THE CITY OF CALHOUN GEORGIA

DATE: March 19, 2024

TO: General Contractors

SUBJECT: **Request for Proposal (RFP) #2024-00925 Installation of the Second Pedestrian Bridge at Palmer Memorial Park, Calhoun Recreational Department**

You are invited to submit a proposal for the "RFP #2024-00925 Installation of Second Pedestrian Bridge at Palmer Memorial Park, Calhoun Recreational Department located at 601 River Street. The project consists of unloading and installing a pre-fabricated steel pedestrian bridge, constructing abutments with helical piles, pouring bridge decking, pouring concrete aprons up to existing paved surfaces, placement of bollards, light grading, survey staking, crane rental, erosion control BMPs, and any other ancillary tasks necessary to complete the project. The contractor will not be responsible for furnishing the 88-foot long steel bridge. It was previously procured under a separate contract, has already been fabricated by Pioneer Bridges (Fort Payne, AL), and would be ready for delivery with 2-weeks notice.

There will be an optional pre-proposal site visit for this project. Tuesday, April 2, 2024, 2:00 P.M. located at the Billy Bearden Recreation Center, 601 South River Street, Calhoun, Georgia 30701.

Inquiries regarding this request for proposal (RFP) should be made to Margaret Boyd, Director of Purchasing, (706) 602-5680 or e-mail: maboyd@calnet-ga.net
Technical questions may be directed to Kim Townsend Director of Recreational Department, (706) 602-5950, email: ktownsend@calnet-ga.net

The Request for Proposal (RFP) documents may be obtained at Georgia Procurement Registry or The City of Calhoun Website or via written request to e-mail: purchasing@calnet-ga.net. Include your written request with your company name, address, point of contact, fax, and phone number.

Attached hereto are the general layout and erosion control plans, stream buffer variance permit, geotechnical subsurface investigation report, abutment design, and approved bridge fabrication submittal.

The written requirements contained in this Request for Proposal (RFP) shall not be changed or superseded except by a written addendum from the City of Calhoun Purchasing Division of the Finance Department. Failure to comply with the written requirements for this (RFP) may result in the rejection of the submittal by the city.

Submittals are to be sealed, marked with the offeror's name and address, and labeled:
Request for Proposal (RFP) #2024-00925 Installation of the Second Pedestrian Bridge at Palmer Memorial Park, Calhoun Recreational Department

, and delivered to:

The City of Calhoun Utilities Building
Attn: Margaret Boyd, Director of Purchasing
700 West Line Street
Calhoun, Georgia 30701

Not later than **3:00 P.M. EST, Wednesday, April 24, 2024**

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SECTION I - REQUEST FOR PROPOSAL SUBMISSION INSTRUCTIONS

ALL DOCUMENTS RECEIVED WILL BECOME A PART OF THE OFFICIAL CONTRACT FILE AND MAY BE SUBJECT TO DISCLOSURE.

A complete signed price proposal must include the documents listed below:

PROPOSAL FORMAT: Offerors are expected to examine the supporting documents, price schedule, and all instructions. Failure to do so will be at the offeror's risk. Each offeror shall furnish the information required by the solicitation. ***The proposal, specifications, and price schedule must be signed by an officer of the company, who is legally authorized to enter into a contractual relationship in the name of the offeror.***

☐ **COVER LETTER:** A brief cover letter of introduction and interest.

☐ **TABLE OF CONTENTS**

☐ **ACKNOWLEDGMENT OF ADDENDA:** Include the completed Acknowledgement of Addenda form, from Section V, part A of this RFP.

☐ **GEORGIA SECURITY & IMMIGRATION COMPLIANCE (GSIC) ACT AFFIDAVIT:** Include a notarized copy of the GSIC Affidavit form for the contractor and all sub-contractors, from Section V, part B of this RFP.

☐ **TECHNICAL DOCUMENTS:** Please include from Section III

☐ **PRICE AND PERFORMANCE PROPOSAL FORM:** Please include the completed Price Proposal Form from Section V-C of this RFP in a separately sealed paper copy of Section V-C AND Price and Proposal Form, in order that price may be evaluated separately. **DO NOT** include pricing or fees in any other format. Proposals that fail to keep pricing/fees confined to the separately sealed paper copy **may be rejected**.

☐ **WARRANTY:** The offeror shall provide at least a one-year warranty for workmanship and materials used on the project.

☐ **REFERENCES:** Include a minimum of three references for contracts of a similar nature, preferably public sector references. Include the name, address, telephone number, point of contact, and description of the contract for each reference.

OPTIONAL DOCUMENTS CHECKLIST: Section V, part A

☐ **Bidder's List Application –** If you do not have a vendor number, please contact the purchasing department for a packet by email at purchasing@calnet-ge.net

SUBMITTAL FORMAT: ALL bid copies must be submitted in a sealed envelope or container with the **OUTERMOST** Container stating the address, telephone number, the RFP number, and title **(**RFP #2024-00925 Installation of Second Pedestrian Bridge at Palmer Memorial Park, Calhoun Recreational Department**)**. Also, please include your City of Calhoun Vendor Number.

☐ **One (1) Paper Copy of the Complete Signed Proposal WITHOUT PRICING**

☐ **One (1) Separately Sealed paper copy of section V-C Price and Performance Proposal Schedule**
(MUST BE SUBMITTED SEPARATELY IN A SEALED ENVELOPE)

ALL FILES SUBMITTED ON USB FLASH DRIVE MUST BE IN A SINGLE PDF FILE.

REQUEST FOR PROPOSAL
RFP #2024-00925

SECTION II - REQUEST FOR PROPOSAL OVERVIEW AND PROCEDURES

A. INTRODUCTION AND PURPOSE

The City of Calhoun is requesting proposals for the "RFP #2024-00925 Installation of the Second Pedestrian Bridge at Palmer Memorial Park, Calhoun Recreational Department" located at 601 River Street, Calhoun, GA 30701 in accordance with the attached specifications from responsible vendors.

B. RFP TIMETABLE

The anticipated schedule for the RFP is as follows:

RFP Available……Tuesday, March 19, 2024
Pre-Proposal Site Visit (optional) ……Tuesday, April 2, 2024, 2:00 PM, EST
Deadline for submission of questions ……Wednesday, April 17, 2024
Submittal deadline ……Wednesday, April 24, 2024, 3:00 PM, EST
Proposal Valid Until: ……Monday, June 24, 2024

C. CONTACT INFORMATION

The contact person for this RFP is Margaret Boyd, Director of Purchasing, (706)602-5680 or email: maboyd@calnet-ga.net. Technical questions may be directed to Kim Townsend, Director of the Recreation Department, (706)602-5950, or email: ktownsend@calnet-ga.net

Offerors are encouraged to contact only the contact persons stated above to clarify any part of this RFP. Any such unauthorized contact shall not be used as a basis for responding to this RFP and also may result in the rejection of the Offeror's submittal.

D. MINIMUM PROPOSAL ACCEPTANCE PERIOD

Proposals shall be valid and may not be withdrawn for a period of sixty (60) days from the date specified for receipt of proposals.

E. ADDITIONAL INFORMATION/ADDENDA

The City of Calhoun will issue responses to inquiries and any other corrections or amendments it deems necessary in written addenda issued prior to the proposal due date. Offerors should not rely on any representations, statements, or explanations other than those made in this RFP or in any addendum to this RFP. Where there appears to be a conflict between the RFP and any addenda issued, the last addendum issued will prevail.

Offerors must acknowledge any issued addenda. Proposals which fail to acknowledge the Offeror's receipt of any addendum will result in the rejection of the proposal if the addendum contained information which substantively changed the Owner's requirements.

Offerors who obtain this Request for Proposal from the Georgia Procurement Registry or from sites are **advised to re-visit the above websites to obtain any addenda which may be issued prior to the proposal closing date.** The City of Calhoun assumes no responsibility for Offerors' failure to acknowledge any addenda issued.

F. LATE PROPOSALS, WITHDRAWALS, MODIFICATIONS AND REJECTIONS

Proposals shall not be modified, withdrawn, or canceled by the Offeror for a period of **sixty (60) days** following the time and date designated for the receipt of proposals, and each Offeror so agrees in submitting his proposal. Negligence on the part of the Offeror in the preparation of his proposal shall not be grounds for the modification or withdrawal of a proposal after the time set for proposal closing. Proposals received after the proposal due date and time are late and will not be considered. Modifications received after the proposal due date are also late and will not be considered.

G. PROPOSAL CLOSING

Proposal schedule prices will not be opened or read aloud publicly. A list of names of firms providing proposals may be obtained from Georgia Procurement Registry or The City of Calhoun via email request to e-mail: The City of Calhoun purchasing@calnet-ga.net after the proposal due date and time stated herein a tabulation of prices may be obtained upon award.

H. NON-COLLUSION AFFIDAVIT

By submitting a proposal, the Offeror represents and warrants that such proposal is genuine and not sham or collusive or made in the interest or on behalf of any person not therein named and that the Offeror has not directly or indirectly induced or solicited any other Offeror to put in a sham proposal, or any other person, firm or corporation to refrain from proposing and that the Offeror has not in any manner sought by collusion to secure to that Offeror any advantage over any other Offeror.

By submitting a proposal, the Offeror represents and warrants that no official or employee of The City of Calhoun has, in any manner, an interest, directly or indirectly in the proposal or in the contract which may be made under it, or in any expected profits to arise therefrom.

I. GEORGIA SECURITY AND IMMIGRATION COMPLIANCE ACT AFFIDAVIT

By submitting a proposal and executing the attached Affidavits, the Offeror verifies its compliance with O.C.G.A. §13-10-91. The Offeror further agrees to maintain records of such compliance and shall provide a copy of each such verification to The City of Calhoun, at the time the subcontractor(s) is retained to perform such services.

J. COST INCURRED BY OFFERORS

All expenses involved with the preparation and submission of proposals to The City of Calhoun, or any work performed in connection therewith shall be borne by the Offeror(s). No payment will be made for any responses received or for any other effort required of or made by the Offeror(s) prior to the commencement of work as defined by a contract approved by the governing body of The City of Calhoun.

K. EQUAL OPPORTUNITY POLICY STATEMENT

It is the policy of The City of Calhoun government that no person or business shall be excluded from participation, denied the benefits of, or otherwise discriminated against in relation to the award and performance of any contract or subcontract on the grounds of race, color, creed, national origin, age, or sex.

L. HOLD HARMLESS AND INDEMNIFICATION

The Offeror agrees, insofar as it legally may, to indemnify and hold harmless The City of Calhoun, its officers, employees, and agents from and against all loss, costs, expenses, including attorneys' fees, claims, suits, and judgments, whatsoever in connection with injury to or death of any person or persons or loss of or damage to property resulting from any and all operations performed by Offeror, its officers, employees, and agents under any of the terms of this contract.

M. SITE VISIT:

Offerors will need to attend the mandatory site visit. To inspect the site where services are to be performed, the attached building assessments, and to satisfy themselves regarding all general and local conditions that may affect the cost of contract performance, to the extent that the information is reasonably obtainable. In no event, shall failure to inspect the site constitute grounds for a claim after contract award.

N. AWARD OF CONTRACT

This is a past performance/technical/price trade-off source selection in which competing Offeror's past and present performance history and technical ability will be evaluated on a basis approximately equal to price. The award will be made to the responsible Offeror whose proposal represents the best value after evaluation in accordance with the factors listed in Section IV herein. The City of Calhoun may reject any or all proposals if such action is in The City of Calhoun's interest.

O. QUALIFICATION OF OFFERORS

The City of Calhoun may make such reasonable investigations as deemed proper and necessary to determine the ability of the Offeror to perform the work and the Offeror shall furnish to The City of Calhoun all such information and data for this purpose as may be requested. The City of Calhoun reserves the right to reject any proposal if the evidence submitted by, or investigations of, such Offeror fails to satisfy The City of Calhoun that such Offeror is properly qualified to carry out the obligations of the contract and to complete the work contemplated therein.

The City of Calhoun contractors/vendors must have a current The City of Calhoun business license if they are physically located in The City of Calhoun or if they perform a service in The City of Calhoun.

Proposals from any Offeror that is in default on the payment of any taxes, license fees, or other monies due to The City of Calhoun will not be accepted.

P. ALTERNATE PROPOSALS

Alternate proposals or proposals that deviate from the requirements of this solicitation will not be considered. Offerors shall not insert in their proposal any written statement which will have the effect of making any material change or changes in the Scope of Services or in any contract between the parties covering subject matter thereof.

Q. OPEN RECORDS

In accordance with OCGA Section 50-18-72(a)(34) Any trade secrets obtained from a person or business entity that are required by law, regulation, bid, or request for proposal to be submitted to an agency. **An entity submitting records containing trade secrets that wishes to keep such records confidential under this paragraph shall submit and attach to the records an affidavit affirmatively declaring that specific information in the records constitute trade secrets pursuant to Article 27 of Chapter 1 of Title 10**. If such entity attaches such an affidavit, before producing such records in response to a request under this article, the agency shall notify the entity of its intention to produce such records as set forth in this paragraph. If the agency makes a determination that the specifically identified information does not in fact constitute a trade secret, it shall notify the entity submitting the affidavit of its intent to disclose the information within ten days unless prohibited from doing so by an appropriate court order. In the event the entity wishes to prevent disclosure of the requested records, the entity may file an action in superior court to obtain an order that the requested records are trade secrets exempt from disclosure. The entity filing such action shall serve the requestor with a copy of its court filing. If the agency makes a determination that the specifically identified information does constitute a trade secret, the agency shall withhold the records, and the requester may file an action in superior court to obtain an order that the requested records are not trade secrets and are subject to disclosure;

SECTION III - SCOPE OF SERVICES

A. DESCRIPTION OF PROJECT:

The City of Calhoun wishes to obtain a qualified contractor for the purpose of installing a pre-fabricated steel, pedestrian bridge over Oothkalooga Creek with the responsibilities of coordinating, managing, and implementing construction in an acceptable and safe manner. The location of the project is depicted in the attached General Layout and Erosion Control Plans, but can be generally characterized as the southeast corner of the recreational park off River Street.

Furthermore, the project (at a minimum) would consist of renting a crane, unloading and installing a pre-fabricated steel pedestrian bridge, constructing concrete abutments with helical piles on the south end as designed by the structural engineer (see exhibits), pouring and finishing the 4000 psi concrete decking with steel reinforcement, pouring concrete aprons (with minimum of 4" GABC) up to existing paved surfaces, placement of bollards, light grading, survey staking, erosion control BMPs, and any other ancillary tasks necessary to complete the project.

The contractor will not be responsible for furnishing the 88-foot long steel bridge with formed fitted galvanized composite floor deck. It was previously procured under a separate contract, has already been fabricated by Pioneer Bridges (Fort Payne, AL), and would be ready for delivery with 2-weeks notice. The attached drawing specifically states which items (setting plates, PTFE pads, etc.) will be delivered with the structure. After the concrete decking has cured, an appropriate sealer should be field applied.

It's extremely important that all interested Contractors carefully examine the attached supporting documents/exhibits to better understand site conditions, the design, and the expectations for construction. After examining the entire RFP, a proposal shall be provided that covers the total cost of all personnel, equipment, tools, materials, supervision, and other items or tasks necessary to provide a functional, aesthetically-pleasing final product that the community can safely enjoy.

ADA Compliance: The structure shall be suitable for use by all citizens and comply with the Americans with Disabilities Act (ADA).

B. INSURANCE REQUIREMENTS:

Unless otherwise approved, all Contractors/Vendors shall be required to provide proof of insurance in the following amounts and shall confirm all subcontractors introduced to the property have adequate coverage.

1.	Commercial General Liability:	
a.	Per Occurrence:	$1,000,000
b.	General Aggregate:	$2,000,000

c. Products/Completed Operations Aggregate $2,000,000

2. Commercial Automobile Liability (Even if no autos are owned, coverage for hired and non-owned automobiles must be provided):

a. Combined Single Limit: $1,000,000

3. Workers' Compensation: Statutory

Employers' Liability:

Each Accident	$1,000,000
Disease – Each Employee	$1,000,000
Disease – Policy Limit	$1,000,000

4. Umbrella Liability:

a. Per Occurrence: $1,000,000

b. General Aggregate: $1,000,000

Summary of Endorsements that must be provided with Acord 25 Certification of Insurance for compliance verification.

General Liability:

Additional Insured including ongoing and completed operations – ISO policy forms CG 20 10 04 13 AND CG 20 37 04 13 (or equivalent)

Waiver of Subrogation – ISO policy form CG 24 04 05 09 (or equivalent)

Primary and Non-contributory – ISO policy form CG 20 01 04 13 (or equivalent)

Commercial Automobile:

Additional Insured

Waiver of Subrogation

Workers' Compensation:

Waiver of Subrogation

The insurance company will only be accepted if it is in good standing within the state of Georgia through the Insurance Commissioner's office. <u>It must also be rated "A" or better with AM Best Company.</u>

A current certificate of insurance shall be provided from the agent, listing the City of Calhoun as the certificate holder and an additionally insured party. We require 30 days prior notice of cancellation to be shown on the certificate.

C. COST INCURRED BY OFFERS/BONDING REQUIREMENTS:

All expenses involved with the preparation, general compliance, and submission of proposals to the City of Calhoun, or any work performed in connection therewith shall be borne by the Offeror(s). No payment will be made for any responses received or for any other effort required of or made by the Offeror(s) prior to the commencement of work as defined by a contract approved by the governing body of Calhoun. Furthermore, all ancillary tasks or related expenses that occur after contract approval such as bonding, obtaining proper insurance coverage, project management, overhead expenses, etc. should be incorporated into the Offeror's proposal.

1. **Bid/Proposal Bond**: All proposals for the general contract shall be accompanied by a certified check or bid bond made payable to, in favor of, and for the protection of the City of Calhoun, written preferably in the AIA format in an amount not less than five percent (5%) of the contractor's total base proposal. As required in O.C.G.A § 36-91-2(3), the bid/proposal bond should be issued by a good and sufficient surety… generally listed on the U.S. Treasury 570 Circular with at least an "A" financial strength rating from A.M. Best and authorized to transact business in the state where the project is located.

2. **Performance and Payment Bonds**: If awarded the project, the general contractor must provide 100% Payment and Performance Bonds made payable to, in favor of, and for the protection of the City of Calhoun, written preferably in the AIA format in an amount equal to the full contract amount, which the City may in good faith contract with another party to perform the work covered by said proposal and cover legitimate project debts upon failure of the general contractor to comply with any or all of the foregoing requirements within the time specified. As required in O.C.G.A § 36-91-2(10,11), the payment and performance bonds should be issued by a good and sufficient surety… generally listed on the U.S. Treasury 570 Circular with at least an "A" financial strength rating from A.M. Best and authorized to transact business in the state where the project is located.

All bidding and bonding shall adhere with the provisions of Georgia Code Title 36 Local Government, Public Works Bidding and Contracts, regardless of whether they are or are not specified elsewhere in the RFP.

Surety on Federal Treasury's list of approved sureties (http://www.fms.treas.gov/c570/c570.html#Certified_Companies); bid bond amount within underwriting limit and surety authorized to do business in Georgia

D. CONTRACTOR'S INVOICE

a. The Contractor shall prepare and submit invoices to the Finance Office address specified on individual orders. If the invoice does not comply with these requirements, the Finance Office will return it with the reasons why it is not a proper invoice. A proper invoice must include the items listed below.

(i) Name and address of the Contractor.

(ii) Invoice date and invoice number. (The Contractor should date invoices as close as possible to the date of the mailing or transmission.)

(iii) Purchase order number for supplies delivered or services performed.

(iv) Description, quantity, unit of measure, unit price, and extended price of supplies delivered or services performed.

(v) Shipping and payment terms (e.g., shipment number and date of shipment, discount for prompt payment terms).

(vi) Name and address to whom payment is to be sent.

(vii) Name (where practicable), title, phone number, and mailing address of the person to notify in the event of a defective invoice.

(viii) Any other information or documentation required by the contract (e.g., evidence of shipment).

(ix) Invoice must be sent to Attention: Accounts Payable Office located at 700 West Line Street Calhoun, Georgia 30701

b. In the event orders are made via monthly or period purchase orders, the contractor may provide a summary invoice for all deliveries made during a billing period, identifying the delivery tickets covered therein, and stating their total dollar value. A summary invoice shall be supported by receipt copies of the delivery tickets. Delivery tickets or sales slips shall contain:

(i) Name of supplier

(ii) Purchase Order number

(iii) Ship to Department and Address

(iv) Description, Quantity, unit price, and extension of each item.

(v) Date of delivery or shipment

SECTION IV - EVALUATION AND SELECTION PROCESS

The proposals will be evaluated against the terms of the RFP by the Owner based on Contractor's understanding and perceived coherence to deliver the desired end-product as demonstrated by their submitted response, total base cost with any suggested upgrades (if applicable), experience/references, company's geographical proximity to the job site, and warranty information. The purpose of the evaluation criteria is to determine the most beneficial offering for the Owner. Evaluation criteria and point of allocation are defined below. If not specifically requested elsewhere in this RFP, Contractor shall provide sufficient data and product information for each category below to facilitate RFP scoring.

Item Description

1. Content and Appearance of Submittal *(5 Points)*
2. Total Installation Cost *(50 Points)*

   Base cost shall cover all labor, equipment, and material costs (with exception to steel bridge) to ensure a complete installation in accordance with manufacturer's recommendations and City's requirements. If applicable, the cost for any add-on or upgrade features to the bridge should be included separately from the base cost and presented clearly for evaluation.
3. Experience, References, and Geographical Proximity *(35 Points)*
4. Warranty Information *(10 Points)*

SECTION V MANDATORY PROPOSAL FORMS:

MANDATORY SUBMITTAL

A: ADDENDA ACKNOWLEDGEMENT

The Offeror has examined and carefully studied the Specifications and the following Addenda, receipt of all of which is hereby acknowledged:

Addendum No.	_____	dated	_____	Acknowledgement	_____
Addendum No.	_____	dated	_____	Acknowledgement	_____
Addendum No.	_____	dated	_____	Acknowledgement	_____
Addendum No.	_____	dated	_____	Acknowledgement	_____

Offerors must acknowledge any issued addenda. Proposals which fail to acknowledge the Offeror's receipt of any addenda will result in the rejection of the proposal if the addenda contained information which substantively changes the Owner's requirements.

MANDATORY SUBMITTAL

SECTION V MANDATORY PROPOSAL FORMS:

B: GEORGIA SECURITY & IMMIGRATION COMPLIANCE (GSIC) AFFIDAVIT

The City of Calhoun and the Contractor agree that compliance with the requirements of O.C.G.A. -10-91, as amended, are conditions of this Agreement for the physical performance of services.

If employing or contracting with any subcontractor(s) in connection with this Agreement, Contractor further agrees:

(1) To secure from the subcontractor(s) an affidavit attesting to the subcontractor's compliance with O.C.G.A. § 13-10-91(b), as amended; such affidavit being in a form similar to and containing the same information as the form attached hereto; and

(2) To obtain such subcontractor affidavit(s) when the subcontractor(s) is retained. Contractor shall have such forms available for inspection and submit to the Owner, if so requested by the Owner.

The failure of Contractor to supply the affidavit of compliance at the time of the bid will be cause for the bid being deemed non-responsive. Failure of Contractor to continue to satisfy the obligations of O.C.G.A. § 13-10-91, as amended throughout the entire contract period shall constitute a material breach of the contract. Upon notice of such breach, Contractor shall be entitled to cure the breach within ten days, upon providing satisfactory evidence of compliance with the terms of this Agreement and State law. Should the breach not be cured, The City of Calhoun shall be entitled to all available remedies, including termination of the contract and damages.

SEE AFFIDAVITS ON FOLLOWING PAGE

MANDATORY SUBMITTAL

CONTRACTOR AFFIDAVIT & AGREEMENT UNDER O.C.G.A. § 13-10-91(b)(1)

By executing this affidavit, the undersigned contractor verifies its compliance with O.C.G.A. § 13-10-91, as amended, stating affirmatively that the individual, firm, or corporation which is engaged in the physical performance of services on behalf of The City of Calhoun, Georgia, has registered with, is authorized to use, and uses the federal work authorization program commonly known as E-Verify, or any subsequent replacement program, in accordance with the provisions and deadlines established in O.C.G.A. § 13-10-91, as amended.

Furthermore, the undersigned will continue to use the federal work authorization program throughout the contract period and the undersigned contractor will contract for the physical performance of services in satisfaction of such contract only with subcontractors who present an affidavit to the contractor with the information required by O.C.G.A. § 13-10-91(b). The contractor hereby attests that its federal work authorization user identification number and date of authorization are as follows:

_____ _____
Federal Work Authorization User Identification Number Date of Authorization

Name of Contractor: _____

Name of Project: _____

Name of Public Employer: The City of Calhoun

I hereby declare under penalty of perjury that the foregoing is true and correct.

Executed on____,_____, 2024 in_____,_____.

_____
Signature of Authorized Officer or Agent

_____
Printed Name and Title of Authorized Officer or Agent

SUBSCRIBED AND SWORN BEFORE ME ON THIS THE
____ DAY OF_____, 2024

_____
Notary Public
My Commission Expires:

SECTION V MANDATORY PROPOSAL FORMS:

MANDATORY SUBMITTAL

SEE SECTION III - SCOPE OF SERVICES AND TECHNICAL DOCUMENTS

C**:** PRICE AND PERFORMANCE PROPOSAL FOR RFP #2024-00925 Installation of Second Pedestrian Bridge at Palmer Memorial Park, Calhoun Recreational Department, Georgia

1. Proposed prepared based on City's RFP and all Supporting Documents: ☐YES ☐NO

2. Price and Performance Proposal Expires on_____day of_____, (2024)
(Prices must be held firm for a minimum of 60 days after submittal)

3. Total Cost $_____

4. Anticipated Start Date: _____ and Duration of Construction:____days

5. Offeror's Name: Company:

Contact: _____

Address: _____

_____

Phone: _____Fax:_____

Email: _____

_____ _____ _____

Authorized Representative/Title *(Print or type)* Signature Date

MANDATORY SUBMITTAL

SECTION V PROPOSAL FORM D:

Proposal of_____

(Hereinafter called "Offeror"), organized and existing under the laws of the State of

_____, ***doing business as***_____***.** In compliance with your RFP, the Offeror hereby proposes and agrees to perform and furnish all work for the requirement known as RFP #2024-00925 Installation of the Second Pedestrian Bridge at Palmer Memorial Park, Calhoun Recreational Department, Georgia**,** in strict accordance with the Proposal Documents, within the time set forth therein, and at the price proposed.

By submission of this Proposal, the Offeror certifies, and in the case of a joint Offer, each party thereto certifies as to its own organization that:

1. The Offeror has examined and carefully studied the Proposal Documents and the Addenda, receipt of all of which is hereby acknowledged in Section V-A.

2. The Offeror agrees that this proposal may not be revoked or withdrawn after the time set for the opening of proposals but shall remain open for acceptance for a period of sixty (60) days following such time.

Company:			
Contact:			
Address:			
Phone:		Fax	
Email:			

☐ ***By checking this box, I acknowledge that I have read all insurance requirements and will meet the requirements listed in*** RFP #2024-00925 Installation of the Second Pedestrian Bridge at Palmer Memorial Park, Calhoun Recreational Department, Georgia

Authorized Representative/Title *(Print or type)*	Signature	Date

SECTION V BID BOND E:

MANDATORY SUBMITTAL

BID BOND

STATE OF

GEORGIA

COUNTY OF

CLARKE

KNOW ALL MEN BY THESE PRESENTS, that we,_____, as Principal, and_____, as Surety, are held and firmly bound unto the City of Calhoun, Georgia in the sum of _____Dollars ($_____) lawful money of the United States of America, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, personal representatives, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted to the Owner a Bid for the construction of: Installation of the Second Pedestrian Bridge at Palmer Memorial Park, Calhoun Recreational Department" located at 601 River Street, Calhoun, GA 30701

NOW THEREFORE, the conditions of this obligation are such that if the Bid be accepted, the Principal shall, within ten days after receipt of conformed Contract Documents, execute a Contract in accordance with the Bid upon the terms, conditions and prices set forth therein, and in the form and manner required by the Contract Documents and execute sufficient and satisfactory separate Performance and Payment Bonds payable to the Owner, each in an amount of 100 percent of the total Contract Price, in form satisfactory to the Owner, then this obligation shall be void; otherwise, it shall be and remain in full force and effect in law; and the Surety shall, upon failure of the Principal to comply with any or all of the foregoing requirements within the time specified above, immediately pay to the aforesaid Owner, upon demand, the amount hereof in good and lawful money of the United States of America, not as a penalty, but as liquidated damages.

This bond is given pursuant to and in accordance with O.C.G.A. §36-91-1 et.seq. and all the provisions of the law referring to this character of bond as set forth in said Sections or as may be hereinafter enacted and these are hereby made a part hereof to the same extent as if set out herein in full.

SECTION VI - DOCUMENTS CHECK LIST:

MANDATORY PROPOSAL FORMS Offeror must complete, execute and include with the proposal the following mandatory documents:

☐ A. ADDENDA ACKNOWLEDGEMENT

☐ B. GEORGIA SECURITY & IMMIGRATION COMPLIANCE (GSIC) ACT AFFIDAVIT
CONTRACTOR AFFIDAVIT & AGREEMENT

☐ C. PRICE AND PERFORMANCE PROPOSAL - **Submit in separate sealed envelope**

☐ D. SIGNED PROPOSAL

☐ E. BID BOND

VII SUPPORTING DOCUMENTS

Supporting Document A:
General Layout and Erosion Control Plan

By Calhoun Engineering Department

GENERAL LAYOUT AND EROSION CONTROL PLAN
SECOND PEDESTRIAN BRIDGE AT PALMER MEMORIAL PARK
FOR THE CITY OF CALHOUN
GORDON COUNTY, GEORGIA

CITY OFFICIALS AND DEPARTMENTAL STAFF

MAYOR
JAMES F. PALMER Jr.

COUNCIL
AL EDWARDS.....MAYOR PRO TEM
JACKIE PALAZZOLO.....COUNCIL MEMBER
RAY M. DENMON.....COUNCIL MEMBER
ED MOYER.....COUNCIL MEMBER

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VICINITY MAP

N.T.S.

INDEX TO DRAWINGS

REVISED MARCH 2024

24-HOUR EMERGENCY CONTACT
EROSION SEDIMENTATION & POLLUTION CONTROL
KURT McCORD,
CITY OF CALHOUN
UTILITIES ENGINEERING
PHONE: (706) 602-6082

PREPARED BY:
THE CITY OF CALHOUN
UTILITIES ENGINEERING
CALHOUN, GA 30701

REVISION NO.	DESCRIPTION	DATE
1	MINOR UPDATES FOR INSTALLATION RFP	03-14-2024

GEORGIA REGISTERED No. PE35089 PROFESSIONAL ENGINEER KURT THOMAS McCORD

LEVEL II CERTIFIED DESIGN
PROFESSIONAL CERT. # 52026
EXPIRES 6/13/2025

CERTIFICATION STATEMENTS:

I CERTIFY THAT THE PERMITEE'S EROSION, SEDIMENTATION AND POLLUTION CONTROL PLAN PROVIDES FOR AN APPROPRIATE AND COMPREHENSIVE SYSTEM OF BEST MANAGEMENT PRACTICES REQUIRED BY THE GEORGIA WATER QUALITY CONTROL ACT AND THE DOCUMENT "MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA" (MANUAL) PUBLISHED BY THE STATE SOIL AND WATER CONSERVATION COMMISSION AS OF JANUARY 1 OF THE YEAR IN WHICH LAND DISTURBING ACTIVITY WAS PERMITTED. THE PLAN PROVIDES FOR THE SAMPLING OF THE RECEIVING WATER(S) OR THE SAMPLING OF THE STORM WATER OUTFALLS AND THAT THE DESIGNED SYSTEM OF BEST MANAGEMENT PRACTICES AND SAMPLING METHODS IS EXPECTED TO MEET THE REQUIREMENTS CONTAINED IN THE GENERAL NPDES PERMIT NO. GAR. 100001

"I CERTIFY UNDER PENALTY OF LAW THAT THIS DOCUMENT AND ALL ATTACHMENTS WERE PREPARED UNDER MY DIRECTION OR SUPERVISION IN ACCORDANCE WITH A SYSTEM DESIGNED TO ASSURE THAT QUALIFIED PERSONNEL PROPERLY GATHER AND EVALUATE THE INFORMATION SUBMITTED. BASED ON MY INQUIRY OF THE PERSON OR PERSONS WHO MANAGE THE SYSTEM, OR THOSE PERSONS DIRECTLY RESPONSIBLE FOR GATHERING THE INFORMATION, THE INFORMATION SUBMITTED IS, TO THE BEST OF MY KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT FOR KNOWING VIOLATIONS."

