



CITY OF MORGANTON
NORTH CAROLINA

October 17, 2023

Dear Contractor,

Please find the “Bethel Park Restoration” contract documents at the following link:
<https://www.morgantonnc.gov/rfps>

This project includes the restoration of East Prong Hunting Creek and Fiddlers Run through Bethel Park within the City of Morganton for the purpose of ecological enhancement and flood mitigation. Please review the plans and bid proposal book which provide all of the specific details and information on the project.

A pre-bid meeting is scheduled for **11:00 A.M. on Tuesday, October 31, 2023** at City of Morganton, City Hall in the Council Chambers at 305 E Union St. Suite A100 Morganton, NC 28655. A site visit will follow the pre-bid meeting.

Bids must be received prior to **2:00 P.M. on Thursday November 16, 2023**. The formal bid proposal submissions shall be submitted prior to that date, at any time during our normal business hours of 8:00 A.M. to 5:00 P.M. Monday thru Friday to the Development and Design Services Department. The bid proposals shall be submitted **sealed** by mail, or delivered in person to the Development and Design Services Department on the second floor of City Hall, Attn.: Mario Sclarandis P. E., City Engineer. Mail **PO Box 3448 Morganton, NC 28680**, Delivery **305 East Union St., Suite A100 Morganton, NC 28655**. All bids must be accompanied by one of the forms of bid security listed in the bid Summation, references of previous similar projects, and the applicable Affidavit A or B of the Disadvantaged Business Enterprise (DBE / MBE / WBE) forms included in the bid packet. Failure to include these items with the bid proposal may be deemed as non-responsive. No bids shall be received after the above-stated time.

Three originals of the bid documents shall be delivered to the City by the awarded Contractor for inclusion in and execution of the Contract Documents.

If you plan to bid and did not receive your bid documents directly from the City of Morganton, please be sure that you are on our bidders list. Otherwise, you may fail to get updates or addenda.

The bid listed on the Proposal Sheet shall remain valid for a period of up to 120 days after the bid submittal deadline listed until Notice to Proceed can be given.

Please review the information and call me at (828) 438-5263 if you have any questions.
Sincerely,

Mario Sclarandis

Mario Sclarandis, P.E.
City Engineer

City of Morganton
Bethel Park Restoration

City Officials

Ronnie Thompson, Mayor
Wendy Cato, Mayor Pro-Tem
Chris Hawkins, Councilman
Butch McSwain, Councilman
Chris Jernigan, Councilman

Sally W. Sandy, City Manager

Prepared by
City of Morganton
Mario Sclarandis, P.E.

Contents

	<u>Page</u>
1. Notice to Bidders	1
2. Summation of Detailed Information to Bidders	SB-1
3. Contractor Qualifications	Q-1
4. Instructions to Bidders	IB-1
5. General Conditions	GC-1
6. Specifications	PS-1
7. Vicinity Maps	M-1
8. Proposals	P-1
9. MBE Requirements	MBE-1
11. Bid Bond	B-1
12. Award of Contract	LD-1
13. Construction Agreement	LD-3
14. Performance Bond	LD-6
15. Payment Bond	LD-8
16. Certificate of City Attorney & Finance Officer	LD-10

Notice to Bidders

A pre-bid meeting is scheduled for **11:00 A.M. on Thursday, October 31, 2023** at City of Morganton, City Hall in the Council Chambers at 305 E Union St. Suite A100 Morganton, NC 28655. A site visit will follow the pre-bid meeting.

Bids must be received prior to **2:00 P.M. on Thursday November 16, 2023.**

The bid proposals can be submitted at any time during our normal business hours of 8:00 A.M. to 5:00 P.M. Monday thru Friday to the Development and Design Services Department, at City Hall. The bid proposals shall be submitted **sealed** by mail, or delivered in person to the Development and Design Services Department Attn: Mario Sclarandis, P.E., City Engineer, on the second floor of City Hall. Mail **PO Box 3448 Morganton, NC 28680,** Delivery **305 East Union St., Suite A100 Morganton, NC 28655**

No proposals shall be received after the above-stated time. Proposals will be on the following construction: **Bethel Park Restoration**, bids must be on standard forms furnished in the contract documents.

Contract documents may be obtained from the City of Morganton website at <https://www.morgantonnc.gov> Go to the website and search for **Bids**, and then download the “Bethel Park Restoration” bid package.

Each bid must be accompanied by a bid security of 5% of the bid amount. Security may be in the form of cash, certified check or cashier’s check made payable to the City of Morganton or a bid bond issued by an insurance company authorized to do business in North Carolina. The deposit shall be retained if the successful bidder fails to execute the contract within (10) days after the award of contract or fails to give satisfactory surety as required herein.

A performance bond of 100% of the contract price shall be required.

A material and labor bond in the amount of 100% of the contract price shall be required.

The bidder shall comply with minority business requirements as outlined in G.S. 143-128 by:

1. Providing the minority businesses that will be utilized on the project with corresponding total dollar value of the bid and affidavit listing good faith efforts or,
2. An affidavit indicating that work will be self-performed.

Failure to comply with these requirements may be grounds for rejection of bid.

If you did not receive the project bid notification directly from the City of Morganton, please be sure that you contact us and ask to be added to our bidders list. Include your business name, contact name, physical address, phone number, fax number and email address when contacting us for inclusion to the bidders list. Otherwise, you may fail to get updates or addenda.

Please direct all questions to Mario Sclarandis, P.E. If you use email, please use the subject line of “Bethel Park Restoration” so that your email is reviewed in a timely manner. It would be best to follow up with a phone call to ensure receipt of your email or other correspondence. If addenda are made at any time throughout the process, they will be posted on the City website under the project title for review.

The City reserves the right to reject any or all bids, reduce scope or to accept the bid that appears to be in the best interest of the City, or provided by law. No bid may be withdrawn for a period of 120 days after the scheduled bid opening.

Mario Sclarandis, P.E.

City Engineer

SUMMATION OF DETAILED INFORMATION TO BIDDERS

<u>Owner:</u>	The owner of the work to be done under these plans and specifications is the City of Morganton, represented by the Mayor, City Council and City Manager.
<u>Project:</u>	Bethel Park Restoration.
<u>Bid Security:</u>	Cash, certified check, or cashier's check in the amount of 5% base bid or an acceptable bid bond in the amount of 5% of base bid in accordance with G.S. 143-129.
<u>Contractor:</u>	The organization or legal representative to which the contract is awarded for the proposed work.
<u>Engineer:</u>	The City Engineer for the City of Morganton or his authorized representative representing the owner.
<u>Insurance Required:</u>	As specified by the contract documents.
<u>Time of Completion:</u>	The total time allowed for this project shall 240 days from issuance of Notice to Proceed. Notice to Proceed issuance is anticipated in February 2024.
<u>Liquidated Damages:</u>	\$200 per calendar day.
<u>Instructions to Bidders and General Conditions:</u>	The Instructions to Bidders and General Conditions in the contract documents are the standard PENC documents B-2 (1981 Edition) and B-1 (1985 Edition) respectively. Changes to these standard documents are listed in the Special Conditions section of the contract documents.
<u>Contract Extension:</u>	Not anticipated.

Contractor Qualifications

The successful bidder shall have successfully completed projects comparable in scope and nature to this project. Contractor shall have experience in or show that subcontractor has substantial experience in the following:

- a. General site grading
- b. Stream restoration construction and installation of in-stream structures
- c. Installation of pedestrian bridges
- d. Asphalt trail paving (alternate)

References for at least three similar projects shall be submitted with the Contractor's bid or within 24 hours of the bid opening.

The Contractor shall submit a list of all subcontractors at bid time. All subcontractors must be approved by the City of Morganton.

INSTRUCTIONS TO BIDDERS

**CITY OF MORGANTON, NORTH CAROLINA
DEVELOPMENT AND DESIGN SERVICES DEPARTMENT
305 E. Union Street, Suite A100
P.O. Box 3448
Morganton, NC 28680-3448**

INSTRUCTIONS TO BIDDERS

For a proposal to be considered, it must be in accordance with the following instructions:

1. DEFINED TERMS.

Terms used in these Instructions to Bidders are generally defined in the General Conditions of the Contract Documents. For the convenience of prospective bidders the following information may be helpful:

- a. The words "Proposal" and "Bid" are used interchangeably to refer to the properly signed response to the Advertisement for Bids, which, if accepted by the City, will bind the Bidder to perform the Construction Contract.
- b. "Bid Form" refers to the form provided by the City of Morganton ("City") so that a prospective Bidder can submit its response to the invitation for bid. It is also called the "Form of Proposal". Only the form provided by the City can be used to submit a Bid.
- c. The word "Bidder" means a properly licensed contractor who submits a Bid in accordance with these instructions. If a Bidder's Proposal is accepted by the City, then the Bidder becomes the Contractor and is required to execute the Construction Agreement and undertake construction of the Project.

2. PROPOSALS.

Bids must be submitted on the Bid Form provided by the City. Bid Forms must be completed in ink or by typewriter and all blank spaces for bids, alternates, unit prices or other requested information shall be properly filled in. Prices must be stated in both words and numbers and in case of a conflict, the words will take precedence. Erasures, obvious changes or interlineation may disqualify the Bid. Bids containing confusing or conflicting information may likewise be disqualified.

Photocopied and faxed proposals will only be considered if the original of the Bid Form containing the original signature is delivered to the City by mail, courier or by hand delivery immediately following the bid opening.

Any modifications to the Form of Proposal will disqualify the Bid and cause the Bid to be rejected.

The Bidder shall sign the Form of Proposal as follows:

- a. If the documents are executed by a sole owner, that fact shall be evidenced by the word "Owner" appearing after the name of the person executing them.
- b. If the documents are executed by a partnership, that fact shall be evidenced by the word "Co-Partner" appearing after the name of the partner executing them.

c. If the documents are executed on the part of a corporation, they shall be executed by either the president or the vice president and attested by the secretary or assistant secretary in either case, and the title of the office of such person shall appear after their signatures. The seal of the corporation shall be impressed on each signature page of the documents.

d. If the proposal is made by a joint venture, it shall be executed by each member of the joint venture in the above form for sole owner, partnership or corporation, whichever form is applicable.

e. All signatures shall be properly witnessed.

f. If the contractor's license of a bidder is held by a person other than an owner, partner or officer of a firm, then the licensee shall also sign and be a party to the proposal. The title "Licensee" shall appear under his/her signature.

Proposals shall be addressed as indicated in the Advertisement for Bids and shall be delivered, enclosed in an opaque sealed envelope, marked "Proposal" or some similar word and bearing the title of the work, name of the bidder, and the contractor's license number of the bidder. Bidders shall clearly mark on the outside of the bid envelope which contract(s) they are bidding.

For projects bid in the single-prime alternative, the names and license numbers of major subcontractors shall be listed on the proposal form.

It shall be the specific responsibility of the bidder to deliver his bid to the proper official (generally the Development and Design Services Department) at the City of Morganton prior to the announced time for the opening of bids. Later delivery of a bid for any reason, including delayed delivery by the United States Postal Service or courier service, shall disqualify the bid.

Modifications of previously deposited bids will be acceptable only if delivered in writing or by telegram or fax to the place of the bid opening prior to the time for opening bids. Telegraphic and fax modifications must be confirmed in writing within 72 hours of the opening of bids.

Unit prices quoted in the proposal shall include overhead and profit and shall be the full compensation for the contractor's cost involved in the work.

3. EXAMINATION OF CONDITIONS

By submitting a Bid, the Bidder acknowledges that all documents pertaining to the Work, the location, accessibility and general character of the site of the Work and all existing buildings and structures within and adjacent to the site has been carefully examined and the Bidder is satisfied as to the nature of the Work, the condition of the existing buildings and structures, the topographic features of the work area, the character, quality and quantity of the material to be encountered, the character of the equipment, machinery, plans and other facilities needed preliminary to and during the prosecution of all Work,

the general and local conditions, the construction hazards, and all other matters, including, but not limited to, the labor situation which can in any way affect the Work under the Contract, and including all safety measures required by the Occupational Safety and Health Act of 1970, as amended, and all rules and regulations issued pursuant thereto.

In submitting a Proposal, the Bidder acknowledges that the available Plans and Specifications, Drawings and other Contract Documents have been reviewed and that the Project described therein is feasible and the Contractor has the means and ability to undertake and complete all Work. By submitting a Bid, the Bidder accepts all the terms, conditions and stipulations contained in the Contract Documents and the Bidder is prepared to work in cooperation with other contractors performing work on the Project Site.

Reference is made to the Contract Documents for the identification of any surveys and investigative reports of subsurface or latent physical conditions at the site or otherwise affecting performance of the Work which have been relied upon by the Engineer in preparing the Drawings and Specifications. The City will make copies of all such surveys and reports, if any, available to the Bidder upon request.

Each Bidder may, at its own expense, make such additional surveys and investigations as the Bidder may deem necessary in order to prepare its Bid and if awarded the bid, perform the Work. Any onsite investigation shall be done at the convenience of the City; however, any reasonable request for access to the site will be honored by the City.

4. BULLETINS AND ADDENDA

Any addenda to specifications issued during the time of bidding are to be considered covered in the proposal and in issuing the contract they will become a part thereof. It shall be the bidder's responsibility to ascertain prior to bid time the addenda issued and to see that its bid includes any changes required by the addenda.

All addenda should be acknowledged by the bidder(s) on the Form of Proposal.

5. INTERPRETATIONS. Any questions about the meaning or intent of the Drawings and Specifications shall be submitted to the City and/or the Engineer in writing. Replies will be issued by addenda mailed and delivered to all prospective Bidders recorded by the City and/or the Engineer as having received the bidding documents. Questions received by the City less than five (5) days prior to the date for opening of the bids will not be answered. Only questions answered by formal written addenda will be binding on the City. Each Bidder, before submitting its Bid, shall ascertain that the Bidder has received all addenda issued.

6. BID SECURITY

Each proposal shall be accompanied by either (i) a cash deposit; (ii) a certified check drawn on some bank or trust company insured by the Federal Deposit Insurance Corporation, or (iii) a bid bond issued by a commercial surety in an amount equal to not less than five percent (5%) of the proposal. The Bid Security will be retained by the City of Morganton as liquidated damages in the event of the failure of the successful bidder to execute the contract within ten (10) days after the award and to give satisfactory surety as required by law (G.S. 143-129).

Bid bond shall be conditioned that the surety will, upon demand, forthwith make payment to the obligee upon said bond if the bidder fails to execute the contract. The City may retain bid securities of any bidder(s) who may have a reasonable chance of award of contract for the full duration of time stated in the Notice to Bidders. Other bid securities may be released sooner, at the discretion of the City. All bid securities (cash or certified checks) shall be returned to the bidders promptly after award of contracts and no later than seven (7) days after expiration of the holding period stated in the Notice to Bidders. A Standard Form of Bid Bond acceptable to the City is included with these instructions.

7. RECEIPT OF BIDS

Bids shall be received in strict accordance with the requirements of the General Statutes of North Carolina. Prior to the opening of any Bids for the Project, Bids may be modified or withdrawn provided any modification of a previously submitted Bid shall be executed by the Bidder in the same manner that the original Bid was executed and submitted. Refer to Section 2 above for additional information.

8. OPENING OF BIDS

Upon opening, all bids shall be read aloud. Once any bid is opened, there shall not be any withdrawal of bids by any bidder and no bids may be returned to any bidder. After the bid opening, a bidder may request that his bid be withdrawn from consideration without forfeiture of his bid security in accordance with the provisions of the North Carolina General Statute 143-129.1; however, no bid may be withdrawn, except under the provisions of General Statute 143-129.1, for a period of thirty days unless otherwise specified. Should the successful bidder default or fail to execute a contract, the contract may be awarded to the next lowest and responsible bidder. The City reserves the unqualified right to reject any and all bids. Reasons for rejection may include, but shall not be limited to, the following:

- a. If the Form of Proposal furnished to the bidder by the City is not used or is altered.
- b. If the bidder fails to insert a price for all bid items, alternate and unit prices requested.
- c. If the bidder adds any provision reserving the right to accept or reject any award, or attempts to condition the bid or impose limitations on the bid.

- d. If there are unauthorized additions or conditional bids, or irregularities of any kind which tend to make the proposal incomplete, indefinite or ambiguous as to its meaning.
- e. If the bidder fails to complete the proposal form where information is requested so that the bid may be properly evaluated by the City.
- f. If the unit prices contained in the bid schedule are unacceptable to the City of Morganton.
- g. If the bidder fails to comply with other instructions stated herein.

9. BID EVALUATION

The award of the contract will be made to the lowest responsible bidder as soon as practical after the bid opening. The City may award on the basis of the base bid and any alternates the City chooses.

Before awarding a contract or in connection with the bidding process, the City may require the apparent low bidder to qualify himself to be a responsible bidder by furnishing any or all of the following data:

- a. The latest financial statement showing assets and liabilities of the company or other information satisfactory to the City.
- b. A listing of completed projects of similar size.
- c. Permanent name and address of place of business.
- d. The number of regular employees of the organization and length of time the organization has been in business under the present name.
- e. The name and home office address of the surety proposed and the name and address of the responsible local claim agent.
- f. The names of members of the firms who hold appropriate trade licenses, together with license numbers.
- g. A listing of other construction contacts involving the bidders default or alleged default.

Failure or refusal to furnish any of the above information, if requested, shall constitute a basis for disqualification of the bidder.

In determining the lowest responsible, responsive bidder, the City shall take into consideration the bidder's compliance with the requirements of G.S. 143-128.2(c); the past performance of the bidder on construction contracts for the City or other public bodies including the State of North Carolina with particular concern given to completion

times, quality of work, cooperation with other contractors, and cooperation with the designer and City. Failure of the low bidder to furnish affidavit and/or documentation as required by G.S. 143-128.2(c) may constitute a basis for disqualification of the bid.

Should the City decide that the apparent low bidder is not the lowest responsible, responsive bidder by virtue of the above information or for other valid reasons, the apparent low bidder will be so notified and his bid security shall be returned to him.

10. PERFORMANCE BOND

The successful bidder, upon award of contract, shall furnish a performance bond in an amount equal to 100 percent of the contract price. See Article 35, General Conditions.

11. PAYMENT BOND

The successful bidder, upon award of contract, shall furnish a payment bond in an amount equal to 100 percent of the contract price. See Article 35, General Conditions.

12. PAYMENTS

Payments to the successful bidders (contractors) will be made on the basis of monthly estimates unless some other progress payment schedule is established. See Article 31, General Conditions.

13. PRE-BID CONFERENCE

Prior to the date set for receiving bids, the City may arrange and conduct a Pre-Bid Conference for all prospective bidders. The purpose of this conference is to review project requirements and to respond to questions from prospective bidders and their subcontractors or material suppliers related to the intent of bid documents. Attendance by prospective bidders shall be as required by the "Notice to Bidders".

14. SUBSTITUTIONS

In accordance with the provisions of G.S. 133-3, material, product, or equipment substitutions proposed by the bidders to those specified herein can only be considered during the bidding phase until ten (10) days prior to the receipt of bids when submitted to the Designer with sufficient data to confirm material, product, or equipment equality. Proposed substitutions submitted after this time will be considered only as a potential change order, subject to City approval.

Submittals for proposed substitutions shall include the following information:

- a. Name, address, and telephone number of manufacturer and supplier as appropriate.
- b. Trade name, model or catalog designation.

- c. Product data including performance and test data, reference standards, and technical descriptions of material, product, or equipment. Include color samples and samples of available finishes as appropriate.
- d. Detailed comparison with specified products including performance capabilities, warranties, and test results.
- e. Other pertinent data including data requested by the Designer to confirm product equality.

If a proposed material, product, or equipment substitution is deemed equal by the City to those specified, all bidders of record will be notified by Addendum.

15. QUALIFICATION OF BIDDERS AFTER AWARD

Bidders should be prepared to submit written documentation to demonstrate the Bidder's qualifications for undertaking the Project. If requested by the City, the Bidder shall be required to submit financial data, previous experience, license information and other evidence of authority to conduct business in the State of North Carolina. See Section 9 for additional information concerning qualifications.

**CITY OF MORGANTON
CONSTRUCTION CONTRACT
GENERAL CONDITIONS**

CITY OF MORGANTON, NC
GENERAL CONDITIONS CONSTRUCTION CONTRACT

Table of Contents

ARTICLE 1 – DEFINITIONS.....	1
ARTICLE 2 – CONTRACT DOCUMENTS AND REQUIREMENTS.....	4
ARTICLE 3 – PRELIMINARY MATTERS.....	9
ARTICLE 4 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; REFERENCE POINTS.....	11
ARTICLE 5 – BONDS AND INSURANCE.....	15
ARTICLE 6 – CONTRACTOR’S RESPONSIBILITIES.....	19
ARTICLE 7 – CITY’S RESPONSIBILITIES.....	33
ARTICLE 8 – OTHER WORK.....	34
ARTICLE 9 – ENGINEER.....	35
ARTICLE 10 –CHANGES IN THE WORK.....	38
ARTICLE 11 – CHANGE OF CONTRACT AMOUNT.....	40
ARTICLE 12 – TIMES.....	41
ARTICLE 13 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANACE OF DEFECTIVE WORK.....	42
ARTICLE 14 – PAYMENTS TO THE CONTRACTOR AND COMPLETION.....	47
ARTICLE 15 – SUSPENSION OF WORK AND TERMINATION.....	55
ARTICLE 16 – DISPUTE RESOLUTION.....	57
ARTICLE 17 – MISCELLANEOUS.....	58

GENERAL CONDITIONS

ARTICLE 1 - DEFINITIONS.

1.1 Basic Definitions. Whenever used in these General Conditions or in the other Contract Documents, the following terms have the meanings indicated which are applicable to both the singular and plural thereof:

1.1.1 City.

The City of Morganton, North Carolina, a party to the Contract. See also Owner.

1.1.2 Contract.

It is the entire agreement entered into between the City and the Contractor, and it also includes all of the other documents described in Article 2 as the Contract Documents, including any formal changes to any of those documents by addendum, change order or other written modification. The terms Contract and Contract Documents are synonymous and may be used interchangeably. For purposes of distinguishing documents, the term "Agreement" may be used in place of Contract when referring solely to the separate document signed by the parties.

1.1.3 Contract Amount.

The Contract Amount is the sum of money stated in the Contract that is payable by the City to the Contractor for the performance of the Work. Normally the Contract Amount is the amount stated in the bid, but it may also include any adjustments authorized by change order or other written modification. Sometimes it is referred to as the contractor's fee or the contract sum and it is generally paid to the Contractor in monthly or periodic progress payments, based on the portion of the Work satisfactorily completed, less any retainage.

1.1.4 Contract Time.

The number of calendar days allowed for completion of the Work, as stated in the Agreement or other Contract Documents.

1.1.5 Contractor.

The Contractor is the Person entering into the Contract with the City to perform all of the Work required under the Contract Documents. For some projects, more than one Contractor may have a subdivision or branch of the Work requiring a separate contract (i.e. projects involving multiple prime contracts). Where a particular contractor is intended, an adjective may be used to help further define which contractor, such as “general” contractor, “single prime” contractor or “heating” contractor in order to help identify the contractor required to perform all or any specific branch or subdivision of the Work assigned to that contractor. However, the term does not include a “subcontractor” which is meant to be a Person who has entered into a direct contract with a contractor but not the City.

1.1.6 Drawings.

The Drawings are the graphic or pictorial portions of the Contract Documents showing the design, the location and the dimensions of the Work, generally including plans, elevations, sections, details, schedules and diagrams and other visual representations of the Work.

1.1.7 Engineer.

The Person engaged by the City to perform architectural, engineering, design and other related services (but not construction) related to the Project and the Work required to complete the Project. When the City uses an architect for such services, the terms “architect” and “engineer” shall be synonymous. The Engineer may be an independent contractor providing professional services to the City; however, for some projects, the architectural, engineering, design, inspection, testing and other services related to the Project may be provided by a staff person or a department of the City.

1.1.8 Owner.

For this Contract, the term Owner is synonymous with the City.

1.1.9 Person.

The term Person includes an individual, a partnership, corporation or other entity regardless of its organizational structure. Most often, it refers to the Contractor or to the Engineer and depending on its usage, may refer to the individual who is designated to or has apparent authority to act on behalf of the Contractor or the Engineer or the City.

1.1.10 Plans and Specifications.

A term sometimes used to refer to the Drawings and the Specifications together or to the set of documents which describes the Work and which may include floor plans, elevations, renderings, plats, details of mechanical systems or other pictorial or written descriptions of the Work.

1.1.11 Project.

The entire construction Project involving the Work provided for in whole or in part by the Contract Documents. It is the intended result of the Work.

1.1.12 Project Expediter.

The Project Expediter is a responsible, reliable Person appointed by the City under G.S. 143-128(e) for the purpose of expediting the Work on the Project. Not all projects will have a Project Expediter. Unless a specific Project Expediter is appointed by the City, the single prime Contractor or the general Contractor will have the responsibility for coordinating the Work and preparing any schedule of how or when the Work will be completed.

1.1.13 Specifications.

The written description of the technical requirements for construction such as the written requirements for materials, equipment, systems, standards and workmanship for the Work and the performance of related services.

1.1.14 Supplemental Conditions.

Those additional or special conditions, when included as a part of the Contract Documents, which contain changes, deletions and additions to the general conditions or clarify the scope of the Work for the particular project. Also called Special Conditions.

1.1.15 Work.

The term Work means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all labor, materials, equipment and services (including documentation) required to be provided or necessary to be furnished by the Contractor in order to fulfill its obligations under the Contract.

1.2 Other Definitions. As required, other words and phrases may be defined when used throughout the Contract Documents as those words and/or phrases are used.

1.3 Technical Words. Unless defined, words or phrases having an accepted or recognized technical or construction industry meaning are used throughout the Contract Documents in accordance with those meanings. Likewise, abbreviations shall refer to the technical society, organization, body, code, rules, or standards, generally ascribed to such abbreviation by the building and construction trades.

1.4 Pronouns. The pronouns he, she and it, or his, her and their, are used interchangeably to refer to the Contractor, the Engineer or some other person.

