneous material; viable and capable of growth and development when planted.

1. Furnish sod machine stripped in widths of 12 inches to 24 inches in uniform length less than 6 feet with minimum 1 ½" – 2" of soil attached. At time of stripping, grass shall be 1 to 2 inches high cut.

2.2 ACCESSORIES

A. Topsoil: specified in Section 31 22 00.

B. Commercial Fertilizer: Conforming to applicable Federal and State law, uniform as to composition, dry, free-flowing, and delivered to site in original unopened containers. Application rate and minimum analysis shall be as recommended by soils test report.

C. Soil Conditioning Materials:

1. Aluminum Sulfate: Unadulterated, in manufacturer's original, unopened container labeled with analysis and net weight. Use to acidify soil (lower pH) as recommended by soils test report.

2. Limestone: Raw, ground agricultural limestone, containing at least 90 percent calcium carbonate; 90 percent shall pass No. 10 sieve and 50 percent shall pass No. 50 sieve. Use to decrease acidity of soil (raise pH) as recommended by soils test report.

D. Stakes:

1. Softwood, untreated 3/4 inch dia. x 8 inch long or,

B. Steel, tee shaped pins, 4 inch head x 8 inch leg

C. Sod staples

D. Water: Clean, free from toxic amounts of salt, oil, acid, alkali, organic matter or other substance harmful to plants.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine finish surfaces, grades, topsoil quality, and depth. Do not start grass installation until unsatisfactory conditions are corrected and fine grading has been completed.

B. Subsurface Drainage Investigation: perform subsurface drainage investigation as specified in Section 32 93 00.

3.2 PREPARATION

A. Protection of Surrounding Areas: Contractor shall clean pavements at end of working day and before onset of inclement weather to prevent staining by or tracking of materials. Keep pavement and work area in an orderly condition. Dispose of trash and debris created by landscape operations daily.

B. Limit preparation to areas which will be immediately sodded.

C. Loosen topsoil of lawn areas to minimum depth of 4 inches. Remove stones over 1 inch in any dimension and sticks, roots, rubbish, and extraneous matter.

D. Soil Conditioning:

1. Coordinate soil conditioning with soil testing and fine grading operations.

2. Adjustment of pH: Adjust the pH range of the existing soils that are unacceptable according to requirements specified in Section 31 22 00. Adjust pH by uniformly incorporating required soil conditioning materials at the rate determined by the analysis of the soil test done by the Soils Testing Laboratory. Soil pH shall be corrected for the grasses specified on the Drawings to a pH range recommended for the species.

3. Peat Moss: Adjust percent of organic material of existing soils that are unacceptable according to minimum requirements specified in Section 31 22 00. Spread peat moss uniformly on soil surface.

4. Incorporate peat moss and soil conditioners into the topsoil to a depth of 4 inches by disking or rototilling. Use hand tools where power equipment is inaccessible.

5. Add required fertilizer at rate specified by laboratory test and County Agent for the grass species. If season does not permit immediate fertilization, then fertilizer shall be applied in following spring at recommended rate. Do not apply fertilizer between October 1 and March 1.

   a. For bid purposes only, the application rate shall be 12-12-12 commercial fertilizer at 20 pounds per 1000 square feet.

   b. Incorporate fertilizer into the topsoil by disking or rototilling to depth of 4 inches for sodding and 1 inch for seeding. Use hand tools where power equipment is inaccessible.

6. Recompact soil to density specified in Section 31 22 00.

E. Location of Grass Areas: Stake grass areas as indicated on Drawings.

F. Dampen dry soil prior to sodding, plugging, and seeding.

G. Restore prepared areas to specified condition if eroded, settled, or otherwise disturbed after fine grading and prior to sodding and seeding.

H. Temporary Cover Grass: If season does not permit planting the specified grass variety, provide temporary cover grass until season permits establishing permanent grass.

1. Seed lawn areas with Annual Ryegrass (*Lolium multiflorum*) at a rate of not less than 10 to 12 lbs. per 1000 square feet. Seed shall be sown as specified under Seeding below.

2. Fertilize, mow grass, and repair eroded areas to maintain neat appearance until time for permanent grassing when cover grass shall be thoroughly disked into topsoil.

3.3 INSTALLATION

A. Plant lawn areas within 24 hours of soil preparation.

B. Sodding:

1. Lay boards over sodded areas to protect sod from construction traffic.

2. Do not lay sod on saturated or frozen soil.

3. Lay sod to form a solid mass with tightly-fitted joints. Butt ends and sides of sod strips. Do not overlay edges. Stagger strips to offset joints in adjacent courses. Remove excess sod to avoid smothering of adjacent grass. Provide sod pad top flush with adjacent curbs, sidewalks, drains, and seeded areas.

4. Install initial row of sod in a straight line, beginning at bottom of slopes, perpendicular to direction of the sloped area. Place subsequent rows parallel to and against previously installed row.

5. Topdress sod with topsoil and work into joints with broom or mat.

6. Water sod thoroughly with a fine spray immediately after laying.

7. Roll with light lawn roller to ensure contact with subgrade.

3.4 WATERING

A. Thoroughly soak lawn areas immediately after installation with fine mist spray until the ground is soaked to a depth of at least 2 inches.

3.5 MAINTENANCE

A. Maintain lawns until final acceptance of Work.

B. Maintain grass areas to establish a full, uniform stand of grass free of weeds, undesirable grass species, disease, and turfgrass pests.

1. Repair, rework, and resod or reseed all areas that have washed out, are eroded, or have not established. Replace undesirable or dead areas with new sod or seed.

2. Mow lawn areas as soon as lawn top growth reaches a 3" height. Cut back to no more than 1/3rd of height. Repeat mowing as required to maintain specified height. After first mowing, grass shall be mowed every 3 days at the same height. Mowing shall be done using reel type mowers only; no rotary mowers may be used. After third mowing the Owner shall be responsible for mowing, even though grass may not have reached standard for acceptance. Contractor shall advise Owner of proper mowing procedures. Maintain grass at 1” mowing height.

3. Post-Germination Nitrogen Application: Two and one-half weeks after seeds germinate apply sodium nitrate at 3 to 5 lbs. per 1000 square feet.

4. Topdressing Fertilizer: After grass has become established, evenly spread topdressing fertilizer at rate recommended by soil laboratory test for the appropriate time of year. Thoroughly water into soil.

5. Apply herbicides as required to control weed growth or undesirable grass species.

6. Apply fungicides and insecticides as required to control diseases and turfgrass pests.

7. Remove sod pegs.

8. Spot weed.

9. Water as required to maintain lawn.

3.6 ACCEPTANCE

A. Inspection to determine acceptance of grass areas will be made by the Landscape Architect, upon Contractor's request. Provide notification at least 10 working days before requested inspection date.

1. Contractor shall be required to produce a satisfactory stand of perennial grass.

2. Sodded areas will be acceptable provided all requirements, including maintenance, have been complied with, and a healthy, even colored viable lawn is established, free of weeds, undesirable grass species, disease, and insects. The root system shall be sufficient to survive dry periods, winter weather, and be capable of re-establishing in spring.

3. Scattered bare spots no larger than 4 inches square shall not total more than 3 square feet in any 100 square foot area.

B. Upon acceptance, the Owner will assume lawn maintenance.

3.7 CLEANING

A. Remove from site all excess materials, debris, and equipment. Repair damage resulting from sodding and seeding operations.

END OF SECTION 32 92 00

SECTION 32 93 00 – PLANTS

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Soil Preparation.
2. Planting mixes.
3. Trees, shrubs, and groundcovers.
4. Mulch and planting accessories.
5. Maintenance of Trees, Shrubs, and Groundcovers.

B. Related Sections:

1. Division 1: General Requirements
2. Section 31 22 00: Earthwork

1.2 REFERENCES

A. "Standardized Plant Names" as adopted by the latest edition of the American Committee of Horticultural Nomenclature.

B. American Standard for Nursery Stock, ANSI Z60.1. American Nursery and Landscape Association, 1250 Eye Street. NW, Suite 500, Washington, D.C. 20005

C. Standards of Practice of the American Association of Nurserymen.

D. All standards shall include the latest additions and amendments as of the day of the advertisement for bids.

1.3 QUALIFICATIONS

Landscape planting and related work shall be performed by a firm with a minimum of five years experience specializing in this type of work. All contractors and their sub-contractors who will be performing any landscape work included in this section of the specification shall be approved by the landscape architect.

1.4 SUBMITTALS

A. Quality Control Submittals:

1. Submit the following materials certification:
   a. Plant fertilizer(s) analysis.
2. Submit subsurface investigation reports.

3. Submit photographs of "specimen" plant materials.

B. Contract Closeout Submittals:

A. Prior to plant material acceptance, submit written maintenance instructions recommending adequate and reasonable procedures for maintenance of plant materials.

B. Provide plant material record drawings:

1. Legibly mark drawings to record actual construction.

2. Indicate horizontal locations, referenced to permanent surface improvements.

3. Identify field changes of dimension and detail and changes made by Change Order.

1.5 QUALITY ASSURANCE

A. Provide stock true to botanical name and legibly tag plants with botanical name to include variety or cultivar and size in accordance with the Standards of Practice of the American Association of Nurserymen.

B. Comply with sizing and grading standards of the latest edition of "American Standard for Nursery Stock."

C. Plants may be inspected and approved at the place of growth, for compliance with specification requirements for quality, size, and variety.

1. Such approval shall not impair the right of inspection and rejection upon delivery at the site or during the progress of work.

D. Qualifications: Planting shall be performed by experienced workers familiar with planting procedures.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver fertilizer materials in original, unopened, and undamaged containers showing weight, analysis, and name of manufacturer. Store in manner to prevent wetting and deterioration.

B. Moving and Storage of Plant Materials: Take all precautions customary in good trade practice in preparing plants for moving. Workmanship that fails to meet the highest standards will be rejected.

1. Dig, pack, transport, and handle plants with care to ensure protection against injury. Fully protect plants from damage by sun, wind, drought, water and other injurious conditions during transportation to site and during temporary storage before planting.

2. Inspection certificates required by law shall accompany each shipment invoice or order to stock and on arrival, the certificate shall be filed with the Landscape Architect.

3. No plant shall be bound with rope or wire in a manner that could damage or break the branches.

1.7 PROJECT CONDITIONS

A. Protect existing utilities, paving, and other facilities from damage caused by landscaping operations.

B. The irrigation system will be installed prior to planting. Locate, protect, and maintain the irrigation system during planting operations. Repair irrigation system components, damaged during planting operations, at Contractor's expense.

1.8 SCHEDULING

A. Time of Planting: Plant under favorable weather conditions and recommended season for survival and establishment. At option of, and under full responsibility of Contractor, planting operations may be conducted under unseasonable conditions, but without additional compensation.

1.9 WARRANTY

A. Warrant plant material to remain alive and be healthy, vigorous condition for a period of one year after final acceptance of entire project.

B. Contractor's Inspection of Owner's Maintenance:

1. During Warranty Period, Contractor shall make periodic visits to site (especially during times of unusually severe weather conditions) to inspect plants installed and guaranteed by him. If he should determine that conditions such as Owner's maintenance, which are not directly under his control, are insufficient to sustain plants, he shall promptly file written notice with Owner and Landscape Architect stating his findings and recommendations for correction.

2. If Landscape Architect concurs with Contractor after inspection of site, or if he should not be authorized to promptly inspect the site at Owner's expense, Contractor then may file written notice with Owner and Landscape Architect that unless proper maintenance, or other necessary work has been completed by a reasonable given date, and sustained thereafter, the terms of Plant Warranty will become null and void for all or stated portions of the work.

C. Remove from site, promptly upon discovery during periodic visits, dead or other unsatisfactory plants. Mark location safely with stake to facilitate future replacement.

D. Replace, in accordance with the Drawings and Specifications, all plants that are dead or, as determined by the Landscape Architect, are in an unhealthy or unsightly condition, and have lost their natural shape due to dead branches, or other causes due to Contractor's negligence.

1. The cost of such replacement(s) is at Contractor's expense.

2. Replace during earliest favorable weather and season unless directed otherwise by Landscape Architect.

3. Warrant all replacements plants for 1 year after installation.

E. Warranty shall not include damage or loss of plants caused by fires, floods, freezing, rains, lightning storms, winds over 75 miles per hour, or winter kill caused by extreme cold and severe winter conditions not typical of planting area; acts of vandalism or negligence on the part of the Owner.

F. Failure to Remedy Defects: If Contractor fails to remedy any defects in workmanship, materials, or performance that he is responsible for within reasonable length of time as specified in notice from

Landscape Architect to Contractor, the Owner may have work done and charge the cost to the Contractor.

G. Satisfaction of Warranty:

1. Contractor shall request by written notice inspection of final acceptance to take place within one week before or after end of warranty period.

2. If plants are in satisfactory condition, the Contractor shall receive a written notice of Warranty Compliance.

3. Replace rejected work and continue maintenance until work is reinspected by Landscape Architect and found acceptable.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Plants shall be true to species and variety specified and nursery-grown in accordance with good horticultural practices under climatic conditions similar to those in the locality of the project for at least two years. They shall have been freshly dug (during the most recent favorable harvest season).

1. All plant names and descriptions shall be as defined in *Hortus Third*.

2. All plants shall be grown and harvested in accordance with the *American Standard for Nursery Stock*.

3. Unless approved by the landscape architect, plants shall have been grown at a latitude not more than 325 km (200 miles) north or south of the latitude of the project unless the provenance of the plant can be documented to be compatible with the latitude and cold hardiness zone of the planting location.

B. Unless specifically noted, all plants shall be of specimen quality, exceptionally heavy, symmetrical, and so trained or favored in development and appearance as to be unquestionably and outstandingly superior in form, compactness, and symmetry. They shall be sound, healthy, vigorous, well branched, and densely foliated when in leaf; free of disease and insects, eggs, or larvae; and shall have healthy, well-developed root systems. They shall be free from physical damage or other conditions that would prevent vigorous growth.

1. Trees with multiple leaders, unless specified, will be rejected. Trees with a damaged or crooked leader, bark abrasions, sunscald, disfiguring knots, insect damage, cuts of limbs over 20 mm (3/4 in.) in diameter that are not completely closed or flush pruning cuts that do not preserve the collar at the base of the branch will be rejected.

C. Plants shall conform to the measurements specified, except that plants larger than those specified may be used if approved by the landscape architect. Use of larger plants shall not increase the contract price. If larger plants are approved, the root ball shall be increased in proportion to the size of the plant.

1. Caliper measurements shall be taken on the trunk 150 mm (6 in.) above the natural ground line for trees up to and including 100 mm (4 in.) in caliper, and 300 mm (12 in.) above the natural ground line for trees over 100 mm (4 in.) in caliper. Height and spread dimensions specified refer to the main body of the plant and not from branch tip to branch tip. Plants shall be measured when branches are in their normal position. If a range of sizes is given, no plant shall be less than the minimum size, and no less than 50 percent of the plants shall be as large as the maximum size specified. Measurements specified are minimum sizes acceptable after pruning, where pruning is required. Plants that meet measurements but do not possess a standard relationship between height and spread, according to the *American Standards for Nursery Stock*, shall be rejected.

D. Substitutions of plant materials will not be permitted unless authorized in writing by the landscape architect. If proof is submitted in writing that a plant specified is not obtainable, consideration will be given to the nearest available size or similar variety, with a corresponding adjustment of the contract price.

E. The plant list at the end of this section, or on the drawing, is for the contractor's information only, and no guarantee is expressed or implied that quantities therein are correct or that the list is complete. The contractor shall ensure that all plant materials shown on the drawings are included in his or her bid.

F. All plants shall be labeled by plant name. Labels shall be attached securely to all plants, bundles, and containers of plant materials when delivered. Plant labels shall be durable and legible, with information given in weather-resistant ink or embossed process lettering.

G. Selection and Tagging

1. Plants shall be subject to inspection for conformity to specification requirements and approval by the landscape architect at their place of growth and upon delivery. Such approval shall not impair the right of inspection and rejection during progress of the work.

2. All field grown deciduous trees shall be marked to indicate the trees north orientation in the nursery. Place a 1-in. diameter spot of white paint onto the north side of the tree trunk within the bottom 12 inches of the trunk.

H. Balled and Burlapped (B&B) Plant Materials

1. Trees designated B&B shall be properly dug with firm, natural balls of soil retaining as many fibrous roots as possible, in sizes and shapes as specified in the *American Standard for Nursery Stock*. Balls shall be firmly wrapped with nonsynthetic, rottable burlap and secured with nails and heavy, nonsynthetic, rottable twine. The root collar shall be apparent at surface of ball. Trees with loose, broken, processed, or manufactured root balls will not be accepted, except with special written approval before planting.
   NOTE: Some nurseries practice result in the root flare being buried several inches deep. The top of the root ball may be at ground level, but the root flare actually is too deep. Remove the excess soil on the top of the root ball. Proper planting depth requires the root flare to be at or slightly above the finished grade.

I. Container Plants

1. Plants grown in containers shall be of appropriate size for the container as specified in the most recent edition of the *American Standard for Nursery Stock* and be free of circling roots on the exterior and interior of the root ball.

2. Container plants shall have been grown in the container long enough to have established roots throughout the growing medium.

J. Bareroot and Collected Plants

1. Plants designated as bareroot or collected plants shall conform to the *American Standard for Nursery Stock*.

2. Bareroot material shall not be dug or installed after bud break or before dormancy.

K. Immediately after harvesting plants, protect from drying and damage until shipped and delivered to the planting site. Rootballs shall be checked regularly and watered sufficiently to maintain root viability.

L. Transportation and Storage of Plant Material

1. Branches shall be tied with rope or twine only, and in such a manner that no damage will occur to the bark or branches.

2. During transportation of plant material, the contractor shall exercise care to prevent injury and drying out of the trees. Should the roots be dried out, large branches broken, balls of earth broken or loosened, or areas of bark torn, the landscape architect may reject the injured tree(s) and order them replaced at no additional cost to the owner. All loads of plants shall be covered at all times with tarpaulin or canvas. Loads that are not protected will be rejected.

3. All bareroot stock sent from the storage facility shall be adequately covered with wet soil, sawdust, woodchips, moss, peat, straw, hay, or other acceptable moisture-holding medium, and shall be covered with a tarpaulin or canvas. Loads that are not protected in the above manner may be rejected.

4. Plants must be protected at all times from sun or drying winds. Those that cannot be planted immediately on delivery shall be kept in the shade, well protected with soil, wet mulch, or other acceptable material, and kept well watered. Plants shall not remain unplanted any longer than three days after delivery. Plants shall not be bound with wire or rope at any time so as to damage the bark or break branches. Plants shall be lifted and handled with suitable support of the soil ball to avoid damaging it.

M. Mechanized Tree Spade Requirements

Trees may be moved and planted with an approved mechanical tree spade. The tree spade shall move trees limited to the maximum size allowed for a similar B&B root-ball diameter according to the *American Standard for Nursery Stock* or the manufacturer's maximum size recommendation for the tree spade being used, whichever is smaller. The machine shall be approved by the landscape architect prior to use. Trees shall be planted at the designated locations in the manner shown in the plans and in accordance with applicable sections of the specifications.

2.2 ACCESSORIES

A. Planting Soil Mix:

1. Topsoil: As specified in Section 31 22 00.

2. Pine Bark: Commercial horticultural preparation, finely ground, free of extraneous and harmful matter.

B. Soil Conditioning Materials:

1. Aluminum Sulfate: Unadulterated, in manufacturer's original, unopened container labeled with analysis and net weight. Use to acidify soil (lower pH) as recommended by soils test report.

2. Limestone: Raw, ground agricultural limestone, containing at least 90 percent calcium carbonate; 90 percent shall pass No. 10 sieve and 50 percent shall pass No. 50 sieve. Use to decrease acidity of soil (raise pH) as recommended by soils test report.

C. Fertilizer:

1. Superphosphate: Soluble mixture of treated minerals; 20% available phosphoric acid.

2. Commercial Fertilizers: Conforming to applicable Federal and State law, uniform as to composition, dry, free-flowing, and delivered to site in original unopened containers. Application rate and minimum analysis shall be as recommended by soils test report.

D. Mulch:

1. Hardwood Mulch: Material shall be mulching grade, uniform in size, and free of foreign matter. Submit sample for approval.

E. Edging Materials:

NONE PERMITTED

F. Miscellaneous Materials:

1. Water: Clean, free from toxic amounts of salt, oil, acid, alkali, organic matter or other substances harmful to plants.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine proposed planting areas and conditions of installation. Do not start planting work until unsatisfactory conditions are corrected and fine grading has been approved by Landscape Architect.

B. Subsurface Drainage Investigation:

1. Required Tests: Subsurface drains have not been included as part of project; therefore, Contractor shall make such reasonable percolation tests, approved by Landscape Architect, as may be necessary to determine if subsurface drainage conditions in landscape areas are so poor as to support moisture conditions potentially fatal to plantings. The following procedure is recommended:

a. Wait at least twenty-four (24) hours after rain and dig test pit twelve (12) inches square or 13-1/2 inches in diameter to depth of bottom of plant bed, trench or pit. Remove all loose soil (if standing water is visible, notify the Landscape Architect).

b. Quickly fill pit bottom with six (6) inches (approximately 3-1/4 gallons) of water.

c. Record length of time from filling until disappearance of water and divide the number of minutes by six (6) to give average time of one (1) inch fall.

d. Compare one (1) inch fall time with following table:
- 1 inch in 0-3 min. indicates rapid absorption.
- 1 inch in 3-5 min. indicates medium absorption.
- 1 inch in 5-30 min. indicates slow absorption.
- 1 inch in 30-60 min. indicates semi-impervious soil.
- 1 inch in over 60 min. indicates impervious soil.

e. If soil is indicated to be semi-impervious or impervious, or if water is initially found in test pit, notify Landscape Architect before proceeding further.

f. If Contractor does not make test at representative locations and file records of results with Owner and Landscape Architect, or if he plants in areas shown to have poor drainage without written release from Owner, he shall be liable for any future guaranteed replacements due to subsurface water damage.

g. If Contractor makes proper tests and files complete records indicating no semi-impervious or worse conditions, he will not be held responsible for future subsurface water damage to work of Contract within Guaranty Period. Owner or Landscape Architect may supervise testing at any time.

2. Relocation or Omission of Plants:

   a. Where subsurface conditions provide inadequate drainage and subsurface drainage system is not to be used as remedy, make reasonable relocation of plants as directed by Landscape Architect.

   b. Drainage conditions necessitating omission of plants shall be covered by Change Order.

3. Authorization of Drain as Extra Work: Owner may authorize installation of subsurface drains to alleviate moisture problems at locations determined by Landscape Architect. Perform work at negotiated extra cost; begin work only upon receipt of Change Order. Locations, appropriate materials, and construction techniques shall be as directed by Landscape Architect.

3.2 PREPARATION

A. Utility Verification: **Contractor will be responsible for damages to any unmarked utility.**

1. The contractor shall contact the local utility companies for verification of the location of all underground utility lines in the area of the work. The contractor shall be responsible for all damage resulting from neglect or failure to comply with this requirement.

B. Soil Conditioning:

1. Coordinate soil conditioning with soil testing and fine grading operations specified in Section 02200.

2. Adjustment of pH: If the pH range of the soil samples from the proposed planting sites is not acceptable, the Contractor shall, upon receipt of authorization to proceed by Change Order, adjust the pH of the existing soils within the unacceptable areas. Adjust pH by uniformly incorporating required soil conditioning materials at the rate determined by the analysis of the soil test done by the Soils Testing Laboratory.

C. Location of Plants: Place individual plants and stake plant beds as indicated on Drawings. Notify Landscape Architect for approval prior to planting. Contractor shall make reasonable adjustment of plant locations as recommended by Landscape Architect.

D. Obstructions:

1. Obstructions at or below grade shall be removed where possible; obstructions such as functioning utilities or objects too massive to be removed with tractor mounted backhoe will require plant relocations as directed by Landscape Architect.

2. Above Ground: Report overhead interference such as wires, overhangs, etc., to Landscape Architect and relocate plantings as directed.

3. Repairs: Contractor shall familiarize himself with the location of all underground and above-ground improvements and take care not to disturb improvements during his installation operations. Contractor shall repair or replace at Contractor's sole expense improvements damaged by his installation operations.

E. EXCAVATION FOR TREES AND SHRUBS

a. Locations for plants and/or outlines of areas to be planted are to be staked out at the site. Locate and mark all subsurface utility lines. Approval of the stakeout by the landscape architect is required before excavation begins.

b. Tree, shrub, and groundcover beds are to be excavated to the depth and widths indicated on the drawings. If the planting area under any tree is initially dug too deep, the soil added to bring it up to the correct level should be thoroughly tamped.

1. The sides of the excavation of all planting areas shall be sloped at a 45 degrees. The bottom of all beds shall slope parallel to the proposed grades or toward any subsurface drain lines within the planting bed. The bottom of the planting bed directly under any tree shall be horizontal such that the tree sits plumb.

2. Maintain all required angles of repose of the adjacent materials as shown on the drawings. Do not excavate compacted subgrades of adjacent pavement or structures.

c. For trees and shrubs planted in individual holes in areas of good soil that is to remain in place and/or to receive amendment in the top 150-mm (6 in.) layer, excavate the hole to the depth of the root ball and to widths shown on the drawing. Slope the sides of the excavation at a 45 degree angle up and away from the bottom of the excavation.

1. In areas of slowly draining soils, the root ball may be set up to 75 mm (3 in.) or 1/8 of the depth of the root ball above the adjacent soil level.

2. Save the existing soil to be used as backfill around the tree.

3. On steep slopes, the depth of the excavation shall be measured at the center of the hole and the excavation dug as shown on the drawings.

D. Detrimental soil conditions: The landscape architect is to be notified, in writing, of soil conditions encountered, including poor drainage, which the contractor considers detrimental to the growth of plant material. When detrimental conditions are uncovered, planting shall be discontinued until instructions to resolve the conditions are received from the landscape architect.

E. Obstructions: If rock, underground construction work, utilities, tree roots, or other obstructions are encountered in the excavation of planting areas, alternate locations for any planting shall be determined by the landscape architect.

F. Planting Mixture:

1. Mixture for shrubs, trees and groundcovers: Clean friendly native top soil.

a. Add soil amendments necessary to adjust soil to required pH for plant material, as recommended in soil test report.

b. Add 1/2 lb. superphosphate per cubic yard for planting mixture.

2. Place and compact mixture to 6-inch depth in bottom of pit. Reserve enough mixture for backfill.

3. Groundcover Beds: Till and pulverize soil to a depth of 6 inches below grade. Mix by tilling the material as described above.

3.3 INSTALLATION

A. Plants shall be set on flat-tamped or unexcavated pads at the same relationship to finished grade as they were to the ground from which they were dug, unless otherwise noted on the drawings. Plants must be set plumb and braced in position until topsoil or planting mix has been placed and tamped around the base of the root ball. Improper compacting of the soil around the root ball may result in the tree settling or leaning. Plants shall be set so that they will be at the same depth and so that the root ball does not shift or move laterally one year later.

   NOTE: Proper planting depth requires the root flare to be at or slightly above the finished grade. It is important to determine how deep the root flare is in the ball before it is placed in the planting hole. Sometimes the top of the ball may need to be raised until the root flare is at the proper planting depth and/or soil must be removed from the top of the ball.

   1. Determine the elevation of the root flare and ensure that it is planted at grade. This may require that the tree be set higher than the grade in the nursery.

   2. If the root flare is less than 50 mm (2 in.) below the soil level of the root ball, plant at the tree the appropriate level above the grade to set the flare even with the grade. If the flare is more than 50 mm (2 in) at the center of the root ball the tree shall be rejected.

B. Lift plants only from the bottom of the root balls or with belts or lifting harnesses of sufficient width not to damage the root balls. Do not lift trees by their trunk or use the trunk as a lever in positioning or moving the tree in the planting area.

C. Remove plastic, paper, or fiber pots from containerized plant material. Pull roots out of the root mat, and cut circling roots with a sharp knife. Loosen the potting medium and shake away from the root mat. Immediately after removing the container, install the plant such that the roots do not dry out. Pack planting mix around the exposed roots while planting.

D. The roots of bare-root trees shall be pruned at the time of planting to remove damaged or undesirable roots (those likely to become a detriment to future growth of the root system). Bare-root trees shall have the roots spread to approximate the natural position of the roots and shall be centered in the planting pit. The planting-soil backfill shall be worked firmly into and around the roots, with care taken to fill in completely with no air pockets.

E. Cut ropes or strings from the top of shrub root balls and trees smaller than 3 in. caliper after plant has been set. Remove burlap or cloth wrapping and any wire baskets from around top half of balls. Do not turn under and bury portions of burlap at top of ball.

   1. Do not immediately remove the ropes and burlap from trees larger than 3 in. caliper. Return to each tree three months after planting (six months for fall-planted material), and cut all ropes around the trunks and tops of the root balls of these trees.

   2. Completely remove any waterproof or water-repellant strings or wrappings from the root ball and trunk before backfilling.

F. Set balled and burlapped trees in the hole with the north marker facing north unless otherwise approved by the landscape architect.

G. Place native soil, topsoil, or planting mix into the area around the tree, tamping lightly to reduce settlement.

   1. For plants planted in individual holes in existing soil, add any required soil amendments to the soils, as the material is being backfilled around the plant. Ensure that the amendments are thoroughly mixed into the backfill.

   2. For plants planted in large beds of prepared soil, add soil amendments during the soil installation process.

3. Ensure that the backfill immediately around the base of the root ball is tamped with foot pressure sufficient to prevent the root ball from shifting or leaning.

H. Thoroughly water all plants immediately after planting. Apply water by hose directly to the root ball and the adjacent soil.

I. Remove all tags, labels, strings, etc. from all plants.

J. Remove any excess soil, debris, and planting material from the job site at the end of each workday.

K. Form watering saucers 100 mm (4 in.) high immediately outside the area of the root ball of each tree as indicated on the drawings.

M. Pruning

1. Plants shall not be heavily pruned at the time of planting. Pruning is required at planting time to correct defects in the tree structure, including removal of injured branches, double leaders, waterspouts, suckers, and interfering branches. Healthy lower branches and interior small twigs should not be removed except as necessary to clear walks and roads. In no case should more than one-quarter of the branching structure be removed. Retain the normal or natural shape of the plant.

2. All pruning shall be completed using clean, sharp tools. All cuts shall be clean and smooth, with the bark intact with no rough edges or tears. All pruning cuts shall be made just outside of the collar at the base of the branch.

3. Except in circumstances dictated by the needs of specific pruning practices, tree paint shall not be used. The use of tree paint shall be only upon approval of the landscape architect. Tree paint, when required, shall be paint specifically formulated and manufacturing for horticultural use.

4. Pruning of large trees shall be done from a hydraulic man-lift such that it is not necessary to climb the tree.

N. Tree Guying, and Staking

1. Staking and guying shall not be required unless conditions exist (such as high wind exposure, loose soil conditions, small/rounded root balls, etc.) that warrant stabilizing the plant materials. This decision shall be made by the contractor and approved by the owner's representative. Staking may weaken the initial tree development. If required or recommended, staking shall be completed immediately after planting. Trees up to two inches (5 cm) caliper are to be staked with two wood stakes and separate flexible ArborTies. For larger trees use three strands of guying material and ground anchors. Ground anchors are to be driven at approximately a 45° angle to ground plane in line with guying material and distributed at 120° intervals around the trunk. Anchors shall be driven to 2 – 3" above finish grade. Tie guying material to anchor and cap anchor with safety cap.

2. Stakes and guys shall be installed immediately upon approval or planting, and shall be removed at the end of the first growing season. Any trees that is not stable at the end of this time shall be rejected.

3. Leave enough slack in the guy cords to allow the tree to sway. The cords shall be tied loosely above a branch or crotch.

O. Fertilizing

1. Time of Application: Apply at time of planting or promptly thereafter. Do not apply during period of August 16th through March 15th.

2. Methods of Application: Uniformly spread on soil surface prior to mulching at specified rate.

3. Rates of Application: Apply fertilizer at rate and ratio according to recommendations from soil tests. Fertilizer rates listed below are general rates, which may be altered due to specific soil requirements:

   - Trees: 16-4-8 at 2 pounds per inch of caliper.

   - Shrubs: 5-10-10 at 20 pounds per 100 square feet.

   - Groundcovers: 5-10-10 at 2 pounds per 100 square feet.

   - Vines: 5-10-10 at 2 pounds per 100 square feet.

   - Herbaceous Plants: 5-10-10 at 2 pounds per 100 square feet.

P. Mulch

1. Areas to receive mulch: all plant beds and other areas as designated on Drawings shall be mulched.

2. Placement: Place mulch to required uniform depth soon after planting to prevent drying of planting soil around roots. When other operations such as fertilizing do not necessitate delay, mulch promptly after planting; do not delay more than 3 days after plants have been set.

   a. Apply Hardwood Mulch at a uniform depth of 3 inches, except in groundcover beds where it shall be a uniform depth of 2 inches. Work mulch neatly down among plants to give good appearance.

3.4 MAINTENANCE

A. Maintenance shall begin immediately after each plant is planted and continue until its acceptance has been confirmed by the landscape architect.

B. Maintenance shall consist of pruning, watering, cultivating, weeding, mulching, tightening and repairing guys and stakes, resetting plants to proper grades or upright position, restoring of the planting saucer, and furnishing and applying such sprays or other materials as necessary to keep plantings free of insects and diseases and in vigorous condition.

C. Planting areas and plants shall be protected at all times against trespassing and damage of all kinds for the duration of the maintenance period. If a plant becomes damaged or injured, it shall be treated or replaced as directed by the landscape architect at no additional cost.

D. Watering: Contractor shall irrigate as required to maintain vigorous and healthy tree growth. Overwatering or flooding shall not be allowed. The contractor shall monitor, adjust, and use existing irrigation facilities, if available, and furnish any additional material, equipment, or water to ensure adequate irrigation. Root balls of all trees and large shrubs shall be spot watered using handheld hoses during the first four months after planting, as required to ensure adequate water within the root ball.

E. During periods of restricted water usage, all governmental regulations (permanent and temporary) shall be followed. The contractor may have to transport water from ponds or other sources, at no additional expense to the owner when irrigation systems are unavailable..

3.5 ACCEPTANCE

A. Standard for Acceptance of Plantings: Each plant shall be as specified, properly installed and maintained in good healthy condition. All water saucers and beds shall be neatly formed and mulched. Beds shall be free of weeds and erosion damage.

B. Work may be accepted in parts when the landscape architect and contractor deem that practice to be in their mutual interest. Approval must be given in writing by the landscape architect to the contractor verifying that the work is to be completed in parts. Acceptance of work in parts shall not waive any other provision of this contract.

C. Upon acceptance, the Owner will assume plant maintenance.

3.6 CLEANING

A. Remove from site all excess materials, soil, debris, and equipment. Repair damage resulting from planting operations.

3.7 GUARANTEE PERIOD AND REPLACEMENT

A. The guarantee period for trees and shrubs shall begin at the date of acceptance.

B. The contractor shall guarantee all plant material to be in healthy and flourishing condition for a period of one year from the date of acceptance.

C. When work is accepted in parts, the guarantee periods extend from each of the partial acceptances to the terminal date of the guarantee of the last acceptance. Thus, all guarantee periods terminate at one time.

D. The contractor shall replace, without cost, as soon as weather conditions permit, and within a specified planting period, all plants determined by the landscape architect to be dead or in an unacceptable condition during and at the end of the guarantee period. To be considered acceptable, plants shall be free of dead or dying branches and branch tips and shall bear foliage of normal density, size, and color. Replacements shall closely match adjacent specimens of the same species. Replacements shall be subject to all requirements stated in this specification.

E. The guarantee of all replacement plants shall extend for an additional period of one year from the date of their acceptance after replacement. In the event that a replacement plant is not acceptable during or at the end of said extended guarantee period, the landscape architect may elect subsequent replacement or credit for that item.

F. At the end of the guarantee, the contractor shall reset grades that have settled below the proposed grades on the drawings.

G. The contractor shall make periodic inspections, at no extra cost, during the guarantee period to determine what changes, if any, should be made in the maintenance program. If changes are recommended, they shall be submitted in writing to the landscape architect. **Claims by the contractor that the owner's maintenance practices or lack of maintenance resulted in dead or dying plants will not be considered if such claims have not been documented by the contractor during the guarantee period**.

3.8 FINAL ACCEPTANCE

A. At the end of the guarantee period and upon written request of the contractor, the landscape architect will inspect all guaranteed work for final acceptance. The request shall be received at least ten calendar days before the anticipated date for final inspection. Upon completion and re-inspection of all repairs or renewals necessary in the judgment of the landscape architect at that time, the landscape architect shall certify, in writing, that the project has received final acceptance.

END OF SECTION 32 93 00

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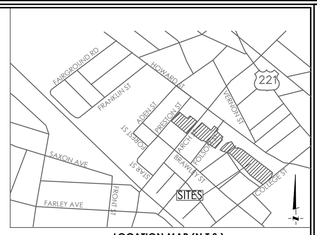
EXHIBIT A-2 DRAWINGS

CONSTRUCTION DOCUMENTS FOR:

BUTTERFLY BRANCH GREENWAY

CITY OF SPARTANBURG SOUTH CAROLINA



LOCATION MAP (N.T.S.)

1 / 1.0 **OVERALL SITE PLAN**

SCALE: 1" = 60'

DIVISION 1

Sheet Number	Sheet Title
1.0	COVER SHEET
2.0	EXISTING CONDITIONS PLAN
2.1	DEMOLITION PLAN
2.2	EROSION CONTROL PLAN
2.3	OVERALL GRADING PLAN
2.4	GRADING ENLARGEMENT PLAN
3.0	OVERALL TRAIL LAYOUT PLAN
3.1	TRAIL LAYOUT PLAN (1)
3.2	TRAIL LAYOUT PLAN (2)

DIVISION 1

Sheet Number	Sheet Title
3.3	PAVILION LAYOUT (1)
3.4	CONSTRUCTION DETAILS (1)
3.5	CONSTRUCTION DETAILS (2)
4.0	LANDSCAPE PLAN (1)
4.1	LANDSCAPE PLAN (2)
4.2	LANDSCAPE PLAN (3)
4.3	LANDSCAPE PLAN (4)
5.0	CONDUIT PLAN
6.0	IRRIGATION (1)

DIVISION 1

Sheet Number	Sheet Title
6.1	IRRIGATION (2)
6.2	IRRIGATION (3)
6.3	IRRIGATION (4)
6.4	IRRIGATION (5)
E-1	ELECTRICAL PLAN (1)
E-2	ELECTRICAL PLAN (2)
E-3	ELECTRICAL PLAN (3)
E-4	ELECTRICAL PLAN (4)
E-5	ELECTRICAL PLAN (5)

DIVISION 2

Sheet Number	Sheet Title
7.0	BRIDGE LAYOUT PLAN
7.1	PEDESTRIAN BRIDGE DETAILS (1)
7.2	PEDESTRIAN BRIDGE DETAILS (2)
7.3	PEDESTRIAN BRIDGE DETAILS (3)
7.4	PEDESTRIAN BRIDGE DETAILS (4)
7.5	PEDESTRIAN BRIDGE DETAILS (5)
7.6	PEDESTRIAN BRIDGE DETAILS (6)
7.7	PEDESTRIAN BRIDGE DETAILS (7)

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Phone: (864) 596-2089

Jay Squires, Streets & Stormwater Manager
jsquires@cityofspartanburg.org

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Tipton Pitts, ASLA
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ELECTRICAL ENGINEER:
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Phone: (864) 583-6274

Steve Smith
ssmith@matrixei.com

IRRIGATION DESIGNER:
SITE ONE
637 Marina Dr.
Charleston, SC 29492
Phone: (843) 216-7980

Charles Cannon
ccannon@siteone.com

PAVING SCHEDULE

SYMBOL	DESCRIPTION	QTY
P-101	10' PEDESTRIAN TRAIL 4" CONCRETE	26,718 SF
P-103	FUTURE 10' PEDESTRIAN TRAIL 4" CONCRETE (N.I.C.)	11,109 SF
P-104	NEW ASPHALT (HAMMER HEAD)	8,857 SF
P-106	PERMEABLE PAVER	253 SF
P-107	PERMEABLE PAVER BORDER	96 LF

03 CONCRETE SCHEDULE

SYMBOL	DESCRIPTION	QTY
03-01	4" CONCRETE BROOM FINISHED WALKS	2,968 SF

LIGHTING SCHEDULE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	DETAIL
☼	CITY STANDARD DECORATIVE STREET LIGHT	4	

CURB SCHEDULE

SYMBOL	DESCRIPTION	QTY
C-101	6" CURB / 12" GUTTER (ARCH STREET)	180 LF
C-102	6" CURB / 24" GUTTER (COLLEGE STREET)	234 LF
C-103	6" CURB / 12" GUTTER (HAMMERHEAD)	269 LF

ROCK SCHEDULE

SYMBOL	DESCRIPTION	QTY
K-101	FIELD STONE BOULDERS	45

FENCE SCHEDULE

SYMBOL	DESCRIPTION	QTY
F-101	5' RAIL FENCING	290 LF

SITE FURNISHINGS SCHEDULE

SYMBOL	DESCRIPTION	QTY	MANUFACTURER	MODEL NUMBER	FINISH	SIZE
S-101	INFORMATIONAL KIOSK	6				
S-102	6' BENCH	5	THOMAS STEELE	SKU/EAN CRB	BLACK	6'
S-103	LITTER RECEPTACLE	4	THOMAS STEELE	SKU/EAN CRTRN	BLACK	32 GAL
S-104	BIKE RACK	2	MADRAX	CS200-3-IG-P	BLACK	3 CAPACITY
S-105	PICNIC TABLE	6	THOMAS STEELE	SKU/EAN-8S-SF-P	BLACK	8'
S-106	R-8464 REMOVABLE BOLLARD	8	RELIANCE FOUNDRY	R-8464	BLACK SEMI GLOSS TEXTURED	

City of SPARTANBURG south carolina

BUTTERFLY BRANCH GREENWAY
CITY OF SPARTANBURG, SOUTH CAROLINA

CIVIL ENGINEERING:

BLACKWOOD ASSOCIATES INC.
CONSULTING ENGINEERS
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NOTE:
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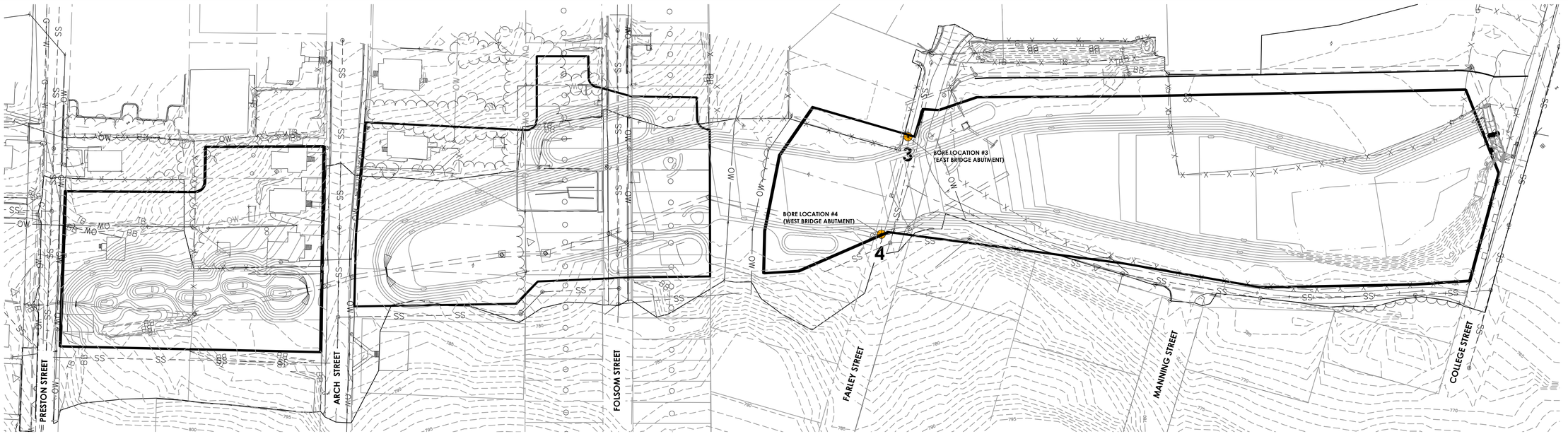
LDG JOB #: 13037-00
DR. BY: TP/AQ
APP.BY: TP
DATE: 01/26/17

811 Know what's below. Call before you dig.

COVER SHEET

0 60 120feet
SCALE: 1" = 60'



1 / 2.0 **EXISTING CONDITIONS**

SCALE: 1" = 60'

2 / 2.0 **LIMITS OF DISTURBANCE**

SCALE: 1" = 60'

NORTHING/EASTING POINT SCHEDULE

POINT	DESCRIPTION	NORTHING	EASTING
3	EAST BRIDGE ABUTMENT	N 1139321.7375	E 1723768.4875
4	WEST BRIDGE ABUTMENT	N 1139251.0367	E 1723671.5267

MITIGATION/CONSERVATION AREA OF PROJECT LIMITS +/- 7.32 ACRES

GREENWAY/LANDSCAPE AREA OF PROJECT LIMITS +/- 3.45 ACRES

City of SPARTANBURG south carolina

BUTTERFLY BRANCH GREENWAY

CITY OF SPARTANBURG, SOUTH CAROLINA

CIVIL ENGINEERING:

BAI

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811 Know what's below. Call before you dig.