"I CERTIFY UNDER PENALTY OF LAW THAT THIS PLAN WAS PREPARED AFTER A SITE VISIT TO THE LOCATION DESCRIBED HEREIN BY MYSELF OR MY AUTHORIZED AGENT, UNDER MY DIRECT SUPERVISION."

KURT T. McCORD, P.E.	62026	08-13-2024
	LEVEL II CERTIFICATION NO.	EXPIRATION

DESIGN PROFESSIONAL 7-DAY VISIT CERTIFICATION:

DATE OF INSPECTION _____

I CERTIFY THE SITE IS IN COMPLIANCE WITH THE ES&PC PLAN ON THE DATE INSPECTED.

0000062026
KURT T. McCORD — CERTIFICATION #
GSWCC LEVEL II DESIGN PROFESSIONAL

INSPECTION REVEALED THE FOLLOWING DISCREPANCIES FROM THE EROSION ES&PC PLAN

_____

_____

_____

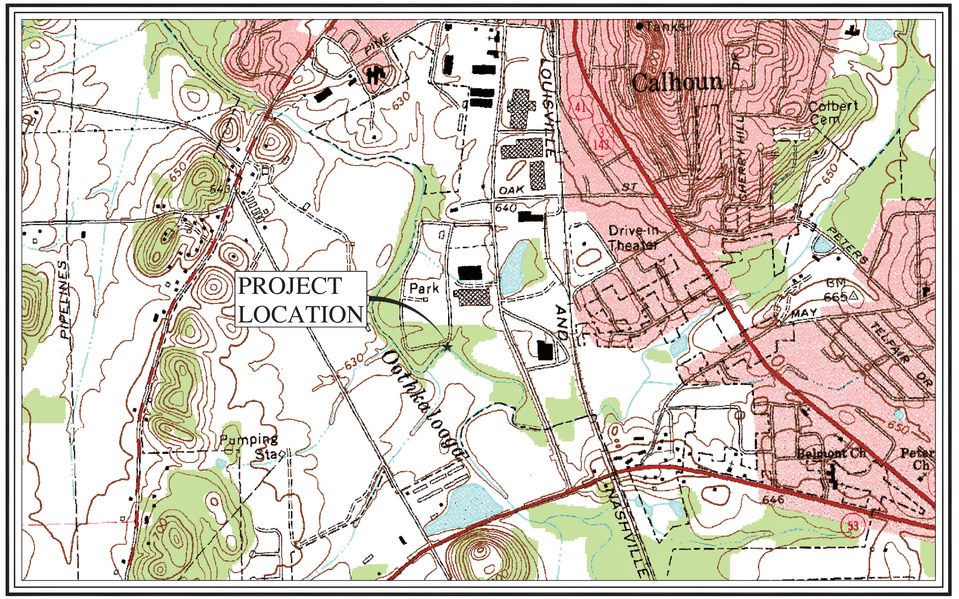
THESE DISCREPANCIES MUST BE ADDRESSED IMMEDIATELY AND A RE-INSPECTION SCHEDULED. WORK SHALL NOT PROCEED ON THE SITE UNTIL DESIGN PROFESSIONAL CERTIFICATION IS OBTAINED.

APPROX. STARTING DATE: MAY 2024

ITEM	DESCRIPTION	CONSTRUCTION ACTIVITY SCHEDULE	
		JUNE 2024	JULY 2024
1	CLEARING & GRUBBING, ACCESS PROVISIONS FOR HEAVY EQUIPMENT		
2	INITIAL PRE-CONSTRUCTION EROSION CONTROL BMPs		
3	INSTALLATION OF ABUTMENTS AND BRIDGE		
3	FINAL GRADING, SOIL STABILIZATION, PERMANENT GRASSING		

SCHEDULE NOTES:

1. SEDIMENT STRUCTURES SHALL BE INSTALLED PRIOR TO LAND DISTURBANCE (INCLUDING CLEARING AND GRUBBING).
2. IF CLEARING& GRUBBING PRECEDES CONSTRUCTION BY MORE THAN SEVEN DAYS, DISTURBED AREAS SHALL BE MULCHED AND CHECK DAMS INSTALLED IMMEDIATELY PROCEEDING THE LAND-DISTURBING ACTIVITY.
3. EROSION & SEDIMENT CONTROL STRUCTURES SHALL BE REMOVED ONCE "FINAL STABILIZATION" HAS BEEN ACHIEVED.
4. DESIGN PROFESSIONAL SHALL INSPECT THE INSTALLATION OF BMPS WITHIN 7 DAYS AFTER INITIAL CONSTRUCTION ACTIVITY BEGINS.



TOPOGRAPHIC MAP

N.T.S.

ABBREVIATION LIST

ACT. TILE	ACOUSTICAL TILE
ASPH.	ASPHALT
B.F.	BLIND FLANGE
BLDG.	BUILDING
BLK.	BLOCK
BOT.	BOTTOM
BRG.	BEARING
B.F.V.	BUTTERFLY VALVE
B.V.	BALL VALVE
B.W.V.	BACKWATER VALVE
CAP	CORRUGATED ALUMINUM PIPE
CHEM.	CHEMICAL
CMP	CORRUGATED METAL PIPE
CONC.	CONCRETE
CONT.	CONTINUOUS
CONST.	CONSTRUCTION
CP	CONTROL POINT
CL.P.V.	CHLORINATED POLY VINYL
CL	CHLORIDE
C.V.	CHECK VALVE
C.Y.	CUBIC YARDS
Δ	DELTA
D.I.A.	DIAMETER
D.I.P. OR D.I.	DUCTILE IRON PIPE
D.S.	DOWN SPOUT
D/W	DRIVEWAY
DWL.	DOWEL
EA.	EACH
E.F.	EACH FACE
EFF.	EFFLUENT
E.J.	EXPANSION JOINT
EL. OR ELEV.	ELEVATION
E.W.	EACH WAY
EXP.	EXPANSION
F & C	FRAME & COVER
F.D.	FLOOR DRAIN
F.E.	FIRE EXTINGUISHER
F.E.S.	FLARED END SECTION
F.F.	FINISHED FLOOR
FL.	FLANGE

FM	FORCE MAIN
FT.	FOOT/FEET
G.A.B.	GRADED AGGREGATE BASE
G.V.	GATE VALVE
GWC	GROUNDWATER MONITORING WELL
GYP. BD.	GYPSUM BOARD
H.M.	HOLLOW METAL
HORIZ.	HORIZONTAL
H.P.	HORSE POWER
HYD.	HYDRANT
I.E.	INVERT ELEVATION
I.F.	INSIDE FACE
INF.	INFLUENT
INSUL.	INSULATION
INV.	INVERT
J.B.	JUNCTION BOX
JT.	JOINT
L	LENGTH OF CURVE
L.A.S.	LAND APPLICATION SYSTEM
LB.	POUNDS
L.C.	LENGTH OF CHORD
L.F.	LINEAR FEET
MET.	METAL
M.H.	MANHOLE
MIN.	MINIMUM
M.J.	MECHANICAL JOINT
ML	MEGALUG
M.M.	METHANE MONITORING WELL
M.O.	MASONRY
N.T.S.	NOT TO SCALE
O.C.	ON CENTER
O.F.	OUTSIDE FACE
PC	POINT OF CURVATURE
P.E.	PLAIN END
P.H.	POST HYDRANT
P.I.	POINT OF INTERSECTION
PL	PLACE(S)
P.R.V.	PRESSURE REDUCING VALVE
PS	PUMP STATION
PT	POINT OF TANGENCY

PTS.	POINTS
P.V.	PLUG VALVE
P.V.C.	POLY VINYL CHLORIDE
R	PIPE RADIUS
RCP	REINFORCED CONCRETE PIPE
REQ'D	REQUIRED
R.J.	RESTRAINED JOINT
SAN.	SANITARY
SED.	SEDIMENT
S.S.	STAINLESS STEEL
T & B	TOP & BOTTOM
TAN	TANGENT
T/W	TOP OF WALL
T.U.	TRUE UNION
TYP.	TYPICAL
U.F.	UNIFLANGE
V.B.	VALVE BOX
VERT.	VERTICAL
W/	WITH
W.A.S.	WASTE ACTIVATED SLUDGE
W.S.	WATER STOP
W.S.L.	WATER SURFACE LEVEL
Y.H.	YARD HYDRANT

LEGEND

	EXISTING	PROPOSED
PROPERTY LINE		
EASEMENT LINE		
RIGHT OF WAY		
EDGE OF PAVEMENT		
CREEK/DITCH		
CONTOUR	100	100
SILT FENCE	X	X X
FENCE	XX	XX
CENTERLINE		
WATER LINE	W	
SANITARY SEWER	SS	
FORCE MAIN	FM	FM
GAS LINE	GAS	
FIBER OPTIC CABLE	FOC	
UNDERGROUND CABLE	UGC	
UNDERGROUND TELEPHONE	UGT	
UNDERGROUND POWER	UGP	
OVERHEAD POWER	OHP	
STORM DRAIN		
CHEMICAL FEED		
YARD PIPING		
YARD PIPING (ABANDONED)		
UTILITY POLE/GUY WIRE		
BUILDING		
STRUCTURE		
CONCRETE DRIVEWAY		
GRAVEL DRIVEWAY		
ASPHALT/CONCRETE/GRAVEL DEMOLITION		
STRUCTURE DEMOLITION		
YARD PIPE DEMOLITION		
YARD PIPE ABANDONMENT		

	EXISTING	PROPOSED
FIRE HYDRANT		
YARD HYDRANT	YH	YH
METER		
MONITORING WELL		
METHANE VENT		
CLEANOUT	C.O.	C.O.
MANHOLE	MH	
SIGN		
MAILBOX		
CONTROL POINT		
TEMP. BENCHMARK		TBM
SOIL BORE		SB01
TELEPHONE PEDESTAL	T.P.	T.P.
HEADWALL		
RIPRAP		
PINE TREE		
HARDWOOD		
MISC. TREE		
MISC. SHRUB		
IRON PIN FOUND	IPF	
CONC. R/W MONUMENT	CMF	
SPOT ELEV.	101.5	101.5
DOWNSTREAM SAMPLING POINT FOR NPDES STORM WATER GENERAL PERMIT		DSP-1
UPSTREAM SAMPLING POINT FOR NPDES STORM WATER GENERAL PERMIT		USP-1

DISCAIMER:
THE CITY OF CALHOUN DOES NOT WARRANT, GUARANTEE, NOR ASSUME RESPONSIBILITY AS TO THE PRECISION OR ACCURACY OF THE PROPERTY LINES, RIGHTS-OF-WAY, PROPERTY OWNERS, OR EXISTING UTILITIES SHOWN ON THIS PLAN. THIS INFORMATION IS COMPILED BY RECORD MAPS ALONG WITH THIRD PARTY SOURCES AND IS PROVIDED FOR THE CONVENIENCE OF THE CONTRACTOR.

GEORGIA REGISTERED No. PE35089 PROFESSIONAL ENGINEER KURT THOMAS McCORD

LEVEL II CERTIFIED DESIGN PROFESSIONAL, CERT. # 62026 EXPIRES 8/13/2025

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GENERAL LAYOUT & CONSTRUCTION NOTES

REVISIONS:		
1	INSTALLATION RFP	03-14-2024

GENERAL LOYOUT AND EROSION CONTROL PLAN FOR THE SECOND PEDESTRIAN BRIDGE AT PALMER MEMORIAL PARK

CITY OF CALHOUN
UTILITIES ENGINEERING
CALHOUN, GEORGIA 30701
PHONE: (706) 629-4701

THIS LINE IS ONE INCH LONG WHEN DRAWING IS PLOTTED FULL SCALE

DSGN: KTM	DRWN: ATL
DWG. NAME: PROPOSED PEDESTRIAN BRIDGE	
DATE: MARCH 2024	SHEET NO.: 1 OF 5 SHEETS

CONTROL POINT DATA				
POINT #	DESCRIPTION	ELEVATION	NORTHING	EASTING
1	REBAR W/ ALUMINIUM CAP	618.93	1633017.059	2058161.802
2	REBAR W/ ALUMINIUM CAP	619.35	1633312.722	2058163.330

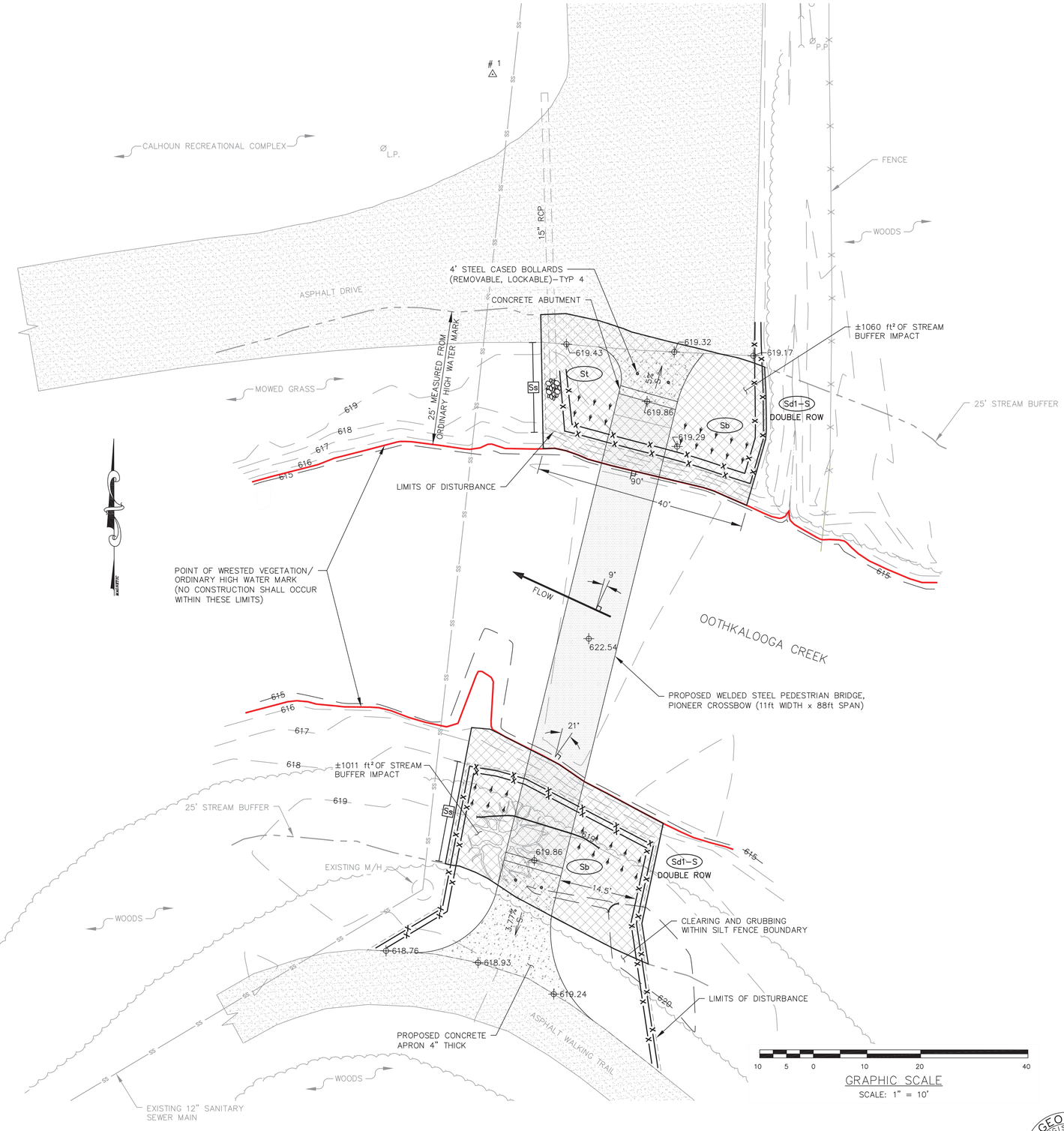
LIMITS OF DISTURBANCE

TOTAL LIMITS OF DISTURBANCE = 0.052 ACRES

AREA OF DISTURBANCE WITHIN PERENNIAL STREAM BUFFER = 2,071 SQ FT

GENERAL CONSTRUCTION NOTES

1. CONTRACTOR WILL BE WORKING ON CITY OWNED PROPERTY. CONTRACTOR SHALL BE RESPONSIBLE FOR CLEARING, GRUBBING, HAULING, AND DISPOSAL OF DEBRIS WITHIN THE REQUIRED WORK AREA. FURTHERMORE, THE CONTRACTOR WILL BE RESPONSIBLE FOR LOCATING, SUPPLYING AND HAULING SUITABLE FILL FROM BORROW SITE(S), IF NECESSARY. CONTRACTOR WITH ENGINEER'S ASSISTANCE SHALL ENSURE THAT BORROW MATERIAL IS SUITABLE FOR THE WORK BEING DONE. ALL UNSUITABLE EXCAVATED MATERIAL SHALL BE REMOVED AND PROPERLY DISPOSED OFFSITE BY THE CONTRACTOR.
2. CONTRACTOR SHALL HAVE PERIMETER SOIL EROSION CONTROL MEASURES IN PLACE BEFORE CONSTRUCTION BEGINS.
3. CONTRACTOR TO NOTIFY UTILITY PROTECTION AGENCY 72 HOURS PRIOR TO START OF WORK. PHONE NUMBER: 811 OR 1-800-285-7411.
4. SOME CONSTRUCTION ACTIVITIES WILL OCCUR WITHIN ENVIRONMENTALLY SENSITIVE AREAS (STREAMS, RIPARIAN BUFFERS, FLOOD PLAIN, WETLANDS, ETC.) REQUIRING STRICT ADHERENCE TO PERMITTED ACTIVITIES. DEVIATIONS ARE PROHIBITED WITHOUT PRIOR AUTHORIZATION OF ENGINEER AND REGULATORY AGENCIES .
5. STORAGE OF MATERIALS AND EQUIPMENT SHALL BE COORDINATED IN ADVANCE BY CONTRACTOR.
6. ALL CONSTRUCTION SHALL COMPLY WITH THE DEPARTMENT OF LABOR, OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, 29 CFR PART 126, SUBPART P, LATEST REVISION.
7. EXISTING UTILITY LINES SHOWN ARE APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UTILITY LINE LOCATIONS AND ELEVATIONS PRIOR TO ANY CONSTRUCTION AND ORDERING ANY EQUIPMENT. ANY DEVIATIONS FROM THE DESIGN LOCATION SHALL BE REPORTED TO THE ENGINEER PRIOR TO CONSTRUCTION. DAMAGE TO EXISTING UTILITY LINES RESULTING FROM THE CONTRACTOR'S NEGLIGENCE SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE TO THEIR ORIGINAL CONDITION AND QUALITY, AS APPROVED BY THE OWNER AND REPRESENTATIVE OF THE APPROPRIATE UTILITY COMPANY.
8. CONTRACTOR MAY TEMPORARILY DIVERT DITCHES AT HIS EXPENSE, USING PROPER EROSION CONTROL MEASURES, IF AUTHORIZED BY THE ENGINEER.
9. ALL CONSTRUCTION STAKING SHALL BE DONE BY THE CONTRACTOR AT HIS EXPENSE.
10. CONTRACTOR SHALL MAINTAIN FIELD "AS-BUILT" DRAWINGS AND SHALL MEASURE AND SHOW LOCATIONS OF ALL PROPOSED IMPROVEMENTS, INCLUDING BRIDGE ALIGNMENT, CONCRETE ABUTMENTS, BURIED CONDUITS, AND UTILITY CONFLICTS. AS-BUILT DRAWINGS SHALL PROVIDE ELEVATIONS FOR ALL STRUCTURES.
11. ALL EROSION AND SEDIMENTATION CONTROL SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE COMPLETED AS DIRECTED BY THE ENGINEER'S PERMITTED DRAWINGS.
12. SILT FENCE IS REQUIRED AS SHOWN. ENGINEER OR OWNER MAY REQUIRE ADDITIONAL SILT FENCE/HAY BALES IN CERTAIN AREAS DEPENDING ON BMP EFFECTIVENESS.
13. IF THE CONTRACTOR DAMAGES ANY EXISTING ROAD SURFACES OR STRUCTURES, HE SHALL, AT HIS OWN EXPENSE, REPLACE OR REPAIR TO ITS ORIGINAL CONDITION AS APPROVED BY THE ENGINEER. ANY AREA THAT THE CONTRACTOR MAY FIND QUESTIONABLE SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER AND OWNER BEFORE CONSTRUCTION BEGINS.
14. FOR THE SLOPE STABILIZATION [Ss] VEGETATIVE BMP, THE CITY WILL REQUIRE BIODEGRADABLE JUTE MATTING WITH PREFERABLY A HYDROSEED OVERCOATING. IF INITIAL STABILIZATION PROVES TO BE DIFFICULT, THEN CONTRACTOR SHOULD SPRAY APPLY A TACKIFIER FOR IMPROVED SOIL ADHESION.



GENERAL LAYOUT AND BMP PLAN VIEW

REVISIONS:		
1	INSTALLATION RFP	03-14-2024

GENERAL LAYOUT AND EROSION CONTROL PLAN FOR THE SECOND PEDESTRIAN BRIDGE AT PALMER MEMORIAL PARK

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DSGN: KTM	DRWN: ATL
DWG. NAME: PROPOSED PEDESTRIAN BRIDGE	
DATE: MARCH 2024	SHEET NO.: 2 OF 5 SHEETS

STRUCTURAL PRACTICES

CODE	PRACTICE	DETAIL	MAP SYMBOL	DESCRIPTION
Cd	CHECKDAM (Cd-S) STONE CHECK DAM (Cd-Hb) STRAW-BALE CHECK DAM (Cd-Fs) COMPOST FILTER SOCK			A small temporary barrier or dam constructed across a swale, drainage ditch or area of concentrated flow.
Ch	CHANNEL STABILIZATION (Ch-1) CATEGORY 1 (0-5FT/SEC) (Ch-2) CATEGORY 2 (5-10FT/SEC) (Ch-3) CATEGORY 3 (<10FT/SEC)			Improving, constructing or stabilizing an open channel, existing stream, or ditch.
Co	CONSTRUCTION EXIT		Co (Label)	A crushed stone pad located at the construction site exit to provide a place for removing mud from tires thereby protecting public streets.
Cr	CONSTRUCTION ROAD STABILIZATION		Cr	A travelway constructed as part of a construction plan including access roads, subdivision roads, parking areas and other on-site vehicle transportation routes.
Dc	STREAM DIVERSION CHANNEL (Dc-A) GEOTEXTILE, POLYETHELENE FILM, OR SOD (0-2.5 FPS) (Dc-B) GEOTEXTILE ALONE (2.5-9.0 FPS) (Dc-C) CLASS 1 RIPRAP & GEOTEXTILE (9.0-13.0 FPS)		Dc	A temporary channel constructed to convey flow around a construction site while a permanent structure is being constructed.
Di	DIVERSION			An earth channel or dike located above, below, or across a slope to divert runoff. This may be a temporary or permanent structure.
Dn1	TEMPORARY DOWNDRAIN STRUCTURE		Dn1 (Label)	A flexible conduit of heavy-duty fabric or other material designed to safely conduct surface runoff down a slope. This is temporary and inexpensive.
Dn2	PERMANENT DOWNDRAIN STRUCTURE		Dn2 (Label)	A paved chute, pipe, sectional conduit or similar material designed to safely conduct surface runoff down a slope.
Fr	FILTER RING		Fr	A temporary stone barrier constructed at storm drain inlets and pond outlets.
Ga	GABION			Rock filter baskets which are hand-placed into position forming soil stabilizing structures.
Gr	GRADE STABILIZATION STRUCTURE		Gr	Permanent structures installed to protect channels or waterways where otherwise the slope would be sufficient for the running water to form gullies.
Lv	LEVEL SPREADER			A structure to convert concentrated flow of water into less erosive sheet flow. This should be constructed only on undisturbed soils.
Rd	ROCK FILTER DAM			A permanent or temporary stone filter dam installed across small streams or drainageways.
Re	RETAINING WALL		Re (Label)	A wall installed to stabilize out and fill slopes where maximum permissible slopes are not obtainable. Each situation will require special design.
Rt	RETRO FITTING (Rt-P) PERFORATED HALF-ROUND PIPE WITH STONE FILTER (Rt-B) SLOTTED BOARD DAM WITH STONE OR FILTER FABRIC (Rt-Sg) SILT CONTROL GATE		Rt (Label)	A device or structure placed in front of a permanent stormwater detention pond outlet structure to serve as a temporary sediment filter.
Sd1	SEDIMENT BARRIER (Sd1-NS) NONSENSITIVE AREAS (Sd1-S) SENSITIVE AREAS (Sd1-BB) BRUSH BARRIER		TYPE	A barrier to prevent sediment from leaving the construction site. It may be sandbags, bales of straw or hay, brush, logs and poles, gravel, or a silt fence.
Sd2	INLET SEDIMENT TRAP (Sd2-F) FILTER FABRIC W/SUPPORTING FRAME (Sd2-B) BAFFLE BOX (Sd2-Bg) BLOCK & GRAVEL DROP INLET PROTECTION (Sd2-G) GRAVEL DROP INLET PROTECTION (Sd2-S) SOD INLET PROTECTION (Sd2-P) CURB INLET PROTECTION		(Indicate type)	An impounding area created by excavating around a storm drain drop inlet. The excavated area will be filled and stabilized on completion of construction activities.
Sd3	TEMPORARY SEDIMENT BASIN			A basin created by excavation or a dam across a waterway. The surface water runoff is temporarily stored allowing the bulk of the sediment to drop out.
Sd4	TEMPORARY SEDIMENT TRAP (Sd4-A) OVERFLOW (Sd4-B) COMBINATION STRAW BALE & SILT FENCE OUTLET (Sd4-C) ROCK OUTLET			A small temporary pond that drains a disturbed area so that sediment can settle out. The principle feature distinguishing a temporary sediment trap from a temporary sediment basin is the lack of a pipe or riser.
Sk	FILTER SURFACE SKIMMER			A buoyant device that releases/drains water from the surface of sediment ponds, traps or basins at a controlled rate of flow.
SpB	SEEP BERM			A linear control device constructed as a diversion perpendicular to the direction of the runoff to enhance dissipation and infiltration of runoff, while creating multiple sedimentation chambers with the employment of intermediate dikes.
Sr	TEMPORARY STREAM CROSSING (Sr-B) TEMPORARY BRIDGE CROSSING (Sr-C) TEMPORARY CULVERT CROSSING		Sr (Label)	A temporary bridge or culvert-type structure protecting a stream or watercourse from damage by crossing construction equipment.
St	STORMDRAIN OUTLET PROTECTION		St	A paved or short section of riprap channel at the outlet of a storm drain system preventing erosion from the concentrated runoff.
Su	SURFACE ROUGHENING		Su	A rough soil surface with horizontal depressions on a contour or slopes left in a roughened condition after grading.
Tc	TURBIDITY CURTAIN (Tc-F) FLOATING TURBIDITY CURTAIN (Tc-S) STAKED TURBIDITY CURTAIN			A floating or staked barrier installed within the water. (It may also be referred to as a floating boom, silt barrier or silt curtain).
Tp	TOPSOILING		Tp	Stripping off the more fertile top soil, storing it, then spreading it over the disturbed area after completion of construction activities.
Tr	TREE PROTECTION		Tr	To protect desirable trees from injury during construction activity.
Wt	VEGETATED WATERWAY OR STORMWATER CONVEYANCE CHANNEL	EROSION BLANKET	Wt	Paved or vegetative water outlets for diversions, terraces, berms, dikes or similar structures.

VEGETATIVE MEASURES

CODE	PRACTICE	DETAIL	MAP SYMBOL	DESCRIPTION
Bf	BUFFER ZONE		Bf (Label)	An undisturbed natural "green belt" separating the land-disturbed site from surrounding property and bordering streams. It serves to reduce water velocity and remove some sediment. It is also at times a noise or "vision pollution" barrier.
Cs	COASTAL DUNE STABILIZATION (WITH VEGETATION)		Cs	Planting vegetation on dunes that are denuded, artificially construction, or renourished.
Ds1	DISTURBED AREA STABILIZATION (WITH MULCHING ONLY)		Ds1	Establishing temporary protection for disturbed areas where seedlings may not have a suitable growing season to produce an erosion retarding cover.
Ds2	DISTURBED AREA STABILIZATION (WITH TEMPORARY SEEDING)		Ds2	Establishing a temporary vegetative cover with fast growing seedings on disturbed areas.
Ds3	DISTURBED AREA STABILIZATION (WITH PERMENANT SEEDING)		Ds3	Establishing a permanent vegetative cover such as trees, shrubs, vines, grasses, sod or legumes on disturbed areas.
Ds4	DISTURBED AREA STABILIZATION (SODDING)		Ds4	A permanent vegetative cover using sods on highly erodable or critically eroded lands.
Du	DUST CONTROL ON DISTURBED AREAS		Du	Controlling surface and air movement of dust on construction site, roadways and similar sites.
Fl-Co	FLOCCULANTS & COAGULANTS		Fl-Co	Formulated to assist in the solids/liquid separation of suspended particles in solution.
Sb	STREAMBANK STABILIZATION (USING PERMENANT VEGETATION)		Sb	The use of readily available native plant materials to maintain and enhance streambanks, or to prevent, or restore and repair small streambank erosion problems.
Ss	SLOPE STABILIZATION		Ss	The installation of a protective covering (blanket) or soil stabilization mat on a prepared planting area of a steep slope, channel, or shoreline.
Tac	TACKIFIERS & BINDERS Tac-1 SYNTHETIC POLYMERS Tac-2 ORGANIC POLYMERS Tac-3 SYNTHETIC/ORGANIC BLENDS Tac-4 ORGANIC TACKIFIERS WITH SYNTHETIC FIBERS Tac-5 SYNTHETIC/ORGANIC BLENDS WITH SYNTHETIC FIBERS		Tac	Substance used to anchor straw or hay mulch by causing the organic material to bind together.