ARTICLE 2 – CONTRACT DOCUMENTS AND REQUIREMENTS.

2.1 Meaning and Intent. The Contract Documents form the entire Contract for the construction of the Project and the satisfactory completion of all Work required from the Contractor. The Contract Documents include the Advertisement for Bids and any addenda, the Instruction to Bidders, the completed Bid, the Award of Contract, the Agreement (the specific Contract document signed by the parties), the General Conditions, the Supplemental Conditions, if any, the Drawings, the Specifications, and all addenda thereto, all required bonds and insurance certificates as well as all formal changes to any of those documents by addendum, properly issued change order or by other modification in writing.

Any reference to the term “Contract” includes all of the Contract Documents.

The Contract Documents are complementary, each to the other, and any requirement contained in one document is as binding as if it were contained in another or all of the other documents.

The intent of the Contract Documents is to describe and provide for a functionally complete and operational Project to be constructed in accordance with the Contract Documents.

2.2 Conflicts. In the event there is a discrepancy in a document or an ambiguity or conflict between documents and such discrepancy, ambiguity or conflict cannot be resolved by reference to all of the documents, the following order of precedence shall apply in reconciling the discrepancy, ambiguity or conflict (listed in order of highest to lowest precedence):

1. Written modifications in inverse chronological order,

2. Properly issued change orders,
3. Supplemental Conditions, if any,
4. The General Conditions,
5. Written amendments or addenda to Drawings and Specifications,
6. The Drawings and the Specifications (Plans and Specifications),
7. The Agreement,
8. Advertisement for Bids and any written addenda thereto,
9. The Bid.

Further, figure dimensions on Drawings govern over scale dimensions and detailed Drawings shall govern over general Drawings. When there is a conflict between existing Project site conditions and information contained on the Drawings or the Specifications, the existing Project site conditions shall govern and the Contractor shall perform the Work and adjust to the existing conditions at no additional cost to the City provided the Contractor could or should have known of such conditions based upon its reasonable investigation of the Project site prior to submitting its Bid in accordance with the Instruction to Bidders.

2.3 Execution of Contract Documents. The Contractor shall see that the Agreement and any other Contract Document requiring its signature, is properly executed by an officer having the authority to legally bind the Contractor. Where appropriate, the officer's signature shall be attested to or witnessed and the corporate seal, if any, affixed thereto, although the failure to have a signature witnessed or the seal attached shall not affect the validity of the document. If the Contractor is transacting business under a trade name, then the full legal name and type of entity (sole proprietorship, partnership, corporation, etc.) shall be disclosed and set out on the signature page of the Agreement as well as on the bonds and insurance required by the Contract Documents. If the contractor's license is held by a person other than the owner, partner or officer of the Contractor, then the licensee shall also sign as a party to the Contract and the title "licensee" shall appear under his or her signature.

By executing the Agreement, the Contractor certifies that (i) it has examined the conditions pertaining to the Work as required in Section 3 of the Instructions to Bidder, (ii) it has made diligent inquiry and understands the relationship and role of the various contractors, engineers, inspectors and representatives appointed by the City, if any, and the other persons involved in the Project, (iii) it has made

inquiry about and fully understands the extent and limits of any branch or subdivision of the Work to complete the Project that will be awarded to other contractors, if the Contract is separate or multiple prime contract [see G.S. 143-238(b)] or any portion of the Work that will be retained or completed by the City by its own forces, (iv) the Contractor has given full consideration to the completion date (Contract Time) and the time of performance, (v) the Contractor has the skill, experience, training and ability to complete the Work under the Contract Documents for the Contract Amount and by the Contract Time, and (vi) that it has secured all approvals, corporate resolutions or other actions necessary in order to sign and be bound by the Agreement.

2.4 Review of Contract Documents and Site Conditions. The Contract Documents are not complete in every detail, but show the purpose and intent only and the Contractor shall comply with their true intent and meaning, taken as a whole, and shall not avail itself of any manifest error, omission, discrepancy or ambiguity which appears in the Contract Documents, instructions given by the Engineer or the work performed by others.

In such cases where the Contract Documents, the site conditions or the nature of the Work requires clarification, the Contractor shall request written clarification from or by the Engineer or an interpretation of the documents before proceeding with the Work. The Engineer shall promptly provide the Contractor with any requested instructions, interpretation or more detailed Drawings and Specifications so that the Contractor may proceed with its Work in a timely manner.

2.5 Copies of Drawings and Specifications. The Engineer shall furnish the Contractor, free of charge, a sufficient number of copies of the Plans and Specifications to complete its Work. Unless otherwise required by the nature of the Project, the Engineer shall:

2.5.1 General Contractor. Provide the General Contractor (or single prime contractor) with not less than four (4) full sets of Drawings and Specifications. Each set of Drawings and Specifications shall include the Drawings and Specifications of all other Contracts issued in connection with the Project.

The General Contractor shall also be provided with a suitable set of Drawings upon which the Contractor will clearly and legibly record all work-in-place that is at variance with the Contract Documents or other changes made during the construction process. The Drawings marked to show such changes shall be kept at the Project Site for review by the Engineer and/or the City.

2.5.2 Other Contractors. Provide other contractors furnishing Work at the Project with not less than three (3) sets of Drawings and Specifications one of which shall be used to clearly and legibly record all work-in-place that is at variance with the Contract Documents and be made available upon request to the Engineer and/or the City.

Additional sets of Contract Documents shall be furnished at cost, including mailing, to any contractor requesting additional sets of Contract Documents. The cost of additional sets of Plans and Specifications shall be the same as stated in the bidding documents.

2.6 Shop Drawings, Samples and Product Information.

Shop drawings are intended to be drawings, diagrams, prints, schedules and other data that is prepared by the Contractor, a subcontractor, manufacturer, supplier or distributor to illustrate a portion of the Work.

Product data sheets are illustrations, standard schedules, charts, instructions, brochures, diagrams and other information provided by the Contractor for the purpose of illustrating materials and equipment to be installed or other supplies to be provided as a part of the Work.

Samples are examples which generally illustrate materials that will be used as a part of the Work or samples of equipment and/or workmanship used to demonstrate the standards by which the Work will be judged.

When the Special Conditions require or for those projects that are sufficiently complex to require shop drawings, the Engineer and the Contractor shall jointly establish a schedule of shop drawings to be prepared by the Contractor. The schedule as to when shop drawings are due will be made a part of the Construction schedule. After checking and verifying all field measurements and reviewing the Drawings, the Contractor will submit to the Engineer for review, at least four (4) copies of all shop drawings which shall have been checked by and stamped with the approval of the Contractor and identified as the Engineer may require. The data shown on the shop drawings will be complete with respect to dimensions, design criteria, materials of construction and other information in order for the Engineer to complete his review.

The Contractor will also submit to the Engineer for review in a timely manner so as to cause no delay in the Work, all samples, required by the Contract Documents. All samples will likewise be checked by and stamped with the approval of the Contractor and identified clearly as to material, manufacturer, any pertinent catalogue numbers and the use for which the sample is intended.

In making such submissions, the Contractor will call the Engineer's attention to any deviations that the shop drawings or samples may have from the requirements of the various Contract Documents, especially those shop drawings and samples at variance with the Drawings or Specifications.

The Engineer will review the submissions with reasonable promptness for conformance with the design concept of the Project and for compliance with the information provided by the Contract Documents. The Contractor will make any corrections required by the Engineer and then provide the Engineer with corrected copies of all shop drawings and new samples and this process will be repeated until the review is satisfactory to the Engineer and final copies are approved.

No work requiring a shop drawing or sample submission shall be commenced by the Contractor until the submission has been reviewed and approved by the Engineer.

The Engineer's review of shop drawings and/or samples shall not relieve the Contractor from its responsibility for any deviations from the requirements of the Contract Documents unless the Contractor has in writing called the Engineer's attention to such deviation at the time of the submission and the Engineer has given written approval (generally in the form of a change order) to the specific deviation, nor shall the review and approval by the Engineer relieve the Contractor from its responsibility for errors and omissions in the shop drawings and/or samples provided.

Shop drawings, samples and product data sheets are not part of the Plans and Specifications nor are they considered as a Contract Document.

2.7 Ownership of the Plans and Specifications. The drawings, specifications and other design documents, including those in electronic format prepared by the Engineer are instruments of service and neither the Contractor nor any subcontractor or other person acting on behalf of the Contractor shall have any claim or ownership of such Drawings, Specifications or other instruments of service. If those instruments of service are prepared by the City or any of its employees and departments, the ownership and rights to those documents shall be retained by the City. If the instruments of service are prepared by an architect or other independent consultant employed by the City, then the ownership and rights to those documents shall be subject to the separate agreement between the City and such architect, engineer or consultant. The Contractor may retain a record set of the instruments of service for its own purposes, but the record set of instruments shall not be used by the Contractor on any other project or for additions to this Project outside the scope of the Work without the specific written consent of the City and/or the Engineer.

ARTICLE 3 – PRELIMINARY MATTERS.

3.1 Delivery of Agreement, Bonds, Insurance, etc.: Within ten (10) calendar days after written notification of the Award of Contract, the Contractor shall deliver to the City, the signed Agreement, Bond(s), Insurance Certificate(s) and other documentation required for execution of the Contract.

3.2 Preconstruction Conference. If the Engineer and/or the City shall schedule a preconstruction conference (not to be confused with any prebid conference), all Contractors and/or major subcontractors shall attend the conference if required. The preconstruction conference may be scheduled at any time after the Award of Contract, but before the commencement of construction. The Engineer shall prepare minutes or a summary of the results of the conference.

At the preconstruction conference, the Engineer shall review the scope of the project and shall be prepared to provide instructions or directions concerning the construction schedule, the progress schedule, the procedure and schedule for handling shop drawings, samples and product information and establish procedures as to how the Contractor may make required submissions to the Engineer, may request interpretations and secure other necessary binding instructions from the City so that the Work will not be unnecessarily delayed. The procedures for issuing change orders and/or securing modifications to the Contract Documents shall be explained. At the preconstruction conference, the Engineer shall identify all representatives of the City involved in the project and the processing of payment applications will be discussed.

The Contractor, if it has not already done so, will be afforded an opportunity to raise questions concerning site conditions and make inquiry about the availability of geotechnical surveys, topographic maps, environmental studies and surveys and other reports and information if such information is available that will benefit the Contractor in performing the Work or if such information was used by the Engineer to prepare the Drawings and Specifications.

3.3 Commencement of Contract Times; Notice to Proceed: The Contract Time(s) including any completion date (whether specifically stated or determined by computation) will begin to run on the day indicated in the Notice to Proceed. Notice to Proceed will be given at any time within thirty (30) calendar days after the executed Agreement is delivered to the Contractor.

3.4 Before Starting Construction:

3.4.1 No Work shall be done at the site prior to the preconstruction conference, if one is scheduled, without the Engineer's approval. Early entry to the site for mobilization, staging and other preparation work

may be granted by the Engineer at any time after the Award of the Contract, but such work is at the expense and risk of the Contractor. Before undertaking each part of the Work, the Contractor shall carefully study the Contract Documents to check and verify that the pertinent figures shown thereon compare accurately to all applicable field measurements. Contractor shall promptly report in writing to the Engineer any conflict, error, ambiguity or discrepancy which Contractor may discover and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby. The Contractor shall be liable to the City for failure to report any conflict, error, ambiguity or discrepancy in the Contract Documents of which Contractor knew or reasonably should have known.

3.4.2 The successful completion of the Work within the Contract Time is of primary importance. Therefore, the Contractor shall submit to the Engineer for review and approval, or acceptance, as appropriate, a Construction Schedule, no later than thirty (30) days after the preconstruction conference, if one is held, or as otherwise required by the Engineer.

The Construction Schedule must indicate the times (number of days or dates) for starting and completing the various stages of the Work, including any milestones specified in the Contract Documents, and must contain sufficient detail to indicate that the Contractor has properly identified required Work elements and tasks; has provided for a sufficient and proper workforce and integration of subcontractors; has provided sufficient resources; and, has considered the proper sequencing of the Work required to result in a successful Project that can be completed within the Contract Time. The times for submitting shop drawings, samples and product data sheets will be included unless set out on a separate schedule.

3.4.3 Other Information. Unless the Contractor and the Engineer shall mutually agree to a different time schedule as recorded in the minutes of the preconstruction conference, not later than the commencement of construction, the Contractor will provide the Engineer with the name, address and contact information (mailing address, telephone number, cell phone number, and an emergency or after hours telephone number) for the Superintendent assigned to the Project by the Contractor, the Safety Officer, if one is required by the Engineer, and if different from the Superintendent, as well as a list of all subcontractors.

The Contractor will not employ any subcontractor or any other person or organization, either initially or as a substitute, against whom the City or the Engineer may have reasonable objection nor will the Contractor be required to employ any subcontractor, consultant or other person or organization against whom the Contractor shall have reasonable objection.

ARTICLE 4 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; REFERENCE POINTS.

4.1 Availability of Lands. The City will make the site of the Project available to the Contractor and will provide access to all land and interests in land required for the Work and will, through the Engineer, notify the Contractor of any restrictions on such access. The Contractor must obtain any additional temporary construction facilities, stockpiling, staging or storage sites not otherwise provided or available on the Project site.

4.2 Subsurface and Physical Conditions:

4.2.1 The Contractor specifically represents that it has carefully examined the Plans and Specifications, the geotechnical report, if any, and the site of the proposed Work (reference is made to Instruction to Bidders) and is thoroughly familiar with all of the conditions surrounding construction of the Project, having had the opportunity to conduct any and all additional inquiry, tests and investigation that the Contractor deems necessary and proper. The Contractor acknowledges the receipt of the geotechnical report, if any, and agrees that the report, while it is an accurate record of the geotechnical conditions at the boring locations, is not a guarantee of specific site conditions which may vary between boring locations.

4.2.2 The Contractor shall notify The City in writing as soon as reasonably possible, but no later than three (3) calendar days, if unforeseen conditions are encountered at the site which are: (i) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents, or (ii) unknown physical conditions of an unusual nature, that differs materially from those normally encountered in the type of work being performed under this Contract. The Contractor may not disturb the conditions until the Engineer conducts an investigation. The Engineer will promptly investigate such conditions. If it is determined that such conditions differ materially and cause an increase or decrease in the Contractor's cost of or time required for performance of any part of the Work, the Engineer will recommend an equitable adjustment in the

Contract Amount or Contract Time, or both. If it is determined that such conditions are not materially different from those indicated in the Contract Documents, the Engineer will notify the Contractor in writing of such findings and the Contract will not be adjusted.

4.2.3 Notwithstanding any other provision of this Contract, the Contractor is solely responsible for the location and protection of any and all public utility lines and utility customer service lines in the Work area. "Public utility lines" means the utility distribution and supply system, and "utility customer service lines" means the utility lines connecting customers to the utility distribution and collection system. Generally, existing utility customer service line connections are not shown on the Drawings. The Contractor shall notify "One Call" (or other similar service) and exercise due care to locate, mark, uncover and otherwise protect all such lines in the construction zone and any of the Contractor's work or storage areas. The Contractor's responsibility for the location and protection of utilities is primary and nondelegable. **The Contractor shall indemnify or reimburse such expenses or costs (including fines that may be levied against the City) that may result from unauthorized or accidental damage to all public lines and utility customer service lines in the work area.** The City reserves the right to repair any damage the Contractor causes to such utilities at the Contractor's expense. If a public line and/or customer service line is damaged by the Contractor, the Contractor shall give verbal notice within one (1) hour and written notice within twenty-four (24) hours to the Engineer and likewise promptly notify the owner of any public utility line that is damaged. The coordination and expense of the relocation of all public utility lines (except for those owned by the City) and all utility customer service lines, either temporary or permanent, is the responsibility of the Contractor unless the City has agreed otherwise .

4.2.4 The Contractor shall take reasonable precaution to avoid disturbing graves, primitive records, artifacts and antiquities of archaeological, paleontological, cultural or historical significance. No objects of this nature shall be disturbed without written permission of the City and the appropriate agency of the State of North Carolina (Office of State Archaeology) . When such objects are uncovered unexpectedly, the Contractor shall stop all Work in close proximity and notify the Engineer and all appropriate North Carolina Agencies of their presence and shall not disturb them until written permission and permit to do so is granted. All primitive records and antiquities uncovered on the City's property shall remain the property of the City and/or the State of North Carolina. If it is

determined by the City, in consultation with the State of North Carolina that exploration or excavation of primitive records or antiquities on the Project site is necessary to avoid loss, the Contractor shall cooperate in salvage work attendant to preservation. If the Work stoppage or salvage work causes an increase in the Contractor's cost of, or time required for, performance of the Work, the Contract Amount and/or Contract Time will be equitably adjusted.

4.3 Reference Points. Unless otherwise specified, all control lines and bench marks suitable for use in the layout of the Work will be furnished by City. The City shall furnish the Contractor with any engineering surveys of the site of the project describing the property boundaries, utility lines and other physical characteristics of the property. Controls, bench marks and property boundary markers shall be carefully preserved by the Contractor by use of flags, staffs or other visible devices and in case of destruction or removal by the Contractor or its employees, such controls and bench marks shall be replaced by a Registered Professional Land Surveyor at the Contractor's expense. Any survey monuments damaged by Contractor will be reestablished by the City at the Contractor's expense.

4.4 Hazardous Materials. The Contractor shall comply with all federal and state laws, rules, orders and directives concerning possession, use and disposal of any hazardous substances or materials, hazardous waste, toxic pollutants or other dangerous substances (collectively called "hazardous materials) as defined by the United States Environmental Protection Agency (EPA) and/or the North Carolina Department of Environment Management (NCDEM) or any of their respective divisions or by any federal or state law. All activities carried on by the Contractor on the Project Site shall be in full compliance with the rules and regulations issued by any federal and/or state agency regarding discharges, releases, emissions, spills, and the containment or clean up of any pollutant, hazardous material or substance adversely affecting the environment or in any way regulated by the EPA, NCDEM or any other state or federal agency.

4.4.1 To the extent provided by any applicable law, the City shall be responsible for any hazardous material uncovered or revealed at the site which was not shown, indicated or identified in the Contract Documents to be within the scope of the Work and which may present a substantial danger to persons or property exposed thereto in connection with the Work at the site. The Contractor shall immediately notify the Engineer of any suspected hazardous materials encountered before or during performance of the Work and shall take all necessary precautions to avoid further disturbance of the materials.

4.4.2 The Contractor shall be responsible for any hazardous materials brought to the site by the Contractor, subcontractor, suppliers or anyone else for whom the Contractor is responsible.

4.4.3 No asbestos-containing materials shall be incorporated into the Work or brought on Project site without prior approval of the City. The Contractor shall not knowingly use, specify, request or approve for use any asbestos containing materials or lead-based paint without the City's written approval. When a specific product is specified, the Contractor shall endeavor to verify that the product does not include asbestos containing material.

4.4.4 Unless otherwise expressly provided in the Contract Documents to be part of the Work, the Contractor is not responsible for any hazardous materials and/or conditions uncovered or revealed at the site which was not shown or indicated on the Drawings or identified as part of the Work. Upon encountering any hazardous conditions, the Contractor must stop Work immediately in the affected area, isolate or temporarily contain such condition and duly notify the Engineer and/or the City. If required by applicable law or regulations, any government agency or quasi-government entities with jurisdiction over the Project site or over the hazardous conditions or materials shall be notified.

Upon receiving notice of the presence of suspected hazardous materials or conditions, the City shall take the necessary measures required to ensure that the hazardous materials are remediated or rendered harmless. Such necessary measures shall include the City retaining qualified independent experts to (i) ascertain whether hazardous materials have actually been encountered, and, if they have been encountered, (ii) prescribe the remedial measures that the City must take either to remove the hazardous materials or render the hazardous materials harmless.

The Contractor shall be obligated to resume Work at the affected area of the Project only after the Engineer provides written certification that (i) the hazardous materials have been removed or rendered harmless, and (ii) all necessary approvals have been obtained from all government and quasi-government entities having jurisdiction over the Project or site. The Contractor shall be responsible for continuing the Work in the unaffected portion of the Project and site.

Notwithstanding the preceding provisions of this Section 4.1, the City is not responsible for hazardous materials or conditions created by or brought to the site by the Contractor, subcontractors or anyone for whose acts they may be liable. **The Contractor shall indemnify, defend and hold harmless the City and the City's officers, directors, employees and agents from and against all claims, losses, damages, liabilities and expenses, including attorneys' fees and expenses, arising out of or resulting from those hazardous materials and conditions introduced or caused to the site by the Contractor, subcontractors or anyone for whose acts they may be liable.**

4.4.5 The Contractor shall be responsible for use, storage and remediation of any hazardous materials or conditions brought to the site by the Contractor, subcontractors, suppliers or anyone else for whom the Contractor is responsible.

ARTICLE 5 – BONDS AND INSURANCE.

5.1 Bonds. Unless the Contractor chooses to make a deposit of money, certified checks or government securities for the full amount of the Contract in order to secure the faithful performance of the terms of the Contract Documents in the manner permitted by G.S. 143-129(c), the Contractor shall furnish the City with a performance bond and a separate payment bond in an amount equal to 100% of the Contract Amount as security for the faithful performance and/or the payment of all of the Contractor's obligations under the Contract Documents. In the event the Contract Amount is increased by written modification or change order, the City may require that additional performance and/or payment bonds be issued in the adjusted Contract Amount.

The bonds shall conform to the requirements of Article 3 of Chapter 44A of the General Statutes of North Carolina and shall be provided by a solvent surety or insurance company licensed by the State of North Carolina and authorized to issue bonds in the amount required by the Contract Documents. Original performance and payment bonds properly executed and issued by the Contractor and the surety shall be provided by the Contractor as required by Section 3.1 above, but before the commencement of any construction whatsoever. Any bond signed or issued by an agent must be accompanied by a certified copy of such agent's authority to act on behalf of the surety (i.e., the power of attorney).

If the surety on any bond furnished by the Contractor is declared bankrupt or becomes insolvent or otherwise has its right to do business in the State of North Carolina terminated, the Contractor shall, within ten (10) days thereafter, substitute another bond or surety which must be acceptable to the City.

All bonds shall remain in effect for at least one (1) year after the date of last payment under the Contract Documents or until such bond is released by the City.

5.2 Insurance. The Contractor shall procure and maintain in full force and effect for the duration of the Contract insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the Work hereunder by the Contractor, or by the agents, representatives, employees and subcontractors (of any tier).

The Contractor shall maintain insurance limits no less than:

1. General liability: (including operations, products and completed operations)

A combined single limit coverage of not less than one million dollars (\$1,000,000) per occurrence for bodily injury, personal property and property damage shall be maintained. If commercial general liability insurance or other form with a general aggregate limit is used, either the general aggregate limit shall apply separately to this Project or the general aggregate limit shall be not less than two million dollars (\$2,000,000).

2. Automobile liability:

One million dollars (\$1,000,000) per accident for bodily injury and property damage shall be maintained.

3. Worker's Compensation and employer's liability:

Worker's Compensation Insurance shall be maintained in the amount and as required by the law of North Carolina with employer's liability of not less than ONE HUNDRED THOUSAND DOLLARS (\$100,000) per accident, FIVE HUNDRED THOUSAND DOLLARS (\$500,000) aggregate policy limit and disease coverage for each employee in the amount of ONE HUNDRED THOUSAND DOLLARS (\$100,000) unless the law of the State of North Carolina requires more coverage.

4. Course of construction:

The Contractor shall purchase and maintain property insurance written on a builder's risk "all risk" or equivalent policy form in the amount of the initial Contract Amount, plus the value of subsequent contract modifications and change orders on a replacement cost basis without optional deductibles. Builder's risk insurance shall be maintained by the Contractor until such time as the Contractor no longer has an insurable interest in the property.

The deductibles or self-insurance retentions must be declared and approved by the City. The City may require the Contractor to provide proof of ability to pay losses and related investigations, claims, administration and defense expenses in the event the Contractor is self-insured.

The general liability and automobile liability policies shall contain, or be endorsed to contain the following provisions:

1. The City and its officers and employees shall be covered as insureds with respect to liability arising out of the Work or operations performed by or on behalf of a contractor including materials, parts or equipment furnished in connection with such work or operations. General liability coverage can be provided in the form of an endorsement to the Contractor's insurance or as a separate owner's and contractor's protective liability policy.
2. For all claims related to this project, the Contractor's insurance coverage shall be primary insurance. Any insurance or self-insurance maintained by the City, its officers, officials and employees shall be in excess of the Contractor's insurance and shall not contribute with it.

3. Each insurance policy required by this section shall be endorsed to provide that coverage shall not be cancelled by either party, except after thirty (30) days prior written notice by certified mail, return receipt requested, has been given to the City.

The Builder's risk insurance policy shall contain provisions naming the City as the loss payee and all rights of subrogation against the City shall be waived.

Insurance shall be placed with insurers with a current A.M. Best's rating of not less than (a) vii or otherwise acceptable to the City.

In the event any of the policies provided by the Contractor provide claims-made coverage, the coverage shall remain in effect for a period of not less than five (5) years after the completion of the Contract or the applicable statute of limitations, whichever occurs first.

The Contractor shall furnish the City with original certificates and amendatory endorsements providing the coverages required by this section. All certificates, endorsements and policies required by this section shall be provided prior to the commencement of Work; however, the failure to obtain any required evidence of insurance shall not waive the Contractor's obligation to provide them.

The Contractor shall require and verify that all subcontractors (of any tier) maintain insurance of the type, limits and conditions set out above.

5.3 Indemnification. The Contractor shall indemnify, save harmless and defend the City, its agents, servants and employees and each of them against and hold it and them harmless from any and all lawsuits, claims, demands, liabilities, losses and expenses, including court costs and attorney fees, for on account of any injury to any person or any death at any time resulting from such injury, or any damage to any property, which may arise or which may be alleged to have arisen out of or in connection with the Work covered by this Contract, except to the extent that such loss results from the sole negligent act of the City or that indemnification is prohibited by the law of North Carolina.