EXISTING CONDITIONS PLAN

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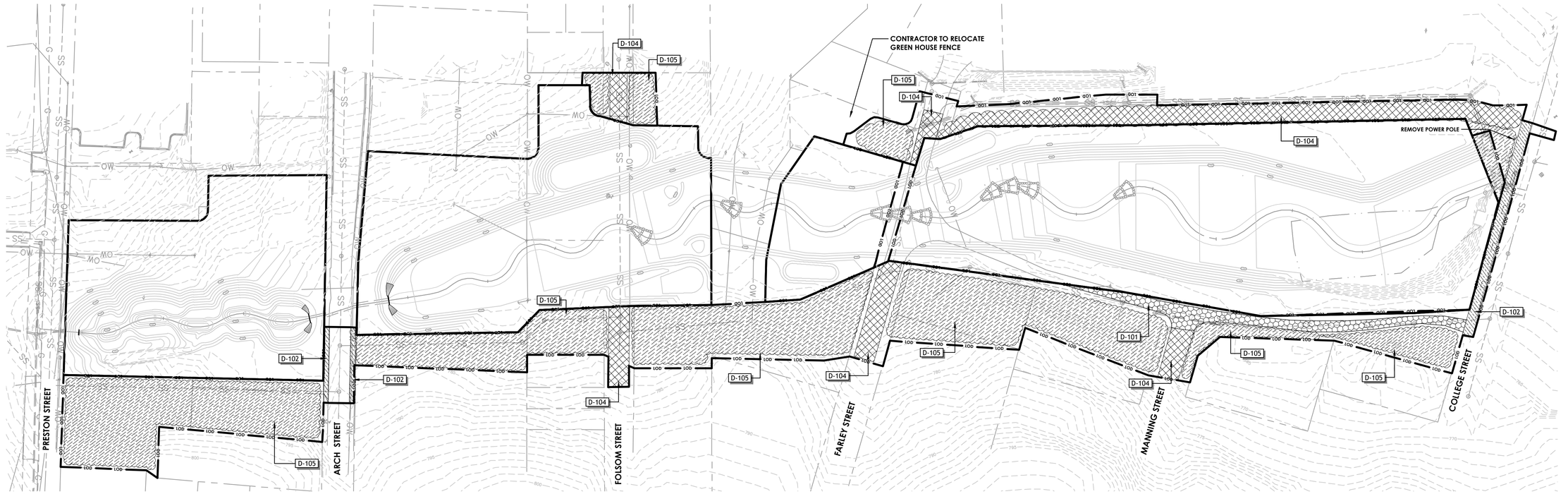
SCALE: 1" = 60'



1 / 2.1 DEMOLITION PLAN

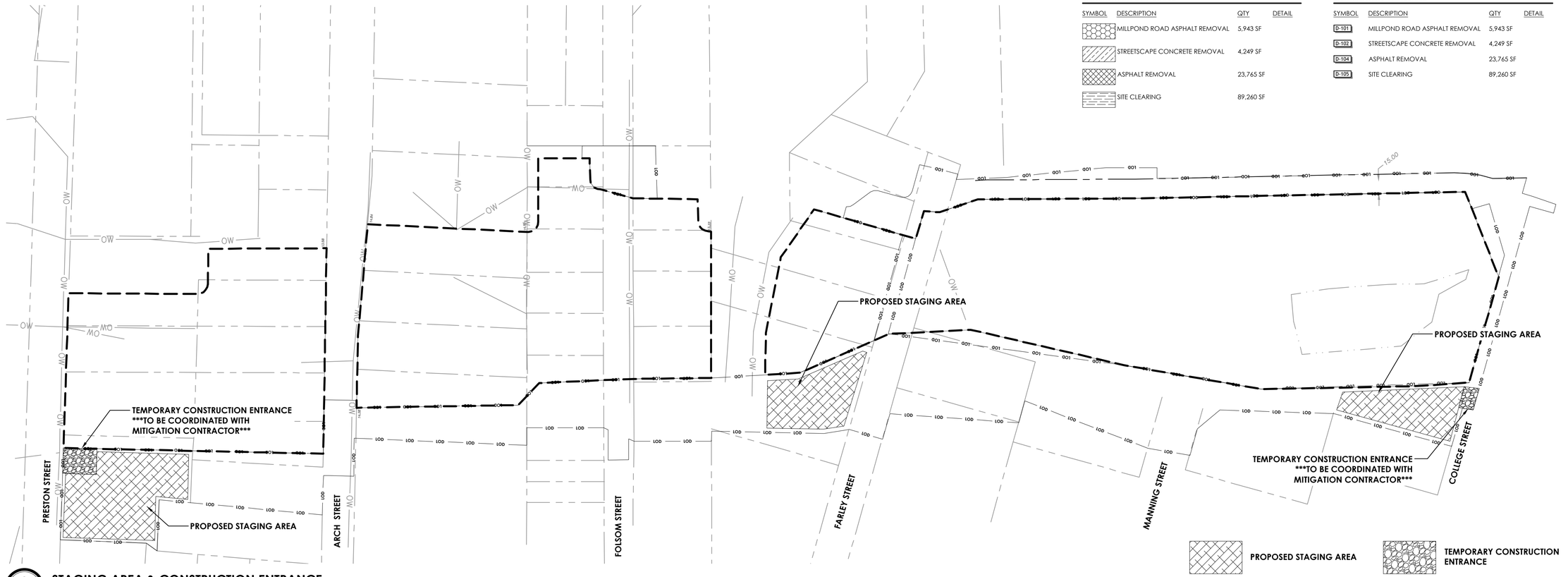
SCALE: 1" = 60'

DEMOLITION SCHEDULE

SYMBOL	DESCRIPTION	QTY	DETAIL
	MILLPOND ROAD ASPHALT REMOVAL	5,943 SF	
	STREETSCAPE CONCRETE REMOVAL	4,249 SF	
	ASPHALT REMOVAL	23,765 SF	
	SITE CLEARING	89,260 SF	

DEMOLITION SCHEDULE

SYMBOL	DESCRIPTION	QTY	DETAIL
D-101	MILLPOND ROAD ASPHALT REMOVAL	5,943 SF	
D-102	STREETSCAPE CONCRETE REMOVAL	4,249 SF	
D-104	ASPHALT REMOVAL	23,765 SF	
D-105	SITE CLEARING	89,260 SF	



2 / 2.1 STAGING AREA & CONSTRUCTION ENTRANCE

SCALE: 1" = 60'

City of SPARTANBURG south carolina

BUTTERFLY BRANCH GREENWAY

CITY OF SPARTANBURG, SOUTH CAROLINA

CIVIL ENGINEERING:

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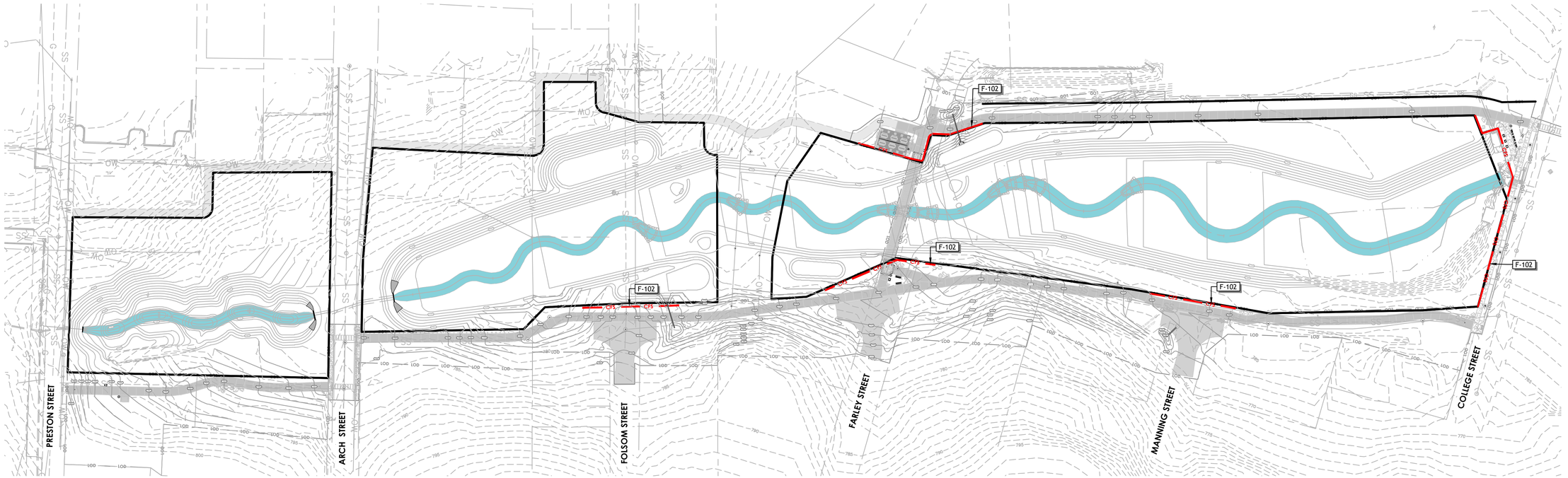
DEMOLITION PLAN

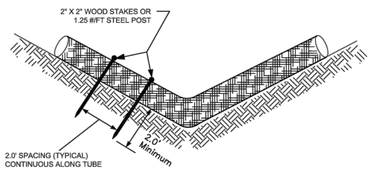
0 60 120feet
SCALE: 1" = 60'



1 / 2.2 EROSION CONTROL PLAN

SCALE: 1" = 60'

NOTES:
A. RANGE OF PH IS 5.0–8.0 IN ACCORDANCE WITH TMECC 04.11–A, "ELECTROMETRIC PH DETERMINATIONS FOR COMPOST"
B. PARTICLE SIZE – 99% PASSING A 2 IN (50MM) SIEVE WITH A RANGE OF 30%–50% PASSING A 3/8 IN (9.5MM) SIEVE, IN ACCORDANCE WITH TMECC 02.02–B, "SAMPLE SIEVING FOR AGGREGATESIZE CLASSIFICATION". (NOTE– IN THE FIELD, PRODUCT COMMONLY IS BETWEEN ½ IN [12.5MM] AND 2 IN [50MM] PARTICLE SIZE.)
C. MESH OPENING SIZE SHALL BE BETWEEN 1/8" AND 3/8".
D. MOISTURE CONTENT OF LESS THAN 60% IN ACCORDANCE WITH STANDARDIZED TEST METHODS FOR MOISTURE DETERMINATION.
E. MATERIAL SHALL BE RELATIVELY FREE (<1% BY DRY WEIGHT) OF INERT OR FOREIGN MAN MADE MATERIALS.
F. A SAMPLE SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO BEING USED AND MUST COMPLY WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS.
G. EXAMPLES OF MEDIA THAT MAY BE USED INCLUDE UNTREATED AND NON–PAINTED WOOD PALLETS, AND CLEAN LAND CLEARING DEBRIS OR TREE CHIPS PROVIDED THEY MEET THE CRITERIA SHOWN ABOVE.



2 / 2.2 COMPOST FILTER SOCK

SCALE: N.T.S.

CONSTRUCTION SEQUENCE

1. RECEIVE NPDES COVERAGE FROM CITY OF SPARTANBURG.
2. SCHEDULE PRECONSTRUCTION MEETING A MINIMUM OF 3 DAYS PRIOR TO BEGINNING CONSTRUCTION.
3. CONDUCT PRECONSTRUCTION MEETING WITH OWNER, ENGINEER, AND CONTRACTOR AND CITY OF SPARTANBURG REPRESENTATIVE.
4. INSTALLATION OF PERIMETER CONTROLS.
5. DEMOLISH EX CONCRETE, ASPHALT, AND VEGETATION.
6. MINOR GRADING
7. INSTALL NEW PEDESTRIAN BRIDGE, PEDESTRIAN PATH, PAVILION, OUTDOOR CLASSROOM, AMENITIES, STREETSCAPE, AND LANDSCAPE.
8. INSTALL CONCRETE CURB.
9. STABILIZE AREAS WITH PERMANENT SEED MIX OR SOD.
10. INSTALL OTHER PERMANENT STABILIZATION AND LANDSCAPING.
11. WHEN ALL DISTURBED AREAS HAVE BEEN STABILIZED TO THE SATISFACTION OF THE CITY OF SPARTANBURG INSPECTOR, REMOVE REMAINING SILT FENCE AND ADD ADDITIONAL SEEDING AND MULCH TO ANY DISTURBED AREAS.
12. SUBMIT FOR NOTICE OF TERMINATION TO CITY OF SPARTANBURG.

ITEMS MUST OCCUR IN ORDER LISTED; ITEMS CANNOT OCCUR CONCURRENTLY UNLESS SPECIFICALLY NOTED.
TOTAL CONSTRUCTION TIME= +/- 6 MONTHS

Temporary Seeding - Upstate

Species	lbs/ac	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Browntop Millet (Alone)	40												
Browntop Millet (Mix)	10												
Rye Grain (Alone)	56												
Rye Grain (Mix)	10												
Rye Grain (Alone)	50												
Rye Grain (Mix)	8												
For Steep Slopes/Cut Slopes													
Weeping Lovegrass (Alone)	4												
Weeping Lovegrass (Mix)	2												

Permanent Seeding - Upstate

Species	Lbs/Ac	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Bahia Grass (Alone)	40												
Bahia Grass (Mix)	30												
Bermuda Grass (Hulled) (Alone)	8-12												
Bermuda Grass (Un-Hul) (Mix)	4-6												
Fescue, Tall (K-31) Alone	40												
Fescue, Tall (K-31) mix	20												
Serices Lespedeza (Scarified) Alone or Mix (inoculate with 35. Inoculant	40												
Tadino Clover (mix only) Inoculate with A3 Inoculant	2												
For Steep Slopes/Cut Slopes													
Weeping Lovegrass (Alone)	4												
Weeping Lovegrass (Mix)	2												
Crownvetch (Mix) (Inoculate with Type M Inoculant	8-10												

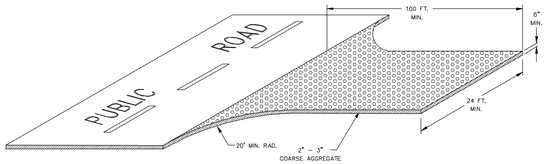
CONTRACTOR TO SUPPLY TRAFFIC CONTROL PLAN

SCDHEC PERMIT NOTES:

1. CONTRACTOR SHALL PERFORM INSPECTION EVERY 7 DAYS AND USE STANDARD SCDHEC REPORTING FORM.
2. CONTRACTOR SHALL BE A VALID CEPSCI (CERTIFIED EROSION PREVENTION AND SEDIMENT CONTROL INSPECTOR) AS OUTLINES IN SECTION 3.10 OF THE SCDHEC PERMIT.
3. CONTRACTOR SHALL COMPLY WITH ALL ADDITIONAL REQUIREMENTS, QUALIFICATIONS, AND REPORTING AS REQUIRED BY SCDHEC PERMIT APPLICATION SCDHEC 2617 - NOTICE OF INTENT FOR STORM WATER DISCHARGES FROM LARGE AND SMALL CONSTRUCTION ACTIVITIES, NPDES GENERAL PERMIT SCR100000.
4. CONTRACTOR SHALL PROVIDE LETTER AT CONCLUSION OF PROJECT CERTIFYING THAT ANY DEFICIENCIES IN SEDIMENT/SORMWATER CONTROL HAVE BEEN CORRECTED.
5. THE SITE AND GENERAL CONTRACTORS SHALL BE REQUIRED TO SIGN SECTION 3.2 OF THE SCDHEC PERMIT AS CO-PERMITTEES FOR THE SITE.

FENCE SCHEDULE

SYMBOL	DESCRIPTION	QTY	DETAIL
F-102	COMPOST FILTER SOCK	795 LF	



NOTES:
1. A STABILIZED PAD OF CRUSHED STONE SHALL BE LOCATED WHERE TRAFFIC WILL BE ENTERING OR LEAVING THE CONSTRUCTION SITE TO OR FROM A PUBLIC STREET.
2. STONE TO BE 2" – 3" WASHED STONE.
3. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC STREETS OR EXISTING PAVEMENT. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
4. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC STREETS MUST BE REMOVED IMMEDIATELY.
5. FILTER FABRIC OR COMPACTED CRUSHER RUN STONE MAY BE USED AS A BASE FOR THE CONSTRUCTION ENTRANCE.
6. ANY SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC STREETS MUST BE REMOVED IMMEDIATELY.
7. WHEN APPROPRIATE, WHEELS MUST BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTERING A PUBLIC STREET. WHEN WASHING IS REQUIRED, IT SHALL BE DONE IN AN AREA STABILIZED WITH CRUSHED STONE WHICH DRAINS INTO AN APPROVED SEDIMENT BASIN.
8. SOIL STABILIZATION FABRIC (AS SPECIFIED BY THE ENGINEER) SHALL BE USED IF FIELD CONDITIONS DICTATE.

STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE

3 / 2.2 STABILIZED CONSTRUCTION ENTRANCE

SCALE: 1" = 60'

SCDHEC STANDARD NOTES

1. IF NECESSARY, SLOPES WHICH EXCEED EIGHT (8) VERTICAL FEET SHOULD BE STABILIZED WITH SYNTHETIC OR VEGETATIVE MATS, IN ADDITION TO HYDROSEEDING. IT MAY BE NECESSARY TO INSTALL TEMPORARY SLOPE DRAINS DURING CONSTRUCTION. TEMPORARY BEMIS MAY BE NEEDED UNTIL THE SLOPE IS BROUGHT TO GRADE.
2. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN FOURTEEN (14) DAYS AFTER WORK HAS CEASED, EXCEPT AS STATED BELOW.
   * WHERE STABILIZATION BY THE 14TH DAY IS PRECLUDED BY SNOW COVER OR FROZEN GROUND CONDITIONS STABILIZATION MEASURES MUST BE INITIATED AS SOON AS PRACTICABLE.
   * WHERE CONSTRUCTION ACTIVITY ON A PORTION OF THE SITE IS TEMPORARILY CEASED, AND EARTH-DISTURBING ACTIVITIES WILL BE RESUMED WITHIN 14 DAYS, TEMPORARY STABILIZATION MEASURES DO NOT HAVE TO BE INITIATED ON THAT PORTION OF THE SITE.
3. ALL SEDIMENT AND EROSION CONTROL DEVICES SHALL BE INSPECTED ONCE EVERY CALENDAR WEEK. IF PERIODIC INSPECTION OR OTHER INFORMATION INDICATES THAT A BMP HAS BEEN INAPPROPRIATELY, OR INCORRECTLY INSTALLED, THE PERMITTEE MUST ADDRESS THE NECESSARY REPLACEMENT OR MODIFICATION REQUIRED TO CORRECT THE BMP WITHIN 48 HOURS OF IDENTIFICATION.
4. PROVIDE SILT FENCE AND/OR OTHER CONTROL DEVICES, AS MAY BE REQUIRED, TO CONTROL SOIL EROSION DURING UTILITY CONSTRUCTION. ALL DISTURBED AREAS SHALL BE CLEANED, GRADED, AND STABILIZED WITH GRASSING IMMEDIATELY AFTER THE UTILITY INSTALLATION. FILL, COVER, AND TEMPORARY SEEDING AT THE END OF EACH DAY ARE RECOMMENDED. IF WATER IS ENCOUNTERED WHILE TRENCHING, THE WATER SHOULD BE FILTERED TO REMOVE ANY SEDIMENTS BEFORE BEING PUMPED BACK INTO ANY WATERS OF THE STATE.
5. ALL EROSION CONTROL DEVICES SHALL BE PROPERLY MAINTAINED DURING ALL PHASES OF CONSTRUCTION UNTIL THE COMPLETION OF ALL CONSTRUCTION ACTIVITIES AND ALL DISTURBED AREAS HAVE BEEN STABILIZED. ADDITIONAL CONTROL DEVICES MAY BE REQUIRED DURING CONSTRUCTION IN ORDER TO CONTROL EROSION AND/OR OFF-SITE SEDIMENTATION. ALL TEMPORARY CONTROL DEVICES SHALL BE REMOVED ONCE CONSTRUCTION IS COMPLETE AND THE SITE STABILIZED.
6. THE CONTRACTOR MUST TAKE NECESSARY ACTION TO MINIMIZE THE TRACKING OF MUD ON TO PAVED ROADWAY(S) FROM CONSTRUCTION AREAS AND THE GENERATION OF DUST. THE CONTRACTOR SHALL DAILY REMOVE MUD/SOIL FROM PAVEMENT, AS MAY BE REQUIRED.
7. RESIDENTIAL SUBDIVISIONS REQUIRE EROSION CONTROL FEATURES FOR INFRASTRUCTURE AS WELL AS FOR INDIVIDUAL LOT CONSTRUCTION. INDIVIDUAL PROPERTY OWNERS SHALL FOLLOW THESE PLANS DURING CONSTRUCTION OR OBTAIN APPROVAL OF AN INDIVIDUAL PLAN IN ACCORDANCE WITH S.C. REG. 72-300 ET SEQ. AND SCR100000.
8. TEMPORARY DIVERSION BERMS AND/OR DITCHES WILL BE PROVIDED AS NEEDED DURING CONSTRUCTION TO PROTECT WORK AREAS FROM A SLOPE RUNOFF AND/OR TO DIVERT SEDIMENT/LADEN WATER TO APPROPRIATE TRAPS OR STABLE OUTLETS.
9. ALL WATERS OF THE STATE(WOS), INCLUDING WETLANDS, ARE TO BE FLAGGED OR OTHERWISE CLEARLY MARKED IN THE FIELD, A DOUBLE ROW OF SILT FENCE IS TO BE INSTALLED IN ALL AREAS WHERE A 50-FOOT BUFFER CAN'T BE MAINTAINED BETWEEN THE DISTURBED AREA AND ALL WOS. A 10-FOOT BUFFER SHOULD BE MAINTAINED BETWEEN THE LAST ROW OF SILT FENCE AND ALL WOS.
10. LITTER, CONSTRUCTION DEBRIS, OILS, FUELS, AND BUILDING PRODUCTS WITH SIGNIFICANT POTENTIAL FOR IMPACT (SUCH AS STOCKPILES OF FRESHLY TREATED LUMBER) AND CONSTRUCTION CHEMICALS THAT COULD BE EXPOSED TO STORM WATER MUST BE PREVENTED FROM BECOMING A POLLUTANT SOURCE IN STORM WATER DISCHARGES.
11. THE CONTRACTOR WILL PROVIDE A PLACE FOR CONCRETE TRUCKS TO WASHOUT AND THE WASHOUT IS TO BE BURIED ON-SITE UNTIL CONSTRUCTION IS COMPLETE. WHEN CONSTRUCTION IS COMPLETE, THE WASTE IS TO BE HAULED OFF TO A LANDFILL.
12. CONSTRUCTION ENTRANCES TO BE PROVIDED AT ALL LOCATIONS WHERE CONSTRUCTION TRAFFIC ACCESSES A PAVED ROADWAY.
13. INLET PROTECTION WILL BE PROVIDED AT ALL EXISTING INLETS THAT RECEIVED FLOWS FROM THE DISTURBED AREAS.
14. ALL OFF-SITE BORROW SITES MUST HAVE A SEPARATE NPDES PERMIT.
15. A COPY OF THE SWPPP, INSPECTION RECORDS, AND RAINFALL DATA MUST BE RETAINED AT THE CONSTRUCTION SITE OR AT NEARBY LOCATION EASILY ACCESSIBLE DURING NORMAL BUSINESS HOURS, FROM THE DATE OF COMMENCEMENT OF CONSTRUCTION ACTIVITIES TO THE DATE THAT FINAL STABILIZATION IS REACHED.
16. INITIATE STABILIZATION MEASURES ON ANY EXPOSED STEEP SLOPE (3H:1V OR GREATER) WHERE LAND-DISTURBING ACTIVITIES HAVE PERMANENTLY OR TEMPORARILY CEASED, AND WILL NOT RESUME FOR A PERIOD OF 7 CALENDAR DAYS.
17. MINIMIZE SOIL COMPACTION AND, UNLESS INFEASIBLE, PRESERVE TOPSOIL.
18. MINIMIZE THE DISCHARGE OF POLLUTANTS FROM EQUIPMENT AND VEHICLE WASHING, WHEEL WASH WATER AND OTHER WASH WATERS. WASH WATERS MUST BE TREATED IN A SEDIMENT BASIN OR ALTERNATE CONTROL THAT PROVIDES EQUIVALENT OR BETTER TREATMENT PRIOR TO DISCHARGE.
19. MINIMIZE THE DISCHARGE OF POLLUTANTS FROM DEWATERING OF TRENCHES AND EXCAVATED AREAS. THESE DISCHARGES ARE TO BE ROUTED THROUGH APPROPRIATE BMPS (SEDIMENT BASIN, FILTER BAG, ETC.).
20. THE FOLLOWING DISCHARGES FROM SITES ARE PROHIBITED:
    20.1) WASTEWATER FROM WASHOUT OF CONCRETE, UNLESS MANAGED BY AN APPROPRIATE CONTROL;
    20.2) WASTEWATER FROM WASHOUT AND CLEANOUT OF STUCCO, PAINT, FORM RELEASE OILS, CURING COMPONENTS, AND OTHER CONSTRUCTION MATERIALS;
    20.3) FUELS, OILS OR OTHER POLLUTANTS USED IN VEHICLE AND EQUIPMENT OPERATION AND MAINTENANCE; AND
    20.4) SOAP SOLVENTS USED IN VEHICLE AND EQUIPMENT WASHING.
21. AFTER CONSTRUCTION ACTIVITIES BEGIN, INSPECTIONS MUST BE CONDUCTED AT A MINIMUM OF AT LEAST ONCE EVERY CALENDAR WEEK AND MUST BE CONDUCTED UNTIL FINAL STABILIZATION IS REACHED ON ALL AREAS OF THE CONSTRUCTION SITE.
22. IF EXISTING BMPS NEED TO BE MODIFIED OR IF ADDITIONAL BMPS ARE NECESSARY TO COMPLY WITH THE REQUIREMENTS OF THIS PERMIT AND/OR SC'S WATER QUALITY STANDARDS, IMPLEMENTATION MUST BE COMPLETED BEFORE THE NEXT STORM EVEN WHENEVER PRACTICABLE. IF IMPLEMENTATION BEFORE THE NEXT STORM EVENT IS IMPRACTICABLE, THE SITUATION MUST BE DOCUMENTED IN THE SWPPP AND ALTERNATE BMPS MUST BE IMPLEMENTED AS SOON AS REASONABLY POSSIBLE.
23. A PRE-CONSTRUCTION CONFERENCE MUST BE HELD FOR EACH CONSTRUCTION SITE WITH AN APPROVED ON-SITE SWPPP PRIOR TO THE IMPLEMENTATION OF CONSTRUCTION ACTIVITIES. FOR NON-LINEAR PROJECTS THAT DISTURB 10 ACRES OR MORE THIS CONFERENCE MUST BE HELD ON-SITE UNLESS THE DEPARTMENT HAS APPROVED OTHERWISE.
24. THE CONTRACTOR SHALL PROVIDE A PORTABLE TOILET IN AN AREA THAT IS AT LEAST 50' FROM ANY WATERS OF THE STATE AND/OR STORM DRAIN SYSTEM.

BUTTERFLY BRANCH GREENWAY

CITY OF SPARTANBURG, SOUTH CAROLINA

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NOTE:
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THIS DRAWING SERVES ONLY AS A REFERENCE AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND MARKING ALL UTILITIES ON SITE. THE LANDART DESIGN GROUP, INC. ASSUMES NO LIABILITY FOR ITS ACCURACY OR STATE OF COMPLETION, OR FOR ANY DECISION (REQUIRING ACCURACY) WHICH THE USER MAY MAKE BASED ON THIS INFORMATION.

REVISIONS

#	DATE	DESCRIPTION	BY
0	01/26/17	ISSUED FOR BID	
1			
2			
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LDG JOB #: 13037-00
DR. BY: TP/AQ
APP.BY: TP
DATE: 01/26/17

811 Know what's below. Call before you dig.

EROSION CONTROL PLAN

0 60 120feet
SCALE: 1" = 60'

1 / 2.3 **OVERALL GRADING PLAN**

SCALE: 1" = 60'

EARTHWORK NOTES:

TOPSOIL:

1. NATURAL, FRIABLE, LOAMY SOIL CHARACTERISTIC OF PRODUCTIVE SOIL IN VICINITY. IT SHALL BE REASONABLY FREE OF STONES LARGER THAN 1 INCH, CLAY LUMPS, ROOTS, TOXIC SUBSTANCES, DEBRIS, AND OTHER FOREIGN MATTER HARMFUL TO PLANT GROWTH.
   a. SHALL CONTAIN NOT LESS THAN 15 PERCENT NOR MORE THAN 40 PERCENT ORGANIC MATTER BY VOLUME AS DETERMINED BY LOSS ON IGNITION OF SAMPLES OVEN DRIED TO CONSTANT WEIGHT AT 212 F.
   b. PH RANGE: COORDINATE PH REQUIREMENTS WITH PLANT REQUIREMENTS DESCRIBED IN SECTION 32 92 00 AND SECTION 32 93 00. IMPORTED TOPSOIL SHALL HAVE A PH RANGE OF 6.0 TO 7.0.
   c. COMPOSITION OF SOIL PASSING NO. 10 SIEVE:
      i. SAND: 20 TO 80 PERCENT
      ii. SILT: TO TO 75 PERCENT
      iii. CLAY: 5 TO 40 PERCENT
2. PROVIDE IMPORTED TOPSOIL MATERIAL AS REQUIRED TO COMPLETE THE WORK. OBTAIN RIGHTS AND PAY ALL COSTS FOR IMPORTED MATERIALS.
3. OBTAIN SOIL AMENDMENT AND FERTILIZATION RECOMMENDATIONS FROM TESTING AGENCY FOR THE PLANT MATERIALS SPECIFIED FOR THE PROJECT.

PREPARATION

A. PROTECTION OF EXISTING UTILITIES:
1. BEFORE STARTING GRADING AND EXCAVATION, ESTABLISH THE LOCATION AND EXTENT OF UNDERGROUND UTILITIES IN WORK AREA. PROTECT EXISTING UTILITIES DURING EARTHWORK. PERFORM EXCAVATION WORK NEAR UTILITIES BY HAND.
2. REMOVE ABANDONED UTILITY SERVICE LINES FROM AREAS OF EXCAVATION. CONSULT UTILITY COMPANY PRIOR TO REMOVAL TO DETERMINE IF SPECIFIC DIRECTIONS ARE REQUIRED. CAP, PLUG, OR SEAL ABANDONED LINES AND IDENTIFY TERMINATION POINTS AT GRADE LEVEL WITH MARKERS.
3. ACCURATELY LOCATE AND RECORD ABANDONED AND ACTIVE UTILITY LINES REROUTED OR EXTENDED ON PROJECT RECORD DOCUMENTS.

B. PROTECTION OF PERSONS AND PROPERTY:
1. PROTECT STRUCTURES, UTILITIES, SIDEWALKS, PAVEMENTS, AND OTHER FACILITIES FROM DAMAGE CAUSED BY SETTLEMENT, LATERAL MOVEMENT, UNDERMINING, WASHOUT, AND OTHER HAZARDS CREATED BY EARTHWORK OPERATIONS.

C. EXCESS WATER CONTROL
1. PROVIDE BERMS OR CHANNELS TO PREVENT FLOODING OF SUBGRADE. PROMPTLY REMOVE ALL WATER COLLECTING IN DEPRESSIONS.
2. REPLACE SOIL SOFTENED OR ERODED BY WATER AND RECOMPACT.
3. PROVIDE AND MAINTAIN DEWATERING SYSTEM COMPONENTS TO CONVEY WATER AWAY FROM EXCAVATIONS.

ROUGH GRADING

A. PERFORM GRADING WITHIN CONTRACT LIMITS TO NEW ELEVATIONS, LEVELS, PROFILES, AND CONTOURS INDICATED. PROVIDE SUBGRADE SURFACES PARALLEL TO PROPOSED FINISHED SURFACE GRADES. PROVIDE UNIFORM LEVELS AND SLOPES BETWEEN NEW ELEVATIONS AND EXISTING GRADES.
B. GRADE SURFACES TO ENSURE POSITIVE DRAINAGE AWAY FROM STRUCTURES AND TO PREVENT PONDING AND POCKETS OF SURFACE DRAINAGE.
C. PROVIDE SUBGRADE SURFACES FREE FROM IRREGULAR SURFACE CHANGES. PROVIDE THE
D. FOLLOWING SUBGRADE TOLERANCES:
1. UNPAVED AREAS: PLUS OR MINUS 0.10 FEET. MAXIMUM 0.10 FEET VARIATION IN 10 FEET.
2. PAVED AREAS: PLUS 0 AND MINUS 0.04 FEET. MAXIMUM 0.04 FEET VARIATION IN 10 FEET.
3. HORIZONTAL MEASUREMENT OF SWALE AND DITCH CENTERLINES TO STRUCTURES SHALL NOT BE 1 FOOT LESS THAN PLAN DIMENSIONS AND LOCATIONS.
4. FINISH REQUIRED WILL BE THAT ORDINARILY OBTAINED FROM EITHER BLADE-GRADER OR SCRAPER OPERATIONS.
5. PROVIDE SUBGRADE SURFACE FREE OF EXPOSED BOULDERS OR STONES EXCEEDING 4 INCHES IN GREATEST DIMENSION IN PAVED AREAS AND 2 INCHES IN GREATEST DIMENSION IN UNPAVED AREAS.
6. LAWN AND PLANTING AREAS: ALLOW FOR 6 INCHES AVERAGE DEPTH OF TOPSOIL AT LAWN AND PLANTING AREAS, EXCEPT AS OTHERWISE SPECIFIED.
7. SLOPE SUBGRADE SURFACES AWAY FROM BUILDING WALLS.

FINE GRADING

A. UNIFORMLY DISTRIBUTE AND SPREAD TOPSOIL. PROVIDE 6 INCH DEPTH AT LAWN AND PLANTING AREAS, EXCEPT AS OTHERWISE SPECIFIED.
B. FINE GRADE TOPSOIL TO LINES AND ELEVATIONS INDICATED ON DRAWINGS, ELIMINATING ROUGH AND LOW AREAS TO ENSURE POSITIVE DRAINAGE. MAINTAIN LEVELS, PROFILES, AND CONTOURS OF SUBGRADES.
C. SET FINE GRADE OF PLANT BEDS 1 INCH BELOW ADJACENT WALKS OR CURBS.
D. REMOVE STONES, ROOTS, WEEDS, AND DEBRIS WHILE SPREADING TOPSOIL MATERIALS. RAKE SURFACE CLEAN OF STONES ONE (1) INCH OR LARGER IN DIAMETER.
E. MANUALLY INSTALL TOPSOIL AT TREES TO REMAIN. AVOID DAMAGE TO ROOT SYSTEMS.

COMPACTION

A. MOISTURE CONDITIONING: MOISTURE CONDITION MATERIAL BY AERATING OR WATERING AND THOROUGHLY MIX MATERIAL TO WITHIN PLUS OR MINUS 3 PERCENT OF OPTIMUM MOISTURE CONTENT FOR COMPACTION.
B. COMPACT FILLS, BACKFILLS, AND SUBGRADES TO MINIMUM PERCENTAGE OF DENSITY FOR EACH AREA CLASSIFICATION.
1. UNPAVED AREAS: COMPACT EACH LAYER OF FILL AND EMBANKMENTS TO MINIMUM OF 85 PERCENT OF MAXIMUM DRY DENSITY.
2. PAVED AREAS AND CONSTRUCTION FOUNDATIONS: COMPACT EACH LAYER OF FILL AND SUBGRADE TO MINIMUM OF 95 PERCENT OF MAXIMUM DRY DENSITY.
C. PERCENTAGE OF MAXIMUM DRY DENSITY SHALL BE DETERMINED BY THE AASHTO T99 AND SHALL BE WITHIN PLUS OR MINUS 2 PERCENT OF THE OPTIMUM MOISTURE CONTENT.
A. WATER SETTLING, PUDDLING, AND JETTING OF FILL AND BACKFILL MATERIALS AS A COMPACTION METHOD ARE NOT ACCEPTABLE.

VEGETATION CONTROL

A. APPLY PRE-EMERGENT HERBICIDE TO SUBGRADE SURFACES IN AREAS OF PROPOSED PAVING AND AGGREGATE SURFACES.
B. APPLY PRE-EMERGENT HERBICIDE IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS AND RECOMMENDED APPLICATION RATE.

FIELD QUALITY CONTROL

A. OBTAIN SAMPLES AS REQUIRED BY TESTING AGENCY.
B. TOPSOIL: TAKE REPRESENTATIVE SAMPLES OF TOPSOIL PROPOSED FOR USE IN PROPOSED PLANTING AREAS AND SUBMIT TO TESTING LABORATORY. PROVIDE THE FOLLOWING DATA:
1. PH FACTOR.
2. MECHANICAL ANALYSIS.
3. PERCENTAGE OF ORGANIC CONTENT.
4. RECOMMENDATIONS ON TYPE AND QUANTITY OF ADDITIVES REQUIRED TO ESTABLISH SATISFACTORY PH FACTOR AND SUPPLY OF NUTRIENTS TO BRING NUTRIENTS TO SATISFACTORY LEVEL FOR PLANTING.

PROTECTION

A. PROTECT NEWLY GRADED AREAS FROM TRAFFIC AND EROSION UNTIL WORK IS ACCEPTED. KEEP FREE FROM TRASH AND DEBRIS.
B. REPAIR, COMPACT, AND RE-ESTABLISH GRADES IN SETTLED, ERODED, AND RUTTED AREAS TO SPECIFIED TOLERANCES.

ROCK SCHEDULE

SYMBOL	DESCRIPTION	QTY	DETAIL
K-102	DRAINAGE SEDIMENT TRAP	1.62 CY	

DR DRAINAGE SCHEDULE

SYMBOL	DESCRIPTION	QTY	DETAIL
DR-101	12" HP STORM HIGH PERFORMANCE (ADS) OR APPROVED ALTERNATE	68 LF	
DR-102	15" RCP	16 LF	

City of SPARTANBURG south carolina

BUTTERFLY BRANCH GREENWAY

CITY OF SPARTANBURG, SOUTH CAROLINA

CIVIL ENGINEERING:

BAI

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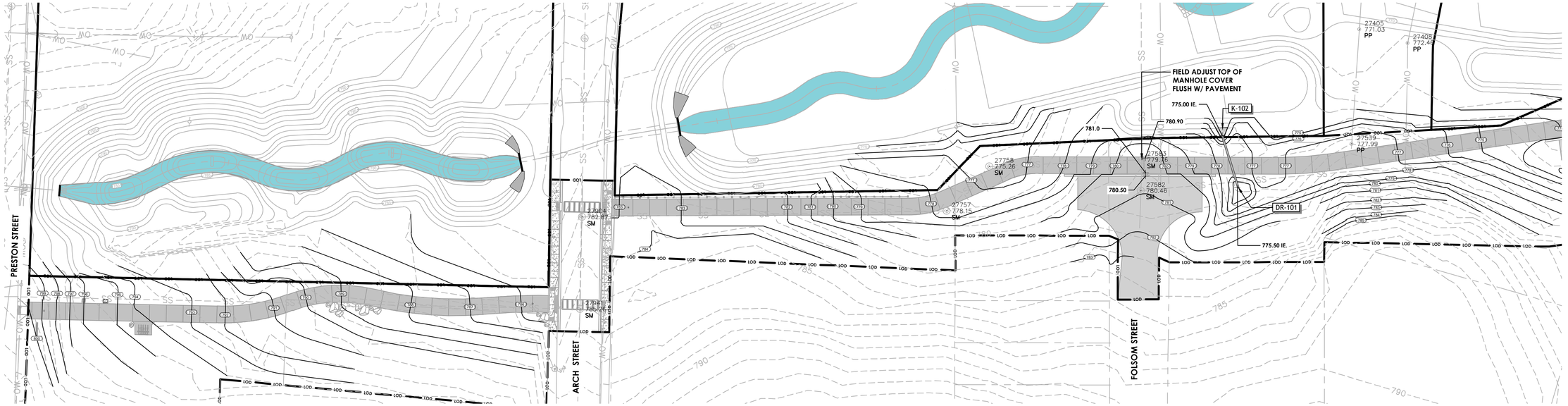
LDG JOB #: 13037-00
DR. BY: TP/AQ
APP.BY: TP
DATE: 01/26/17

811 Know what's below. Call before you dig.

OVERALL GRADING PLAN

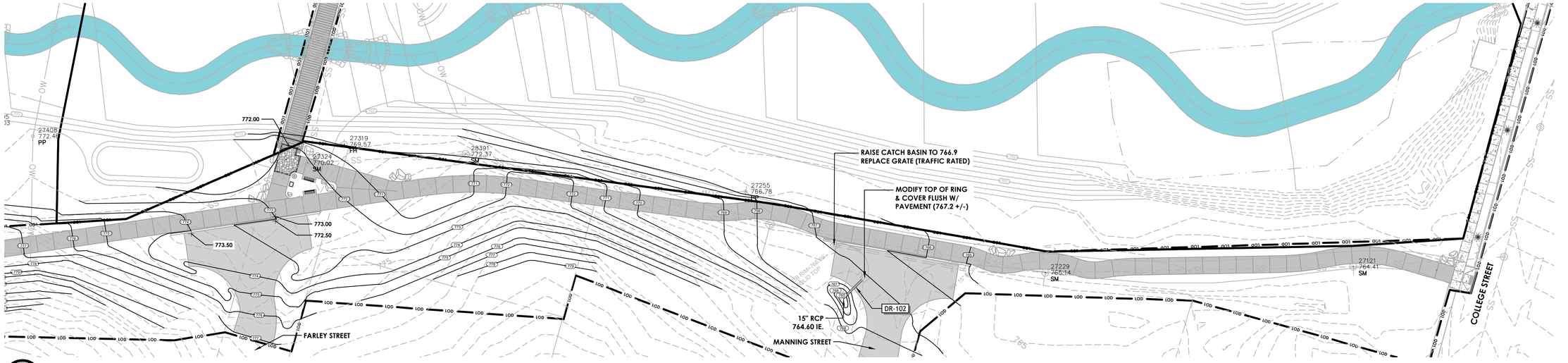
0 60 120feet
SCALE: 1" = 60'



1
2.4

WEST TRAIL GRADING PLAN

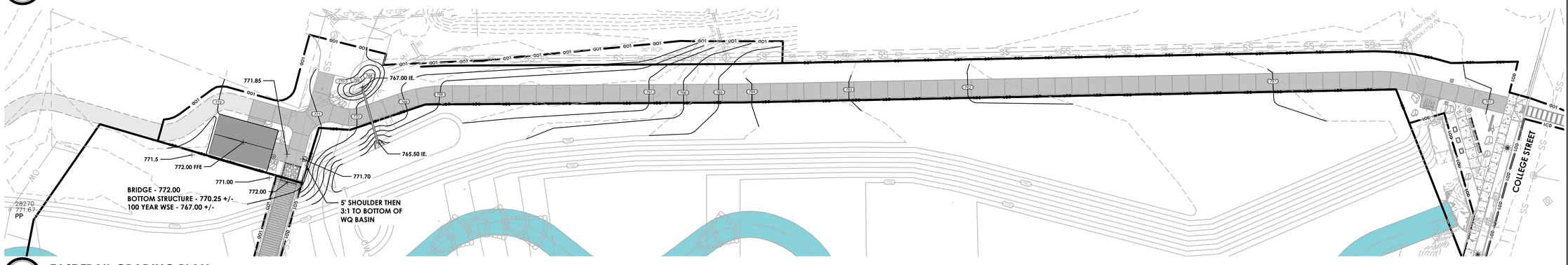
SCALE: 1" = 30'



2
2.4

WEST TRAIL GRADING PLAN CONT.