TEMPORARY VEGETATIVE COVERS

PLANT, PLANT RATE, AND PLANTING DATE FOR TEMPORARY COVER OR COMPANION CROPS[1]

SPECIES	BROADCAST RATES RATE/ACRE[2]	PLS*/1,000SF	RESOURCE AREA[3]	REMARKS
BARLEY alone / in mixture	3 bu. (144lbs) / ½ bu. (24lbs)	3.3lbs / 0.6lbs	M-L, P, C	14,000 seed per pound. Winter hardy. Use on productive soils.
LESPEDEZA, ANNUAL alone / in mixture	40lbs / 10lbs	0.9lbs / 0.2lbs	M-L, P, C	200,000 seed per pound. May volunteer for several years. Use inoculate EL.
LOVEGRASS, WEEPING alone / in mixture	4lbs / 2lbs	0.1lbs / 0.05lbs	M-L, P, C	1,500,000 seed per pound. May last for several years. Mix with *Sericea lespedeza*.
MILLET, BROWNTOP alone / in mixture	40lbs / 10lbs	0.9lbs / 0.2lbs	M-L, P, C	137,000 seed per pound. Quick dense cover. Will provide excessive competition in mixtures if seeded at high rate.
MILLET, PEARL alone	50lbs	1.1lbs	M-L, P, C	88,000 seed per pound. Quick dense cover. May reach 5 feet in height. Not recommended for mixtures.
OATS alone / in mixture	4 bu. (128lbs) / 1 bu. (32lbs)	2.9lbs / 0.7lbs	M-L, P, C	13,000 seed per pound. Use on productive soils. Not as winter hardy as rye or barley.
RYE alone / in mixture	3 bu. (168lbs) / ½ bu. (28lbs)	3.9lbs / 0.6lbs	M-L, P, C	18,000 seed per pound. Quick cover. Drought tolerant and winter hardy.
RYEGRASS, ANNUAL alone	40lbs	0.9lbs	M-L, P, C	227,000 seed per pound. Dense cover. Very competitive and is not to be used in mixtures.
SUDANGRASS alone	60lbs	1.4lbs	M-L, P, C	55,000 seed per pound. Good on droughty sites. Not recommended for mixtures.
TRITICALE alone / in mixture	3 bu. (144lbs) / ½ bu. (24lbs)	3.3lbs / 0.6lbs	C	Use on lower part of Southern Coast Plain and in Atlantic Coastal Flatwoods only.
WHEAT alone / in mixture	3 bu. (180lbs) / ½ bu. (30lbs)	4.1lbs / 0.7lbs	M-L, P, C	15,000 seed per pound. Winter hardy.

(Columns "PLANTING DATES BY RESOURCE AREA[4]" J F M A M J J A S O N D shown graphically.)

[1] Temporary cover crops are very competitive and will crowd out perennials if seeded too heavily.
[2] Reduce seeding rates by 50% when drilled.
[3] M-L represents the Mountain; Blue Ridge; and Ridges and Valleys MLRAs
P represents the Southern Piedmont MLRA
C represents the Southern Coastal Plain; Sand Hills; Black Lands; and Atlantic Coast Flatwoods MLRAs (see Figure 6-4.1, p6-40 of the Manual for Soil Erosion & Sediment Control in Georgia, 2016 Edition)
[4] Solid lines indicate optimum dates. Dotted lines indicate permissible but marginal dates.
*Pure Live Seed

FERTILIZER REQUIREMENTS

TYPE OF SPECIES	YEAR	ANALYSIS OR EQUIVALENT N-P-K	RATE	N TOP DRESSING RATE
1. COOL SEASON GRASSES	First Second Maintenance	6-12-12 6-12-12 10-10-10	1500lbs/ac. 1000lbs/ac. 400lbs/ac.	50-100lbs/ac. 1/2/ - 30
2. COOL SEASON GRASSES AND LEGUMES	First Second Maintenance	6-12-12 0-10-10 0-10-10	1500lbs/ac. 1000lbs/ac. 400lbs/ac.	0-50lbs/ac. 1/ - -
3. GROUND COVERS	First Second Maintenance	10-10-10 10-10-10 10-10-10	1300lbs/ac. 3/ 1300lbs/ac. 3/ 1100lbs/ac.	- - -
4. PINE SEEDLINGS	First	20-10-5	one 21-gram pellet per seedling placed in the hole	-
5. SHRUB LESPEDEZA	First Maintenance	0-10-10 0-10-10	700lbs/ac. 700lbs/ac. 4/	-
6. TEMPORARY COVER CROPS, SEEDED ALONE	First	10-10-10	500lbs/ac.	30lbs/ac. 5/
7. WARM SEASON GRASSES	First Second Maintenance	6-12-12 6-12-12 10-10-10	1500lbs/ac. 800lbs/ac. 400lbs/ac.	50-100lbs/ac. 2/6/ 50-100lbs/ac. 2/ 30lbs/ac.
8. WARM SEASON GRASSES AND LEGUMES	First Second Maintenance	6-12-12 0-10-10 0-10-10	1500lbs/ac. 1000lbs/ac. 400lbs/ac.	50lbs/ac./6/

1/ Apply in spring following seeding.
2/ Apply in split applications when high rates are used.
3/ Apply in 3 split applications.
4/Apply when plants are pruned.
5/Apply to grass species only.
6/Apply when plants grow to a height of 2 to 4 inches.

GENERAL EROSION CONTROL NOTES

1. ALL LAND DISTURBING ACTIVITIES SHALL BE CONDUCTED IN COMPLIANCE WITH THE "EROSION AND SEDIMENTATION ACT OF 1975" AS AMENDED TO DATE.
2. ALL MATERIALS USED FOR BMPS AND OTHER EROSION AND SEDIMENT CONTROL DEVICES AND PRACTICES SHALL BE FIRST-QUALITY AND DESIGNED TO WITHSTAND A MINIMUM 25-YEAR STORM EVENT.
3. ALL PERIMETER EROSION CONTROL AND STORMWATER MANAGEMENT DEVICES SHALL BE INSTALLED PRIOR TO ANY CONSTRUCTION ACTIVITIES. ALL OTHER BMPS SHALL BE INSTALLED PRIOR TO, OR CONCURRENT WITH LAND DISTURBING ACTIVITIES. THE LOCATION OF CERTAIN EROSION CONTROL DEVICES MAY REQUIRE ALTERING FROM THE LOCATIONS SHOWN ON THE DRAWINGS IF DRAINAGE PATTERNS DURING CONSTRUCTION DIFFER FROM THE FINAL GRADING PLANS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ACCOMPLISH EROSION CONTROL FOR DRAINAGE PATTERNS CREATED AT VARIOUS STAGES DURING CONSTRUCTION. AT ALL TIMES, 67 CUBIC YARDS OF SEDIMENT STORAGE MUST BE AVAILABLE FOR EACH ACRE OF DRAINED LAND. IF FULL IMPLEMENTATION OF THE APPROVED PLAN DOES NOT PROVIDE FOR EFFECTIVE EROSION CONTROL, ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED TO CONTROL OR TREAT THE SEDIMENT SOURCE.
4. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CHECKED DAILY AND ANY DEFICIENCIES NOTED SHALL BE CORRECTED BY THE END OF THE DAY. ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES WILL BE INSTALLED IF DEEMED NECESSARY BY ON-SITE OBSERVATIONS.
5. DIVERSION DITCHES, BERMS, AND TEMPORARY DOWN DRAINS SHALL BE USED DURING GRADING OPERATIONS TO PROVIDE SEDIMENT CONTROL FOR DISTURBED AREAS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLATION OF THESE MEASURES DURING THE VARIOUS PHASES OF GRADING. THESE MEASURES MAY OR MAY NOT BE INDICATED ON THE DRAWINGS.
6. ALL SITE CLEARING AND GRUBBING SHALL BE KEPT TO AN ABSOLUTE MINIMUM. VEGETATION AND MULCH SHALL BE APPLIED TO APPLICABLE AREAS IMMEDIATELY AFTER GRADING IS COMPLETE. LAND DISTURBANCE SHALL BE SCHEDULED TO LIMIT EXPOSURE OF BARE SOILS TO EROSIVE ELEMENTS.
7. THE CONTRACTOR SHALL USE ALL MEANS NECESSARY TO LIMIT AND CONTROL DUST ON AND NEAR THE CONSTRUCTION SITE WHEN DUST IS CAUSED BY CONSTRUCTION OPERATIONS.
8. ALL CUT AND FILL SLOPES SHALL HAVE SILT FENCE INSTALLED AND MAINTAINED AT THE TOE OF SLOPES. THE CONTRACTOR SHALL FURNISH AND INSTALL DOUBLE ROWS OF TYPE "SD1-S" SILT FENCE AT THE TOE OF ALL SLOPES ADJACENT TO ALL STATE WATERS. INSTALL AND MAINTAIN SEDIMENT BARRIERS AROUND ALL INLETS AND BELOW ALL OUTLETS AND OTHER DISTURBANCES WHERE EROSIVE RUNOFF MAY LEAVE THE SITE.
9. ALL CUT AND FILL SLOPES MUST BE SURFACE ROUGHENED AND VEGETATED WITHIN SEVEN (7) DAYS OF THEIR GRADING.
10. THE CONTRACTOR SHALL NOT BE PERMITTED TO PLACE TRENCH DIRT ON MAINTAINED ROADWAYS. IF DIRT IS PLACED IN A DITCH SECTION, DITCH SHALL BE RE-GRADED TO EXISTING CONDITIONS, GRASSED AND MULCHED, AND CHECK DAMS (HAY BALES PREFERRED) PLACED IN THE DITCH.
11. ALL EXCAVATED DIRT SHALL BE PLACED ON THE HIGH SIDE OF THE TRENCH AWAY FROM CREEKS, RIVERS, AND OTHER STATE WATERS.
12. CONSTRUCTION ACTIVITIES SHALL BE PERFORMED IN COMPLIANCE WITH ALL APPLICABLE LAWS, RULES, AND REGULATIONS.
13. SEDIMENT BARRIERS SHALL MEET GEORGIA D.O.T. STANDARDS AND SPECIFICATIONS AND SHALL BE INSTALLED AS DESCRIBED HEREIN AND AS INDICATED ON THE DRAWINGS.
14. ESTABLISHMENT OF TEMPORARY AND PERMANENT VEGETATION FOR THIS PROJECT SHALL CONSIST OF GROUND PREPARATION, SEEDING OR HYDRO SEEDING AND MULCHING OF ALL DISTURBED AREAS IN THE PROJECT AREA, WHICH SHALL CONFORM TO THE SPECIFICATIONS AND THE FOLLOWING SCHEDULE:
<u>MULCHING ALONE:</u> SHALL BE USED ON ROUGH GRADED AREAS FOR UP TO SIX (6) MONTHS. IT SHALL BE APPLIED AT THE APPROPRIATE DEPTH, ANCHORED AND MAINTAIN A CONTINUOUS 90% COVER OR GREATER OF THE SOIL SURFACE.
<u>TEMPORARY SEEDING:</u> SHALL BE USED ON DISTURBED AREAS THAT WILL BE LEFT EXPOSED FOR LESS THAN SIX (6) MONTHS.
<u>PERMANENT VEGETATION:</u> SHALL BE USED ON ALL AREAS THAT ARE AT FINAL GRADE OR ON DISTURBED AREAS THAT WILL BE LEFT EXPOSED FOR MORE THAN SIX (6) MONTHS. SEE GRASSING TABLE AND MULCHING SCHEDULE ON THIS SHEET.
15. THE CONTRACTOR SHALL BEGIN GRASSING WITHIN SEVEN (7) DAYS AFTER THE COMPLETION OF ANY LAND DISTURBING ACTIVITY OR IF THE ACTIVITY IS DISCONTINUED FOR A PERIOD OF FOURTEEN (14) DAYS OR LONGER UNLESS INCLEMENT WEATHER PROHIBITS OR GRADING ACTIVITIES WILL BEGIN AGAIN IN LESS THAN TWENTY-ONE (21) DAYS. NO ADDITIONAL PAYMENT SHALL BE MADE FOR GRASSING THE SAME AREA MORE THAN ONCE.
16. EROSION CONTROL SLOPE STABILIZATION (Ss) AND/OR SODDING (Ds4) SHALL BE USED ON: (1) ALL SLOPES STEEPER THAN 2½ : 1 AND GREATER THAN OR EQUAL TO 10 FEET IN HEIGHT; (2) ALL CONCENTRATED FLOW AREAS; AND (3) CUTS AND FILLS ADJACENT TO STATE WATERS.
17. PERMANENT CONTROL STRUCTURES SHALL BE MAINTAINED BY THE CONTRACTOR UNTIL OWNER FULLY ACCEPTS THE PROJECT.
18. TEMPORARY MEASURES, SUCH AS SILT FENCING, SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR ONCE THE AREA DRAINING TO THE BMP HAS REACHED FINAL STABILIZATION. FINAL STABILIZATION MEANS THAT ALL LAND-DISTURBING ACTIVITIES HAVE BEEN COMPLETED AND THAT FOR UNPAVED AREAS AND AREAS NOT COVERED BY PERMANENT STRUCTURES, 100% OF THE SOIL SURFACE IS UNIFORMLY COVERED IN PERMANENT VEGETATION WITH A DENSITY OF 70% OR GREATER, OR EQUIVALENT PERMANENT STABILIZATION MEASURES (SUCH AS GABIONS, RIP-RAP, PERMANENT MULCH, GEOTEXTILES) HAVE BEEN USED.
19. <u>MAINTENANCE PROGRAM:</u> ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CONTINUOUSLY MAINTAINED BY THE CONTRACTOR. ALL DEVICES SHOULD BE CLEANED OUT BEFORE THEY REACH HALF FULL. CLEANOUT OF SEDIMENT CONTROL STRUCTURES WILL BE ACCOMPLISHED BY SPREADING ON SITE. SEDIMENT BARRIERS SHALL REMAIN IN PLACE AT ALL TIMES UNTIL ALL SEDIMENT CONTRIBUTING AREAS ARE FULLY STABILIZED.
20. <u>NPDES GENERAL PERMIT:</u> A GENERAL NPDES PERMIT FOR STORM WATER DISCHARGES RELATED TO CONSTRUCTION ACTIVITIES IS REQUIRED ON ALL PROJECTS THAT DISTURB 1.0 OR MORE ACRES OF LAND. AS REQUIRED BY GENERAL NPDES PERMIT NO. GAR100001 FOR STAND ALONE CONSTRUCTION PROJECTS, THE CONTRACTOR IS REQUIRED TO ACT AS PRIMARY PERMITTEE FOR HIS SPECIFIC DIVISION OF WORK AND MUST FOLLOW ALL RULES AND REGULATIONS AS REQUIRED BY THE GENERAL NPDES PERMIT AND PAY ALL NECESSARY PERMIT FEES.
21. ACCORDING TO O.C.G.A. 12-5-51 (OFFICIAL CODE OF GEORGIA ANNOTATED), ANY PERSON WHO INTENTIONALLY OR NEGLIGENTLY CAUSES OR PERMITS ANY SEWAGE, WASTES, OIL, SCUM, FLOATING DEBRIS, OR OTHER SUBSTANCES, INCLUDING BUILDING MATERIALS, TO BE SPILLED, DISCHARGED, OR DEPOSITED IN THE WATERS OF THE STATE, MAY BE HELD LIABLE IN DAMAGES TO THE STATE. NECESSARY SANITARY CONVENIENCES FOR THE USE OF LABORERS ON THE WORK SITE SHALL BE PROVIDED AND MAINTAINED BY THE CONTRACTOR IN SUCH A MANNER AND AT SUCH POINTS AS APPROVED BY THE ENGINEER. THEIR USE SHALL BE STRICTLY ENFORCED.
22. THE CONTRACTOR MAY BE SUBJECT TO THE RESPONSIBILITIES, LIABILITIES AND PENALTIES UNDER THE GEORGIA HAZARDOUS WASTE MANAGEMENT ACT, O.C.G.A. 12-8-60, ET SEQ. OR UNDER CHAPTER 14 OF TITLE 12 OF THE OFFICIAL CODE OF GEORGIA ANNOTATED, OR UNDER SECTION 311 OF THE CLEAN WATER ACT, OR SECTION 106 OF COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT.
23. THE CONTRACTOR SHALL DISPOSE OF ALL SOLID WASTE MATERIALS SUCH AS TRASH AND DEBRIS RESULTING FROM CLEARING OPERATIONS AND CONSTRUCTION ACTIVITIES IN ACCORDANCE WITH BOTH THE AIR QUALITY CONTROL (CHAPTER 391-3-1) AND THE SOILD WASTE MANAGEMENT (CHAPTER 391-3-4) OF THE RULES AND REGULATIONS OF THE ENVIRONMENTAL PROTECTION DIVISION OF THE GEORGIA DEPARTMENT OF NATURAL RESOURCES.

PERMANENT VEGETATIVE COVERS

PLANT, PLANT RATE, AND PLANTING DATE FOR PERMANENT COVER

SPECIES	BROADCAST RATES RATE/ACRE[1]	PLS[2]/1,000SF	RESOURCE AREA[3]	REMARKS
BAHIA, PENSACOLA alone or with temporary cover / with other perennials	60lbs / 30lbs	1.4lbs / 0.7lbs	P, C	166,000 seed per pound. Low growing. Sod forming. Slow to establish. Plant with a companion crop. Will spread into bermuda pastures and lawns. Mix with Sericea lespedeza or weeping lovegrass.
BAHIA, WILMINGTON alone or with temporary cover / with other perennials	60lbs / 30lbs	1.4lbs / 0.7lbs	M-L, P	Same as above.
BERMUDA, COMMON HULLED SEED alone / with other perennials	10lbs / 6lbs	0.2lbs / 0.7lbs	P, C	1,787,000 seed per pound. Quick cover. Low growing and sod forming. Full sun. Good for athletic fields.
BERMUDA, COMMON UNHULLED SEED with temporary cover / with other perennials	10lbs / 6lbs	0.2lbs / 0.1lbs	P, C	Plant with winter annuals. / Plant with Tall Fescue.
BERMUDA SPRIGS COASTAL, COMMON, MIDLAND OR TIFT 44 / COASTAL, COMMON, OR TIFT 44 / TIFT 78	40ft³ or 0.9ft³ sod plugs 3'x3'		M-L, P, C / C	A cubic foot contains approximately 650 sprigs. A bushel contains 1.25 cubic feet or approximately 800 sprigs. / Same as above. / Southern Coastal Plain only.
CENTIPEDE	Block Sod Only		P, C	Drought tolerant. Full sun or partial shade. Effective adjacent to concrete and in concentrated flow areas. Irrigation is needed until fully established. Do not plant near pastures. Winter hardy as far as north Athens and Atlanta.
CROWNVETCH with winter annuals or cool season grasses	15lbs	0.3lbs	M-L, P	100,000 seed per pound. Dense growth. Drought tolerant and fire resistant. Attractive rose, pink, and white blossoms spring to late fall. Mix with 30lbs of Tall Fescue or 15lbs of Rye. Inoculate seed with M inoculant. Use from North Atlanta and Northward.
FESCUE, TALL alone / with other perennials	50lbs / 30lbs	1.1lbs / 0.7lbs	M-L, P	227,000 seed per pound. Use alone only on better sites. Mix with perennial lespedeza or Crownvetch. Apply top dressing in spring following fall plantings. Not for heavy use areas or athletic fields.
LESPEDEZA SERICEA scarified	60lbs	1.4lbs	M-L, P, C	350,000 seed per pound. Widely adapted. Low maintenance. Mix with Weeping lovegrass, common bermuda, bahia, or tall fescue. Takes 2 to 3 years to become fully established. Excellent on road banks. Inoculate seed with EL inoculant.
unscarified	75lbs	1.7lbs	M-L, P, C	Mix with Tall fescue or winter annuals.
seed-bearing hay	3 tons	1,338lbs	M-L, P, C	Cut when seed mixture is mature, but before it shatters. Add Tall fescue or winter annuals.
LESPEDEZA scarified / unscarified	60lbs / 75lbs	1.4lbs / 1.7lbs	M-L, P, C / M-L, P, C	300,000 seed per pound. Height of growth is 18 to 24 inches. Advantageous in urban areas. Spreading-type growth. New growth has bronze coloration. Mix with Weeping lovegrass, common bermuda, bahia, tall fescue or winter annuals. Do not mix with Sericea lespedeza. Slow to develop solid stands. Inoculate seed with EL inoculant.
LESPEDEZA, SHRUB plants	3'x3'		M-L, P, C	Provide wildlife food and cover.
LOVEGRASS, WEEPING alone / with other perennials	4lbs / 2lbs	0.1lbs / 0.05lbs	M-L, P, C	1,500,000 seed per pound. Quick cover. Drought tolerant. Grows well with Sericea lespedeza on roadbanks.
MAIDENCANE sprigs	2'x3' spacing		ALL	For very wet sites. May clog channels. Dig sprigs from local sources. Use along river banks and shorelines.
PANICGRASS, ATLANTIC COASTAL	20lbs	0.5lbs	P, C	Grows well on coastal sand dunes, borrow areas, and gravel pits. Provides winter cover for wildlife. Mix with Sericea lespedeza except on sand dunes.
REED CANARY GRASS alone / with other perennials	50lbs / 30lbs	1.1lbs / 0.7lbs	M-L, P	Grows similar to Tall fescue.
SUNFLOWER, 'AZTEC' MAXIMILLIAN	10lbs	0.2lbs	M-L, P, C	227,000 seed per pound. Mix with Weeping lovegrass or other low-growing grasses or legumes.

(Columns "PLANTING DATES BY RESOURCE AREA[4]" J F M A M J J A S O N D shown graphically.)

[1] Reduce seeding rates by 50% when drilled.
[2] PLS is an abbreviation for Pure Live Seed. Refer to Section V.E. of the Manual for Erosion and Sediment Control in Georgia, 2016 Edition.
[3] M-L represents the Mountain; Blue Ridge; and Ridges and Valleys MLRAs
P represents the Southern Piedmont MLRA
C represents the Southern Coastal Plain; Sand Hills; Black Lands; and Atlantic Coast Flatwoods MLRAs (see Figure 6-4.1, p6-40 of the Manual for Soil Erosion & Sediment Control in Georgia, 2016 Edition
[4] Solid lines indicate optimum dates. Dotted lines indicate permissible but marginal dates.

EROSION, SEDIMENTATION, AND POLLUTION CONTROL NOTES

GEORGIA REGISTERED PROFESSIONAL ENGINEER No. PE35089 KURT THOMAS McCORD

LEVEL II CERTIFIED DESIGN PROFESSIONAL, CERT. # 62026 EXPIRES 8/13/2025

REVISIONS:

1	INSTALLATION RFP	03-14-2024

GENERAL LAYOUT AND EROSION CONTROL PLAN FOR THE SECOND PEDESTRIAN BRIDGE AT PALMER MEMORIAL PARK

CITY OF CALHOUN
UTILITIES ENGINEERING
CALHOUN, GEORGIA 30701
PHONE: (706) 629-4701

CITY OF CALHOUN LAND OF THE CHEROKEE

THIS LINE IS ONE INCH LONG WHEN DRAWING IS PLOTTED FULL SCALE

DSGN: KTM | DRWN: ATL

DWG. NAME: PROPOSED PEDESTRIAN BRIDGE

DATE: MARCH 2024

SHEET NO.: 3 OF 5 SHEETS

SEEDING SCHEDULE

TEMPORARY STABILIZATION (MULCHING) Ds1

DEFINITION

APPLYING PLANT RESIDUES OR OTHER SUITABLE MATERIALS,PRODUCED ON THE SITE IF POSSIBLE, TO THE SOIL SURFACE.

PUPROSE

- TO REDUCE RUNOFF AND EROSION
- TO CONSERVE MOISTURE
- TO PREVENT SURFACE COMPACTION OR CRUSTING
- TO CONTROL UNDESIRABLE VEGETATION
- TO MODIFY SOIL TEMPERATURE
- TO INCREASE BIOLOGICAL ACTIVITY IN THE SOIL

CONDITIONS

MULCH OR TEMPORARY GRASSING SHALL BE APPLIED TO ALLEXPOSED AREAS WITHIN 14 DAYS OF DISTURBANCE. MULCH CAN BEUSED AS A SINGULAR EROSION CONTROL DEVICE FOR UP TO SIXMONTHS, BUT IT SHALL BE APPLIED AT THE APPROPRIATE DEPTH,DEPENDING ON THE MATERIAL USED, ANCHORED, AND HAVE A CONTINUOUS 90% COVER OR GREATER OF THE SOIL SURFACE. MAINTENANCE SHALL BE REQUIRED TO MAINTAIN APPROPRIATE DEPTH AND 90% COVER. TEMPORARY VEGETATION MAY BE EMPLOYED INSTEAD OF MULCH IF THE AREA WILL REMAIN UNDISTURBED FOR LESS THAN SIX MONTHS. IF AN AREA WILL REMAIN UNDISTURBED FOR GREATER THAN SIX MONTHS, PERMANENT VEGETATIVE TECHNIQUES SHALL BE EMPLOYED.

SPECIFICATIONS

MULCHING WITHOUT SEEDING

THIS STANDARD APPLIES TO GRADES OR CLEARED AREAS WHERE SEEDINGS MAY NOT HAVE A SUITABLE GROWING SEASON TO PRODUCE AN EROSION RETARDANT COVER, BUT CAN BE STABILIZED WITH A MULCH COVER.

SITE PREPARATION

1. GRADE TO PERMIT THE USE OF EQUIPMENT FOR APPLYING AND ANCHORING MULCH.
2. INSTALL NEEDED EROSION CONTROL MEASURES AS REQUIRED SUCH AS DIKES, DIVERSIONS, BERMS, TERRACES AND SEDIMENT BARRIERS.
3. LOOSEN COMPACT SOIL TO A MINIMUM DEPTH OF 3 INCHES.

MULCHING MATERIALS

SELECT ONE OF THE FOLLOWING MATERIALS AND APPLY AT THE DEPTH INDICATED:

1. DRY STRAW OR HAY SHALL BE APPLIED AT A DEPTH OF 2 TO 4INCHES PROVIDING COMPLETE SOIL COVERAGE. ONE ADVANTAGE OFTHIS MATERIAL IS EASY APPLICATION.
2. WOOD WASTE (CHIPS, SAWDUST OR BARK) SHALL BE APPLIED AT ADEPTH OF 2 TO 3 INCHES. ORGANIC MATERIAL FROM THE CLEARINGSTAGE OF DEVELOPMENT SHOULD REMAIN ON SITE, BE CHIPPED,AND APPLIED AS MULCH. THIS METHOD OF MULCHING CAN GREATLYREDUCE EROSION CONTROL COSTS.
3. CUTBACK ASPHALT (SLOW CURING) SHALL BE APPLIED AT 1200GALLONS PER ACRE (OR 1/4 GALLON PER SQ.YD.).
4. POLYETHYLENE FILM SHALL BE SECURED OVER BANKS ORSTOCKPILED SOIL MATERIAL FOR TEMPORARY PROTECTION. THISMATERIAL CAN BE SALVAGED AND REUSED.

APPLYING MULCH

WHEN MULCH IS USED WITHOUT SEEDING, MULCH SHALL BE APPLIED TO PROVIDE FULL COVERAGE OF THE EXPOSED AREA.

1. DRY STRAW OR HAY MULCH AND WOOD CHIPS SHALL BE APPLIED UNIFORMLY BY HAND OR BY MECHANICAL EQUIPMENT.
2. IF THE AREA WILL EVENTUALLY BE COVERED WITH PERENNIAL VEGETATION, 20–30 POUNDS OF NITROGEN PER ACRE IN ADDITION TO THE NORMAL AMOUNT SHALL BE APPLIED TO OFFSET THE UPTAKE OF NITROGEN CAUSED BY THE DECOMPOSITION OF THE ORGANIC MULCHES.
3. APPLY POLYETHYLENE FILM ON EXPOSED AREAS.

ANCHORING MULCH

1. STRAW OR HAY MULCH CAN BE PRESSED INTO THE SOIL WITH A DISK HARROW WITH THE DISK SET STRAIGHT OR WITH A SPECIAL "PACKER DISK." DISKS MAY BE SMOOTH OR SERRATED AND SHOULD BE 20 INCHES OR MORE IN DIAMETER AND 8 TO 12 INCHES APART. THE EDGES OF THE DISK SHOULD BE DULL ENOUGH NOT TO CUT THE MULCH BUT TO PRESS IT INTO THE SOIL LEAVING MULCH OF IT IN AN ERECT POSITION. STRAW OR HAY MULCH SHALL BE ANCHORED IMMEDIATELY AFTER APPLICATION. STRAW OR HAY MULCH SPREAD WITH SPECIAL BLOWER–TYPE EQUIPMENT MAY BE ANCHORED. TACKIFIERS, BINDERS AND HYDRAULIC MULCH WITH TACKIFIER SPECIFICALLY DESIGNED FOR TACKING STRAW CAN BE SUBSTITUTED FOR EMULSIFIED ASPHALT. PLEASE REFER TO SPECIFICATION "TAC–TACKIFIERS. PLASTIC MESH OR NETTING WITH MESH NO LARGER THAN ONE INCH BY ONE INCH SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S SPECIFICATIONS.
2. NETTING OF THE APPROPRIATE SIZE SHALL BE USED TO ANCHOR WOOD WASTE. OPENINGS OF THE NETTING SHALL NOT BE LARGER THAN THE AVERAGE SIZE OF THE WOOD WASTE CHIPS.
3. POLYETHYLENE FILM SHALL BE ANCHOR TRENCHED AT THE TOP AS WELL AS INCREMENTALLY AS NECESSARY.

DISTURBED AREA STABILIZATION (WITH TEMPORARY SEEDING) Ds2

DEFINITION

THE ESTABLISHMENT OF TEMPORARY VEGETATIVE COVER WITH FAST GROWING SEEDINGS FOR SEASONAL PROTECTION ON DISTURBED OR DENUDED AREAS

PUPROSE

- TO REDUCE RUNOFF AND SEDIMENT DAMAGE OF DOWN STREAM RESOURCES
- TO PROTECT THE SOIL SURFACE FROM EROSION
- TO IMPROVE WILDLIFE HABITAT
- TO IMPROVE AESTHETICS
- TO IMPROVE TILTH, INFILTRATION AND AERATION AS WELL AS ORGANIC MATTER FOR PERMANENT PLANTINGS

CONDITIONS

MULCH OR TEMPORARY GRASSING SHALL BE APPLIED TO ALL EXPOSED AREAS WITHIN 14 DAYS OF DISTURBANCE. TEMPORARY GRASSING, INSTEAD OF MULCH, CAN BE APPLIED TO ROUGH GRADED AREAS THAT WILL BE EXPOSED FOR LESS THAN SIX MONTHS. IF AN AREA IS EXPECTED TO BE UNDISTURBED FOR LONGER THAN SIX MONTHS, PERMANENT PERENNIAL VEGETATION SHALL BE USED. IF OPTIMUM PLANTING CONDITIONS FOR TEMPORARY GRASSING IS LACKING, MULCH CAN BE USED AS A SINGULAR EROSION CONTROL DEVICE FOR UP TO SIX MONTHS BUT IT SHALL BE APPLIED AT THE APPROPRIATE DEPTH, ANCHORED, AND HAVE A CONTINUOUS 90% COVER OR GREATER OF THE SOIL SURFACE.

TEMPORARY VEGETATIVE MEASURES SHOULD BE COORDINATED WITH PERMANENT MEASURES TO ASSURE ECONOMICAL AND EFFECTIVE STABILIZATION. MOST TYPES OF TEMPORARY VEGETATION ARE IDEAL TO USE AS COMPANION CROPS UNTIL THE PERMANENT VEGETATION IS ESTABLISHED. NOTE: SOME SPECIES OF TEMPORARY VEGETATION ARE NOT APPROPRIATE FOR COMPANION CROP PLANTINGS BECAUSE OF THEIR POTENTIAL TO OUT–COMPETE THE DESIRED SPECIES (E.G. ANNUAL RYEGRASS). CONTACT NRCS OR THE LOCAL SWCD FOR MORE INFORMATION.

SPECIFICATIONS

GRADING AND SHAPING

EXCESSIVE WATER RUN–OFF SHALL BE REDUCED BY PROPERLY DESIGNED AND INSTALLED EROSION CONTROL PRACTICES SUCH AS CLOSED DRAINS, DITCHES, DIKES, DIVERSIONS, SEDIMENT BARRIERS AND OTHERS.

NO SHAPING OR GRADING IS REQUIRED IF SLOPES CAN BE STABILIZED BY HAND–SEEDED VEGETATION OR IF HYDRAULIC SEEDING EQUIPMENT IS TO BE USED.

SEEDBED PREPARATION

WHEN A HYDRAULIC SEEDER IS USED, SEEDBED PREPARATION IS NOT REQUIRED. WHEN USING CONVENTIONAL OR HAND–SEEDING, SEEDBED PREPARATION IS NOT REQUIRED IF THE SOIL MATERIAL IS LOOSE AND NOT SEALED BY RAINFALL.