5.4 City's Insurance. The City, at its own expense, shall provide and pay for the City's standard and/or customary property and liability insurance on the Project site.

ARTICLE 6 – CONTRACTOR’S RESPONSIBILITIES.

6.1 Supervision and Superintendence:

6.1.1 The Contractor shall supervise, inspect and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. The Contractor shall be solely responsible for the means, methods, techniques, sequences and procedures of construction. The Contractor shall be responsible to see that the completed Work complies accurately with the Contract Documents.

6.1.2 The Contractor shall have an English-speaking, competent superintendent on the site of the Work at all times that work is in progress. The superintendent will be the Contractor’s representative on the Work and shall have the authority to act on the behalf of and bind the Contractor.

All communications given to the Superintendent shall be as binding as if given to the Contractor. Either the Contractor or the superintendent shall provide a cellular telephone number and an emergency and home telephone number at which one or the other may be reached if necessary when work is not in progress. The superintendent must be an employee of the Contractor, unless such requirement is waived in writing by the Engineer. If the Contractor proposes a management structure with a project manager (or some similarly named person) supervising, directing, and managing construction of the Work in addition to or in substitution of a superintendent, the requirements of these Construction Documents with respect to the superintendent shall likewise apply to any such project manager.

6.2 Labor, Materials and Equipment.

6.2.1 The Contractor shall maintain a work force adequate to accomplish the Work within the Contract Time. The Contractor agrees to employ only orderly and competent workers, skillful in performance of the type of Work required under this Contract. The Contractor and its subcontractors, as well as their employees may not use or possess any alcoholic or other intoxicating beverages, illegal drugs or controlled substances while on the job or on the City’s property, nor may such workers be intoxicated, or under the influence of alcohol or drugs, on the job. Subject to the applicable provisions of North Carolina law, the

Contractor, subcontractors, sub-subcontractors, and their employees may not use or possess any firearms or other weapons while on the job or on the City's property. If the Engineer notifies the Contractor that any worker or representative of the Contractor is incompetent, disorderly, abusive, or disobedient, has knowingly or repeatedly violated safety regulations, has possessed any firearms in contravention of the applicable provisions of North Carolina law, or has possessed or was under the influence of alcohol or drugs on the job, the Contractor shall immediately remove such worker or representative, including an officer or owner of the Contractor, from performing Contract Work, and may not employ such worker or representative again on the project without the City's prior written consent. The Contractor shall at all times maintain good discipline and order on or off the site in all matters pertaining to the Project.

6.2.2 The Contractor shall provide and pay for all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities and all other facilities and incidentals necessary for the furnishing, performance testing, start-up and completion of the Work including corrections to the Work, punch list items and any warranty work.

6.2.3 All materials and equipment shall be of good quality and new (including new products made of recycled materials), except as otherwise provided in the Contract Documents. If required by the Engineer, the Contractor shall, at its own expense, furnish satisfactory evidence (reports of required tests, manufacturer's certificates or compliance with material requirements, mill reports, etc.) as to the kind and quality of materials and equipment. All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with instructions of the applicable supplier, except as otherwise provided in the Contract Documents.

6.2.4 Substitutes and "Approved Equal" Items:

1. Substitutions. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular supplier, the specification or description is intended to establish the type, function and quality required. Unless the specification

or description contains words reading that no like, equivalent or “approved equal” item or no substitution is permitted, other items of material or equipment of other suppliers may be submitted by the Contractor, at the Contractor’s sole risk.

2. “Approved Equal”. If in the Engineer’s sole discretion an item of material or equipment proposed by the Contractor is functionally equal to that named and specifically similar so that no change in related Work will be required, it may be considered by the Engineer as an “approved equal” item, in which case review of the proposed item may, in the Engineer’s sole discretion, be accomplished without compliance with some or all of the requirements for evaluation of proposed substitute items. The Contractor shall provide the Engineer with the documentation required for the Engineer to make its determination.

3. Substitute Items. If in the Engineer’s sole discretion an item of material or equipment proposed by the Contractor does not qualify as an “approved equal” item, it will be considered a proposed substitute item. The Contractor shall submit sufficient information as provided in the Contract Documents to allow the Engineer to determine that the item of material or equipment proposed is essentially equivalent to that named and a substitute therefore.

4. Substitute Construction Methods and Procedures. If a specific means, method, technique, sequence or procedure of construction is shown or indicated in and expressly required by the Contract Documents, Contractor may, at Contractor’s sole expense and risk, including disruptions to the progress schedule, with prior approval of the Engineer, furnish or utilize a substitute means, method, technique, sequence, or procedure of construction. The Contractor shall submit sufficient information to the Engineer to allow the Engineer, in the Engineer’s sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents.

5. Engineer’s Evaluation. The Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to section 6.2.4. The Engineer will be the sole judge of acceptability. No “approved equal”

or substitute shall be ordered, installed, or utilized until the Engineer's review is complete, which will be evidenced by either a Change Order or completion of the Shop Drawing review procedure. The City may require the Contractor to furnish at the Contractor's expense a special performance guarantee or other surety bond with respect to any "approved equal" or substitute or for any other delay or disruption to the progress schedule of the Project Schedule attributable to any such substitution. The City shall not be responsible for any delay due to review time for any "approved equal" or substitute.

6. Contractor's Expense. All data and documentation to be provided by the Contractor in support of any proposed "approved equal" or substitute item will be at the Contractor' expense.

The approval of the Engineer will not relieve the Contractor from primary responsibility and liability for the suitability and performance of any proposed substitute item, method or procedure and will not relieve the Contractor from its primary responsibility and liability for curing defective Work and performing warranty work, which the Contractor shall cure and perform, regardless of any claim the Contractor may choose to advance against the Engineer or manufacturer.

6.3 Progress Schedule. Unless otherwise provided, the Contractor shall adhere to the Construction Schedule established in accordance with Paragraph 3.3.2 as it may be adjusted from time to time as provided below. As required by the Engineer, the Contractor shall also maintain throughout the Contract Time a progress schedule which shall record the actual progress of all Work, the completion date for each phase or subsection of the Work and any deviations or discrepancies between the actual progress of the Work and the Construction Schedule. All information set out on the progress schedule shall be accurate and subject to review by the Engineer.

6.3.1 The Contractor shall submit to the Engineer for review and approval on a monthly basis any proposed adjustments in the Construction Schedule that will not change the Contract Times or milestones. Any such proposed adjustments must be substantiated with documentation of any changes to the underlying logic of the Construction Schedule. The Contractor's progress schedule must show how the Contractor will consistently advance the progress of the Work in accordance with the Construction Schedule. Such adjustments will conform generally to the Construction Schedule then in effect.

6.3.2 Proposed adjustments in the Construction Schedule that will change the Contract Times or milestones shall be submitted in accordance with the requirements of Article 12. Any such proposed adjustments must be substantiated with documentation of any changes to the underlying logic of the progress schedule. Such adjustments may only be made by a Change Order or Time Extension Request in accordance with Article 12.

6.4 Concerning Subcontractors, Suppliers and Others:

6.4.1 Assignment. The Contractor shall retain direct control of and give direct attention to fulfillment of this Contract. The Contractor shall not, by Power of Attorney, or otherwise, assign the Contract without the prior written consent of the City. In addition, without the City's written consent, the Contractor will not subcontract the performance of the entire Work or the supervision and direction of the Work nor will the Contractor bid the Project and/or agree to the Work either directly or indirectly for an unlicensed contractor.

6.4.2 Award of Subcontracts for Portions of the Work: The Contractor shall not employ any subcontractor, supplier or other person or organization, whether initially or as a substitute, against whom the City may have reasonable objection. The City will communicate such objections by written notice. If the City requires a change without good cause of any subcontractor, person or organization previously accepted by the City, the Contract Amount shall be increased or decreased by the difference in the cost occasioned by any such change, and the appropriate Change Order shall be issued. The Contractor shall not substitute any subcontractor, person or organization that has been accepted by the City, unless the substitute has been accepted in writing by the City. No acceptance by the City of any subcontractor, supplier or other person or organization shall constitute a waiver of any right of the City to reject defective work.

6.4.3 The Contractor shall enter into written agreements with all subcontractors and suppliers which specifically binds the subcontractors or suppliers to the applicable terms and conditions of the Contract Documents for the benefit of the City and the Engineer. The City reserves the right to specify that certain requirements shall be adhered to by all subcontractors as indicated in other portions of the Contract Documents and these requirements shall be made a part of the agreement between the Contractor and subcontractor or supplier.

6.4.4 The Contractor shall be fully responsible to the City for all acts and omissions of the subcontractors, suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with the Contractor just as the Contractor is responsible for the Contractor's own acts or omissions. Nothing in the Contract Documents shall create for the benefit of any such subcontractor, supplier or other person or organization any contractual relationship between the City and any such subcontractor, supplier or other person or organization, nor shall it create any obligation on the part of the City or the Engineer to pay or to see to the payment of any monies due any such subcontractor, supplier or other person or organization except as may otherwise be required by laws.

6.4.5 The Contractor shall be solely responsible for efficiently scheduling and coordinating the Work of subcontractors, suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with the Contractor in order to avoid any delays or inefficiencies in the prosecution of the Work. The Contractor shall require all subcontractors, suppliers and such other persons and organizations performing or furnishing any of the Work to communicate with the Engineer through the Contractor unless the Engineer and Contractor agree otherwise.

6.4.6 The divisions and sections of the Specifications and the identifications of any Drawings shall not control the Contractor in dividing or delineating the Work to be performed by any specific trade.

6.4.7 The Contractor shall promptly pay each subcontractor and supplier their appropriate share of payments made to the Contractor.

6.4.8 To the extent allowed by North Carolina law, the City shall be deemed to be a third party beneficiary to each subcontract and may, but only if the City elects, following a termination of the Contractor, require that the subcontractor(s) perform all or a portion of unperformed duties and obligations under its subcontract(s) for the benefit of the City, rather than the Contractor; however, if the City requires any such performance by a subcontractor for the City's direct benefit, then the City shall be bound and obligated to pay such subcontractor the reasonable value for all Work performed by such subcontractor to the date of the termination of the Contractor, less previous payments, and for all Work performed thereafter. In the event that the City elects to invoke its right under this section, the City will provide notice of such election to the Contractor and the affected subcontractor(s).

6.5 Patent Fees and Royalties:

6.5.1 The Contractor shall be responsible at all times for compliance with applicable patents or copyrights encompassing, in whole or in part, any design, device, material, or process utilized, directly or indirectly, in the performance of the Work or other formulation or presentation of its Bid.

6.5.2 The Contractor shall pay all royalties and license fees and shall provide, prior to commencement of Work hereunder and at all times during the performance of same, for lawful use of any design, device, material or process covered by letters, patent or copyright by suitable legal agreement with the patentee, copyright holder, or their duly authorized representative whether or not a particular design, device, material, or process is specified by the City.

6.5.3 The Contractor shall defend all suits or claims for infringement of any patent or copyright and shall save the City harmless from any loss or liability, direct or indirect, arising with respect to Contractor's process in the formulation of its Bid or the performance of the Work or otherwise arising in connection therewith. The City reserves the right to provide its own defense to any suit or claim of infringement of any patent or copyright in which event the Contractor shall indemnify and save harmless the City from all costs and expenses of such defense as well as satisfaction of all judgments entered against the City.

6.5.4 The City shall have the right to stop the Work and/or terminate this Agreement at any time in the event the Contractor fails to disclose to the City that the Contractor's work methodology includes the use of any infringing design, device, material or process.

6.6 Permits, Fees. Unless otherwise agreed to in writing, the Contractor shall obtain and pay for all construction permits, licenses and fees required for performance of the Work including any permits, licenses and fees normally charged by the City.

6.7 Laws and Regulations.

6.7.1 The Contractor shall give all notices and comply with all laws and regulations applicable to furnishing and performing the Work, including arranging for and obtaining any required inspections, tests, approvals or certifications from any public body including departments and agencies

of the City, having jurisdiction over the Work or any part thereof. Except where otherwise expressly required by applicable laws and regulations, neither the City nor the Engineer shall be responsible for monitoring the Contractor's compliance with any laws and regulations. The Contractor should not assume that permits and approvals by the Inspection and/or the Planning Departments of the City or any other board or agency of the City will be issued except in accordance with standard procedures and as permitted by law or ordinance.

6.7.2 Maintaining clean water, air and earth or improving thereon shall be regarded as of prime importance. The Contractor shall plan and execute all land disturbing activity in compliance with the Sedimentation Pollution Control Act of 1973 and all applicable Federal, State and local laws and regulations concerning control and abatement of water pollution and prevention and control of air pollution and the control of surface or storm water runoff.

6.7.3 If the Contractor performs any Work contrary to laws or regulations, the Contractor shall bear all claims, costs, losses and damages arising therefrom; however, it shall not be the Contractor's primary responsibility to make certain that the Specifications and Drawings are in accordance with laws and regulations, but this does not relieve the Contractor of the Contractor's obligation to review the Specifications and Drawings for errors and discrepancies and to call those matters to the attention of the Engineer.

6.8 Taxes.

6.8.1 The cost of all payroll taxes, sales and use taxes or any other taxes for which the Contractor is liable shall be included in the contract amount (the Bid) and the Contractor shall be solely liable for the payment of all such taxes.

6.8.2 The Contractor shall pay only those sales, consumer, use and other similar taxes required to be paid by the Contractor in accordance with the laws and regulations of the State of North Carolina in the performance of its public works contract.

6.8.3 The City is an exempt organization as defined by the General Statutes of North Carolina and is thereby exempt from the payment of sales and use taxes. The City will provide the Contractor with its sales tax exemption number and the Contractor will apply for the exemption in accordance with the state law for all required purchases made by the Contractor.

In the event the sales and use taxes are nevertheless payable at the time of purchase, the Contractor shall keep adequate records of all sales and/or use taxes paid and shall cooperate fully with the City in seeking any sales tax reimbursement due to the City including making any written claim required by the State of North Carolina. The Contractor shall provide the City with a sworn affidavit itemizing the quantity and value of the materials and rentals it has used on the Project and the amount of any sales and/or use taxes that has been paid on such materials or rentals in a timely manner so that the City may seek reimbursement for the calendar year or other taxable year as required by law.

6.9 Use of Premises:

6.9.1 The Contractor shall confine construction equipment, the storage of materials and equipment and the operations of workers to the site and land and areas identified in and permitted by the Contract Documents and other land and areas permitted by laws and regulations, right-of-way, permits and easements, and shall not unreasonably encumber the premises with construction equipment or other materials or equipment. The Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof or of any adjacent land or areas, resulting from the performance of the Work. Should any claim be made by any such owner or occupant because of or in connection with the performance of the Work, the Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim. The Contractor shall indemnify, defend and hold harmless the City and the Engineer and anyone directly or indirectly employed by any of them from and against all claims, costs, losses and damages (including court costs and reasonable attorney's fees) arising out of or resulting from any claim or action, legal or equitable, brought by any such owner or occupant against the City and/or the Engineer or any other party indemnified hereunder to the extent caused by or based upon performance of the Work or failure to perform the Work.

6.9.2 During the progress of the Work and on a daily basis, the Contractor shall keep the premises free from unnecessary accumulations of waste materials, rubbish and other debris resulting from the Work. At the completion of the Work, the Contractor shall remove all waste materials, rubbish and debris from and about the premises as well as all tools, appliances, construction equipment and machinery and surplus materials. The Contractor shall leave the site clean and ready for occupancy by the City at substantial completion of the Work. The

Contractor shall, at a minimum, restore to original condition all property not designated for alteration by the Contract Documents. If the Contractor fails to clean up at the completion of the Work, the City may do so and the cost thereof will be charged against the Contractor.

6.9.3 The Contractor shall not load or permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall the Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

6.10 Record Documents. The Contractor shall maintain in a safe place at the Project site, or other location acceptable to the Engineer at least one (1) record copy of all Drawings, Specifications, Addenda, change orders, change directives, field orders and written interpretations and clarifications in good order and annotated to show all changes made during construction. Those record documents together with all final samples and all final Shop Drawings will be available to the Engineer and/or the City for reference during performance of the Work. Upon Substantial Completion of the Work, a copy of record documents, samples and Shop Drawings shall be promptly delivered to the City.

6.11 Safety and Protection:

6.11.1 The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. If requested by the Engineer, the Contractor shall submit a site security plan for approval by the Engineer. By reviewing the plan or making recommendations or comments, neither the City nor the Engineer will assume liability nor will the Contractor be relieved of liability for damage, injury or loss. The Contractor shall take all necessary precautions for the safety of and shall provide the necessary protection to prevent damage, injury or loss to:

1. All persons on the Work site or who may be affected by the Work;
2. All the Work and materials and equipment to be incorporated therein, whether in storage on or off the site; and
3. Other property at the site or adjacent thereto, including, but not limited to, trees, shrubs, lawns, walks, pavements, roadways, structures, utilities and underground facilities not designated for removal, relocation or replacement in the course of construction.

6.11.2 The Contractor shall comply with all applicable laws and regulations of any public body having jurisdiction for safety of persons or property or to protect them from damage, injury or loss; and shall erect and maintain all necessary safeguards for such safety and protection. The Contractor shall notify owners of adjacent property and of underground facilities, and utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation and replacement of their property. All damage, injury or loss to any property caused, directly or indirectly, in whole or in part, by the Contractor, subcontractor, supplier or any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts, any of them, may be liable, shall be remedied by the Contractor.

It shall be the duty and responsibility of the Contractor and all of its subcontractors to be familiar with and comply with 29 USC Section 651, et seq., the Occupational Safety and Health Act of 1970, as amended (“OSHA”) and to enforce and comply with all provisions of the Act as well as any state counterpart to the Act. All rules and regulations, orders, and directives, either general or specific to the project, issued by the U.S. Department of Labor and/or the North Carolina Department of Labor or any agencies thereof shall be observed by the Contractor to the satisfaction of the department or agency issuing the same.

Before commencing any excavation which will exceed a depth of five (5) feet, unless some law or regulation establishes a lesser depth, the Contractor shall provide the Engineer with detailed plans and specifications regarding the safety systems to be utilized.

6.11.3 Safety Representative. The Contractor shall designate in writing a qualified and experienced safety representative at the site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs. Upon request of the Engineer, the Contractor shall provide certifications or other documentation of the safety representative’s qualifications.

6.11.4 Hazard Communication Programs. The Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among the various subcontractors, suppliers and other employers at the site in accordance with laws and regulations.

6.11.5 Emergencies:

- 1.** In emergencies affecting the safety or protection of persons or the Work at the site or adjacent thereto, the Contractor shall act reasonably to prevent threatened damage, injury or loss and to mitigate damage or loss to the Work. The Contractor shall give the Engineer telephone notification as soon as reasonably practical and a prompt written notice if the Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby. If the Engineer determines that a change in the Contract Documents is required because of the action taken by the Contractor in response to such an emergency, a Change Order will be issued to document the consequences of such action; otherwise the City will not be responsible for the Contractor's emergency action.
- 2.** The Superintendent, the safety representative and/or other authorized agents of the Contractor shall respond immediately to call-out at any time of any day or night when circumstances warrant the presence on the Project site of the Contractor or his agent to protect the Work or adjacent property from damage, restriction or limitation or to take such action or measures pertaining to the Work as may be necessary to provide for the safety of the public. Should the Contractor and/or its agent fails to respond and take action to alleviate such an emergency situation, the City may direct other forces to take action as necessary to remedy the emergency condition, and the City will deduct any cost of such remedial action from the funds due to the Contractor under this Contract.
- 3.** In the event there is an accident involving injury to any individual or damage to any property on or near the Work, the Contractor shall provide to the Engineer verbal notification within one (1) hour and written notification within twenty-four (24) hours of the event and shall be responsible for recording the location of the event and the circumstances surrounding the event through photographs, interviewing witnesses, obtaining

medical reports, police accident reports and other documentation that describes the event. Copies of such documentation shall be provided to the Engineer for the City's records within forty-eight (48) hours of the event. The Contractor shall cooperate with the City on any City investigation of any such incident.

6.12 Continuing the Work. The Contractor shall carry on the Work and adhere to the Construction Schedule during all disputes or disagreements with the City. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as the City and the Contractor may otherwise agree in writing.

6.13 The Contractor's General Warranty and Guarantee.

6.13.1 The Contractor warrants and guarantees to the City that all Work will conform to the Plans and Specifications, be performed in a good and workmanlike manner in accordance with the Contract Documents and will not be defective. Materials and equipment furnished will be new and of good quality unless otherwise required or permitted by the Contract Documents. This warranty will survive the termination or expiration of the Contract and continue for a period of twelve (12) months following the date of final acceptance of the Work or beneficial occupancy. The Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

1. Abuse, modification or improper maintenance or operation by persons other than the Contractor, subcontractors or suppliers; or
2. Normal wear and tear under normal usage.

6.13.2 The Contractor's obligation to perform and complete the Work in a good and workmanlike manner in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents.

1. Observations by the City and/or the Engineer;
2. Recommendation of any progress or final payment by the Engineer;

3. The issuance of a certificate of substantial completion or any payment by the City to the Contractor under the Contract Documents;
4. Use or occupancy of the Work or any part thereof by the City;
5. Any acceptance by the City or any failure to do so;
6. Any review of Shop Drawings or sample submittal;
7. Any inspection, test or approval by others; or
8. Any correction of defective Work by the City.

6.14 Indemnification.

6.14.1 The Contractor shall defend, indemnify and hold harmless the City and/or the Engineer (the "Indemnified Parties") from and against all claims, costs, losses and damages (including, but not limited to, all fees and charges of engineers, architects, attorneys and other professionals and all court or arbitration or other dispute resolution costs) arising out of or resulting from the performance of the Work, provided that any such claim, cost, loss or damage:

1. Is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the work itself), including the loss of use resulting therefrom, and
2. Is caused in whole or in part by any negligent act or omission of the Contractor, any subcontractor, any supplier, any person or organization directly or indirectly employed by any of them to perform or furnish any of the work or anyone whose acts any of them may be liable.

6.14.2 In the event the Contractor unreasonably delays progress of the Work being done by others on the site so as to cause loss for which the City becomes liable, then the Contractor shall indemnify the City from and reimburse the City for such loss.

6.15 Survival of Obligations. All representations, indemnifications, warranties and guarantees made in, required by or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion and acceptance of the Work and termination or completion of the Agreement.

6.16 Losses from Natural Causes. Unless otherwise specified, all loss or damage to the Contractor arising out of the nature of the Work to be done or from action of the elements, floods or from unforeseeable circumstances in prosecution of the Work or from unusual obstructions or difficulties which may be encountered in prosecution of the Work, shall be sustained and borne by the Contractor at its own cost and expense.

6.17 Notice of Claim. Should the Contractor suffer injury or damage to person or property because of any error, omission or act of the City or its Engineer or others for whose acts the City is liable, a Claim must be made to the other party within thirty (30) calendar days of the event giving rise to such injury or damage. The provisions of this paragraph 6.17 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitations or statute of repose.

6.18 Liquidated Damages. The Contractor shall be liable for liquidated damages for the failure of the Contractor to timely complete the Work or any portion thereof within the Contract Time.

ARTICLE 7 – CITY’S RESPONSIBILITIES.

7.1 Prior to the start of construction, the City will designate in writing a person or entity to act as the City’s representative during construction. Generally it will be the Engineer, but the City shall have the right to appoint a Project Expediter as its representative or may appoint its own Project Manager. Except as otherwise provided in these General Conditions, the City shall issue all communications to the Contractor through the City’s representative. Notices required by the Contractor to be given to the City will be deemed effective if given in writing to the Engineer or the other person designated as the City’s representative. Likewise, the Contractor shall be entitled to rely upon notices required to be issued by the City if such notices are issued by the Engineer or by the City’s Representative.

7.2 The City will not supervise, direct, control or have authority over or be responsible for the Contractor’s means, methods, techniques, sequences or procedures of construction or the safety precautions and programs incident thereto. The City is not responsible for any failure of the Contractor to comply with laws and regulations applicable to furnishing or performing the Work. The City is not responsible for the Contractor’s failure to perform or furnish the Work

in accordance with the Contract Documents. Failure or omission of the City to discover, or object to or condemn any defective Work or material shall not release the Contractor from the obligation to properly and fully perform the Contract.

7.3 The City is not responsible for the acts or omissions of the Contractor, or of any subcontractor, any supplier, or of any other person or organization performing or furnishing any of the Work. The Contractor acknowledges and agrees that the City's direction to perform Work in accordance with the approved Construction Schedule is not a demand for acceleration or a dictation of the Contractor's means or methods.

7.4 Information or services under the City's control shall be furnished by the City with reasonable promptness to avoid delay in orderly progress of the Work. The City shall have a reasonable amount of time to investigate site conditions, review submittals, analyze requests for changes, and to make other decisions in the orderly administration of the Contract. The Contractor must notify the City in writing, if the time for the investigation, review, analysis of any submittals, required for changes or otherwise required for the City's decision, impacts in any way the critical path of the approved Construction Schedule.

7.5 The foregoing are in addition to other duties and responsibilities of the City enumerated herein and especially those in respect to Article 4 (Availability of Lands; Subsurface and Physical Conditions; Reference Points), Article 7 (Other Work) and Article 14 (Payments to Contractor and Completion).

ARTICLE 8 – OTHER WORK.

8.1 The City may perform other work related to the Project at the site by the City's own forces, or let other contracts therefore, or have other work performed by utility owners. The Contractor and the City agree to and shall use best efforts to cooperate and coordinate the Work with others performing work and other work related to the Project in order to avoid conflicts and delays in the Work.

8.2 The Contractor shall afford other contractors who are in a contract with the City and each utility owner (and the City, if the City is performing the additional work with the City's employees) proper and safe access to the site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work and shall properly connect and coordinate the Work with theirs. Unless otherwise provided in the Contract Documents, the Contractor shall do all cutting, fitting and patching of the Work that may be required to make its several parts come together properly and integrate with such other work. The Contractor shall not endanger any work of others by cutting, excavating or otherwise altering their work and will only cut or

alter their work with the written consent of the Engineer and the other contractors whose work will be affected. The Contractor shall promptly remedy damage wrongfully caused by the Contractor to completed or partially completed construction or to property of the City or separate contractors.