SCALE: 1" = 30'



3
2.4

EAST TRAIL GRADING PLAN

SCALE: 1" = 30'

City of SPARTANBURG south carolina

BUTTERFLY BRANCH GREENWAY

CITY OF SPARTANBURG, SOUTH CAROLINA

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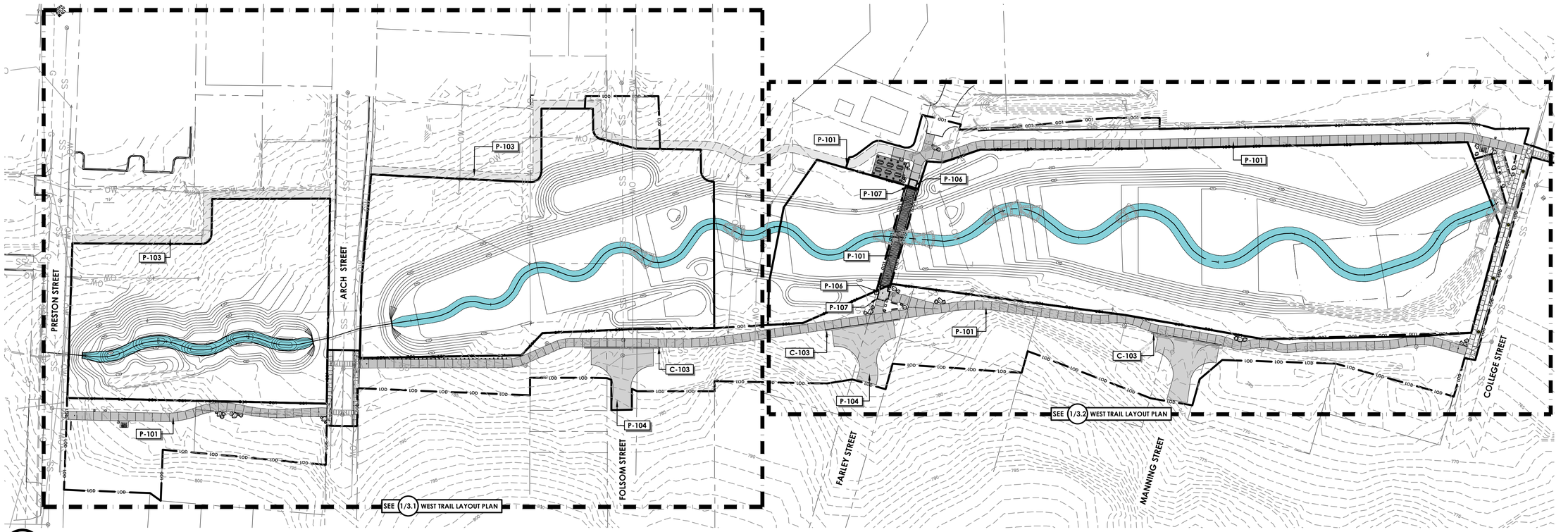
GRADING ENLARGEMENT PLAN

0 30 60 feet
SCALE: 1" = 30'



1 / 3.0 OVERALL TRAIL LAYOUT

SCALE: 1" = 60'

PAVING SCHEDULE

SYMBOL	DESCRIPTION	QTY
P-101	10' PEDESTRIAN TRAIL 4" CONCRETE	26,718 SF
P-103	FUTURE 10' PEDESTRIAN TRAIL 4" CONCRETE (N.I.C.)	11,109 SF
P-104	NEW ASPHALT (HAMMER HEAD)	8,857 SF
P-106	PERMEABLE PAVER	253 SF
P-107	PERMEABLE PAVER BORDER	96 LF

SITE FURNISHINGS SCHEDULE

SYMBOL	DESCRIPTION	QTY	MANUFACTURER	MODEL NUMBER	FINISH	SIZE
S-101	INFORMATIONAL KIOSK	6				
S-102	6' BENCH	5	THOMAS STEELE	SKU/EAN CRB	BLACK	6'
S-103	LITTER RECEPTACLE	4	THOMAS STEELE	SKU/EAN CRTRN	BLACK	32 GAL
S-104	BIKE RACK	2	MADRAX	CS200-3-IG-P	BLACK	3 CAPACITY
S-105	PICNIC TABLE	6	THOMAS STEELE	SKU/EAN-8S-SF-P	BLACK	8'
S-106	R-8464 REMOVABLE BOLLARD	8	RELIANCE FOUNDRY	R-8464	BLACK SEMI GLOSS TEXTURED	

03 CONCRETE SCHEDULE

SYMBOL	DESCRIPTION	QTY
03-01	4" CONCRETE BROOM FINISHED WALKS	2,968 SF

FENCE SCHEDULE

SYMBOL	DESCRIPTION	QTY	DETAIL
F-101	5' RAIL FENCING	290 LF	

CURB SCHEDULE

SYMBOL	DESCRIPTION	QTY
C-101	6" CURB / 12" GUTTER (ARCH STREET)	180 LF
C-102	6" CURB / 24" GUTTER (COLLEGE STREET)	234 LF
C-103	6" CURB / 12" GUTTER (HAMMERHEAD)	269 LF

ROCK SCHEDULE

SYMBOL	DESCRIPTION	QTY
K-101	FIELD STONE BOULDERS	45

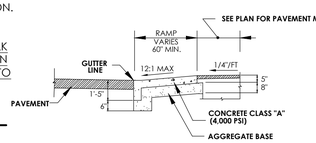
CONSTRUCTION NOTES:

1. INITIATE EROSION CONTROL SEQUENCE BEFORE BEGINNING CLEARING AND GRADING OPERATIONS.
2. CLEAR AREAS TO BE GRADED OF ALL VEGETATION. PROTECT VEGETATION BEYOND CLEARING LIMITS.
3. STRIP REMAINING TOPSOIL TO FULL DEPTH IN AREAS TO BE GRADED AND STOCKPILE. COMPACT ALL FILL AREAS TO 95% OF MAXIMUM DENSITY.
4. ALL AREAS ARE TO BE GRADED SO THAT NO AREAS OF STANDING WATER OCCUR. PROPOSED SPOT ELEVATIONS ARE SHOWN AT FINISHED GRADE (BACK OF CURB ELEVATION, WHERE APPLICABLE).
5. OPERATOR SHALL FIELD VERIFY EXISTING TOPOGRAPHY IN RELATION TO THE PROPOSED GRADES TO ENSURE DRAINAGE IN THE DIRECTIONS INDICATED ON THE PLAN.
6. ALL MATERIALS AND CONSTRUCTION METHODS SHALL BE IN ACCORDANCE WITH SCDOT STANDARDS AND SPECIFICATIONS.
7. THE SURVEY INDICATES NO PRESENCE OF 100-YEAR FLOOD ZONES WITHIN THE CONSTRUCTION LIMITS OF THIS PROJECT SITE.
8. ANY SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ON TO PUBLIC STREETS MUST BE REMOVED IMMEDIATELY.
9. WHEN APPROPRIATE, WHEELS MUST BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTERING A PUBLIC STREET.
10. CONTRACTOR SHALL STAKE SITE AS INDICATED ON CONSTRUCTION DOCUMENTS PRIOR TO COMMENCEMENT OF CONSTRUCTION. NOTIFY THE LANDART DESIGN GROUP, INC. IMMEDIATELY OF ANY DISCREPANCIES.
11. ALL DIMENSIONS ARE TO BACK OF CURB, FACE OF BUILDING OR CENTERLINE UNLESS OTHERWISE NOTED.
12. ALL DETAILS SHALL BE CONSTRUCTED IN STRICT COMPLIANCE WITH SPECIFICATIONS AND CONSTRUCTION DOCUMENTS.
13. CONTRACTOR IS FULLY RESPONSIBLE FOR CONTACTING APPROPRIATE PARTIES AND ASSURING THAT EXISTING UTILITIES ARE LOCATED PRIOR TO BEGINNING CONSTRUCTION.
14. CONTRACTOR IS RESPONSIBLE FOR PLACING BARRICADES, USING FLAG MEN, ETC. AS NECESSARY TO INSURE SAFETY TO THE PUBLIC.
15. ALL PAVEMENT CUTS, CONCRETE OR ASPHALT, ARE TO BE REPLACED ACCORDING TO STANDARDS OF THE SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION.
16. ALL EARTHWORK MUST CONFORM TO 2007 SCDOT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.

PAVEMENT MARKING & STRIPING NOTES:

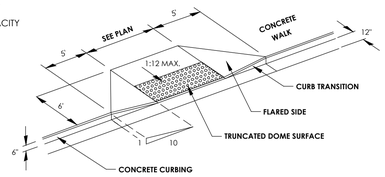
THERMOPLASTIC: CROSSWALK TO BE APPLIED AS THERMOPLASTIC ACCORDING TO THE CURRENT SCDOT MANUAL FOR HIGHWAY CONSTRUCTION.

1. ALL CROSSWALKS ARE TO BE MARKED WITH 8" SOLID WHITE LINES. CROSSWALK LINES ARE TO BE SPACED NOT LESS THAN 6 FEET APART. CROSSWALK LINES ARE TO HAVE A THICKNESS OF 125 MILS.



NOTE: ALL INDICATED SLOPES ARE MAXIMUMS

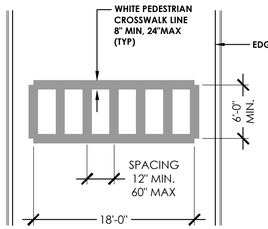
SECTION



RAMP DIMENSIONS

2 / 3.0 ADA RAMP

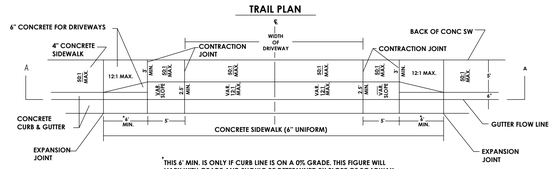
SCALE: 1 1/2" = 1"



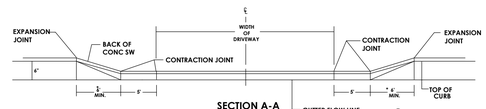
3 / 3.0 STANDARD CROSSWALK MARKINGS

SCALE: 1 1/2" = 1'

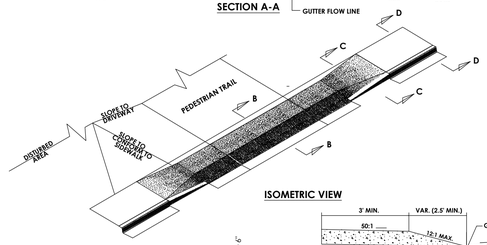
TRAIL PLAN



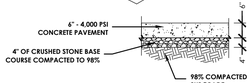
*THIS 6' MIN. IS ONLY IF CURB LINE IS ON A 0% GRADE. THIS FIGURE WILL VARY WITH GRADE AND SHOULD BE DETERMINED BY SLOPE OF ROADWAY.



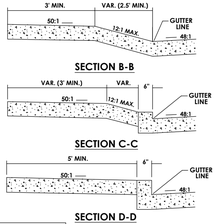
SECTION A-A



ISOMETRIC VIEW



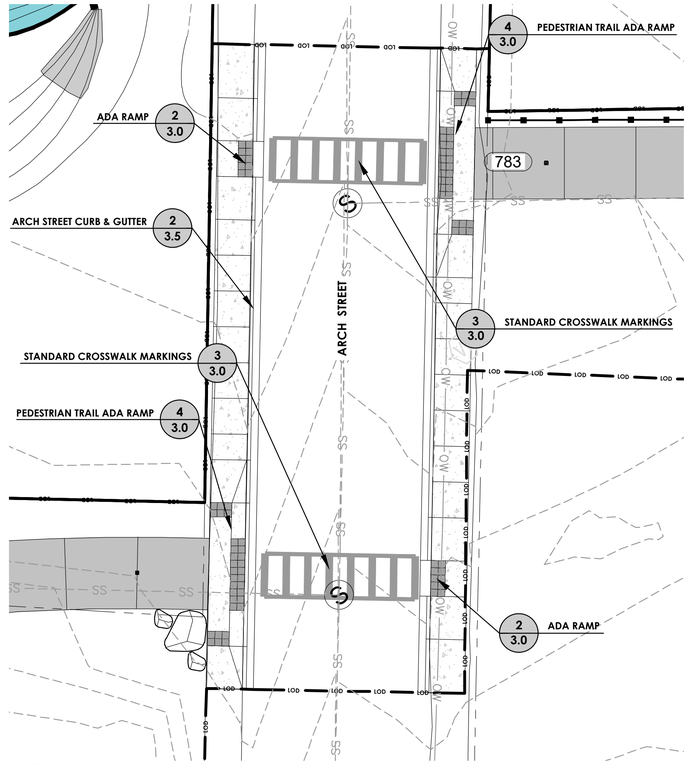
NOTES:
1. WHERE THE WIDTH OF A DRIVEWAY IS 15 FT. OR GREATER, A CONNECTION JOINT SHALL BE PLACED IN THE CENTER OF THE DRIVE. IF THE WIDTH EXCEEDS 30 FT. TWO JOINTS SHALL BE USED.
2. DRIVEWAYS TO BE CONSTRUCTED WHERE DESIGNATED BY THE ENGINEER.
3. CONCRETE CURB THRU DRIVEWAY TO BE MEASURED AND PAID FOR AS CURB & GUTTER EVEN WHEN CURB IS DROPPED.
4. ALL SIDEWALKS ARE TO BE CONSTRUCTED ON A 50:1 MAX. CROSS SLOPE. ALL OTHER SLOPES OF THE SIDEWALKS ARE TO BE A 12:1 MAX. SIDEWALKS SHALL BE BUILT IN ACCORDANCE WITH THE SC DOT TRANSITION PLAN, SECTION 14.
5. FOR CURB OR INTEGRAL CURB DETAILS SEE STANDARD DRAWING NO. 720-1.



DRIVEWAY LAYOUT AND CONSTRUCTION SHALL CONFORM TO SCDOT STANDARD DRAWING NO. 720-410-00, SECTIONS AND DIMENSIONS SHOWN HEREIN ARE FOR REFERENCE ONLY

4 / 3.0 PEDESTRIAN TRAIL ADA RAMP

SCALE: 1" = 1'



5 / 3.0 ARCH STREET ENLARGEMENT

SCALE: 1" = 10'

City of SPARTANBURG south carolina

BUTTERFLY BRANCH GREENWAY

CITY OF SPARTANBURG, SOUTH CAROLINA

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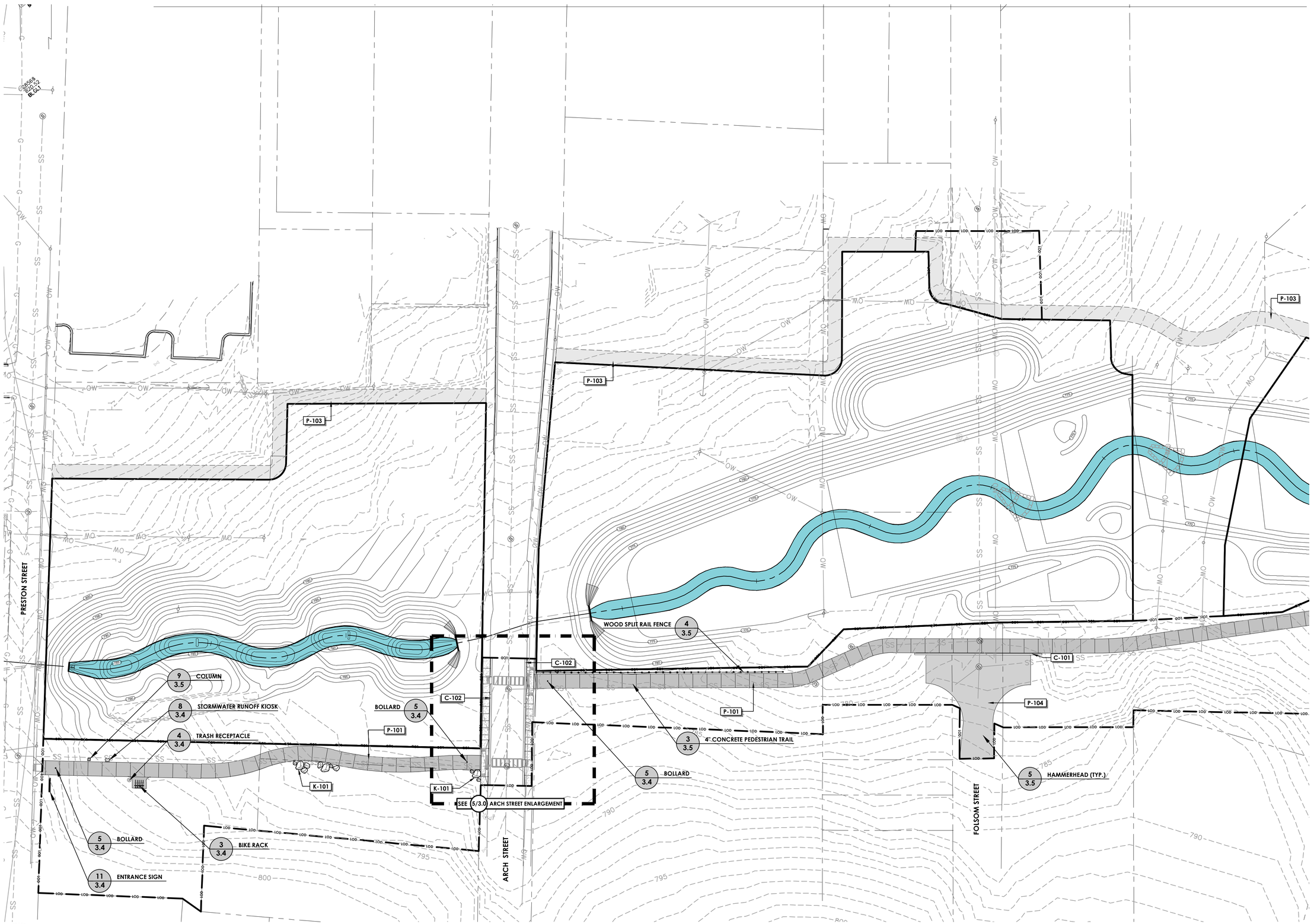
OVERALL TRAIL LAYOUT PLAN

0 60 120feet
SCALE: 1" = 60'



1 / 3.1 **WEST TRAIL LAYOUT PLAN**

SCALE: 1" = 30'

City of SPARTANBURG south carolina

BUTTERFLY BRANCH GREENWAY

CITY OF SPARTANBURG, SOUTH CAROLINA

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TRAIL LAYOUT PLAN (1)

0 30 60 feet
SCALE: 1" = 30'

STREAM MITIGATION KIOSK 6 / 3.4
STEP DETAIL 3 / 3.3
24'X36' PAVILION 1 / 3.3
PICNIC TABLE 1 / 3.4
BOLLARD 5 / 3.4
P-101
K-101
4 TRASH RECEPTACLE 3.4
5 BOLLARD 3.4
PERMEABLE PAVER 12 / 3.5
P-107
P-106
3 PEDESTRIAN BRIDGE COLUMN 4.0
PERMEABLE PAVER 12 / 3.5
PARK BENCH 2 / 3.4
1 10' PEDESTRIAN BRIDGE 4.1
TRASH RECEPTACLES 4 / 3.4
CLEAN WATER KIOSK 7 / 3.4
P-107
P-106
K-101
K-101
P-101
C-101
5 BOLLARD 3.4
P-104
HAMMERHEAD (TYP.) 5 / 3.5
FARLEY STREET
HAMMERHEAD (TYP.) 5 / 3.5
MANNING STREET
C-101
K-101
P-101
4" CONCRETE PEDESTRIAN TRAIL 3 / 3.5
K-101
K-101
C-102
COLLEGE STREET
SEE 2/3.2 COLLEGE STREET ENLARGEMENT

1 / 3.2 WEST TRAIL LAYOUT PLAN CONT.

SCALE: 1" = 30'

BOLLARD 5 / 3.4
2 ADA RAMP 3.0
1 COLLEGE STREET 24" CURB & GUTTER 3.5
8 COLLEGE STREET CONCRETE WALK 3.5
WOOD SPLIT RAIL FENCE 4 / 3.5
BIKE RACK 2 / 3.4
COLUMN 9 / 3.5
TRASH RECEPTACLE 4 / 3.4
CLEAN WATER KIOSK 7 / 3.4
STREAM MITIGATION KIOSK 6 / 3.4
STORMWATER RUNOFF KIOSK 8 / 3.4
2 PARK BENCH 3.4
5 BOLLARD 3.4
11 ENTRANCE SIGN 3.4
CB
CB
ADA RAMP 2 / 3.0
STANDARD CROSSWALK MARKINGS 3 / 3.0
COLLEGE STREET

2 / 3.2 COLLEGE STREET ENLARGEMENT

SCALE: 1" = 10'

City of SPARTANBURG south carolina

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CITY OF SPARTANBURG, SOUTH CAROLINA

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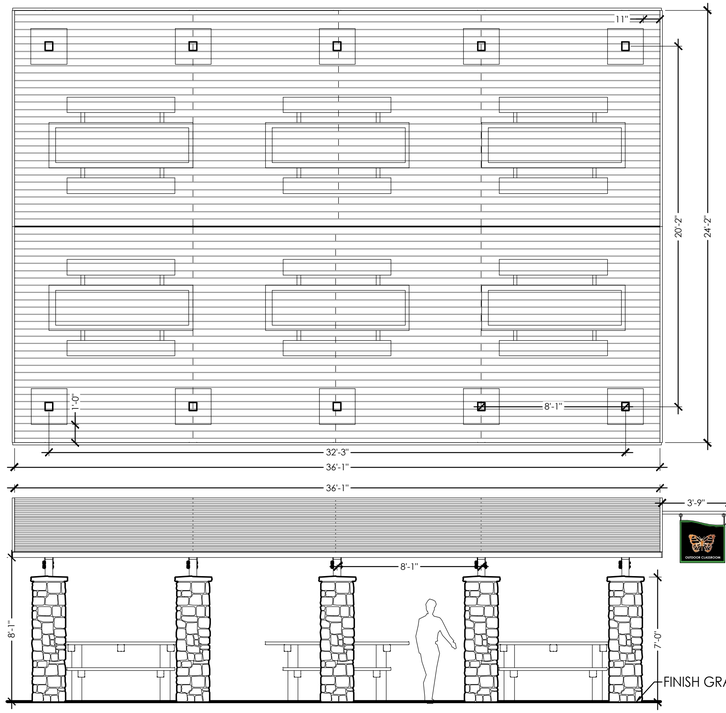
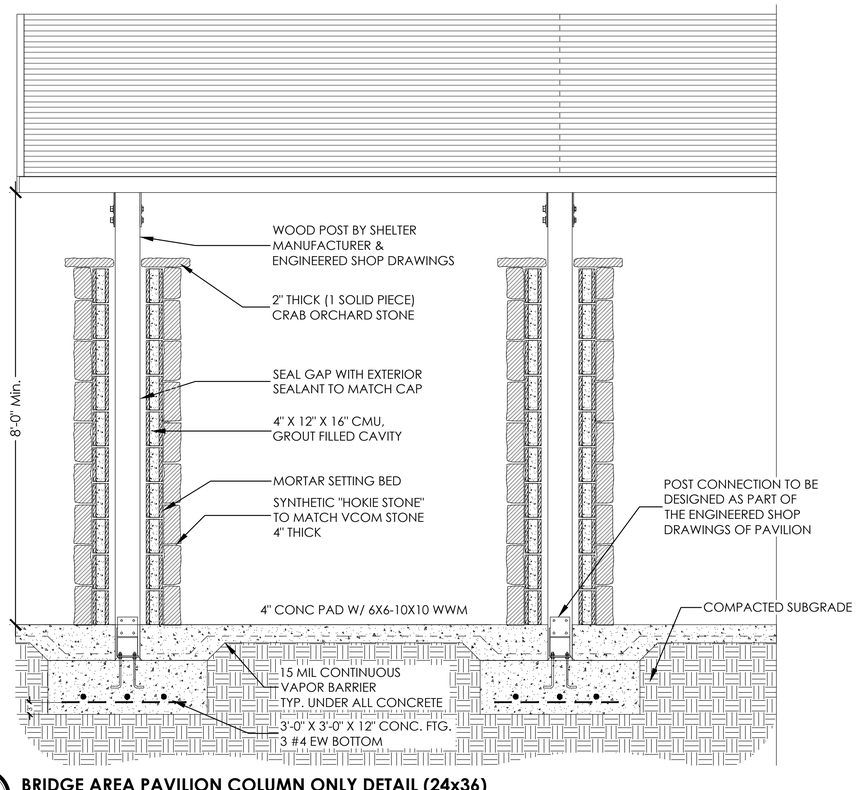
TRAIL LAYOUT PLAN (2)

0 30 60 feet
SCALE: 1" = 30'



1 / 3.3 BRIDGE AREA PAVILION LAYOUT & ELEVATION (24x36)

SCALE: 1/4" = 1'-0"



2 / 3.3 BRIDGE AREA PAVILION COLUMN ONLY DETAIL (24x36)

SCALE: 1/4" = 1'-0"

*****CONTRACTOR TO SUPPLY SHOP DRAWINGS*****

THIS SHELTER PROVIDES 864 SQ. FT. OF SHADE.

SHELTER MODEL:
WOOD RECTANGLE 24X36
WLG-24X36

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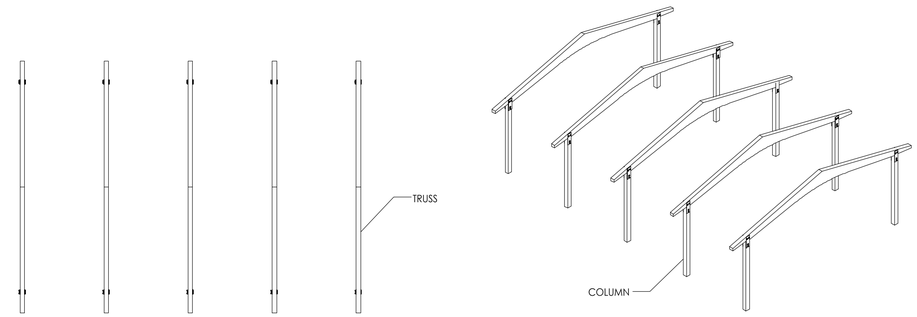
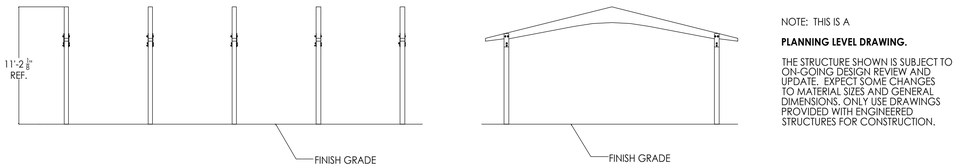
*****OR APPROVED ALTERNATE - ALTERNATES MUST MATCH ARCHITECTURE OF SPECIFIED DETAIL 1/3.3 - APPROVAL BY OWNER AND LANDSCAPE ARCHITECT*****

***** NOT FOR CONSTRUCTION *****
USE ONLY FOR PRELIMINARY PLANNING & ESTIMATING / BIDDING. DIMENSIONS SUBJECT TO CHANGE TO MEET LOAD CRITERA.

AWARDED CONTRACTOR TO PROVIDE SHOP DRAWINGS.
CONTRACTOR SHALL SUBMIT A SET OF SUBMITTAL DRAWINGS AND CALC. BOOKS BOTH SIGNED & SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF SOUTH CAROLINA. THE SUBMITTAL DRAWINGS SHALL BE IN ACCORDANCE TO CITY OF SPARTANBURG BUILDING CODES AND SHALL BE SUBMITTED & APPROVED BY THE CITY OF SPARTANBURG BUILDING INSPECTION DEPARTMENT.
SEE FURTHER DETAILS IN DIVISION 107300 IN WRITTEN SPECIFICATIONS.

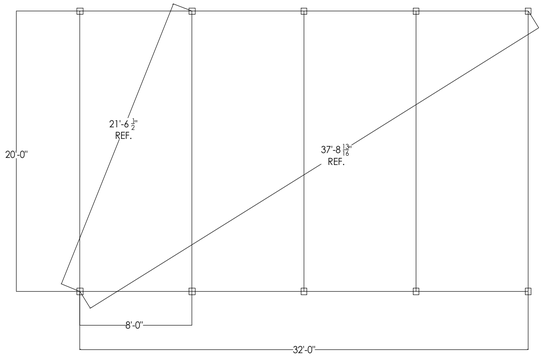


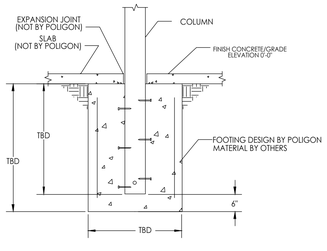


NOTE: THIS IS A

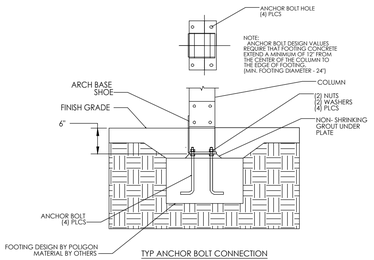
PLANNING LEVEL DRAWING.

THE STRUCTURE SHOWN IS SUBJECT TO ON-GOING DESIGN REVIEW AND UPDATE. EXPECT SOME CHANGES TO MATERIAL SIZES AND GENERAL DIMENSIONS. ONLY USE DRAWINGS PROVIDED WITH ENGINEERED STRUCTURES FOR CONSTRUCTION.

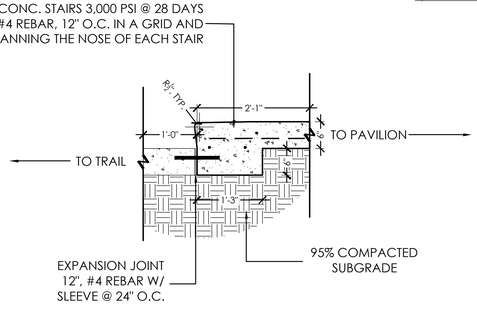




IMBEDMENT STYLE - DIRECT BURY

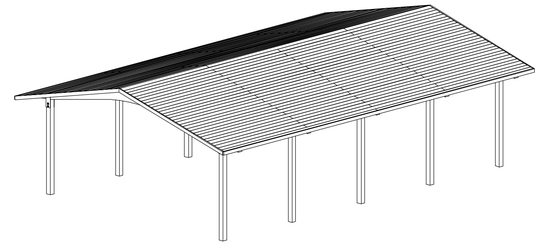


TYP ANCHOR BOLT CONNECTION



3 / 3.3 STEP DETAIL

SCALE: 3/4" = 1'-0"



City of SPARTANBURG south carolina

BUTTERFLY BRANCH GREENWAY

CITY OF SPARTANBURG, SOUTH CAROLINA

CIVIL ENGINEERING:

BAI

BLACKWOOD ASSOCIATES INC.
CONSULTING ENGINEERS
PO BOX 366
SPARTANBURG, SC 29304
864-583-5432 <> FAX-583-5434

LANDSCAPE ARCHITECTS:

LANDART landscape architecture

547 E Main St / Spartanburg, SC 29302
phone 864.585.7580 / fax 864.585.5808
LandArtDesignGroup.com / info@landartdesigngroup.com

NOTE:
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REVISIONS

#	DATE	DESCRIPTION	BY
0	01/26/17	ISSUED FOR BID	
1			
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12			
13			

LDG JOB #: 13037-00
DR. BY: TP/AQ
APP.BY: TP
DATE: 01/26/17

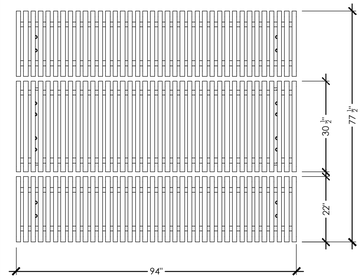
811 Know what's below. Call before you dig.

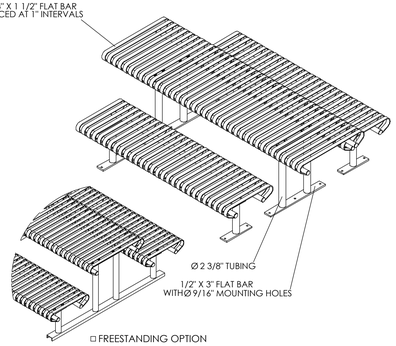
PAVILION LAYOUT (1)

Page- 3.3 of 35

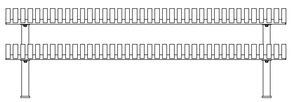
0 4 8 feet
SCALE: 1/4" = 1'-0"

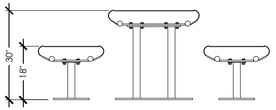
THOMAS STEELE DIVISION
GRABER MANUFACTURING, INC.
1080 UNIEK DRIVE
WAUNAKEE, WI 53597
P(800) 448-7931, P(608) 849-1080, F(608) 849-1081
WWW.MADRAX.COM, E-MAIL: SALES@MADRAX.COM





□ FREESTANDING OPTION





PRODUCT: CRTP-8S
DESCRIPTION: CARNIVAL PICNIC TABLE SET, 8 FT

DATE: 1-23-15
ENG: SMC

ALL FASTENERS ARE STAINLESS STEEL
SOME ASSEMBLY REQUIRED

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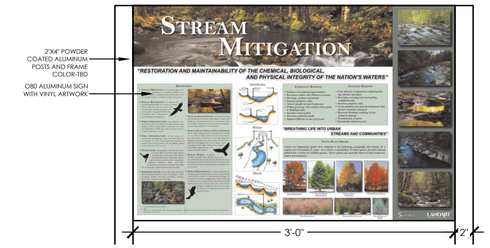
SITE FURNISHING IS POWDER COATED WITH TGIC POLYESTER. STEEL SURFACE PREP INCLUDES MECHANICAL AND CHEMICAL ETCHING FOLLOWED WITH A COATING TO IMPROVE ADHESION AND CORROSION RESISTANCE.

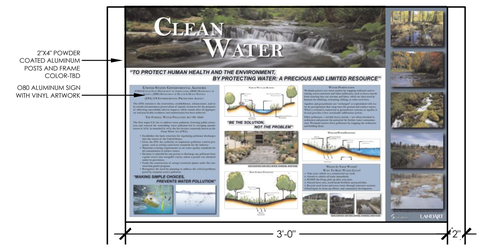
1 / 3.4 PICNIC TABLE

SCALE: 1/2"=1'-0"



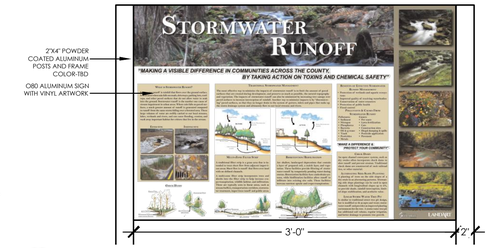
6 / 3.4 STREAM MITIGATION KIOSK (TOTAL 2)

SCALE: 1 1/2"=1'-0"



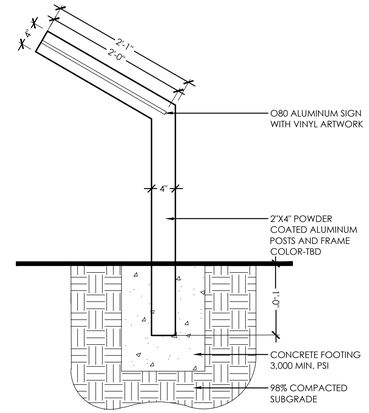
7 / 3.4 CLEAN WATER KIOSK (TOTAL 2)

SCALE: 1 1/2"=1'-0"



8 / 3.4 STORMWATER RUNOFF KIOSK (TOTAL 2)

SCALE: 1 1/2"=1'-0"



10 / 3.4 KIOSK SECTION

SCALE: 1"=1'-0"

SIGNAGE REPRESENTATIVE

SIGNFORCE
THE FORCE BEHIND GREAT SIGNS & MORE!

JOEY HARRISON
SIGN FORCE, INC.
1253 BOILING SPRINGS ROAD
SPARTANBURG, SC 2303
864-582-3600
JHARRISON@SIGNFORCESC.COM
WWW.SIGNFORCESC.COM

OR APPROVED ALTERNATE - APPROVAL BY OWNER AND LANDSCAPE ARCHITECT

THOMAS STEELE DIVISION
GRABER MANUFACTURING, INC.
1080 UNIEK DRIVE
WAUNAKEE, WI 53597
P(800) 448-7931, P(608) 849-1080, F(608) 849-1081
WWW.MADRAX.COM, E-MAIL: SALES@MADRAX.COM

PRODUCT: CRRH-4(2.4.5.8)
DESCRIPTION: CARNIVAL BENCH, HORIZONTAL STRAP

DATE: 6-12-13
ENG: SMC

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ALL STEEL SHALL RECEIVE THOMAS STEELE'S UNIQUE E-STEELE\M+1992OTRI-COAT FINISH. ALL STEEL PARTS SHALL BE SHOTBLASTED, ZINC PHOSPHATIZED, EPOXY E-COAT DIPPED AND TOP COATED WITH ELECTROSTATICALLY APPLIED TGIC POLYESTER POWDER COAT FINISH. ZINC PHOSPHATE AND EPOXY E-COATING SHALL FILL ALL CREVICES. PARTS SHALL HAVE A MAXIMUM FILM BUILD OF 6 MILS TO REDUCE CHIPPING AND SCRATCHING.
E-STEELE\M+1992OTRI-SHALL HAVE A 5 YEAR WARRANTY.

SITE FURNISHING IS POWDER COATED WITH TGIC POLYESTER. STEEL SURFACE PREP INCLUDES MECHANICAL AND CHEMICAL ETCHING FOLLOWED WITH A COATING TO IMPROVE ADHESION AND CORROSION RESISTANCE.

2 / 3.4 PARK BENCHES

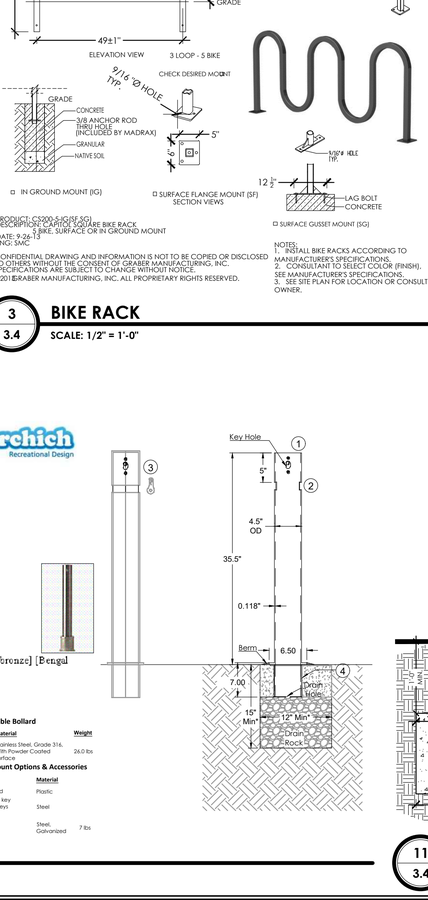
SCALE: 1/2"= 1'-0"

SITE FURNISHINGS REPRESENTATIVE

SUE CHURCHICH
CHURCHICH RECREATION & DESIGN
20 TOWNE DRIVE PMB 186
BLUFFTON, SC 29910
864-757-3156
SUE @CHURCHICHRECREATION.COM
WWW.CHURCHICHRECREATION.COM

OR APPROVED ALTERNATE - APPROVAL BY OWNER AND LANDSCAPE ARCHITECT

MADRAX DIVISION
GRABER MANUFACTURING, INC.
1080 UNIEK DRIVE
WAUNAKEE, WI 53597
P(800) 448-7931, P(608) 849-1080, F(608) 849-1081
WWW.MADRAX.COM, E-MAIL: SALES@MADRAX.COM



PRODUCT: CS200-S-SIGRE-SOG
DESCRIPTION: CARNIVAL SIGNATURE BIKE RACK
5 BIKE, SURFACE OR IN GROUND MOUNT

DATE: 9-24-13
ENG: SMC

NOTES:
1. INSTALL BIKE RACKS ACCORDING TO MANUFACTURER'S SPECIFICATIONS.
2. CONSULTANT TO SELECT COLOR (FINISH), SEE MANUFACTURER'S SPECIFICATIONS.
3. SEE SITE PLAN FOR LOCATION OR CONSULT OWNER.

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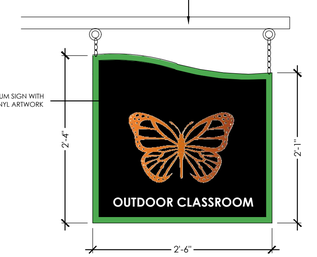
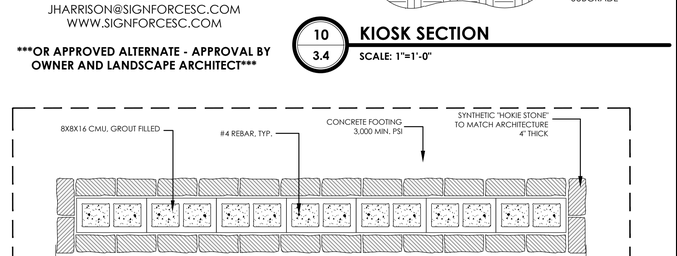
3 / 3.4 BIKE RACK

SCALE: 1/2" = 1'-0"



9 / 3.4 PAVILION SIGN (TOTAL 1)

SCALE: 1" = 1'-0"



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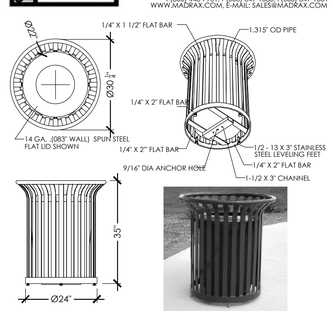
WWW.MADRAX.COM, E-MAIL: SALES@MADRAX.COM



PRODUCT: CRTRN-32
DESCRIPTION: CARNIVAL TRASH RECEPTACLE 32 GAL. 1.315 OD PIPE, NO TOP/BASE RING

DATE: 1-22-15
ENG: SMC

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TRASH LIDS ARE ATTACHED WITH STEEL VINYL COATED AIRCRAFT CABLE. PLASTIC LINER INCLUDED.
ALL FASTENERS ARE STAINLESS STEEL
SITE FURNISHING IS POWDER COATED WITH TGIC POLYESTER.
STEEL SURFACE PREP INCLUDES MECHANICAL AND CHEMICAL ETCHING FOLLOWED WITH A COATING TO IMPROVE ADHESION AND CORROSION RESISTANCE.