WHEN SOIL HAS BEEN SEALED BY RAINFALL OR CONSISTS OF SMOOTH UNDISTURBED CUT SLOPES, THE SOIL SHALL BE PITTED, TRENCHED, OR OTHERWISE SCARIFIED TO PROVIDE A PLACE FOR SEED TO LODGE AND GERMINATE.

LIME AND FERTILIZER

AGRICULTURAL LIME IS REQUIRED UNLESS SOIL TESTS INDICATE OTHERWISE. APPLY AGRICULTURAL LIME AT A RATE DETERMINED BY SOIL TEST FOR PH. QUICK ACTING LIME SHOULD BE INCORPORATED TO MODIFY PH DURING THE GERMINATION PERIOD. BIO STIMULANTS SHOULD ALSO BE CONSIDERED WHEN THERE IS LESS THAN 3% ORGANIC MATTER IN THE SOIL. GRADED AREAS REQUIRE LIME APPLICATION. SOILS MUST BE TESTED TO DETERMINE REQUIRED AMOUNTS OF FERTILIZER AND AMENDMENTS. FERTILIZER SHOULD BE APPLIED BEFORE LAND PREPARATION AND INCORPORATED WITH A DISK, RIPPER, OR CHISEL. ON SLOPES TOO STEEP FOR, OR INACCESSIBLE TO EQUIPMENT, FERTILIZER SHALL BE HYDRAULICALLY APPLIED, PREFERABLY IN THE FIRST PASS WITH SEED AND SOME HYDRAULIC MULCH, THEN TOPPED WITH THE REMAINING REQUIRED APPLICATION RATE.

SEEDING

SELECT A GRASS OR GRASS–LEGUME MIXTURE SUITABLE TO THE AREA AND SEASON OF THE YEAR. SEED SHALL BE APPLIED UNIFORMLY BY HAND, CYCLONE SEEDER, DRILL, CULTIPACKER–SEEDER, OR HYDRAULIC SEEDER (SLURRY INCLUDING SEED AND FERTILIZER). DRILL OR CULTIPACKER–SEEDERS SHOULD NORMALLY PLACE SEED ONE–HALF TO ONE INCH DEEP. APPROPRIATE DEPTH OF PLANTING IS TEN TIMES THE SEED DIAMETER. SOIL SHOULD BE "RAKED" LIGHTLY TO COVER SEED WITH SOIL IF SEEDED BY HAND.

MULCHING

TEMPORARY VEGETATION CAN, IN MOST CASES, BE ESTABLISHED WITHOUT THE USE OF MULCH, PROVIDED THERE IS LITTLE TO NO EROSION POTENTIAL. HOWEVER, THE THE USE OF MULCH CAN OFTEN ACCELERATE AND ENHANCE GERMINATION AND VEGETATION ESTABLISHMENT. MULCH WITHOUT SEEDING SHOULD BE CONSIDERED FOR SHORT TERM PROTECTION. REFER TO DS1 – DISTURBED AREA STABILIZATION (WITH MULCHING ONLY).

IRRIGATION

DURING TIMES OF DROUGHT, WATER SHALL BE APPLIED AT A RATE NOT CAUSING RUNOFF AND EROSION. THE SOIL SHALL BE THOROUGHLY WETTED TO A DEPTH THAT WILL INSURE GERMINATION OF THE SEED. SUBSEQUENT APPLICATIONS SHOULD BE MADE WHEN NEEDED.

NOTE: FULL TEMPORARY SEEDING SCHEDULE CAN BE FOUND ON SHEET 3.

DISTURBED AREA STABILIZATION (WITH PERMANENT VEGETATION) Ds3

DEFINITION

THE PLANTING OF PERENNIAL VEGETATION SUCH AS TREES, SHRUBS, VINES, GRASSES, OR LEGUMES ON EXPOSED AREAS FOR FINAL PERMANENT STABILIZATION. PERMANENT PERENNIAL VEGETATION SHALL BE USED TO ACHIEVE FINAL STABILIZATION.

CONDITIONS

PERMANENT PERENNIAL VEGETATION IS USED TO PROVIDE A PROTECTIVE COVER FOR EXPOSED AREAS INCLUDING CUTS, FILLS, DAMS, AND OTHER DENUDED AREAS.

SPECIFICATIONS

GRADING AND SHAPING

GRADING AND SHAPING MAY NOT BE REQUIRED WHERE HYDRAULIC SEEDING AND FERTILIZING EQUIPMENT IS TO BE USED. VERTICAL BANKS SHALL BE SLOPED TO ENABLE PLANT ESTABLISHMENT.WHEN CONVENTIONAL SEEDING AND FERTILIZING ARE TO BE DONE, GRADE AND SHAPE WHERE FEASIBLE AND PRACTICAL, SO THAT EQUIPMENT CAN BE USED SAFELY AND EFFICIENTLY DURING SEEDBED PREPARATION, SEEDING, MULCHING AND MAINTENANCE OF THE VEGETATION. CONCENTRATIONS OF WATER THAT WILL CAUSE EXCESSIVE SOIL EROSION SHALL BE DIVERTED TO A SAFE OUTLET. DIVERSIONS AND OTHER TREATMENT PRACTICES SHALL CONFORM WITH THE APPROPRIATE STANDARDS AND SPECIFICATIONS.

SEEDBED PREPARATION

SEEDBED PREPARATION MAY NOT BE REQUIRED WHERE HYDRAULIC SEEDING AND FERTILIZING EQUIPMENT IS TO BE USED. WHEN CONVENTIONAL SEEDING IS TO BE USED,SEEDBED PREPARATION WILL BE DONE AS FOLLOWS:

BROADCAST PLANTINGS

1. TILLAGE AT A MINIMUM, SHALL ADEQUATELY LOOSEN THE SOIL TO A DEPTH OF 4 TO 6INCHES; ALLEVIATE COMPACTION; INCORPORATE LIME AND FERTILIZER; SMOOTH AND FIRM THE SOIL; ALLOW FOR THE PROPER PLACEMENT OF SEED, SPRIGS, OR PLANTS; AND ALLOW FOR THE ANCHORING OF STRAW OR HAY MULCH IF A DISK IS TO BE USED.
2. TILLAGE MAY BE DONE WITH ANY SUITABLE EQUIPMENT.
3. TILLAGE SHOULD BE DONE ON THE CONTOUR WHERE FEASIBLE.
4. ON SLOPES TOO STEEP FOR THE SAFE OPERATION OF TILLAGE EQUIPMENT, THE SOIL SURFACE SHALL BE PITTED OR TRENCHED ACROSS THE SLOPE WITH APPROPRIATE HAND TOOLS TO PROVIDE TWO PLACES 6 TO 8 INCHES APART IN WHICH SEED MAY LODGE AND GERMINATE. HYDRAULIC SEEDING MAY ALSO BE USED.

INDIVIDUAL PLANTS

1. WHERE INDIVIDUAL PLANTS ARE TO BE SET, THE SOIL SHALL BE PREPARED BY EXCAVATING HOLES, OPENING FURROWS, OR DIBBLE PLANTING.
2. FOR NURSERY STOCK PLANTS, HOLES SHALL BE LARGE ENOUGH TO ACCOMMODATE ROOTS WITHOUT CROWDING.
3. WHERE PINE SEEDLINGS ARE TO BE PLANTED, SUBSOIL UNDER THE ROW 36 INCHES DEEP ON THE CONTOUR FOUR TO SIX MONTHS PRIOR TO PLANTING. SUB SOILING SHOULD BE DONE WHEN THE SOIL IS DRY, PREFERABLY IN AUGUST OR SEPTEMBER.

PLANTING

HYDRAULIC SEEDING

MIX THE SEED (INOCULATED IF NEEDED), FERTILIZER, AND WOOD CELLULOSE OR WOOD PULP FIBER MULCH WITH WATER AND APPLY IN A SLURRY UNIFORMLY OVER THE AREA TO BE TREATED. APPLY WITHIN ONE HOUR AFTER THE MIXTURE IS MADE.

CONVENTIONAL SEEDING

SEEDING WILL BE DONE ON A FRESHLY PREPARED AND FIRMED SEEDBED. FOR BROADCAST PLANTING, USE A CULTI–PACKER SEEDER, DRILL, ROTARY SEEDER, OTHER MECHANICAL SEEDER,OR HAND SEEDING TO DISTRIBUTE THE SEED UNIFORMLY OVER THE AREA TO BE TREATED.COVER THE SEED LIGHTLY WITH 1/8 TO 1/4 INCH OF SOIL FOR SMALL SEED AND 1/2 TO 1 INCH FOR LARGE SEED WHEN USING A CULTI–PACKER OR OTHER SUITABLE EQUIPMENT.

NO–TILL SEEDING

NO–TILL SEEDING IS PERMISSIBLE INTO ANNUAL COVER CROPS WHEN PLANTING IS DONE FOLLOWING MATURITY OF THE COVER CROP OR IF THE TEMPORARY COVER STAND IS SPARSE ENOUGH TO ALLOW ADEQUATE GROWTH OF THE PERMANENT (PERENNIAL) SPECIES. NO–TILL SEEDING SHALL BE DONE WITH APPROPRIATE NO–TILL SEEDING EQUIPMENT. THE SEED MUST BE UNIFORMLY DISTRIBUTED AND PLANTED AT THE PROPER DEPTH.

INDIVIDUAL PLANTS

SHRUBS, VINES AND SPRIGS MAY BE PLANTED WITH APPROPRIATE PLANTERS OR HAND TOOLS. PINE TREES SHALL BE PLANTED MANUALLY IN THE SUBSOIL FURROW. EACH PLANT SHALL BE SET IN A MANNER THAT WILL AVOID CROWDING THE ROOTS. NURSERY STOCK PLANTS SHALL BE PLANTED AT THE SAME DEPTH OR SLIGHTLY DEEPER THAN THEY GREW AT THE NURSERY. THE TIPS OF VINES AND SPRIGS MUST BE AT OR SLIGHTLY ABOVE THE GROUND SURFACE. WHERE INDIVIDUAL HOLES ARE DUG, FERTILIZER SHALL BE PLACED IN THE BOTTOM OF THE HOLE, TWO INCHES OF SOIL SHALL BE ADDED AND THE PLANT SHALL BE SET IN THE HOLE.

MULCHING

MULCH IS REQUIRED FOR ALL PERMANENT VEGETATION APPLICATIONS. MULCH APPLIED TO SEEDED AREAS SHALL ACHIEVE 75% SOIL COVER. SELECT THE MULCHING MATERIAL FROM THE FOLLOWING AND APPLY AS INDICATED:

1. DRY STRAW OR DRY HAY OF GOOD QUALITY AND FREE OF WEED SEEDS CAN BE USED. DRY STRAW SHALL BE APPLIED AT THE RATE OF 2 TONS PER ACRE. DRY HAY SHALL BE APPLIED AT A RATE OF 2 1/2 TONS PER ACRE.
2. WOOD CELLULOSE MULCH OR WOOD PULP FIBER SHALL BE USED WITH HYDRAULIC SEEDING. IT SHALL BE APPLIED AT THE RATE OF 500 POUNDS PER ACRE. DRY STRAW OR DRY HAY SHALL BE APPLIED (AT THE RATE INDICATED ABOVE) AFTER HYDRAULIC SEEDING.
3. ONE THOUSAND POUNDS OF WOOD CELLULOSE OR WOOD PULP FIBER, WHICH INCLUDES A TACKIFIER, SHALL BE USED WITH HYDRAULIC SEEDING ON SLOPES 3/4:1 OR STEEPER.
4. SERICEA LESPEDEZA HAY CONTAINING MATURE SEED SHALL BE APPLIED AT A RATE OF THREE TONS PER ACRE
5. PINE STRAW OR PINE BARK SHALL BE APPLIED AT A THICKNESS OF 3 INCHES FOR BEDDING PURPOSES. OTHER SUITABLE MATERIALS IN SUFFICIENT QUANTITY MAY BE USED WHERE ORNAMENTALS OR OTHER GROUND COVERS ARE PLANTED. THIS IS NOT APPROPRIATE FOR SEEDED AREAS.
6. WHEN USING TEMPORARY EROSION CONTROL BLANKETS OR BLOCK SOD, MULCH IS NOT REQUIRED.
7. BITUMINOUS TREATED ROVING MAY BE APPLIED ON PLANTED AREAS ON SLOPES, IN DITCHES OR DRY WATERWAYS TO PREVENT EROSION. BITUMINOUS TREATED ROVING SHALL BE APPLIED WITHIN 24 HOURS AFTER AN AREA HAS BEEN PLANTED. APPLICATION RATES AND MATERIALS MUST MEET GEORGIA DEPARTMENT OF TRANSPORTATION SPECIFICATIONS.

WOOD CELLULOSE AND WOOD PULP FIBERS SHALL NOT CONTAIN GERMINATION OR GROWTH INHIBITING FACTORS. THEY SHALL BE EVENLY DISPERSED WHEN AGITATED IN WATER. THE FIBERS SHALL CONTAIN A DYE TO ALLOW VISUAL METERING AND AID IN UNIFORM APPLICATION DURING SEEDING.

APPLYING MULCH

STRAW OR HAY MULCH WILL BE SPREAD UNIFORMLY WITHIN 24 HOURS AFTER SEEDING AND/OR PLANTING. THE MULCH MAY BE SPREAD BY BLOWER–TYPE SPREADING EQUIPMENT,OTHER SPREADING EQUIPMENT OR BY HAND. MULCH SHALL BE APPLIED TO COVER 75% OF THE SOIL SURFACE.

WOOD CELLULOSE OR WOOD FIBER MULCH SHALL BE APPLIED UNIFORMLY WITH HYDRAULIC SEEDING EQUIPMENT.

ANCHORING MULCH

ANCHOR STRAW OR HAY MULCH IMMEDIATELY AFTER APPLICATION BY ONE OF THE FOLLOWING METHODS:

1. EMULSIFIED ASPHALT CAN BE (A) SPRAYED UNIFORMLY ONTO THE MULCH AS IT IS EJECTED FROM THE BLOWER MACHINE OR (B) SPRAYED ON THE MULCH IMMEDIATELY FOLLOWING MULCH APPLICATION WHEN STRAW OR HAY IS SPREAD BY METHODS OTHER THAN SPECIAL BLOWER EQUIPMENT. THE COMBINATION OF ASPHALT EMULSION AND WATER SHALL CONSIST OF A HOMOGENEOUS MIXTURE SATISFACTORY FOR SPRAYING. THE MIXTURE SHALL CONSIST OF 100 GALLONS OF GRADE SS–1H OR CSS–1H EMULSIFIED ASPHALT AND 100 GALLONS OF WATER PER TON OF MULCH.CARE SHALL BE TAKEN AT ALL TIMES TO PROTECT STATE WATERS, THE PUBLIC, ADJACENT PROPERTY, PAVEMENTS, CURBS, SIDEWALKS, AND ALL OTHER STRUCTURES FROM ASPHALT DISCOLORATION.
2. HAY AND STRAW MULCH SHALL BE PRESSED INTO THE SOIL IMMEDIATELY AFTER THE MULCH IS SPREAD. A SPECIAL "PACKER DISK"" OR DISK HARROW WITH THE DISKS SET STRAIGHT MAY BE USED. THE DISKS MAY BE SMOOTH OR SERRATED AND SHOULD BE 20INCHES OR MORE IN DIAMETER AND 8 TO 12 INCHES APART. THE EDGES OF THE DISKS SHALL BE DULL ENOUGH TO PRESS THE MULCH INTO THE GROUND WITHOUT CUTTING IT,LEAVING MUCH OF IT IN AN ERECT POSITION. MULCH SHALL NOT BE PLOWED INTO THE SOIL.
3. SYNTHETIC TACKIFIERS OR BINDERS APPROVED BY GDOT SHALL BE APPLIED IN CONJUNCTION WITH OR IMMEDIATELY AFTER THE MULCH IS SPREAD. SYNTHETIC TACKIFIERS SHALL BE MIXED AND APPLIED ACCORDING TO MANUFACTURER'S SPECIFICATIONS. REFER TOTB – TACKIFIERS AND BINDERS.
4. RYE OR WHEAT CAN BE INCLUDED WITH FALL AND WINTER PLANTINGS TO STABILIZE THE MULCH. THEY SHALL BE APPLIED AT A RATE OF ONE–QUARTER TO ONE HALF BUSHEL PER ACRE.5. PLASTIC MESH OR NETTING WITH MESH NO LARGER THAN ONE INCH BY ONE INCH MAY BE NEEDED TO ANCHOR STRAW OR HAY MULCH ON UNSTABLE SOILS AND CONCENTRATED FLOW AREAS. THESE MATERIALS SHALL BE INSTALLED AND ANCHORED ACCORDING TO MANUFACTURER'S SPECIFICATIONS.

IRRIGATION

IRRIGATION SHALL BE APPLIED AT A RATE THAT WILL NOT CAUSE RUNOFF.

NOTE: FULL PERMANENT SEEDING SCHEDULE CAN BE FOUND ON SHEET 3

POLLUTION CONTROL NOTES:

1. WASHDOWN OF CONCRETE TOOLS, CONCRETE MIXER CHUTES, HOPPERS AND THE REAR OF THE VEHICLES SHALL BE LOCATED ADJACENT TO THE CONSTRUCTION EXIT AT THE SITE ENTRANCE. WASHDOWN SHALL BE CONTAINED WITHIN A PIT OR TRENCH WITH NO MATERIAL LEAVING THE SITE OR IMPACTING VEGETATED OR NON–DISTURBED AREAS. DISPOSAL OF MATERIAL SHALL INCLUDE THE BREAKING OF MATERIAL INTO SMALL AMOUNTS FOR TRASH DISPOSAL OR REMOVAL FROM SITE TO AN APPROPRIATE LANDFILL. WASHOUT OF THE DRUM ON THE CONSTRUCTION SITE IS PROHIBITED.
2. PAINT AND/OR OTHER CHEMICALS SHALL BE STORED IN SECURED FACILITIES WITH RESTRICTED ACCESS TO EMPLOYEES ONLY. CLEAN UP AND DISPOSAL OF THIS MATERIAL SHALL BE IN ACCORDANCE WITH ALL RECOGNIZED LOCAL AND FEDERAL REQUIREMENTS. ALL DISPOSAL SHALL BE TO APPROVED OFF–SITE WASTE FACILITIES CLASSIFIED TO ACCEPT THAT MATERIAL.
3. ALL PETROLEUM PRODUCTS SHALL BE STORED AND USED IN AN AREA THAT PROVIDES A SECONDARY CONTAINMENT FEATURE, AND SHALL BE LOCATED IN AN AREA WITH THE LEAST FORESEEABLE IMPACT IF A CATASTROPHIC EVENT SHOULD OCCUR. EMERGENCY CONTACT NUMBERS AND PROCEDURES FOR SPILLS SHALL BE AVAILABLE ON SITE.
4. CONTAMINATED SOIL SHALL IMMEDIATELY BE EXCAVATED AND PLACED ON A POLYETHYLENE BARRIER AND ALLOWED TO DRY. DISPOSE OF CONTAMINATED SOIL IN AN APPROVED LINED LANDFILL.

SOLID WASTE DISPOSAL:

1. SOLID MATERIALS, INCLUDING BUILDING MATERIALS, SHALL NOT BE DISCHARGED TO WATERS OF THE STATE OR BURIED ON SITE.
2. WASTE DISPOSAL CONTAINERS, IF NECESSARY, SHOULD BE PROVIDED BY CONTRACT HAULER FOR WASTE MATERIALS GENERATED DURING CONSTRUCTION.

EROSION, SEDIMENTATION, AND POLLUTION CONTROL NOTES

GEORGIA REGISTERED No. PE35089 PROFESSIONAL ENGINEER THOMAS MCCORD

LEVEL II CERTIFIED DESIGN PROFESSIONAL CERT. # 62026 EXPIRES 8/13/2025

REVISIONS:

1	INSTALLATION RFP	03–14–2024

GENERAL LAYOUT AND EROSION CONTROL PLAN FOR THE SECOND PEDESTRIAN BRIDGE AT PALMER MEMORIAL PARK

CITY OF CALHOUN
UTILITIES ENGINEERING
CALHOUN, GEORGIA 30701
PHONE: (706) 629–4701

THIS LINE IS ONE INCH LONG WHEN DRAWING IS PLOTTED FULL SCALE

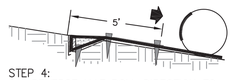
DSGN: KTM	DRWN: ATL
DWG. NAME: PROPOSED PEDESTRIAN BRIDGE	
DATE: MARCH 2024	SHEET NO.: 4 OF 5 SHEETS

UPSTREAM TERMINAL

STEP 1: CUT TERMINAL SLOT.

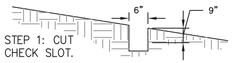
STEP 2: SNUG MAT INTO SLOT.

STEP 3:
A. STAKE MAT INTO SLOT.
B. USE 1" X 3" PRESSURE TREATED BOARD TO SPACE MAT AGAINST VERTICAL CUT.
C. BACKFILL AND COMPACT.

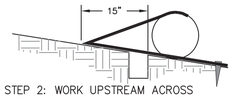


STEP 4:
A. REVERSE MAT ROLL DIRECTION TO OVERLAY CHECK LOT.
B. STAKE MAT TO ANCHOR TERMINAL.

TRANSVERSE CHECK SLOT

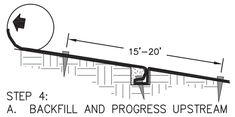


STEP 1: CUT CHECK SLOT.
TEMPORARILY STAKE MAT UNDER MODERATE TENSION.



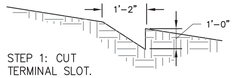
STEP 2: WORK UPSTREAM ACROSS CHECK SLOT AND LAP BACK 15".

STEP 3: TUCK MAT LAP INTO SLOT AND STAKE.

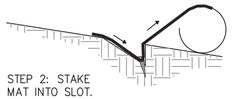


STEP 4:
A. BACKFILL AND PROGRESS UPSTREAM
B. PULL OUT TEMPORARY STAKES WHEN NO LONGER NEEDED FOR TENSIONING.

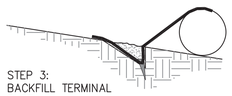
DOWNSTREAM TERMINAL



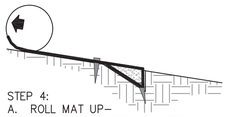
STEP 1: CUT TERMINAL SLOT.



STEP 2: STAKE MAT INTO SLOT.

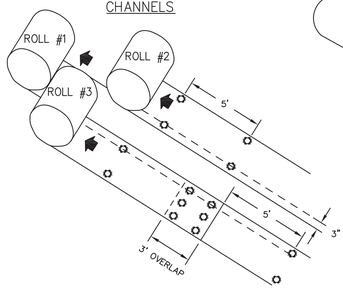


STEP 3: BACKFILL TERMINAL SLOT.

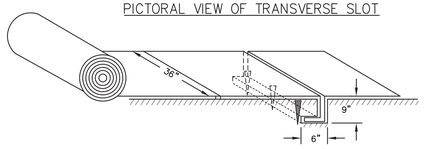


STEP 4:
A. ROLL MAT UP-STREAM OVER REFILLED TERMINAL.
B. STAKE MAT DOWN TO ANCHOR TERMINAL.
C. PROGRESS UPSTREAM WITH ROLL.

SEQUENTIAL ROLL RUN OUT IN CHANNELS



PICTORAL VIEW OF TRANSVERSE SLOT



NOTES:
1. START AT DOWNSTREAM TERMINAL AND PROGRESS UPSTREAM.
2. FIRST ROLL IS CENTERED LONGITUDINALLY IN MID-CHANNEL AND PINNED WITH TEMPORARY STAKES TO MAINTAIN ALIGNMENT.
3. SUBSEQUENT ROLLS FOLLOW IN STAGGERED SEQUENCE BEHIND THE FIRST ROLL. USE THE CENTER ROLL FOR ALIGNMENT TO THE CHANNEL CENTER.
4. WORK OUTWARDS FROM THE CHANNEL CENTER TO THE EDGE.
5. USE 3" OVERLAPS AND STAKE AT 5' INTERVALS ALONG THE SEAMS.
6. USE 3' OVERLAPS AND SHINGLE DOWNSTREAM TO CONNECT THE LINING AT THE ROLL ENDS.

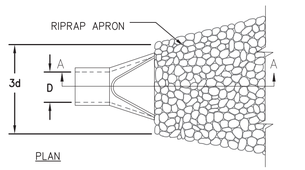
Ss

TYPICAL INSTALLATION GUIDELINES FOR ROLLED EROSION CONTROL

N.T.S

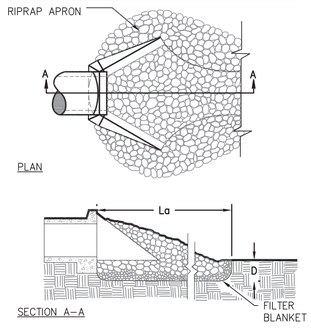
RIPRAP OUTLET PROTECTION St

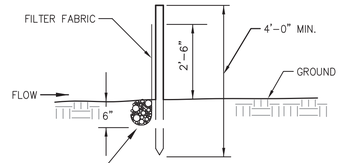
PIPE OUTLET TO FLAT AREA -- NO WELL DEFINED CHANNEL



NOTES:
1. La IS THE LENGTH OF THE RIPRAP APRON.
2. D = 1.5 TIMES THE MAXIMUM STONE DIAMETER BUT NOT LESS THAN 6".
3. IN A WELL-DEFINED CHANNEL, EXTEND THE APRON UP THE CHANNEL BANKS TO AN ELEVATION OF 6" ABOVE THE MAXIMUM TAILWATER DEPTH OR TO THE TOP OF THE BANK (WHICHEVER IS LESS).
4. A FILTER BLANKET OR FILTER FABRIC SHOULD BE INSTALLED BETWEEN THE RIPRAP AND THE SOIL FOUNDATION.

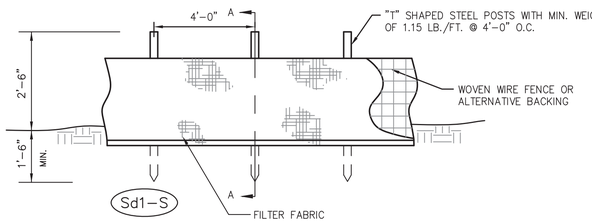
PIPE OUTLET TO WELL DEFINED CHANNEL





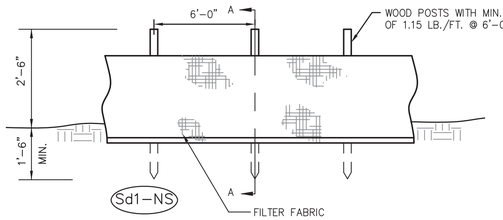
SECTION A

NOTE: SILT FENCE INSTALLATION & MATERIALS SHALL MEET THE MINIMUM REQUIREMENTS OF SECTION 171 OF THE GA DOT SPECIFICATION (LATEST EDITION)



SILT FENCE SEDIMENT BARRIERS

N.T.S.

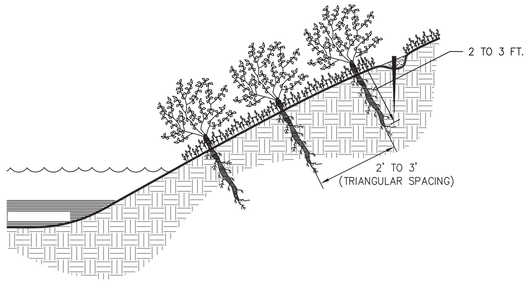


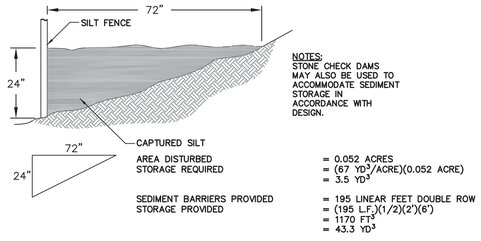
SILT FENCE SEDIMENT BARRIERS

N.T.S.

STREAM STABILIZATION Sb

LIVE STAKING CROSS-SECTION





NOTES:
STONE CHECK DAMS MAY ALSO BE USED TO ACCOMMODATE SEDIMENT STORAGE IN ACCORDANCE WITH DESIGN.

TYPICAL SILT FENCE STORAGE

EROSION, SEDIMENTATION, AND POLLUTION CONTROL DETAILS

REVISIONS:		
1	INSTALLATION RFP	03-14-2024

GENERAL LAYOUT AND
EROSION CONTROL PLAN FOR THE
SECOND PEDESTRIAN BRIDGE
AT PALMER MEMORIAL PARK

CITY OF CALHOUN
UTILITIES ENGINEERING
CALHOUN, GEORGIA 30701
PHONE: (706) 629-4701

LEVEL II CERTIFIED DESIGN PROFESSIONAL, CERT. # 62026
EXPIRES 8/13/2025

THIS LINE IS ONE INCH LONG WHEN DRAWING IS PLOTTED FULL SCALE

DSGN: KTM	DRWN: ATL
DWG. NAME: PROPOSED PEDESTRIAN BRIDGE	
DATE: MARCH 2024	SHEET NO.: 5 OF 5 SHEETS

Supporting Document B:
Stream Buffer Variance Permit
Issued by GA-EPD

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Jeffrey W. Cown, Director

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Atlanta, Georgia 30334
404-656-4713

Dec 20, 2023

Kim Townsend
City of Calhoun
Palmer Memorial Bridge
P.O. Box 248
Calhoun, GA 30701

RE: Request for Variance under the Provisions of O.C.G.A. § 12-7-6(b)(15)
Palmer Memorial Bridge
Calhoun, Gordon County
File: BV-064-23-03

Dear Kim Townsend:

The Georgia Environmental Protection Division (EPD) has reviewed your stream buffer variance application for the above-referenced project. The review was conducted to consider the potential impacts of the proposed project's encroachment on buffers to State waters within the context of the Georgia Erosion and Sedimentation Act and the potential impact to State waters within the context of Georgia's National Pollutant Discharge Elimination System (NPDES) General Permits for Stormwater Discharges Associated with Construction Activities. This review, and the variance granted herein, is limited to only the request(s) in the application that you submitted for permission to conduct land-disturbing activities within 25-foot areas located immediately adjacent to the banks of State waters where vegetation has been wrested by normal stream flow or wave action. To the extent that your buffer variance application includes a request to conduct land-disturbing activities within 25 feet of State waters where there is no vegetation that has been wrested by normal stream flow or wave action, such request has not been considered by EPD, and the related activity is not addressed in the variance granted herein.

Pursuant to Ga. Comp. R. and Regs. 391-3-7-.05(2)(a) and subject to the conditions and contingencies described further below, authorization is hereby granted to encroach within the 25-foot buffer adjacent to State waters as delineated in your application dated September 27, 2023. ***Buffer impacts authorized by this variance must be completed within five years of the date of this approval letter. If the approved buffer impacts cannot be completed prior to the expiration date, a time extension must be requested in writing at least 90 calendar days prior to the expiration date with justifiable cause demonstrated***.

Authorization for the above referenced project is subject to the following conditions and contingencies:

1) All graded slopes 3:1 or greater must be hydroseeded and covered with Georgia DOT approved wood fiber matting or coconut fiber matting. If not hydroseeded, Georgia DOT approved matting that has been incorporated with seed and fertilizer must be used. All slopes must be properly protected until a permanent vegetative stand is established;

2) The amount of land cleared during construction must be kept to a minimum;

3) All disturbed areas must be seeded, fertilized, and mulched as soon as the final grade is achieved. Also, these disturbed areas must be protected until permanent vegetation is established;

4) A double row of Georgia DOT type "C" silt fence or an approved high performance silt fence must be installed between the land disturbing activities and State waters where appropriate;

5) Buffer variance conditions must be incorporated into any Land Disturbing Activity Permit issued by the City of Calhoun for this project; and

6) This project must be conducted in strict adherence to the approved erosion and sedimentation control plan and any Land Disturbing Activity Permit issued by the City of Calhoun.