8.3 If the proper execution or results of any part of the Contractor's Work depends upon work performed by others under this Article 7, the Contractor shall inspect such other work and promptly report to the Engineer in writing any delays, defects or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of the Contractor's Work. The Contractor's failure to report will constitute an acceptance of such other work as fit and proper for integration with the Contractor's Work except for latent or non-apparent defects and deficiencies in such other work.

8.4 The City shall provide for coordination of the activities of the City's own forces and of each separate contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with other separate contractors and the Engineer in reviewing their Construction Schedules when directed to do so. On the basis of such review, the Contractor shall make any revisions to the Construction Schedule deemed necessary after a joint review and mutual agreement. The agreed upon Construction Schedules shall then constitute the Construction Schedules to be used by the Contractor, separate contractors and the City until subsequently revised.

8.5 Costs caused by delays or by improperly timed activities or defective construction shall be borne by the party responsible.

ARTICLE 9 – ENGINEER.

9.1 Engineer's Authority and Responsibilities.

9.1.1 The duties and responsibilities as well as any limitations on the authority of the Engineer during construction, as set forth in the Contract Documents, may either be assigned by the City to an outside (non-employee) professional engineer, architect, etc., or may be assumed by the City or an employee of the City. The authority and responsibilities of the Engineer, if the Engineer is an outside or non-employee of the City shall be established and governed by the separate written agreement between the City and the Engineer who is an outside, non-employee of the City. The assignment of any authority, duties or responsibility to an Engineer by a separate agreement between the City and such Engineer, or any undertaking, exercise or performance of such authority, duties or responsibilities by the outside Engineer, is intended to be for the sole and exclusive benefit of the City and is not intended to be for the benefit of the Contractor.

9.1.2 The Engineer will not supervise, direct, control or have authority over or be responsible for the Contractor's means, methods, techniques, sequences or procedures of construction, or for the safety precautions and programs incident thereto. The Engineer is not responsible for any failure of the Contractor to comply with laws and regulations applicable to the furnishing or performing the Work. The Engineer is not responsible for the Contractor's failure to perform or furnish the Work in accordance with the Contract Documents. The failure or omission of the Engineer to discover, to object to or to condemn any defective Work or material shall not release the Contractor from the obligation to properly and fully perform the Contract and to comply with all laws.

9.1.3 The Engineer is not responsible for the acts or omissions of the Contractor, or of any subcontractor, of any tier, or any supplier, or any other person or organization performing or furnishing any of the Work.

9.1.4 If permitted by the City, the Engineer will review the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds and certificates of inspection, tests and approvals and other documentation required to be delivered by Article 14, for the purpose of determining, in general, that their content complies with the requirements of, and in the case of certificates of inspections, tests and approvals that the results certified indicate compliance with the Contract Documents.

9.2 City's Representative. The Engineer, if the Engineer is a direct employee of the City, will be the City's Representative for all purposes under the Contract Documents. If, however, the Engineer is an independent contractor and not a direct employee of the City (i.e. an outside architect, design professional or engineer), then the Engineer may be the City's representative under the Contract Document, but the City also reserves the right to appoint some other person in addition to the Engineer in addition to or in lieu of the Engineer as the City's representative for receiving notices and approving change orders. The City's representative will normally be identified and the contact information provided in the written notice to proceed. However, the Contractor may assume that the Engineer is the City's representative for all purposes until such time as the Contractor is otherwise advised in writing.

9.3 Inspections. The Engineer will make visits to the site at intervals appropriate to the various stages of construction and in accordance with normal

professional standards in order to observe as an experienced and qualified design professional, the progress that has been made and the quality of the various aspects of the Contractor's completed Work. If the Engineer is an outside consultant, the extent of such observation, investigation and inspection will be governed by the separate agreement between the City and such consultant. Based upon information obtained by the Engineer during such visits, observations, investigations and inspections, the Engineer will endeavor for the benefit of the City to determine if the Work is proceeding in accordance with the Contract Documents. While the Engineer may not be required to make exhaustive or continuous onsite inspections to check the quality or quantity of the Work, the Engineer's efforts will be directed towards providing the City with a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and on-site observations, the Engineer will keep the City informed of the progress of the Work and using his professional expertise will endeavor to protect the City from defective Work. The Engineer's visits and onsite observations are subject to the limitations on the Engineer's authority and responsibility in the event the Engineer is an outside consultant.

9.4 Resident Project Representative. If the City and the Engineer agree, the Engineer will furnish a Resident Project Representative to assist the Engineer in providing more continuous observation, investigation and inspection of the Work. The responsibilities and the authority as well as the limitations of any such Resident Project Representative or any assistants will be determined by the separate agreement with the Engineer who is an outside consultant.

9.5 Clarifications and Interpretations. The Engineer may determine that written clarifications or interpretations of the requirements of the Contract Documents (in the form of drawings or otherwise) are necessary. Such written clarifications or interpretations will be consistent with the intent of and reasonably inferable from the Contract Documents, will be issued with reasonable promptness and will be binding on the City and the Contractor.

9.6 Rejecting Defective Work. The Engineer will recommend that the City disapprove or reject Work which the Engineer believes to be defective, or believes will not produce a completed Project that conforms to the Contract Documents or will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

9.7 Shop Drawings. As provided in Section 2.6, the Engineer shall coordinate and approve all shop drawings, product data sheets and samples as set forth therein.

ARTICLE 10 – CHANGES IN THE WORK.

10.1 Changes.

10.1.1 Without invalidating the Contract and without notice to any surety, the City may, at any time or from time to time, order additions, deletions or revisions in the Work. Such changes in the Work will be authorized by Change Order, Change Directive or Field Order. In the event that the City and the Contractor are unable to negotiate the terms of a Change Order for the performance of additional Work, the City may, at its election, perform such additional Work with its own forces or with another contractor and such work will be considered “Other Work” in accordance with Article 8.

10.1.2 Changes in the Work shall be performed under applicable provisions of the Contract Documents, and the Contractor shall proceed promptly, unless otherwise provided in the Change Order, Change Directive or Field Order. The Contractor’s proposals for changes in the Contract Amount and/or Contract Time shall be submitted within ten (10) calendar days of request by the Engineer, including impacts to the approved Progress Schedule, unless the Engineer grants an extension. The City will review each proposal and respond to the Contractor within ten (10) calendar days. After review by the City, the Contractor shall provide any supporting data requested by the Engineer within seven (7) calendar days, unless the Engineer grants an extension. The City will determine within seven (7) calendar days whether to pursue the change in Work.

10.1.3 The Contractor shall not be entitled to an increase in the Contract Amount or an extension of the Contract Time with respect to any Work performed that is not required, authorized by a written amendment or except in the case of an emergency as provided in Paragraph 6.11.5 or in the case of uncovering Work as provided in Paragraph 13.4.3.

10.1.4 Except in the case of an emergency as provided in Paragraph 6.11.5, a Change Order or Change Directive is required before the Contractor commences any activities associated with a change in the Work which, in the Contractor’s opinion, will result in a change in the Contract Amount and/or Contract Times.

10.1.5 If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Amount or Contract Times) is required by the provisions of any Bond to be given to a surety, the giving of any such notice will be the Contractor's responsibility, and the amount of each applicable Bond will be adjusted accordingly.

10.2 Change Orders.

10.2.1 The City and the Contractor will execute appropriate written Change Orders covering:

1. Approved changes in the Work;
2. The amount of the adjustment in the Contract Amount, if any, for approved changes in the Work.
3. The extent of the adjustment in the Contract Time, if any, for approved changes in the Work.

10.2.2 An executed Change Order shall represent the complete, equitable, and final amount of adjustment in the Contract Amount and/or Contract Time owed to the Contractor or the City as a result of the occurrence or event causing the change in the Work encompassed by the Change Order.

10.3 Field Order.

10.3.1 The Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Amount or the Contract Times and are compatible with the design concept of the completed Project as functioning whole as indicated by the Contract Documents. Normally minor changes may be accomplished by written Field Order and shall be binding on the City and on the Contractor who shall perform the Work involved promptly.

10.3.2 If the Contractor believes that a Field Order would require an adjustment in the Contract Amount and/or Contract Times, the Contractor shall make a prompt written request to the City's Representative for a Change Order. Any request by the Contractor for an adjustment in Contract Amount and/or Contract Times must be made in writing prior to the beginning of the work covered by the Field Order.

10.4 No Damages for Delay. The Contractor shall receive no compensation for delays or hindrances to the Work, except when direct and unavoidable extra cost to the Contractor is caused by failure of the City to provide information or material, if any, which is to be furnished by the City or access to the Work and only to the extent that such acts continue after the Contractor furnishes the City with written notice of such failure. When such extra compensation is claimed a written statement thereof shall be presented by the Contractor to the Engineer and if by the City is found correct, shall be approved. If delay is caused by specific orders given by the City to stop work or by performance of extra Work, or by failure of the City to provide material or necessary instructions for carrying on the Work, then such delay will entitle the Contractor to an equivalent extension of time, the Contractor's application for which shall, however, be subject to approval of the City. No such extension of time shall release the Contractor or surety on its performance bond from all of the Contractor's obligations hereunder which shall remain in full force until discharge of the Contract. In no event shall the Contractor be entitled to any compensation or recovery of any special damages in connection with any delays, including, without limitation: consequential damages, loss opportunity costs, impact damages, or other similar damages. The City's exercise of any of its rights or remedies under the Contract Documents (including, without limitation, ordering changes in the Work, or directing suspension, rescheduling, or correction of the Work), regardless of the extent or frequency of the City's exercise of such rights or remedies, shall not be construed as active interference in the Contractor's performance of the Work. Except as otherwise provided herein, an extension of the Contract Time, to the extent permitted under Article 12, shall be the sole remedy of the Contractor for any acknowledged delays.

ARTICLE 11 – CHANGE OF CONTRACT AMOUNT.

11.1 The Contract Amount is stated in the Bid and the Agreement and, including adjustments approved in writing (i.e. change order), is the total amount payable by the City to the Contractor for the performance of the Work under the Contract Documents.

11.2 The Contract Amount shall only be changed by a Change Order. Any claim for an adjustment in the Contract Amount shall be made by written notice delivered by the party making the claim to the other party promptly (but in no event later than thirty (30) calendar days) after the start of the occurrence or event giving rise to the claim and stating the general nature of the claim. Notice of the amount of the claim with supporting data shall be delivered within thirty (30) calendar days after written notice of claim is delivered by claimant, and shall represent that the adjustment claimed covers all known amounts to which claimant is entitled as a result of said occurrence or event. If the City and the Contractor cannot otherwise agree, all claims for adjustment in the Contract Amount shall be determined as set out in Article 16.

11.3 Determination of Value of Work.

11.3.1 The value of any Work covered by a Change Order for an adjustment in the Contract Amount will be determined by one or more of the following methods:

1. By application of unit prices contained in the Contract Documents to the quantities of the items involved.
2. By a mutually agreed lump sum properly itemized and supported by sufficient substantiating data to permit evaluation.
3. By cost of Work plus the Contractor's fee for all overhead costs and profit as may be agreed upon.

11.3.2 When unit prices have been agreed upon in the Contract Documents, those unit prices shall be used to determine the value of any Work required by a Change Order. Otherwise, the City and the Contractor agree to determine the value of the Work using the methods described above except that no costs will be included in the value of the Work for the time spent preparing the Change Order nor for negotiating the Change Order.

ARTICLE 12 – TIMES.

12.1 Change of Time. The Contract Time may only be changed by a Change Order or by a written modification of the Agreement. In submitting a bid, the Contractor has had the opportunity to review the complexity of the Work, the field conditions and other normal conditions, including weather and delays in the delivery of materials and supplies and agreed that the Contract Time was reasonable for this Project. The ability to complete the Work within the Contract Time is a material part of the Agreement and the award of the Contract to the Contractor.

12.2 Claim for Extension of Time. A Claim by the Contractor for an adjustment or extension in the Contract Time shall be based upon written notice submitted by the Contractor to the Engineer. The notice shall set forth in detail the justification for the adjustment for extension of the Contract Time. Extensions will not be granted due to matters within the control of the Contractor including such matters as normal or expected days of inclement weather, delays in the commencement of construction, normal delivery times for materials and supplies, the normal lost time due to weather. Delays attributable to and within the control of a subcontractor or supplier shall be deemed to be delays within the control of the Contractor.

12.3 Delays beyond Contractor's Control. An extension of the Contract Time may be warranted in those situations where the Contractor is prevented from completing any part of the Work within the Contract Time due to a delay, duly recorded at the time of the delay, which is beyond the control of the Contractor. The Contract Time may, in the discretion of the Engineer, be extended in an amount equal to the time lost due to such delay if a claim is made under this section in a timely manner. Delays beyond the control of the Contractor include, among other things, acts or neglect by the City, acts or neglect of utility owners or other contractors (but not subcontractors, of any tier, working under the supervision of the Contractor), performing other work on the project, fires, floods, epidemics, abnormal weather conditions or acts of God.

12.4 Notwithstanding the extension or the denial of an extension of the Contract Time, the Contractor shall not be entitled to damages or any increase in the Contract Amount or any additional payments of any kind due to a delay in the completion of the Work by the Contractor. However, this section shall not be construed to prevent a claim for change in the Contract Amount pursuant to Article 11 due to delay, interference or disruption directly attributable to the actions or the inactions of the City or anyone for whom the City is responsible.

12.5 Procedure. A request for the extension of the Contract Time shall be submitted to the Engineer immediately following the event which the Contractor believes to justify an extension. The Engineer shall promptly review the request and within seven (7) days submit its recommendation to the City. Within seven (7) days from the time the City receives the request and the Engineer's recommendation, the City shall either authorize the issuance of a Change Order extending the Contract Time or if the request is denied, provide the Engineer and Contractor with the reasons for the denial. Requests for extensions of time accumulated and not submitted in a timely manner or not submitted until the end of the Contract Time will not be granted.

ARTICLE 13 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK.

13.1 Notice of Defects. Prompt notice of all defective Work of which the City or the Engineer has actual knowledge will be given to the Contractor. All defective Work may be rejected, corrected or accepted as provided herein. The Contractor must give the City and the Engineer prompt notice of any defective Work of which the Contractor has actual knowledge.

13.2 Access to Work. The City, and its consultants, the Engineer and other representatives and personnel of the City, independent testing laboratories and governmental agencies having jurisdiction will have access to the Work at all

reasonable times for observing, inspecting and testing. The Contractor shall provide them proper and safe conditions for such access, and advise them of the Contractor's site safety procedures and programs so that they may comply therewith as applicable.

13.3 Tests and Inspections.

13.3.1 The Contractor shall give timely notice of readiness of the Work for all required inspections, test or approvals, and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

13.3.2 The City shall employ and pay for services of an independent testing laboratory to perform all inspections, tests or approvals required by the Contract Documents except:

1. For inspections, tests or approvals covered by Paragraph 13.3.3 below;
2. Those costs incurred with tests or inspections conducted pursuant to Paragraph 13.4.3 below shall be paid as provided in Paragraph 13.4.3;
3. For reinspecting or retesting defective Work; and
4. As otherwise specifically provided in the Contract Documents. All testing laboratories shall meet the requirements of ASTM E-329.

13.3.3 If laws or regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested or approved by an employee or other representative of such public body, the Contractor shall assume full responsibility for arranging and obtaining such inspections, tests or approvals, pay all costs in connection therewith and furnish the Engineer the required certificates of inspection or approval.

13.3.4 The Contractor shall also be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests or approvals required for the City's and the Engineer's review of materials or equipment to be incorporated in the Work, or of materials, mix designs or equipment submitted for review prior to the Contractor's purchase thereof for incorporation in the Work.

13.4 Uncovering Work:

13.4.1 If any Work (or the work of others) that is to be inspected, tested or approved is covered by the Contractor without written concurrence of the Engineer, or if any Work is covered contrary to the written request of the Engineer, it must, if requested by the Engineer, be uncovered and recovered at the Contractor's expense.

13.4.2 Uncovering Work as provided in Paragraph 13.4.1 shall be at the Contractor's expense unless the Contractor has given the Engineer timely notice of the Contractor's intention to cover the same and the Engineer has not acted within five (5) working days to such notice.

13.4.3 If the Engineer considers it necessary or advisable that covered Work be observed, inspected or tested, the Contractor shall uncover, expose or otherwise make available for observation, inspection or testing that portion of the Work in question, furnishing all necessary labor, material and equipment. If it is found that such Work is defective, the Contractor shall pay all claims, costs, losses and damages caused by, arising out of or resulting from such uncovering, exposure, observation, inspection and testing and of satisfactory replacement or reconstruction (including, but not limited to, all costs of repair or replacement of work of others); and the City shall be entitled to an appropriate decrease in the Contract Amount, and may make a claim as provided in Article 11. If, however, such Work is not found to be defective, the Contractor shall be allowed an increase in the Contract Amount or an extension of the Contract Times (or Milestones), or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement and reconstruction.

13.5 City May Stop the Work.

13.5.1 If the Work is defective, or the Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to furnish or perform the Work in such a way that the completed Work will conform to the Contract Documents, the City may order the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of the City to stop the Work shall not give rise to any duty on the part of the City to exercise this right for the benefit of the Contractor or any surety or other party.

13.5.2 If the Contractor fails to correct defective Work or submit a satisfactory plan to take corrective action, with procedure and time schedule, the City may order the Contractor to stop the Work, or any portion thereof, until cause for such order has been eliminated, or take any other action permitted by this Contract. A notice to stop the Work, based on defects, shall not be the basis for extending the Contract Time.

13.6 Correction or Removal of Defective Work. If required by the City, the Contractor shall promptly, as directed, either correct all defective Work, whether or not fabricated, installed or completed, or, if the Work has been rejected by the Engineer, remove it from the site and replace it with Work that is not defective. The Contractor shall correct or remove and replace defective Work, or submit a plan of action detailing how the deficiency will be corrected, within the time frame identified in the notice of defective Work. The Contractor shall pay all claims, costs, losses and damages caused by or resulting from such correction or removal (including, but not limited to, all costs of repair or replacement of work of others).

13.7 Warranty period.

13.7.1 If within one year after the date of Substantial Completion or such longer period of time as may be prescribed by laws or regulations or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents (e.g. Paragraph 14.11.2), any Work, including work performed after the Substantial Completion date, is found to be defective, the Contractor shall promptly, without cost to the City and in accordance with the City's written instructions:

- (i) correct such defective Work, or, if it has been rejected by the City, remove it from the site and replace it with Work that is not defective, and
- (ii) satisfactorily correct or remove and replace any damage to other Work or the work of others resulting therefrom.

If the Contractor does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, the City may have the defective Work corrected or the rejected Work removed and replaced, and all claims, costs, losses and damages caused by or resulting from such removal and

replacement (including, but not limited to, all costs of repair or replacement of work of others) will be paid by the Contractor. The warranty period will be deemed to be renewed and recommended in connection with the completed items of Work requiring correction.

13.7.2 In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all of the Work, the warranty period for that item may start to run from an earlier date if so provided in the Contract Documents.

13.7.3 If correction of defective Work will affect the function or use of the facility, the Contractor shall not proceed with correction of defective Work without prior coordination and approval of the City.

13.7.4 The obligations of the Contractor to perform warranty work will survive the acceptance of the Work and any termination of the Contract.

13.8 Acceptance of Defective Work. If, instead of requiring correction or removal and replacement of defective Work, the City may in its discretion, accept the defective Work at some reduced value or subject to some special condition applicable to the particular defective Work. The Contractor shall pay all claims, costs, losses and damages attributable to the City's evaluation of and determination to accept such defective Work. If any such acceptance occurs prior to recommendation of final payment, a Change Order will be issued incorporating the necessary revisions of the Contract Documents and compensating the City for the diminished value of the defective Work. If the acceptance occurs after such recommendation, an appropriate amount will be paid by the Contractor to the City after a calculation by the City of the diminution in value of the defective Work.

13.9 The City May Correct Defective Work. If the Contractor fails within a reasonable time after Written Notice of the City to correct defective Work, or to remove and replace rejected Work, or if the Contractor fails to perform the Work in accordance with the Contract Documents, or if the Contractor fails to comply with any other provision of the Contract Documents, the City may, after seven (7) calendar days' Written Notice to the Contractor, correct and remedy any such deficiency. If, in the opinion of the Engineer, significant progress has not been made during this seven (7) calendar day period to correct the deficiency, the City may exercise any actions necessary to remedy the deficiency. In exercising the rights and remedies under this paragraph, the City shall proceed expeditiously. In connection with such corrective and remedial action, the City may exclude the Contractor from all or part of the site, take possession of all or part of the Work, and suspend the Contractor's services related thereto, and incorporate in the

Work all materials and equipment stored at the site or for which the City has paid the Contractor, but which are stored elsewhere. The Contractor shall allow the City, its agents and employees, the City's other contractors, the Engineer and the Engineer's consultant's access to the site to enable the City to exercise the rights and remedies under this paragraph. All claims, costs, losses and damages incurred or sustained by the City in exercising such rights and remedies will be charged against the Contractor and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work. The Contractor shall not be allowed an extension of the Contract Times (or Milestones), or claims of damage because of any delay in the performance of the Work attributable to the exercise by the City or the City's rights and remedies hereunder.

ARTICLE 14 - PAYMENTS TO THE CONTRACTOR AND COMPLETION.

14.1 Application for Progress Payments.

14.1.1 No more often than once a month unless otherwise agreed to in writing by the City, the Contractor shall submit to the Engineer (unless some other representation is approved by the City to process progress payment applications) for review an application for payment, in a form acceptable to the City, filled out and signed by the Contractor covering the Work completed as of the date of the application and accompanied by such supporting documentation as is required by the Contract Documents.

14.1.2 Such applications shall not include requests for payment on account of changes in the Work which have been properly authorized by Change Directives, but not yet included in Change Orders.

14.1.3 Such applications shall not include requests for payment of amounts the Contractor does not intend to pay to a subcontractor or supplier because of a dispute or other reason.

14.1.4 If payment is requested on the basis of materials or equipment not incorporated in the Work but delivered and suitably stored at the site or at another location agreed to in writing, the application for payment shall be accompanied by such bills of sale, data and other procedures satisfactory to the City substantiating the City's title to such materials or equipment or otherwise protecting the City's interest. Payment on account of such materials or equipment will not include any amount for the Contractor's overhead or profit or relieve the Contractor of its obligation to protect and install such materials or equipment in accordance with the requirements of the

Contract and to restore damaged or defective Work. If materials or equipment are stored at another location, at the direction of the City, they shall be stored in a bonded and insured facility, accessible to the Engineer and the City, and shall be clearly marked as property of the City. Title to materials delivered to the site of the Work or a staging area will pass to the City upon payment by the City without the necessity for further documentation. Risk of loss will not pass to the City until acceptance.

14.1.5 The City will pay to the Contractor the total amount of the approved application for payment less a five percent (5%) retainage; provided, however, that after fifty percent (50%) of the Work has been satisfactorily completed on schedule, with the approval of the City and with written consent of the surety, further requirements for retainage will be waived so long as the Work continues to be completed in a satisfactory manner and on schedule, but subject to the provisions of 14.4. Notwithstanding this section, any payment under this Contract is subject to the provisions of G.S. 143-134.1 including restrictions on the retainage on any periodic or final payment and/or the payment of interest on a final payment. Likewise, the Contractor is subject to the provisions of G.S. 143-134.1(b) and (b1) governing payments by the contractor to subcontractors (of any tier).

14.1.6 Applications for payment shall include the following documentation:

1. Updated Progress Schedule;
2. Monthly subcontractor report;
3. Any other documentation required under the Supplemental General Conditions.

14.2 Contractor's Warranty of Title. The Contractor warrants and guarantees that title to all Work, materials and equipment covered by any application for payment, whether incorporated in the Project or not, will pass to the City free and clear of all liens no later than the time of payment to the Contractor.

14.3 Review of Applications for Progress Payments.

14.3.1 The Engineer will, within seven (7) calendar days after receipt of each application for payment, either indicate a recommendation for payment and forward the application for processing by the City, or return the application to the Contractor indicating the Engineer's reasons for refusing to recommend payment. In the latter case, the Contractor shall make the necessary corrections and resubmit the application.

14.3.2 The Engineer's recommendation of any payment requested in an application for payment will constitute a representation by the Engineer, based upon the Engineer's on-site observations of the executed Work and on the Engineer's review of the application for payment and the accompanying data and schedules, that to the best of the Engineer's knowledge, information and belief:

1. The Work has progressed to the point indicated; and
2. The quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, to a final determination of quantities and classifications for unit price Work, and to any other qualifications stated in the recommendation).

14.3.3 By recommending any such payment, the Engineer will not thereby be deemed to have represented that:

1. Exhaustive or continuous on-site inspections have been made to check the quality or the quantity of the Work, unless the City and the Engineer have agreed otherwise;
2. Examination has been made to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Amount;
3. The Contractor's construction means, methods, techniques, sequences or procedures have been reviewed; or

4. That there may not be other matters or issues between the parties that might entitle the Contractor to be paid additionally by the City or entitle the City to withhold payment to the Contractor.

14.4 Decisions to Withhold Payment.

14.4.1 The City may withhold or nullify the whole or part of any payment to such extent as may be necessary on account of:

1. Defective Work not remedied;
2. Third party claims filed or reasonable evidence indicating probable filing of such claims;
3. Failure of the Contractor to make payments properly to subcontractors or for labor, materials or equipment;
4. Reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Amount;
5. Damage to the City or another contractor;
6. Reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay;
7. Failure of the Contractor to submit a schedule of values in accordance with the Contract Documents;
8. Failure of the Contractor to submit a submittal schedule in accordance with the Contract Documents;
9. Failure of the Contractor to submit and update a construction Progress Schedule in accordance with the Contract Documents;
10. Failure of the Contractor to maintain a record of changes on drawings and documents;

11. Failure of the Contractor to maintain weekly payroll reports and, as applicable, provide copies of reports in a timely manner upon request of the City;

12. Failure of the Contractor to submit monthly subcontractor reports;

13. The Contractor's neglect or unsatisfactory prosecution of the Work, including failure to clean up;

14. Failure of Contractor to comply with the Morganton City Code, Chapter _____, as amended, "Minority-Owned and Women-Owned Business Enterprise Program", or

15. Failure of Contractor to comply with any Minority Business Enterprise requirements.

14.4.2 When the above reasons for withholding payment are removed, the Contractor shall resubmit a statement for the value of the Work performed. Payment will be made within thirty (30) calendar days of receipt of approved application for payment.