4 / 3.4 TRASH RECEPTACLES

SCALE: 1/2" = 1'-0"

BOLLARD REPRESENTATIVE

RELIANCE FOUNDRY

Unit 207, 6450 - 148 Street, Surrey, BC, Canada V3S-7G7
1-888-735-5680 - info@reliance-foundry.com
www.reliance-foundry.com | www.bollards.ca | www.bike-parking.ca

OR APPROVED ALTERNATE - APPROVAL BY OWNER AND LANDSCAPE ARCHITECT

R-8464 Stainless Steel Removable Bollard

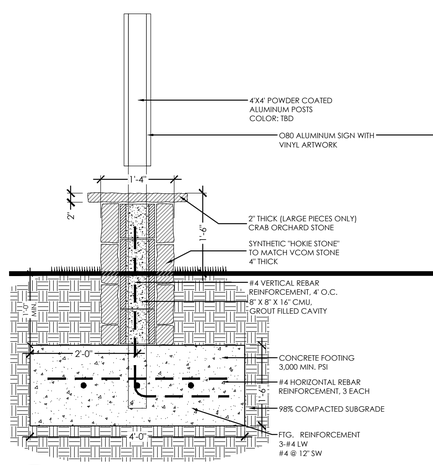
Item	Part Number	Description	Material	Weight
1	R-8464-RA	Removable Bollard	Stainless Steel, Grade 316, With Powder Coated Surface	26.0 lbs

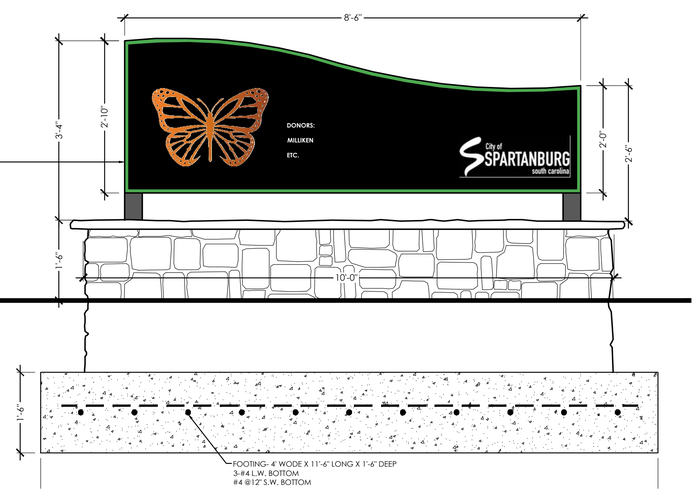
R-8464 Stainless Steel Removable Bollard - Mount Options & Accessories

Item	Part Number	Description	Material
2		Reflective Tape - White, Yellow, Blue Or Red	Plastic
3		Removable Bollard Receiver/Mount Key (2 key included per mount; optional, additional keys available)	Steel
4		Removable Bollard Receiver/Mount	Steel, Galvanized 7 lbs

5 / 3.4 BOLLARD

SCALE: 1" = 1'-0"





11 / 3.4 ENTRANCE SIGNS (TOTAL 2)

SCALE: 3/4"=1'-0"

City of SPARTANBURG south carolina

BUTTERFLY BRANCH GREENWAY

CITY OF SPARTANBURG, SOUTH CAROLINA

CIVIL ENGINEERING:

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BLACKWOOD ASSOCIATES INC.
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PO BOX 366
SPARTANBURG, SC 29304
864-583-5432 <> FAX-583-5434

LANDSCAPE ARCHITECTS:

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LandArtDesignGroup.com / info@landartdesigngroup.com

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0	01/26/17	ISSUED FOR BID	
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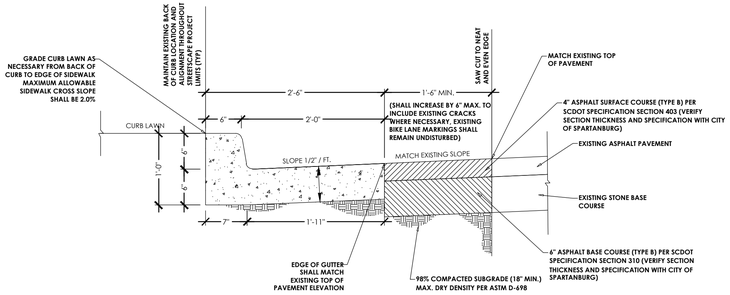
LDG JOB #:13037-00
DR. BY: TP/AQ
APP.BY: TP
DATE: 01/26/17

811 Know what's below. Call before you dig.

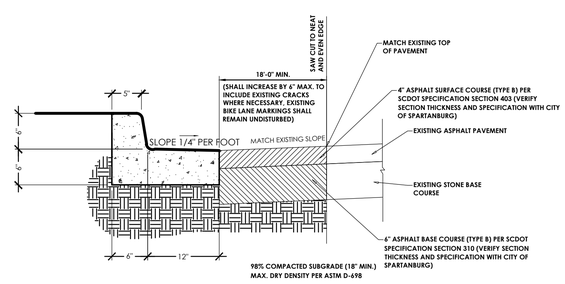
CONSTRUCTION DETAILS (1)

0 30 60 feet
SCALE: 1" = 30'



1 / 3.5 COLLEGE STREET 24" CURB & GUTTER DETAIL

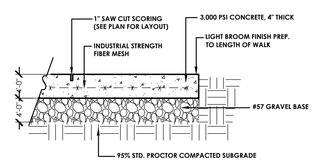
SCALE: 1" = 1'



2 / 3.5 ARCH STREET 12" CURB & GUTTER DETAIL

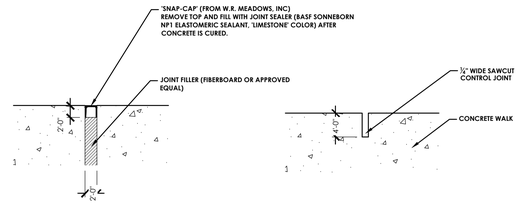
SCALE: 1" = 1'

NOTE: CONTRACTOR TO EXCAVATE DOWN 8" FOR CONCRETE & GRAVEL



NOTE: EXPANSION JOINTS TO BE PLACED

- -WHERE CONCRETE MEETS CURB
- -AT THE BEGINNING/END OF A NEW POUR THAT ADJOINS TO THE CONTINUATION OF NEW CONCRETE WALK.
- -WHEN NEW CONCRETE WALK MEETS PAVILION SLABS
- -WHERE CONCRETE MEETS EXISTING CONCRETE

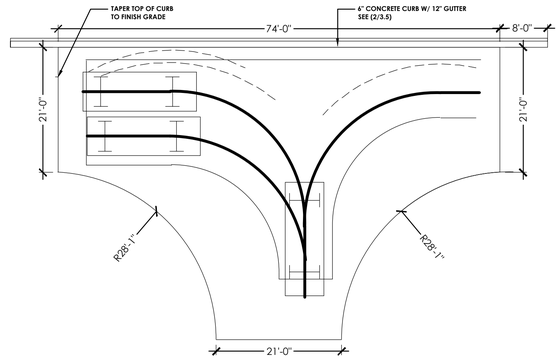


3 / 3.5 4" CONCRETE PEDESTRIAN TRAIL

SCALE: 1" = 1"

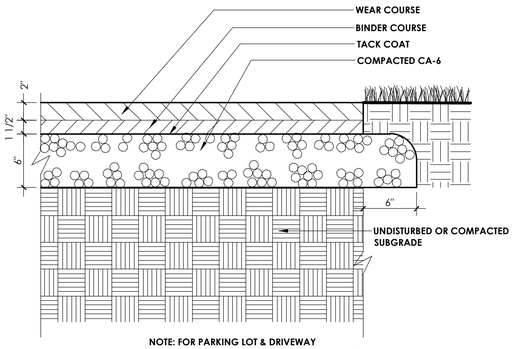
4 / 3.5 WOOD SPLIT RAIL FENCE DETAIL

SCALE: 1/2" = 1"



5 / 3.5 HAMMERHEAD (TYP.)

SCALE: 1" = 1'



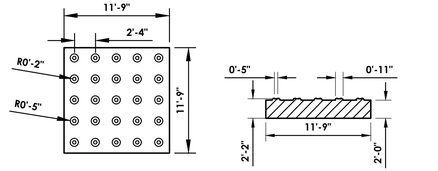
NOTE: FOR PARKING LOT & DRIVEWAY AREAS USE A 1 1/2" WEAR COURSE, 1 1/2" BINDER COURSE & 10" COMPACTED CA-6 BASE

6 / 3.5 ASPHALT PEDESTRIAN TRAIL (ALTERNATE)

SCALE: 1 1/2" = 1'

PAVER SPECIFICATIONS:

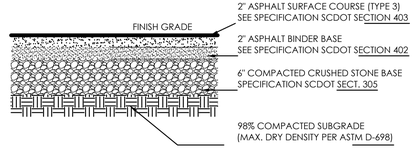
HANOVER PAVER	HANOVER ARCHITECTURAL PRODUCTS
LIMESTONE GRAY WITH TUDOR FINISH	www.hanoverpavers.com sales@hanoverpavers.com Jerry Ball, Sales
HANOVER DETECTABLE WARNING PAVER 12"x12"x2" CHARCOAL	240 BENDER ROAD HANOVER, PA. 17331 P: 717-637-0500 F: 717-637-7145



SEE SITE PLAN FOR PAVER LAYOUT

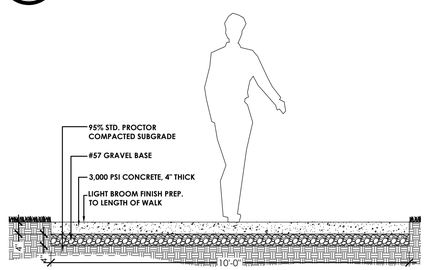
7 / 3.5 HANNOVER PAVER (ADA RAMP)

SCALE: 1 1/2" = 1'



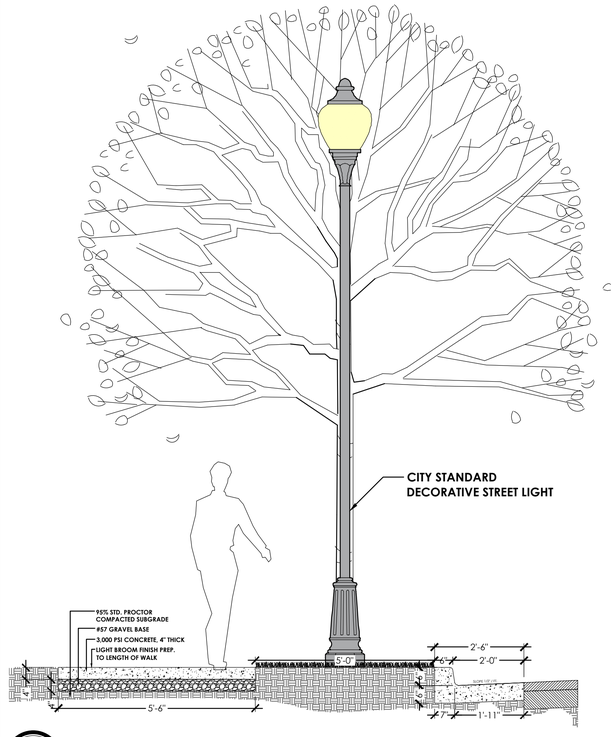
10 / 3.5 HAMMERHEAD ASPHALT DETAIL

SCALE: 1" = 1'



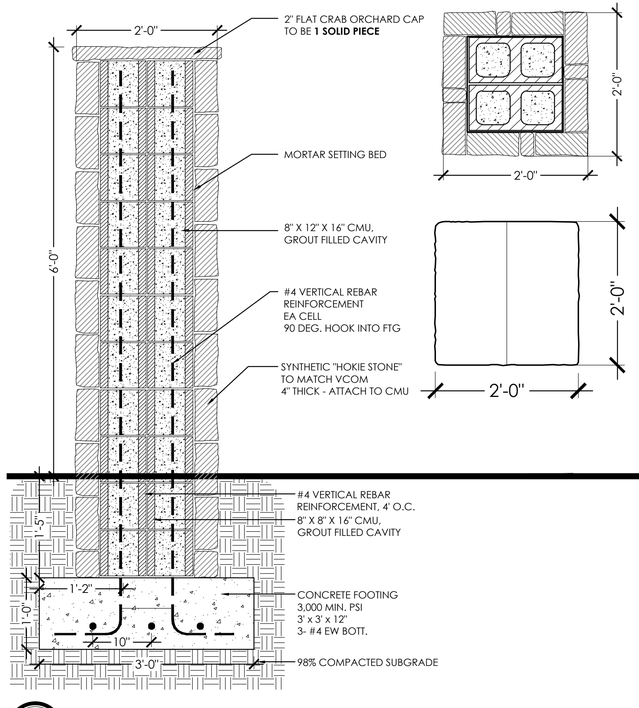
11 / 3.5 10' PEDESTRIAN TRAIL SECTION

SCALE: 1/2"=1'-0"



8 / 3.5 COLLEGE STREET STREETSCAPE SECTION

SCALE: 1/2"=1'-0"



9 / 3.5 COLUMN

SCALE: 1/2"=1'-0"

STONE SPECIFICATION

ARRISCRAFT: HOKIE STONE
(VCOM MATCH STONE)
LOCAL REP. CONTACT:
C.L. CANNON & SONS, INC.
TAD CANNON: (864) 444-7100
7401 ASHEVILLE HWY.
SPARTANBURG, SC. 29303
PH. (864) 503-3400

SPECIMEN BOULDER EXAMPLES
TENNESSEE FIELD STONES

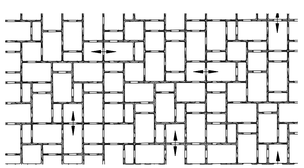
PERMEABLE PAVER INFORMATION

BELGARD: AQUA-BRIC PAVER, BANDING COURSE TO BE BUFF-BROWN-GREY; REMAINING PAVERS TO BE LIGHT RED-DARK RED-BROWN
MORE INFORMATION REGARDING AQUA-BRIC PAVER:
www.belgarddesignpro.com

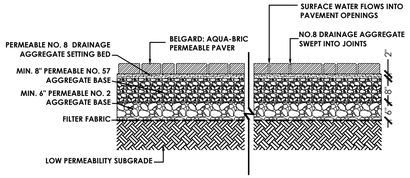
CONTACT: BRANDON SPELLMAN, BELGARD TERRITORY MANAGER
brandon.spellman@oldcastle.com (1-336-215-8790)
Oldcastle - Adams Products

BUFF-BROWN-GREY

LIGHT RED-DARK RED-BROWN



AQUA-BRIC RANDOM PATTERN



12 / 3.5 PERMEABLE PAVER

SCALE: 1/2"=1'-0"

City of SPARTANBURG south carolina

BUTTERFLY BRANCH GREENWAY

CITY OF SPARTANBURG, SOUTH CAROLINA

CIVIL ENGINEERING:

BAI

BLACKWOOD ASSOCIATES INC.
CONSULTING ENGINEERS
PO BOX 366
SPARTANBURG, SC 29304
864-583-5432 <> FAX-583-5434

LANDSCAPE ARCHITECTS:

LANDART landscape architecture
847 E Main St / Spartanburg, SC 29302
phone 864.595.7580 / fax 864.585.5858
LandArtDesignGroup.com / info@landartdesigngroup.com

NOTE:
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LDG JOB #: 13037-00
DR. BY: TP/AQ
APP.BY: TP
DATE: 01/26/17

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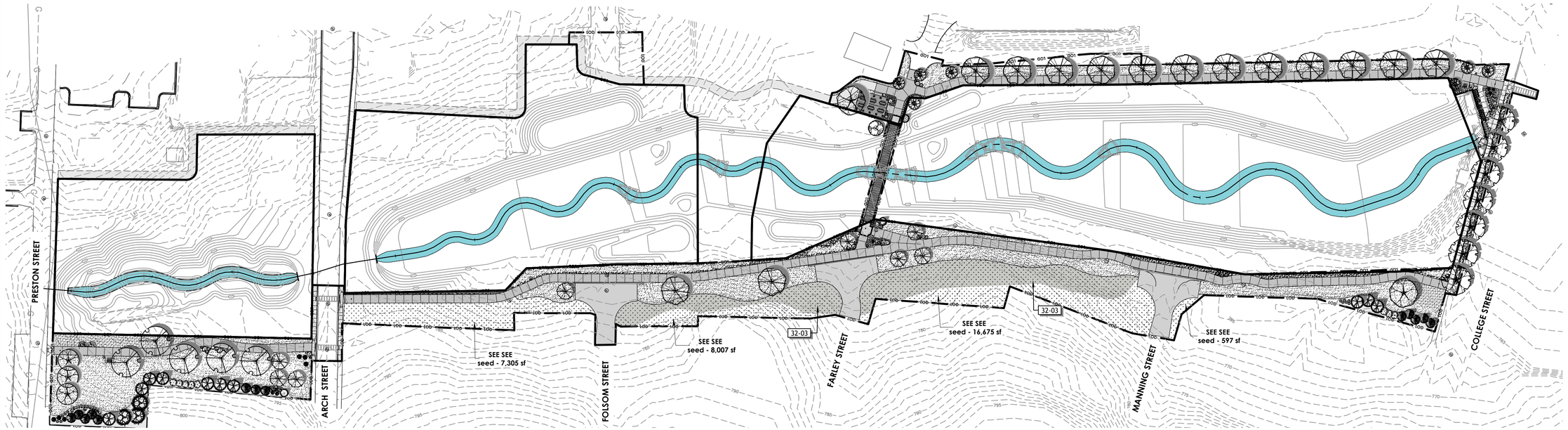
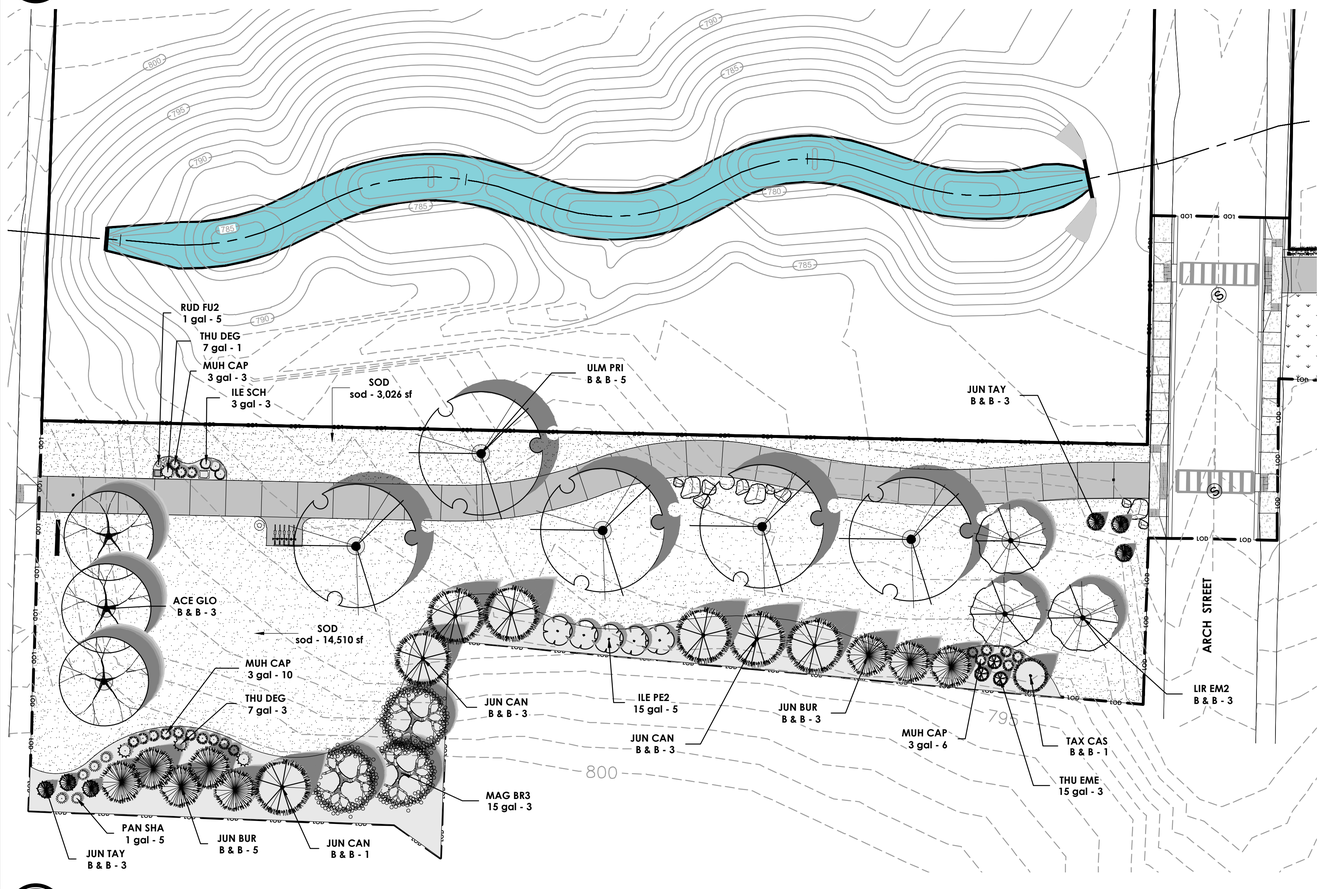
CONSTRUCTION DETAILS (2)

0 30 60 feet
SCALE: 1" = 30'



1 / 4.0 **OVERALL LANDSCAPE PLAN**

SCALE: 1" = 60'



2 / 4.0 **WEST ENTRANCE LANDSCAPE PLAN**

SCALE: 1" = 20'

PLANT SCHEDULE

TREES	CODE	QTY	BOTANICAL NAME / COMMON NAME	CONT	CAL	SIZE
	ACE GLO	3	ACER RUBRUM `OCTOBER GLORY` / OCTOBER GLORY MAPLE	B & B	2" CAL.	14` MIN.
	JUN BUR	13	JUNIPERUS VIRGINIANA `BURKII` / BURKII RED CEDAR	B & B		8` MIN.
	JUN CAN	10	JUNIPERUS VIRGINIANA `CANAERTII` / CANAERTI JUNIPER	B & B		8`-9`
	JUN TAY	11	JUNIPERUS VIRGINIANA `TAYLOR` / TAYLOR EASTERN REDCEDAR	B & B		8` MIN.
	LIR EM2	8	LIRIODENDRON TULIPIFERA `EMERALD CITY` TM / EMERALD CITY TULIP TREE	B & B	2.5"CAL	14` MIN.
	MAG BR3	3	MAGNOLIA GRANDIFLORA `BRACKENS BROWN BEAUTY` / BRACKEN`S BROWN BEAUTY MAGNOLIA	15 GAL		6` HEIGHT
	QUE BIC	2	QUERCUS BICOLOR / SWAMP WHITE OAK	B & B	2.5"CAL	14`
	QUE LYR	14	QUERCUS LYRATA / OVERCUP OAK	B & B	3"CAL	18` MIN. HEIGHT
	QUE HIG	7	QUERCUS PHELLOS `HIGHTOWER` / HIGHTOWER WILLOW OAK	B & B	3"CAL	16` MIN.
	TAX RED	1	TAXODIUM ASCENDENS `FOX RED` / POND CYPRESS	B & B	3" CAL.	
	TAX CAS	3	TAXODIUM DISTICHUM `CASCADE FALLS` / CASCADE FALLS BALD CYPRESS	B & B	1.5"CAL	8` MIN.
	TAX SHA	7	TAXODIUM DISTICHUM `SHAWNEE BRAVE` TM / SHAWNEE BRAVE BALD CYPRESS	B & B	3"CAL	12` MIN.
	THU EME	3	THUJA OCCIDENTALIS `EMERALD` / EMERALD ARBORVITAE	15 GAL		
	ULM PRI	5	ULMUS AMERICANA `PRINCETON` / PRINCETON ELM	B & B	3" CAL.	16` MIN.

SHRUBS	CODE	QTY	BOTANICAL NAME / COMMON NAME	CONT	SIZE
	ILE PE2	8	ILEX VOMITORIA `PENDULA` / WEEPING YAUPON HOLLY	15 GAL	
	ILE SCH	11	ILEX VOMITORIA `SCHILLINGS DWARF` / DWARF YAUPON HOLLY	3 GAL	
	ITE VI3	6	ITEA VIRGINICA `VIRGINIA` / VIRGINIA SWEETSPIRE	3 GAL	
	RUD FU2	34	RUDBECKIA FULGIDA `GOLDSTURM` / GOLDSTURM BLACK-EYED SUSAN	1 GAL	
	THU DEG	8	THUJA OCCIDENTALIS `DEGROOT`S SPIRE` / DEGROOT`S SPIRE ARBORVITAE	7 GAL	

GRASSES	CODE	QTY	BOTANICAL NAME / COMMON NAME	CONT	SIZE
	MUH CAP	33	MUHLENBERGIA CAPILLARIS / PINK MUHLY GRASS	3 GAL	
	PAN SHA	28	PANICUM VIRGATUM `SHENENDOAH` / BURGUNDY SWITCH GRASS	1 GAL	
	SCH ST2	246	SCHIZACHYRIUM SCOPARIUM `STANDING OVATION` / LITTLE BLUESTEM GRASS	1 GAL	
	SPA BAK	24	SPARTINA BAKERI / SAND CORD GRASS	4"POT	

GROUND COVERS	CODE	QTY	BOTANICAL NAME / COMMON NAME
	SEE SEE	32,585 SF	SEED MIX / PERMANENT GRASSING (SEE SPECIFICATIONS.)
	SOD	54,162 SF	SOD/FESCUE / SOD/FESCUE

32 EXTERIOR IMPROVEMENTS SCHEDULE

SYMBOL	DESCRIPTION	QTY	DETAIL
	EROSION CONTROL MATTING NORTH AMERICAN GREEN, S-75 OR EQUAL	14,659 SF	

SYMBOL	DESCRIPTION	QTY	DETAIL
	TRIPLED HAMMERED HARDWOOD MULCH (3" THICK)	64.26 CY	

City of SPARTANBURG south carolina

BUTTERFLY BRANCH GREENWAY

CITY OF SPARTANBURG, SOUTH CAROLINA

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LANDSCAPE ARCHITECTS:

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phone 864.585.7580 / fax 864.585.5808
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LDG JOB #: 13037-00
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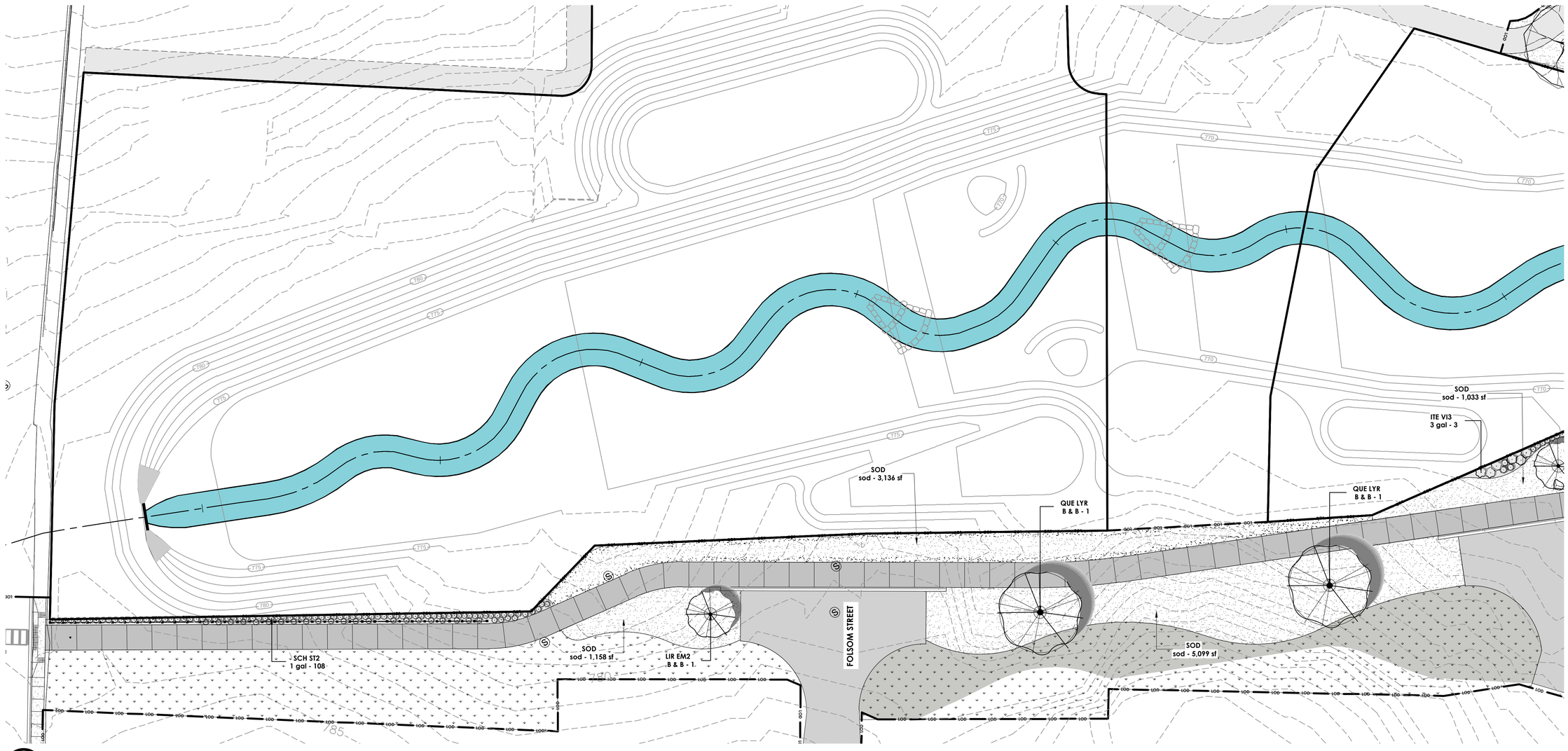
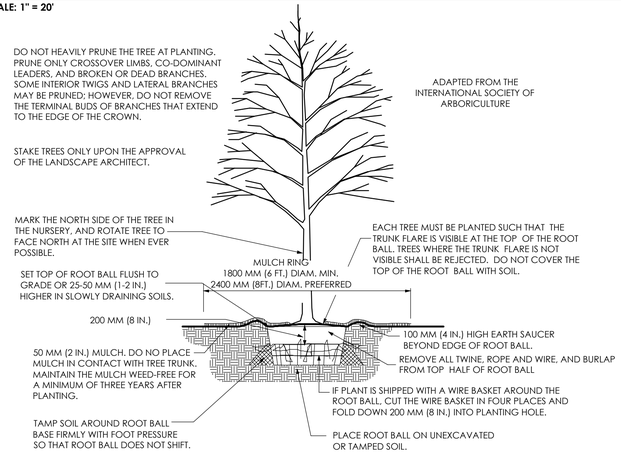
LANDSCAPE PLAN (1)

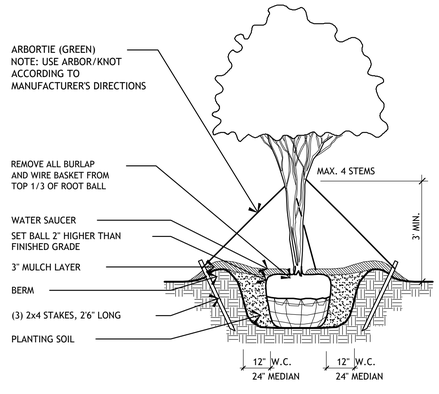
0 60 120feet
SCALE: 1" = 60'

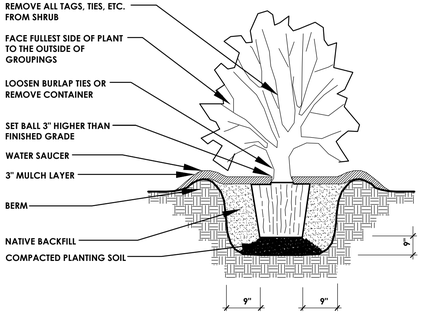


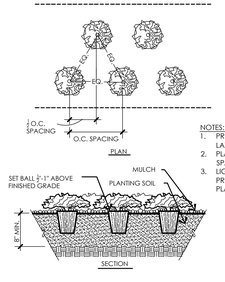
1 / 4.1 **TRAIL / OUTDOOR CLASSROOM LANDSCAPE PLAN**

SCALE: 1" = 20'









NOTES:
1. PREPARE PLANTING BED WITH 8" LAYER OF PLANT SOIL MIXTURE.
2. PLACE PLANTS IN PREPARED BEDS, SPACING AS SPECIFIED.
3. LIGHTLY ROUGHEN ROOT BALLS PRIOR TO PLANTING. ROOT BOUND PLANTS WILL NOT BE ALLOWED.

2 / 4.1 **TYPICAL PLANTING DETAILS**

SCALE: N.T.S

City of SPARTANBURG south carolina

BUTTERFLY BRANCH GREENWAY

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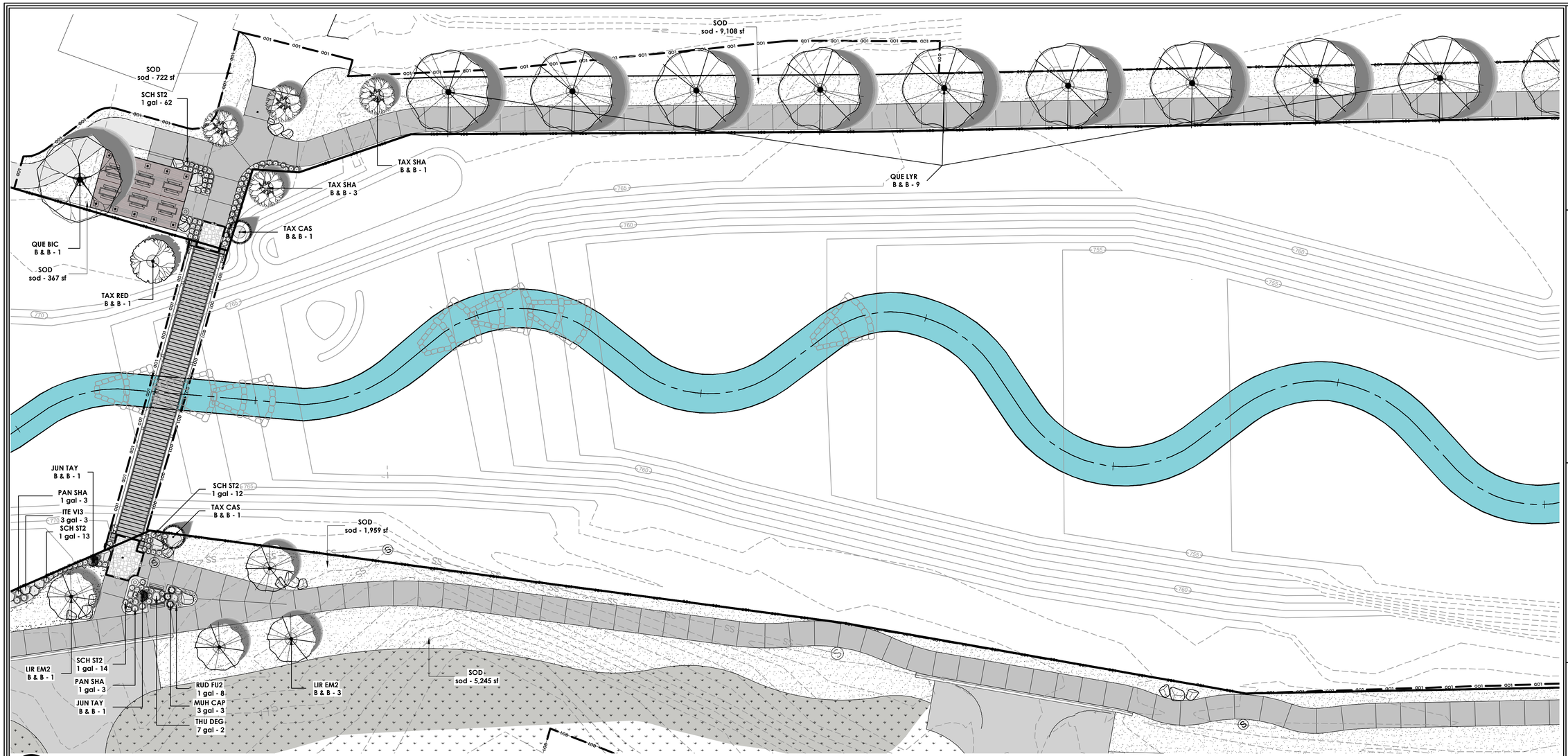
LANDSCAPE PLAN (2)

0 20 40 feet
SCALE: 1" = 20'



1 / 4.2 **TRAIL / BRIDGE LANDSCAPE PLAN**

SCALE: 1" =20'

GENERAL LANDSCAPE SPECIFICATIONS:

LANDSCAPE PLANTING AND RELATED WORK SHALL BE PERFORMED BY A FIRM WITH A MINIMUM OF FIVE YEARS EXPERIENCE SPECIALIZING IN THIS TYPE OF WORK. ALL CONTRACTORS AND THEIR SUB-CONTRACTORS WHO WILL BE PERFORMING ANY LANDSCAPE WORK INCLUDED IN THIS SECTION OF THE SPECIFICATION SHALL BE APPROVED BY THE LANDSCAPE ARCHITECT.

CONTRACT CLOSEOUT SUBMITTALS:

A. PRIOR TO PLANT MATERIAL ACCEPTANCE, SUBMIT WRITTEN MAINTENANCE INSTRUCTIONS RECOMMENDING ADEQUATE AND REASONABLE PROCEDURES FOR MAINTENANCE OF PLANT MATERIALS.
B. PROVIDE PLANT MATERIAL RECORD DRAWINGS:
   1. LEGIBLY MARK DRAWINGS TO RECORD ACTUAL CONSTRUCTION.
   2. INDICATE HORIZONTAL LOCATIONS, REFERENCED TO PERMANENT SURFACE IMPROVEMENTS.
   3. IDENTIFY FIELD CHANGES OF DIMENSION AND DETAIL AND CHANGES MADE BY CHANGE ORDER.

PREPARATION:

A. UTILITY VERIFICATION: CONTRACTOR WILL BE RESPONSIBLE FOR DAMAGES TO ANY UNMARKED UTILITY.
   1. THE CONTRACTOR SHALL CONTACT THE LOCAL UTILITY COMPANIES FOR VERIFICATION OF THE LOCATION OF ALL UNDERGROUND UTILITY LINES IN THE AREA OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGE RESULTING FROM NEGLECT OR FAILURE TO COMPLY WITH THIS REQUIREMENT.
B. **SOIL CONDITIONING:**
   1. CONTRACTOR SHALL BE RESPONSIBLE FOR A SOIL TEST REPORT BEFORE CONSTRUCTION START; PROVIDE REPORT TO OWNER, GENERAL CONTRACTOR, AND LANDSCAPE ARCHITECT.
   2. COORDINATE AND PROVIDE ALL SOIL CONDITIONING REQUIREMENTS BASED ON THE SOIL TESTING.

INSTALLATION:

A. PLANTS SHALL BE SET ON FLAT-TAMPED OR UNEXCAVATED PADS AT THE SAME RELATIONSHIP TO FINISHED GRADE AS THEY WERE TO THE GROUND FROM WHICH THEY WERE DUG, UNLESS OTHERWISE NOTED ON THE DRAWINGS. PLANTS MUST BE SET PLUMB AND BRACED IN POSITION UNTIL TOPSOIL OR PLANTING MIX HAS BEEN PLACED AND TAMPED AROUND THE BASE OF THE ROOT BALL. IMPROPER COMPACTING OF THE SOIL AROUND THE ROOT BALL MAY RESULT IN THE TREE SETTLING OR LEANING. PLANTS SHALL BE SET SO THAT THEY WILL BE AT THE SAME DEPTH AND SO THAT THE ROOT BALL DOES NOT SHIFT OR MOVE LATERALLY ONE YEAR LATER.
   NOTE: PROPER PLANTING DEPTH REQUIRES THE ROOT FLARE TO BE AT OR SLIGHTLY ABOVE THE FINISHED GRADE. IT IS IMPORTANT TO DETERMINE HOW DEEP THE ROOT FLARE IS IN THE BALL BEFORE IT IS PLACED IN THE PLANTING HOLE. SOMETIMES THE TOP OF THE BALL MAY NEED TO BE RAISED UNTIL THE ROOT FLARE IS AT THE PROPER PLANTING DEPTH AND/OR SOIL MUST BE REMOVED FROM THE TOP OF THE BALL.
   1. DETERMINE THE ELEVATION OF THE ROOT FLARE AND ENSURE THAT IT IS PLANTED AT GRADE. THIS MAY REQUIRE THAT THE TREE BE SET HIGHER THAN THE GRADE IN THE NURSERY.
   2. IF THE ROOT FLARE IS LESS THAN 50 MM (2 IN.) BELOW THE SOIL LEVEL OF THE ROOT BALL, PLANT AT THE TREE THE APPROPRIATE LEVEL ABOVE THE GRADE TO SET THE FLARE EVEN WITH THE GRADE. IF THE FLARE IS MORE THAN 50 MM (2 IN) AT THE CENTER OF THE ROOT BALL THE TREE SHALL BE REJECTED.

GUARANTEE PERIOD AND REPLACEMENT:

A. THE OWNER OF FEE TITLE TO ANY PROPERTY ON WHICH PLANT MATERIAL HAS BEEN ESTABLISHED IN ACCORDANCE WITH AN APPROVED LANDSCAPE / PLANTING PLAN, SHALL BE RESPONSIBLE FOR THE MAINTENANCE, REPAIR, AND REPLACEMENT OF THE APPROVED PLANT MATERIAL, AS REQUIRED BY THE ORDINANCE.
B. THE GUARANTEE PERIOD FOR TREES AND SHRUBS SHALL BEGIN AT THE DATE OF ACCEPTANCE.
C. THE CONTRACTOR SHALL GUARANTEE ALL PLANT MATERIAL TO BE IN HEALTHY AND FLOURISHING CONDITION FOR A PERIOD OF ONE YEAR FROM THE DATE OF ACCEPTANCE.
D. WHEN WORK IS ACCEPTED IN PARTS, THE GUARANTEE PERIODS EXTEND FROM EACH OF THE PARTIAL ACCEPTANCES TO THE TERMINAL DATE OF THE GUARANTEE OF THE LAST ACCEPTANCE. THUS, ALL GUARANTEE PERIODS TERMINATE AT ONE TIME.
E. THE CONTRACTOR SHALL REPLACE, WITHOUT COST, AS SOON AS WEATHER CONDITIONS PERMIT, AND WITHIN A SPECIFIED PLANTING PERIOD, ALL PLANTS DETERMINED BY THE LANDSCAPE ARCHITECT TO BE DEAD OR IN AN UNACCEPTABLE CONDITION DURING AND AT THE END OF THE GUARANTEE PERIOD. TO BE CONSIDERED ACCEPTABLE, PLANTS SHALL BE FREE OF DEAD OR DYING BRANCHES AND BRANCH TIPS AND SHALL BEAR FOLIAGE OF NORMAL DENSITY, SIZE, AND COLOR. REPLACEMENTS SHALL CLOSELY MATCH ADJACENT SPECIMENS OF THE SAME SPECIES. REPLACEMENTS SHALL BE SUBJECT TO ALL REQUIREMENTS STATED IN THIS SPECIFICATION.
F. THE GUARANTEE OF ALL REPLACEMENT PLANTS SHALL EXTEND FOR AN ADDITIONAL PERIOD OF ONE YEAR FROM THE DATE OF THEIR ACCEPTANCE AFTER REPLACEMENT, IN THE EVENT THAT A REPLACEMENT PLANT IS NOT ACCEPTABLE DURING OR AT THE END OF SAID EXTENDED GUARANTEE PERIOD, THE LANDSCAPE ARCHITECT MAY ELECT SUBSEQUENT REPLACEMENT OR CREDIT FOR THAT ITEM.
G. AT THE END OF THE GUARANTEE, THE CONTRACTOR SHALL RESET GRADES THAT HAVE SETTLED BELOW THE PROPOSED GRADES ON THE DRAWINGS.
H. THE CONTRACTOR SHALL MAKE PERIODIC INSPECTIONS, AT NO EXTRA COST, DURING THE GUARANTEE PERIOD TO DETERMINE WHAT CHANGES, IF ANY, SHOULD BE MADE IN THE MAINTENANCE PROGRAM. IF CHANGES ARE RECOMMENDED, THEY SHALL BE SUBMITTED IN WRITING TO THE LANDSCAPE ARCHITECT. CLAIMS BY THE CONTRACTOR THAT THE OWNER'S MAINTENANCE PRACTICES OR LACK OF MAINTENANCE RESULTED IN DEAD OR DYING PLANTS WILL NOT BE CONSIDERED IF SUCH CLAIMS HAVE NOT BEEN DOCUMENTED BY THE CONTRACTOR DURING THE GUARANTEE PERIOD.