The granting of this approval does not relieve you of any obligation or responsibility for complying with the provisions of any other law or regulations of any federal, local or additional State authority, nor does it obligate any of the aforementioned to permit this project if they do not concur with its concept of development/control. As a delegated "Issuing Authority," the City of Calhoun is expected to ensure that the stream buffer variance requirements are met for this project and is empowered to be more restrictive in this regard.

If you have questions concerning this letter, please contact Madison McCrary, Erosion and Sedimentation Control Unit, Nonpoint Source Program, at (470) 524-0622.

Sincerely,

Jeffrey W. Cown

Jeffrey W. Cown
Director

JWC:mm

cc: Kurt T. McCord, City of Calhoun
James F. Palmer, Mayor, City of Calhoun
Neal Russell, City of Calhoun
Jim Hakala, Wildlife Resources Division, Region 1 Fisheries Management
Robert Amos, Georgia Soil and Water Conservation Commission, Region I
Kevin Dallmier, EPD Mountain District Office, Cartersville

File: BV-064-23-03

Supporting Document C:
GeoTechnical Subsurface Investigation

By GeoSystems Engineering, Inc.

GEOSYSTEMS
ENGINEERING, INC.

October 16, 2023

Kurt T. McCord, P.E.
Calhoun Utilities
700 West Line Street
Calhoun, Georgia 30701

Re: Subsurface Investigation Report
City of Calhoun
Proposed Pedestrian Bridge at Palmer Memorial Park
Calhoun, Gordon County, Georgia
GeoSystems Project No. 23-2907

Dear Mr. McCord:

GeoSystems Engineering, Inc. (GeoSystems) has completed the authorized subsurface investigation for the referenced pedestrian bridge. The purpose of the investigation was to characterize subsurface conditions at the site and provide information required for design of the new bridge abutments. Our services were performed in general accordance with GeoSystems proposal, dated September 13, 2023. The following report presents our understanding of the project, investigation procedures, indicated subsurface conditions and our conclusions and recommendations for geotechnical issues relative to the bridge foundation design and construction.

PROJECT INFORMATION

Our understanding of this project is based on information included in your previous emails, a preliminary bridge plan, dated September 2023, and our telephone discussions. We observed the site conditions during the field investigation, and also reviewed a site-specific soil survey report from the NRCS website and available on-line historic aerial photographs of the site.

The proposed bridge location is within Palmer Memorial Park along Oothkalooga Creek in the City of Calhoun. Entrance to the park on the eastern side of the creek is via a drive at the Calhoun City Recreation Department, located at 601 South River Street. On the western side, park access is by Recreation Drive, off McDaniel Station Road, SW. In the park area, the creek flows generally to the south but bends to the northeast about 600 feet southwest of the bridge location and bends back to the southeast immediately east of the location. A Google Earth Site Location Map is attached showing the 601 South River Street address.

Topography in the park vicinity is a relatively level, broad floodplain formed along the existing creek. Indicated grades shown on the preliminary bridge plan vary from high elevations of 619 and 620 feet near the ends of the bridge location on the north and south sides, respectively, to a low elevation of 614 to 615 feet in the creek bottom.

The north bridge abutment will be located adjacent to a driveway encircling through the park along the east side of the creek. The location is near the eastern edge of the park at the creek. The south bridge abutment is located along the northern side of a paved trail through the park along the western side of the creek.

We understand the proposed pedestrian bridge will be a single span prefabricated welded steel bridge capable of carrying light maintenance ATV-type vehicles, bicycles and pedestrians. The bridge span is 88 feet long and the deck will be 11 feet wide. We understand the estimated total (dead + live) vertical service load at each bridge abutment support will be on the order of 95 to 100 kips. The bridge fabricator's structural engineer is responsible for design of reinforced concrete abutments for the bridge.

INVESTIGATION PROCEDURES

Subsurface conditions at the bridge location were investigated by drilling two soil test borings, B-1 at the north abutment and B-2 at the south abutment. Four auger borings (B-1A, B-1B, B-2A and B-2B), offset short distances from the soil test borings, were also drilled to investigate auger refusal conditions. The boring locations are shown on the attached *Boring Location Plan* (Figure 1) that was prepared from the provided preliminary bridge plan. The boring locations were established in the field by a GeoSystems engineer by measuring distances and estimating right angles from existing abutment stakes previously set by the city engineers. Boring elevations were estimated to the nearest 1-foot from the topography shown on the preliminary bridge plan. Since these measurements are not precise, the referenced boring locations and elevations should be considered approximate.

Soil sampling and standard penetration testing in the borings were in general accordance with ASTM Standard D 1586. All borings were advanced to refusal depths by mechanically rotating hollow-stem augers into the ground. Standard penetration testing and soil sampling were performed in borings B-1 and B-2 at regular intervals using a standard 1.4-inch I.D., 2-inch O.D. split-barrel sampler. The sampler was first seated 6 inches to penetrate any loose cuttings, and then driven an additional foot with blows from a 140-pound automatic hammer falling 30 inches. The number of blows required to drive the sampler the final foot was recorded and is designated the "standard penetration resistance," or "N" value. Penetration resistance, when properly evaluated, is an index of the soil's strength, density, and ability to support foundations.

Split-barrel samples from the borings were initially classified in the field. Following completion of the field drilling, the samples were returned to our laboratory and visually classified by a geotechnical engineer. The enclosed test boring records represent our interpretation of the field conditions based on the boring logs and examination of the split-barrel samples. Included are soil descriptions and unified classifications, graphical plots of the standard penetration resistances, and groundwater conditions encountered at the time of boring. Lines on the boring logs, designating interfaces between various strata, represent approximate boundaries only, as transitions between materials may be gradual. We note that subsurface conditions shown represent those at the boring locations only and conditions between borings or at other locations may be different than those indicated.

AREA AND SITE GEOLOGY

The proposed bridge site is in the Great Valley District of the Southern Valley and Ridge Section of the Ridge and Valley Physiographic Province of Georgia. The topography of the Great Valley District is typically broad and open with a few scattered ridges and hills. Ground elevations generally range from 700 to 800 feet above sea level with relief of 50 to 100 feet. The eastern edge of this area follows the escarpment of the Great Smokey-Cartersville Fault.

The Ridge and Valley Province lies generally north and west of the Piedmont and Blue Ridge provinces and is bounded in Georgia on the north by the Cumberland Plateau and Lookout Mountain and on the south and east by the Great Smokey-Cartersville Fault. Rocks in this province are generally ancient sedimentary materials 420 to 500 million years old, dating from Cambrian or Ordovician times. Although the rocks were placed as sediments, they have long ago been consolidated into very hard rocks by cementation and great pressure. The basic rocks include limestones, sandstones, and shales, that are typically interbedded and quite broken. All these rocks have weathered in place and are covered by a mantle of residual soils formed by their chemical alteration. The residuum consists of the insoluble impurities which once were present in the rock. Characteristically, these soils are red-brown or yellow clay containing varying amounts of sand, chert gravel, and boulders.

Geologic mapping indicates the underlying rocks at this location are either shale with beds of limestone in the Conasauga shale formation or dolomites and limestones of the Knox dolomite formation. Shale is a fine-grained rock formed under pressure by the compaction of silt or clay. Limestone contains calcium or calcium carbonate, whereas dolomite contains calcium and magnesium carbonate. Most dolomites are associated and often interbedded with limestone.

SUBSURFACE CONDITIONS

The subsurface conditions encountered by the borings drilled at the bridge abutments consist of an upper stratum of alluvium and then some possible residual soils overlying auger refusal (apparent bedrock) materials. The following narrative briefly describes each of these subsurface conditions.

Alluvium

Alluvium is a term used to define soils that have been deposited by flowing water. Soils described as alluvium were encountered in the borings from below the ground surface to approximate depths of 7 feet in the north abutment and 12 feet in the south abutment. The alluvium was described mostly as silt (ML) with traces of clay and fine sand. Underlying the upper silt, slightly clayey fine to coarse sand (SW) was also identified in the south abutment extending from about 8 to 12 feet in depth. Consistency of the silt, indicated by the standard penetration resistances, is stiff to very stiff in the north abutment and firm in the south abutment. Standard penetration resistances in these soils ranged approximately from 10 to 25 blows per foot (bpf) in boring B-1 and 6 to 8 bpf in B-2. We note, however, that due to very dry, desiccated soil moisture conditions in boring B-1, the penetration values

are likely amplified indicating higher consistency not representative of the actual soil strength. Relative density of the sand layer in boring B-2 is very loose based on a penetration value of 2 bpf.

Possible Residuum

Residuum refers to residual soils that formed in-situ by the chemical weathering process of the underlying rocks. Possible residuum was encountered beneath the alluvium in boring B-2 and extended to auger refusal at a depth of 23 feet below the surface. The residual soils are comprised of soft to very soft silt (ML) with traces of clay and fine rock fragments. Penetration values in the residual soils were 1 and 2 bpf.

Refusal Material

Refusal is a designation applied to any material that cannot be further penetrated by the soil drilling process and is normally indicative of a very hard or very dense material, such as boulders, rock lenses, or the upper surface of bedrock. Refusal was encountered at a depth of 7 feet in each boring conducted in the north abutment and varied between 18 and 23 feet in borings B-2, B-2A and B-2B in the south abutment. Rock coring procedures are required to determine the character and continuity of the refusal materials. No rock coring was performed during this investigation; however, the hollow-stem auger refusal levels appear to be at or near the upper surface of bedrock underlying the area.

Groundwater

Groundwater was encountered at the time of the field investigation at a depth of 4 feet in the south abutment borings. No groundwater was observed at the locations of borings B-1, B-1A and B-1B in the north abutment. Water level measurements were made with a weighted tape immediately after removing the augers from the boreholes. Stabilized 24-hour groundwater levels were not determined, since the open boreholes were backfilled with the soil cuttings following completion of the field work. Groundwater is subject to subsurface conditions, runoff, climate, seasonal variations, and other factors; therefore, groundwater conditions at other locations or at other times may be different than that reported during this study.

CONCLUSIONS AND RECOMMENDATIONS

Foundation Support

North Abutment. A conventional shallow spread footing foundation keyed into apparent bedrock is recommended for support of the planned reinforced concrete abutment on the north end of the bridge. The foundation will require penetration of the upper approximate 7-foot thick alluvium layer. Installation of the footing may require temporary dewatering of the excavation or other groundwater control measures to allow construction below the water table. We anticipate that shallow groundwater control may be accomplished by pumping from sumps within the excavation. A cofferdam along the creek side of the excavation may also be required to reduce or control infiltration of water from the

creek or during flood conditions. The theoretical scour line for the creek has not been determined. However, we estimate the scour line is near elevation 612 at the north abutment because of the presence of apparent scour resistant rock.

Based on anticipated relatively light structural loading conditions, we anticipate maximum contact pressure for the north abutment shallow spread footing will be on the order of 3 to 4 ksf. Higher bearing capacities are available in competent bedrock, if required; however, we recommend foundation design using similar soil bearing capacities due to the unknown rock conditions. The footing should be embedded a minimum of 1 foot into a competent rock bearing stratum for protection from possible scour at the north end.

We recommend the shallow footing excavation be evaluated by the project geotechnical engineer to confirm that conditions are similar to those encountered in the borings and that the bearing rock is capable of supporting the design contact pressure. Engineering inspection should include probing small-diameter test holes drilled by the contractor into the rock at the bottom of the footing in order to evaluate its hardness and continuity. At least two test holes should be installed to two (2) times the footing width or a minimum of 6 feet, whichever is greater. Additional test holes may be required by the inspector to adequately evaluate the quality of the bearing rock. The bearing surface should be level or suitably benched and free of soft or loose soil, mud, disturbed materials, or other deleterious materials immediately prior to placement of concrete.

South Abutment. Subsurface conditions at the south abutment location are indicated to consist of very weak, compressible alluvium and possible residual soils to depths of about 18 to 23 feet below the surface. Apparent rock below these depths is indicated by auger refusal conditions in borings B-2, B-2A and B-2B. The existing alluvium and possible residual soil subsurface conditions are considered unsuitable for shallow foundation support. Deep pile or pier foundations, including timber and steel piles, would be acceptable for support of the bridge abutment. However, based on the boring data and our experience with similar subsurface conditions and foundation loading conditions, we recommend that helical piers be used for foundation support of the south abutment. Helical piers work well for support of relatively light structures, installation is typically fast with little soil displacement at the ground surface and are relatively cost effective.

Many factors including the subsurface conditions, helical shaft diameter, number and sizes of the helix plates, pier embedment, etc. are considered in designing helical pier foundations. In order to allow specialized helical pier contractors bidding the project to utilize their previous experience and adapt their specialized helical pier products, equipment and construction methods to the site specific conditions, we recommend a performance specification be used for the pier installation. The specification should assign responsibility for final helical pier design and the pier installation methods to the helical pier designer/installation contractor and describe the pier design and performance requirements, products and materials, and required submittals.

The contractor may rely on the subsurface conditions described in this report for the helical pier design analysis or may also perform additional investigations and testing to determine the soil parameters for

design. The contractor should submit site specific shop drawings and design calculations for the helical pier foundation system for review and approval prior to installation. The specifications should require the shop drawings and calculations be prepared by a Georgia professional engineer and include a description of the required pier components, estimated pier embedment depths and the minimum installation torque required to achieve the design vertical compression, vertical uplift tension and lateral load resistance pier capacities. Field installation of the helical piers should be observed by the project geotechnical engineer to confirm the required torque resistance, pier embedment depth, and inclination constraints are achieved.

For the indicated subsurface conditions, we anticipate that helical piers will require embedment to the indicated top of rock at depths of 18 to 23 feet below the existing ground surface, in order to achieve design capacity. The capacity is typically verified using a torque-capacity relationship, which varies depending on the size of helix and shaft utilized for individual piers. In the subsurface conditions indicated, we anticipate the helical piers will provide adequate compression resistance and limited uplift capacity. Compression and uplift capacity can be verified if some penetration into the bearing stratum is achieved, and adequate torque can be developed. However, for auger refusal conditions, helical piers generally refuse near the top of the bearing stratum without development of torque. In this case helical pier capacities cannot be verified with torque correlations, but other methods can be used to assure the compression resistance and conservatively estimate uplift capacity, if required.

The minimum size helical pier used in the industry is typically a single 8-inch diameter helix on a 1.5-inch square shaft. However, we expect that larger, round hollow shaft helical piers, which range from about 3 to 8 inches in diameter, will be required for this project to prevent possible buckling of the piers in the weak upper alluvium and possible residuum strata. Standard practice for helical pier design is a minimum center-to-center spacing between adjacent helical piers of three times the diameter of the largest helix but not less than 3 feet. A factor of safety of 2.0 is typically used for determining the allowable pier capacity for design and ultimate vertical compression capacities for helical piers installed into the residual soil stratum to the top of rock, should be capable of achieving the required ultimate compression capacities.

We recommend the use of piers battered at an angle of 15 to 20 degrees from the vertical to assist in development of required lateral load resistance. Lateral support from horizontal earth pressure resistance on individual pier shafts is also available but is limited due to relatively low soil strength in the upper soil strata. Depending on the loads applied and available lateral soil support along the pier shaft, it may be possible to use an enlarged section in the upper portion of the piers and a smaller diameter shaft for the lower portions. Additional lateral loads could be resisted by extending the concrete abutment foundation deeper into the ground to develop passive soil resistance.

Slope Stability

As noted previously, footing installation at the north abutment will require excavation through the upper 7 feet of alluvium in order to provide bearing in the underlying apparent rock surface. Our investigation did not include a detailed analysis of slope stability for any temporary excavation slope

or permanent slope conditions for the bridge construction. However, we recommend temporary slopes no steeper than 1.5(H):1.0(V) and permanent slopes no steeper than 2.0(H):1.0(V) for soil excavations and soil or rock fills constructed at this site. A minimum setback from the top of all permanent slopes of 5 feet is recommended for pavements. In addition, provisions should be made for protection of all slopes from erosion.

Abutment Wall Earth Pressure

We assume that permanent cast-in-place concrete walls will be required at the abutments to support the bridge and retain backfill for the bridge approaches. Earth pressures on walls below grade are influenced by the structural design of the walls, conditions of wall restraint, methods of construction and the strength of the materials being restrained. The most common conditions assumed for earth retaining wall design are the active and at-rest conditions. Active conditions apply to relatively flexible earth retention structures, such as free-standing cantilevered walls, where some movement and rotation may occur to mobilize soil shear strength. Walls that are rigidly restrained, such as basement, pit and tunnel walls, should be designed for the at-rest condition. A third condition, the passive state, represents the maximum possible pressure when a structure is pushed against the soil, and is used in wall foundation design to help resist active or at-rest pressures. Because significant wall movements are required to develop the passive pressure, a minimum factor of safety of 2.0 should be applied to the total calculated passive resistance for design purposes.

We recommend the following effective earth pressure coefficients for design of permanent cast in place concrete abutment retaining walls and any required temporary shoring:

Earth Pressure Conditions	**Coefficient**	
	Crushed Stone	Sandy Soil
Active (K_A)	0.22	0.33
At-Rest (K_O)	0.36	0.50
Passive (K_P)	4.60	3.00

The recommended earth pressure coefficients are based on our previous experience with similar conditions and the following assumed properties for compacted crushed stone (GP/GW or GDOT graded aggregate base (GAB)) and sandy soil backfill (SW/SM GDOT Class I Roadway Materials):

Crushed Stone:

Cohesion (c) - 0
Angle of Internal Friction (ϕ) - 40 degrees
Soil Unit Weight (γ) - 140 pcf

Sandy Soil:

Cohesion (c) - 0
Angle of Internal Friction (ϕ) - 30 degrees
Soil Unit Weight (γ) - 120 pcf

To calculate the north abutment wall shallow foundation resistance to sliding, a coefficient of static friction (μ) value of 0.70 should be used for rough concrete cast against clean, sound rock.

Abutment Approach Embankment Construction

Clean crushed stone backfill behind the new bridge abutment walls should be placed in maximum 12-inch thick loose lifts. Each lift must be compacted with several passes of walk behind vibratory rollers or portable vibratory sleds. Structural backfill composed of GAB or sandy soil should be placed in maximum 6 to 8-inch lifts, loose measure, and compacted to at least 98 percent of the maximum dry density as determined by the modified Proctor compaction test (ASTM D-1557, Modified AASHO). In confined areas, portable compaction equipment and thin lifts of 3 to 4 inches may be required to achieve the specified degree of compaction. Soil moisture during placement should be maintained within 0 to 3 percent of the optimum moisture content. All fill should be placed in horizontal lifts and adequately keyed into the existing stripped and scarified subgrade soils. During fill placement a sufficient number of field density tests should be conducted by a qualified soils technician working under the direction of the geotechnical engineer to assure that the recommended degree of compaction is achieved.

QUALIFICATION OF RECOMMENDATIONS

Our design and construction recommendations for the proposed pedestrian bridge were based on our understanding of the project, the information obtained during the field investigation, and our experience with similar site and subsurface conditions. The anticipated subsurface conditions were interpolated from the boring data. We note that regardless of the thoroughness of a subsurface investigation, there is the possibility that conditions between borings will differ from those at the boring locations; there may be conditions that were not anticipated, or that the construction process has altered the subsurface conditions. The nature and extent of such variations may not become evident until the course of construction. If conditions differing from those anticipated are encountered, GeoSystems should review the changed conditions to develop any required revisions to our recommendations. Also, should the bridge plans change substantially from those outlined in this report, we request the opportunity to review our recommendations considering the changes.

Our professional services were performed, our findings derived, and our conclusions prepared consistent with the professional skill and care ordinarily provided by geotechnical engineers practicing in the same locality under the same or similar circumstances for projects of this type. We make no warranties or guarantees, either expressed or implied. GeoSystems is not responsible for the conclusions, opinions or recommendations of others based on our findings and evaluations.

Thank you for giving us the opportunity to conduct this subsurface investigation for the new pedestrian bridge. We look forward to assisting you with any additional consulting or inspection services that may be required during the construction phase of the project.

Sincerely,

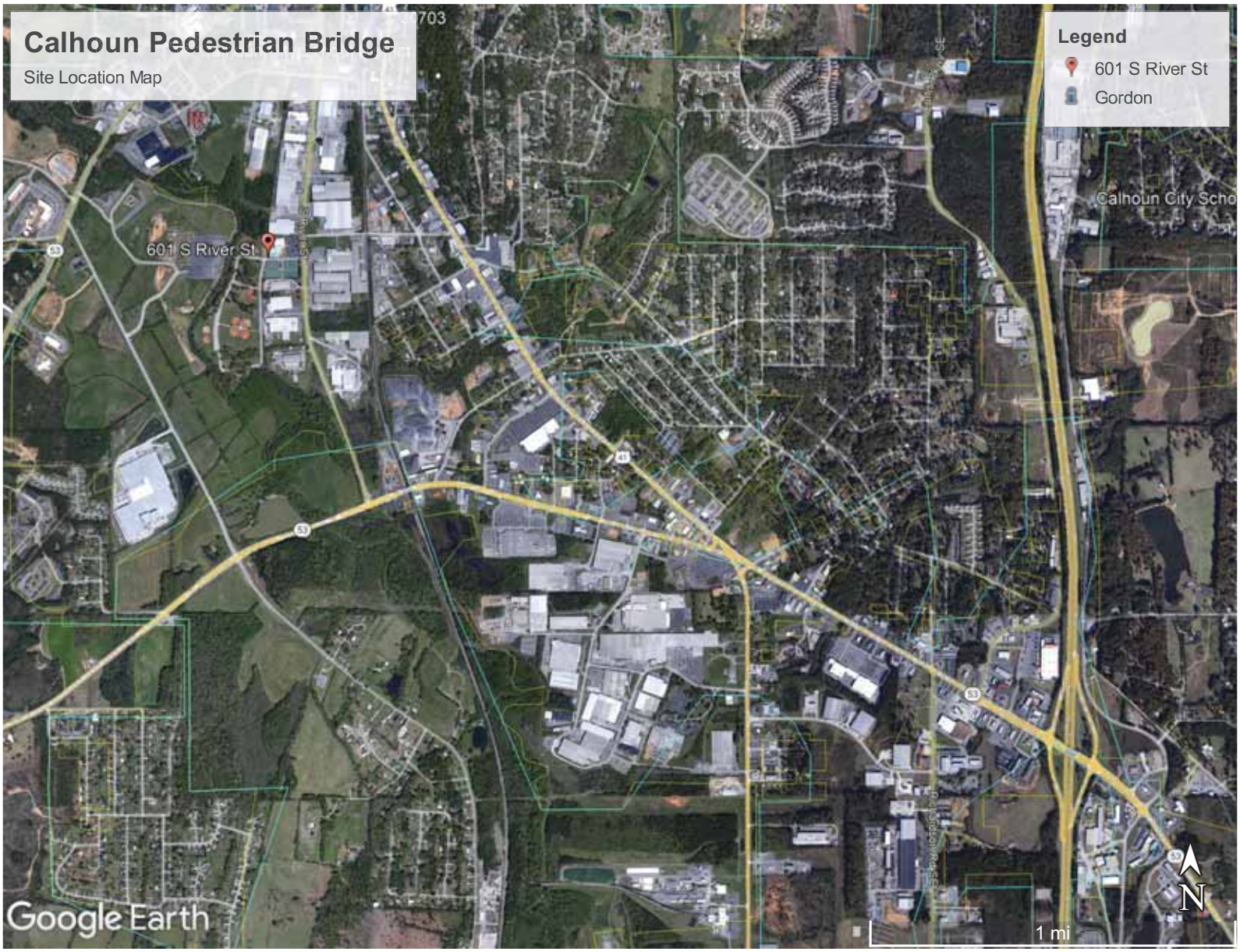
GeoSystems Engineering, Inc.

Larry Mullins

Larry D. Mullins, P.E.
Principal Engineer

Enclosures: Google Earth – Site Location Map
Boring Location Plan – Figure 1
Key to Symbols and Classifications
Soil Test Boring Logs

Cc: Margaret Boyd
Kim Townsend


Calhoun Pedestrian Bridge
Site Location Map
Legend
601 S River St
Gordon
601 S River St
Calhoun City Scho
Google Earth
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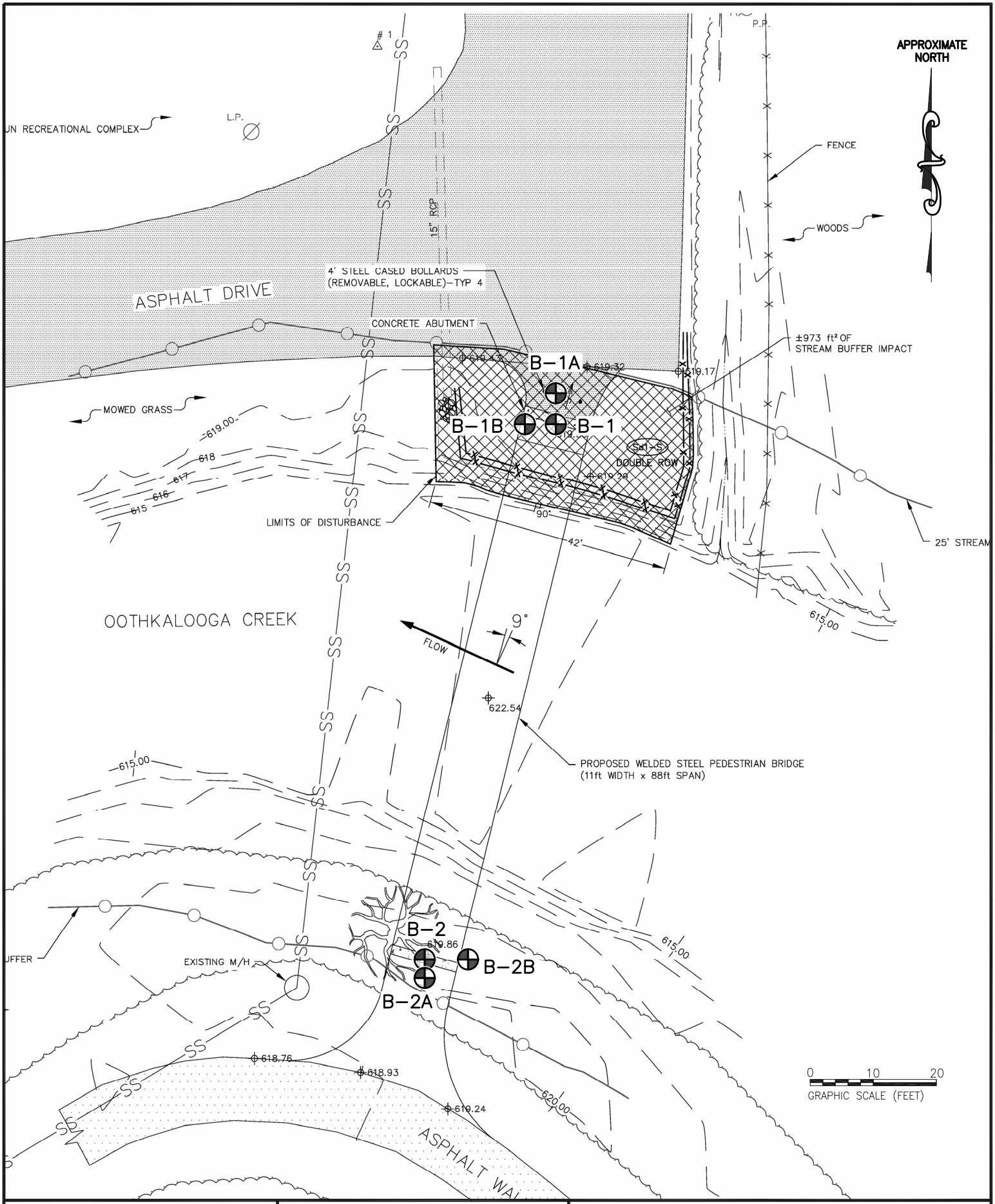


LEGEND

⊕ – SOIL TEST BORING

SCALE: 1" = 20' (APPROXIMATELY)

PREPARED BY: GEI	DATE: 10/9/2023
REVIEWED BY: LDM	DATE: 10/9/2023

GEOSYSTEMS ENGINEERING, INC.

REFERENCE: Calhoun Pedestrian Bridge.dwg

BORING LOCATION PLAN

PROJECT: CITY OF CALHOUN
PROPOSED PEDESTRIAN BRIDGE AT PALMER MEMORIAL PARK
Calhoun, Gordon County, Georgia
GeoSystems Project Number: 23–2907

FIGURE: 1

KEYS TO SYMBOLS AND CLASSIFICATIONS

SPECIAL STRATIGRAPHY IDENTIFIERS USED TO HIGHLIGHT SPECIFIC LAYERS	FILL TOPSOIL PAVEMENT	PARTIALLY WEATHERED ROCK ROCK (GENERAL) WATER ALLUVIUM
COARSE GRAINED SOIL - GRAVELS & SANDS (MORE THAN 50% OF MATERIAL IS RETAINED ON NO. 200 SIEVE)	CLEAN SANDS & GRAVELS (< 5% FINES CONTENT)	SP: Poorly graded sands SW: Well graded sands GP: Poorly graded gravels GW: Well graded gravels
	SANDS & GRAVELS WITH HIGH FINES CONTENT (> 15% FINES CONTENT)	SM: Silty sands GM: Silty gravels SC: Clayey sands GC: Clayey gravels
FINE GRAINED SOIL - SILTS & CLAYS (MORE THAN 50% OF MATERIAL PASSES NO. 200 SEIVE)	SILTS	ML: Low plasticity inorganic silts MH: High plasticity inorganic silts
	CLAYS	CL: Low placticity inorganic clays CH: High plasticity inorganic clays
	ORGANIC SILTS & CLAYS	OL: Low plasticity organic silts and clays OH: High plasticity organic silts and clays

CORRELATION OF PENETRATION RESISTANCE WITH RELATIVE DENSITY AND CONSISTENCY

	NUMBER OF BLOWS, N	APPROXIMATE RELATIVE DENSITY
SANDS AND GRAVELS	0 - 4	Very Loose
	5 - 10	Loose
	11 - 30	Medium Dense
	31 - 50	Dense
	OVER 50	Very Dense
	NUMBER OF BLOWS, N	APPROXIMATE RELATIVE CONSISTENCY
SILTS AND CLAYS	0 - 1	Very Soft
	2 - 4	Soft
	5 - 8	Firm
	9 - 15	Stiff
	16 - 30	Very Stiff
	31 - 50	Hard
	OVER 50	Very Hard

CITY OF CALHOUN
PROPOSED PEDESTRIAN BRIDGE AT PALMER MEMORIAL PARK
CALHOUN, GORDON COUNTY, GEORGIA

LOG OF BORING B-1

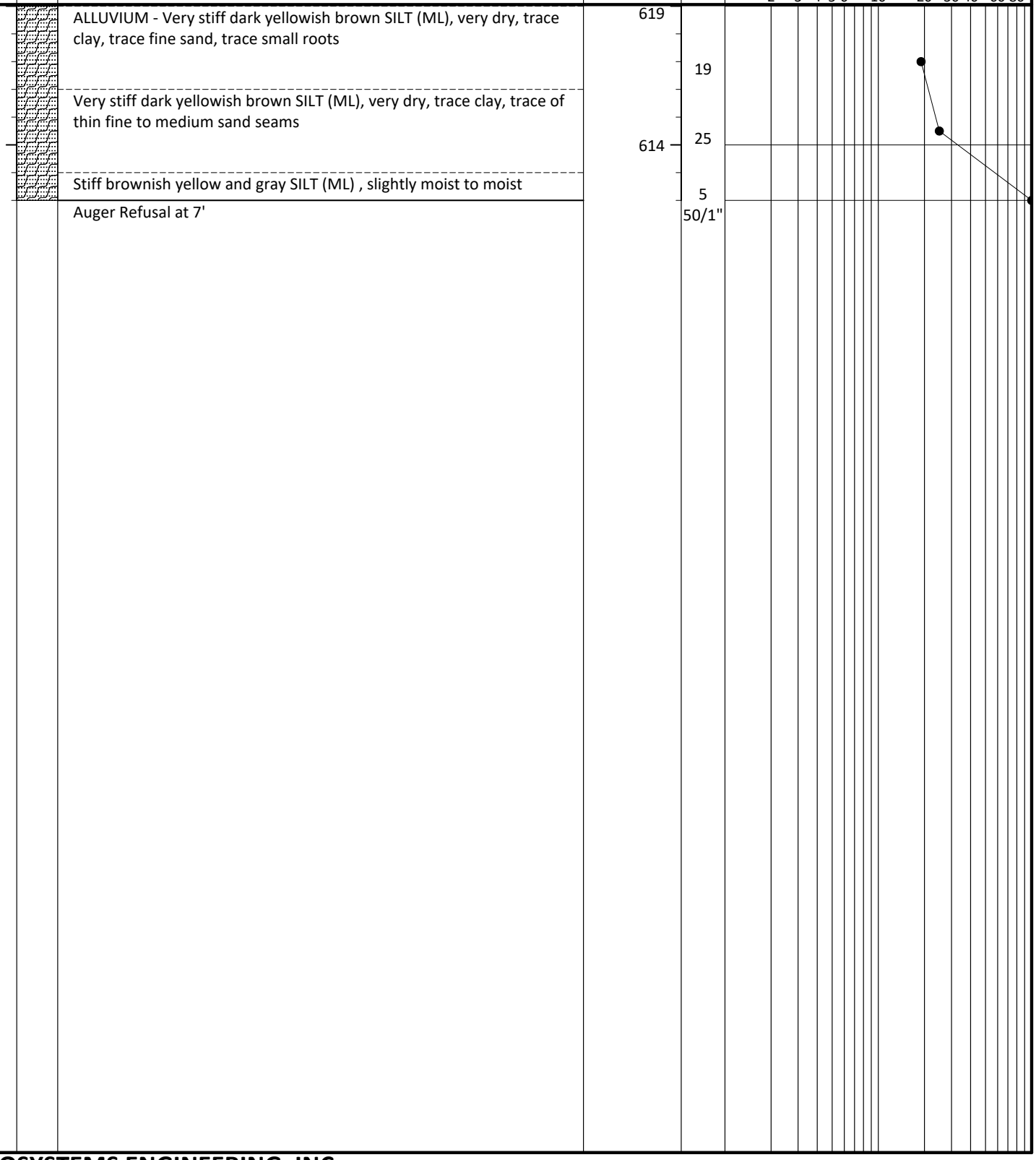
GEOLOGIST: *N/A*	ELEVATION (feet): *619*
DATE DRILLED: *9/25/2023*	BORING DEPTH (feet): *7*
DRILLER: *RANGER CONSULTING, INC.*	WATER LEVEL TOB (feet): *NGWE* 24HR (feet): *N/D*
DRILLING METHOD: *HOLLOW STEM AUGER WTIH AUTOMATIC HAMMER*	

NOTES: 1. No groundwater encountered at the time of boring (NGWE). 2. 24HR groundwater level was not determined (N/D).