14.5 Substantial Completion:

14.5.1 When the Contractor considers that the Work, or a portion thereof which the City agrees to accept separately, is substantially complete, the Contractor shall notify the City's Representative and request a determination as to whether the Work or designated portion thereof is substantially complete. If the City's Representative does not consider the Work substantially complete, the City's Representative will notify the Contractor giving reasons therefor. After performing any required Work, the Contractor shall then submit another request for the City's Representative to determine Substantial Completion. If the City's Representative considers the Work substantially complete, the City's Representative will prepare and deliver a certificate of Substantial Completion which shall establish the date of Substantial Completion, shall include a punch list of items to be completed or corrected before final payment, shall establish the time within which the Contractor shall finish

the punch list, and shall establish responsibilities of the City and the Contractor for security, maintenance, heat, utilities, damage to the Work, warranty and insurance. Failure to include an item on the punch list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. If a Certificate of Occupancy is required by public authorities having jurisdiction over the Work, said certificate shall be issued before the Work or any portion thereof is considered substantially complete. The certificate of Substantial Completion shall be signed by the City and the Contractor to evidence acceptance of the responsibilities assigned to them in such certificate.

14.5.2 The City shall have the right to exclude the Contractor from the Work after the date of Substantial Completion, but the City will allow the Contractor reasonable access to complete or correct items on the punch list and complete warranty work.

14.6 Partial Utilization. Use by the City, at the City's option, of any substantially completed part of the Work which: (i) has specifically been identified in the Contract Documents, or (ii) the City and the Contractor agree constitutes a separately functioning and usable part of the Work that can be used by the City for its intended purpose without significant interference with the Contractor's performance of the remainder of the Work, may be accomplished prior to Substantial Completion of all the Work in accordance with the following:

14.6.1 The City at any time may request the Contractor to permit the City to use any such part of the Work which the City believes to be ready for its intended use and substantially complete. If the Contractor agrees that such part of the Work is substantially complete, the Contractor shall certify to the Engineer that such part of the Work is substantially complete and request the Engineer to issue a certificate of substantial completion for that part of the Work. The Contractor at any time may notify the Engineer that the Contractor considers any such part of the Work ready for its intended use and substantially complete and request the Engineer to issue a certificate of Substantial Completion for that part of the Work. The provisions of paragraphs 14.6.1 and 14.6.2 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

14.6.2 Such partial utilization is authorized by public authorities having jurisdiction over the Work.

14.7 Final Inspection. Upon written notice from the Contractor that the entire Work or an agreed portion thereof is complete, the City's Representative will make a final inspection with the Contractor and provide written notice of all particulars in which this inspection reveals that the Work is incomplete or defective. The Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

14.8 Final Application for Payment. The Contractor may make application for final payment following the procedure for progress payments after the Contractor has completed all such corrections to the satisfaction of the City's Representative and delivered the following documents:

14.8.1 Affidavit by the Contractor certifying the payment of all debts and claims;

14.8.2 Three (3) complete operating and maintenance manuals, each containing maintenance and operating instructions, schedules, guarantees, and other documentation required by the Contract Documents;

14.8.3 Record documents (as provided in Paragraph 6.10);

14.8.4 Consent of surety, if any, to final payment. If surety is not provided, complete and legally effective releases or waivers (satisfactory to the Owner) of all claims arising out of or filed in connection with the Work;

14.8.5 Certificate evidencing that insurance required by the Supplemental General Conditions will remain in force after final payment and through the warranty period;

14.8.6 Non-Use of Asbestos Affidavit (after construction);

14.8.7 Subcontractor report and all other documentation necessary for evaluation of the Contractor's fulfillment of the Contract goals;

14.8.8 Documentation of notice to claimants, to the extent applicable and subject to subparagraph 14.11.4; and

14.8.9 Any other documentation called for in the Contract Documents.

14.9 Final Payment and Acceptance.

14.9.1 If, on the basis of observation of the Work during construction, final inspection, and review of the final Application for Payment and accompanying documentation as required by the Contract Documents, the Engineer is satisfied that the Work has been completed and the Contractor's other obligations under the Contract Documents have been fulfilled and there are no outstanding claims, the Engineer will recommend the final Application for Payment and thereby notify the City, who will pay to the Contractor the balance due the Contractor under the terms of the Contract.

14.9.2 If the Contract measures Contract Time to Final Completion, rather than Substantial Completion, the Engineer will issue a letter of final acceptance to the Contractor which establishes the Final Completion date and initiates the one-year warranty period, unless the sole remaining unfinished items include such things as landscaping or the re-establishment of vegetation, then the Engineer may issue a letter of conditional acceptance to the Contractor which establishes a final completion date and initiates the one year warranty period, provided further, the Contractor has executed a letter committing to the unfinished items and securing such letter through retainage, letter of credit or some other security acceptable to the City.

14.9.3 Final payment is considered to have taken place when the Contractor or any of its representatives negotiates the City's final payment check, whether labeled final or not, for cash or deposits check in any financial institution for its monetary return.

14.9.4 The City may withhold funds sufficient to cover the amount of any unresolved contract claims from the final payment.

14.10 Waiver of Claims. The making and acceptance of final payment will constitute:

14.10.1 A waiver of claims by the City against the Contractor, except claims arising from unsettled claims, from defective Work appearing after final inspection, from failure to comply with the Contract Documents or the terms of any warranty specified therein, or from the Contractor's continuing obligations under the Contract Documents; and

14.10.2 A waiver of all claims by the Contractor against the City other than those previously made in writing and still unsettled.

ARTICLE 15 – SUSPENSION OF WORK AND TERMINATION.

15.1 The City may Suspend Work Without Cause. At any time and without cause, the City may suspend the Work or any portion thereof for a period of not more than ninety (90) calendar days by written notice to the Contractor which will fix the date on which the Work will be resumed. The Contractor shall resume the Work on the date so fixed. The Contractor shall be allowed an adjustment in the Contract Amount or an extension of the Contract Times, or both, directly attributable to any such suspension, if the Contractor makes an approved claim therefor as provided in Articles 11 and 12.

15.2 The City May Terminate Without Cause. Upon seven (7) calendar days' written notice to the Contractor, the City may, without cause and without prejudice to any right or remedy of the City, elect to terminate the Agreement. In such case, the Contractor shall be paid (without duplication of any items):

15.2.1 For completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination;

15.2.2 For reasonable demobilization costs;

15.2.3 For anticipated profits on completed and accepted Work not previously paid and not included in separate pay items calculated to date of termination, but not for anticipated profit on the entire Contract not previously paid, unabsorbed overhead, or lost opportunity; and

15.2.4 Where Contractor's services have been so terminated by the City, the termination will not affect any rights or remedies of the City against the Contractor and surety then existing or which may thereafter accrue. Any retention or payment of monies due the Contractor by the City will not release the Contractor from liability. In the event the City terminates the Contract with cause, the City may reject any and all bids submitted by the Contractor for up to three (3) years. In addition, in the event of a termination for cause, the Contractor and its principals shall not submit any further bids to the City for three (3) years after the date of such termination.

15.4 The Contractor May Stop Work or Terminate. If through no act or fault of the Contractor, the Work is suspended for a period of more than ninety (90) calendar days by the City or under an order of court or other public authority, or (except during disputes) the City's Representatives fails to forward for processing any mutually acceptable application for payment within thirty (30) calendar days after it is submitted, or (except during disputes) the City fails for sixty (60) calendar days after it is submitted to pay the Contractor any sum finally determined by the City to be due, then the Contractor may, upon seven (7) calendar days' written notice to the City, and provided the City does not remedy such suspension or failure within that time, terminate the Agreement and recover from the City payment on the same terms as provided in Paragraph 15.2. In lieu of terminating the Agreement and without prejudice to any other right or remedy, if (except during disputes) the Engineer has failed to forward for processing any mutually acceptable application for payment within thirty (30) calendar days after it is submitted, or (except during disputes), the City has failed for sixty (60) calendar days after it is submitted to pay the Contractor any sum finally determined by the City to be due, the Contractor may upon seven (7) calendar days' written notice to the City stop the Work until payment of all such amounts due the Contractor, including interest thereon. The provisions of this Paragraph 15.4 are not intended to preclude the Contractor from making a claim under Articles 11 and 12 for an increase in the Contract Amount or Contract Times or otherwise for expenses or damage directly attributable to the Contractor's stopping work as permitted by this paragraph.

15.5 Discretionary Notice to Cure. In its complete discretion, the City may, but is not required to, provide a notice to cure to the Contractor and its surety to cure an event of default described above and/or an anticipatory breach of contract and, if required by the City, to attend a meeting with the City, regarding the notice to cure, the event of default, and/or the anticipatory breach of contract. The notice to cure will set forth the time limit in which the cure is to be completed or commenced and diligently prosecuted. Upon receipt of any notice to cure, the Contractor shall prepare a report describing its program and measures to affect the cure of the event of default and/or anticipatory breach of contract within the time required by the notice to cure. The Contractor's report must be delivered to the City at least three (3) days prior to any requested meeting with the City and surety.

15.6 Bankruptcy. If the Contractor declares bankruptcy or is adjudged bankrupt or makes an assignment for the benefit of creditors or if a receiver (trustee) is appointed for the benefit of creditors or if a receiver is appointed by reason of the Contractor's insolvency, the Contractor may be unable to perform this Contract in accordance with the Contract requirements. In such event, the City may demand the Contractor or its successor in interest provide the City with adequate

assurance of the Contractor's future performance in accordance with the terms and conditions of the Contract. If the Contractor fails to provide adequate assurance of future performance to the City's reasonable satisfaction within ten (10) days of such a request, the City may terminate the Contractor's services for cause or without cause, as set forth above. If the Contractor fails to provide timely adequate assurance of its performance and actual performance, the City may prosecute the Work with its own forces or with other contractors on a time and material or other appropriate basis and the costs of which will be charged against the Contract balance.

15.7 Duty to Mitigate. In the event of any termination or suspension under this Contract, the Contractor agrees to and shall take all reasonable actions to mitigate its damages and any and all claims which may be asserted against the City.

15.8 Responsibility during Demobilization. While demobilizing, the Contractor will take all necessary and reasonable actions to preserve and protect the Work, the site and other property of the City or others at the site.

ARTICLE 16 – DISPUTE RESOLUTION.

16.1 Disputes. Disputes between the City and the Contractor, or involving the Engineer, who is not an employee of the City, shall be resolved in accordance with this article. Furthermore, the Contractor agrees to attempt to resolve all disputes between the Contractor and other contractors (where there are multiple prime contractors) or between the Contractor and subcontractors or between the subcontractors utilizing the procedures of this article. Disputes shall be resolved as quickly as possible and as informally as possible so that the Work will not be delayed or unnecessarily interrupted and so that additional costs involved in resolving the dispute can be minimized. All parties agree to continue performing their portion of the Work not involved in the dispute throughout the process of resolving any dispute. Contract Times will not be extended nor will the Contract Amount be increased as a result of frivolous disputes, the abuse of the dispute resolution process, failure to participate in good faith in the dispute resolution process or the failure to proceed with the Work that is not involved in the particular dispute.

16.2 Informal Process. Prior to the submission of a written request for mediation in accordance with Section 16.3 below, the Contractor, any other prime contractor issued a contract by the City for this project, or any subcontractor must first submit its claim to the Engineer for review. If the dispute is not resolved through the involvement and instructions of the Engineer, then the parties to the dispute may use the formal dispute resolution process described below.

If the claim is against the City, and if the Engineer is an employee of the City, the Engineer may select an outside architect, engineer or other design professional to review the dispute and resolve the issue and any costs of retaining the outside architect, engineer or design professional shall be shared equally between the parties to the dispute regardless of the results of the meeting. In an effort to resolve the dispute informally, the parties shall, to the extent feasible, secure the attendance at the meeting of at least one previously uninvolved senior level decision maker for each party to the dispute.

16.3 Formal Dispute Resolution Process. If the amount in controversy is at least fifteen thousand dollars (\$15,000) and if the effort to resolve the claim using the informal process described above is unsuccessful, the party may submit a request for mediation in writing to the other party or parties involved with a written copy of the request provided to the City unless the City is the other party involved in the claim.

The parties shall then select a mediator, enter into a mediation agreement, schedule the mediation conference and make a good faith effort to resolve the claim or dispute in accordance with subchapter 30H(01NCAC3H.0101 through 01NCAC3H.1001) of the North Carolina Administrative Code, Dispute Resolution Process Adopted by the State Building Commission all in accordance with the requirements of G.S. 143-128(f1), as amended or superseded.

By written agreement, the parties to the dispute may agree upon a different mediation process; however, as a condition of this Contract, the Contractor shall, in good faith, participate in the mediation process either adopted by the State Building Commission or a dispute resolution process, including mediation, as an alternative to the mediation process required above prior to the commencement of the filing of any lawsuit against the City.

ARTICLE 17 – MISCELLANEOUS.

17.1 Venue. In the event of any suit or in equity involving the Contract, venue shall be exclusively in Burke County, North Carolina and the laws of the State of North Carolina shall apply to the interpretation and enforcement of the Contract.

17.2 Extent of Agreement. This Contract represents the entire and integrated agreement between the City and the Contractor with respect to the subject matter hereof and supersedes all prior negotiations, representations or agreements, either written or oral.

17.3 Cumulative Remedies. The rights and remedies available to the parties are not to be construed in any way as a limitation of any rights and remedies available to any or all of them which are otherwise imposed or available by laws or regulations, by special warranty or guarantees or by other provisions of the Contract Documents, and the provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right and remedy to which they apply. Specifically, the City is not required to only assess liquidated damages, the City may elect to pursue its actual damages resulting from the failure of the Contractor to complete the Work in accordance with the requirements of the Contract Documents.

17.4 Severability. If any word, phrase, clause, sentence or provision of the Contract, or the application of same to any person or set of circumstances is for any reason held to be unconstitutional, invalid or unenforceable, that finding shall only effect such word, phrase, clause, sentence or provision, and such finding shall not effect the remaining portions of this Contract; this being the intent of the parties in entering into the Contract; and all provisions of the Contract are declared to be severable for this purpose.

17.5 Independent Contractor. The Contract shall not be construed as creating an employer/employee relationship, a partnership, or a joint venture. The Contractor is an independent contractor and the Contractor's services shall be those of an independent contract. The Contractor agrees and understands that the Contract does not grant any rights or privileges established for employees of the City.

17.6 Prohibition of Gratuities. The City may, by written notice to the Contractor, terminate the Contract without liability if it is determined by the City that gratuities were offered or given by the Contractor or any agent or representative of the Contractor to any officer or employee of the City with a view toward securing the Contract or securing favorable treatment with respect to the awarding or amending or the making of any determinations with respect to the performing of such Contract. In the event the Contract is terminated by the City pursuant to this provision, the City shall be entitled, in addition to any other rights and remedies, to recover or withhold the amount of the cost incurred by the Contractor in providing such gratuities.

17.7 Prohibition Against Personal Interest in Contracts. No officer, employee, independent consultant, or elected official of the City who is involved in the development, evaluation, or decision-making process of the performance of any solicitation shall have a financial interest, direct or indirect, in the Contract resulting from that solicitation. Any violation of this provision, with the knowledge, expressed or implied, of the Contractor shall render the Contract voidable by the City.

17.8 City's Right to Audit.

17.8.1 Records means all records generated by or on behalf of the Contractor and each subcontractor and supplier of the Contractor, whether paper, electronic, or other media, which are in any way related to performance of or compliance with this Contract, including, without limitation:

1. Accounting records;
2. Written policies and procedures;
3. Subcontract files (including proposals of successful and unsuccessful bidders, bid recaps, etc.);
4. Original estimates and estimating work sheets;
5. Correspondence;
6. Change Order files (including documentation covering negotiated settlements);
7. Back charge logs and supporting documentation;
8. General ledger entries detailing cash and trade discounts earned, insurance rebates and dividends;
9. Lump sum agreements between the Contractor and any subcontractor or supplier;
10. Records necessary to evaluate: The Contract compliance, Change Order pricing, and any claim submitted by the Contractor or any of its payees; and
11. Any other Contractor record that may substantiate any charge related to this Contract.

17.8.2 The Contractor shall allow the City's agent or its authorized representative to inspect, audit, and/or reproduce, or all three, all records generated by or on behalf of the Contractor and each subcontractor and supplier, upon the City's written request. Further, the Contractor shall allow the City's agent or authorized representative to interview any of the Contractor's employees, all subcontractors and all suppliers, and all their respective employees.

17.8.3 The Contractor shall retain all its records, and require all its subcontractors and suppliers to retain their respective records, during this Contract and for three (3) years after final payment, until all audit and litigation matters that the City has brought to the attention of the Contractor are resolved, or as otherwise required by law, whichever is longer. The City's right to inspect, audit, or reproduce records, or interview employees of the Contractor or its respective subcontractors or suppliers exists during this Contract, and for three (3) years after final payment, until all audit and litigation matters that the City has brought to the Contractor's attention are resolved, or as otherwise required by law, whichever is longer, and at no cost to the City, either from the Contractor or any of its subcontractors or suppliers that may furnish records or make employees available for interviewing.

17.8.4 The Contractor must provide sufficient and accessible facilities during its normal business hours for the City to inspect, audit, or reproduce records, or all three, and to interview any person about the records.

17.8.5 The Contractor shall insert these requirements in each written contract between the Contractor and any subcontractor or supplier and require each subcontractor and supplier to comply with these provisions.

17.9 Survival. The terms and conditions of this Contract, which contemplate a period of time beyond completion or termination will survive such completion or termination and not be merged therein or otherwise terminated.

17.10 No Waiver. The waiver of any provision of this Contract will not be deemed to be a waiver of any other provision of this Contract. No waiver of any provision of this Contract will be deemed to constitute a continuing waiver unless expressly provided in writing, nor will a waiver of any default be deemed a waiver of any subsequent defaults of the same type. The failure at any time to enforce this Contract, whether the default is known or not, shall not constitute a waiver or estoppel of the right to do so.

Bethel Park Restoration

Burke County, North Carolina

CONSTRUCTION SPECIFICATIONS

October 16, 2023

Prepared for:



City of Morganton, North Carolina
305 E. Union St. Suite A100
Morganton, NC 28655

Prepared by:



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TABLE OF CONTENTS

GENERAL NOTES AND CONSTRUCTION SEQUENCE	3
SPECIFICATIONS	9
1.0 Special Conditions	9
1.1 Note on Quantity Take-Off and Type of Contract	9
1.2 List Sources of Standards	9
1.3 Contractor’s Liability for Damage	9
1.4 Construction Warranty	9
1.5 Safety Measures and Traffic Coordination	10
1.6 Contract Period	10
2.0 Site Preparation	10
2.1 Construction Survey	10
2.2 Mobilization and Demobilization	11
2.3 Staging and Stockpiling	12
2.4 Video Existing Conditions	13
3.0 Erosion and Sediment Control	13
3.1 Silt Fence	13
3.2 Safety Fence/Tree Protection Fencing	15
3.3 Temporary Rock Check Dam	16
3.4 Erosion Control Matting	16
3.5 Temporary Stream Crossing – Culvert	17
3.6 Temporary Stream Crossing – Timber Mat	18
3.7 Pump-Around System	19
3.8 Turbidity Curtain	20
4.0 Demolition	20
4.1 Site Demolition	20
5.0 Earthwork	21
5.1 Grading	21
5.2 Tree Removal	23
5.3 Clearing, Grubbing and Debris Removal	24
6.0 Materials	26
6.1 Stone	26
6.2 Filter Fabric	27
6.3 Logs	28
6.4 Brush and Woody Debris	28
7.0 In-Stream Structures	29
7.1 Log Sill	29
7.2 Log J-Hook	30
7.3 W-Weir	31
7.4 Brush Toe	32
7.5 Crayfish Glide	33
7.6 Constructed Riffles	33
7.7 Floodplain Sill	34
8.0 Bridge Crossings	35
8.1 Prefabricated Pedestrian/Vehicle Bridges	35
8.2 Floodplain Culverts	46
9.0 Planting	47



9.1 Temporary Seeding..... 47

9.2 Permanent Seeding..... 48

9.3 Live Stakes & Herbaceous Plugs 51

9.4 Containerized Plants 52

9.5 Bare Root Planting 53

9.6 Planting Warranty..... 54

10.0 Park Features 54

10.1 Bioswales 54

10.2 Bioretention Areas..... 55

10.3 Asphalt Trail 57

Record of Revisions

Date	Description

GENERAL NOTES AND CONSTRUCTION SEQUENCE

All construction activities on this project shall be completed in accordance with the City of Morganton's stormwater management program, North Carolina Department of Transportation (NCDOT) Standard Specifications for Roads and Structures as amended, NCDOT Best Management Practices for Construction and Maintenance Activities as amended, North Carolina Department of Environmental Quality (NCDEQ) Erosion and Sediment Control, Planning, and Design Manual, the project specific specifications (Specifications) contained herein and the approved construction plans (Plans). All information contained in the City of Morganton, NCDOT, and NCDEQ specifications referenced above shall carry their full weight and force as if included in this document verbatim and are hereby incorporated into this document by reference.

The Project Owner is the City of Morganton. Any reference in the Specifications or special provisions to the term "Owner" shall be interpreted as meaning the City of Morganton. References in the Specifications or special provisions to the term "County" refer to the Burke County Engineer or their designated representative.

The Contractor is responsible for applicable sections of the Specifications herein.

Definitions:

City – The City refers to the City of Morganton's Engineer, or their designated representative.

Contract Documents – Legal contract, and associated documentation, including approved Plans and Specifications, agreed to by the Owner and Contractor.

Contractor – Selected Contractor for the construction of the Project as approved by the Owner.

County – The County refers to the Burke County Engineer, or their designated representative.

Engineer – Where referenced herein, Engineer or Design Engineer refers to the engineer responsible for the implementation and final certification of the Project. This must be a registered Professional Engineer within the State of North Carolina, or adequately experienced designee as appointed by the Owner. Where applicable, modifications to the Plans and Specifications may be necessary as field conditions warrant. Changes to the Plans without consent of the Design Engineer absolve the Design Engineer and their representatives from liability associated with the performance and function of the modified portions of the Contract Documents.

Owner – The Owner herein shall refer to the City of Morganton. The Owner shall designate an Owner Representative to facilitate day-to-day activities associated with the Project including, but not limited to, contractual concerns, requests for information (RFIs), pay applications, construction administration and compliance with the approved Plans and Specifications. References to the Owner or the City of Morganton herein interchangeably refers to the Owner or their representative(s).

Plans – References to Plans herein refer to the approved construction plans entitled *Bethel Park Restoration* dated October 16, 2023.

Project – The Project referenced herein refers to the *Bethel Park Restoration* and associated Plans and Specifications.

Select Material – Select material used for backfilling structures and grading consists of clay, clay loam or sandy clay loam soil that is free of rock and organic debris.

Site – The Site referenced herein refers to the construction area as identified as the *Bethel Park Restoration* in the Plans and Specifications.

Specifications – Specifications include the general and technical requirements associated with the completion of the Project included within the Plans. Specifications, technical and otherwise, outlined as part of this document and identified on the accompanying Plans, are limited in their application to the Project and shall not be construed as design specifications or guidance beyond the limits and scope of the Project.

Work Zone – In general, the disturbed area within the Site limits that is disturbed and not stabilized. When working in an active watercourse, the work zone shall be limited such that the clearing, installation of in-stream structures, as applicable, finish grading and streambank stabilization with coir matting or other devices as specified in the Plans and Specifications, can be completed in one working day. Work zones outside of an active watercourse may be expanded at the discretion of the Engineer under the condition that proper sediment and erosion control practices are in place in accordance with the Plans and Specifications. Mass clearing and grubbing

or grading outside of the active work zone is prohibited. Work zone lengths may be modified at the discretion of the Engineer.

Construction Sequence:

The construction sequence outlined below represents general construction activities, sediment and erosion control measures and detailed measures to facilitate the construction of the Site. Prior to land disturbing activities, the Contractor shall provide the Engineer with a detailed sequence of construction. This sequence will include the proposed construction sequence for each restoration area, general timeline for completion and stabilization of each restoration area and any proposed stockpile areas that may deviate from the Plans. The Engineer will review this detailed sequence of construction for compliance with the erosion and sediment control (ESC) plan for the Site and applicable permit requirements. The Contractor will not commence land disturbing activities or mobilization prior to approval of the construction sequence by the Engineer.

Construction shall commence in accordance with the construction sequence as approved by the Engineer. In general, the construction sequence shall, at a minimum, include the initial site preparation, stream and floodplain bench construction, park grading, and construction demobilization steps listed below.