GENERAL LANDSCAPE NOTES:

1. MATERIALS LIST WAS PREPARED FOR ESTIMATING PURPOSES, CONTRACTOR SHALL MAKE OWN QUANTITY TAKE-OFF USING DRAWINGS AND SPECIFICATIONS TO DETERMINE QUANTITIES TO HIS SATISFACTION, REPORTING PROMPTLY ANY DISCREPANCIES WHICH MAY EFFECT BIDDING.
2. ROOT TYPES MAY BE FREELY SUBSTITUTED IN CASE OF BALLED AND BURLAPPED OR CONTAINER GROWN. ALL PLANT MATERIAL MUST ADHERE TO ANSI Z60.1-2004 (AMERICAN STANDARD FOR NURSERY STOCK) SPECIFICATIONS FOR ROOT BALLS AND CONTAINER SIZES.
3. **CONTRACTOR TO VERIFY THAT ALL PLANT MATERIALS ARE AVAILABLE AS SPECIFIED WHEN BID/PROPOSAL IS SUBMITTED.**
4. UNLESS SPECIFICALLY NOTED, ALL PLANTS SHALL BE OF SPECIMEN QUALITY, EXCEPTIONALLY HEAVY, SYMMETRICAL, AND SO TRAINED OR FAVORED IN DEVELOPMENT AND APPEARANCE AS TO BE UNQUESTIONABLY AND OUTSTANDINGLY SUPERIOR IN FORM, COMPACTNESS AND SYMMETRY. THEY SHALL BE SOUND, HEALTHY, VIGOROUS, WELL BRANCHED AND DENSELY FOLIATED WHEN IN LEAF; FREE OF DISEASE AND INSECTS, EGGS OR LARVAE; AND SHALL HAVE HEALTHY, WELL-DEVELOPED ROOT SYSTEMS. THEY SHALL BE FREE FROM PHYSICAL DAMAGE OR OTHER CONDITIONS THAT WOULD PREVENT VIGOROUS GROWTH.
5. **SUBSTITUTIONS OF PLANT MATERIALS WILL NOT BE PERMITTED UNLESS AUTHORIZED IN WRITING BY THE LANDSCAPE ARCHITECT.** IF PROOF IS SUBMITTED IN WRITING THAT A PLANT SPECIFIED IS NOT OBTAINABLE, CONSIDERATION WILL BE GIVEN TO THE NEAREST AVAILABLE SIZE OR SIMILAR VARIETY, WITH A CORRESPONDING ADJUSTMENT OF THE CONTRACT PRICE.
6. PLANTS SHALL CONFORM TO THE MEASUREMENTS SPECIFIED, EXCEPT PLANTS LARGER THAN THOSE SPECIFIED MAY BE USED IF APPROVED BY THE LANDSCAPE ARCHITECT IN WRITING. USE OF LARGER PLANTS SHALL NOT INCREASE THE CONTRACT PRICE. IF LARGER PLANTS ARE APPROVED, THE ROOT BALL SHALL BE INCREASED IN PROPORTION TO THE SIZE OF THE PLANT.
7. ROOT FLARE OF PLANT MATERIAL MUST BE AT OR SLIGHTLY HIGHER THAN EXISTING GRADE. PULL MULCH BACK 6 IN. FROM ROOT FLARE.
8. TREES WITH MULTIPLE LEADERS, UNLESS SPECIFIED, WILL BE REJECTED. TREES WITH A DAMAGED OR CROOKED LEADER, BARK ABRASIONS, SUNSCALD, DISFIGURING KNOTS, INSECT DAMAGE, CUTS OF LIMBS OVER 20 MM (¾ IN.) IN DIAMETER THAT ARE NOT COMPLETELY CLOSED OR FLUSH PRUNING CUTS THAT DO NOT PRESERVE THE COLLAR AT THE BRANCH WILL BE REJECTED.
9. TREE PLANTING DETAILS AND SPECIAL PROVISIONS FOR PLANTING MUST BE FOLLOWED.
10. CONTRACTOR SHALL TEST SOIL pH AND CONDITIONS FOR ALL SOD AREAS TO INSURE THAT PROPER SOIL REQUIREMENTS ARE MET FOR THE SODDED LAWN. SOIL SHALL BE AMENDED BY CONTRACTOR AS INDICATED BY SOIL TEST AND SPECIFICATIONS TO ACHIEVE PROPER SOIL CONDITIONS.
11. ALL PLANT BEDS TO RECEIVE 3" DEEP HARDWOOD MULCH, PULLED 6" AWAY FROM THE TRUNK.
12. CONTRACTOR TO MAINTAIN THE PLANTINGS AND CONTROL WEEDS IN MULCH AREAS THROUGH THE DURATION OF CONSTRUCTION UNTIL FINAL ACCEPTANCE.
13. ALL PLANT BED AND SEED/SOD AREAS TO RECEIVE 100% IRRIGATION COVERAGE.
14. **AS-BUILT IRRIGATION PLAN SHOULD ALSO BE PROVIDED TO SCHOOL DISTRICT OF NEWBERRY COUNTY.**
15. IN THE PLANT SCHEDULE, PLANTS NOTED AS "SPECIMEN", SHALL BE SELECTED BY THE LANDSCAPE ARCHITECT AT THE NURSERY OR PHOTOS OF THE PLANTING STOCK SHALL BE SUBMITTED TO THE LANDSCAPE ARCHITECT FOR APPROVAL.
16. PREEMERGENT HERBICIDE SHALL BE APPLIED TO PLANTING AREAS PRIOR TO LANDSCAPE INSTALLATION AND ACCORDING TO MANUFACTURER'S INSTRUCTIONS.
17. PLANT BED SHALL BE TESTED FOR pH AND AMENDED PRIOR TO INSTALLATION.
18. ALL PLANT MATERIAL SHALL CONFORM TO STANDARD SET FORTH BY "AMERICAN STANDARDS FOR NURSERY STOCK" ANSI Z60.1-2004 PUBLISHED BY THE AMERICAN NURSERY AND LANDSCAPE ASSOCIATION.
19. ALL PLANT MATERIAL SHALL BE PROTECTED DURING TRANSPORT AND DELIVERY TO JOB SITE WITH SHADE CLOTH OR OTHER ACCEPTABLE MEANS OF WINDBURN PREVENTION.
20. ANY SUBSTITUTIONS IN SIZE AND/OR PLANT MATERIAL MUST BE APPROVED BY THE LANDSCAPE ARCHITECT BEFORE PLANTING CAN BEGIN.
21. ALL TREES MUST BE STRAIGHT TRUNK, FULL HEADED, AND MEET ALL REQUIREMENTS SPECIFIED.
22. PRIOR TO CONSTRUCTION, THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES AND SHALL AVOID DAMAGE TO ALL UTILITIES DURING CONSTRUCTION. SHOULD THE CONTRACTOR CAUSE DAMAGE TO ANY UTILITIES, NECESSARY REPAIRS SHALL BE MADE AS QUICKLY AS PRACTICABLE, AT CONTRACTOR'S EXPENSE.
23. ALL ELEMENTS OF LANDSCAPING SHALL BE INSTALLED SO AS TO MEET ALL APPLICABLE ORDINANCES AND CODES REQUIREMENTS.
24. CONTRACTOR SHALL ASSURE DRAINAGE AND PERCOLATION OF PLANTING PITS PRIOR TO INSTALLATION OF PLANT MATERIAL. CONTRACTOR IS RESPONSIBLE FOR THE REPLACEMENT OF ALL PLANTS LOST DUE TO INADEQUATE DRAINAGE CONDITIONS.
25. BALLED AND BURLAP MATERIAL SHALL HAVE THE TOP ONE HALF (1/2) OF THE BURLAP AND STRAPS REMOVED.
26. CONTRACTORS SHALL REFER TO THE LANDSCAPE PLANTING DETAILS, PLANTS LISTS, GENERAL NOTES AND THE PLANTING SPECIFICATIONS FOR COMPLETE LANDSCAPE PLANTING INSTRUCTIONS.
27. CONTRACTOR TO PROVIDE SOD CERTIFICATION BEFORE INSTALLATION.
28. TURF GRASS SHALL BE PLANTED AFTER ALL PLANTS ARE INSTALLED AND MULCHED. SEED AND/OR SOD BED PREPARATIONS BY MEANS OF PULVERIZATION TO LOOSEN SOIL. SMOOTH AND FINE GRADE AREA REMOVING ANY ROCKS, ROOTS, TRASH, AND CLODS OVER ENTIRE AREA.
29. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING IN FULL ALL PLANTING AREAS (INCLUDING WATERING, SPRAYING, MULCHING, MOWING, FERTILIZING, ETC.) UNTIL THE OWNER AND LANDSCAPE ARCHITECT ACCEPT CONSTRUCTION IN FULL & FINAL PUNCH LIST COMPLETED / ACCEPTED IN WRITING.
30. CONTRACTOR TO GUARANTEE PLANT MATERIAL FOR A 12 MONTH ESTABLISHMENT PERIOD BEGINNING AT THE OWNERS FULL ACCEPTANCE OF THE PROJECT.

City of SPARTANBURG south carolina

BUTTERFLY BRANCH GREENWAY

CITY OF SPARTANBURG, SOUTH CAROLINA

CIVIL ENGINEERING:

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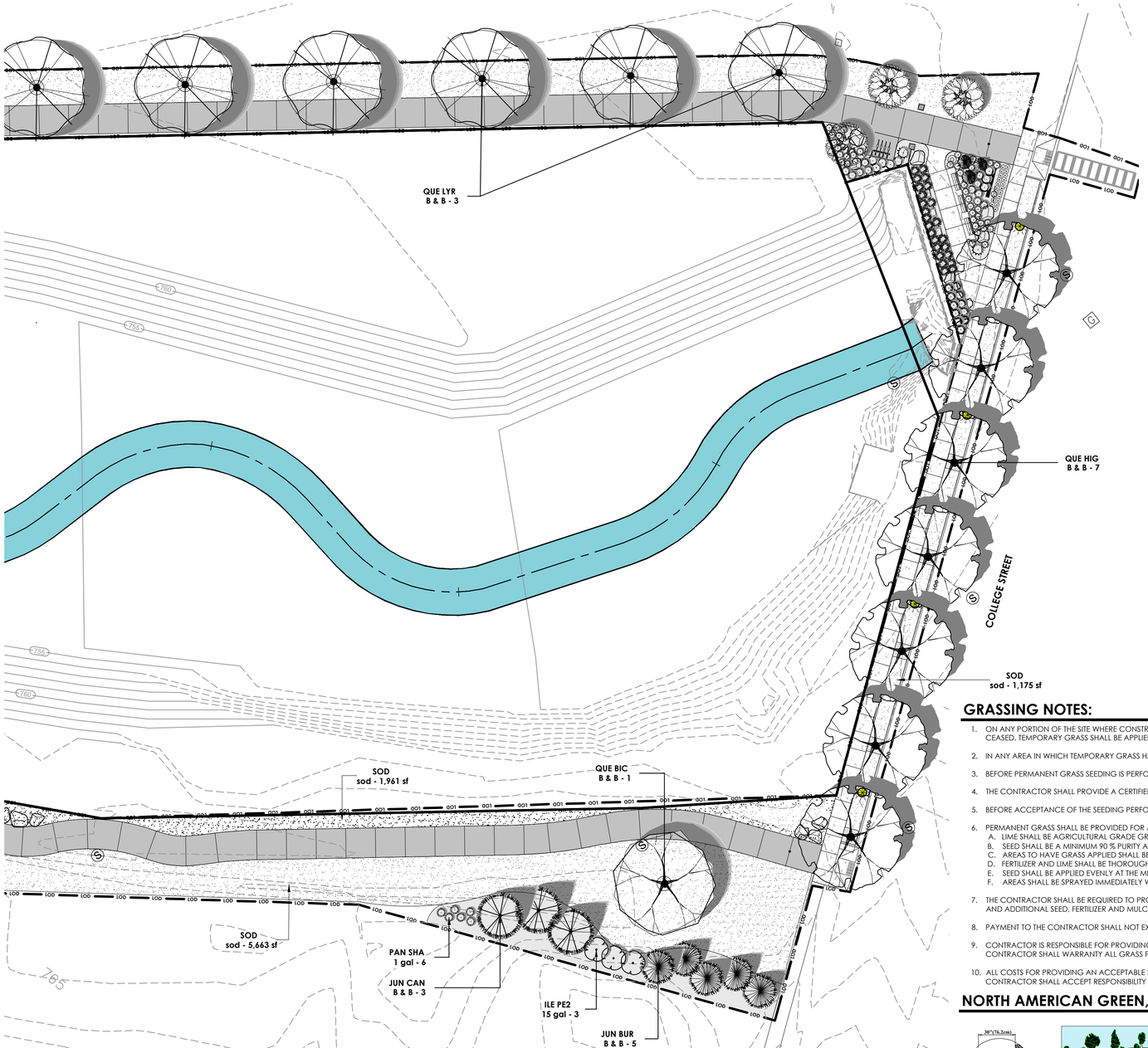
LDG JOB #:13037-00
DR. BY: TP/AQ
APP.BY: TP
DATE: 01/26/17

811 Know what's below. Call before you dig.

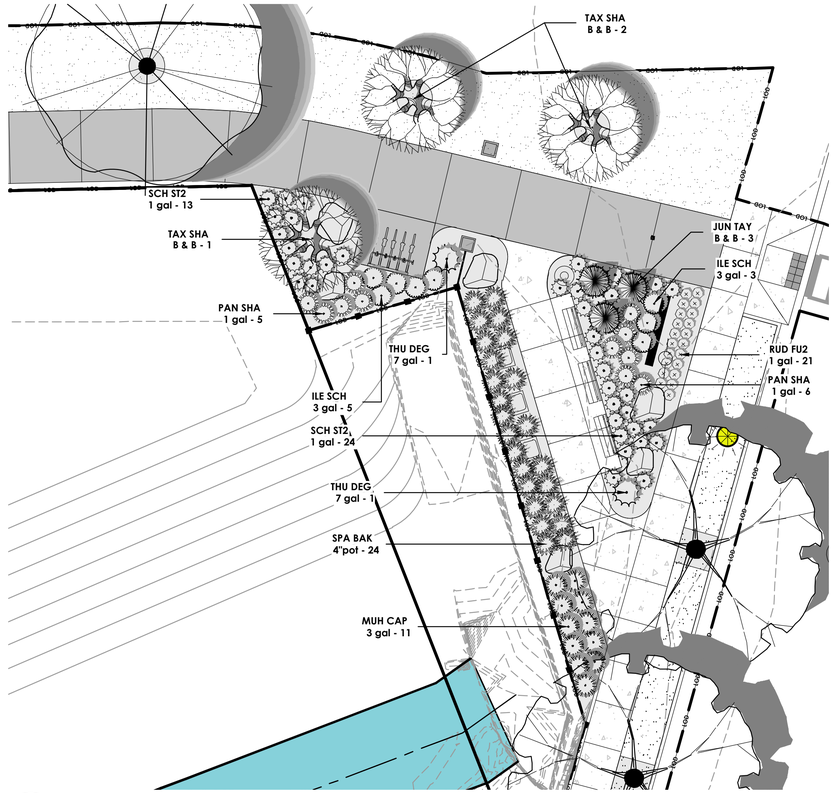
LANDSCAPE PLAN (3)

0 20 40 feet
SCALE: 1" = 20'



1 / 4.3 EAST ENTRANCE LANDSCAPE PLAN

SCALE: 1" = 20'



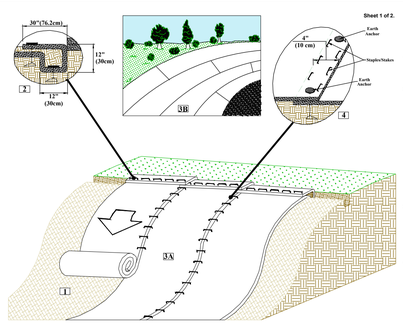
2 / 4.3 EAST MAIN ENTRANCE LANDSCAPE PLAN

SCALE: 1" = 10'

GRASSING NOTES:

1. ON ANY PORTION OF THE SITE WHERE CONSTRUCTION HAS TEMPORARILY OR PERMANENTLY CEASED, ALL DISTURBED AREAS SHALL BE STABILIZED WITH GRASS AS SOON AS PRACTICAL, BUT NOT EXCEEDING FOURTEEN (14) DAYS AFTER WORK HAS CEASED. TEMPORARY GRASS SHALL BE APPLIED IN AREAS WHERE FUTURE CONSTRUCTION WILL RE-DISTURB THIS AREA, OTHERWISE,PERMANENT GRASS SHALL BE APPLIED.
2. IN ANY AREA IN WHICH TEMPORARY GRASS HAS BEEN APPLIED, THE GRASS SHALL BE MOWED AND THE SEED BED RE-SCARIFIED BEFORE PERMANENT GRASS APPLICATION.
3. BEFORE PERMANENT GRASS SEEDING IS PERFORMED, THE ENGINEER/OWNER SHALL BE NOTIFIED FOR AN ON-SITE INSPECTION OF THE PREPARED SEED BED AND FOR AN INSPECTION OF THE QUANTITIES OF MATERIAL TO BE APPLIED.
4. THE CONTRACTOR SHALL PROVIDE A CERTIFIED LETTER INDICATING THE QUANTITIES OF MATERIAL APPLIED PER ACRE.
5. BEFORE ACCEPTANCE OF THE SEEDING PERFORMED FOR THE ESTABLISHMENT OF PERMANENT VEGETATION, THE CONTRACTOR WILL BE REQUIRED TO PRODUCE A UNIFORM VEGETATIVE COVER WITH A DENSITY OF 80 % OF THE SEEDED AREA.
6. PERMANENT GRASS SHALL BE PROVIDED FOR ALL DISTURBED AREAS WITH THE FOLLOWING CRITERIA:
   A. LIME SHALL BE AGRICULTURAL GRADE GROUND LIMESTONE CONTAINING LEAST 34 % MAGNESIUM CARBONATE.
   B. SEED SHALL BE A MINIMUM 90 % PURITY AND 80 % GERMINATION.
   C. AREAS TO HAVE GRASS APPLIED SHALL BE SCARIFIED CULTIVATED TO A DEPTH OF 3 INCHES, WITH ALL CLODS OR CLUMPS GREATER THAN 3" BROKEN UP AND FOREIGN MATERIAL INCLUDING ROCK, ROOTS, AND MISC. DEBRIS REMOVED.
   D. FERTILIZER AND LIME SHALL BE THOROUGHLY WORKED INTO THE SOIL, AND THE SURFACE RAKED SMOOTH BEFORE APPLYING SEED.
   E. SEED SHALL BE APPLIED EVENLY AT THE MINIMUM RATE AND RAKED IN LIGHTLY WITH APPROXIMATELY 1/4" TOPSOIL COVER. SEEDED AREAS SHALL BE DRESSED SMOOTH, THEN MULCH (STRAW) SHALL BE APPLIED MECHANICALLY.
   F. AREAS SHALL BE SPRAYED IMMEDIATELY WITH AN EMULSION TO BIND SEED AND MULCH.
7. THE CONTRACTOR SHALL BE REQUIRED TO PROVIDE ALL MAINTENANCE NECESSARY TO KEEP SEEDED AREAS IN SATISFACTORY CONDITION UNTIL THE WORK IS ACCEPTED. THIS INCLUDES MOWING, IRRIGATING, REPAIRING OF EROSION WASHES, AND ADDITIONAL SEED, FERTILIZER AND MULCH APPLIED TO AREAS WHERE A SATISFACTORY STAND OF GRASS HAS NOT BEEN ACHIEVED. ALL COSTS INCLUDING IRRIGATING ND MOWING TO BE INCLUDED IN BASE BID PRICE.
8. PAYMENT TO THE CONTRACTOR SHALL NOT EXCEED 75 % OF THE CONTRACT PRICE FOR GRASS UNTIL A SATISFACTORY STAND OF PERMANENT GRASS HAS BEEN OBTAINED.
9. CONTRACTOR IS RESPONSIBLE FOR PROVIDING A STAND OF GRASS WITH A ROOT SYSTEM THAT HAS DEVELOPED SUFFICIENTLY TO SURVIVE DRY PERIODS AND WINTER WEATHER AND BE CAPABLE OF RE-ESTABLISHMENT IN THE SPRING. THE CONTRACTOR SHALL WARRANTY ALL GRASS FOR A PERIOD OF 1 YEAR BEGINNING FROM THE DATE OF ACCEPTANCE BY THE OWNER/ENGINEER.
10. ALL COSTS FOR PROVIDING AN ACCEPTABLE STAND OF GRASS (PERMANENT & TEMPORARY SEEDINGS) SHALL BE INCLUDED IN BASE BID. NO ADDITIONAL CHARGES WILL BE HONORED FOR REPAIRS DUE TO WEATHER OR OTHER REASONS. THE CONTRACTOR SHALL ACCEPT RESPONSIBILITY AND COSTS FOR PROVIDING AN ACCEPTABLE STAND OF GRASS.

NORTH AMERICAN GREEN, S-75 OR EQUAL:



Sheet 1 of 2.

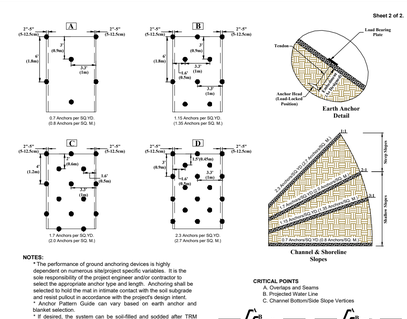
SLOPE INSTALLATION EARTH ANCHOR (EA) DETAIL

1. Prepare soil before installing high-performance turf reinforcement mats (HP-TRMs), including any necessary application of lime, fertilizer, and seed.
2. Begin at the top of the slope by anchoring the HP-TRMs in a 12" (30 cm) deep x 12" (30cm) wide trench with approximately 30" (76.2 cm) of HP-TRMs extended beyond the up-slope portion of the trench. Anchor the HP-TRMs with an alternating row of staples and anchors approximately 30" (76.2 cm) apart across the bottom of the trench. Backfill and compact the trench after stapling. Fold remaining 30" (76.2 cm) portion of HP-TRMs back over compacted soil. Secure HP-TRMs over compacted soil with an alternating row of staples/stakes spaced approximately 18" (45 cm) apart across the width of the HP-TRMs.
3. Roll the HP-TRMs (A) down or (B) horizontally across the slope. HP-TRMs will unroll with appropriate side against the soil surface. All HP-TRMs must be securely fastened to soil surface by placing staples/stakes in appropriate locations as shown in the staple pattern guide.
4. The edges of parallel HP-TRMs must be stapled between earth anchors with approximately 4" (10 cm) overlap depending on the HP-TRM type. For curved sections, adjust the overlap edges of parallel HP-TRMs to maintain a minimum of 4" (10 cm) overlap to accommodate transitional segments.

*NOTE:
In loose soil conditions, the use of staple or stake lengths greater than 6"(15cm) may be necessary to properly secure the HP-TRMs.

Drawing Not To Scale

Tensar. North American Green
5401 St. Wendel - Cynthiana Rd. PH: 800-772-2040
Poseyville, IN 47633 www.tensarnagreen.com



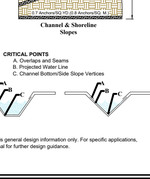
Sheet 2 of 2.

SLOPE INSTALLATION EARTH ANCHOR (EA) DETAIL

1. Prepare soil before installing high-performance turf reinforcement mats (HP-TRMs), including any necessary application of lime, fertilizer, and seed.
2. Begin at the top of the slope by anchoring the HP-TRMs in a 6" (15 cm) deep x 6" (15cm) wide trench with approximately 12" (30 cm) of HP-TRMs extended beyond the up-slope portion of the trench. Anchor the HP-TRMs with a row of staples and anchors approximately 12" (30 cm) apart in the bottom of the trench. Backfill and compact the trench after stapling. Apply seed to compacted soil and fold remaining 12" (30 cm) portion of HP-TRMs back over seed and compacted soil. Secure HP-TRMs over compacted soil with a row of staples/stakes spaced approximately 12" (30 cm) apart across the width of the HP-TRMs.
3. Roll the HP-TRMs (A) down or (B) horizontally across the slope. HP-TRMs will unroll with appropriate side against the soil surface. All HP-TRMs must be securely fastened to soil surface by placing staples/stakes in appropriate locations as shown in the staple pattern guide.
4. The edges of parallel HP-TRMs must be stapled with approximately 3" - 5" (5-12.5cm) overlap, depending on the HP-TRM type.
5. Consecutive HP-TRMs spliced down the slope (A) must be end over end (Shingle style) with an approximate 3'(7.5cm) overlap. Staple through overlapped area, approximately 12"(30cm) apart across entire HP-TRM width.

*NOTE:
In loose soil conditions, the use of staple or stake lengths greater than 6"(15cm) may be necessary to properly secure the HP-TRMs.

Earth Anchor Detail



Channel & Shoreline Slopes

CRITICAL POINTS
A. Overlaps and Seams
B. Projected Water Line
C. Channel Bottom/Side Slope Vertices

* The performance of ground anchoring devices is highly dependent on numerous site/project specific variables. It is the sole responsibility of the project engineer and/or contractor to select the appropriate anchor type and length. Anchoring shall be selected to hold the mat in intimate contact with the soil subgrade and resist pullout in accordance with the project's design intent.
* Anchor Pattern Guide can vary based on earth anchor and blanket selection.
* If desired, the system can be soil-filled and sodded after TRM installation. Sod should be staples/staked according to plan specifications.

Drawing Not To Scale

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5401 St. Wendel - Cynthiana Rd. PH: 800-772-2040
Poseyville, IN 47633 www.tensarnagreen.com

Disclaimer:
The information presented herein is general design information only. For specific applications, consult an independent professional for further design guidance.

SEEDBED PREPARATION:

AREAS TO BE SEEDED SHALL BE RIPPED OR TILLED AND SPREAD WITH AVAILABLE TOPSOIL 4" DEEP. TOTAL SEEDBED PREPARED DEPTH SHALL BE 6".

ROCKS, ROOTS AND OTHER OBSTRUCTIONS AND CONSTRUCTION DEBRIS SHALL BE REMOVED FROM THE SURFACE OF THE SEEDBED. SURFACE OF COMPLETED PREPARED SEEDBED SHALL BE LOOSE, SMOOTH AND UNIFORM. CONTRACTOR SHALL TILL, DISC AND/OR HARROW IF NECESSARY TO ACHIEVE THIS.

IF NO SOIL TEST IS TAKEN, FERTILIZER AND LIME SHALL BE APPLIED ACCORDING TO THE SEEDING SPECIFICATIONS.

IF SOIL TEST IS TAKEN, APPLY FERTILIZER AND LIME IN ACCORDANCE W/SOIL TEST RECOMMENDATIONS.

LIME AND FERTILIZER SHALL BE APPLIED UNIFORMLY AND MIXED WITH THE SOIL DURING SEEDBED PREPARATION.

IMMEDIATELY AFTER SEEDING, MULCH ALL SEEDED AREAS WITH A THIN DENSE LAYER OF CLEAN WHEAT STRAW AND SPRAY WITH ASPHALT EMULSION @ A RATE SUFFICIENT TO BIND THE SEED AND STRAW.

TEMP. EROSION CONTROL SEEDING SPEC'S.

3:1 SLOPES OR FLATTER

- APPLY AGRICULTURAL LIME AT A RATE OF 90 LBS/1000 S.F. UNLESS SOIL TEST INDICATES OTHERWISE.
- APPLY 10-10-10 COMMERCIAL FERTILIZER AT THE RATE OF 20 LBS/1000 S.F. UNLESS SOIL TEST INDICATES OTHERWISE.
- SEED IN ACCORDANCE WITH THE FOLLOWING SCHEDULE AND APPLICATION RATES.

DATE	TYPE	PLANTING RATE
NOV. 1 TO MAY 1	ANNUAL RYE GRAIN AND TURF TYPE TALL FESCUE	150 LBS/ACRE 100 LBS/ACRE
MAY 1 TO AUG. 15	GERMAN MILLET AND TURF TYPE TALL FESCUE	60 LBS/ACRE 100 LBS/ACRE
AUG. 15 TO NOV. 1	TURF TYPE TALL FESCUE	250 LBS/ACRE

MULCH WITH STRAW APPLIED AT THE RATE OF 75-100 LBS/1000 S.F.
*- HEAVILY MULCHED DURING JANUARY - MARCH PERIOD.

IF GERMAN MILLET IS USED FOR TEMPORARY COVER DURING SUMMER MONTHS, CONTRACTOR MUST KEEP TEMPORARY MILLET MOWED AND CONTRACTOR MUST OVERSEED WITH THE SPECIFIED RATE OF TURF TYPE TALL FESCUE AFTER THE HEAT OF SUMMER IS PAST BUT NOT BEFORE SEPT. 15 NOR LATER THAN NOV. 1.

PERMANENT SEEDING SPEC'S.

3:1 SLOPES OR FLATTER

- APPLY AGRICULTURAL LIME AT A RATE OF 90 LBS/1000 S.F. UNLESS SOIL TEST INDICATES OTHERWISE.
- APPLY 10-10-10 COMMERCIAL FERTILIZER AT THE RATE OF 20 LBS/1000 S.F. UNLESS SOIL TEST INDICATES OTHERWISE.
- SEED AT A RATE OF 6 LBS/1000 S.F.

DATE	TYPE
NOV. 1 TO MAY 1	ANNUAL RYE GRAIN AND TURF TYPE TALL FESCUE
MAY 1 TO AUG. 15	TURF TYPE TALL FESCUE
AUG. 15 TO NOV. 1	TURF TYPE TALL FESCUE

MULCH WITH UNCHOPPED, UNWEATHERED SMALL GRAIN STRAW FREE OF SEEDS APPLIED AT THE RATE OF 1 - 2 TONS/ACRE *- HEAVILY MULCHED DURING JANUARY - MARCH PERIOD.

THE CONTRACTOR SHALL MAINTAIN THE PERMANENT VEGETATIVE COVER BY MOWING, IRRIGATION, REPAIR OR PLANTING FAILURES OR OTHER METHODS FOR THE DURATION OF THE PROJECT AND UNTIL THE PROJECT IS ACCEPTED BY THE OWNER.

City of SPARTANBURG south carolina

BUTTERFLY BRANCH GREENWAY

CITY OF SPARTANBURG, SOUTH CAROLINA

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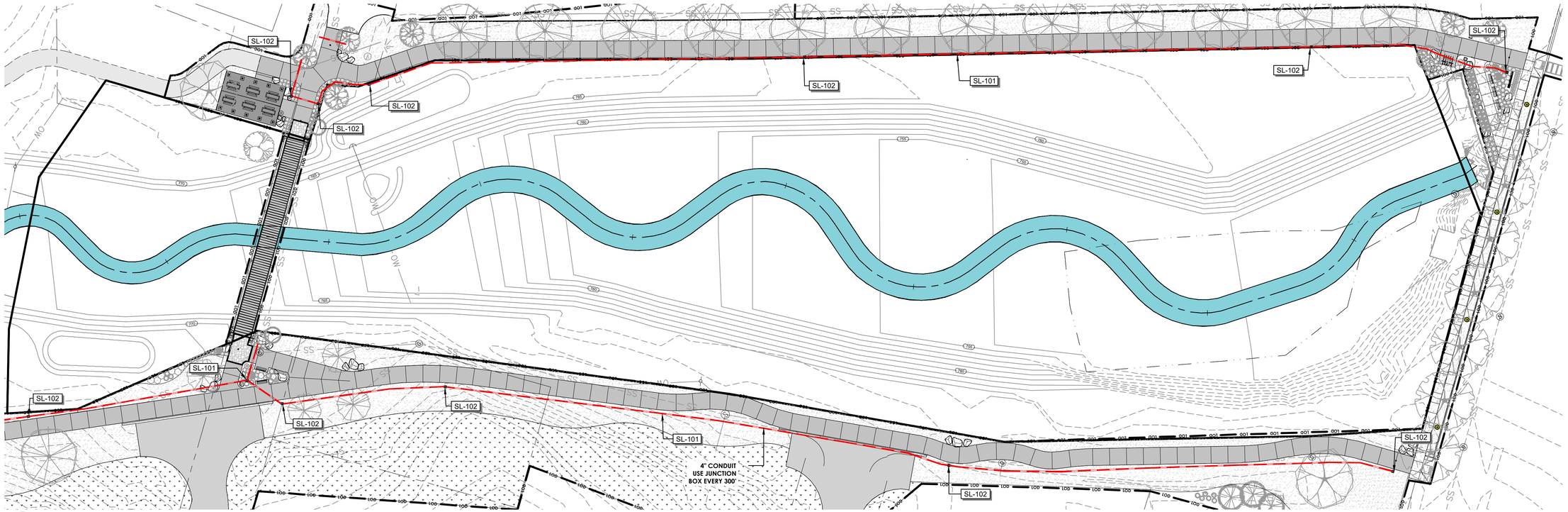
DR. BY: TP/AQ
APP.BY: TP
DATE: 01/26/17

811 Know what's below. Call before you dig.

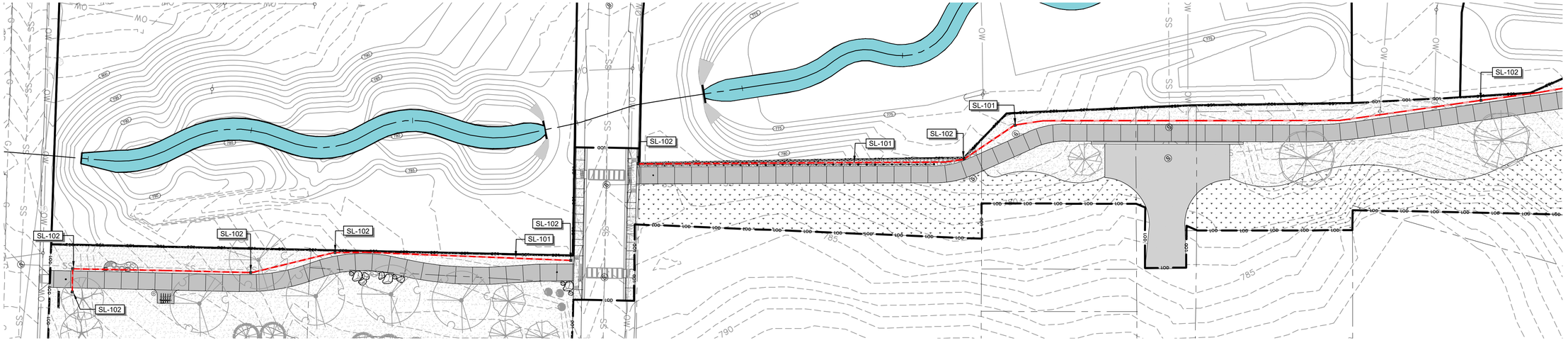
LANDSCAPE PLAN (4)

0 20 40 feet
SCALE: 1" = 20'



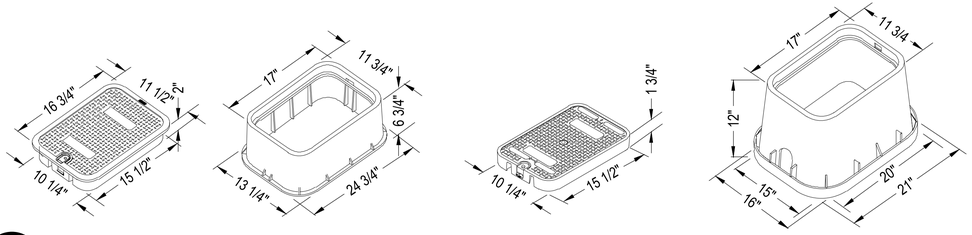
1 / 5.0 CONDUIT PLAN

SCALE: 1" = 30'



2 / 5.0 CONDUIT PLAN CONT.

SCALE: 1" = 30'



PART NUMBER	DESCRIPTION - MARKING	COLOR (BOX/COVER)	PALLET QTY.	WEIGHT EA.	PRODUCT CLASS
BOX & COVER					
113BCE	14"X19" BOX, OVERLAPPING COVER - ELECTRICAL	BLACK/GREEN	78	8.00	20NM

3 / 5.0 NDS JUNCTION BOX

SCALE: 3/4" = 1'

NDS, INC.
851 NORTH HARVARD AVE.
LINDSAY, CA 93247
TOLL FREE: 1-800-726-1994
PHONE: (559) 562-9888
FAX: (559) 562-4488
www.ndspro.com

SL SLEEVING SCHEDULE

SYMBOL	DESCRIPTION	QTY	DETAIL
SL-101	4" SLEEVE, SCHEDULE 40	2,422 LF	
SL-102	JUNCTION BOX	20	

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CONDUIT PLAN

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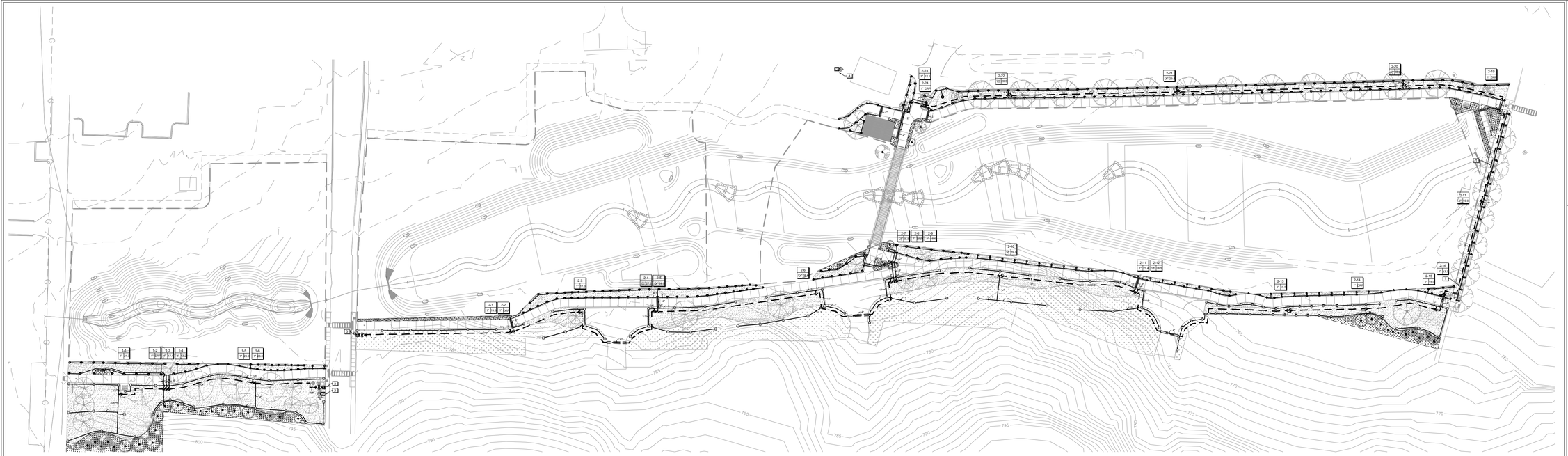
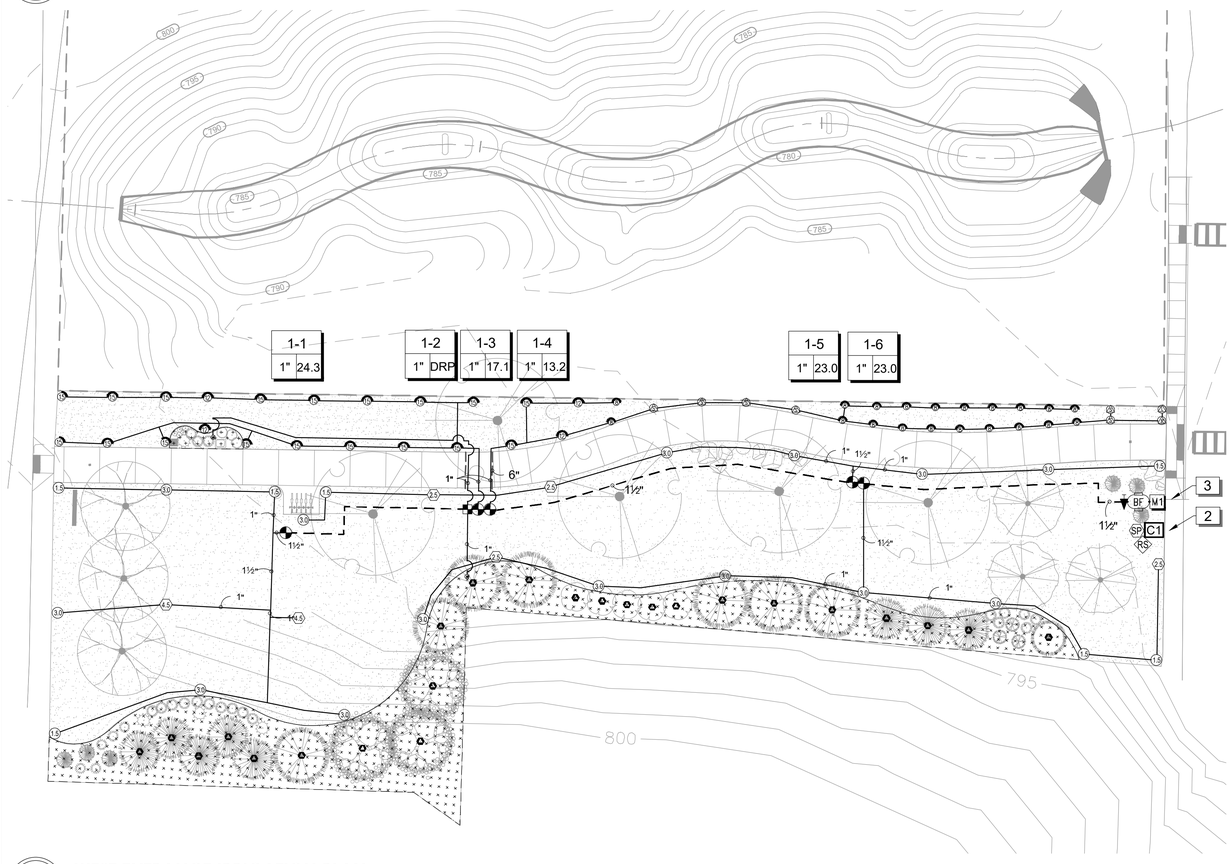


1
6.0
OVERALL IRRIGATION PLAN
SCALE: 1" = 60'



2
6.0
WEST ENTRANCE IRRIGATION PLAN
SCALE: 1" = 20'

City of SPARTANBURG south carolina

BUTTERFLY BRANCH GREENWAY
CITY OF SPARTANBURG, SOUTH CAROLINA

IRRIGATION DESIGNER:

SiteOne Project Services

PROJECT NUMBER: 117996

FOR MORE INFORMATION PLEASE CONTACT 1-843-873-4062 OR VISIT OUR WEBSITE AT www.SITEONE.com

LANDSCAPE ARCHITECTS:

LANDART landscape architecture

647 E Main St / Spartanburg, SC 29302
phone 864.585.7580 / fax 864.585.5808
LandArtDesignGroup.com / info@landartdesigngroup.com

NOTE:
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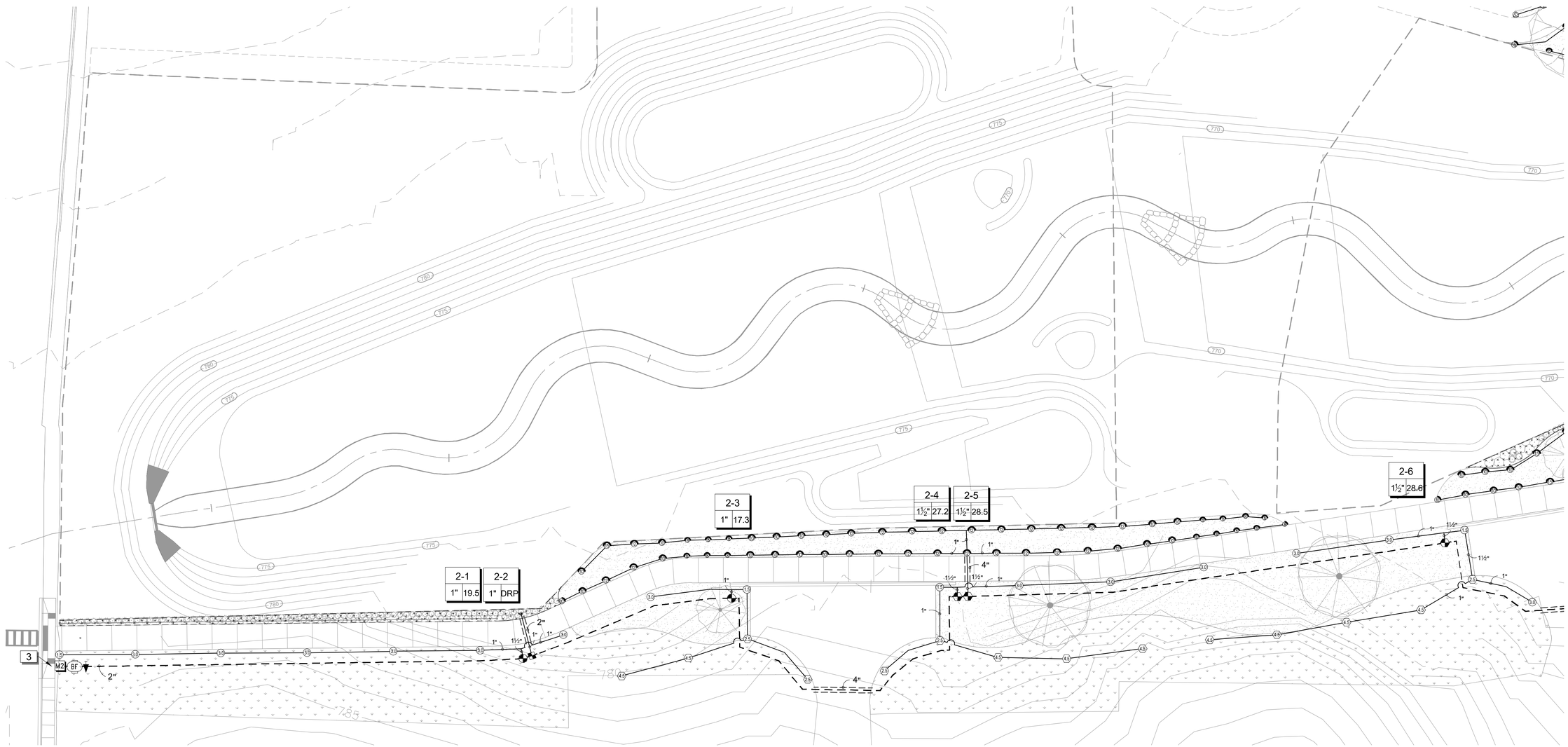
LDG JOB #:13037-00
DR. BY: TP/AQ
APP.BY: TP
DATE: 01/26/17