DEPTH (feet)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV (feet)	N VALUE
0		ALLUVIUM - Very stiff dark yellowish brown SILT (ML), very dry, trace clay, trace fine sand, trace small roots	619	19
		Very stiff dark yellowish brown SILT (ML), very dry, trace clay, trace of thin fine to medium sand seams		
5		Stiff brownish yellow and gray SILT (ML) , slightly moist to moist	614	25
		Auger Refusal at 7'		5 50/1"

STANDARD PENETRATION RESISTANCE (blows/ft)

2 3 4 5 6 10 20 30 40 60 80



GEOSYSTEMS ENGINEERING, INC.

JOB NO. 23-2907

CITY OF CALHOUN
PROPOSED PEDESTRIAN BRIDGE AT PALMER MEMORIAL PARK
CALHOUN, GORDON COUNTY, GEORGIA

LOG OF BORING B-1A

GEOLOGIST: *N/A*
ELEVATION (feet): *619*
DATE DRILLED: *9/25/2023*
BORING DEPTH (feet): *7*
DRILLER: *RANGER CONSULTING, INC.*
WATER LEVEL TOB (feet): *NGWE* 24HR (feet): *N/D*
DRILLING METHOD: *HOLLOW STEM AUGER WTIH AUTOMATIC HAMMER*

NOTES: 1. Boring offset approximately 5 feet north of B-1. 2. No groundwater encountered at the time of boring (NGWE). 3. 24HR groundwater level not determined (N/D).

DEPTH (feet)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV (feet)	N VALUE	STANDARD PENETRATION RESISTANCE (blows/ft) 2 3 4 5 6 10 20 30 40 60 80
0		AUGER BORING - No sampling performed (See log of boring B-1 for soil description)	619		
5			614		
		Auger Refusal at 7'			

GEOSYSTEMS ENGINEERING, INC.

JOB NO. 23-2907

CITY OF CALHOUN
PROPOSED PEDESTRIAN BRIDGE AT PALMER MEMORIAL PARK
CALHOUN, GORDON COUNTY, GEORGIA

LOG OF BORING B-1B

GEOLOGIST: *N/A*
ELEVATION (feet): *619*
DATE DRILLED: *9/25/2023*
BORING DEPTH (feet): *7*
DRILLER: *RANGER CONSULTING, INC.*
WATER LEVEL TOB (feet): *NGWE* 24HR (feet): *N/D*
DRILLING METHOD: *HOLLOW STEM AUGER WTIH AUTOMATIC HAMMER*

NOTES: 1. Boring offset approximately 5 feet west of B-1. 2. No groundwater encountered at the time of boring (NGWE). 3. 24HR groundwater level not determined (N/D).

DEPTH (feet)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV (feet)	N VALUE	STANDARD PENETRATION RESISTANCE (blows/ft) 2 3 4 5 6 10 20 30 40 60 80
0		AUGER BORING - No sampling performed (See log of boring B-1 for soil description)	619		
5			614		
		Auger Refusal at 7'			

GEOSYSTEMS ENGINEERING, INC.

JOB NO. 23-2907

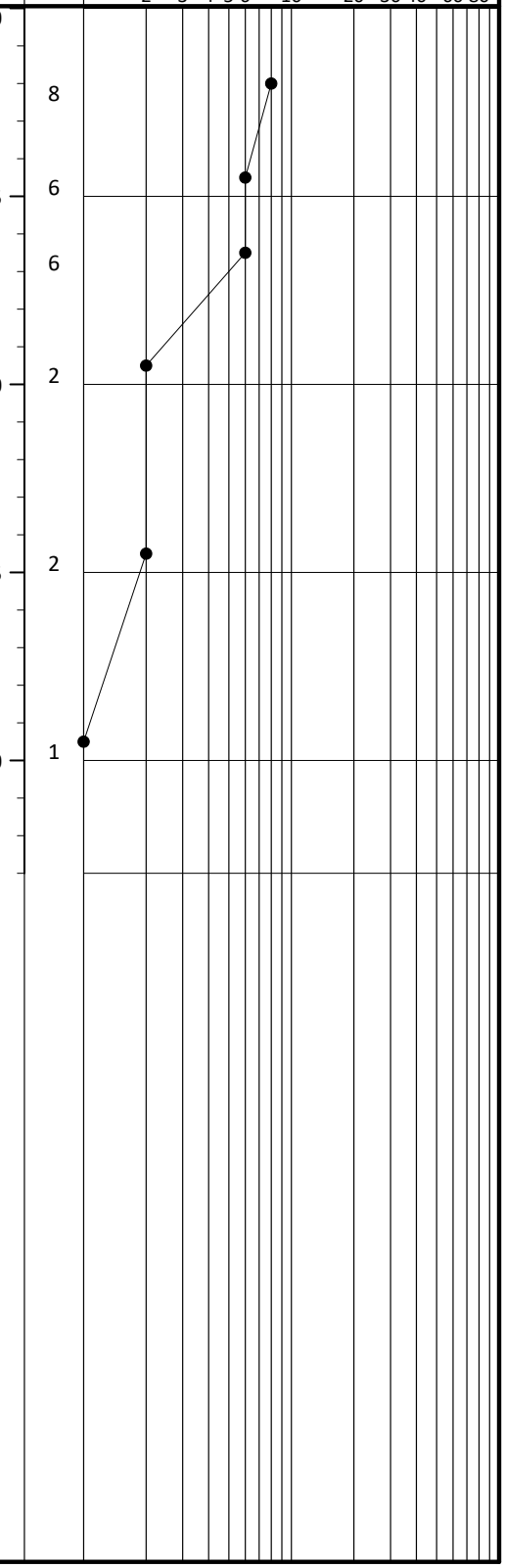
CITY OF CALHOUN
PROPOSED PEDESTRIAN BRIDGE AT PALMER MEMORIAL PARK
CALHOUN, GORDON COUNTY, GEORGIA

LOG OF BORING B-2

GEOLOGIST: *N/A*	ELEVATION (feet): *620*	NOTES: 1. Groundwater encountered at a depth of 4 feet at the time of boring. 2. 24HR groundwater level was not determined (N/D).
DATE DRILLED: *9/25/2023*	BORING DEPTH (feet): *23*	
DRILLER: *RANGER CONSULTING, INC.*	WATER LEVEL TOB (feet): *4* 24HR (feet): *N/D*	
DRILLING METHOD: *HOLLOW STEM AUGER WTIH AUTOMATIC HAMMER*		

DEPTH (feet)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV (feet)	N VALUE
0		ALLUVIUM - Firm dark yellowish brown SILT (ML), moist, trace clay, trace fine sand, trace small roots	620	8
5			615	6, 6
10		Very loose dark grayish brown and black slightly clayey fine to coarse SAND (SW), moist to very moist, trace fine gravel, split-spoon drove through a 1/4"-1/2" thick piece of wood or a large root	610	2
15		POSSIBLE RESIDUUM - Soft to very soft gray to light yellowish brown SILT (ML), wet, trace clay, trace of fine rock fragments slightly moist to moist	605	2
20			600	1
		Auger Refusal at 23'		

STANDARD PENETRATION RESISTANCE (blows/ft)
2 3 4 5 6 10 20 30 40 60 80



GEOSYSTEMS ENGINEERING, INC.

JOB NO. 23-2907

CITY OF CALHOUN
PROPOSED PEDESTRIAN BRIDGE AT PALMER MEMORIAL PARK
CALHOUN, GORDON COUNTY, GEORGIA

LOG OF BORING B-2A

GEOLOGIST: *N/A*
ELEVATION (feet): *620*
DATE DRILLED: *9/25/2023*
BORING DEPTH (feet): *18*
DRILLER: *RANGER CONSULTING, INC.*
WATER LEVEL ▽ TOB (feet): *4* ▼ 24HR (feet): *N/D*
DRILLING METHOD: *HOLLOW STEM AUGER WTIH AUTOMATIC HAMMER*

NOTES: 1. Boring offset approximately 4 feet south of B-2. 2. Groundwater was encountered at a depth of 4 feet at the time of boring. 3. 24HR groundwater level not determined (N/D).

DEPTH (feet)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV (feet)	N VALUE	STANDARD PENETRATION RESISTANCE (blows/ft) 2 3 4 5 6 10 20 30 40 60 80
0		AUGER BORING - No sampling performed (See log of boring B-2 for soil description)	620		
▽					
5			615		
10			610		
15			605		
		Auger Refusal at 18'			

GEOSYSTEMS ENGINEERING, INC.

JOB NO. 23-2907

CITY OF CALHOUN
PROPOSED PEDESTRIAN BRIDGE AT PALMER MEMORIAL PARK
CALHOUN, GORDON COUNTY, GEORGIA

LOG OF BORING B-2B

GEOLOGIST: *N/A*	ELEVATION (feet): *620*	NOTES: 1. Boring offset approximately 7 feet east of B-2. 2. Groundwater was encountered at a depth of 4 feet at the time of boring. 3. 24HR groundwater level not determined (N/D).
DATE DRILLED: *9/25/2023*	BORING DEPTH (feet): *20*	
DRILLER: *RANGER CONSULTING, INC.*	WATER LEVEL ▽ TOB (feet): *4* ▼ 24HR (feet): *N/D*	
DRILLING METHOD: *HOLLOW STEM AUGER WTIH AUTOMATIC HAMMER*		

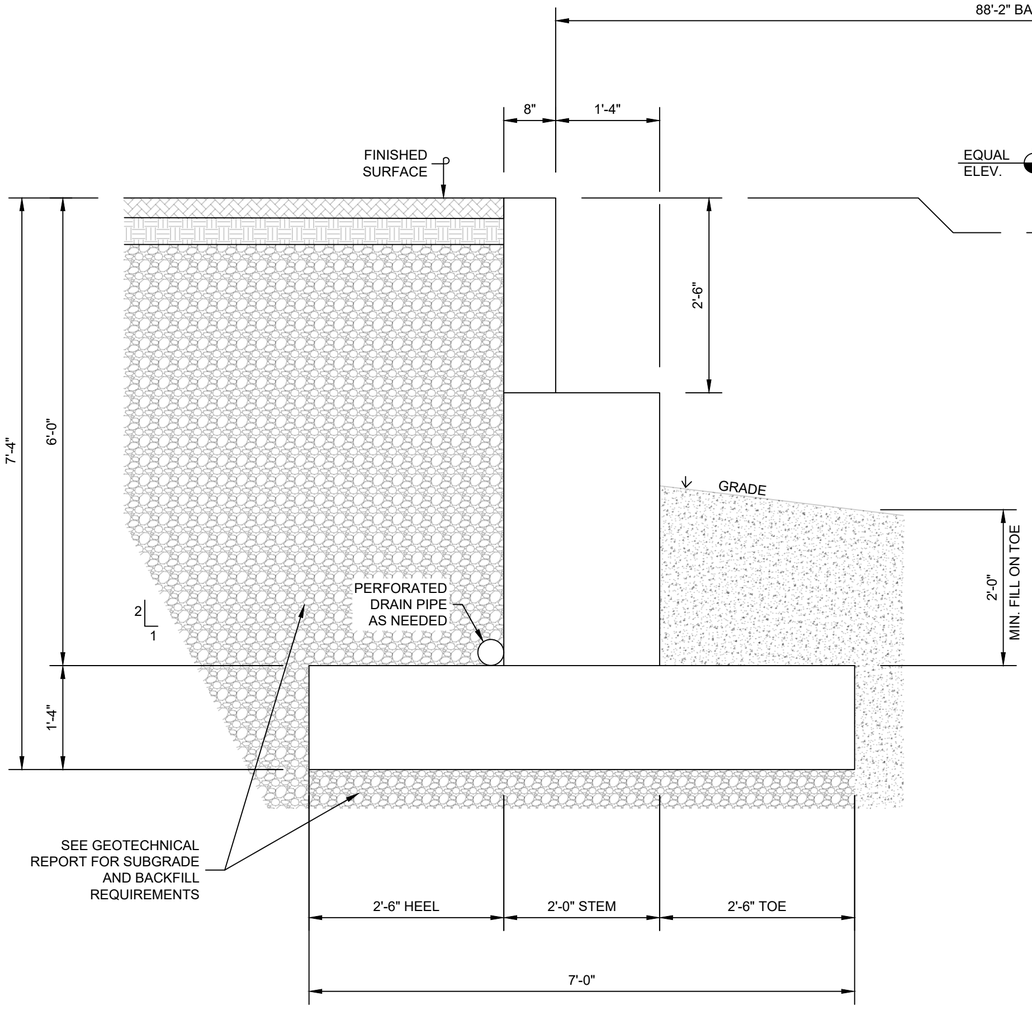
DEPTH (feet)	GRAPHIC LOG	GEOLOGIC DESCRIPTION	ELEV (feet)	N VALUE	STANDARD PENETRATION RESISTANCE (blows/ft) 2 3 4 5 6 10 20 30 40 60 80
0		AUGER BORING - No sampling performed (See log of boring B-2 for soil description)	620		
▽					
5			615		
10			610		
15			605		
20		Auger Refusal at 20'	600		

GEOSYSTEMS ENGINEERING, INC.

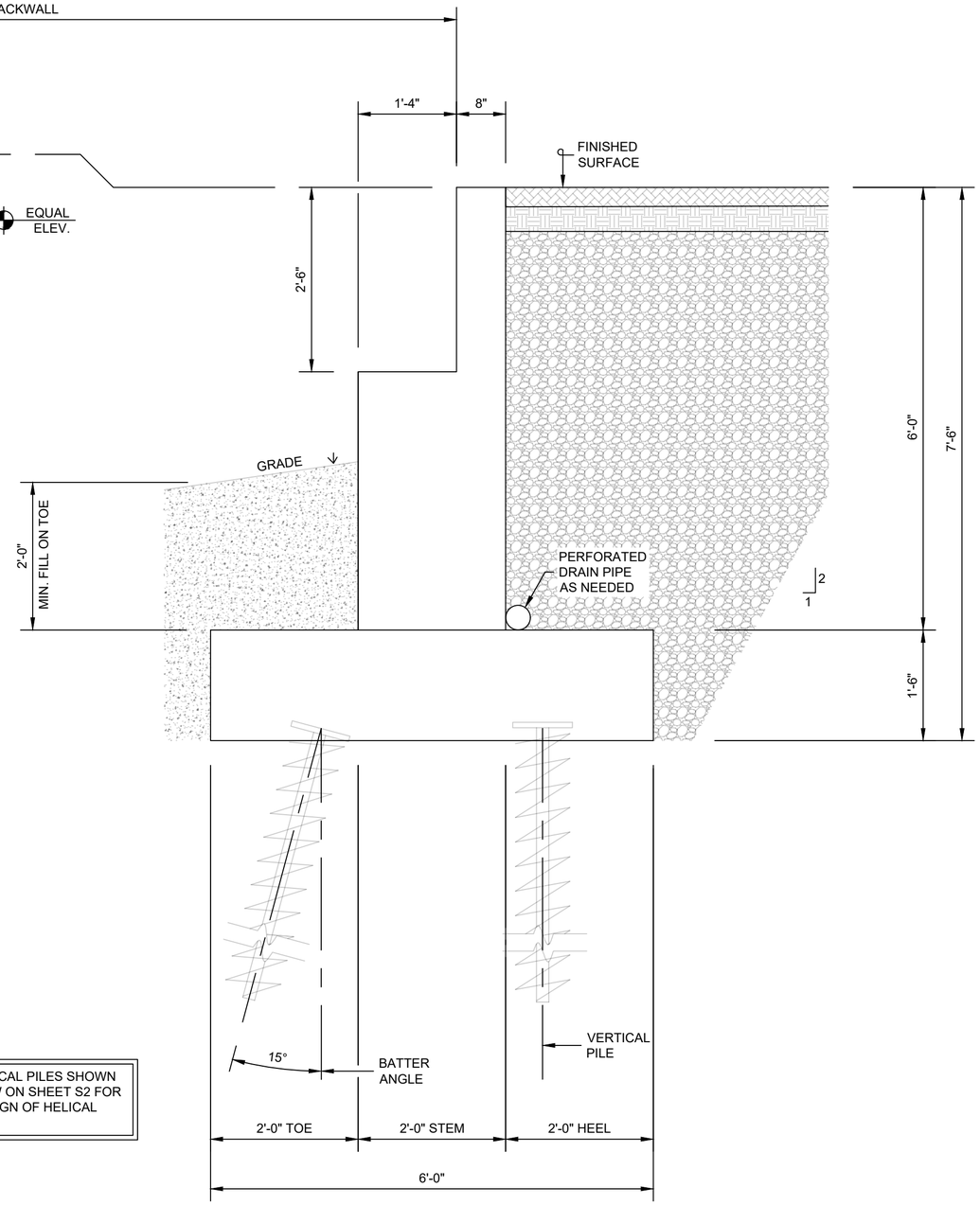
JOB NO. 23-2907

Supporting Document D:
Abutment Design

By Chad Elliott, PE



NORTH ABUTMENT



SOUTH ABUTMENT

ORIENTATION OF HELICAL PILES SHOWN HERE. SEE PLAN VIEW ON SHEET S2 FOR LAYOUT. ACTUAL DESIGN OF HELICAL PILES IS BY OTHERS.

Chad Michael Elliott, P.E.

REV	DATE	DESCRIPTION
1		
2		
3		
4		
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7		
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10		

DRAWING NAME: ABUTMENT SECTION

SIZE: C | PROJECT NO.: 2408 | PROJECT NAME: PALMER MEMORIAL PARK | DESIGNED BY: CME | SCALE: NTS | DATE: 3-1-24

PROJECT: PIONEER BRIDGES JOB # 23111P ABUTMENT DESIGN

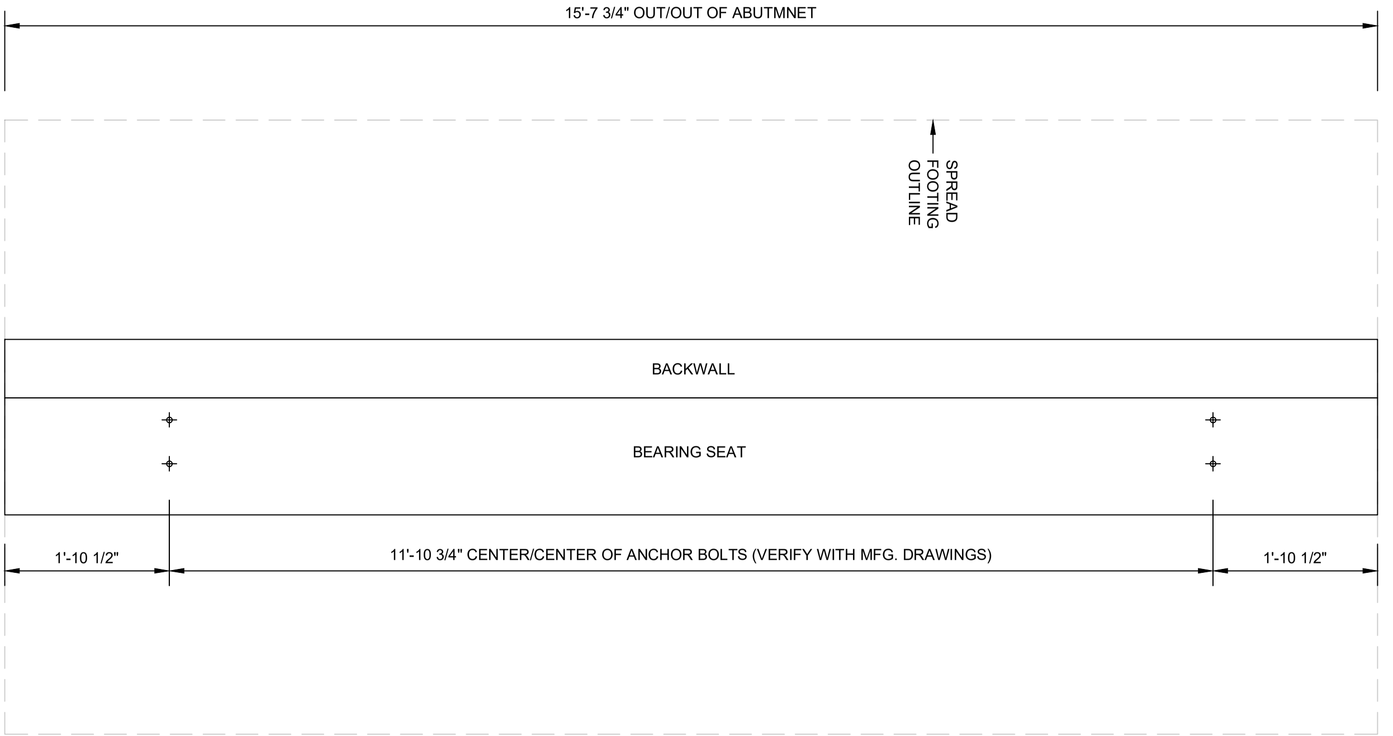
LOCATION: CITY OF CALHOUN CALHOUN, GA

GEORGIA REGISTERED No. SE001007 STRUCTURAL ENGINEER CHAD MICHAEL ELLIOTT

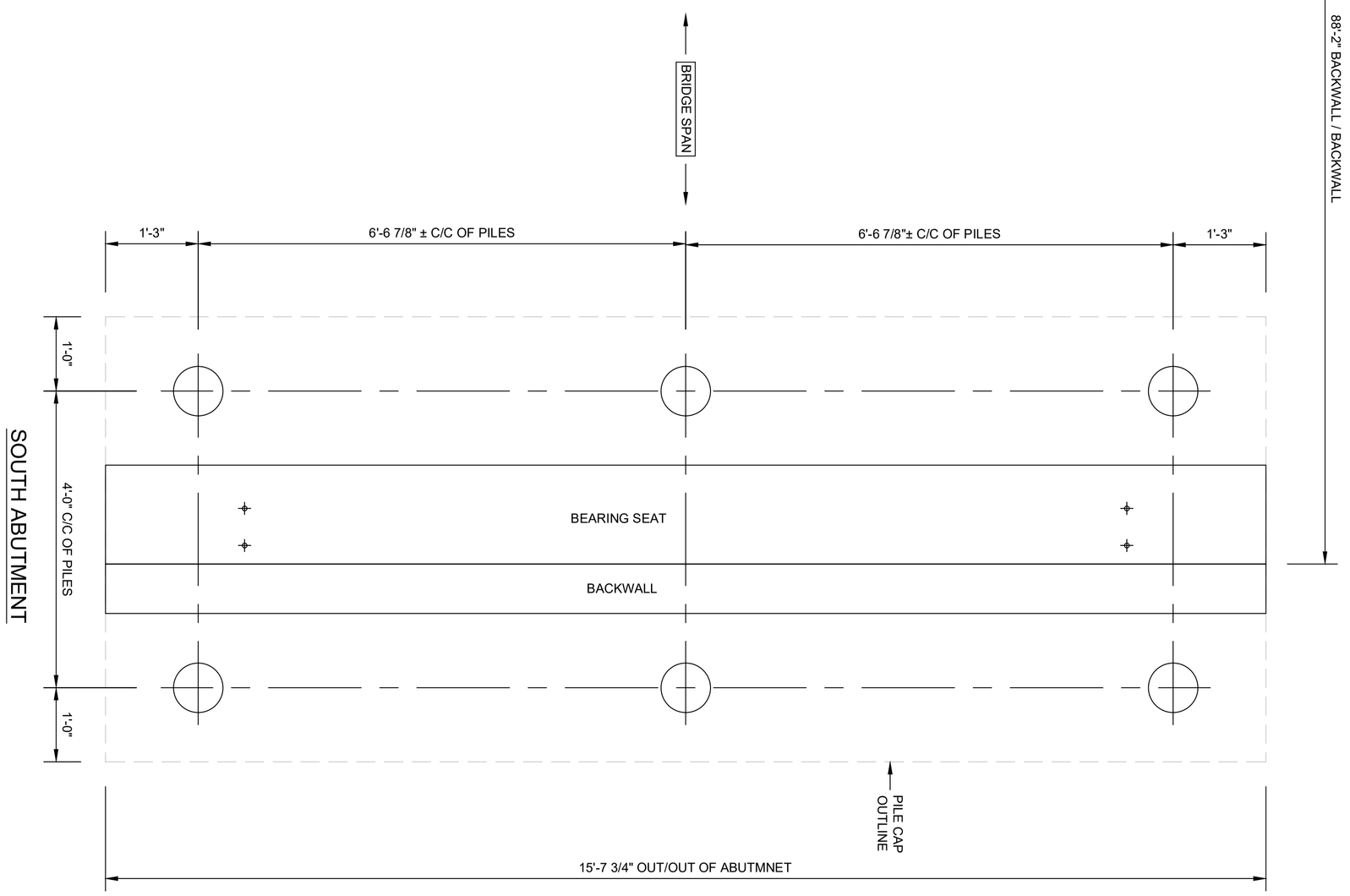
3/2/24

DRAWING NUMBER: S1

NORTH ABUTMENT



PLAN VIEW/PILE LAYOUT



SOUTH ABUTMENT

DRAWING NUMBER
S2

3/2/24

PROJECT :
PIONEER BRIDGES
JOB # 23111P
ABUTMENT DESIGN

LOCATION :
CITY OF CALHOUN
CALHOUN, GA

Chad Michael Elliott, P.E.

DRAWING NAME
ABUTMENT PLAN

SIZE	PROJECT NO.	PROJECT NAME
C	2408	PALMER MEMORIAL PARK

SCALE:	DESIGNED BY:	DATE:
NTS	CME	3-1-24

REV	DATE	DESCRIPTION
1		
2		
3		
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10		

GENERAL NOTES

FOOTING DESIGN REQUIRES THE FOLLOWING ASSUMPTIONS BEING MET:

1. PROTECTION FROM SCOUR.
2. HELICAL PILES ARE PROPERLY DESIGNED AND INSTALLED TO RESIST IMPOSED FORCES.
3. BACKFILL REQUIREMENTS:
   - 3.1. GRANULAR FREE DRAINING MATERIALS SHALL BE USED (COHESIONLESS)
   - 3.2. APPROPRIATE DRAINAGE PROVISIONS SHALL BE PROVIDED TO PREVENT HYDROSTATIC AND SEEPAGE FORCES FROM DEVELOPING BEHIND THE WALL
   - 3.3. FOLLOW SPECIFIC GUIDANCE GIVEN IN THE SUBSURFACE INVESTIGATION REPORT PROVIDED BY GEOSYSTEMS ENGINEERING, INC. DATED OCTOBER 16, 2023.

THE SECTIONS AND DIMENSIONAL SIZES SHOWN ARE SUITABLE TO PROPERLY ANCHOR THE STRUCTURE IF THE GENERAL ASSUMPTIONS NOTED ABOVE ARE VALID.

DESIGN OF HELICAL PILES AND THEIR INSTALLATION IS THE RESPONSIBILITY OF OTHERS.

IT IS RECOMMENDED THE DESIGN PROFESSIONAL RESPONSIBLE FOR THE SUBSURFACE INVESTIGATION REPORT IS PRESENT DURING EXCAVATION, CONSTRUCTION, AND BACKFILL IN ORDER TO PROPERLY EXECUTE THE PROJECT.

THE STRUCTURE ANCHORS ARE TO BE PLACED PER THE MANUFACTURER'S DRAWINGS. THE OWNER/CONTRACTOR SHOULD CAREFULLY REVIEW THE OVERALL DIMENSIONS AND THE ANCHOR BOLT LAYOUT DETAILS PRIOR TO SETTING THE ANCHORS. THE ANCHORS MUST BE INSTALLED EXACTLY TO THE REQUIREMENTS OF THE MANUFACTURERS DRAWINGS FOR THE STRUCTURE TO BE PROPERLY ANCHORED AND ERECTED. ANCHOR BOLTS/RODS SHOULD CONFORM TO ASTM F1554 GRADE 36.

IT IS IMPERATIVE THAT THE AREA BE OVER-EXCAVATED TO ENSURE THAT PLASTIC (EXPANSIVE) SOILS, ORGANICS, AND OTHER DELETERIOUS MATERIALS ARE REMOVED. THE FILL MATERIAL SHOULD BE PLACED IN LIFTS APPROPRIATE FOR THE COMPACTION EQUIPMENT TO BE EMPLOYED. FILL MATERIAL QUALITY AND COMPACTION SHOULD FOLLOW CODE REQUIREMENTS. UNIFORM SOIL CAPACITY IS ESSENTIAL TO INSURE THE INTEGRITY OF THE ABUTMENT AND FOUNDATION SYSTEM. A BASE COURSE (MINIMUM OF 6"THICK WITH MAXIMUM PARTICLE SIZE OF 1") OF CLEAN, CRUSHED STONE TO PROVIDE DRAINAGE AND STABILITY IS REQUIRED ON TOP OF THE COMPACTED SOIL UNDERNEATH THE FOOTING AREA. IT IS RECOMMENDED THAT A LOCAL DESIGN PROFESSIONAL BE CONTRACTED TO GUIDE THE SITE PREPARATION.