General Notes

1. All erosion and sediment control (ESC) practices shall comply with the 2013 North Carolina (NC) Erosion and Sediment Control Planning and Design Manual (NCESCPDM).
2. All graded areas with slopes steeper than 3:1 will be stabilized within seven working days. All other areas will be stabilized within fourteen days.
3. Staging and stockpile areas are depicted in the ESC plan sheets. Additional or alternative staging and/or stockpile areas may be utilized by the Contractor with prior approval from the Owner and the Engineer, provided that all practices comply with the NCESCPDM.
4. The Contractor will ensure that ESC practices are properly functioning in areas as shown on the ESC plan sheets.
5. The Contractor shall use care to avoid damaging or removing existing trees that are beyond the limits of disturbance (LOD).
6. The Contractor shall not exceed the LOD illustrated on the plans without prior approval from the Engineer and Owner.
7. The Contractor shall utilize a pump around system to divert flow around active work areas, as directed by the Engineer or defined in the Specifications, when conducting channel excavation or tying new channels into the existing channels.
8. The Contractor is responsible for removing and disposing of any vegetation, materials, or debris within the site limits as directed by the Engineer.
9. Any off-site borrow and/or waste required for the project must come from a site with an approved erosion control plan, a site regulated under the Mining Act of 1971, or a landfill regulated by the Division of Solid Waste Management. Trash or debris from demolition activities or generated by any activities on site must be disposed of at a facility regulated by the Division of Solid Waste Management or per Division of Solid Waste Management or Division of Water Resources Rules and Regulations.
10. Any unauthorized damage to existing structures or grounds due to construction activities will be repaired or replaced to a condition that meets or exceeds the previous standard. Repairs will occur at the expense of the Contractor.
11. The Contractor will coordinate with the Engineer and Owner to facilitate closing any parking lots, roadways, or park amenities (i.e., basketball courts, tennis courts, dog park, walking trail, playground, etc.). The City will be responsible for closing park facilities and establishing closure barricades and signage.
12. All instream structures shall be constructed as directed by the Engineer in the field.
13. The Engineer will provide (1) an Erosion and Sediment Control permit (2) 401/404 permits that authorize the land disturbance activities and impacts to the waters of the US as depicted on the plans (3) NCDOT

Encroachment Permit and (4) floodplain permit. The Contractor will be responsible for securing all other necessary permits and authorizations to complete the work.

14. An ESC permit and a Certificate of Coverage (COC) must be obtained by the Owner and/or Engineer before any land disturbing activities occur. The COC can be obtained by filling out the electronic notice of intent (e-NOI) form at deq.nc.gov/ncg01. Please note, the e-NOI form may only be filled out once the plans have been approved. A copy of the ESC permit, the COC, and a hard copy of the plans must be kept on site, preferably in a permits box, and accessible during inspection. Establishing and maintaining an on-site construction box is the responsibility of the Contractor.
15. The Contractor shall coordinate with the Engineer to setup a meeting with NCDEQ division of energy, Mineral and Land Resources (DEMLR) regional (Asheville) office, 828-296-4500, to notify them of the start date and schedule a pre-construction meeting at least 48 hours prior to project activation.
16. Equipment storage within the park when the site is not actively being worked on is prohibited. Equipment, fuel tanks, and facilities must be located within the two parking lot areas and adjacent stockpile areas when not in active use.
17. No major grading activities will take place during wet weather or periods of predicted wet weather.
18. The site must be storm ready at the end of each workday and before any extended breaks in demolition/construction activities, including weekends.
19. When the project is complete, the Permittee shall contact DEMLR to close out the ESC plan. After DEMLR informs the permittee of the project close out, via inspection report, the Permittee shall visit deq.nc.gov/ncg01 to submit an electronic notice of termination (e-NOT). A \$100 annual general permit fee will be charged until the e-NOT has been filled out.

Erosion and Sediment Control Sequence

Phase 1 – Perimeter Control

1. Install turbidity curtain upstream of the existing box culvert on Bethel Road.
2. Establish the staging/stockpile area and associated silt fence along the parking lot in the eastern side of the Park.
3. Install a check dam downstream of the existing culverts in East Prong Hunting Creek.
4. Install silt fence along the west bank of East Prong Hunting Creek. Access for establishing silt fence shall occur by utilizing the existing stream crossings.
5. Install the stockpile area and associated silt fence in the southern portion of the Park.
6. Establish the stockpile area and associated silt fence along the parking lot in the northwest corner of the Park.
7. Install silt fence along the existing wetlands to the west of Fiddlers Run. Access for establishing the silt fence shall occur from the existing parking lot in the northwest corner of the Park.
8. Install silt fence along the east bank of Fiddlers Run. Access for establishing silt fence shall occur by utilizing the existing stream crossing.

Phase 2 – Stream Construction

1. Establish the temporary culvert stream crossing on East Prong Hunting Creek as shown on the Plans.
2. Install the temporary timber mat stream crossings and associated downstream check dams along Fiddlers Run as shown on the Plans.
3. Stockpile areas may be installed and utilized at the Contractor's discretion. Each active stockpile area shall be surrounded with silt fence on the downstream side as shown in the Plans.
4. Temporary stream crossings on Fiddlers Run shall be removed concurrent with filling the existing channel and grading the floodplain bench.
5. Install the temporary stream crossings in the areas shown on the Plans to facilitate access across the newly constructed portion of East Prong Hunting Creek.

6. Once grading and stabilization of East Prong Hunting Creek is completed, and flow has been redirected into the new channel, remove Phase 1 silt fence from the left bank of the existing channel and place along the left bank of the new channel.
7. Upon completion of grading and stabilization of Fiddlers Run and redirection of flow into the newly graded channel, Phase 1 silt fence shall be moved to the right top-of-bank of Fiddlers Run to facilitate floodplain grading.

Phase 3 – Park Improvements

1. Begin grading and stabilizing the proposed walking trail at the southern limits of the park and work concurrently along both sides of the trail until finish grade elevations of the trail have been achieved. This shall be completed prior to interior grading of the Park.
2. The proposed walking trail shall act as a diversion berm for Park interior earthwork.

Construction Sequence

1. The Contractor shall contact North Carolina 811 prior to site mobilization.
2. Prior to site mobilization, the Contractor shall document the condition of on-site access points and existing park infrastructure (e.g., park signage, gates, parking lots, etc.) via video or still photography and provide to the Engineer of Record. Prior to demobilization activities, access points must be restored, at a minimum, to existing site conditions.
3. Prior to site mobilization, the Contractor shall erect signage designating Bethel Park as a construction zone with typical work hours displayed.
4. Set up temporary facilities and mobilize equipment and materials to the site.
5. Install perimeter ESC measures (phase 1) as shown on the plans and in the order listed in the ESC sequence including staging and stockpile areas, silt fence, a turbidity curtain, and temporary stream crossings. Place any imported materials within the limits of protected stockpile areas as shown in the ESC plans.
6. The Contractor shall install ESC measures as shown on the plans and notify the City when all necessary measures are complete. Allow the City 30 days for demolition of site features within the site as shown on the demolition plans.
7. Upon completion of ESC installation and demolition, begin the stream restoration and floodplain bench excavation following the sequence below.
8. Ensure that phase 1 of the ESC sequence is implemented and is functioning properly before any clearing or grubbing activities commence.
9. Clear any additional trees within the proposed stream corridor of Fiddlers Run necessary for proposed alignment excavation. Stockpile all trees on site within any established, protected, and approved stockpile area(s).
10. Perform excavation and grading of Fiddlers Run offline of the existing channel from approximate station 201+00 to 210+00 and from station 211+00 to the proposed confluence with East Prong Hunting Creek. Flow will be maintained in the existing channel.
11. Seed and mat stream banks and floodplain areas according to the plans and specifications.
12. Place all excavated material in designated and protected stockpile areas at least 50 feet from perimeter control ESC measures. The contractor will ensure that ESC practices are properly functioning in stockpile areas as shown on the ESC plans.
13. Contact NC Wildlife Resource Commission (NC WRC) 10 working days prior to diverting flow from the old channel to the new channel. NC WRC will be responsible for relocation of crayfish species.
14. Harvest reusable substrate from the existing channel as directed by the Engineer and stockpile within any approved and protected stockpile area(s).

15. Tie the newly excavated channel into the existing channel at the southern and northern extents of Fiddlers Run. A pump around may be utilized at the discretion of the Contractor and Engineer to work in dry conditions as outlined in the specifications.
16. Relocate the installed silt fence as defined in phase 2 of the ESC sequence to facilitate floodplain grading and filling the existing channel with the recently excavated material. The Engineer must approve the removed silt fence for reuse based on its condition after removal. If the Engineer deems it unfit for reuse, the Contractor must install new silt fence per the plans and specifications.
17. Any excess fill material will be stored in the approved stockpile area(s). If additional fill material is needed, the Contractor may begin clearing and offline channel excavation at the upstream extent of East Prong Hunting Creek.
18. Filling the abandoned channel should include installing channel plugs as noted in the plans and specifications.
19. Clearing and grubbing activities along East Prong Hunting Creek may not commence until phase 1 of the ESC sequence has been implemented and approved by the Engineer.
20. Clear any additional trees necessary to facilitate channel construction and grading at the upstream extent of East Prong Hunting Creek as shown on the plans. Stockpile all trees and brush in approved and protected stockpile area(s) or as directed by the Engineer.
21. Perform excavation and grading of East Prong Hunting Creek offline of the existing channel from approximate station 101+00 to 110+00. Flow will be maintained in the existing channel. Stockpile excavated material within any of the approved and protected stockpile area(s).
22. Tie the new channel into the existing channel at the southern extent of the park and downstream of station 110+00. A pump around may be utilized at the discretion of the Contractor and Engineer to work in dry conditions as outlined in the specifications.
23. Fill the existing channel and grade the floodplain bench concurrently to the grades shown on the plans. The installed silt fence along the west bank of East Prong Hunting Creek may be relocated as defined in phase 2 of the ESC sequence.
24. Utilize a pump around to excavate the proposed stream while filling the old channel concurrently until approximate station 118+00. The constructed channel must be tied into the existing channel and stabilized at the end of each workday to facilitate flow through East Prong Hunting Creek at all times.
25. When the new channel is tied into the existing channel at station 118+00, excavate the remainder of East Prong Hunting Creek to the confluence with Fiddlers Run. Upon completion, fill both of the existing channels and allow both streams to flow through the newly constructed channels.
26. When stream grading is complete, the proposed bridge crossings may be installed. The Contractor must ensure that flow will be maintained through or around East Prong Hunting Creek and Fiddlers Run throughout the duration of the bridge installation process.
27. Bridge abutments will utilize concrete as outlined on sheet 8.3. As such, concrete washout locations will be determined in the field by the Engineer. The Contractor is responsible for installing and maintaining the washouts as outlined on sheet 7.9.
28. Grade any remaining extents of the floodplain bench as shown on the plans. Any excess material will be stored in any of the approved stockpile area(s).
29. Once all phases of channel and floodplain bench grading are complete, prepare the floodplain bench for planting per the specifications.
30. Apply permanent seed and plant vegetation along the stream banks and in the floodplain bench per the plans and specifications.
31. Upon completion of stream bank and floodplain bench excavation and planting, begin interior park grading.

32. Grade the proposed walking trail loop and connecting trails to the elevations shown on the plans.
33. Transport excess fill material from the stockpile area(s) to the stockpile area at the southern extent of the park to facilitate grading south of the proposed walking trail as shown on the plans.
34. Complete final grading within the proposed walking trail from the southern extent and the northern extent concurrently.
35. Install the drainpipes in the park at the locations and elevations specified in the plans. Following pipe installation, return any disturbed trail to the proposed grade in the plans.
36. Upon reaching final grade, transport any excess fill material out of the interior of the park to a disposal site as directed by the City, if necessary.
37. Plant the remainder of the areas in the park per the plans and specifications.
38. Once permanent seed is established, minimum 70% coverage is achieved, and the Engineer of Record approves, remove any remaining temporary stream crossings, stockpile areas, and ESC practices. No ESC practices shall be removed without prior approval from the Engineer.
39. The Contractor shall remove all trash, debris, and any leftover construction materials prior to demobilization.
40. Demobilize equipment from the site.
41. Demobilize all equipment, offices, buildings, and other temporary facilities assembled on site.

SPECIFICATIONS

1.0 Special Conditions

1.1 Note on Quantity Take-Off and Type of Contract

The Contractor shall verify the estimated quantities and bid accordingly. In general, lump sum items within this contract are to be considered immeasurable and will be paid for as a lump sum price. The Contractor must be able to perform all activities (all equipment, labor, materials, and incidentals) necessary to complete the lump sum items unless specifically listed as a unit price cost item. In general, for unit price bid items, overruns and under runs may be adjusted based on the difference between the quantity estimated and quantity used if approved by the Engineer prior to installation. Overruns will not be eligible for payment if installed before Engineer approval. For lump sum bid items, a change order is applicable only to modifications in scope of the work and shall not be adjusted based on quantity take-off.

1.2 List Sources of Standards

The Contractor shall follow the standards and regulations of the A.G.C. Accident Prevention Manual in Construction as amended, the NCDOT Standard Specifications for Roads and Structures as amended, the NC Erosion and Sediment Control Planning and Design Manual as amended, and the City of Morganton stormwater management program. The Contractor shall adhere to the rules, regulations and interpretations of the North Carolina Department of Labor's Occupational Safety and Health Standards for the Construction Industry (Title 29, Code of Federal Regulations, Part 1926 published in Volume 39, Number 122, Part 11, June 24, 1974 Federal Register) and any revisions including thereto as adopted by General Statutes of North Carolina 95-126 through 155.

1.3 Contractor's Liability for Damage

The Contractor is responsible for the entire Site during construction. The Contractor is required to provide all the necessary safeguards as required by laws or ordinances governing such conditions and any Engineer required safeguards. The Contractor is responsible for identifying existing utilities, both above and below ground, and avoid impacts to these structures unless noted for removal in the Plans. The Contractor is encouraged to coordinate with the Engineer prior to mobilization regarding existing infrastructure that shall be avoided during construction. The Contractor shall be responsible for any damage to the Owner and Engineer's property or that of others on the job, by himself, his personnel, or his subcontractors, and shall make good such damages. He shall be responsible for and pay for any claims against the Engineer arising from such damages. Important Note: Existing right of ways and roads used as construction entrances and access roads must be restored to their original condition at the completion of construction.

The 25-year 24-hour storm event for Morganton, NC (NOAA Station ID: 31-5838) is 6.60 inches of rainfall. The Contractor is responsible for reporting all storm events resulting in 0.5 inches of rainfall measured over a 24-hour period within the on-site rain gages. The Contractor is responsible for repairing and restoring any damage to the Site as a result of flooding events associated with a 25-year 24-hour storm event or less from the initiation of clearing and grubbing activities until the date construction and stabilization is complete and accepted by the Engineer. Repair costs for damage caused by events greater than a 25-year 24-hour storm event may be negotiated with the Owner on a case-by-case basis.

1.4 Construction Warranty

The Contractor shall provide a one-year construction warranty on all workmanship and materials associated with the construction of the Site. The Engineer shall attend the six- and twelve-month warranty inspections. These inspections will include visual inspection of stream restoration and grading activities and structures for stability and compliance with the finish grade identified in the as-built drawings. The Engineer will provide a warranty inspection report to the Contractor identifying areas to be remediated.

The Engineer will meet with the Contractor on-site to review activities to be addressed. After the Contractor has notified the Engineer that the warranty items have been addressed, the Engineer will inspect warranty work and

make recommendations for acceptance of work. The Engineer will notify the Owner of warranty items that have not been addressed.

The warranty period for construction shall begin following acceptance of final site stabilization by the Engineer and Owner. All work completed under this section shall be considered incidental to mobilization/demobilization activities, therefore no separate pay item for the construction warranty is provided.

1.5 Safety Measures and Traffic Coordination

The Contractor is expected to perform Site construction safely and in accordance with all applicable rules and regulations. All necessary safety measures for the protection of all persons at work, including the requirements of the A.G.C. Accident Prevention Manual in Construction as amended, shall be provided by the Contractor. All safety measures shall also comply with all state laws or regulations and North Carolina State Building Code requirements to prevent accidents or injury to persons on or about the location of the work. Existing hazards shall be clearly marked with warnings, and any excavations or similar hazards shall be barricaded. Hard hats and any required head gear shall be worn when working near heavy machinery in accordance with 29 CFR 1926.100 and 29 CFR 1910.135 and the Contractor shall protect against potential damage or injury which could result from falling materials. Protective devices and signs shall be maintained throughout the work's progress.

The Contractor is responsible for any necessary traffic control while entering and exiting the construction Site. The Contractor is responsible for conducting due diligence on subsurface information for this Site ("One Call" 1-800-632-4949).

1.6 Contract Period

The Contractor shall commence work to be performed under this agreement on a date to be specified in a written Notice to Proceed. The Contractor shall fully complete stream construction and planting according to the Contract Periods listed in the table below. Stream construction includes all grading and installation of in-stream structures, floodplain bench grading, and grading within the park as identified in the Plans and directed by the Engineer in the field. Stream construction and planting will not be considered fully complete until the Engineer inspects the Site, any necessary deficiencies are addressed by the Contractor and the Engineer provides their approval. The Contractor is responsible for coordinating with the Owner/Engineer to define limitations on construction activity scheduling.

Activity	Responsible Party	Completion Date
Notice to Proceed	Owner / Engineer	On or before March 1, 2024
Stream Construction	Contractor	On or before September 1, 2024
Planting	Contractor	On or before December 31, 2024

2.0 Site Preparation

2.1 Construction Survey

Description

The construction survey shall be performed in accordance with Section 801 of the NCDOT Standard Specifications for Roads and Structures and shall include but not be limited to the layout of the stream channel, limits of disturbance, temporary and permanent easements and all sensitive areas associated with the implementation of the design as indicated in the Plans.

The Contractor shall always maintain a GPS and/or level and rod on-site for use by the Engineer to evaluate stream grades and structure elevation. This condition will not alleviate the Contractor's responsibility to make certain that the stream is constructed in accordance with the project Plans and Specifications.

Construction Methods

Refer to Section 801, NCDOT Standard Specifications for Roads and Structures.

The Engineer shall provide the grading model and Plans for the Site. The Contractor shall verify and establish control points as needed. Full stakeout of the stream channel and associated structures may not be required if GPS equipment is utilized to support grading activities. The use of GPS equipment will only be accepted if the accuracy and tolerances for finish grading and structures identified on the Plans and outlined in these Specifications can be achieved. The Contractor is liable for verifying GPS accuracy prior to conducting the construction survey. The Engineer may field-verify the accuracy of the construction survey, as deemed necessary. Resurveying due to discrepancies in GPS accuracy, outside of project tolerances, is the responsibility of the Contractor.

If GPS equipment is not used by the Contractor, stakeout of the stream channel in its entirety shall be performed under the supervision of a Professional Land Surveyor in such a way that the Engineer can verify the layout of the stream channel prior to construction activities commencing. The Contractor shall mark the proposed location of the centerline of the channel at 50-foot intervals, at the head of each riffle/shallow and at maximum pool depth locations within the proposed channel. Upon completion of the stakeout and prior to beginning construction, the Contractor shall give the Engineer a 48-hour notice in order to approve the stream alignment. Stakes should be maintained until construction in the work area is approved by the Engineer. There will be no additional payment for re-staking. Sensitive areas requiring safety fence shall be staked by the Contractor under the supervision of a Professional Land Surveyor.

Measurement and Payment

The construction survey will be measured and paid for as a lump sum price in accordance with Article 801-3 of the NCDOT Standard Specifications for Roads and Structures. Such price and payment will be full compensation for all work covered by this Specification, including but not limited to construction layout, boundary surveying and engineering necessary for the proper construction of the project in accordance with the project Plans and Specifications. Any adjustments to the stream alignment, structure placement, grading limits or elevations shall be considered incidental to the lump sum price for construction survey.

All work completed under this Specification shall be considered incidental to mobilization and demobilization (Specification 2.2); therefore, no separate pay item for this work is provided.

2.2 Mobilization and Demobilization

Description

This work consists of the mobilization and demobilization of the Contractor's equipment, materials and personnel necessary to perform the work required in the Plans. Mobilization will not be considered as work in fulfilling the requirement for commencement of work.

Construction Methods

Refer to Section 800, NCDOT Standard Specifications for Roads and Structures. Mobilization includes all activities and costs for transportation of personnel, equipment, materials, and operating supplies to the Site; establishment of offices and other necessary facilities for the Contractor's operations at the Site; premiums paid for performance and payment bonds, including coinsurance and reinsurance agreements as applicable; and other items as specified in this specification.

Demobilization includes all activities and costs for transportation of personnel, equipment and supplies not included in the contract from the Site; the disassembly, removal, and Site cleanup; and repair of offices, buildings and other facilities assembled on the Site for this contract.

The Contractor shall provide and pay for toilet facilities for all workmen, as required by local ordinances for complete and adequate sanitary arrangements as part of mobilization and demobilization. Sanitary facilities and the surrounding area shall be kept clean and neat at all times. They shall be located on the project Site as approved by the Engineer.

The Contractor will provide and pay for temporary utilities including electricity, telephone, and water as part of mobilization and demobilization. All temporary facilities will be available for the duration of the project. The Contractor will be responsible for compliance with code ordinances and requirements of local officials for temporary facilities, controls and related health and safety requirements. It will be the responsibility of the Contractor to coordinate electrical service. In the event that electrical power will not be available, it will be the Contractor's responsibility to provide any necessary generator(s) to facilitate construction.

The Contractor may provide a temporary field office complete with lights, telephone and proper climate conditioning as required by weather conditions. A portion of the field office, if provided, shall be designated for the use of the Engineer or their representatives. This area shall be of adequate size and contain an adequate layout board and adequate plan rack. The field office, if provided, shall not be removed from the project without the approval of the Engineer. Each Contractor may provide any necessary storage shed for its own use. All temporary structures shall be constructed in a sound waterproof manner and located on the project Site as approved by the Engineer. All temporary structures shall remain on the project Site until the Engineer approves their removal.

Measurement and Payment

All work completed under this Specification will be measured and paid for as a lump sum for mobilization and demobilization, in accordance with Section 800 of the NCDOT Standard Specifications for Roads and Structures. This work includes mobilization and demobilization required by the contract at the time of the award. If additional mobilization and demobilization activities and costs are required during the performance of the contract because of the changed, deleted or added items of work for which the Contractor is entitled to an adjustment in contract price, compensation for such costs will be included in the price adjustment for the item or items of work changed or added. One properly installed construction sign is considered incidental to mobilization.

The payment schedule for this item will be 50% upon mobilization of equipment and materials to the Site and installation of the project sign, and 50% upon completion of demobilization and removal of all equipment and excess materials from the Site at project completion.

Payment will be made under:

Bid Item	Pay Item	Pay Unit
1	Mobilization and Demobilization	Lump Sum (LS)

2.3 Staging and Stockpiling

Description

This work consists of staging construction equipment for storage and refueling purposes and stockpiling Site materials in staging areas. In addition, this Specification covers the initial stockpiling of trees for use as in-stream structures. The Contractor may establish staging areas as appropriate for phasing purposes with Engineer's approval. All staging areas must be located within the limits of disturbance (LOD) identified on the Plans.

Construction Methods and Materials

Prior to construction activities, the Contractor shall identify staging areas throughout the Site and review these areas with the Engineer. Harvested trees, stone, woody debris, and topsoil shall be transported to these staging areas. The Contractor shall also adhere to Section 6.01 of the NC Erosion and Sediment Control Planning and Design Manual. Stockpiles shall be monitored daily for signs of erosion, material loss and/or accumulation of stormwater runoff. The Contractor is responsible for conducting and the cost of all repairs necessary for stockpile maintenance. All refueling equipment (tanks, trucks and otherwise) shall be located within the existing parking lot areas. Placement of non-mobile refueling equipment within the limits of the park between East Prong Hunting Creek and Fiddlers Run is prohibited.

Measurement and Payment

All work completed under this Specification shall be considered incidental to mobilization and demobilization (Specification 2.2); therefore, no separate pay item for this work is provided.

2.4 Video Existing Conditions

Description

The Contractor is required to provide existing site documentation in the form of video footage or still photography to the Engineer prior to construction. This is required to document the Site condition and prevent claim of damages not incurred by the Contractor.

Sensitive areas that require documentation include, but aren't limited to, existing park infrastructure that will remain such as gates, asphalt parking lots, entrance signage, basketball courts, tennis courts, and playground equipment.

Measurement and Payment

All work completed for video and photographic documentation shall be considered incidental to mobilization and demobilization (Section 2.2); therefore, no separate pay item for this work is provided.

3.0 Erosion and Sediment Control

This work consists of installation and maintenance of erosion and sedimentation control devices to conform to the Plans, permits, local laws, state regulations and federal requirements.

The quantity of erosion control devices to be installed will be affected by the actual conditions that occur during the construction of the project. The quantity of erosion control devices may be increased, decreased, or eliminated entirely as directed by the Engineer. Such variations in quantity will not be considered as alterations in the details of construction or a change in the character of the work.

Refer to the NC Erosion and Sediment Control Planning and Design Manual as amended. Stone for erosion control practices can be quarry or re-purposed on-site stone. Payment for each erosion control item shall be considered full compensation for the items of work including the cost for furnishing all materials, labor, equipment, tools, and incidentals required to implement the item.

The Contractor must follow the requirements in accordance with the Plans and Specifications and the requirements of General Permit No. NCG010000 (General Permit to Discharge Stormwater under the National Pollutant Discharge Elimination System) at all times, including the following:

1. Erosion and sediment control devices shall be inspected once a week at a minimum and within 24 hours following any rainfall event in excess of 0.25" per 24-hour period. The results of these inspections shall be documented and any devices that are not functioning properly shall be immediately repaired.
2. The Contractor is required to maintain a rain gauge on the Site and keep daily a record of rainfall amounts and dates.
3. The Contractor is required to complete milestone erosion control inspections as part of the NCDEQ Self-Inspection program. Milestones include: after perimeter erosion control installation, after clearing and grubbing, after completion of slope/fill grading, after construction completion and after permanent ground cover establishment.
4. The Plans, a copy of permit NCG010000, rainfall records and inspection reports must be kept on the Site and must be accessible at all times.

3.1 Silt Fence

Description

This work consists of installation and maintenance of geotextile silt fences and silt fence gravel outlets to trap sediment from limited runoff areas. In general, standard silt fence shall be used on the Site as noted on the Plans

and as directed by the Engineer. Reinforced silt fence may be required as necessary to maintain Site stability and fulfill erosion and sediment control requirements, only as directed by the Engineer. Silt fence shall be properly trenched to prevent stormwater discharge or erosion under the fence. Silt fence and silt fence gravel outlets are considered temporary control measures and shall be removed after permanent stabilization of contributing areas.