811 Know what's below. Call before you dig.

IRRIGATION (1)

0 60 120feet
SCALE: 1" = 60'



1 6.1 **TRAIL / OUTDOOR CLASSROOM IRRIGATION PLAN**

SCALE: 1" = 20'

City of SPARTANBURG south carolina

BUTTERFLY BRANCH GREENWAY

CITY OF SPARTANBURG, SOUTH CAROLINA

IRRIGATION DESIGNER:

SiteOne Project Services

PROJECT NUMBER: 117996

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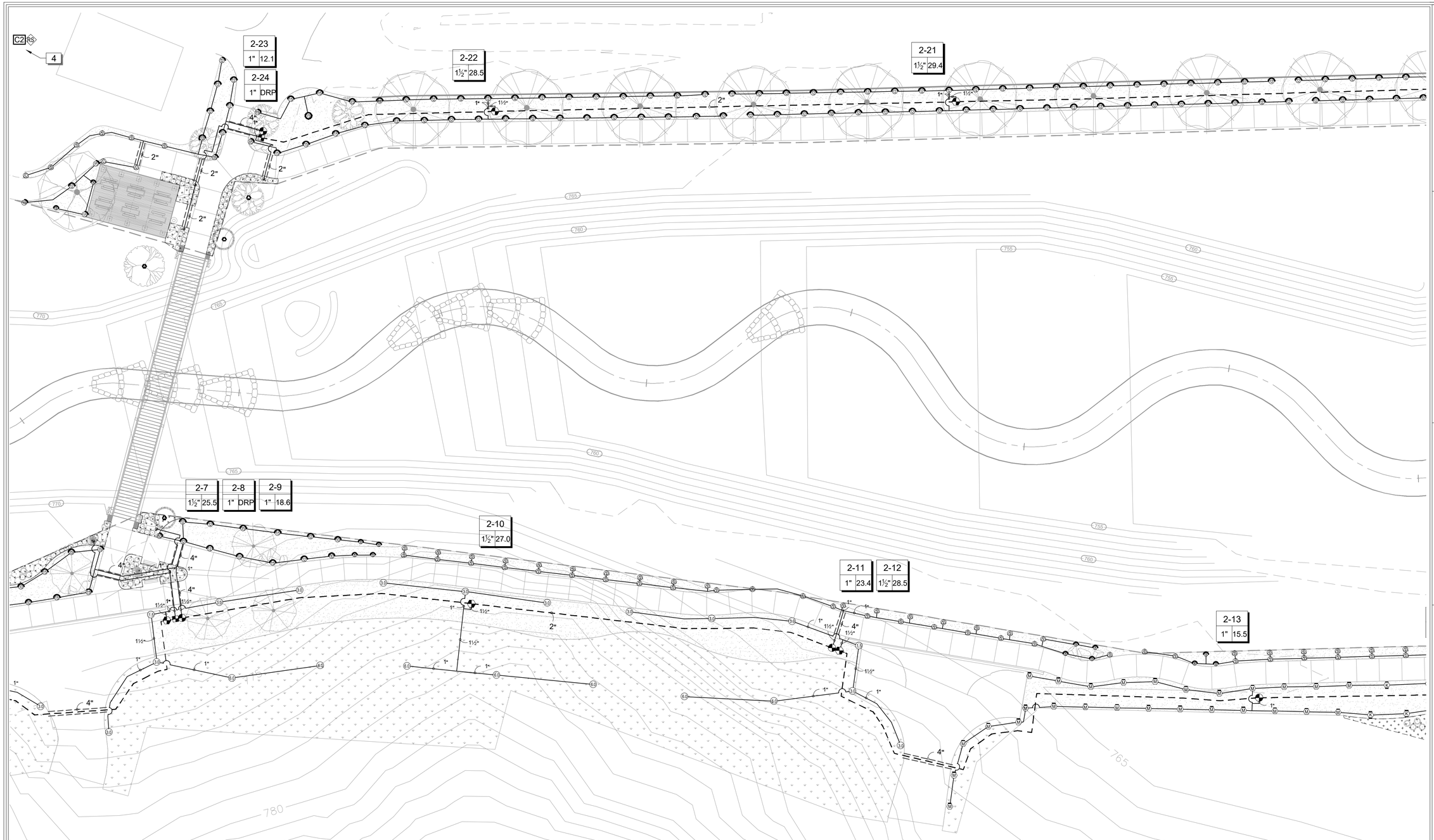
IRRIGATION (2)

0 20 40 feet
SCALE: 1" = 20'



1
6.2

TRAIL / BRIDGE IRRIGATION PLAN

SCALE: 1" =20'

City of SPARTANBURG south carolina

BUTTERFLY BRANCH GREENWAY

CITY OF SPARTANBURG, SOUTH CAROLINA

IRRIGATION DESIGNER:

SiteOne Project Services

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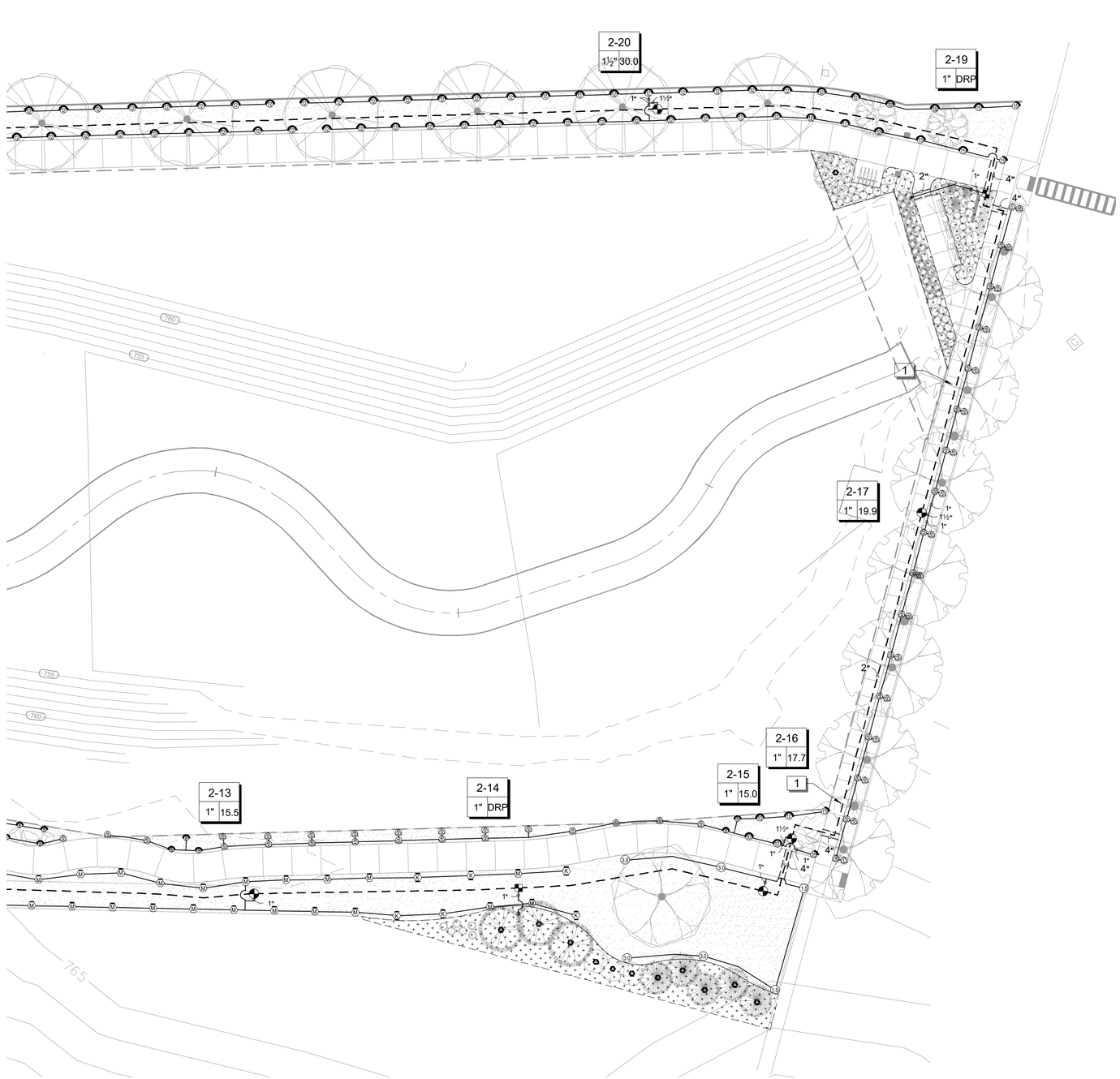
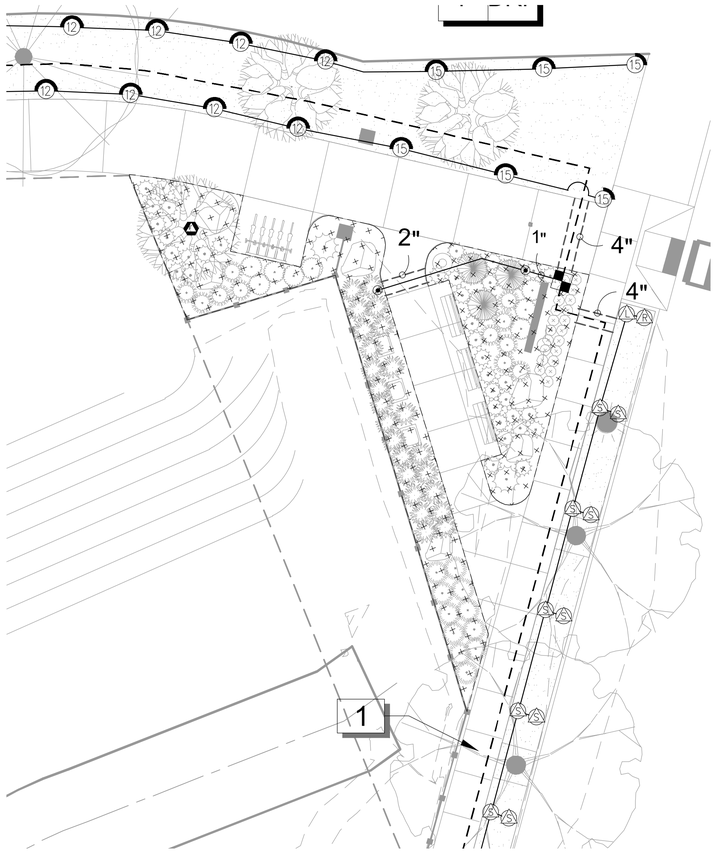
IRRIGATION (3)

0 20 40 feet
SCALE: 1" = 20'



1 / 6.3 EAST ENTRANCE IRRIGATION PLAN

SCALE: 1" = 20'



2 / 6.3 EAST MAIN ENTRANCE IRRIGATION PLAN

SCALE: 1" = 10'

City of SPARTANBURG south carolina

BUTTERFLY BRANCH GREENWAY

CITY OF SPARTANBURG, SOUTH CAROLINA

IRRIGATION DESIGNER:

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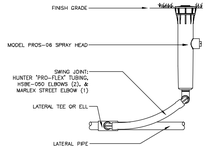
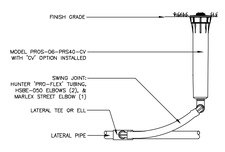
IRRIGATION (4)

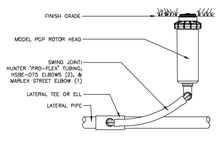
0 20 40 feet
SCALE: 1" = 20'



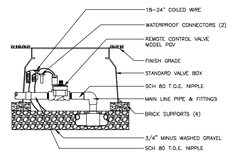
1 PROS-06 SPRAY HEAD WITH PRO-FLEX TUBING



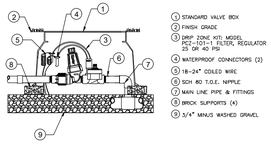
2 PROS-06-PRS40-CV MP ROTATOR SPRINKLER



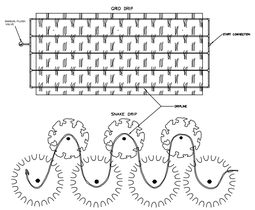
3 PGP ROTOR HEAD WITH PRO-FLEX TUBING



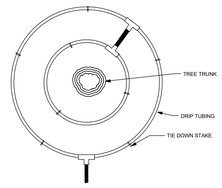
4 PGV ELECTRIC VALVE



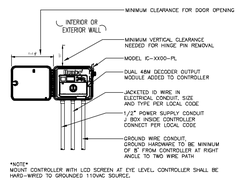
5 PCZ-101-1 DRIP ZONE KIT



6 TYPICAL DRIP TUBING LAYOUT



7 TYPICAL DRIP TREE RING



8 I-CORE DECODER CONTROLLER

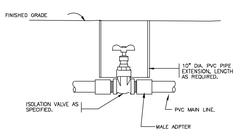
NOTE
SPRINKY 4 OR 12 STATION MODEL CONTROLLER, MOUNT CONTROLLER WITH LCD SCREEN AT EYE LEVEL.

9 XCH STAINLESS CONTROLLER

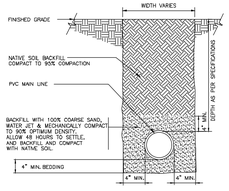
10 REMOTE CONTROL VALVE W/ DECODER

11 HUNTER RFC RAIN/FREEZE-CLIK

12 DOUBLE CHECK BACKFLOW PREVENTER



13 ISOLATION GATE VALVE



14 SLEEVE AT ROAD

REFERENCE NOTES SCHEDULE

SYMBOL	DESCRIPTION
1	PIPING AND EQUIPMENT SHOWN TO THE SIDE FOR CLARITY
2	FINAL LOCATION OF CONTROLLER TO BE DETERMINED BY LANDSCAPE ARCHITECT
3	METER LOCATION TO BE APPROVED BY LANDSCAPE ARCHITECT
4	IRRIGATION CONTROLLER TO BE LOCATED IN MAINTENANCE SHED

IRRIGATION SCHEDULE- WEST ENTRANCE

SYMBOL	MANUFACTURER/MODEL
	HUNTER PROS-06 SPRAY HEAD/ TORO PRECISION NOZ 8 SERIES
	HUNTER PROS-06 SPRAY HEAD/ TORO PRECISION NOZ 12 SERIES
	HUNTER PROS-06 SPRAY HEAD/ TORO PRECISION NOZ 15 SERIES
	HUNTER PROS-06 SPRAY HEAD/ TORO PRECISION NOZ 4X STRIP SPRAY

SYMBOL	MANUFACTURER/MODEL
2.5	HUNTER PGP-04-LA LOW ANGLE ROTOR
4.5	HUNTER PGP-04-LA LOW ANGLE ROTOR
1.5	HUNTER PGP-04 ROTOR
3.0	HUNTER PGP-04 ROTOR

SYMBOL	MANUFACTURER/MODEL
	HUNTER PCZ-101-40 DRIP VALVE W/ DC LATCHING SOLENOID
	PIPE/DRIP TRANSITION POINT ABOVE GRADE
	HUNTER PLD-06-18 (DRIP RING)
	AREA TO RECEIVE DRIPLINE HUNTER PLD-06-18 (SERPENTINE PATTERN)

SYMBOL	MANUFACTURER/MODEL
	HUNTER PGV-100G ELECTRIC VALVE W/ DC LATCHING SOLENOID
	GATE VALVE (MAINLINE SIZE)
BF	FEBCO 850 1" DCA
C1	HUNTER XCH-SS HYBRID DC CONTROLLER
SP	HUNTER SPXCH SOLAR PANEL
RS	HUNTER RFC RAIN/FREEZE SENSOR
M1	WATER METER 1"
	IRRIGATION LATERAL LINE: PVC CLASS 200 SDR 21
	IRRIGATION MAINLINE: PVC CLASS 200 SDR 21
	PIPE SLEEVE: PVC SCHEDULE 40

Valve Callout
Valve Number
Valve Flow
Valve Size

IRRIGATION SCHEDULE- TRAIL/CLASS ROOM/BRIDGE/ EAST ENTRANCE

SYMBOL	MANUFACTURER/MODEL
	HUNTER PROS-06 SPRAY HEAD/ TORO PRECISION NOZ 8 SERIES
	HUNTER PROS-06 SPRAY HEAD/ TORO PRECISION NOZ 10 SERIES
	HUNTER PROS-06 SPRAY HEAD/ TORO PRECISION NOZ 12 SERIES
	HUNTER PROS-06 SPRAY HEAD/ TORO PRECISION NOZ 15 SERIES
	HUNTER PROS-06 SPRAY HEAD/ TORO PRECISION NOZ 4X STRIP SPRAY
M	HUNTER MP1000 PROS-06-PRS40-CV
K	HUNTER MP2000 PROS-06-PRS40-CV

SYMBOL	MANUFACTURER/MODEL
2.5	HUNTER PGP-04-LA LOW ANGLE ROTOR
4.5	HUNTER PGP-04-LA LOW ANGLE ROTOR
1.5	HUNTER PGP-04 ROTOR
3.0	HUNTER PGP-04 ROTOR
6.0	HUNTER PGP-04 ROTOR

SYMBOL	MANUFACTURER/MODEL
	HUNTER PCZ-101-40 DRIP VALVE W/ DUAL DECODER
	PIPE/DRIP TRANSITION POINT ABOVE GRADE
	HUNTER PLD-06-18 (DRIP RING)
	AREA TO RECEIVE DRIPLINE HUNTER PLD-06-18 (SERPENTINE PATTERN)

SYMBOL	MANUFACTURER/MODEL
	HUNTER PGV-100G ELECTRIC VALVE W/ DUAL DECODER
	HUNTER PGV-151 ELECTRIC VALVE W/ DUAL DECODER
	GATE VALVE (MAINLINE SIZE)
BF	FEBCO 850 1" DCA
C2	HUNTER I-CORE DUAL TWO WIRE CONTROLLER
RS	HUNTER RFC RAIN/FREEZE SENSOR
M2	WATER METER 1"
	IRRIGATION LATERAL LINE: PVC CLASS 200 SDR 21
	IRRIGATION MAINLINE: PVC CLASS 200 SDR 21
	PIPE SLEEVE: PVC SCHEDULE 40

Valve Callout
Valve Number
Valve Flow
Valve Size

IRRIGATION NOTES

1. IRRIGATION SYSTEM DESIGN BASED ON 30 GPM AT 70 PSI.
2. IRRIGATION DESIGN IS FROM THE POINT OF CONNECTION(POC)ONLY. THE DESIGN IS BASED ON GALLONS PER MINUTE(GPM)AND POUNDS PER SQUARE INCH(PSI)FURNISHED BY OTHERS.
3. IRRIGATION CONTRACTOR IS TO VERIFY POINT OF CONNECTION IN THE FIELD. INSTALLER IS TO CONFIRM THE MINIMUM DISCHARGE REQUIREMENTS OF THE POINT OF CONNECTION AS INDICATED ON THE LEGEND PRIOR TO INSTALLATION.
4. THE PRESSURE REQUIREMENT AT THE POINT OF CONNECTION IS BASED ON NO MORE THAN 5-FEET OF ELEVATION CHANGE IN THE AREAS OF IRRIGATION.
5. ALL PRODUCTS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND ACCORDING TO LOCAL BUILDING, ELECTRICAL AND PLUMBING CODES.
6. IRRIGATION CONTRACTOR WILL ARRANGE INSPECTIONS REQUIRED BY LOCAL AGENCIES AND ORDINANCES DURING THE COURSE OF CONSTRUCTION AS REQUIRED. ALL WIRING TO BE PER LOCAL CODE. BACKFLOW PREVENTION PER LOCAL CODE.
7. LOCATION OF IRRIGATION COMPONENTS SHOWN ON DRAWINGS IS APPROXIMATE. ACTUAL PLACEMENT MAY VARY SLIGHTLY AS REQUIRED TO ACHIEVE FULL, EVEN COVERAGE.
8. ALL SPRINKLER HEADS SHALL BE INSTALLED PERPENDICULAR TO FINISH GRADES, EXCEPT AS OTHERWISE INDICATED.
9. INSTALL IRRIGATION MAINS WITH A MINIMUM 18" OF COVER BASED ON FINISH GRADES. INSTALL IRRIGATION LATERAL WITH A MINIMUM 12" OF COVER BASED ON FINISH GRADES.
10. PIPE LOCATIONS ARE DIAGRAMATIC. VALVES AND MAINLINE SHOWN IN PAVED AREAS ARE FOR GRAPHIC CLARITY ONLY.
11. THE IRRIGATION CONTRACTOR SHALL COMPLY WITH PIPE SIZES AS INDICATED.
12. ALL WIRE SPLICES OR CONNECTIONS SHALL BE MADE WITH APPROVED WATERPROOF WIRE CONNECTORS AND BE IN A VALVE OR SPLICE BOX.
13. ALL CONTROL WIRING DOWNSTREAM OF THE CONTROLLER IS TO BE 2-WIRE & 14AWG, UL APPROVED DIRECT BURY.
14. SURGE PROTECTION TO BE INSTALLED PER MANUFACTURER'S RECOMMENDATION.
15. THE DESIGN IS BASED ON THE SITE INFORMATION AND/OR DRAWING SUPPLIED WITH THE DESIGN CRITERIA BEING SET(AREA TO BE IRRIGATED, EQUIPMENT MANUFACTURER AND MODEL TO BE USED, WATER SOURCE INFORMATION, ELECTRICAL POWER AVAILABILITY, ETC...). SITEONE LANDSCAPE SUPPLY BEARS NO RESPONSIBILITY OR LIABILITY FOR ANY ERRORS IN DESIGN OR INSTALLATION THAT ARISE DUE TO INACCURACIES IN THE ABOVE REFERENCED INFORMATION SUPPLIED TO SITEONE LANDSCAPE SUPPLY IN RELATION TO THIS PROJECT, UNLESS OTHERWISE NOTED.

City of SPARTANBURG south carolina

BUTTERFLY BRANCH GREENWAY

CITY OF SPARTANBURG, SOUTH CAROLINA

IRRIGATION DESIGNER:

SiteOne Project Services

PROJECT NUMBER: 117996

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811 Know what's below. Call before you dig.

IRRIGATION (5)

Page- 6.4 of 35

0 30 60 feet
SCALE: 1" = 30'

ELECTRICAL SPECIFICATIONS

General Provisions

1. All Electrical work shall be executed in accordance with the 2011 version of the National Electrical Code and all other local codes, laws, and ordinances. Where one code differs from another, the stricter of the two shall apply.
2. It is the duty of the Electrical contractor to be familiar with the construction details of the project. The electrical contractor shall coordinate the installation of the electrical system with all other trades and shall complete the electrical installation as soon as conditions will allow.
3. Payment of all fees, permits, and licenses required to complete the electrical installation shall be the responsibility of the electrical contractor.
4. All work shall be done in a neat, quality manner with all wiring and raceways concealed where conditions allow.
5. All electrical work shall be warranted by the electrical contractor for one (1) year from the date of acceptance by the owner or his designated representative.
6. All electrical drawings are generally diagrammatic in nature. The electrical contractor shall closely coordinate all electrical work will all other trades working on the premises.
7. Electrical contractor shall submit five (5) sets of catalog cuts, brochures, or other technical data for all equipment furnished under this contract to the architect for his review.
8. All requests for prior approval shall be submitted to the engineer no later than ten (10) days prior to the bid date unless noted as "approved equal" in a written addendum. All manufactures shall be specified herein or as shown on the contract documents.
9. See general notes, schedules, and legends on the electrical drawing set for any additional requirements to the contract.
10. All electrical panel boards and lighting equipment shall be restrained per seismic requirements of the appropriate building code in effect.

Electrical Raceways

1. All cutting and patching required for and resulting from the electrical installation work shall be patched and repaired to restore the original surface finish. This repair work is the responsibility of the electrical contractor.
2. Conduit is to be installed between cabinets and boxes with no more than four (4) 90 degree bends. Conduit is to be securely fastened in place with straps, hangers and steel supports as required.
3. All underground conduit shall be PVC type – install PVC schedule 40 in grassed areas and PVC Schedule 80 under road crossing and and driveway entrances.
4. Acceptable conduits above grade are EMT where protected from the elements and IMC galvanized where exposed to the elements.
5. Contractor shall install a nylon pull wire in each empty conduit.
6. Contractor to include an equipment grounding conductor in each conduit. Conductor size to be determined by National Electrical Code requirements.

Conductors

1. Conductors shall be soft–annealed 98 % copper. All conductors larger than #8 AWG shall be stranded. Minimum size conductor shall be #12 AWG unless otherwise specified. No aluminum conductors will be permitted. Type THHN shall not be used underground, outside, at service entrances or in wet locations. All insulation shall be rated at 600 volts.

The following insulation types are permitted:

#10 AWG and smaller	THW,THWN,THW
#8 AWG to #4/0 AWG	THW, THHN
Over 4/0 AWG	THW
Service Entrance	USE, RHW

Conductors shall be color coded as follows:

	208/120 Volt Y	480/277 Volt Y
Phase A	Black	Brown
Phase B	Red	Orange
Phase C	Blue	Yellow
Neutral	White	White
Ground	Green	Gray

Service and Distribution

1. Contractor shall coordinate with local utility company to furnish and install all underground electrical service to the metering point. Any additional cost for underground service shall be paid for by the contractor. Contractor to supply all utility company requirements and pay all underground fees and costs required.
2. Electrical power service voltage shall be as noted on the drawings. Size of the electrical service conductors shall be as shown on the riser diagram. All service connections and grounding detail shall be per the National Electrical Code article 250 and shall be inspected before covering.
3. Contractor shall comply with the 2011 National Electrical Code and all laws that apply to electrical installations.
4. All material used on the project shall be new and conform to Underwriters Laboratories (UL) standards.
5. Contractor to verify voltage drops and A.I.C. ratings for all equipment connected and verify the size of all electrical system breakers, conduit, wire size, etc.

Grounding

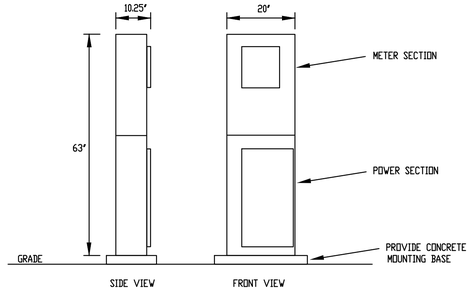
1. All metallic conduit, supports, cabinets, panel boards, and other electrical system components shall be permanently grounded per the National Electrical Code. All grounding devices and clamps shall be of the type approved specifically for grounding use. All circuits shall include a grounding conductor sized per National Electrical Code requirements.

Lighting Equipment

1. Lighting fixtures shall be of the type shown in the lighting fixture schedule.

LIGHTING FIXTURE SCHEDULE

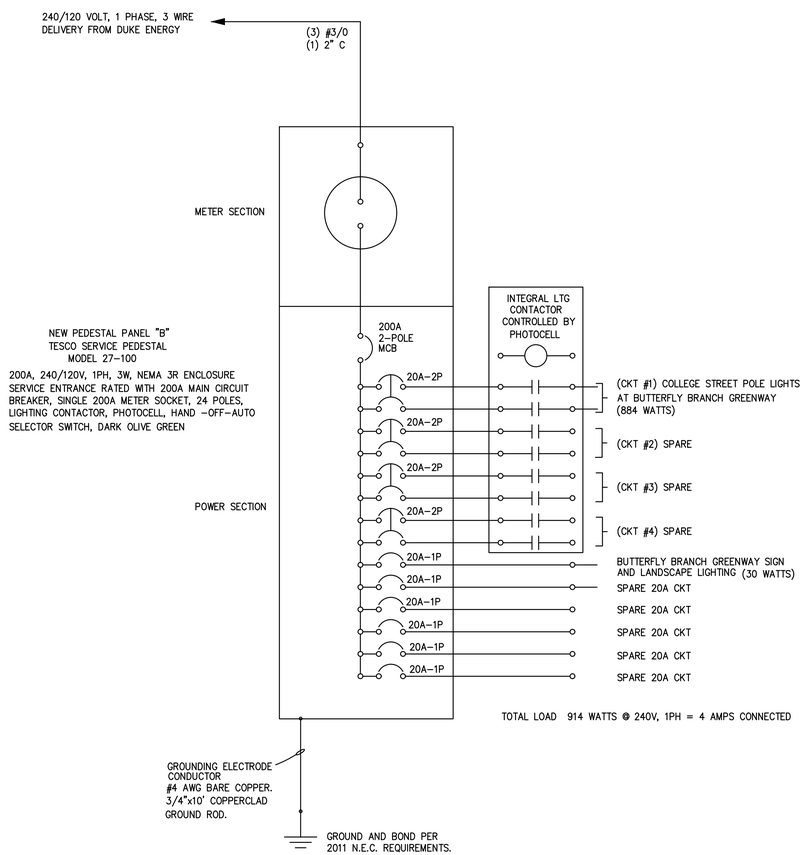
TYPE	DESCRIPTION	LAMP	COLOR TEMP	MANUFACTURER PART #	VOLTAGE	WATTAGE
A	STREET POST LIGHT: 175W PULSE START METAL HALIDE FIXTURE MOUNTED ON 12' ALUMINUM POLE	(1) 175W PSMH	3000 K	US ARCHITECTURAL CATALOG #6–1060–10–PT27–GFI–LAE1–YA–CP–175PSMH–240–PT–RAL9005–T	240 V	221 W
B	SIGN ILLUMINATION: WALL WASH FIXTURE WET LOCATION, 120 VOLT	LED	3000 K	WAC LIGHTING #5022–30–BBR	120 V	15 W
C	LANDSCAPE LIGHT: ACCENT LUMINAIRE WITH ADJUSTABLE & LOCKABLE BEAM ANGLE, WET LOCATION	LED	3000 K	WAC LIGHTING #5012–30–BBR	120 V	16 W
D	PAVILION LIGHTING: WAREHOUSE SERIES PENDANT WITH 1/2" STEM AND FOREST GREEN SHADE	LED	3000 K	ANP LIGHTING #W516–M021LD–N–W–30K–RTC–STC–42	120 V	21 W
EM	EGRESS LIGHTING: EMERGENCY DUAL HEAD FIXTURE WITH BATTERY BACK–UP	LED		EMERGI–LITE # EL2SQ	120 V	
F	52 INCH CEILING FAN			SELECTED BY OWNER	120 V	50 W
G	PAVILION FLOOD: DOUBLE SPOT, WET LOCATION	LED	3000 K	WAC LIGHTING #WP–LED430–30–aBZ	120 V	30 W
H	BRIDGE ILLUMINATION: OUTDOOR FLEXIBLE TAPE LIGHT, WET LOCATION, 12 VOLT	LED	3000 K	WAC LIGHTING #8101–30–BK TRANSFORMER #9600–TRN–SS (600 WATTS)	12 V	2 W/ FOOT



NEW PEDESTAL SERVICE PANEL
(NO SCALE)

PEDESTAL PANEL NOTES:
1. GROUND MOUNT PEDESTAL PANEL PER MANUFACTURER'S SPECIFICATIONS.
2. PROVIDE CONCRETE FOUNDATION PAD FOR PEDESTAL PANEL.
3. PURCHASE AND INSTALL TESCO PEDESTAL PANEL MODEL 27–100. SEE SPECIFICATIONS ABOVE RIGHT.

ELECTRICAL CONTRACTOR TO SCHEDULE A SITE VISIT TO ACCESS EXISTING CONDITIONS AND VERIFY DISTANCES FOR WIRING WHERE NOT SHOWN ON DRAWING.



City of SPARTANBURG south carolina

BUTTERFLY BRANCH GREENWAY
CITY OF SPARTANBURG, SOUTH CAROLINA

ELECTRICAL ENGINEERING:
MATRIX ENGINEERING, INC.
912 South Pine Street
Spartanburg, South Carolina 29302
(864)583–6274
matrixei.com
PROJECT NUMBER: 2016–168

LANDSCAPE ARCHITECTS:
LANDART landscape architecture
324 E Saint John St / Spartanburg, SC 29302
phone 864 585.7500 / fax 864.585 3898
LandArtDesignGroup.com / info@landartdesigngroup.com

NOTE:
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DR. BY: SLS
APP.BY: HPB
DATE: 01/26/17

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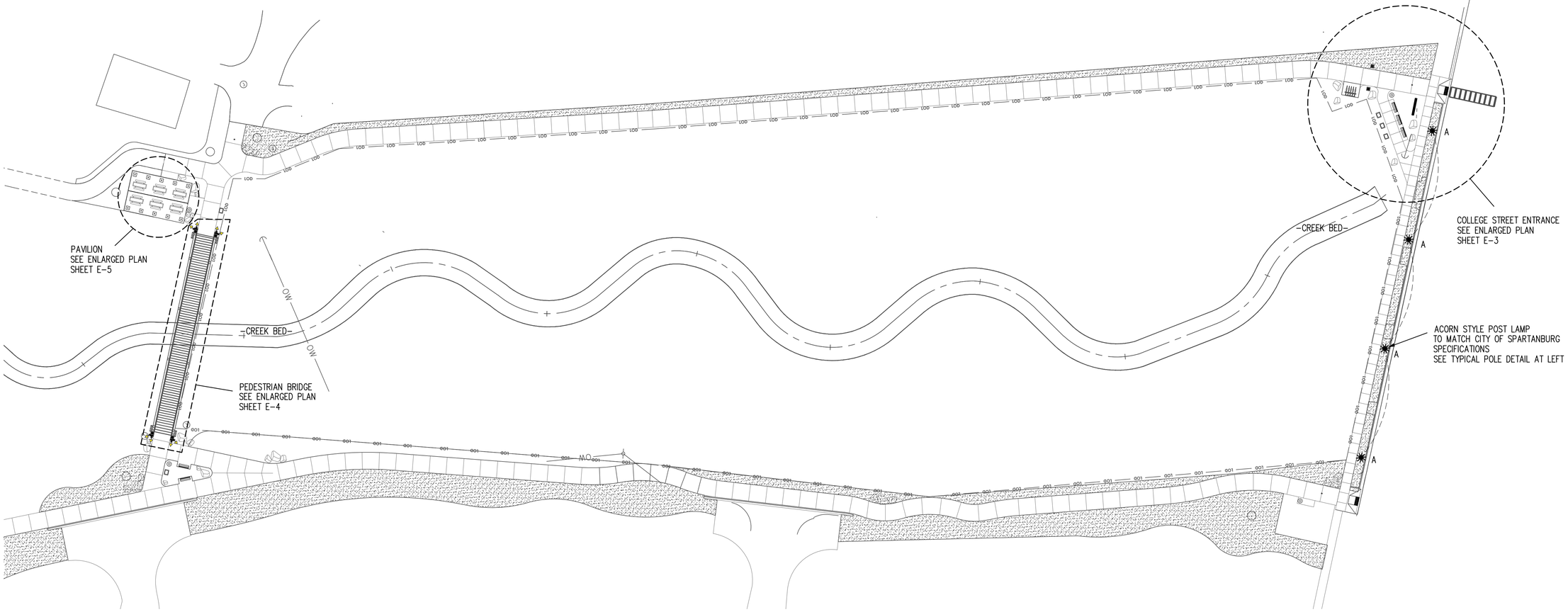
MATRIX ENGINEERING INC. No. C01034 CERTIFICATE OF AUTHORIZATION
SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 9801 STEPHEN L. BUNN II
01-26-2017

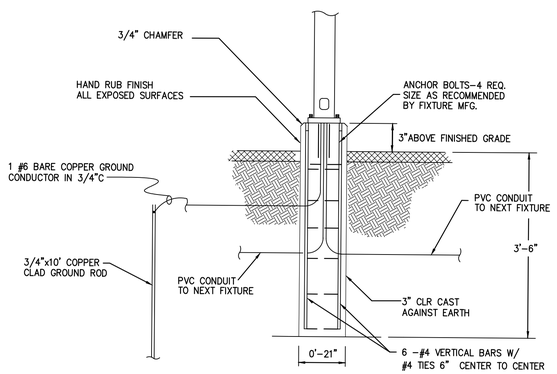
PEDESTAL PANEL "B" SINGLE LINE DIAGRAM, SPECIFICATIONS & LIGHT FIXTURE SCHEDULE

E-1



OVERALL ELECTRICAL PLAN

SCALE: 1" = 30'-0"



TYPICAL POLE BASE DETAIL

SCALE: NONE

NOTE:

1. GROUT BETWEEN CONCRETE POLE BASE AND LIGHT FIXTURE POLE BASE WITH NON SHRINKING GROUT TO FILL AIR SPACE BETWEEN THEM.
2. CONCRETE IS 3000 PSI MIN. REINFORCING STEEL IS Fy = 60ksi.
3. COORDINATE EXACT LOCATION OF LIGHT FIXTURES WITH LANDSCAPE PLANS BEFORE INSTALLING CONDUIT/POLE BASES.
5. BURY ALL LIGHTING CIRCUIT CONDUITS A MINIMUM OF 24 INCHES DEEP.

City of SPARTANBURG south carolina

BUTTERFLY BRANCH GREENWAY

CITY OF SPARTANBURG, SOUTH CAROLINA

ELECTRICAL ENGINEERING:

MATRIX ENGINEERING, INC.
912 South Pine Street
Spartanburg, South Carolina 29302
(864)583-6274
matrixei.com

PROJECT NUMBER: 2016-168

LANDSCAPE ARCHITECTS:

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324 E Saint John St / Spartanburg, SC 29302
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LandArtDesignGroup.com / info@landartdesigngroup.com

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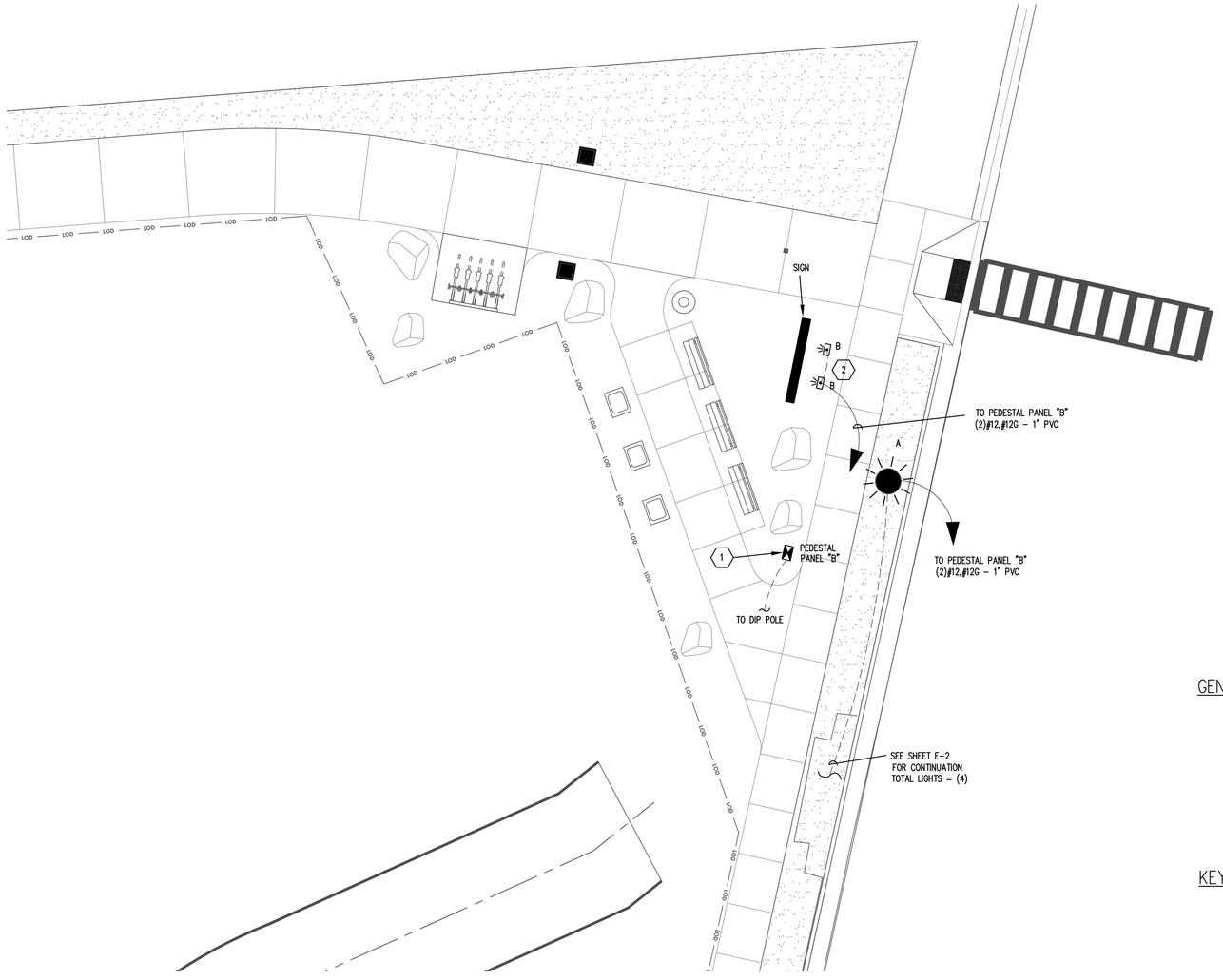
SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 9801 RICHARD H. BUNN

01-26-2017

OVERALL ELECTRICAL PLAN

E-2



ENLARGED COLLEGE STREET ENTRANCE ELECTRICAL PLAN

SCALE: 1/8" = 1'-0"

GENERAL NOTES:

1. ELECTRICAL CONTRACTOR TO COORDINATE ALL ELECTRICAL COMPONENT LOCATIONS WITH LANDSCAPE ARCHITECT PRIOR TO INSTALLING.
2. ALL CONDUIT SHALL BE SCHEDULE 40 PVC TYPE
3. WHERE PORTIONS OF A RACEWAY ARE SUBJECT TO DIFFERENT TEMPERATURES, AND WHERE CONDENSATION IS KNOWN TO BE A PROBLEM, AS IN PEDESTAL APPLICATIONS OR WHERE PASSING FROM WARM TO COLD AREAS, ELECTRICAL CONTRACTOR TO FILL THE RACEWAY WITH AN APPROVED MATERIAL TO PREVENT CIRCULATION OF WARM AIR TO A COLDER SECTION OF THE RACEWAY.

KEYED NOTES:

(1) DENOTES PROPOSED LOCATION OF NEW 200 AMP, 1 PHASE, 3 WIRE PEDESTAL PANEL "B." COORDINATE SERVICE WITH DUKE ENERGY REPRESENTATIVE. ROUTE 2 INCH SCHEDULE 40 CONDUIT UNDERGROUND FROM PEDESTAL PANEL "B" OVER AND UP TO UTILITY DIP POLE DESIGNATED BY DUKE ENERGY. PROVIDE 90 DEGREE SWEEPING ELBOW WITH BELL END POINTING UP TOWARDS TOP OF POLE. PROVIDE PULL STRING IN EMPTY CONDUIT.

(2) DENOTES LIGHT FIXTURES FOR SIGN ILLUMINATION. COORDINATE SET-BACK OF FIXTURES AT NIGHT FOR MAXIMUM LIGHTING EFFECT.