COVER (UNLESS NOTED OTHERWISE):

- 3" WHEN CAST AGAINST OR PERMANENTLY EXPOSED TO EARTH.
- 2" ALL OTHER LOCATIONS UNLESS SPECIFICALLY NOTED OTHERWISE.
- 5" AT LOWER FOOTING STEEL TO CLEAR PILES AS SHOWN ON DRAWING.

CONTINUITY:

REINFORCEMENT SPLICE LENGTH MINIMUMS ARE AS FOLLOWS:

- #3 - 17"
- #4 - 22"
- #5 - 28"
- #6 - 33"

ANY PENETRATION POINTS (SUCH AS PIPE PENETRATIONS) SHOULD BE ISOLATED FROM THE STEM WALL STRUCTURE. OPENING MUST NOT INTERFERE WITH MAJOR REINFORCEMENT. ADDITIONAL REINFORCING SHOULD BE PROVIDED AROUND SUCH OPENINGS TO INHIBIT CRACKING.

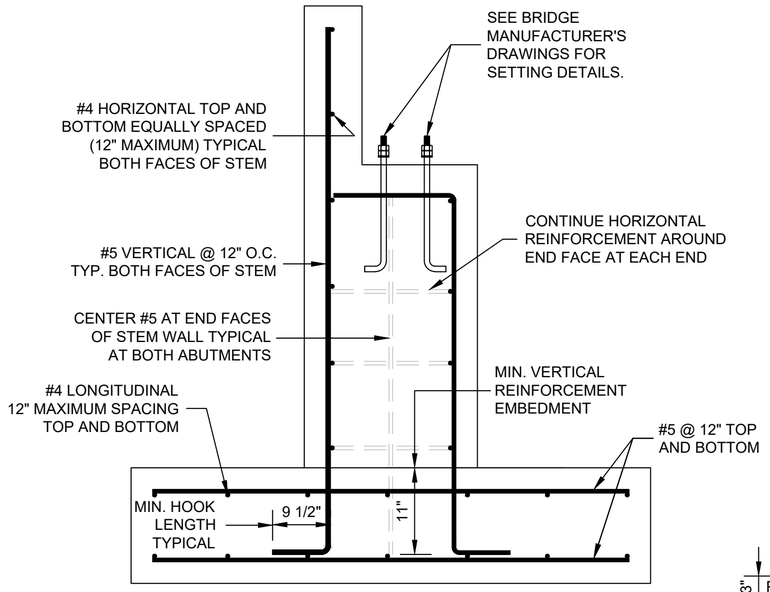
DETAILS OF REINFORCEMENT SHALL CONFORM TO ACI 315 AND THE CRSI MANUAL OF STANDARD PRACTICES.

EXPOSED EDGES SHOULD BE CHAMFERED TO REDUCE CHIPPING.

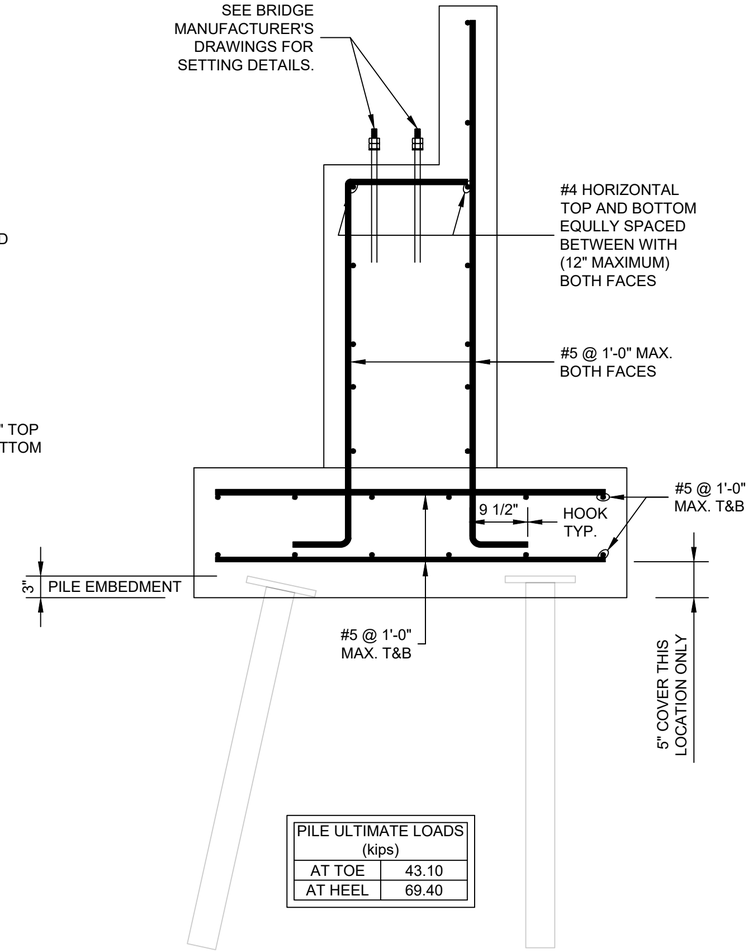
CONCRETE MIX:

CEMENT: AASHTO M85 (TYPE I OR II) OR ASTM C 150 (TYPE I OR II)

- ASTM C33 AGGREGATE: SIZE 57
- TARGET AIR: 5.0% (±1.5% TOLERANCE)
- WATER/CEMENT RATIO (BY WEIGHT): 0.445 MAX.
- MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS: 4000 PSI
- MAXIMUM SLUMP: 3"± 1"



TYPICAL SECTION



PILE ULTIMATE LOADS (kips)	
AT TOE	43.10
AT HEEL	69.40

SOUTH ABUTMENT

REV	DATE	DESCRIPTION
1		
2		
3		
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9		
10		

Chad Michael Elliott, P.E.

DRAWING NAME: ABUTMENT DETAILS

PROJECT NAME: PALMER MEMORIAL PARK

DATE: 3-1-24

SIZE: C

PROJECT NO.: 2408

DESIGNED BY: CME

SCALE: NTS

PROJECT: PIONEER BRIDGES JOB # 23111P ABUTMENT DESIGN

LOCATION: CITY OF CALHOUN CALHOUN, GA

GEORGIA REGISTERED No. SE001007 STRUCTURAL ENGINEER CHAD MICHAEL ELLIOTT

3/2/24

DRAWING NUMBER: S3

Supporting Document E:
Abutment Calculations

By Chad Elliott, PE

PEDESTRIAN BRIDGE ABUTMENT
DESIGN CALCULATIONS

March 2, 2024

JOB NUMBER: **2408**
PIONEER BRIDGES JOB NUMBER: 23111P REV A

PALMER MEMORIAL PARK PEDESTRIAN BRIDGE
CALHOUN, GA

CALCULATION PAGES: 1-12

Chad Michael Elliott, P.E.

Project: PALMER MEMORIAL PARK
Engineer: CME
Descrip: 2408 SPREAD FTG

GEOMETRY

Conc. Stem Height	**6.00**	ft	
Stem Thickness Top	**8.0**	in	
Stem Thickness Bot	**24.0**	in	
Footing Thickness	**16.0**	in	
Toe Length	**2.50**	ft	
Heel Length	**2.50**	ft	
Soil Cover @ Toe	**2.00**	ft	
Backfill Height	**6.00**	ft	OK
Backfill Slope Angle	**3.0**	deg	

SEISMIC EARTH FORCES

Hor. Seismic Coeff. kh	**0.17**	
Ver. Seismic Coeff kv	**0.17**	
Seismic Active Coeff. Kae	0.48	
Seismic Force Pae-Pa	0.3	k/ft

SOIL PRESSURES (Comb. Strength Ia)

Bearing Resistance	3.5	ksf	OK
Max. Pressure @ Toe	3.0	ksf	
Min. Pressure @ Heel	3.0	ksf	
Total Footing Length	7.00	ft	
Footing Length / 6	1.17	ft	
Resultant Eccentricity e	-0.58	ft	
Under-strength ϕ Factor	0.55		

APPLIED LOADS

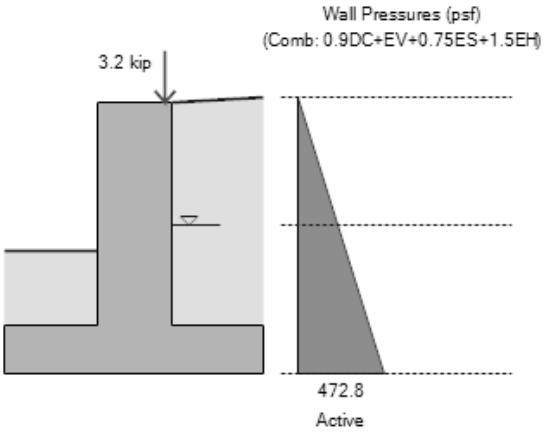
Surcharge	D =	0.0	L =	0.0	psf
Strip Pressure	D =	0.0	L =	0.0	psf
Strip 0.0 ft deep, 0.0 ft wide @ 0.0 ft from Stem					
Stem Vertical	D =	3.6	L =	3.7	k/ft
Stem Horizontal	D =	0.0	L =	0.0	k/ft
Eccentricity	ev =	2.0	eh =	0.0	in
Wind Load =	0.0	psf	Height =	5.00	ft

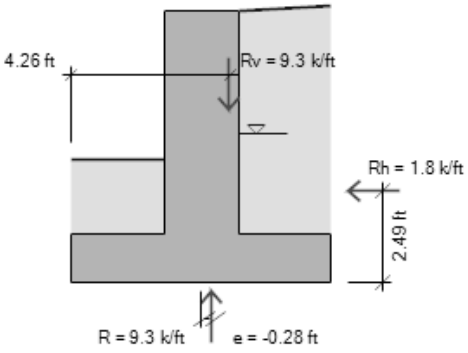
BACKFILL PROPERTIES

Moist Density =	140	Saturated =	140 pcf
Earth Pressure Theory	Coulomb Active		
Internal Friction Angle	30		
Active Pressure Coeff. Ka	0.31		
Active Pressure pa	43.7	psf/ft	
Active Force @ Wall Pa	1.2	k/ft	
Water Table Height	4.00	ft	

SHEAR KEY (Comb. Strength Ia)

Shear Key Depth	0.0	in
Shear Key Thickness	0.0	in
No shear key has been specified		
Shear Capacity Ratio	0.00	OK
Moment Capacity Ratio	0.00	OK
Minimum Steel Area Ratio	0.00	OK





OVERTURNING CALCULATIONS (Comb. Strength IVb)

	OVERTURNING				RESISTING		
	Force k/ft	Arm 1ft 1	Moment k-ft/ft		Force k/ft	Arm ft	Moment k-ft/ft
Backfill Pa	1.8	2.49	4.4	Stem Top	1.6	3.50	5.7
Water Table	0.0	1.33	0.0	Stem Taper	0.0	4.50	0.0
Surcharge Dead ...	0.0	3.73	0.0	CMU Stem at Top	0.0	0.00	0.0
Surcharge Live	0.0	3.73	0.0	Footing Weight	1.3	3.50	4.4
Strip Load Hor	0.0	0.00	0.0	Shear Key	0.0	4.50	0.0
Horizontal Dead ...	0.0	3.73	0.0	Soil Cover @ Toe .	0.7	1.25	0.9
Horizontal Live	0.0	3.73	0.0	Stem Wedge	0.0	4.50	0.0
Wind Load	0.0	4.83	0.0	Backfill Weight	2.1	5.75	12.1
Seismic Backfill ...	0.0	4.48	0.0	Backfill Slope	0.0	6.17	0.1
Seismic Water	0.0	1.33	0.0	Water Weight	0.0	5.75	0.0
Seismic Selfweight	0.0	0.00	0.0	Seismic Backfill	0.0	7.00	0.0
Passive Pressure ..	0.0		0.0	Pa Vert @ Heel	0.3	7.00	2.2
Rh =	1.8	OTM =	4.4	Vertical Dead	3.2	4.33	14.0
				Vertical Live	0.0	4.33	0.0
				Surcharge Dead	0.0	5.75	0.0
				Surcharge Live	0.0	5.75	0.0
				Strip Load Ver	0.0	5.75	0.0
				Water Buoyancy	0.0	3.50	0.0
				Rv =	9.3	RM =	39.4

Arm of Horizontal Resultant = $\frac{4.4}{1.8}$ = 2.49 ft

Arm of Vertical Resultant = $\frac{39.4}{9.3}$ = 4.26 ft

Eccentricity = -0.28 ft < Ftg / 3 = 2.33 ft OK

STEM DESIGN (Comb. Strength Ia)

Height ft	d in	Mu k-ft/ft	ϕMn k-ft/ft	Ratio	
6.00	20.7	0.0	0.0	0.00	
5.40	20.7	-9.1	11.6	-0.79	
4.80	20.7	-9.1	23.1	-0.40	
4.20	20.7	-9.1	28.5	-0.32	
3.60	20.7	-9.0	28.5	-0.32	
3.00	20.7	-8.9	28.5	-0.31	
2.40	20.7	-8.7	28.5	-0.30	
1.80	20.7	-8.4	28.5	-0.29	
1.20	20.7	-8.0	28.5	-0.28	
0.60	20.7	-7.4	28.5	-0.26	
0.00	20.7	-6.7	28.5	-0.24	OK

Shear Force @ Crit. Height	1.3	k/ft	OK
Resisting Shear ϕVn	10.0	k/ft	
Use vertical bars #5 @ 12 in at backfill side			
Do not cut off alternate vertical bars			
Vert. Bars Embed. Ldh Reqd	6.0	in	OK
Vert. Bars Splice Length Ld	12.0	in	
Vert. Bars Max. Spacing Ratio	0.67		OK
Minimum Steel Area Ratio	0.43		OK
Maximum Steel Area Ratio	0.07		OK

SLIDING CALCS (Comb. Strength Ib)

Footing-Soil Friction Coeff. ..	**0.70**	
Friction Force at Base	5.3	k/ft
Passive Pressure Coeff. Kp .	3.34	
Depth to Neglect Passive	**0.00**	ft
Passive Pressure @ Wall	960.0	psf
Passive Force @ Wall Pp	1.6	k/ft
Horiz. Resisting Force	6.1	k/ft
Horiz. Sliding Force	2.1	k/ft

Sliding Ratio = $\frac{2.1}{6.1}$ = 0.35 < 1.0 OK

HEEL DESIGN (Comb. Strength IVa)

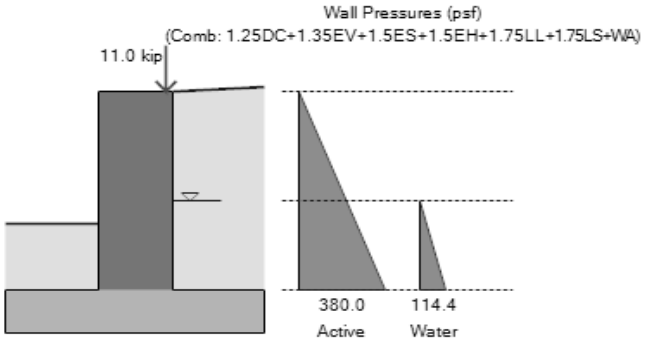
	Force k/ft	Arm ft	Moment k-ft/ft
Upward Pressure .	0.0	0.00	0.0
Concrete Weight ..	0.8	1.25	0.9
Backfill Weight	2.8	1.25	3.5
Backfill Slope	0.0	1.67	0.1
Water Weight	0.0	1.25	0.0
Surcharge Ver.	0.0	1.25	0.0
Strip Load Ver.	0.0	1.25	0.0
	3.6	Mu =	4.5

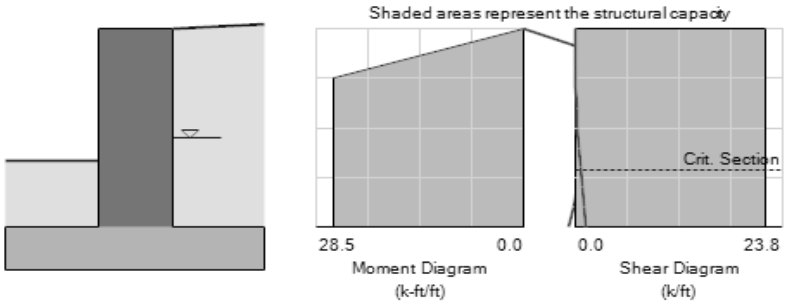
Shear Force @ Crit. Sect. ..	3.6	k/ft	OK
Resisting Shear ϕVc	16.8	k/ft	
Use top bars #5 @ 12 in , Transv. #4 @ 12 in			
Resisting Moment ϕMn	17.4	k-ft/ft	OK
Develop. Length Ratio at End	0.44		OK
Develop. Length Ratio at Toe	0.24		OK
Minimum Steel Area Ratio	0.86		OK
Maximum Bar Spacing Ratio	0.67		OK

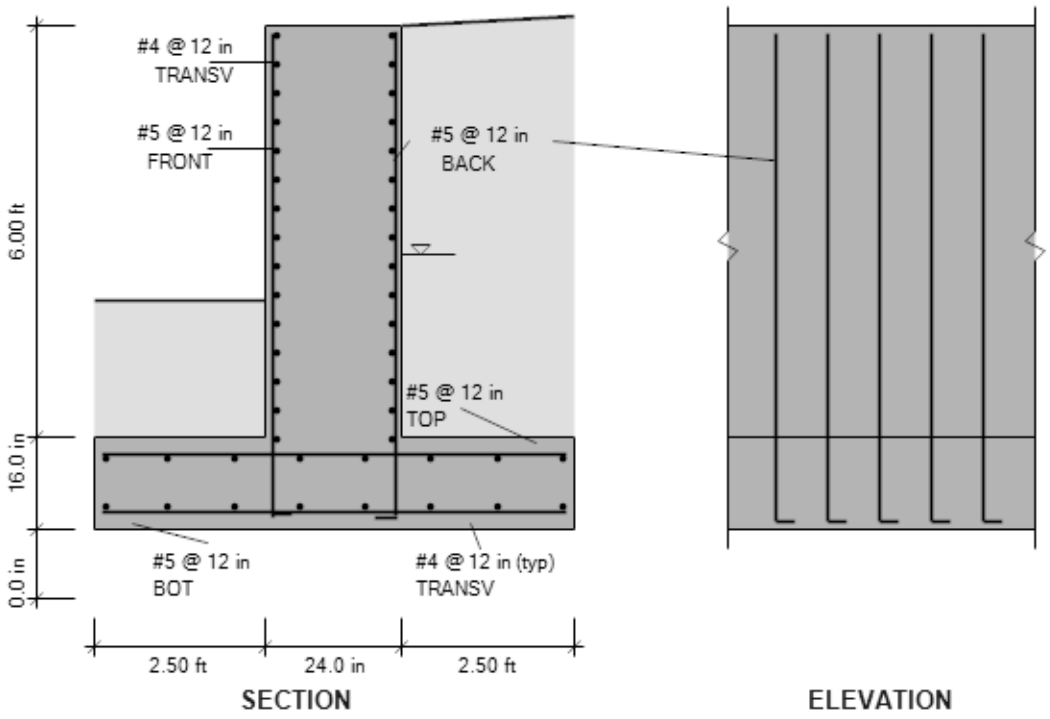
TOE DESIGN (Comb. Strength Ia)

	Force k/ft	Arm ft	Moment k-ft/ft
Upward Presssure	7.5	1.25	9.3
water Buoyancy ...	0.0	1.25	0.0
Concrete Weight ..	-0.6	1.25	-0.8
Soil Cover	-0.9	1.25	-1.2
	6.5	Mu =	8.2

Shear Force @ Crit. Sect. ..	3.8	k/ft	OK
Resisting Shear ϕVc	16.8	k/ft	
Use bott. bars #5 @ 12 in , Transv. #4 @ 12 in			
Resisting Moment ϕMn	17.4	k-ft/ft	OK
Develop. Length Ratio at Toe	0.44		OK
Develop. Length Ratio at Stem	0.24		OK
Minimum Steel Area Ratio	0.86		OK
Maximum Bar Spacing Ratio	0.67		OK





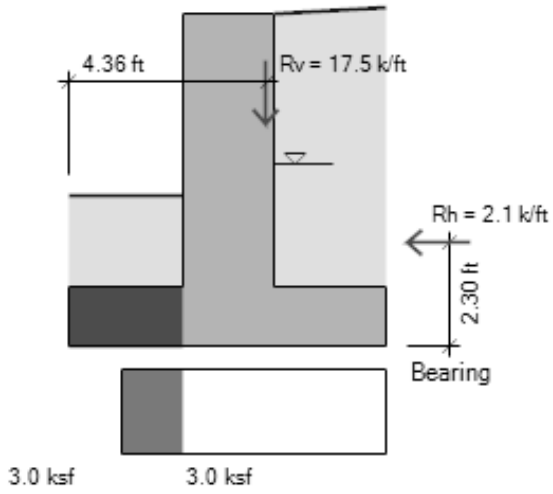


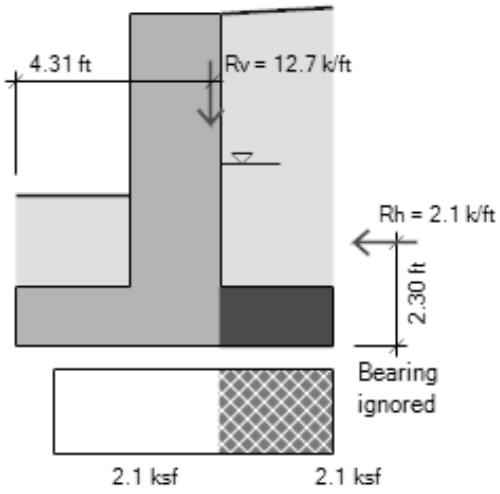
DESIGN CODES

General Analysis	AASHTO LRFD-20
Concrete Design	AASHTO LRFD-20
Masonry Design	TMS 402-16
Load Combinations	AASHTO LRFD

MATERIALS

	Stem	Footing	
Concrete f'c	4.0	4.0	ksi
Rebars fy	60.0	60.0	ksi
Masonry f'm	1.5		ksi





Toe Design Ratios					
Bending	0.47	<	1.00	✓	(Strength Ia)
Shear	0.22	<	1.00	✓	(Strength Ia)

Heel Design Ratios					
Bending	0.26	<	1.00	✓	(Strength IVa)
Shear	0.22	<	1.00	✓	(Strength IVa)

GEOMETRY

Conc. Stem Height	**6.00**	ft
Stem Thickness Top	**24.0**	in
Stem Thickness Bot	**24.0**	in
Footing Thickness	**18.0**	in
Toe Length	**2.00**	ft
Heel Length	**2.00**	ft
Soil Cover @ Toe	**2.00**	ft
Backfill Height	**6.00**	ft OK
Backfill Slope Angle	**3.0**	deg

SEISMIC EARTH FORCES

Hor. Seismic Coeff. kh	**0.17**	
Ver. Seismic Coeff kv	**0.17**	
Seismic Active Coeff. Kae	0.48	
Seismic Force Pae-Pa	0.4	k/ft

APPLIED LOADS

Surcharge	D = 0.0	L = 0.0	psf
Strip Pressure	D = 0.0	L = 0.0	psf
Strip 0.0 ft deep, 0.0 ft wide @ 0.0 ft from Stem			
Stem Vertical	D = 3.6	L = 3.7	k/ft
Stem Horizontal	D = 0.0	L = 0.0	k/ft
Eccentricity	ev = 2.0	eh = 0.0	in
Wind Load = 0.0 psf	Height = 5.00		ft

BACKFILL PROPERTIES

Moist Density = 140	Saturated = 140	pcf
Earth Pressure Theory	Coulomb Active	
Internal Friction Angle	30	
Active Pressure Coeff. Ka	0.31	
Active Pressure pa	43.7	psf/ft
Active Force @ Wall Pa	1.3	k/ft
Water Table Height	4.00	ft

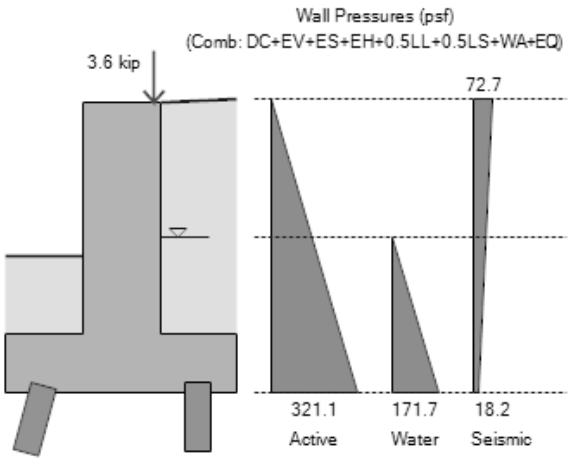
PILE FOUNDATION (Comb. Strength Ia)

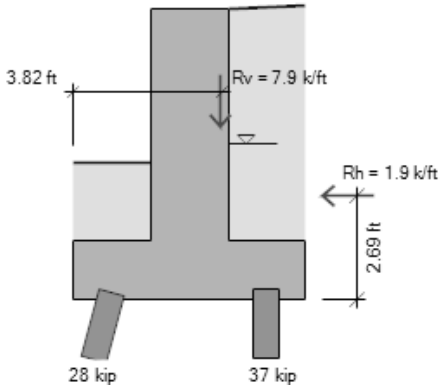
Use 8-in Round Piles, Embedment = 3 in

	At Toe	At Heel	
Pile Edge	**1.00**	**1.00**	ft
Pile Spacing	**6.57**	**6.57**	ft
Batter Angle	**15.0**	**0.0**	deg

	At Toe	At Heel	
Pile Axial Force	43.1	69.4	kip
Pile Axial Capacity	90.0	90.0	kip
Axial Capacity Ratio	0.48	0.77	OK

Horiz. Capacity = 7.8 k/ft > Rh = 2.2 k/ft OK





OVERTURNING CALCULATIONS (Comb. Extreme Ia)

	OVERTURNING				RESISTING		
	Force k/ft	Arm ft	Moment k-ft/ft		Force k/ft	Arm ft	Moment k-ft/ft
Backfill Pa	1.2	2.53	3.1	Stem Top	1.8	3.00	5.4
Water Table	0.3	1.33	0.5	Stem Taper	0.0	4.00	0.0
Surcharge Dead ...	0.0	3.80	0.0	CMU Stem at Top	0.0	0.00	0.0
Surcharge Live	0.0	3.80	0.0	Footing Weight	1.4	3.00	4.1
Strip Load Hor	0.0	0.00	0.0	Shear Key	0.0	4.00	0.0
Horizontal Dead ...	0.0	3.80	0.0	Soil Cover @ Toe .	0.6	1.00	0.6
Horizontal Live	0.0	3.80	0.0	Stem Wedge	0.0	4.00	0.0
Wind Load	0.0	5.00	0.0	Backfill Weight	1.7	5.00	8.4
Seismic Backfill ...	0.3	4.56	1.6	Backfill Slope	0.0	5.33	0.1
Seismic Water	0.0	1.33	0.0	Water Weight	0.0	5.00	0.0
Seismic Selfweight	0.0	0.00	0.0	Seismic Backfill	0.1	6.00	0.6
Passive Pressure ..	0.0		0.0	Pa Vert @ Heel	0.3	6.00	2.0
Rh =	1.9	OTM =	5.1	Vertical Dead	3.6	3.83	13.8
				Vertical Live	0.0	3.83	0.0
				Surcharge Dead	0.0	5.00	0.0
				Surcharge Live	0.0	5.00	0.0
				Strip Load Ver	0.0	5.00	0.0
				Water Buoyancy	-1.5	3.00	-4.5
				Rv =	7.9	RM =	30.3

Arm of Horizontal Resultant = $\frac{5.1}{1.9}$ = 2.69 ft

Arm of Vertical Resultant = $\frac{30.3}{7.9}$ = 3.82 ft

STEM DESIGN (Comb. Strength Ia)

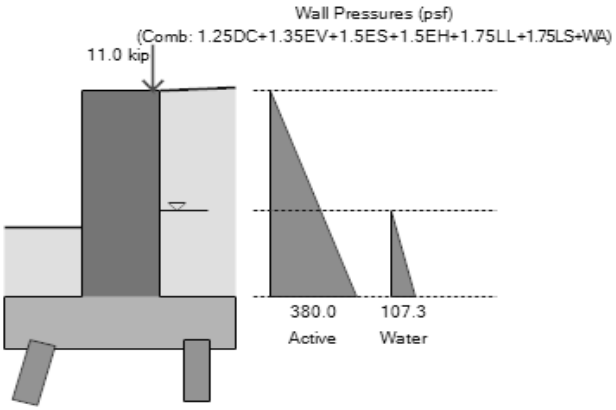
Height ft	d in	Mu k-ft/ft	ϕMn k-ft/ft	Ratio	
6.00	20.7	0.0	0.0	0.00	
5.40	20.7	-9.1	11.6	-0.79	
4.80	20.7	-9.1	23.1	-0.40	
4.20	20.7	-9.1	28.5	-0.32	
3.60	20.7	-9.0	28.5	-0.32	
3.00	20.7	-8.9	28.5	-0.31	
2.40	20.7	-8.7	28.5	-0.30	
1.80	20.7	-8.4	28.5	-0.29	
1.20	20.7	-8.0	28.5	-0.28	
0.60	20.7	-7.4	28.5	-0.26	
0.00	20.7	-6.8	28.5	-0.24	OK

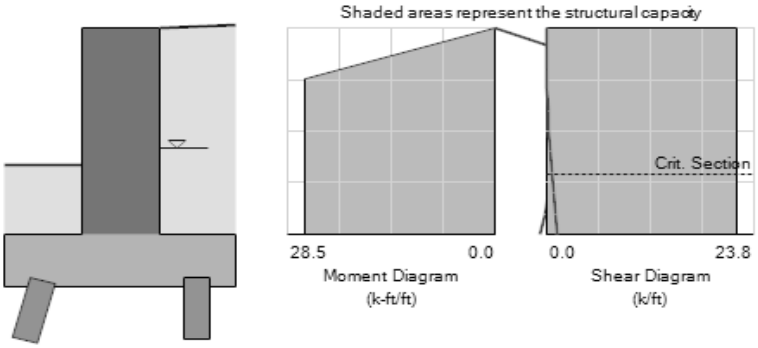
Shear Force @ Crit. Height	1.3	k/ft	OK
Resisting Shear ϕVn	10.0	k/ft	

Use vertical bars #5 @ 12 in at backfill side

Do not cut off alternate vertical bars

Vert. Bars Embed. Ldh Reqd	6.0	in	OK
Vert. Bars Splice Length Ld	12.0	in	
Vert. Bars Max. Spacing Ratio	0.67		OK
Minimum Steel Area Ratio	0.43		OK
Maximum Steel Area Ratio	0.07		OK