Construction Methods and Materials

Materials for silt fence shall conform to the sediment fence specifications (Section 6.62) in the NC Erosion and Sediment Control Planning and Design Manual. Use a 36-inch-wide synthetic filter cloth consisting of at least 95% by weight polyolefins or polyester and conforming with the requirements in ASTM D 6461, shown in the table below.

Property	Test Material	Units	Supported Silt Fence	Un-Supported Silt Fence	Type of Value
Grab Strength – Machine Direction	ASTM D 4632	lbs	90	90	MARV
Grab Strength – X-Machine Direction	ASTM D 4632	lbs	90	90	MARV
Permittivity	ASTM D 4491	sec-1	0.05	0.05	MARV
Apparent Opening Size	ASTM D 4751	US Sieve #	30	30	Max ARV
Ultraviolet Stability	ASTM D 4355	% Retained Strength	70% after 500h of exposure	70% after 500h of exposure	Typical

MARV: minimum average roll value

The posts for silt fence shall be 1.25lb/linear ft minimum steel with a minimum length of 5 ft. Posts shall have projections to facilitate fastening the filter fabric.

For supported silt fence, reinforce the standard filter cloth with a minimum 14-gauge steel wire with a maximum mesh spacing of 6 inches. The hardware cloth used in silt fence gravel outlets shall be welded galvanized screen with square 1/4-1/2 inch holes.

Stone for silt fence gravel outlets shall be 0.5” to 1.5” washed stone consistent with section 5.1 of these Specifications. The hardware cloth for the silt fence gravel outlet shall be welded galvanized wire screen with 1/4 - 1/2-inch holes.

Construction methods for silt fence shall conform to the sediment fence specifications (Section 6.62) in the NC Erosion and Sediment Control Planning and Design Manual. The above ground height of the silt fence shall not exceed 24 inches to avoid impounding large volumes of water. Construct the filter cloth from a continuous roll cut to the length of the barrier identified in the Plans to avoid the use of joints. When joints are necessary, securely fasten the filter cloth at a support post with a minimum 4 ft overlap to the next post. If reinforced silt fence is required by the Engineer, fasten the wire reinforcement to the upslope side of the posts and filter cloth.

Drive the posts 2 ft into the ground at locations identified in the Plans and as directed by the Engineer. Posts shall be installed at 6 ft max offsets for standard silt fence and 8 ft max offsets for reinforced silt fence. Excavate a trench approximately 4 inches wide and 8 inches deep along the line of posts and upslope of the barrier. Place 12 inches of the filter cloth along the bottom and side of the trench. Backfill the trench with soil placed over the filter cloth and compact. Secure the filter cloth to the posts using plastic or wire ties.

Maintain or replace silt fence as needed and as directed by the Engineer. Remove sediment accumulated along the fence when it reaches 1/3 the height of the fence.

Measurement and Payment

Silt fence will be measured and paid for in linear feet, accepted in place, along the ground line of the fence. No direct payment will be made for posts, woven wire fence, filter fabric, staples, gravel outlets and any other material components; these will be considered incidental to the work covered by silt fence. No additional payment shall be made for overlapping silt fence.

Such price and payment shall be full compensation for the items of work, including the cost for furnishing all materials, labor, equipment, tools, incidentals, storage, preparation, installation, removal, and proper disposal of the silt fence required by the above specification.

Payment will be made under:

Bid Item	Pay Item	Pay Unit
2	Silt Fence	Linear Feet (LF)

3.2 Safety Fence/Tree Protection Fencing

Description

This work consists of installation and maintenance of safety fence to protect desirable trees and wetlands, to remain, from damage during staging, construction, and grading activities. Safety fence is a temporary measure and may be removed after completion of construction activities within the daily work zone with the approval of the Engineer.

Construction Methods and Materials

Safety fence shall have the following properties or be approved by the Engineer prior to installation:

Physical Property	Tests	Requirements
Material	N/A	Polyethylene
Recommended color	N/A	"International Orange"
Tensile Yield	ASTM D638	Ave. 2000 lbs. per 4' wide
Ultimate tensile strength	ASTM D638	Ave. 2900 lbs. per 4' wide
Elongation at break (%)	ASTM D638	Greater than 1000%
Chemical resistance	N/A	Inert to most chemicals and acids

The Contractor shall install tall, bright, protective fencing durable to last throughout the construction project. Orange safety fence is preferred. Safety fence may be installed at the drip line of the tree being protected to limit compaction of the root zone. Signage shall be installed along all sides of fencing saying, "Keep Out". Safety fence shall be installed and maintained according to specifications from the Engineer. Safety fence shall not be removed without Engineer approval.

Measurement and Payment

Safety fence will be measured and paid for in linear feet, accepted in place, along the ground line of the fence. No direct payment will be made for posts, signage, fencing and other material components; these will be considered incidental to the work covered by safety fence.

Such payment shall be considered full compensation for the items of work, including the cost for furnishing all materials, labor, equipment, tools, incidentals, storage, preparation, installation, removal, and proper disposal of the safety fence and components.

Payment will be made under:

Bid Item	Pay Item	Pay Unit
Alt 1	Safety Fence/Tree Protection Fencing	Linear Feet (LF)

3.3 Temporary Rock Check Dam

Description

This work consists of installation and maintenance of temporary rock check dams as a sediment control BMP. Temporary rock check dams are temporary measures and shall be removed after completion of construction activities within phase of the project. The quantity of temporary rock check dams may be increased, decreased, or eliminated entirely as directed by the Engineer. Such variations in quantity will not be considered as alterations in the details of construction or a change in the character of the work.

Construction Methods and Materials

Each check dam shall be composed of 5" to 12" stone and 0.5" to 1.5" gravel. Place 5" to 12" stone in the existing stream channel to a minimum height of 3-feet and the width of the channel. Place 0.5" to 1.5" gravel on top of the 5" to 12" stone to 6-inches below the existing top of bank such that a low flow channel equivalent of 2/3 of the stream width is maintained, as shown in the Contract Documents, and as directed by the Engineer.

The contractor shall remove sediment from between the check dams when the depth reaches a maximum of 9-inches. All temporary check dams shall be removed by the Contractor after completion of construction activities within each phase of the project.

Measurement and Payment

Temporary rock check dams shall be paid per each structure installed and accepted by the Engineer in the field. Such price and payment shall be full compensation for the items of work, including the cost for furnishing all materials, labor, equipment, tools, and incidentals required by the above specification.

Payment will be made under:

Bid Item	Pay Item	Pay Unit
3	Temporary Rock Check Dam	Each (EA)

3.4 Erosion Control Matting

Description

This work consists of furnishing and installing erosion control matting on finished grade as shown on the Plans, or as directed by the Engineer.

The quantity of erosion control matting to be installed will be affected by the actual conditions that occur during the construction of the project. The quantity of erosion control matting may be increased, decreased, or eliminated entirely as directed by the Engineer. Such variations in quantity will not be considered as alterations in the details of construction or a change in the character of the work.

Construction Methods and Materials

Erosion control matting will be machine-produced mat made of 100% coconut fiber with properties as follows:

Property	Requirement	Test Method
matrix	100% coconut fiber	ECTC*
roll size	6.6 feet x 164 feet	ECTC*
thickness	0.30" (minimum)	ASTM D5199
elongation	34% x 38% (maximum)	ECTC*
flexibility	65030 x 29590 mg cm	ECTC*
mass per unit area	20 ounces per square yard (minimum)	ASTM D5261
stable flow velocity	11 feet per second (minimum)	ECTC*
open area (measured)	50% (maximum)	ECTC*
tensile strength	1348 x 626 pounds per foot	ASTM D5035
'C' factor	0.002	ASTM D5035

*Testing methods specified by Erosion Control Technology Council (ECTC) guidelines.

A hardwood Eco-STAKE™ or similar biodegradable stakes shall be used to secure matting. Stakes used to secure fabric at the top and toe of bank will be wooden stakes 12" in length with a square cross-section of 2" by 2", with a notch cut 1" from the top or a 6" nail driven through the top. No metal stakes will be used on the project.

The Contractor will install erosion control matting in locations and to the widths and lengths as shown on the Plans, or as directed by the Engineer. Matting will be secured with stakes installed at three (3) feet on-center spacing in offset rows in a diamond pattern. Fabric overlap at seams will be a minimum of 6". Fabric will be overlapped so that the upstream mat end is on top of the downstream mat start. Stakes will secure fabric at three (3) foot spacing on the overlapping seams. Matting will be dry when installed. Matting will be installed to lie on slopes not too loosely but not in tension.

Prior to matting placement, proposed grades shall be achieved, and no voids will occur in the slope. The area will be treated with fertilizer, soil amendments and temporary and permanent seeding as specified in the Plans and Specifications. Straw mulch will be used to cover the finished grade to achieve 60% coverage on the soil prior to placement of the matting.

Measurement and Payment

Erosion control matting will be measured and paid for in square yards measured along the surface of the ground over erosion control matting that has been acceptably placed. No separate measurement will be made for overlapping fabric at seams.

Such price and payment will be full compensation for all work covered for erosion control matting, including but not limited to all labor, machinery, maintenance, hauling, preparation, and installation to complete the work in an acceptable manner. Wooden stakes and straw placement will be considered incidental to erosion control matting installation.

Stabilization measures required prior to streambank matting installation including, but not limited to, seeding, soil amendments and fertilizers will be measured and paid under temporary seeding and permanent seeding.

Payment will be made under:

Bid Item	Pay Item	Pay Unit
4	Erosion Control Matting	Square Yard (SY)

3.5 Temporary Stream Crossing – Culvert

Description

This work consists of installation and maintenance of a temporary culvert stream crossing to provide a means for construction vehicles and equipment to cross East Prong Hunting Creek without moving sediment to the stream or damaging the channel. The culvert stream crossing is a temporary measure and should be removed after completion of construction activities at the location of the crossing near the parking lot along East Prong Hunting Creek as approved by the Engineer. The quantity of temporary culvert stream crossings to be installed will be affected by the construction sequence submitted by the Contractor and approved by the Engineer. The quantity of temporary culvert stream crossings may be increased, decreased, or eliminated entirely as directed by the Engineer. Such variations in quantity will not be considered as alterations in the details of construction or a change in the character of the work.

Construction Methods and Materials

The Contractor may utilize alternative stream crossing measures than those shown on the Contract Documents with prior approval from the Engineer. The culvert crossing will be constructed with a minimum of one 72" diameter pipe and stone that shall be of a size conforming with specifications as outlined in the Contract Documents. Pipe material may be corrugated metal, corrugated plastic, or any other alternative recommended by the Contractor and accepted by the Engineer. Pipe shall be 20' in length.

The temporary culvert stream crossing shall be constructed perpendicular to flow in the existing channel according to the Contract Documents or as directed by the Engineer in the field. The temporary culvert stream

crossing shall only be constructed over stream channels within the active work zone and shall be removed once the channel is abandoned.

The culvert stream crossing consists of pipe and coarse aggregate backfill. Place the pipe (minimum 72" diameter) in the center of the existing channel and backfill with a mix of 2" to 6" stone and 5" to 12" stone to a minimum 12" above the top of the pipe. Place a minimum 6" of coarse aggregate (minimum $D_{50} = 6"$) on top of the backfilled stone and a minimum 25' outside of the top of bank.

Measurement and Payment

Temporary culvert stream crossings shall be paid per each structure installed and accepted by the Engineer in the field.

Such price and payment will be full compensation for all work covered for temporary culvert stream crossings, including but not limited to all labor, machinery, maintenance, hauling, preparation, and installation to complete the work in an acceptable manner. Pipe, stone, and coarse aggregate backfill will be considered incidental to temporary culvert stream crossing installation.

Payment will be made under:

Bid Item	Pay Item	Pay Unit
5	Temporary Stream Crossing - Culvert	Each (EA)

3.6 Temporary Stream Crossing – Timber Mat

Description

This work consists of installation and maintenance of temporary timber mat stream crossings to provide a means for construction vehicles and equipment to cross streams without moving sediment to streams or damaging the channel. The timber mat stream crossings are temporary measures and should be removed after completion of construction activities at the location of the crossing as approved by the Engineer. The quantity of temporary timber mat stream crossings to be installed will be affected by the construction sequence submitted by the Contractor and approved by the Engineer. The quantity of temporary timber mat stream crossings may be increased, decreased, or eliminated entirely as directed by the Engineer. Such variations in quantity will not be considered as alterations in the details of construction or a change in the character of the work.

Construction Methods and Materials

The Contractor may utilize alternative stream crossing measures than those shown on the Contract Documents with prior approval from the Engineer. Timber mat stream crossings will be constructed with mud mats, logs, filter fabric, and rock according to the Contract Documents.

All temporary timber mat stream crossings shall be constructed perpendicular to flow in the existing channel according to the Contract Documents or as directed by the Engineer in the field. Temporary timber mat stream crossings shall only be constructed over existing or recently constructed stream channels within the active work zone and shall be removed once the existing channel is abandoned.

Timber mat stream crossings consist of mud mats (composed of hardwood timbers), logs, and rock. Place support logs (minimum diameter = 12") at both top of banks. Place the mud mats on top of the support logs. Mud mats shall be 16' long or a minimum of 4' longer than the existing top of bank width. 16' long mud mats shall be constructed with minimum 8" W x 8" H hardwood timbers. Mud mats that are longer than 16' shall be constructed with minimum 12" W x 12" H hardwood timbers. Mud mats shall have no gaps between the timbers. All mud mats shall be 4' in width.

Measurement and Payment

Temporary timber mat stream crossings shall be paid per each structure installed and accepted by the Engineer in the field.

Such price and payment will be full compensation for all work covered for temporary timber mat stream crossings, including but not limited to all labor, machinery, maintenance, hauling, preparation, and installation to complete the work in an acceptable manner. Logs and timber will be considered incidental to temporary timber mat stream crossing installation.

Payment will be made under:

Bid Item	Pay Item	Pay Unit
6	Temporary Stream Crossing – Timber Mat	Each (EA)

3.7 Pump-Around System

Description

The work for the pump-around system shall consist of maintaining stream flow through the Site, isolating work areas from stream flow and dewatering the work areas in accordance with the Plans and Specifications, or as directed by the Engineer. In-stream work shall be performed in the dry using pump-around methods as needed. The work covered by this section consists of furnishing, installing, maintaining, and removing any and all temporary pump-around operations used on this project to facilitate stream restoration construction or bridge crossing installation.

Construction Methods and Materials

Refer to the pump-around system detail in the Plans. The pump-around pump assembly, utilizing one or more pumps, shall have a capacity sufficient to convey the normal stream flow. The Contractor shall determine the required pumping capacity and select the appropriate, reliable, sufficient equipment to accomplish the diversion, including all necessary intake and discharge hoses, couplings, intake screens, filters, ventures, suction lines and so forth.

The pump-around operation shall provide a passageway for the stream flow around portions of the work Site where construction of the channel is occurring. Pumping shall be maintained such that sediment laden water does not enter the downstream watercourse outside of the active work zone. During anticipated larger storm events, channel construction areas shall be stabilized to reduce erosion. Pumping shall continue until construction and stabilization of the channel banks and in-stream structures is completed in an active work zone. Pumping activities may be removed at the end of each workday at the discretion of the Engineer.

Refer to the Plans for pump-around details. The pump-around system shall be operational at all times during the periods of in-stream work. The sequence of construction, including the utilization of pump-arounds, shall be provided by the Contractor, and approved by the Engineer prior to construction. The Contractor’s project schedule shall address maintenance of stream flow and dewatering practices. The Contractor is advised to address all permit requirements and restrictions, or any revisions thereto, in the project schedule. Modifications to the pump-around system application during construction are permitted with prior approval from the Engineer. No time extension will be granted for work shutdown due to pumping equipment inadequacy, malfunction, or disrepair.

Flow will be maintained in the existing channels of East Prong Hunting Creek and Fiddlers Run to the extent practical, however a pump around shall be utilized to work in dry conditions once channel excavation can no longer occur offline. The contractor should only begin work in an area which can be completed by the end of the day. At the end of each workday, the work area must be stabilized and the pump around removed from the channel. Sandbag dikes should be situated at the upstream and downstream ends of the work area, and stream flow should be pumped around the work area. The pump should discharge onto a stable velocity dissipater made of sandbags or other approved material. Water from the work area should be pumped to a sediment filtering measure such as a dewatering basin, sediment bag, or other approved source. The measure should be located such that the water drains back into the channel below the downstream sandbag dike. After an area is completed and stabilized, the clean water dike should be removed. After the first sediment flush, a new clean water dike should be established upstream from the old sediment dike. Finally, upon establishment of a new sediment dike

below the old one, the old sediment dike should be removed. The pump around system for both streams shall be implemented in a similar fashion as described herein.

Measurement and Payment

Materials and equipment necessary for pump-around systems will be considered incidental to Grading and no separate measurement or payment will be made.

3.8 Turbidity Curtain

Description

This work consists of furnishing and installing turbidity curtains to reduce downstream turbidity and sedimentation.

Construction Methods and Materials

The turbidity curtain shall be installed at the downstream limits of Site disturbance according to manufacturer's instructions and as shown on the Contract Documents. The turbidity curtain should intercept all stream flow that contacts the work zone or displays increased turbidity related to construction activities. The curtain should be inspected, maintained, and adjusted daily to ensure proper function. The curtain should remain in the stream as long as non-stabilized work zones exist within the project area and until project completion.

The turbidity curtain shall be suitable for use in moving water and installed according to manufacturer's recommendations and the Contractor shall provide an appropriate turbidity curtain and anchor system. The Contractor shall provide all personnel required to adequately position, install and maintain the turbidity curtain until the project is complete. Provide floating turbidity barrier meeting the following minimum requirements:

- Fabric – Polyester Reinforced Vinyl 18 oz/yd²
- Flotation – 13 lbs/ft
- Rope Retainer – 5/8 inch Polypropylene
- Grommets #4 Brass #4 Brass #4 Brass
- Seams Heat Welded
- Bottom Load Chain – 0.63 lbs/ft (min) (1/4 inch, galvanized)
- Connecting Hardware – Galvanized Steel

Measurement and Payment

All work completed under this section will be measured and paid for as a lump sum for turbidity curtain. The payment schedule for this item will be 50% upon mobilization of equipment and materials to the Site, and 50% upon completion of demobilization and removal of all equipment and excess materials from the Site at project completion. This work includes materials, labor, and equipment required by the above specification. Payment will be made under:

Payment will be made under:

Bid Item	Pay Item	Pay Unit
7	Turbidity Curtain	Lump Sum (LS)

4.0 Demolition

4.1 Site Demolition

Description

This work consists of the demolition and removal of all existing structures and disconnecting, capping or sealing, and removing utilities from the Site according to the Contract Documents and as directed by the Engineer. The quantity of existing structures to be demolished may be increased, decreased, or eliminated entirely as directed by the Engineer. Such variations in quantity will not be considered as alterations in the details of construction or a change in the character of the work.

This City is responsible for demolition of park infrastructure including, but not limited to, the existing asphalt trail, dog park fencing and structures, disc golf baskets and structures and field light poles including de-energizing of the subsurface utilities. The City will also fell all trees identified to be removed on the plans, to the maximum extent practicable given their equipment capacity and access to wetter areas of the site.

The Contractor is responsible for removal and demolition of the two (2) existing pedestrian bridges on the site. The Contractor is responsible for the demolition and removal of the existing dual 60" culverts at the southern end of the parking lot along East Prong Hunting Creek. The Contractor is responsible for stockpiling, limbing and cutting to length of the felled trees for reuse as in-stream structures. See Section 5.2 for details on tree work.

Demolition Methods and Materials

The Contractor is responsible for contacting NC-811 to verify the location of any utilities within the proximity of the demolition area prior to initiating any demolition activities. The City will locate, identify, disconnect and seal or cap off indicated utilities serving buildings and structures to be demolished. Contractor shall coordinate with the City to arrange for the shut off of existing utilities.

Hazardous materials are defined as asbestos, petroleum storage tanks or other material that could pose an environmental risk in the event of damage or misuse. The Contractor shall take care during the course of the demolition to identify any potential hazardous materials that are encountered. If hazardous materials are identified, demolition activities shall cease immediately, and the location of the hazardous materials reported to the Engineer. The Engineer will notify the Owner and a proper course of protection and action shall be determined prior to resumption of demolition activities. No hazardous material has been identified on site. However, this must be verified by the Contractor prior to and during demolition activities. Hazardous material removal/disposal is not included as part of site demolition. If encountered, Contractor shall notify Owner and Engineer to determine appropriate means and methods of disposal.

Abandon existing utilities and below-grade utility structures as noted on the plans. Where de-energized utility lines are encountered during grading activities, they should be removed to a minimum distance of 5' from the proposed finish grade, or a minimum of 12" below finish grade. Remove demolition waste materials from the Site and legally dispose of them in an approved landfill acceptable to authorities having jurisdiction.

Measurement and Payment

All work completed under this section will be measured and paid for as a lump sum for Site Demolition. This work includes mobilization, materials, labor, and equipment required by the above specification. The payment schedule for this item will be 100% upon completion of structure demolition and utility removal accepted by the Engineer.

Payment will be made under:

Bid Item	Pay Item	Pay Unit
8	Site Demolition	Lump Sum (LS)

5.0 Earthwork

5.1 Grading

Description

This work involves the excavation of floodplains, floodplain benches, new channels, bioswale and bioretention areas, placement of fill in the abandoned channel, construction of stormwater conveyance features, designated stockpiles, proposed walking trail sub-grade, and permanent fill locations. The Contractor shall perform excavation and grading as necessary to attain final surface elevations along the stream corridor, within the bench extents, and within Bethel Park as shown on the Plans.

Construction Methods

All work shall be completed in accordance with the Plans and Specifications and NCDOT Standard Specifications for Roads and Structures, including but not limited to sections 225 (Roadway Excavation), 230 (Borrow Excavation) and 235 (Embankments).

Site Grading

The Contractor shall perform grading as necessary to attain final surface elevations as shown on the Plans. Field modifications shall be approved by the Engineer. Final elevations for channel grade and stream dimensions shall be within a vertical tolerance of +/- 0.1 feet (1.2-inches) and a horizontal tolerance of +/- 0.2 feet (2.4-inches). Final floodplain grades shall be within a vertical tolerance of +/- 0.2 feet (2.4-inches) and a horizontal tolerance of +/- 0.4 feet (4.8-inches). Sensitive areas to be protected, as noted in the Plans, include existing wetlands designated for avoidance. Damage to these areas will be the Contractor's responsibility for re-establishment.

Bedrock Excavation

The Contractor shall immediately notify the Engineer if bedrock is encountered on the Site that impedes the Contractor from achieving finish grade as identified in the Contract Documents. Where possible, the Engineer will work with the Contractor to adjust channel or floodplain grades to avoid bedrock. Channel realignment or finish grade amendments for the purposes of bedrock avoidance will be considered incidental to grading and no additional pay item will be allowable. Where, as determined by the Engineer, bedrock excavation is unavoidable in the channel or floodplain, a rock hammer shall be used in place of blasting to remove bedrock. Bedrock is defined as native material that cannot be excavated with a large track-mounted excavator equipped with rock teeth. Isolated boulders that can be moved with a large track-mounted excavator do not qualify as bedrock. Bedrock excavation approved by the Engineer will be paid at the bedrock unit price included with the Contractor's bid.

Channel Construction

In areas where channels are to be constructed or old channel areas are to be filled, the Contractor shall comply with the requirements of Subarticle 235-4(C) of the NCDOT Standard Specifications for Roads and Structures to obtain a minimum 95% compaction rate. Lift thickness shall not exceed 12" and compaction shall be achieved by use of mechanical compaction equipment. Organic material shall not exceed 10% of the total volume of the fill material used. No compaction shall be performed for graded areas unless directed by Engineer.

Channel banks will be graded evenly and smoothly at the slopes and dimensions indicated on the Plans. The top of slopes and embankments will match surrounding adjacent grade such that after compaction and settlement, grades will be at proper elevation. The Contractor will be required to address any settlement that occurs prior to final project approval by the Engineer. Existing drainage patterns should remain unchanged on the adjacent floodplain, unless otherwise noted in the Plans.

Trail Grading

The Contractor shall grade the proposed walking trail to the elevations and dimensions as shown on the Plans using Select Material as approved by the Engineer. The Select Material must be free of rock or organic material. The Contractor shall comply with the requirements of Subarticle 235-4(C) of the NCDOT Standard Specifications for Roads and Structures to obtain a minimum 95% compaction rate. Compaction shall be achieved by use of mechanical compaction equipment.

Topsoil Harvesting

Topsoil harvesting and reuse shall be at the discretion of the Engineer based on Site conditions and project value. The Contractor shall only harvest and reuse topsoil as directed by the Engineer. Topsoil shall be obtained in areas that are already being graded or disturbed, stockpiled for reuse and reapplied. Topsoil may not always be encountered at the ground surface but may have been buried by prior Site activities. Buried topsoil may be required to be harvested if the same soil is already being excavated and relocated as part of grading activities. Harvesting of topsoil outside of the project area as shown on the Plans is prohibited. Topsoil shall be reapplied within stream corridors, and within other disturbed areas as directed by Engineer. Topsoil shall be incorporated

into the top 6" of the soil column and tamped to create a loose yet firm structure. Stream corridors shall be all areas within the excavated floodplain bench area. Topsoil shall be harvested to the depth deemed appropriate in the field (by Engineer) and shall be reapplied to a depth of 2-4" as determined by availability of harvested material. The Engineer shall determine the reapplication depth upon completion of harvesting activities in each work area.

Channel Plugs

Channel plugs shall follow the detail in the Plans. Channel plugs shall be installed at all locations identified in the Plans, and as directed by the Engineer, to prevent flow from returning to the existing channel to be abandoned. Channel plugs shall be constructed with material consisting of clay, clay loam or sandy clay loam, and must be free of rock and organic material. The material to be used for channel plug construction must be approved by the Engineer prior to construction of each channel plug. The Contractor shall comply with the requirements of Section 235-3 (C) of 2018 NCDOT Standard Specifications for Roads and Structures to obtain a minimum 95% compaction rate. Lift thickness shall not exceed 12" and compaction shall be achieved by use of mechanical compaction equipment. Along the proposed channel, the channel plug side slope shall conform to the side slopes specified in the Plans. Along the abandoned channel, the channel plug side slope shall not exceed 1:1 (H:V). Channel plugs shall have a minimum length of 40 linear feet (LF) along the abandoned channel, unless otherwise directed by Engineer, a width that is equal to the top width of the abandoned channel and a depth that is equal to the depth of the abandoned channel. The channel plug near the tie in of East Prong Hunting Creek shall be 80 LF along the abandoned channel.