SOUTH CAROLINA MATRIX ENGINEERING INC. No. C01034 CERTIFICATE OF AUTHORIZATION

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 9801 FLETCHER B. BUNN II

01-26-2017

City of SPARTANBURG south carolina

BUTTERFLY BRANCH GREENWAY

CITY OF SPARTANBURG, SOUTH CAROLINA

ELECTRICAL ENGINEERING:

MATRIX ENGINEERING, INC.
912 South Pine Street
Spartanburg, South Carolina 29302
(864)583-6274
matrixei.com
PROJECT NUMBER: 2016-168

LANDSCAPE ARCHITECTS:

LANDART landscape architecture
324 E Saint John St / Spartanburg, SC 29302
phone 864 585.7500 / fax 864.585 3808
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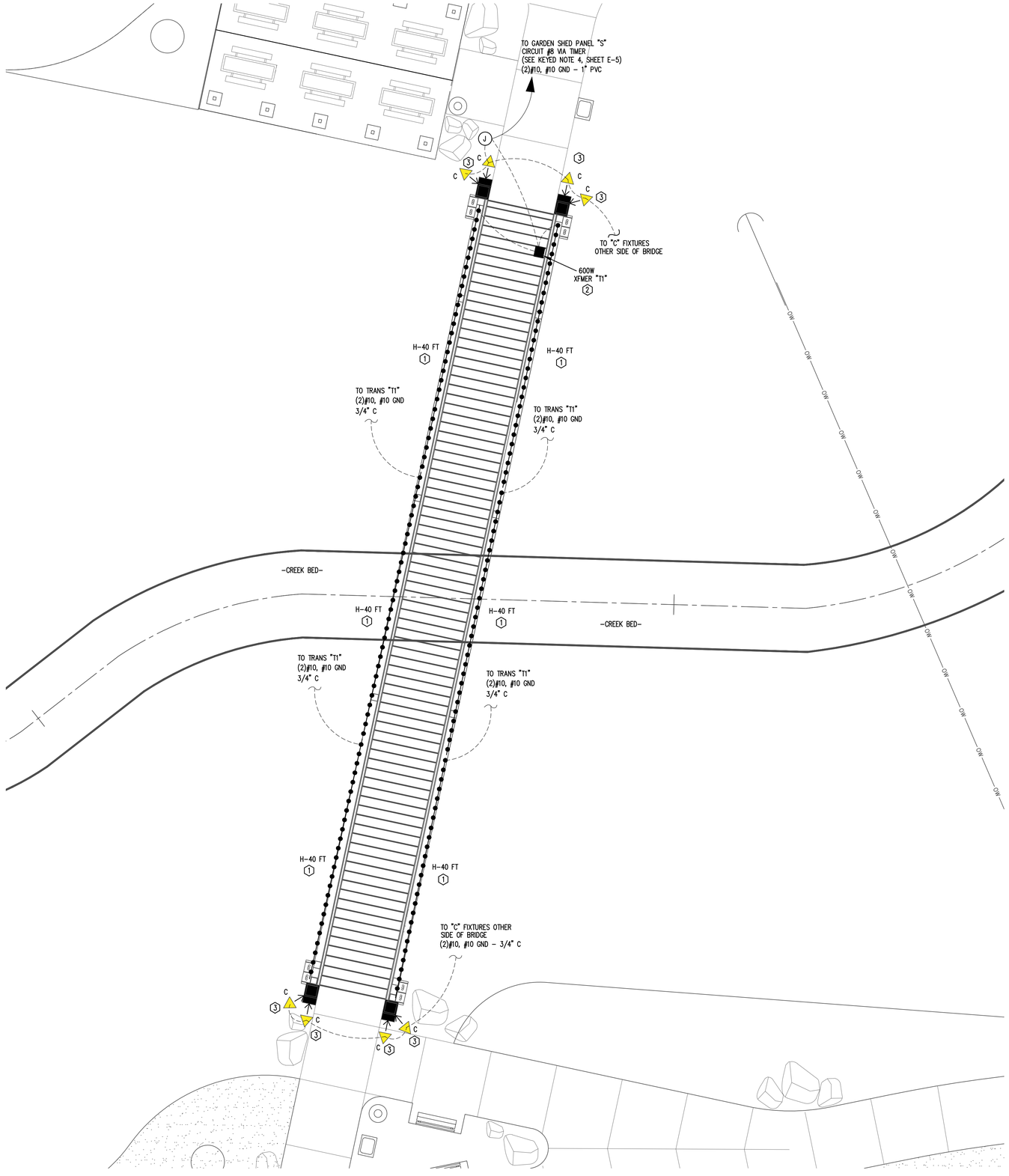
ENLARGED COLLEGE STREET ENTRANCE ELECTRICAL PLAN

E-3



ENLARGED BRIDGE AREA ELECTRICAL PLAN

SCALE: 1/8" = 1'-0"

GENERAL NOTES:

1. ELECTRICAL CONTRACTOR TO COORDINATE ALL ELECTRICAL COMPONENT LOCATIONS WITH LANDSCAPE ARCHITECT PRIOR TO INSTALLING.
2. ALL CONDUIT BELOW GRADE SHALL BE SCHEDULE 40 PVC. ALL ABOVE GRADE CONDUIT ON BRIDGE SHALL BE GALVANIZED IMC TYPE.
3. ALL DEVICE/JUNCTION BOXES MOUNTED TO BRIDGE SHALL BE GALVANIZED STEEL OR ALUMINUM.
4. ALL WIRING ON THIS SHEET TO BE WIRED TO EXISTING GARDEN SHED PANEL "S" WHICH IS NOT SHOWN ON THIS DRAWING.
5. WHERE PORTIONS OF A RACEWAY ARE SUBJECT TO DIFFERENT TEMPERATURES, AND WHERE CONDENSATION IS KNOWN TO BE A PROBLEM, ELECTRICAL CONTRACTOR TO TO FILL THE RACEWAY WITH AN APPROVED MATERIAL TO PREVENT CIRCULATION OF WARM AIR TO A COLDER SECTION OF THE RACEWAY.

KEYED NOTES:

1. DENOTES FLEXIBLE ROPE LIGHTS TO ILLUMINATE SIDES OF BRIDGE. PROVIDE ALL ACCESSORIES (END CAPS, MOUNTING CLIPS, JOINER CABLES, ETC) TO MAKE A COMPLETE CODE COMPLIANT AND WORKING SYSTEM.
2. DENOTES 600 WATT POWER SUPPLY (TRANSFORMER) TO POWER LOW VOLTAGE ROPE LIGHTS. ROPE LIGHTS ARE IN 10 FOOT SECTIONS AND MAXIMUM RUN IS 40 FEET DUE TO CONNECTORS RATED AT 5 AMPS. PROVIDE 3 SEPARATE RUNS FROM TRANSFORMER TO ROPE LIGHTS PER SIDE OF BRIDGE. MOUNT TRANSFORMER IN AN ACCESSIBLE LOCATION UNDER BRIDGE.
3. DENOTES LANDSCAPE LIGHT FIXTURES TO ILLUMINATE ROCK BRIDGE ENTRANCES. PROVIDE ADEQUATE FOUNDATION FOR LIGHT FIXTURES. COORDINATE SET-BACK OF FIXTURES AT NIGHT FOR MAXIMUM EFFECT.

City of SPARTANBURG south carolina

BUTTERFLY BRANCH GREENWAY

CITY OF SPARTANBURG, SOUTH CAROLINA

ELECTRICAL ENGINEERING:

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912 South Pine Street
Spartanburg, South Carolina 29302
(864)583-6274
matrixei.com
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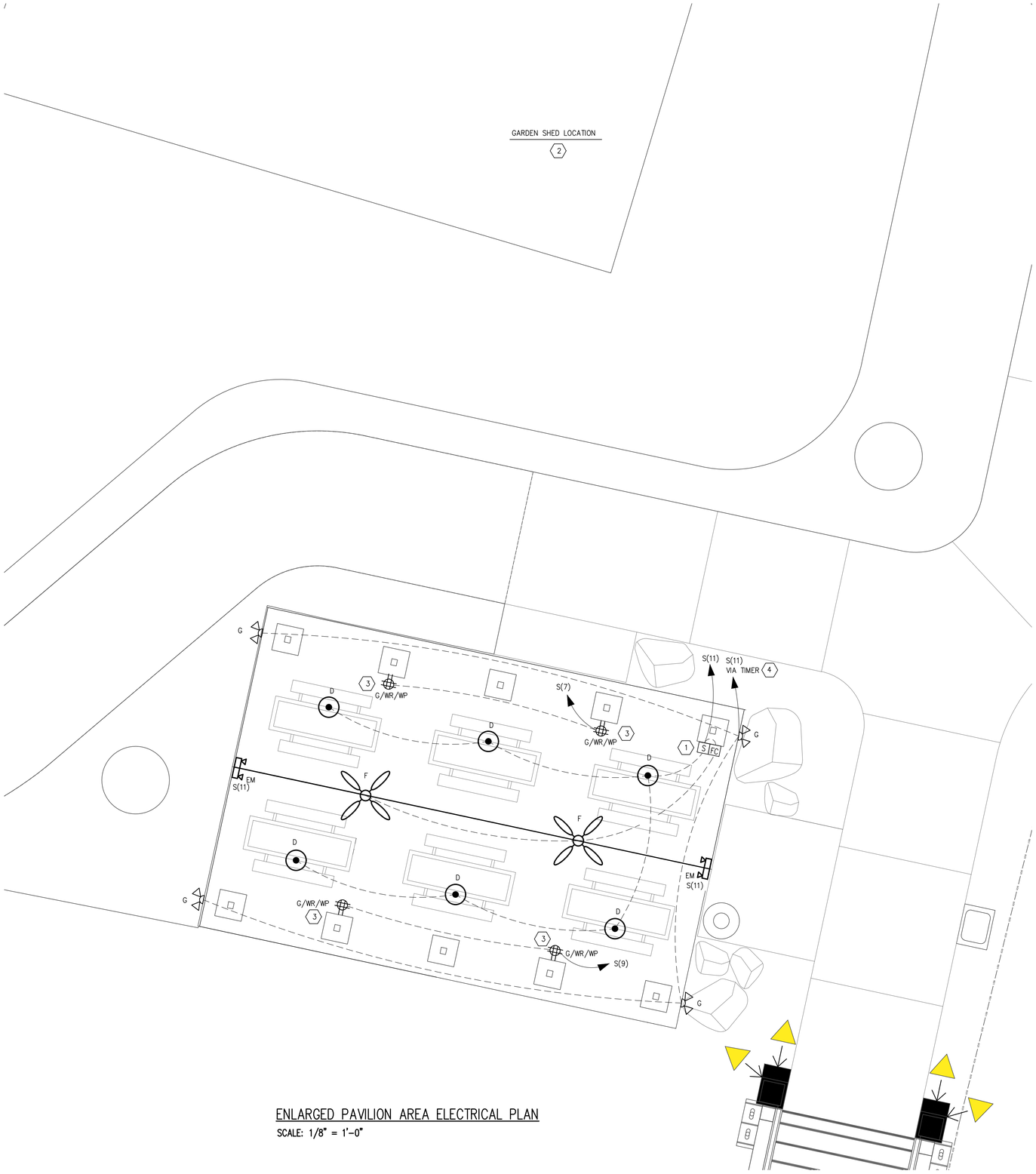
SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 9801 HOWARD P. BUNN, II
01-26-2017

ENLARGED BRIDGE AREA ELECTRICAL PLAN

E-4



ENLARGED PAVILION AREA ELECTRICAL PLAN

SCALE: 1/8" = 1'-0"

EXISTING GARDEN SHED ELECTRICAL PANEL
PANEL "S"

240/120 VOLTS, 200 AMP MAIN CIRCUIT BREAKER

CONN LOAD	CIRCUIT USE	S N	200A M. C. B.	S N	CIRCUIT USE	CONN LOAD	L1	L2
3120	GREENHOUSE ELECTRICAL PANEL *	1	100A	2	RECEPTACLES *	500	3620	
3120	↓	3		4	LIGHTS *	750		3870
500	FLOOD LIGHTS *	5		6	RECEPTACLES *	900	1400	
720	REC-PAVILION	7		8	BRIDGE LIGHTING	650		1370
720	REC-PAVILION	9		10	IRRIGATION CONTROLLER	500	1220	
750	PAVILION LTS & CEILING FANS	11		12	SPARE 20A CKT			750
	SPARE 20A CKT	13		14	SPARE 20A CKT			
	PREPARED SPACE ONLY	15		16	PREPARED SPACE ONLY			
	PREPARED SPACE ONLY	17		18	PREPARED SPACE ONLY			
	PREPARED SPACE ONLY	19		20	PREPARED SPACE ONLY			
	PREPARED SPACE ONLY	21		22	PREPARED SPACE ONLY			
	PREPARED SPACE ONLY	23		24	PREPARED SPACE ONLY			
	PREPARED SPACE ONLY	25		26	PREPARED SPACE ONLY			
	PREPARED SPACE ONLY	27		28	PREPARED SPACE ONLY			
	PREPARED SPACE ONLY	29		30	PREPARED SPACE ONLY			

PHASE A	6240	
PHASE B		5990
TOTAL VA	12230	
CONNECTED AMPERAGE 51 AMPERES		

NOTES:

1. ALL CIRCUIT BREAKERS 20 AMPERE, SINGLE POLE, UNLESS NOTED OTHERWISE.
2. REVISE PANEL CIRCUIT SCHEDULE TO REFLECT ADDITIONAL CIRCUITS TO PAVILION & BRIDGE.

* DENOTES EXISTING CIRCUITS IN GARDEN SHED PANEL

GENERAL NOTES:

1. ELECTRICAL CONTRACTOR TO COORDINATE ALL ELECTRICAL COMPONENT LOCATIONS WITH LANDSCAPE ARCHITECT PRIOR TO INSTALLING.
2. ALL BELOW GRADE CONDUIT SHALL BE SCHEDULE 40 PVC.
3. ALL CIRCUITS ON THIS SHEET TO BE WIRED TO EXISTING GARDEN SHED PANEL "S" WHICH IS NOT SHOWN ON THIS DRAWING.
4. ALL WIRING TO GARDEN SHED PANEL "S" SHALL BE #10 AWG.

KEYED NOTES:

1. PROVIDE NEMA 12 GASKETED TYPE JIC BOX WITH HASP FOR LOCKING. MOUNT LIGHT AND FAN CONTROL SWITCHES ON SUB-PANEL.
2. DENOTES APPROXIMATE LOCATION OF GARDEN SHED WITH 200 AMP PANEL "S." IRRIGATION CONTRACTOR TO PROVIDE AND INSTALL IRRIGATION CONTROL PANEL IN GARDEN SHED. ELECTRICAL CONTRACTOR TO PROVIDE 120 VOLT CIRCUIT TO CONTROLLER. COORDINATE EXACT LOCATION OF CONTROLLER WITH IRRIGATION CONTRACTOR.
3. DENOTES QUAD RECEPTACLE MOUNTED IN FACE OF ROCK COLUMN WITH "IN-USE" TYPE COVER.
4. ELECTRICAL CONTRACTOR TO PURCHASE AND INSTALL TIMER FOR BRIDGE UP-LIGHTING CIRCUIT AND PAVILION FLOOD LIGHTING CIRCUIT. INSTALL TIMER IN GARDEN SHED ADJACENT TO PANEL "S." PROVIDE INTERMATIC MODEL GM-40 OR EQUAL.

SOUTH CAROLINA MATRIX ENGINEERING INC. No. C01034 CERTIFICATE OF AUTHORIZATION

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 9801 HARRY P. BUNN, II 01-26-2017

City of SPARTANBURG south carolina

BUTTERFLY BRANCH GREENWAY

CITY OF SPARTANBURG, SOUTH CAROLINA

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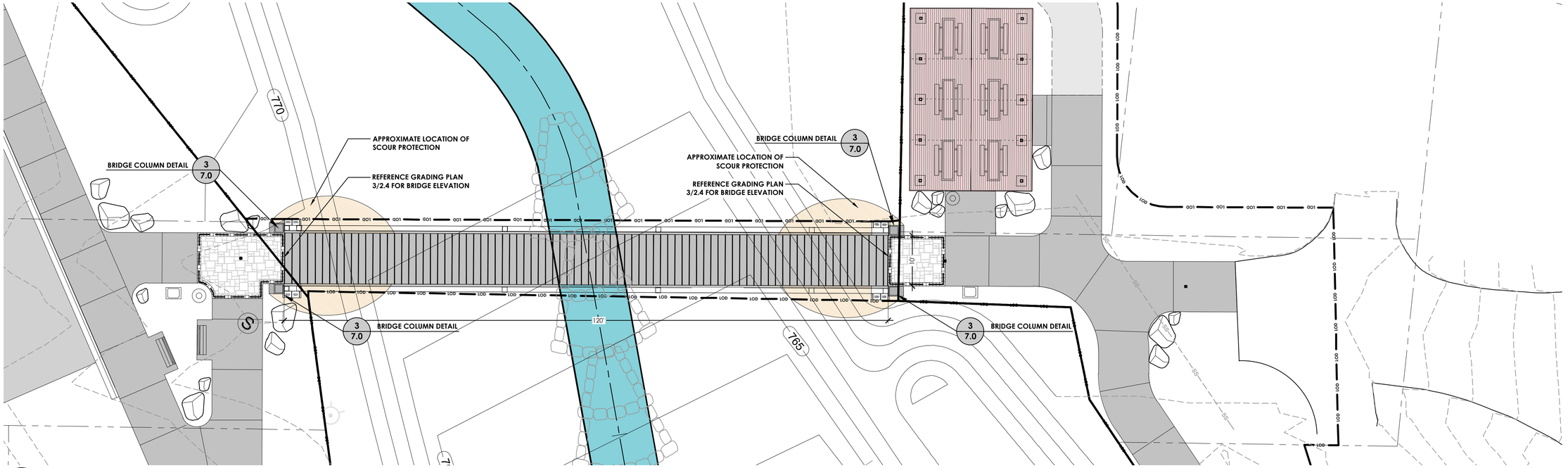
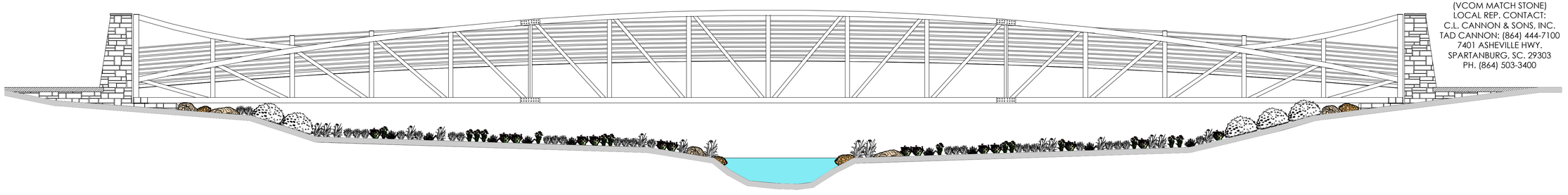
ENLARGED PAVILION AREA ELECTRICAL PLAN

E-5



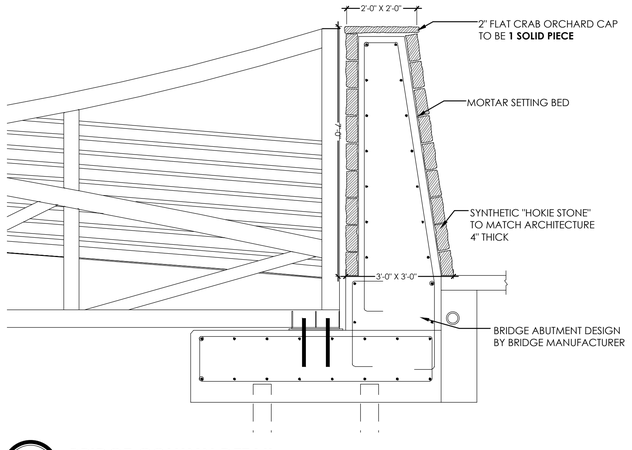
1 7.0 BRIDGE LAYOUT

SCALE: 1" = 10'



2 7.0 BRIDGE SIDE ELEVATION

SCALE: N.T.S.



3 7.0 BRIDGE COLUMN DETAIL

SCALE: N.T.S.

STONE SPECIFICATION

ARRISCRAFT: HOKIE STONE
(VCOM MATCH STONE)
LOCAL REP. CONTACT:
C.L. CANNON & SONS, INC.
TAD CANNON: (864) 444-7100
7401 ASHEVILLE HWY.
SPARTANBURG, SC. 29303
PH. (864) 503-3400

BRIDGE DETAIL & ATTRIBUTES DETAILS

BRIDGE DETAILS			
BRIDGE LENGTH	120'-0"	**BRIDGE INSIDE WIDTH**	10'-0"
VEHICLE LOADING	H-5	**LIVE LOAD**	90PSF
TRUSS STYLE	CUSTOM	**SPLICE**	X
DECKING TYPE	PREP FOR CONCRETE	**ELEVATION CHANGE**	N/A
ATTRIBUTES			
RAILING STYLE	HORIZONTAL	**RAILING HEIGHT**	3'-6"
WEIGHT	+/- 41,380 IBS	**RUBRAIL**	N/A
BRIDGE FINISH	3 LAYER PAINT	**AASHTO DESIGN**	X
HANDRAIL		**TOE PLATE**	X

City of SPARTANBURG south carolina

BUTTERFLY BRANCH GREENWAY

CITY OF SPARTANBURG, SOUTH CAROLINA

CIVIL ENGINEERING:

BAI

BLACKWOOD ASSOCIATES INC.
CONSULTING ENGINEERS
PO BOX 366
SPARTANBURG, SC 29304
864-583-5432 <> FAX-583-5434

LANDSCAPE ARCHITECTS:

LANDART landscape architecture
547 E Main St / Spartanburg, SC 29302
phone 864.585.7580 / fax 864.585.5808
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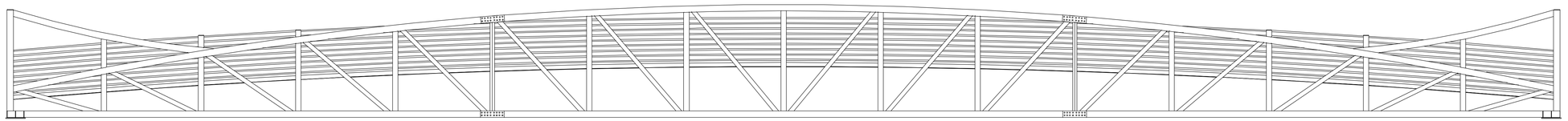
LDG JOB #: 13037-00
DR. BY: TP/AQ
APP.BY: TP
DATE: 01/26/17

811 Know what's below. Call before you dig.

BRIDGE LAYOUT PLAN

0 10 20 feet
SCALE: 1" = 10'

BRIDGE SHALL BE SHIPPED IN THREE SECTIONS
SHIPPING & LIFTING WEIGHT = ~35KIPS TOTAL (~11KIPS PER END SECTION, ~13KIPS MIDDLE SECTION)



BRIDGE REACTIONS (UNFACTORED; INCL CONCRETE WEIGHT)			
	Z (LBS)	Y (LBS)	X (LBS)
DEAD LOAD	---	-20,600	---
DEAD + VEHICLE LOAD (10,000 LB)	---	-25,600	---
DEAD + LIVE LOAD (@ 90PSF)	---	-47,600	---
DEAD + HORIZONTAL WIND (@ 46.2PSF) + OVERTURNING WIND (@ 20PSF)	4,738	-6,895 -21,105	---
THERMAL (COEFF OF FRICTION 0.2)	---	---	4,120

BRIDGE INSTALLED WEIGHT = ~82,400 LBS (CONCRETE DECK INSTALLED ON SITE)
THERMAL EXPANSION (BASED ON A SEASONAL TEMPERATURE VARIATION OF 120 °F)
Y = VERTICAL LOAD @ EACH BEARING PLATE (4 TOTAL)
Z= HORIZONTAL LOAD @ EACH FOOTING (2 PER BRIDGE, 1 @ EACH END)
X = LONGITUDINAL LOAD @ EACH FIXED BEARING PLATE (2 PER BRIDGE)

GENERAL NOTES:
1. USE OF DE-ICING AGENTS ON BRIDGE STRUCTURE IS HIGHLY DISCOURAGED
2. BRIDGE BEARINGS SHALL BE CONSTRUCTED AT SAME ELEVATION
3. UHMW OR TEFLON COATED SETTING PLATES SHALL BE SHIPPED LOOSE FROM BRIDGE
4. ANCHOR & ABUTMENT DESIGN SHALL BE BY BRIDGE BROTHERS.
5. BRIDGE DECK SHALL BE CAMBERED 2"-7" AT MID-SPAN
6. HSS SQUARE & RECTANGULAR TUBING SHALL BE ASTM A500 GR B
7. FLAT PLATE, ANGLE, AND CHANNEL SHALL BE ASTM A36
8. BRIDGE METAL DECK PAN SHALL BE GALVANIZED AND FASTENED USING MECHANICAL FASTENERS; 4,000PSI CONCRETE SHALL BE PROVIDED BY OTHERS FOR DECK ABOVE METAL PAN. TEMPERATURE/SHRINKAGE REINFORCEMENT AND CRACK CONTROL JOINTS ARE THE RESPONSIBILITY OF OTHERS
9. ALL SPLICE HARDWARE SHALL BE HOT-DIP GALVANIZED (HDG); SPLICE BOLTS SHALL BE ASTM A325; SPLICE WASHERS SHALL BE ASTM F436; SPLICE NUTS SHALL BE ASTM A563, GR C OR DH
10. SHOP WELDING SHALL CONFORM TO THE REQUIREMENTS OF AWS D1.1:2010, STEEL STRUCTURAL WELDING CODE
11. DEBUR ALL EXPOSED WELDS WHICH MAY COME IN CONTACT WITH PEDESTRIANS
12. ALL EXTERIOR SURFACES OF FRAME SHALL BE BLAST CLEANED IN ACCORDANCE WITH SSPC-SP7
13. ALL EXTERIOR SURFACES OF FRAME SHALL BE PAINTED IN ACCORDANCE WITH BRIDGE BROTHERS' SUGGESTED SPECIFICATION

NO.	DESCRIPTION
1	TITLE SHEET
2	SCHEDULE OF MEMBERS
3	BRIDGE ELEVATION & SECTION VIEWS
4	BRIDGE PLAN VIEW
5	BRIDGE SPLICE DETAILS
6	ABUTMENT PLAN & NOTES
7	ABUTMENT SECTION VIEWS

LOADINGS & DESIGN CRITERIA:
1. AASHTO LRFD GUIDE SPECIFICATIONS FOR THE DESIGN OF PEDESTRIAN BRIDGES, 2009
2. AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS-7th EDITION, 2014 w/ 2015 & 2016 INTERIM REVISIONS
3. AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS, 2013
4. AISC PART 16.1-2010 SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS
5. GALAMBOS - GUIDE TO STABILITY DESIGN CRITERIA FOR METAL STRUCTURES, 1998
6. STANDARD ENGINEERING PRACTICE
7. THIS STRUCTURE HAS NOT BEEN ANALYZED FOR FLOOD LOADING
8. SUBMITTAL CALCULATION PACKAGE DESIGN CRITERIA
   - 90 PSF LIVE LOAD
   - 10,000 LB VEHICLE LOAD, 80% ON REAR AXLE
   - 50 PLF RAIL LIVE LOAD, 200 LB RAIL POINT LOAD
   - 90 MPH WIND LOAD

CUSTOMER SIGNATURE DATE

SIGN AND DATE ABOVE TO INDICATE ACCEPTANCE AND APPROVAL FOR BRIDGE BROTHERS TO PROCEED WITH FABRICATION.

*BRIDGE BROTHERS INC ACCEPTS NO RESPONSIBILITY FOR WORK PERFORMED BY OTHERS. BRIDGE BROTHERS INC RESERVES THE RIGHT TO MODIFY THIS STRUCTURE DURING FABRICATION, WITH CUSTOMER APPROVAL. NO MODIFICATIONS TO THIS STRUCTURE SHALL BE PERMITTED WITHOUT WRITTEN CONSENT FROM BRIDGE BROTHERS INC.

BRIDGE BROTHERS
57 OLD IVY SQUARE, ATLANTA, GA 30342
(866) 258-3401, WWW.BRIDGEBROTHERSINC.COM

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CITY OF SPARTANBURG
PEDESTRIAN BRIDGE
SPARTANBURG, SC

CUSTOMER:

PROJECT # N/A PO # N/A

TOLERANCES UNLESS SPECIFIED OTHERWISE
XXX = ±1/4"; FRACTIONS = ±1/8"; ANGULAR = ±1°

DRAWN BY:

CHECKED BY:

SHEET 1 of 7

TITLE SHEET

SCALE: N/A

REVISION RECORD

REV.	DATE	DESCRIPTION
0	1/25/17	CUSTOMER SUBMITTAL

1 / 7.1 BRIDGE DETAILS
SCALE: N.T.S.

City of SPARTANBURG south carolina

BUTTERFLY BRANCH GREENWAY

CITY OF SPARTANBURG, SOUTH CAROLINA

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LDG JOB #:13037-00
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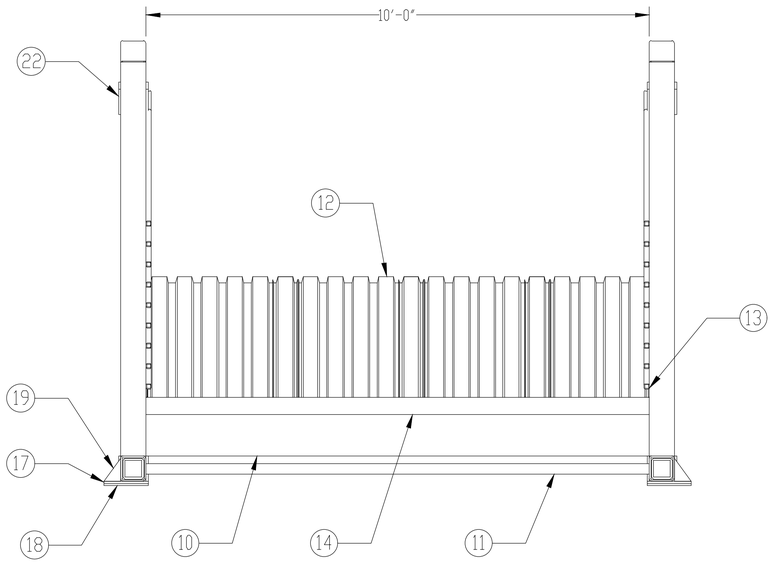
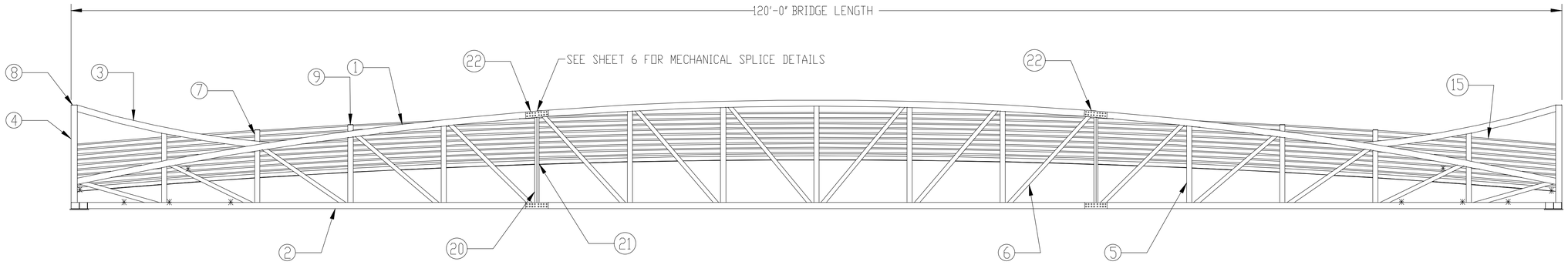
PEDESTRIAN BRIDGE DETAILS (1)

0 10 20 feet
SCALE: 1" = 10'

ITEM NO.	NAME	MATERIAL	DESCRIPTION	QTY
1	TRUSS TOP CHORD	ASTM A500 GR B	6x6x3/8 HSS TUBE	6
2	TRUSS BOTTOM CHORD	ASTM A500 GR B	6x6x3/8 HSS TUBE	6
3	TRUSS END ARCH	ASTM A500 GR B	6x6x3/8 HSS TUBE	4
4	TRUSS END POST	ASTM A500 GR B	6x6x3/8 HSS TUBE	4
5	TRUSS VERTICAL	ASTM A500 GR B	5x5x1/4 HSS TUBE	26
6	TRUSS DIAGONAL	ASTM A500 GR B	4x4x1/4 HSS TUBE	32
7	RAIL POST	ASTM A500 GR B	5x5x1/4 HSS TUBE	8
8	END POST CAP	ASTM A36	1/4" PL	4
9	RAIL POST CAP	ASTM A36	1/4" PL	8
10	FLOOR BEAM	ASTM A36	C10x15.3 CHANNEL	15
11	FLOOR BRACING	ASTM A500 GR B	2 1/2x2 1/2x3/16 HSS TUBE	16
12	SUB-DECK	GALVANIZED	18GA, 1 1/2" B-DECK, 36"x20'	24
13	SIDE DECK FORM	ASTM A36	L3x4x1/4 ANGLE	6
14	END DECK FORM	ASTM A36	L3x4x1/4 ANGLE	2
15	HORIZONTAL RAIL	ASTM A36	1 1/4x1 1/4x3/16 HSS TUBE	54
17	BEARING PLATE	ASTM A36	10 1/2" x 1'-4" x 1/2"	4
18	SETTING PLATE	UHMW	10 1/2" x 1'-6" x 1/2"	4
19	BEARING GUSSET	ASTM A36	FLT 4"x1/4" TRIANGULAR GUSSET	12
20	TRUSS SPLICE POST	ASTM A36	C6x10.5 CHANNEL	8
21	FLOOR SPLICE BEAM	ASTM A36	C6x10.5 CHANNEL	4
22	TRUSS SPLICE PLATE	ASTM A36	6"x1'-10"x1/2" PLATE	16
23	TRUSS SPLICE TUBE INSERT	ASTM A36	5"x5"x1'-10" TUBE, FABRICATED FROM 1/2" PLT	8
24	SPLICE FASTENERS	ASTM A325	SEE SHEET 6 FOR SPLICE DETAILS	
25	TRUSS GUSSET	ASTM A36	1/2" PLT	20





*TRUSS GUSSET LOCATION

APPROVAL INITIALS:

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CITY OF SPARTANBURG
PEDESTRIAN BRIDGE
SPARTANBURG, SC

CUSTOMER:

PROJECT # N/A PO # N/A

TOLERANCES UNLESS SPECIFIED OTHERWISE
XXX = ±1/4"; FRACTIONS = ±1/8"; ANGULAR = ±1°

DRAWN BY:
CHECKED BY:

SHEET 2 of 7

SCHEDULE OF MEMBERS

SCALE: N/A

REVISION RECORD

REV.	DATE	DESCRIPTION
0	1/25/17	CUSTOMER SUBMITTAL

1 / 7.2 **BRIDGE DETAILS**
SCALE: N.T.S.

City of SPARTANBURG south carolina

BUTTERFLY BRANCH GREENWAY

CITY OF SPARTANBURG, SOUTH CAROLINA

CIVIL ENGINEERING:

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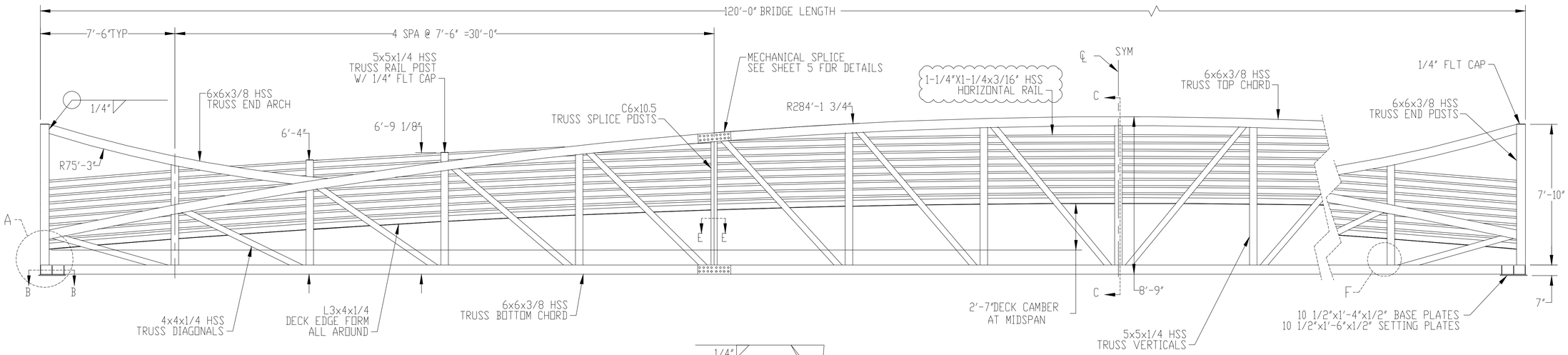
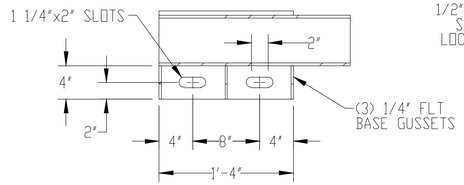
811 Know what's below. Call before you dig.

PEDESTRIAN BRIDGE DETAILS (2)

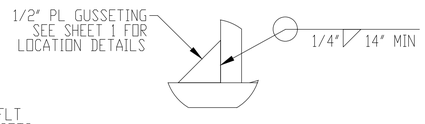
0 10 20 feet
SCALE: 1" = 10'

*BRIDGE DECK SHALL BE CAMBERED 2'-7" AT MID-SPAN

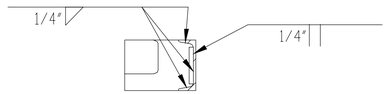




SECTION B-B



DETAIL F



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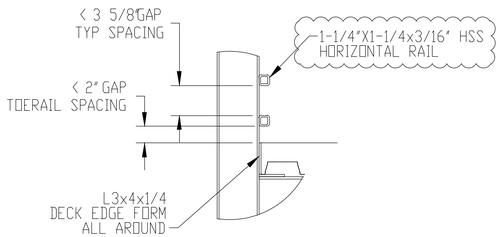
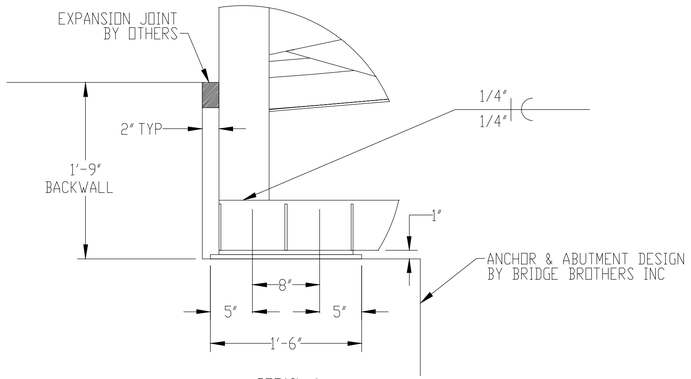
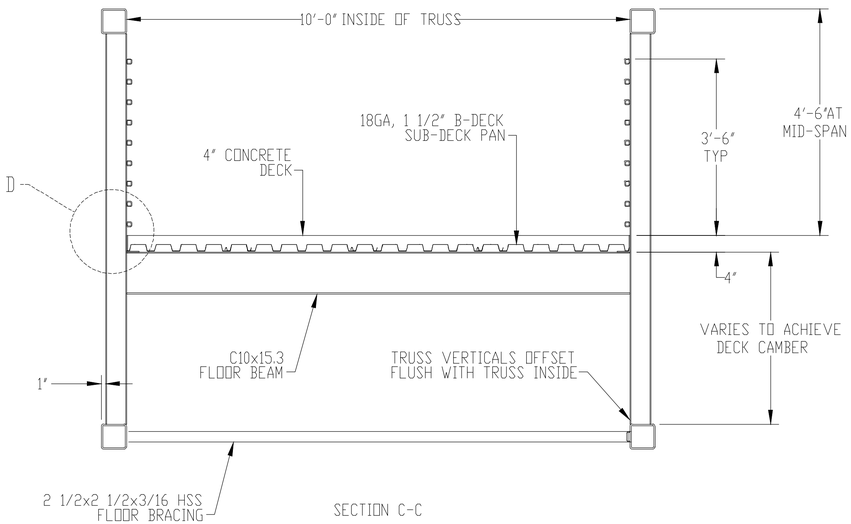


DETAIL D



DETAIL A



SECTION C-C

APPROVAL INITIALS:

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PEDESTRIAN BRIDGE
SPARTANBURG, SC

CUSTOMER:

PROJECT # N/A PO # N/A

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XXX = ±1/4"; FRACTIONS = ±1/8"; ANGULAR = ±1°

DRAWN BY:

CHECKED BY:

SHEET 3 of 7

ELEVATION & SECTION VIEWS

SCALE: N/A

REVISION RECORD

REV.	DATE	DESCRIPTION
0	1/25/17	CUSTOMER SUBMITTAL

1 / 7.3 **BRIDGE DETAILS**
SCALE: N.T.S.

City of SPARTANBURG south carolina

BUTTERFLY BRANCH GREENWAY

CITY OF SPARTANBURG, SOUTH CAROLINA

CIVIL ENGINEERING:

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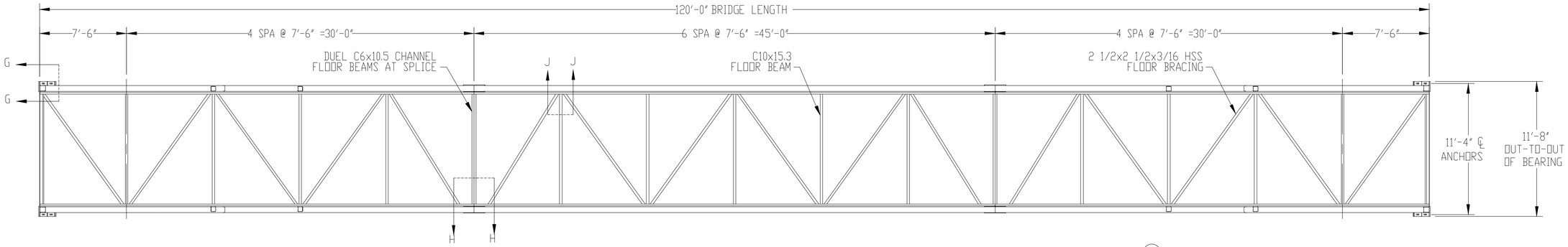
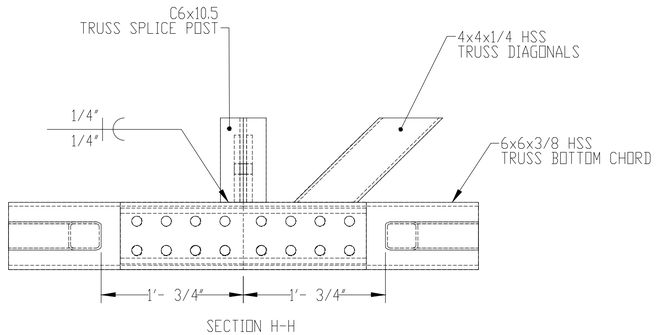
811 Know what's below. Call before you dig.