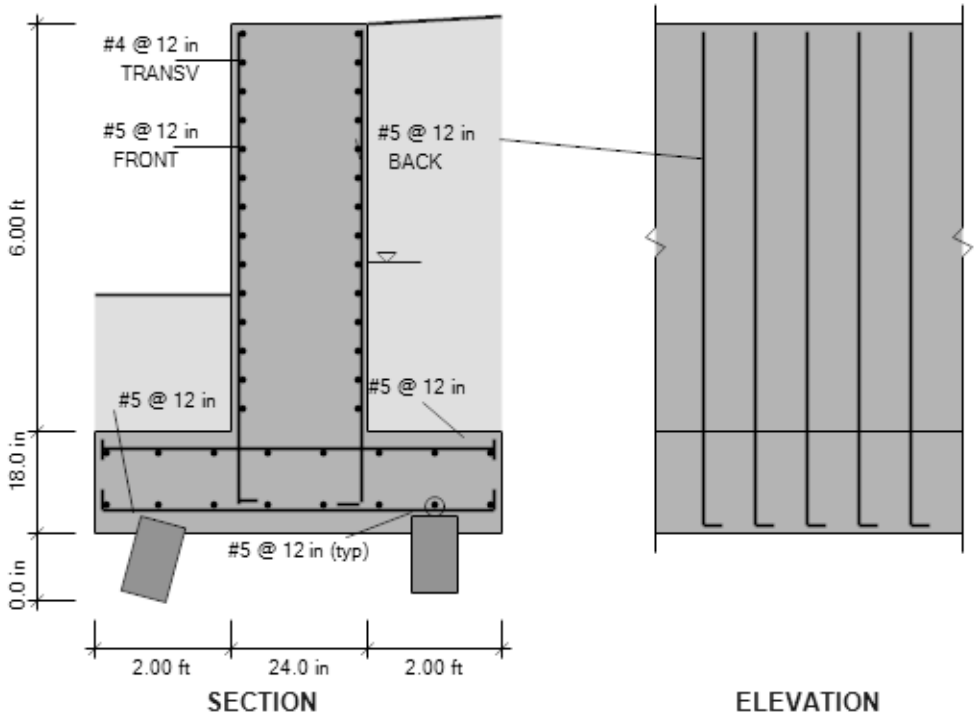




FOOTING (Comb. Strength Ia)

Vertical Resultant Rv	16.9	k/ft	Punching Perimeter bo	34.5	in	
Distance from Toe End	3.80	ft	Punching Shear Strength ϕVc	91.8	kip	
Overturning Moment OTM	5.1	k-ft/ft	Max. Pile Axial Load	69.4	kip	
Critical Shear Force Vu	10.6	k/ft	Punching Shear Ratio	0.76		OK
Shear Strength ϕVc	18.4	k/ft	Max Transverse Moment Mu .	38.7	k-ft	OK
One-way Shear Ratio	0.57	OK	Transv. Bending Strength ϕMn	41.5	k-ft	
Use Top bars #5 @ 12 in , Transv. #5 @ 12 in			Maximum Bar Spacing Ratio ...	0.67		OK
Use Bott bars #5 @ 12 in , Transv. #5 @ 12 in						

	Top	Bot	
Bending Moment Mu	0.0	12.7	k-ft/ft
Bending Strength ϕMn	20.2	17.4	k-ft/ft
Bending Moment Ratio	0.00	0.73	OK
Min. Steel Area Ratio	0.83	0.97	OK

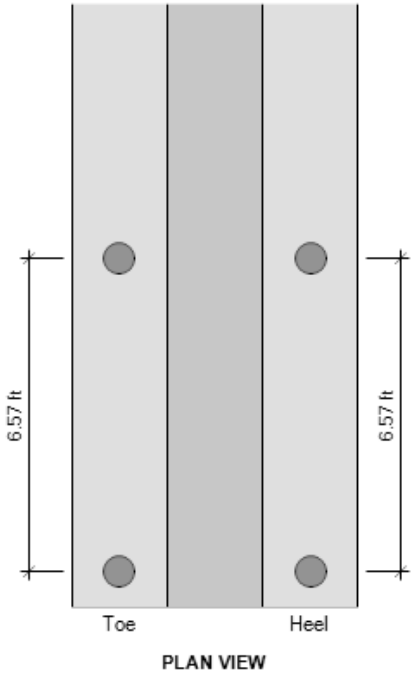


DESIGN CODES

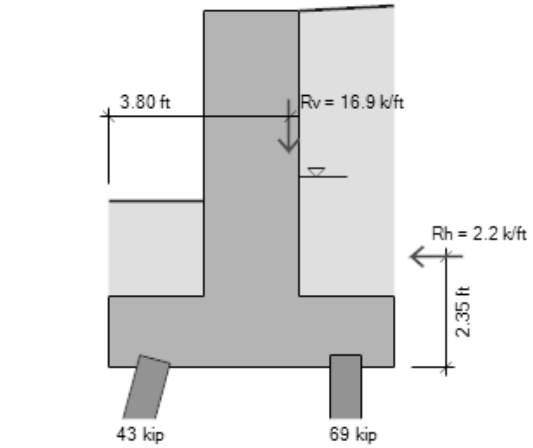
General Analysis	AASHTO LRFD-20
Concrete Design	AASHTO LRFD-20
Masonry Design	TMS 402-16
Load Combinations	AASHTO LRFD

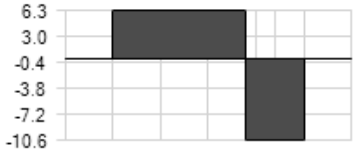
MATERIALS

	Stem	Footing	
Concrete f'c	4.0	4.0	ksi
Rebars fy	60.0	60.0	ksi
Masonry f'm	1.5		ksi

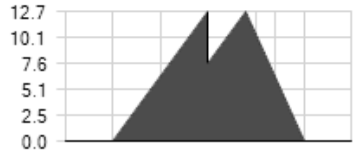


PLAN VIEW





SHEAR DIAGRAM (k/ft)



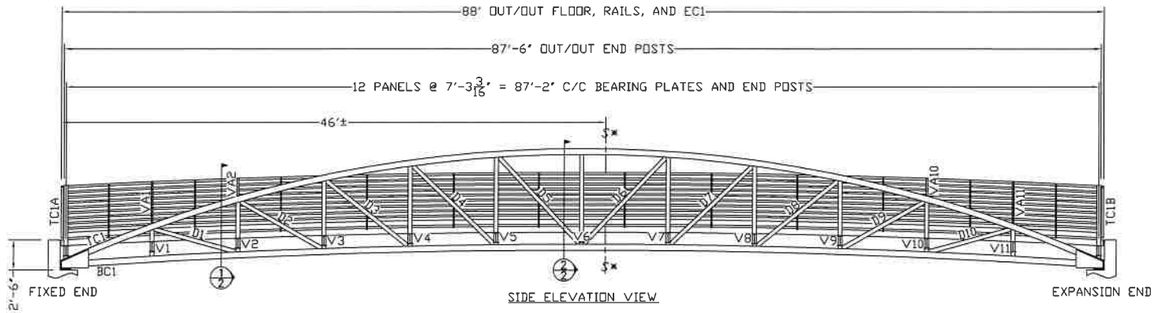
MOMENT DIAGRAM (k-ft/ft)

Comb: 1.25DC+1.35EV+1.5ES+1.5EH+1.75LL+1.75LS+WA)

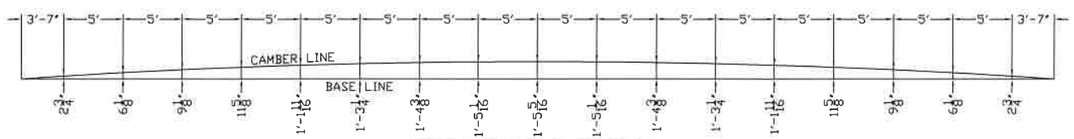
Supporting Document F:
Pedestrian Bridge Design

By Pioneer Bridges

*APPROX. LOCATION (±4') OF SHOP CHORD SPLICES (SEE WELD DETAIL, THIS SHEET). SPLICE LOCATION SUBJECT TO CHANGE DEPENDING ON MATERIAL AVAILABILITY. FINAL LOCATIONS TO BE RECORDED IN AS-BUILT DRAWINGS.

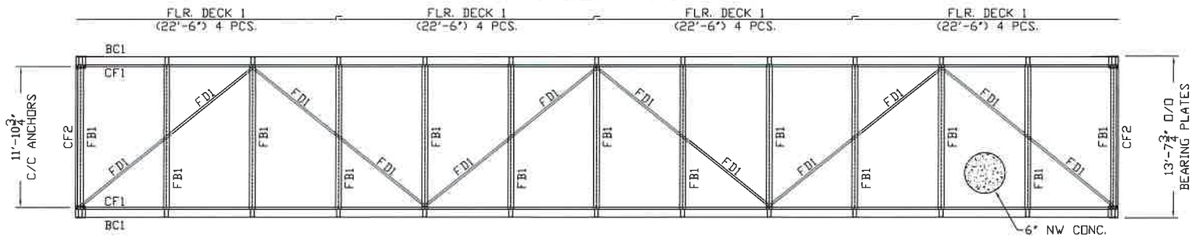


SIDE ELEVATION VIEW

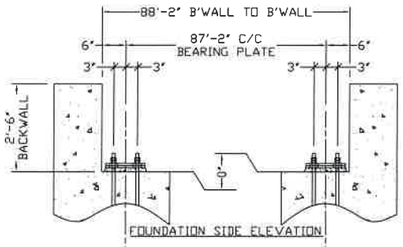


FINAL BC1 CAMBER AFTER DL APPLIED = 1'-4"

BOTTOM CHORD SHOP CAMBER DIAGRAM



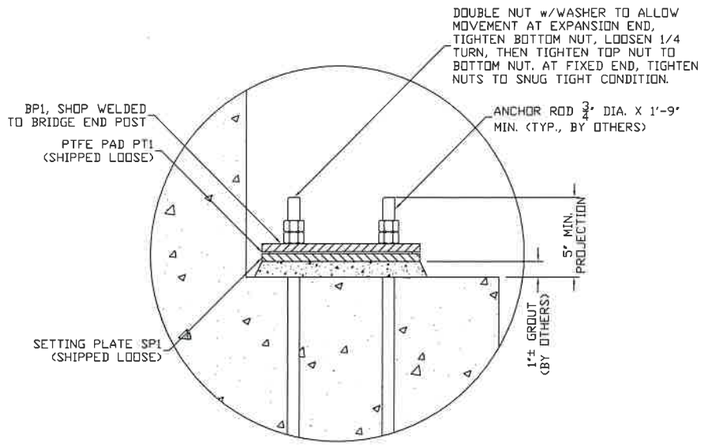
PLAN VIEW



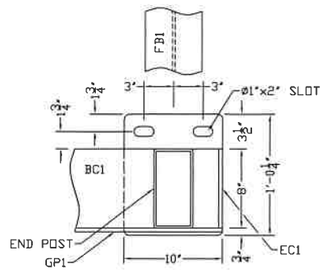
FOUNDATION SIDE ELEVATION

FOUNDATION PLAN VIEW

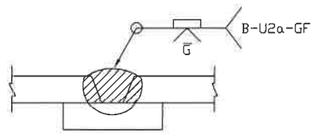
UNFACTORED ABUTMENT REACTIONS
(EXCLUDES IMPACT)
VERT. DL = 46.0 KIPS
VERT. LL = 47.1 KIPS
HORIZ. (WIND) = 8.6 KIPS
THERMAL LONG. = 9.2 KIPS
NET UPLIFT (WIND) AT ONE BP = NONE
NET FACTORED UPLIFT = NONE



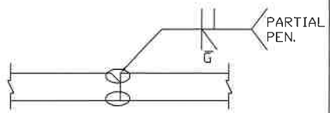
STANDARD BEARING CONFIGURATION



BEARING PLATE (BP1) AND SETTING PLATE (SP1) DETAIL
PL½" A588 OR A242-50



TYP. TOP AND BOTT. CHORD SHOP SPLICE WELD DETAIL



TYPICAL BUTT SPLICE
FOR RAILS, TOE PL, FENCE FRAMES & MISC ITEMS.

GENERAL NOTES:

1. ALL DESIGN VALUES ARE IN ACCORDANCE WITH THE AASHTO LRFD STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 7TH EDITION WITH AASHTO PEDESTRIAN BRIDGE GUIDE SPECS 2ND EDITION.
2. WELDING TO CONFORM WITH THE AMERICAN WELDING SOCIETY D1.1 LATEST REVISION AND/OR D1.5 (AS APPLICABLE). WELDING TO BE PERFORMED BY EXPERIENCED WELDERS QUALIFIED IN ACCORDANCE WITH A.W.S. PROCEDURES. WELDING ELECTRODES TO BE A.W.S E81T-X SERIES. WELD PROCESS TO BE FCAW OR GMAW.
3. ALL STRUCTURAL STEEL TO HAVE A MINIMUM YIELD STRENGTH OF 50,000 PSI WITH A WEATHERING FINISH.
4. STRUCTURAL WELDS WILL BE A MINIMUM OF 3/16" FILLET UNLESS SHOWN OTHERWISE. MINIMUM WELD DOES NOT APPLY TO SEAL WELDS.
5. ANCHOR RODS TO BE ASTM F1554-36 GALV. STEEL RODS. AT EXPANSION END, TIGHTEN BOTTOM NUT, LOOSEN 1/4 TURN, THEN TIGHTEN TOP NUT TO BOTTOM NUT. AT FIXED END, TIGHTEN NUTS TO SNUG TIGHT CONDITION. IF REQUIRED, FIELD SPLICE CONNECTION BOLTS SHALL BE ASTM A325 TYPE 3 AND SHALL BE TIGHTENED BY THE TURN OF THE NUT METHOD TO OBTAIN PROPER TENSION.
6. ALL PROMINENTLY EXPOSED STEEL SURFACES TO BE MEDIA BLASTED TO S.S.P.C. #6 "COMMERCIAL SAND BLAST FINISH."
7. CONCRETE FLOOR DECK TO BE 4000 PSI NORMAL WEIGHT (150 PCF), POURED AND FINISHED ON THE JOB SITE. THE BRIDGE SHALL BE DELIVERED FORMED WITH A GALVANIZED (G90) COMPOSITE FLOOR DECK. CONTROL JOINTS ARE NOT RECOMMENDED OR REQUIRED. HOWEVER, DEPENDING ON POUR SEQUENCE AND CURE RATES, CONTRACTOR MAY UTILIZE CONTROL JOINTS OR POUR STOPS AT THEIR DISCRETION TO MITIGATE SHRINKAGE CRACKING DURING CONCRETE CURE. CONTRACTOR TO FURNISH REINFORCING STEEL WHICH SHALL BE GRADE 60 DEFORMED BARS. A CONCRETE DECK SEALER, IF NOT REQUIRED BY OTHER CONTRACT DOCUMENTS, IS RECOMMENDED.
8. HAND RAILS AND ALL OTHER ACCESSIBLE SURFACES TO BE GROUND SMOOTH WITH NO SHARP EDGES OR CORNERS.
9. LENGTH OF ANCHOR RODS AND FOUNDATION DETAILS ARE FOR GENERAL ARRANGEMENT PURPOSES ONLY. ACTUAL FOUNDATION AND SUBSTRUCTURE DESIGN, RAILING, CAMBER AND SLOPE REQUIREMENTS, ELECTRICAL GROUNDING, AND CLEARANCES (FLOOD PLAIN, ROADWAY, AND WATERWAY) ARE THE RESPONSIBILITY OF OTHERS.

PLACARD INFO:
PEDESTRIAN TRAFFIC
LIGHT VEHICLE, MAX GVW: 10 TONS
MODEL: CROSSBOW
SERIAL NO: 23111P

DESIGN CRITERIA

THIS BRIDGE IS DESIGNED BASED ON THE FOLLOWING CRITERIA:
1. DEAD LOAD OF 88 PSF PLUS EVENLY DISTRIBUTED LIVE LOAD OF 90 PSF.
2. DEAD LOAD PLUS CONCENTRATED LIVE LOAD OF 20,000 POUNDS.
3. WIND LOAD OF 35 PSF CALCULATED ON THE ENTIRE PROJECTED VERTICAL SURFACE AS THOUGH FULLY ENCLOSED PER AASHTO.

PRELIMINARY LIFTING WEIGHT = 26,000 LBS
(PRELIMINARY LIFTING WEIGHT CONSISTING OF BRIDGE WITH NO CONCRETE POURED)

Calhoun Utilities - Water & Wastewater
Project Name
Pedestrian Rec. Bridge

☑ APPROVED ☐ REJECTED
☐ REVISE AND RESUBMIT ☐ SUBMIT SPECIFIED ITEM

BY kmccord DATE 12/1/2023
SUBMITTAL# 23111P Rev/ SPEC RFP2024-0

Review of equipment/material submittals is conducted for general design and Calhoun standards conformance. Approval, correction, and/or comments made by the City do not relieve the Contractor/Vendor from compliance with the the engineering drawings and technical specifications, nor does it guarantee performance for which the manufacturer is responsible. Furthermore, the City's approval of a specific item does not constitute approval of the entire assembly to which the item is a component. Contractor is responsible for confirming/correlating all quantities and dimensions, selecting proper fabrication processes, construction means/method, installation techniques, sequences, ensuring professional workmanship, coordinating all trades of work, and performing all duties in a safe and satisfactory manner.

BAILEY BRIDGES, INC.
GA COA #PEF007624 EXP. 6/30/2024

GEORGIA REGISTERED No. PEF44722 PROFESSIONAL ENGINEER ALEX DEREK FLORA
10/16/2023

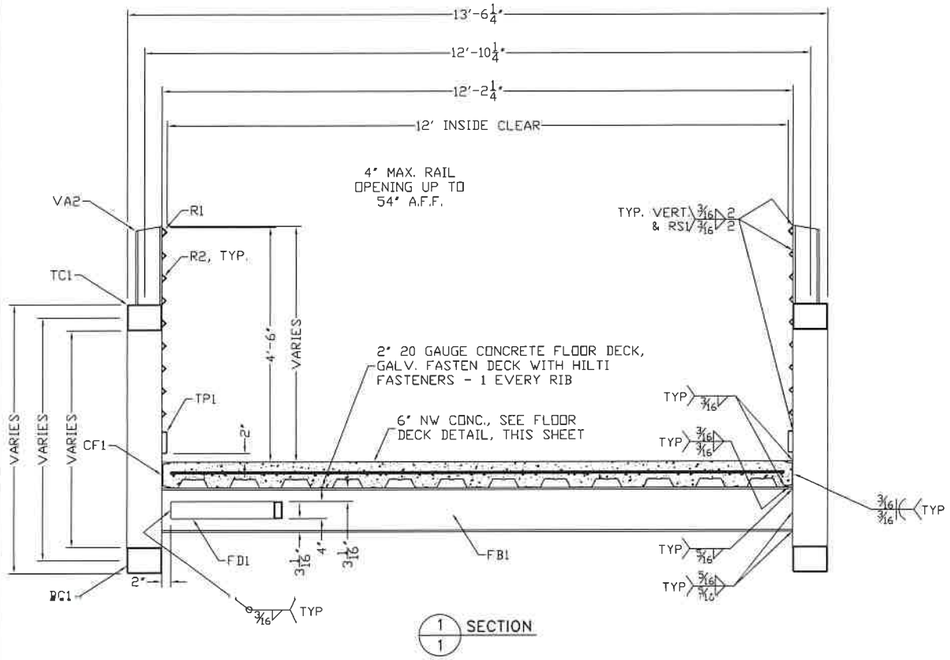
REV	DESCRIPTION	BY/DATE	CHECKED BY
A	FOR APPROVAL	SAR 9/22/23	NH 9/26/23

PIONEER BRIDGES
A DIVISION OF BAILEY BRIDGES, INC.
119 40th Street NE
Fort Payne, AL 35967
1-866-708-5778

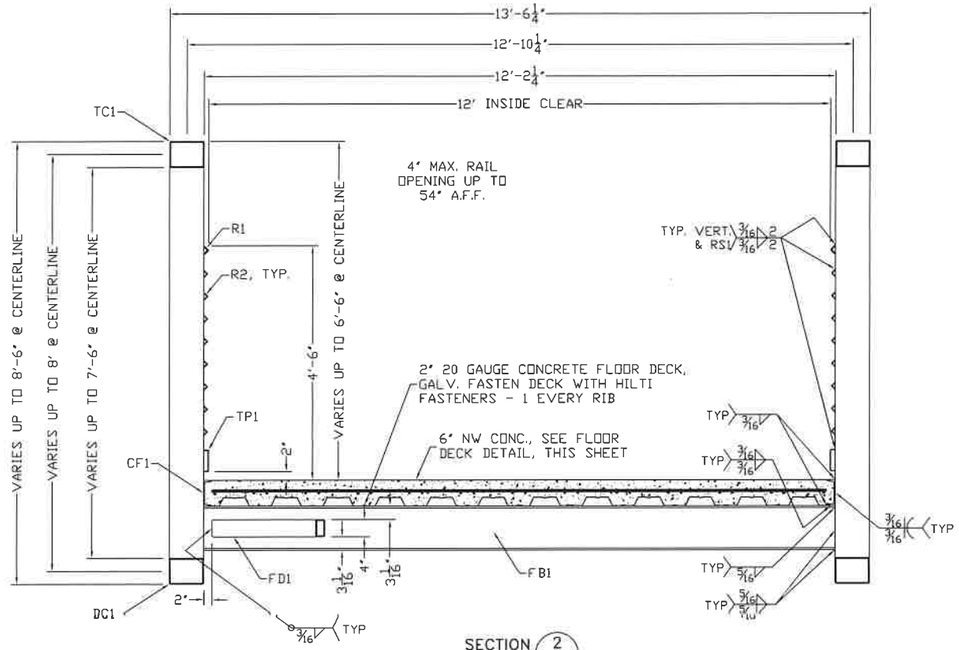
PROJECT: PALMER MEMORIAL PEDESTRIAN BRIDGE
OWNER: CITY OF CALHOUN
ADDRESS: CALHOUN, GA
CONTRACTOR: –
DESCRIPTION: 12'X88' CROSSBOW PEDESTRIAN BRIDGE

DRAWN BY: SAR
APPROVED BY: RGG
CHECKED BY: NH

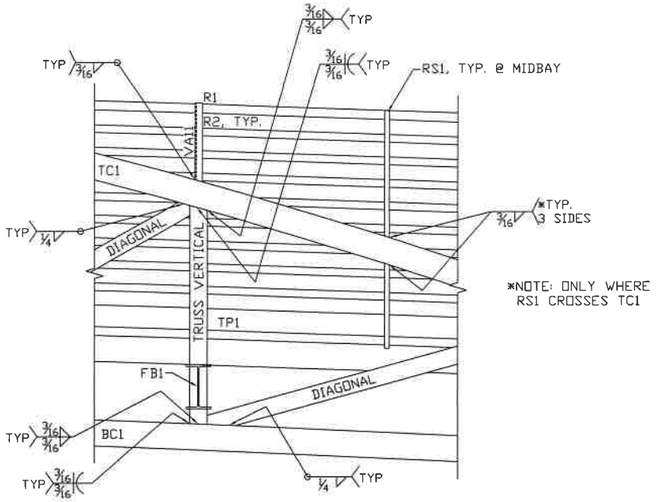
JOB NO: 23111P
SHEET: 1 OF 3
REV. A



1/1 SECTION

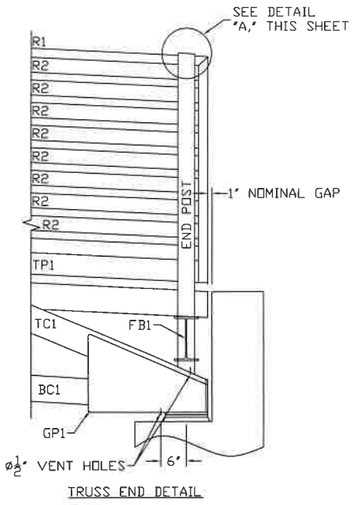


SECTION 2/1

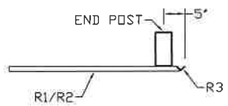


*NOTE: ONLY WHERE RS1 CROSSES TC1

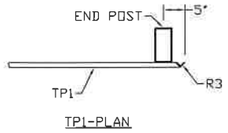
TYPICAL TRUSS DETAIL



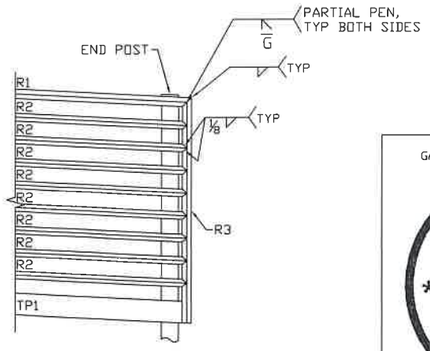
TRUSS END DETAIL



R1/R2-PLAN

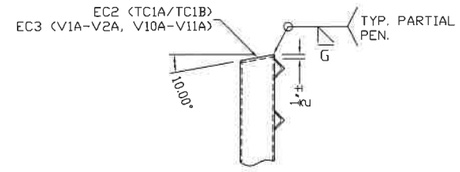


TP1-PLAN



ELEVATION

RAIL TERMINATION DETAIL



DETAIL "A"

BAILEY BRIDGES, INC.
GA COA #PEF007624 EXP. 6/30/2024

GEORGIA REGISTERED No. PE044722 PROFESSIONAL ENGINEER ALEX DEREK FLORA
10/10/2023

REV	DESCRIPTION	BY/DATE	CHECKED BY
A	FOR APPROVAL	SAR 9/22/23	NH 9/26/23

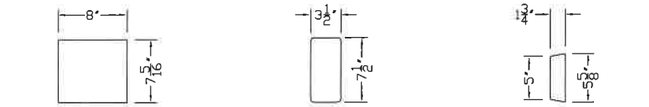
PIONEER BRIDGES

A DIVISION OF BAILEY BRIDGES, INC.
119 40th Street NE
Fort Payne, AL 35967
1-866-708-5778

PROJECT: PALMER MEMORIAL PEDESTRIAN BRIDGE
OWNER: CITY OF CALHOUN
ADDRESS: CALHOUN, GA
CONTRACTOR: —
DESCRIPTION: 12'X88' CROSSBOW PEDESTRIAN BRIDGE

DRAWN BY: SAR
APPROVED BY: RGG
CHECKED BY: NH

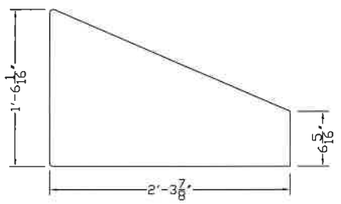
JOB NO: 23111P
SHEET: 2 OF 3
REV: A



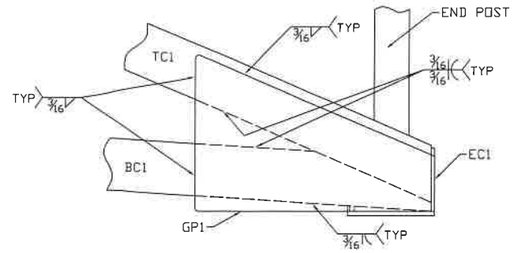
EC1
PL 3/8" A588 OR A242-50

EC2
PL 1/4" A588 OR A242-50

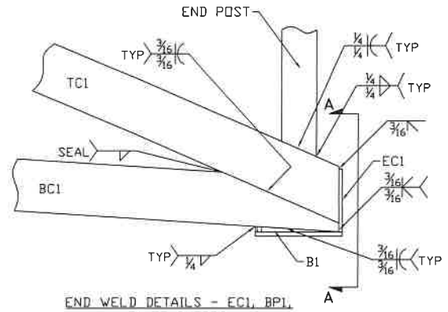
EC3
PL 1/4" A588 OR A242-50



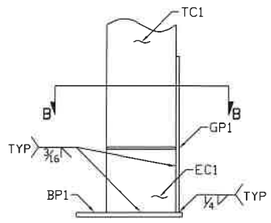
GP1
PL 3/8" A588 OR A242-50



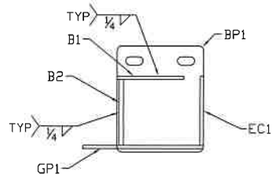
END WELD DETAILS - GP1 TO CHORDS



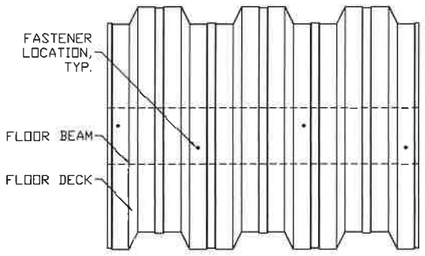
END WELD DETAILS - EC1, BP1, B1 TO CHORDS
GP1 OMITTED FOR CLARITY



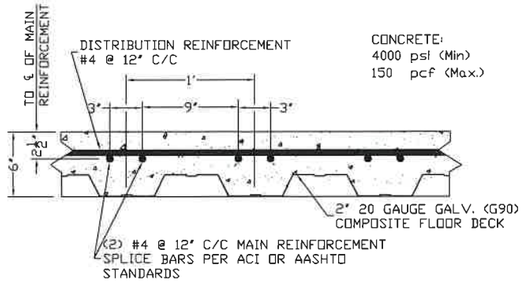
SECTION A-A
EC1 TO BP1 & GP1



SECTION B-B
BP1 TO B1 & B2
(CHORDS OMITTED FOR CLARITY)



STANDARD INSTALLATION DETAIL
2" FLOOR DECK TO FLOOR BEAM
PLACE FASTENER IN EVERY CORRUGATION, ALTERNATING SIDES OF THE FLOOR BEAM FLANGE.



CONCRETE DECK TYPICAL DETAIL

MATERIAL SCHEDULE (A588, A242-50, A847) - 1 BRIDGE (12'x88')

Pc. Mk	Quantity	Description
TC1	2	HSS8X6X1/4
TC1A/TC1B	4	HSS8X4X1/4
BC1	2	HSS8X6X1/4
V1	2	HSS8X4X1/4
V2	2	HSS8X4X1/4
V3	2	HSS8X4X1/4
V4	2	HSS8X4X1/4
V5	2	HSS8X4X1/4
V6	2	HSS8X4X1/4
V7	2	HSS8X4X1/4
V8	2	HSS8X4X1/4
V9	2	HSS8X4X1/4
V10	2	HSS8X4X1/4
V11	2	HSS8X4X1/4
V1A	2	C6X8.2
V2A	2	C6X8.2
V10A	2	C6X8.2
V11A	2	C6X8.2
D1	2	HSS6X4X1/4
D2	2	HSS6X4X1/4
D3	2	HSS6X4X1/4
D4	2	HSS6X4X1/4
D5	2	HSS6X4X1/4
D6	2	HSS6X4X1/4
D7	2	HSS6X4X1/4
D8	2	HSS6X4X1/4
D9	2	HSS6X4X1/4
D10	2	HSS6X4X1/4
FB1	13	W10X22
FD1	12	HSS4X2X1/4
CF1	2	C6X8.2
CF2	2	C6X8.2
R1	2	L1 1/2X1 1/2X3/16
R2	16	L1 1/4X1 1/4X1/8
R3	4	L1 1/2X1 1/2X3/16
TP1	2	UC5X3.08
RS1	24	FL 1/2X1
FLR. DECK 1	16	2" 20 GA. CFD GALV. G90
DECK FASTENERS	169	HILTI FASTENERS
B1	4	PL3/8X7 3/4
B2	4	PL1/2X8
GP1	4	PL3/8X18
EC1	4	PL3/8X8
EC2	4	PL1/4X3 1/2
EC3	8	PL1/4X1 3/4
BP1	4	PL 1/2 X 10
PT1	4	1/8" X 9" TEFLON PAD
SP1	4	PL 1/2 X 10

BAILEY BRIDGES, INC.
GA COA #PEF007624 EXP. 6/30/2024

GEORGIA REGISTERED No. PE044722 PROFESSIONAL ENGINEER ALEX DEREK FLORA
10/16/2023

REV	DESCRIPTION	BY/DATE	CHECKED BY
A	FOR APPROVAL	SAR 9/22/23	NH 9/26/23

PIONEER BRIDGES
A DIVISION OF BAILEY BRIDGES, INC.
119 40th Street NE
Fort Payne, AL 35967
1-866-708-5778

PROJECT: PALMER MEMORIAL PEDESTRIAN BRIDGE
OWNER: CITY OF CALHOUN
ADDRESS: CALHOUN, GA
CONTRACTOR: —
DESCRIPTION: 12'X88' CROSSBOW PEDESTRIAN BRIDGE

DRAWN BY: SAR
APPROVED BY: RGG
CHECKED BY: NH

JOB NO: 23111P
SHEET: 3 OF 3
REV: A