PEDESTRIAN BRIDGE DETAILS (3)

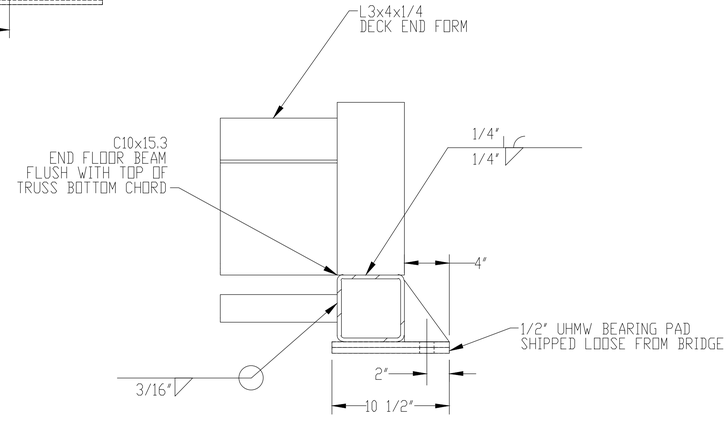
0 10 20 feet
SCALE: 1" = 10'



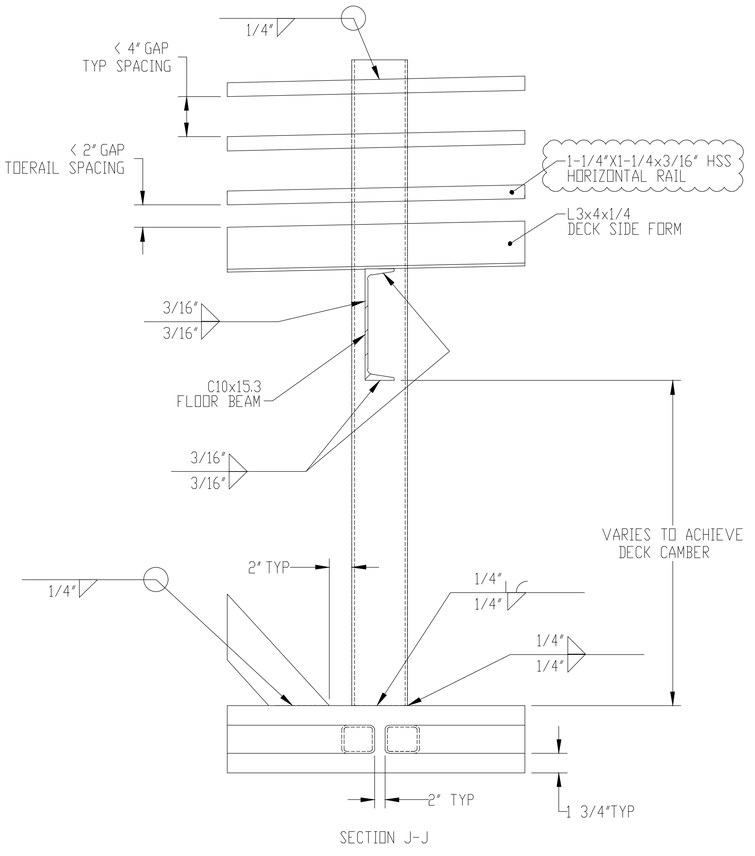


SECTION H-H

UHMW SETTING PLATES
SHIPPED LOOSE FROM BRIDGE
(QTY x4)



SECTION G-G



SECTION J-J

APPROVAL
INITIALS:

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DRAWN BY:
CHECKED BY:

SHEET 4 of 7

BRIDGE PLAN VIEW

SCALE: N/A

REVISION RECORD

REV.	DATE	DESCRIPTION
0	1/25/17	CUSTOMER SUBMITTAL

1 BRIDGE DETAILS
7.4 SCALE: N.T.S.

City of SPARTANBURG south carolina

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REVISIONS

#	DATE	DESCRIPTION	BY
0	01/26/17	ISSUED FOR BID	
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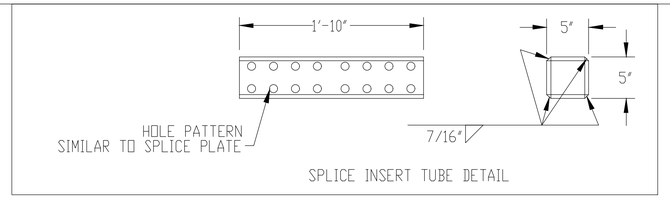
LDG JOB #:13037-00
DR. BY: TP/AQ
APP.BY: TP
DATE: 01/26/17

811 Know what's below. Call before you dig.

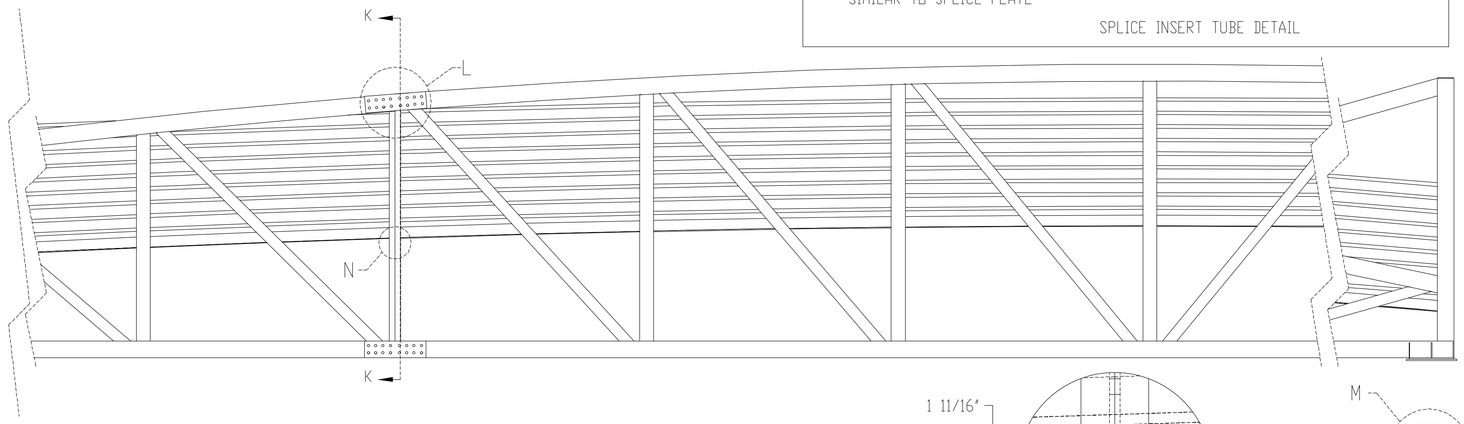
PEDESTRIAN BRIDGE DETAILS (4)

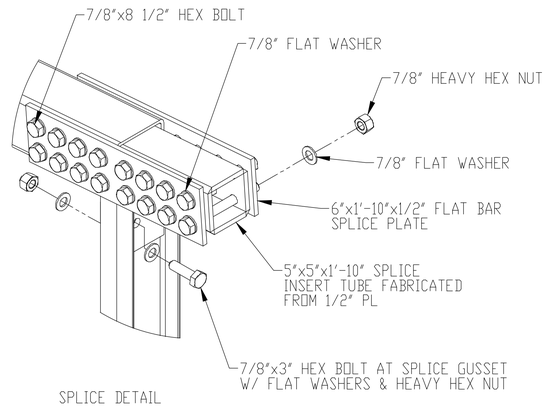
0 10 20 feet
SCALE: 1" = 10'

SPLICE BOLTS SHALL BE ASTM A325, HDG
SPLICE WASHERS SHALL BE ASTM F436, HDG
SPLICE NUTS SHALL BE ASTM A563, GR C OR DH, HDG

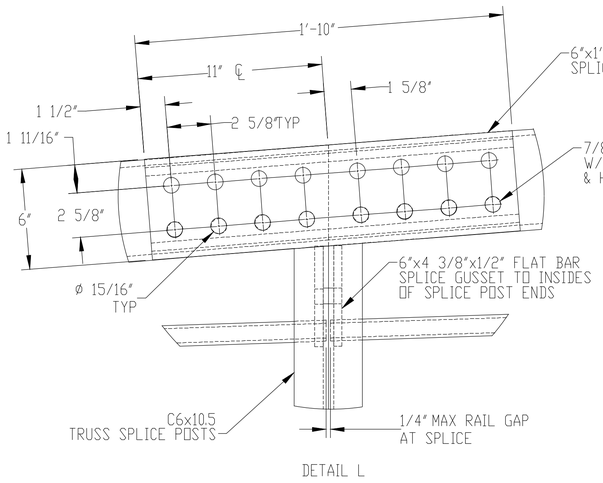


SPLICE INSERT TUBE DETAIL

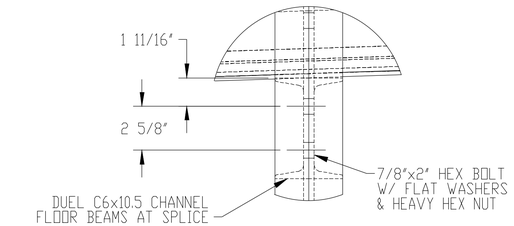




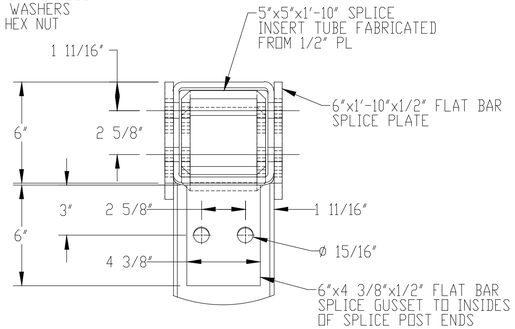
SPLICE DETAIL



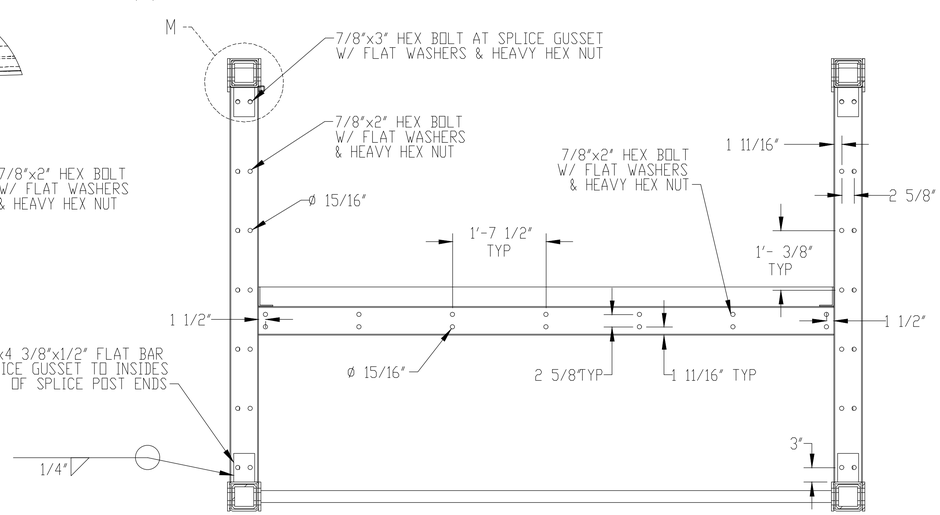
DETAIL L



DETAIL N



DETAIL M



SECTION K-K

APPROVAL
INITIALS:

BRIDGE BROTHERS
57 OLD IVY SQUARE, ATLANTA, GA 30342
(866) 258-3401, WWW.BRIDGEBROTHERSINC.COM

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CITY OF SPARTANBURG
PEDESTRIAN BRIDGE
SPARTANBURG, SC

CUSTOMER:

PROJECT # N/A PO # N/A

TOLERANCES UNLESS SPECIFIED OTHERWISE
XXX = ±1/4"; FRACTIONS = ±1/8"; ANGULAR = ±1°

DRAWN BY:
CHECKED BY:
SHEET 5 of 7

BRIDGE SPLICE DETAILS

SCALE: N/A

REVISION RECORD		
REV.	DATE	DESCRIPTION
0	1/25/17	CUSTOMER SUBMITTAL

1 BRIDGE DETAILS
7.5 SCALE: N.T.S.

City of SPARTANBURG south carolina

BUTTERFLY BRANCH GREENWAY

CITY OF SPARTANBURG, SOUTH CAROLINA

CIVIL ENGINEERING:

BAI
BLACKWOOD ASSOCIATES INC.
CONSULTING ENGINEERS
PO BOX 366
SPARTANBURG, SC 29304
864-583-5432 <> FAX-583-5434

LANDSCAPE ARCHITECTS:

LANDART landscape architecture
547 E Main St / Spartanburg, SC 29302
phone 864.585.7980 / fax 864.585.5808
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LDG JOB #:13037-00
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811 Know what's below. Call before you dig.

PEDESTRIAN BRIDGE DETAILS (5)

0 10 20 feet
SCALE: 1" = 10'

DESIGN CRITERIA AND GENERAL NOTES

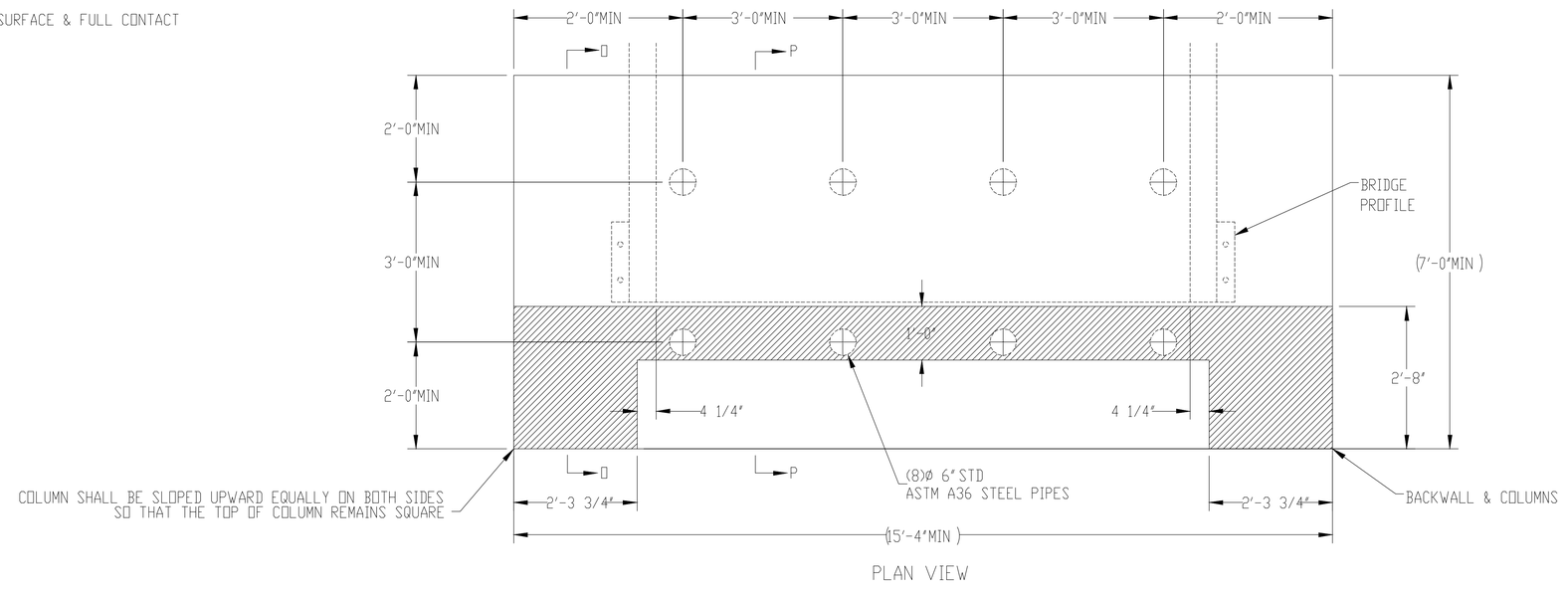
FOUNDATIONS:

1. ABUTMENT DESIGN IS BASED UPON REACTIONS NOTED ON BRIDGE DRAWING SHEET 1 AND RELATED SOIL LOADING PARAMETERS AS NOTED IN GEOTECHNICAL REPORT PROVIDED BY S&ME DATED DECEMBER 5, 2016 (PROJECT NO. 1426-16-114).
2. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL EXISTING CONDITIONS PRIOR TO COMMENCING WITH WORK.
3. THE CONTRACTOR SHALL COORDINATE THE EXISTING GRADE AND SITE WORK TO ACHIEVE THE GEOTECH RECOMMENDATIONS.

ABUTMENT CONCRETE:

1. ALL PHASES OF WORK PERTAINING TO THE CONCRETE CONSTRUCTION SHALL CONFORM TO THE "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE" (ACI 318 LATEST APPROVED EDITION) WITH MODIFICATIONS AS NOTED IN THE DRAWINGS AND SPECIFICATIONS.
2. REINFORCED CONCRETE DESIGN IS BY THE "ULTIMATE STRENGTH DESIGN METHOD", ACI 318-(LATEST EDITION)
3. ALL STRUCTURAL CONCRETE SHALL HAVE A MINIMUM 28-DAY STRENGTH OF 4,000 PSI. PERIODIC SPECIAL INSPECTION IS REQUIRED FOR PLACEMENT OF REBAR, ANCHOR BOLTS, & CONCRETE MIX DESIGN.
4. CONCRETE MIX DESIGN SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL WITH THE FOLLOWING REQUIREMENTS:
   a. COMPRESSIVE STRENGTH AT AGE 28 DAYS AS SPECIFIED ABOVE.
   b. LARGE AGGREGATE-HARDROCK, 3/4" MAXIMUM SIZE CONFORMING TO ASTM C-33
   c. CEMENT-ASTM C-150, TYPE I OF II PORTLAND CEMENT
   d. MAXIMUM SLUMP 5-INCHES, MAX WATER CEMENT RATIO: 0.50
   e. NO ADMIXTURES, EXCEPT FOR ENTRAINED AIR, AND AS APPROVED BY THE ENGINEER.
5. CONCRETE MIXING OPERATIONS, ETC. SHALL CONFORM TO ASTM C-94
6. PLACEMENT OF CONCRETE SHALL CONFORM TO ACI STANDARD 514 AND PROJECT SPECIFICATIONS.
7. UNLESS NOTED OTHERWISE, CLEAR COVERAGE OF CONCRETE OVER OUTER REINFORCING BARS SHALL BE AS FOLLOWS:
   a. CONCRETE POURED DIRECTLY AGAINST EARTH - 3 INCHES CLEAR
   b. FORMED CONCRETE WITH EARTH BACK FILL - 2 INCHES CLEAR
8. ALL REINFORCING BARS, ANCHOR BOLTS AND OTHER CONCRETE INSERTS SHALL BE WELL SECURED IN POSITION PRIOR TO PLACING CONCRETE PER CRSI MANUAL OF STANDARD PRACTICE AND ACI 315.
9. REINFORCING BARS SHALL CONFORM TO ASTM A615 GRADE 60.
10. WHERE FOOTING IS PRECAST, CONTRACTOR TO ENSURE LEVEL BEARING SURFACE & FULL CONTACT BETWEEN FOOTING & SUPPORT BASE.

ALL SIZES ARE APPROXIMATE AND BASED ON 8 (6"STD) PILES DRIVEN TO 25 TON EACH PER ABUTMENT



PLAN VIEW

APPROVAL INITIALS:

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(866) 258-3401, WWW.BRIDGEBROTHERSINC.COM

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CITY OF SPARTANBURG
PEDESTRIAN BRIDGE
SPARTANBURG, SC

CUSTOMER:

PROJECT # N/A PO # N/A

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XXX = ±1/4"; FRACTIONS = ±1/8"; ANGULAR = ±1°

DRAWN BY:
CHECKED BY:
SHEET 6 of 7

ABUTMENT PLAN & NOTES

SCALE: N/A

REVISION RECORD		
REV.	DATE	DESCRIPTION
0	1/25/17	CUSTOMER SUBMITTAL

CHAD S. MCDONALD, PE
MASSACHUSETTS PE#48949

TRILOGY ENGINEERING
2550 SANDY PLAINS RD, STE 225
MARIETTA, GA 30066
PHONE: 404-556-5923

1 / 7.6 **BRIDGE DETAILS**
SCALE: N.T.S.

City of SPARTANBURG south carolina

BUTTERFLY BRANCH GREENWAY

CITY OF SPARTANBURG, SOUTH CAROLINA

CIVIL ENGINEERING:

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BLACKWOOD ASSOCIATES INC.
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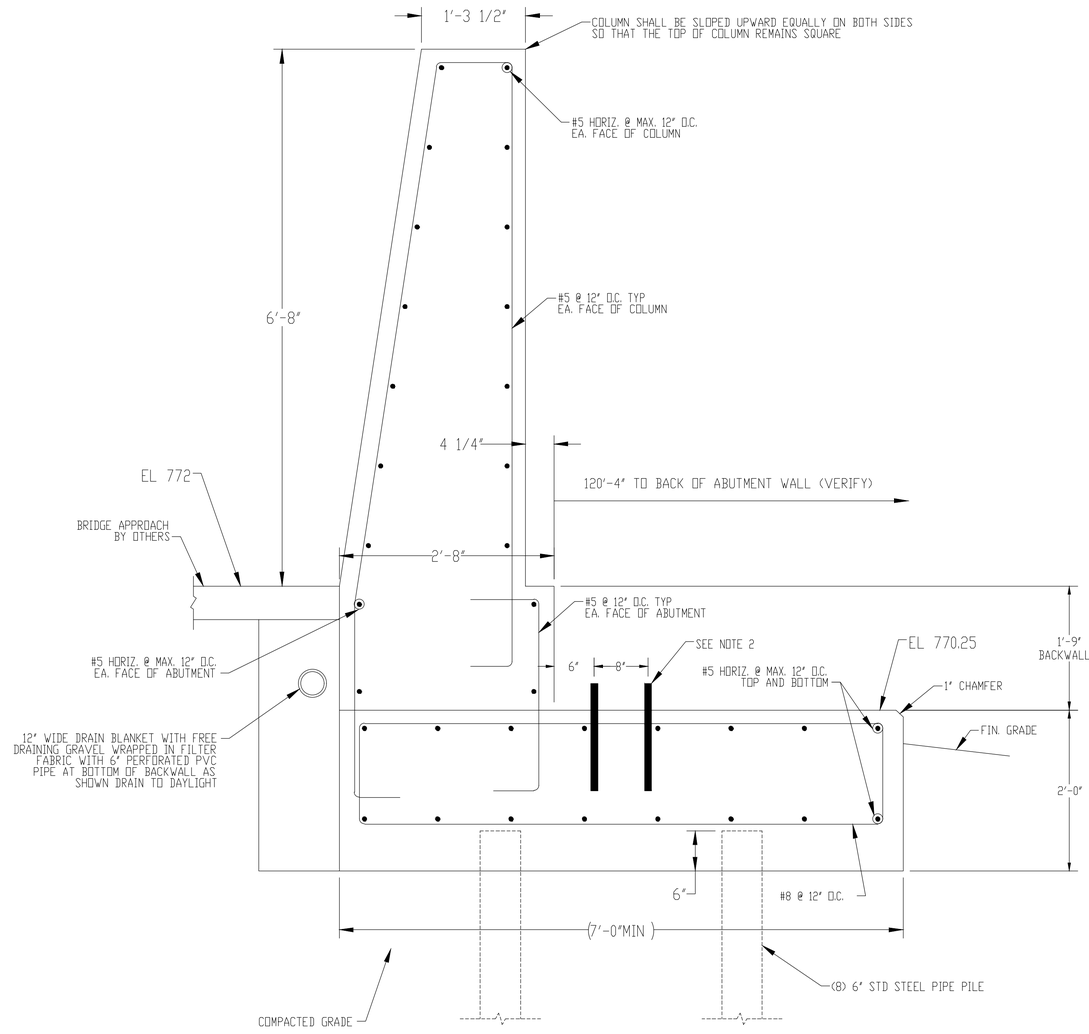
PEDESTRIAN BRIDGE DETAILS (6)

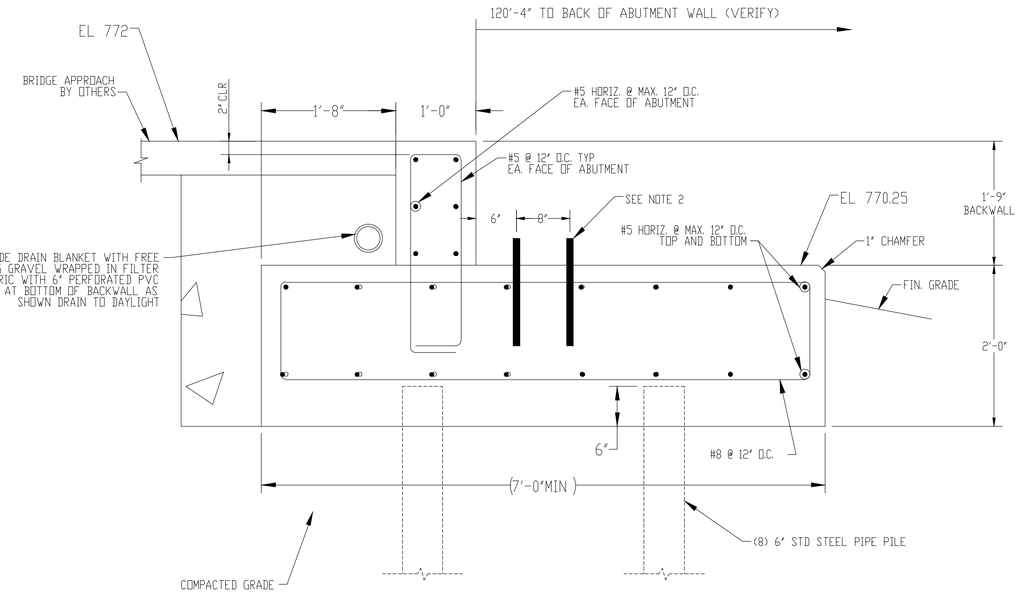
0 10 20 feet
SCALE: 1" = 10'

NOTES:
1. PROVIDE PERFORATED PIPE WITHIN THE LIMITS OF BACKWALL ONLY. PROVIDE NON-PERFORATED PIPE EXTENSION TO DAYLIGHT
2. SEE "DETAIL A" ON SHEET 3 OF BRIDGE DRAWINGS FOR BEARING DETAIL. (2)Ø1"F1554-36 ANCHOR BOLTS w/ DOUBLE NUTS & STANDARD WASHERS w/ 12" EMBEDMENT
3. CONTRACTOR SHALL COORDINATE BRIDGE BEARING ELEVATION AND MIN FOUNDATION BEARING BELOW GRADE WITH EXISTING SITE CONDITIONS.



SECTION O-O

SCOUR PROTECTION:
1. FIELD STONE BOULDERS SHOULD BE PLACED AROUND FRONT & SIDES OF PIER CAPS TO AVOID SCOUR.
2. SCOUR PROTECTION SHOULD BE PLACED FROM PIER CAP DOWN TO EL766 +/-



SECTION P-P

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CITY OF SPARTANBURG
PEDESTRIAN BRIDGE
SPARTANBURG, SC

CUSTOMER:

PROJECT # N/A PO # N/A

TOLERANCES UNLESS SPECIFIED OTHERWISE
XXX = ±1/4"; FRACTIONS = ±1/8"; ANGULAR = ±1°

DRAWN BY:

CHECKED BY:

SHEET 7 of 7

ABUTMENT SECTION VIEWS

SCALE: N/A

REVISION RECORD

REV.	DATE	DESCRIPTION
0	1/25/17	CUSTOMER SUBMITTAL

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MASSACHUSETTS PE#48949
TRILOGY ENGINEERING
2550 SANDY PLAINS RD, STE 225
MARIETTA, GA 30066
PHONE: 404-556-5923

1 / 7.7 BRIDGE DETAILS
SCALE: N.T.S.

City of SPARTANBURG south carolina

BUTTERFLY BRANCH GREENWAY

CITY OF SPARTANBURG, SOUTH CAROLINA

CIVIL ENGINEERING:

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DATE: 01/26/17

811 Know what's below. Call before you dig.

PEDESTRIAN BRIDGE DETAILS (7)

0 10 20 feet
SCALE: 1" = 10'

EXHIBIT A-3

Procurement & Property Division

CITY OF SPARTANBURG SOUTH CAROLINA

Request for Proposal

Butterfly Branch Linear Park Project.

Proposal No. 1617-02-14-01

(Show this number on envelope and all correspondence)

_____ submits herewith our proposal in response to the bid request
(*Company Name)*
number shown above in compliance with the description(s) and specifications (s) for the following:
Bidder will supply materials and labor for the following fixed price:

In compliance with the proposal invitation and subject to all conditions thereof, the undersigned agrees:

A. This proposals is stated, is open for acceptance for a period of 60 calendar days from day of pending.
B. To furnish any and all material and labor at the prices set forth the items unless otherwise specified, within contract and/or notice proceed.

DIVISION 1

Total Base Price _____
Total Alt. #1 Price _____
Total Alt. #2 Price _____
Total Alt. #3 Price _____

DIVISION 2

Total Base Price _____

COMBINED DIVISION

Total Price if both Divisions Awarded _____

Company Name:	
Street Address:	
City, State, Zip:	
Telephone #:	
Fax #:	
Federal ID or SS #:	

SIGNATURE OF PROPOSALER'S REPRESENTATIVE

Name & Title:_____

Date:_____

EXHIBIT A-4

UNIT PRICE SCHEDULE

BUTTERFLY BRANCH GREENWAY
SPARTANBURG, SOUTH CAROLINA

PREPARED BY: _____

DATE: _____

*****UNIT PRICING FOR COMPARISON ONLY*****

#	ITEM	SIZE	QTY	UNIT	UNIT PRICE	EXTENSION

DIVISION 1

GREENWAY TRAIL / SITE AMENITIES

GENERAL CONDITIONS

1	Project Setup & Mobilization	1	LS	@	_____	_____
2	Temporary Facilities	1	LS	@	_____	_____
3	Traffic Control	1	LS	@	_____	_____
				Subtotal	**$**	_____

DEMOLITION - EARTHWORK

1	Site Clearing	1	LS	@	_____	_____
2	Mill Pond Asphalt Removal	1	LS	@	_____	_____
3	Asphalt/Pavement Removal	1	LS	@	_____	_____
4	Rough/Fine Grading	1	LS	@	_____	_____
				Subtotal	**$**	_____

EROSION CONTROL/DRAINAGE

1	Drainage Sediment Trap	1	LS	@	_____	_____
2	12" HP Storm High Performance (ADS)	68	LF	@	_____	_____
3	15" RCP	16	LF	@	_____	_____
4	Compost Filter Sock	795	LF	@	_____	_____
				Subtotal	**$**	_____

GENERAL CONSTRUCTION

1	10' Pedestrian Trail 4" Concrete	26,718	SF	@	_____	_____
2	New Asphalt (Hammer Head)	8,857	SF	@	_____	_____
3	Permeable Paver w/ Border	349	SF	@	_____	_____
4	Field Stone Boulders	45	EA	@	_____	_____
5	5' Rail Fencing	290	LF	@	_____	_____
6	6' Benchs	5	EA	@	_____	_____

7	Litter Receptacles		4	EA	@		
8	Bike Racks		2	EA	@		
9	Picnic Tables		6	EA	@		
10	R-8464 Removable Bollard		8	EA	@		
11	Informational Kiosks		6	EA	@		
12	Entrance Signs		2	EA	@		
13	Pavilion Sign		1	EA	@		
14	24' x 36' Poligon Pavilion		1	LS	@		
15	Concrete Step		1	LS	@		
16	Stone Veneered Entrance Columns		2	EA	@		
17	4" Sleeve/Junction Boxes (20)		2,422	LF	@		
18	6" Curb / 12" Gutter (Hammerheads)		269	LF	@		
						Subtotal $	

ELECTICAL

1	Electical System/Fixtures/Electrical Connection		1	LS	@		
						Subtotal $	

LANDSCAPE

1	*Acer Rubrum* `October Glory`	2" caliper/14' min.	3	EA	@		
2	*Juniperus Virginiana* 'Burkii'	8' Min.	13	EA	@		
3	*Juniperus Virginiana* 'Canaertii'	8'-9'	10	EA	@		
4	*Juniperus Virginiana* 'Taylor'	8' Min.	11	EA	@		
5	*Liriodendron Tulipifera* 'Emerald City' TM	25." Cal./14' Min.	8	EA	@		
6	*Magnolia Grandifora* 'Brackens Brown Beauty'	6' Height	3	EA	@		
7	*Quercus Bicolor*	2.5" Cal./14'	2	EA	@		
8	*Quercus Lyrata*	3" Cal/18' Min. Hgt.	14	EA	@		
9	*Quercus Phellos* 'Hightower'	3" Cal./16' Min.	7	EA	@		
10	*Taxodium Ascendens 'Fox Red'*	3" Cal.	1	EA	@		
11	*Taxodium Distichum* 'Cascade Falls'	1.5" Cal./8' Min.	3	EA	@		
12	*Taxodium Distichum* 'Shawnee Brave' TM	3" Cal./12' Min.	7	EA	@		
13	*Thuji Occidentalis* 'Emerald'	15 Gal.	3	EA	@		
14	*Ulmus Americana* 'Princeton'	3" Cal./16' Min.	5	EA	@		
15	*Ilex Vomitoria* 'Pendula'	15 Gal.	8	EA	@		
16	*Ilex Vomitoria* 'Schillings Dwarf'	3 Gal.	11	EA	@		
17	*Itea Virginica* 'Virginia'	3 Gal.	6	EA	@		
18	*Rudbeckia Fulgida* 'Goldsturm'	1 Gal.	34	EA	@		
19	*Thuji Occidentalis* 'Degroot's Spire'	7 Gal.	8	EA	@		

20	*Muhlenbergia Capillaris*	3 Gal.	33	EA	@		
21	*Panicum Virgatum* 'Shenendoah'	1 Gal.	28	EA	@		
22	*Schizachyrium Scoparium* 'Standing Ovation'	1 Gal.	246	EA	@		
23	*Spartina Bakeri*	4" Pot	24	EA	@		
24	Seed Mix	Seed	32,585	SF	@		
25	Sod/Fescue	Sod	53,890	SF	@		
26	Triple Hammered Hardwood Mulch	(3" Depth)	44	CY	@		
27	Erosion Control North American Green, S-75 OR EQUAL	N/A	14,659	SF	@		

Subtotal $ _____

IRRIGATION

1	Irrigation Systems/ Irrigation Meters	1	LS	@		

Subtotal $ _____

ALTERNATE #1 (ASPHALT PEDESTRIAN TRAIL)

1	10' Pedestrian Trail Asphalt in lieu of concrete	26,718	SF	@		

Subtotal $ _____

ALTERNATE #2 (COLLEGE STREET STREETSCAPE)

1	Concrete Removal	1	LS	@		
2	4" Concrete Broom Finish Walks	1	LS	@		
3	6" Curb & 24" Gutter	234	LF	@		
4	ADA Accessible Ramps	1	LS	@		
5	City Standard Decorative Street Light	4	EA	@		
6	Thermo Plastic Crosswalk	1	LS	@		

Subtotal $ _____

ALTERNATE #3 (ARCH STREET STREETSCAPE)

1	Concrete Removal	1	LS	@		
2	4" Concrete Broom Finish Walks	1	LS	@		
3	6" Curb & 12" Gutter	269	LF	@		
4	ADA Accessible Ramps	1	LS	@		
5	Thermo Plastic Crosswalk	1	LS	@		

Subtotal $ _____

TOTAL BASE BID (DIVISION 1) _____

TOTAL ALTERNATE (ASPHALT PED. TRAIL) #1 _____

TOTAL ALTERNATE (COLLEGE STREET) #2 _____

TOTAL ALTERNATE (ARCH STREET) #3 _____

DIVISION 2
PEDESTRIAN BRIDGE / BRIDGE ABUTMENTS & COLUMNS

PEDESTRIAN BRIDGE CONSTRUCTION						
1	Project Setup & Mobilization	1	LS	@	_____	_____
2	Rough/Fine Grading	1	LS	@	_____	_____
3	Manufactured Bridge	1	LS	@	_____	_____
4	Bridge Installation	1	LS	@	_____	_____
5	Abutment & Column Installation	1	LS	@	_____	_____
6	Abutment & Column Stone Veneer	1	LS	@	_____	_____
7	Scour Protection	1	LS	@	_____	_____

TOTAL BASE BID (DIVISION 2) _____

BID SUMMARY

DIVISION 1

SUB-TOTALS

1	General Conditions	**Subtotal $** _____
2	Demolition - Earthwork	**Subtotal $** _____
3	Erosion Control/Drainage	**Subtotal $** _____
4	General Construction	**Subtotal $** _____
5	College Street Streetscape	**Subtotal $** _____
6	Arch Street Streetscape	**Subtotal $** _____
7	Electrical	**Subtotal $** _____
8	Landscape	**Subtotal $** _____
9	Irrigation	**Subtotal $** _____

TOTAL BASE BID $ _____

TOTAL ALTERNATE (ASPHALT PED. TRAIL) #1 $ _____

TOTAL ALTERNATE (COLLEGE STREET) #2 $ _____

TOTAL ALTERNATE (ARCH STREET) #3 $ _____

DIVISION 2

SUB-TOTALS

1	Pedestrian Bridge Construction	**Subtotal** $ _____

TOTAL BASE BID $ _____

COMBINED DIVISIONS

TOTAL PRICE IF BOTH DIVISIONS AWARDED $ _____

Contractor Signature_____

Notes: Add alternates are subject to dismissle from bid package before or after project has been awarded due to total cost of project and funds available.

Quantities under the Lump Sum Items are shown for comparison and reference purposes only. Contractor is to determine the exact quantities required for the proper construction of the project prior to bidding. Lump Sum Items will therefore not be individually measured for payment. The quantities listed under the Unit Price Items are considered an allowance if those items are required. Any quantities not used will not be paid and any excess quantities required must be approved by the City prior to the work. Unit Costs for either Lump Sum or Unit Price Items may be used in the addition or deletion of work at the Owner's discretion if site conditions vary from those expected.

EXHIBIT B
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

Prior to execution of Contract and 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:# 864-596-2365
Email: cwright@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 in-surance 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 en-dorsed 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 be-
half 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/Ex-cess 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

Builder's Risk Insurance: If Owner provides Builder's Risk Insurance, Con-tractor is responsible for its pro-rata share of the $_____ dollar deductible.

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.

EXHIBIT C

South Carolina's Immigration Reform Act

Contractor agrees 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 Identification 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. Contractor certifies that it will comply with the Statute in its entirety and agrees to provide the Owner with documentation to establish applicability of the Statute to the Contractor and compliance by same.

Furthermore, The City of Spartanburg will have the right to request and receive legal status verification within five working days of any person working under Contract with Contractor or Sub Contractor. Failure to comply can result in the immediate cancellation of the contract.

_____ Contractor

_____ Subcontractor

certifies that it is compliant with the South Carolina Eligible Immigration Reform Act by either registering and participating in the Federal Work Authorization Program (E-Verify) pursuant to the Statute or employing 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 Identification Card from another state which has been deemed by the Director of the Department of Motor Vehicles to have requirements at least as strict as South Carolina. By the signature below, the Contractor (Subcontractor, etc.) agrees to provide the City with documentation to establish the applicability of the Statute to the Contractor and by the signature below, certifies that it is compliant with the Statute with all regards. This certification and the requirements of this Statute require that the Contractor verify the hiring eligibility of its employees before and during the Project.

_____
Name of Contractor (Subcontractor, etc.)

By_____

Its_____

Date_____

EXHIBIT D

City of SPARTANBURG south carolina
www.cityofspartanburg.org

BUSINESS LICENSE APPLICATION

Business Licenses expire December 31st each year.

City of Spartanburg | PO Drawer 1749 | Spartanburg, SC 29304
Phone: (864) 596-2055 Fax: (864) 596-2424

For Calendar Year
2016

License Number (office use only):

1. Location Information (If outside City limits, write OUTSIDE):

Physical street address:

Phone: email:

3. Describe business activity:

4. NAICS code (required; see back):

5. Rate Class (office use only):

2. Mailing Information:

Legal/Organization name:

DBA/name on signs:

Mailing address:

6. Applying for:

☐New (Open ___/___/___) ☐Renewal ☐Closed (___/___/___)

7. Ownership:

☐Individual ☐Partnership ☐Corporation ☐Other: _____

Minority/woman owned: ☐No ☐Yes

8. Federal Employer Identification Number or Social Security Number:

9. Will alcoholic beverages be served/consumed on site? ☐No ☐Yes (If yes, owner must first complete background check with Spartanburg Public Safety Dept.)

10. Gross Revenue (Choose one section only: a, b, or c. Nonresident businesses report gross revenue earned within the City limits only):

a. New Business

1. Total estimated gross revenue for the balance of the year ending December 31st (Round up to a whole thousand) a.1. $ _____

b. Second Year Business (First time renewing; Line 9.b.1. adjusts overestimated or underestimated revenue from last year)

1. Actual gross revenue from last year: _____ - estimated revenue from last year: _____ = b.1. _____ (indicate + or -)

2. **Resident business only:** Allowable ordinance deductions from last year, if applies (see back). b.2.- _____

3. **Resident business:** use annualized gross revenue from last year (see back); **Nonresident business:** use actual. b.3.+ _____

4. Total adjusted gross revenue (Line b.3. minus Line b.2. plus or minus Line b.1. Round up to a whole thousand). b.4. $ _____

c. Established Business or Nonresident Contractor

1. Gross revenue from last calendar year (or YTD City revenue for Nonresident Contractor). c.1. _____

2. **Resident business only:** Allowable ordinance deductions from last year, if applies (see back). c.2.- _____

3. Total adjusted gross revenue (Line c.1. minus Line c.2. Round up to a whole thousand). c.3. $ _____

11. Calculation of fee (New Businesses call for Additional Fee and Base Fee amounts):

a. Base Fee: Covers the first $2,000 in gross revenue. All businesses must pay at least the Base Fee on right. $ _____ Base a. $ _____

b. Total revenue from Section 10: _____ - $2,000 = _____ ÷ 1,000 = _____

c. Addt'l Fee: Per $1,000 in gross revenue. Multiply final amount on line 11.b. by the Addt'l Fee on right. $ _____ Addt'l c.+ _____

d. Penalties: Operation without a current license (see back). **Minimum is $25.00.** Add 11.a. and 11.c and multiply by: _____% d.+ _____

e. Total Due: Add 11.a., 11.c., and 11.d. e. $ _____

12. Commercial Property class only: Include rental property street address and Tax Map Number (attach list if needed):

Address: Tax Map #:

13. Name, title, and ID for each owner/partner/officer (everyone authorized to make license changes/access financial information; attach list if needed):

Name: Title: State: DL or ID #:

Name: Title: State: DL or ID #:

This is to certify the above is a true statement of the business done or transacted at or through the above location. The information reported corresponds with the books and records of the business and with the report of same filed, or to be filed, for the corresponding period with the **SC DEPARTMENT OF REVENUE** or **INSURANCE COMMISSIONER** and with the **US INTERNAL REVENUE SERVICE**. The exact amount returned as **TOTAL GROSS REVENUE** from this business or profession as reported herein is true and correct. I am familiar with the City ordinance providing for penalties and revocation of this license for making false or fraudulent statements in this application. The books of this business are available for inspection by authorized agent of the City. The issuance of a business license is conditional upon compliance with the ordinances of the City of Spartanburg and failure to so comply may result in revocation of the license in addition to other remedies.

Printed Name | Phone | Signature of preparer | Date

INSTRUCTIONS FOR FILING A BUSINESS LICENSE APPLICATION

General Guidelines:

Every person engaged in or intending to engage in any business, in whole or in part, in the City of Spartanburg shall file with the Finance Office a Business License Application form, under oath, for a license to engage in such business. All businesses must obtain a business license prior to beginning operation inside the City limits.

- Print or type all information clearly. Complete all blank areas and sign the application to avoid delays in processing. This application will *not* be processed unless all requested information is provided and is legible.
- Verify all pre-printed information and correct any errors.
- Resident businesses and Nonresident businesses reporting on previous year gross revenue must apply for their license renewals and pay the license fee in full by the last business day in February to avoid penalties. Nonresident Contractors reporting on year-to-date (YTD) City revenue must apply for their license renewals and pay the license fee prior to beginning work for the year. Business License Adjustment forms should be used thereafter to upgrade their licenses for additional revenue/ contracts/ jobs/ work/ change orders received within the same calendar year. **Businesses that fail to purchase the license after formal notification shall be subject to a Municipal Summons.**

Specific Notes by Section:

2. The Legal/organization name is usually a corporation, partnership, or owner's name (individuals should list last name first). The name that you are Doing Business As (DBA) appears on signage, vehicles, uniforms, business cards, and online/ phone book listings.

4. The six-digit North American Industry Classification System (NAICS) Code used on this application should match the NAICS code used on your Federal Tax return if you are a Resident Business. Nonresident Businesses should use the NAICS code that reflects the majority of their activities within the City.

6. If you are opening a new business, please list the estimated opening date. If you have closed, please list the closing date and return form.

10. Businesses located inside City limits must report total gross revenue, whether derived from inside or outside of the City limits. Be certain that the reported gross revenue correspond with the records of the business and with the return filed for the corresponding year with the SC Department of Revenue or Insurance Commissioner and the US Internal Revenue Service. Businesses located outside City limits report revenue earned inside the City limits only.

    Deductions from your gross revenue are allowed if you are a resident business that pays a business license tax to another municipality. The deduction is limited to the gross revenue that was reported on that license. Satisfactory proof of this deduction must be attached to this application before the deduction will be allowed. A business may deduct sales, use, or excise taxes if these amounts are included in the total gross revenue. Neither allowable ordinance deductions for resident businesses or adjustments for second year businesses may reduce the renewal license fee to an amount lower than the base fee. All businesses must pay at least the base fee.

    As stated in Section 4b of the Business License Ordinance, the business license fee is based on gross revenue for the preceding calendar year or, in the case of Second Year businesses that were open for less than a full year during the first year of operation, on a twelve-month projected revenue based on the monthly average for the preceding calendar year.

    License fees are not prorated for temporary or seasonal businesses or businesses operating for a portion of the year, because the license fee calculation is based on gross revenue.

11. Penalties are calculated at a percentage of the license fee, however, **the minimum penalty is $25.00:**

    Penalties for New Businesses estimating gross revenue and Nonresident Contractors using YTD City revenue:
    - 15% if not filed prior to beginning operation/ work in the City of Spartanburg
    - 5% additional for each month thereafter, until paid

    Renewal Penalties for Resident Businesses and Nonresident Businesses using previous year gross revenue:
    - 5% if not filed or postmarked by the last day of February
    - 15% if not filed or postmarked by the last day of March
    - 5% additional for each month thereafter, until paid (i.e. May = 20%, June = 25%, July = 30%, etc.)

For help completing this form, please call the City of Spartanburg Finance Office at (864) 596-2055 or visit us at 145 W Broad Street.

Applications and checks may be mailed to:

City of Spartanburg
Business Licensing
PO Drawer 1749
Spartanburg, SC 29304

EXHIBIT E

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	$	

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