Measurement and Payment

All work completed under this Specification will be measured as lump sum for grading, and paid based on the percent approved, completed, and accepted by the Engineer. The payment schedule for grading will be based on the percent of grading completed at the end of each month. The Contractor is required to submit a certified statement at the end of each month that documents the percent grading completed during a given month.

The quantity of earthwork may be increased or decreased due to field adjustments to grading limits as directed by the Engineer. Such variations in quantity will not be considered as alterations in the details of construction or a change in the character of the work. No separate or additional payment or credit is due if the amount of cumulative increase or decrease from one or multiple field adjustments is less than 10% of the total earthwork quantity. Measurement and contract adjustments for cumulative increases or decreases greater than 10% of the total earthwork quantity will be negotiated on a case-by-case basis. The burden of proof is on the Contractor for quantity increases exceeding 10%; the burden of proof is on the Engineer for quantity decreases exceeding 10%.

The above prices and payments will be full compensation for all work covered by this Specification including, but not limited to, accessing the Site, channel bank excavation, channel realignment, over-excavating unsuitable materials, placing and compacting select material, backfilling undercut areas, constructing embankments in eroded areas, channel bank sloping and hauling of suitable and/or unsuitable excavated material to a location approved by the Engineer for disposal.

Payment will be made under:

Bid Item	Pay Item	Pay Unit
9	Grading	Lump Sum (LS)
Alt 2	Bedrock Excavation	Cubic Yard (CY)
Alt 3	Topsoil Harvesting	Cubic Yard (CY)

5.2 Tree Removal

Description

The work under this specification consists of the removal, clearing, and disposal of trees from the project area that are denoted on the Contract Documents or specified by the Engineer in the field. Trees shall not be removed

without the final approval of the Engineer in the field. All materials that will be reused on the Site shall be removed, preserved, and protected in a manner to facilitate reuse. Removal and subsequent handling of organic materials shall be referred to as clearing and grubbing.

The City is responsible for cutting all trees identified on the plans for removal, to the maximum extent practicable. The Contractor is responsible for moving the felled trees to the stockpile areas identified on the plans, limbing the trees and cutting them to appropriate lengths for reuse as in-stream structures in accordance with the Plans. Stumps located in the proposed stream alignment shall be removed by the Contractor. Stumps outside of the proposed alignment may remain within the floodplain as woody debris. The Contractor is responsible for cutting stumps to remain to lower height, as directed by the Engineer, to reduce floodplain and erosion impacts.

All woody debris shall remain on site and used as in-stream or floodplain structures as identified on the plans. Any remaining vegetation shall be chipped by the Contractor and used as topdressing for bioretention areas or stockpiled for use by the City.

Construction Methods and Materials

Refer to the Plans for the identification of trees to be removed. All tree removals (even those already marked on the Plans) shall be approved by the Engineer in the field. Removal of trees with a Diameter at Breast Height (DBH) of less than 12" and brush from the Site are considered incidental to Grading. Mark trees proposed on the Contract Documents for removal and review with the Engineer to verify that removal is necessary. Do not damage or remove trees 12" or larger without approval of the Engineer. Harvested trees with a DBH of 12" or greater may be reused on-site for the construction of in-stream structures at the discretion of the Engineer. All trees to remain that need to be trimmed must be neatly trimmed using accepted industry standards for pruning. The Contractor is responsible for relocation and trimming of felled trees by the City.

Removed trees, vegetative material, and excess soil shall be disposed of in a manner that complies with the Clearing, Grubbing, and Debris Removal specification outlined in Section 5.3.

Measurement and Payment

Tree removal is anticipated to be completed by the City. However, it is possible that the City may not be able to reach all trees to be removed, and additional tree removal may be required. Tree removal for the Contractor is estimated to be the relocation and trimming of approximately 80 felled trees. The Contractor shall consider the potential for removal of up to 10 additional trees. Tree removal is to be paid on a lump sum basis for the relocation, limbing and trimming of approximately 80 trees, the removal of up to an additional 10 trees 12" DBH or greater, stump removal (as directed by the Engineer), chipping of excess woody material, and the trimming of stumps at the discretion of the Engineer and shall be paid on a lump sum basis. Such payment shall be considered full compensation for the items of work, including the cost of furnishing all materials, moving material within the Site, labor, equipment, tools, and incidentals required.

Payment will be made under:

Bid Item	Pay Item	Pay Unit
10	Tree Removal	Lump Sum (LS)

5.3 Clearing, Grubbing and Debris Removal

Description

The work under this specification consists of clearing, grubbing and disposal of organics (trees, snags, logs, brush, stumps, root mass, shrubs) from the project area as identified on the Plans. All materials that will be re-used on the Site shall be removed, preserved, and protected in a manner to facilitate reuse.

Removal and subsequent handling of organic materials (live or dead plant material), debris, and trash within the limits of disturbance shall be referred to as clearing and grubbing. Areas identified by the Engineer as having

suitable herbaceous species for juncus, woody material or transplants shall be protected from clearing and grubbing or other activities under this specification until they can be harvested and transplanted. This Specification also covers harvesting on-site stone and other materials that are necessary for the construction of the project and are not identified in subsequent Specifications of this document. Excess material shall be disposed of as shown on the Plans or as directed by the Engineer. No suitable materials shall be removed from the Site unless specifically approved by the Engineer. The Contractor is responsible for obtaining all appropriate permits for off-site disposal locations from NCDEQ and other applicable agencies.

Construction Methods

Refer to Section 200, NCDOT Standard Specifications for Roads and Structures. Refer to the limits of disturbance depicted on the Plans for limits of clearing and grubbing. The Contractor shall minimize land disturbance and the removal of clusters of trees within the limits of disturbance to the extent practical. Safety fence shall be utilized to protect trees as identified in the Plans and Section 3.2 of these Specifications. The Engineer may identify additional areas to avoid land disturbance than are identified in the Plans. The Contractor is responsible for complying with all applicable local, state, or federal regulations for off-site disposal of materials. Burning of materials not suitable for in-stream structures is prohibited. Excess woody materials that cannot be utilized for structures as shown on the Plans shall be chipped or otherwise reused on site at the discretion of the Owner and Engineer.

Grubbing and debris removal includes all trash and old structures found in the project area to be removed as specified in the Plans or directed by the Engineer; including, but not limited to: bridges, pipe, fencing, concrete material, asphalt, plastics and household appliances. Trees, understory brush and woody debris will be removed and stockpiled for on-site use at the direction of the Engineer and as noted in the Plans.

Burial of materials generated by clearing, grubbing and debris removal is prohibited, unless otherwise approved by the Engineer. Wood and soil not used in the construction of the project shall be disposed of on-site per the Engineer's direction. Crushed concrete, asphalt, pipe, metal, fencing and other inorganic debris shall be disposed of off-site at the Contractor's expense and at the direction of the Owner. Metal should be recycled when metal recycling facilities exist within the same County as the project Site, or within a distance of 25 miles, unless otherwise directed by the Engineer.

All hardwood trees with a 12" diameter at breast height (DBH) or larger will be stockpiled for use on in-stream structures on Site. Tree trunks that can be utilized for construction of project features will be protected from damage during removal, transport, and storage. No materials suitable for use in project features (such as brush for use in brush toe or brush riffles, tree trunks for use in log structures, etc.) will be removed from the Site without Engineer's approval. Removal of trees and brush from the Site will not be paid for and shall be incidental to mobilization and demobilization. The Contractor shall not damage or remove trees with a DBH larger than 12" without the consent of the Engineer except for those that must be removed for construction of the proposed stream channel as shown on the Plans.

Stone encountered during grading and demolition shall be stockpiled for reuse, at the discretion of the Engineer, to the extent that it is free of trash, debris, and waste asphalt. Stone containing any of these materials may not be utilized in the stream. The Engineer may reject harvested stone if unsuitable materials are mixed with stone. The Contractor shall harvest stone from the existing channels to the maximum extent practicable, prior to backfilling the existing channel. Harvested stone will be utilized for riffle construction.

Measurement and Payment

All work completed under this Specification shall be considered incidental to grading (Specification 5.1); therefore, no separate pay item for this work is provided.

6.0 Materials

6.1 Stone

Description

This work consists of furnishing and stockpiling approved stone used to construct in-stream structures, stream crossings and for use in other locations as directed by the Engineer. Boulders and stone shall be harvested on site whenever possible and shall conform to the size requirements specified below. There is likely some stone on site for use in in-stream structures; however, structures requiring additional stone or larger boulders will likely require materials to be imported. This stone harvest area is located in the existing stream bed of Fiddlers Run. Stone harvested on-site is preferred. If imported rock is necessary, it shall be mixed with available on-site rock to achieve a heterogeneous mixture.

All rock used for in-stream structures shall be clean and free of trash and debris. Native rock encountered during channel excavation shall be identified and stockpiled for use as rock for in-stream structures. The Contractor may supplement native rock with imported rock that resembles the rock found on-site. Rip rap or other non-native gravel aggregates may be utilized as sub-grade material, unless otherwise identified on the Contract Documents. Rock utilized as top dressing, as identified in the Contract Documents, must consist of on-site native rock or similar imported material. Riprap is not permissible as top dressing. The Contractor shall refer to the Contract Documents specific to each in-stream structure for rock sizing requirements. The Engineer shall approve all rock prior to use in in-stream structures to ensure conformity. The Contractor shall discard Engineer-rejected rock from the work zone and replace with suitable material at no additional cost to the Owner. Rejected rock may be disposed of on-site as directed by the Engineer.

The quantity of stone to be installed will be influenced by actual field conditions that occur during the construction of the project. The quantity of stone may be increased, decreased, or eliminated entirely as directed by the Engineer. Such variations in quantity will not be considered as alterations in the details of construction or a change in the character of the work.

Construction Methods and Materials

Refer to the NCDOT Standard Specifications for Roads and Structures, Divisions 5 and 10 and the sections listed below. In addition, all Stone shall be composed of clean, tough, durable fragments free of organic matter or fines.

Item	Section
No. 57 Stone and ABC	1005
Riprap Class A, B, 1 and 2	1042

Aggregates, including #57 stone and ABC, shall be obtained from sources participating in the NCDOT Aggregate QC/QA Program. Aggregates shall consist of rock that meets the gradations listed in the table below.

Aggregate Gradation (% of total weight passing)								
Standard Size	1-1/2"	1"	1/2"	#4	#8	#10	#40	#200
#57	100	95-100	25-60	0-10	0-5	-	-	-
ABC	100	75-97	55-80	35-55	-	25-45	14-30	4-12

Use field stone or rough unhewn stone meeting the sizes listed in the table below for riprap. Stone of a specified class shall have an equal distribution of various sizes of stone within the required size range. No more than 5% of the material furnished can be less than the minimum size specified and no more than 10% of the material can exceed the maximum size specified. Stone shall be sound, tough, dense, resistant to the action of air and water and free of organic debris and trash. Broken concrete or other rubble shall not be used as stone material for any part of this project. A sample of the stone to be used for each class shall be submitted to the Engineer for approval prior to its use on site.

Riprap Stone Sizes (inches)			
Class	Minimum	Midrange	Maximum
A	2	4	6
B	5	8	12
1	5	10	17
2	9	14	23

Boulders shall be sized to have minimum dimensions as indicated on the Plans, shall be relatively flat on either side in the same dimension, preferably the long dimension, and shall be harvested on-site if possible. The Contractor shall place stone in locations and to the thickness, widths, and lengths as shown on the Plans or as directed by the Engineer. All stone shall be placed neatly and uniformly with an even surface in accordance with the Plans and approved by the Engineer.

Measurement and Payment

Measurement and payment for stone and boulders used in in-stream structures will be incidental to in-stream structures as described in Section 7.0 of these Specifications. Measurement and payment for stone and boulders used in erosion and sediment control features will be incidental to the erosion control structures as described in Section 3.0 of these Specifications.

Such price and payment will be full compensation for all work covered by this section, including but not limited to furnishing, weighing, stockpiling, handling, and installation of imported stone not available on site.

Should additional stone or boulders be required by the Engineer above the scope of the Plans and Specifications, the quantity to be measured for payment will be the actual tons of stone delivered and accepted by the Engineer. This payment will be considered full compensation for all labor, equipment, and any related expenses.

Payment will be made under:

Bid Item	Pay Item	Pay Unit
Alt 4	Misc. Boulders	Tons (TONS)
Alt 5	Misc. Gravel - #57 Stone	Tons (TONS)
Alt 6	Misc. Class ABC	Tons (TONS)
Alt 7	Misc. Class A Stone	Tons (TONS)
Alt 8	Misc. Class B Stone	Tons (TONS)
Alt 9	Misc. Class 1 Stone	Tons (TONS)
Alt 10	Misc. Class 2 Stone	Tons (TONS)

6.2 Filter Fabric

Description

This work consists of furnishing and installing filter fabric as shown on the Plans. Filter fabric is used for stabilization, reinforcement, erosion control and filtration for in-stream structures.

The quantity of filter fabric to be installed will be influenced by the actual conditions that occur during the construction of the project. The quantity of filter fabric may be increased, decreased, or eliminated entirely as directed. Such variations in quantity will not be considered as alterations in the details of construction or a change in the character of the work.

Materials

Refer to Section 1056 for Type 2 Filter Fabric in the NCDOT Standard Specifications for Roads and Structures. All filter fabric used in log structures shall be woven. All filter fabric used in rock structures shall be non-woven. Filter fabric shall meet the requirements listed in the table below. The Engineer shall visually inspect and verify the filter fabric to be used prior to its installation. The product name or label shall be attached to the filter fabric while stockpiled on site to allow for efficient verification of filter fabric properties by the Engineer. Filter fabric

with defects, flaws, deterioration, or damage will be rejected.

Filter Fabric Requirements	
Property	Requirement (MARV)
Elongation (MD & CD)	>50%
Grab Strength (MD & CD)	AASHTO M 288 Table 1 Class 1
Tear Strength (MD & CD)	
Puncture Strength	
Permittivity	AASHTO M 288 Table 6
Apparent Opening Size	
UV Stability (Retained Strength)	15% to 50% in Situ Soil Passing 0.075 mm

Construction Methods

The Contractor shall install filter fabric in locations and to the widths and lengths as shown on the Plans, or as directed by the Engineer.

Measurement and Payment

Measurement and payment for filter fabric used in in-stream structures will be incidental to in-stream structures as described in Section 7.0 of these Specifications. Measurement and payment for filter fabric used erosion and sediment control features will be incidental to the erosion control structures as described in Section 3.0 of these Specifications.

6.3 Logs

Description

Logs used for in-stream structures shall be harvested on site or supplied by the Contractor. Native hardwood trees encountered during clearing and grubbing shall be identified and stockpiled for use as logs in in-stream structures. All logs should be recently harvested and relatively straight hardwood species, unless otherwise approved by the Engineer. Preservative treated logs or split logs are not acceptable. Use of old logs for in-stream structures, either dead or harvested prior to Site mobilization activities, is prohibited. Logs shall be free of soil and debris prior to installation.

All logs used for in-stream structures must have a minimum 12" DBH, or as noted, per the Plans. The required lengths for each type of in-stream structure are detailed on the Plans. Remaining smaller logs may be utilized in floodplain sills at the discretion of the Engineer.

Nails used to secure filter fabric to log structures will be 3" 10d galvanized nails or standard 3" roofing nails.

Measurement and Payment

Measurement and payment for logs used in in-stream structures will be incidental to individual in-stream structures. The quantity of logs to be installed will be impacted by the actual conditions that occur during the construction of the project. The quantity of logs may be increased or decreased as directed by the Engineer. Such variations in quantity will not be considered as alterations in the details of construction or a change in the character of the work.

6.4 Brush and Woody Debris

Description

Woody debris shall consist of 3" to 6" diameter woody branches and logs generated on site, which are free of decay and disease. Woody debris shall be hardwood and free from invasive species. The required lengths for woody debris are detailed on the Plans. Split branches or damaged logs are not acceptable for reuse, unless otherwise approved by the Engineer. Woody debris shall be free of soil and debris prior to installation.

Brush consists of larger and smaller woody branches. Branches will be a minimum of five feet in length. Larger branches will have a minimum 3" diameter stem while smaller branches will have a minimum 1" diameter stem. Branches will be hardwood and free of decay or invasive species. Split branches are not acceptable.

Live cuttings consist of live branches cut from healthy, dormant parent plants which are properly adapted to the Site conditions. It is ideal to harvest material for brush toes from on-site plants whenever possible. Live, woody branches no greater than 1" in diameter and between 5 to 10 feet in length shall be used for brush toes. Brush toe material shall be harvested from the same species identified in the live staking plant list or they should be otherwise approved by the Engineer.

Measurement and Payment

Measurement and payment for brush and woody debris is incidental to in-stream structures. The quantity of brush and woody debris to be installed will be influenced by the actual conditions that occur during the construction of the project. The quantity of brush and woody debris may be increased or decreased as directed by the Engineer. Such variations in quantity will not be considered as alterations in the details of construction or a change in the character of the work.

7.0 In-Stream Structures

Description

The work covered by this Specification consists of the construction of wood and/or boulder or rock structures placed in and along the stream at locations designated on the Plans to provide bank stability and in-stream habitat. The quantity of wood and/or boulder or rock structures to be installed will be affected by the actual conditions that occur during the construction of the project. The quantity of structures may be increased, decreased, or eliminated entirely as directed by the Engineer. Measurement and payment for changes to the quantity of in-stream structures is defined in each individual section below.

In-stream structures consist of the following grade control structures: constructed riffle (CR-CR), angled log riffle (CR-ALR), chunky riffle (CR-CH), log sills, log j-hooks, and a w-weir. Other in-stream structures include brush toe and crayfish glides. Footer rocks or logs used in in-stream structures shall extend inward toward the center of the channel, past the header rocks or logs so that the footers act as a splash rock or log. The elevation tolerance for in-stream structures will be +/-0.1 ft across the entire structure.

Materials

All materials used in in-stream structures shall comply with criteria outlined in Specification 6.0 and 7.0 of these Specifications. The Engineer shall approve all materials prior to use in in-stream structures to ensure conformity. The Contractor shall remove Engineer-rejected materials from the Site and replace at no additional cost.

7.1 Log Sill

Description

This work consists of constructing log sill structures in sections of channel as indicated on the Plans and as directed by the Engineer. Log sills involve constructing log structures in and along the stream at locations designated on the Plans to direct stream flow and to provide grade control.

Construction Methods and Materials

Log sills shall be constructed using the materials listed in the table below having properties consistent with those detailed in Section 6.0 of these Specifications. Logs shall be long enough to be embedded into both banks a minimum of 5 ft beyond toe of slope, or to bankfull, whichever is greater as directed by the Engineer. The backfill material for log sills shall be consistent with the type of riffle that is adjacent to the log sill in the Plans. Riprap is suitable for backfill in the subpavement layer. Top 4" of backfill shall be native or imported cobble material.

Structure	Material	Section
Log Sill	Filter Fabric	6.2

	Logs	6.3
	Nails	6.3

Log sills shall be constructed according to the Plans or as directed by the Engineer. Excavate a trench along the stream bed and bank to allow for a minimum one footer log and one header log. The trench shall be wide enough to allow the logs to be embedded into each bank to bankfull, long enough to allow for filter fabric to be buried a minimum of 5 ft upstream from the header log, and deep enough to facilitate a sill elevation that corresponds with the Plans. Typical minimum log lengths for East Prong Hunting Creek structures shall be a minimum of 35 feet and for Fiddler’s Run a minimum of 25 feet, both at a minimum of 24” in diameter. Place the filter fabric along the base of the trench with enough excess material to cover the face of the footer log and header log. Place the footer log at the downstream extent of the trench, pull the excess filter fabric over the footer log, and backfill the trench with sufficient riffle material to meet the top of the footer log. Lay the excess filter fabric back over top of the backfilled material and place the header log on top of the footer log at a 0.25-0.5 ft upstream offset. Pull the excess filter fabric across the upstream side of the header log and secure the fabric to the header log using roofing nails at a minimum offset of 12”. Secure the roofing nails approximately 4” below the top of the footer log to ensure they are not exposed when the trench is backfilled. Backfill the trench with the appropriate riffle material to the proposed grades shown on the Plans and trim any exposed filter fabric.

Measurement and Payment

Log sills shall be paid per each structure installed and accepted by the Engineer. Such price and payment shall be full compensation for the items of work, including the cost for furnishing all materials, labor, equipment, tools and incidentals required by the above specification.

Payment will be made under:

Bid Item	Pay Item	Pay Unit
11	Log Sill	Each (EA)

7.2 Log J-Hook

Description

The work covered by this section consists of the construction of log j-hooks placed in and along the stream at locations designated on the Plans to reduce water velocity and direct stream flow away from the bank.

Construction Methods and Materials

Logs used for log j-hooks shall be harvested on site or supplied by the Contractor and shall be a minimum of 12” in diameter (see construction methods below) and of appropriate length to be embedded in each bank a minimum of 12’ as shown on the Contract Documents. Refer to Section 6.0 of this document for filter fabric. Boulders used for log j-hooks shall be harvested on site or supplied by the Contractor and shall be a minimum of 4’ L x 3’ W x 2’ H.

Log j-hooks shall be constructed according to the log j-hook detail as shown on the Contract Documents or as directed by the Engineer. Excavate a trench along the stream bed and bank to allow for a minimum one footer log and one header log to be placed at a 25° angle from the bank and a negative slope as shown in the Contract Documents. The trench shall be wide enough to allow the logs to be embedded into the bank a minimum of 12’, long enough to allow for filter fabric to be buried a minimum of 5’ upstream from the header log, and deep enough to facilitate a vane elevation that corresponds with the Contract Documents. Place the filter fabric along the base of the trench with enough excess material to cover the face of the footer log and header log. Place the footer log at the downstream extent of the trench, pull the excess filter fabric over the footer log, and backfill the trench with sufficient native or imported rock (D50 = 2-4”) to meet the top of the footer log. Lay the excess filter fabric back over top of the backfilled material and place the header log on top of the footer log at a 0.25-0.5’ upstream offset. Pull the excess filter fabric across the upstream side of the header log and secure the fabric to the header log using roofing nails at a minimum offset of 12”. Secure the roofing nails approximately 4” below the top of the footer log to ensure they are not exposed when the trench is backfilled. Backfill the trench with

cobble/gravel bed material (D50 = 2-4") to the proposed grades shown on the Plans and trim any exposed filter fabric. Stabilize the log j-hook by placing a boulder (minimum 4' H x 3' W x 2' L) at each end of the header log as shown in the Contract Documents.

Starting from the upstream end of the header log, place footer boulders in an arching pattern toward the opposite stream bank as shown in the Contract Documents; continue placing footer boulders until the boulders are a minimum of 5' into the stream bank. There shall be no gaps or spaces between footer boulders. Place header boulders on top of the footer boulders to the elevations listed in the Contract Documents at a 0.25-0.5' upstream offset. Header boulders within the base flow channel shall be placed with 1-2' spaces between each subsequent boulder. Header boulders that are buried into the channel banks shall be placed with no spaces between each subsequent boulder.

Measurement and Payment

Log j-hooks shall be paid per each structure installed and accepted by the Engineer in the field. Such price and payment shall be full compensation for the items of work including cost for furnishing all materials, labor, equipment, tools, and incidentals required by the above specification.

Payment will be made under:

Bid Item	Pay Item	Pay Unit
12	Log J-Hook	Each (EA)

7.3 W-Weir

Description

The work covered by this section consists of collection, storage, preparation, and installation of all materials required for installation of a w-weir. W-weir structures are constructed to provide grade control at the confluence of two streams, reduce near bank shear stress, and enhance habitat for fish and benthic macroinvertebrates.

Construction Methods and Materials

W-weirs shall be constructed of angular, flat or cubed boulders with a minimum size of 4' x 3' x 2' (L x W x H). Rock should be of sufficient hardness to resist weathering and shall be free of cracks and other blemishes. Porous rock, such as some limestones, and soft rock, such as shales are not allowed. W-weirs shall be installed according to the Plans, the following specifications, and as directed in the field by the Engineer.

W-weirs shall be constructed with two (2) rock vanes on opposing sides of the stream channel forming the outside legs of the w-weirs and two opposing vanes in the center of the channel to complete the w-weir. w-weirs may be staggered, such that one leg of the w-weirs is offset either upstream or downstream of the opposite leg. The "w" shape is seen when viewing the w-weirs from upstream looking downstream.

The outside rock vane components shall extend to the streambed invert in an upstream direction forming the outside legs of the w-weir. The inside legs of the w-weir shall be constructed similar to a rock vane with the exception that the apex (joining point) of the inner legs is at the elevations as shown on the Plans. The w-weir shall be constructed so that adjoining rocks taper in an upstream direction (outside legs) from the bankfull elevation to the stream invert. The inside legs shall extend from the streambed invert in a downstream direction and shall be tapered to a point one-half (½) the bankfull elevation. The elevation of the apex of the w-weir may be adjusted as required or as directed by the Engineer. The upstream end of the outside legs of the w-weir is set at an angle of 20 -30 degrees tangent to the bank.

The downstream end of the outside legs of the w-weir shall be keyed into the streambank at the bankfull elevation. The w-weir shall be keyed a minimum of eight feet (8') into the streambank. The upstream end of the outside legs as well as the upstream end of the inside legs, will be keyed into the streambed at the invert elevation. The w-weir legs shall be installed with a slope of 4% to 7% from the streambed invert to the tie in

point along the bank. Footer rocks shall be installed as shown in the Plans and shall be firmly keyed into the streambed. All w-weir rocks shall be placed behind footers.

Rocks placed to construct the legs of the w-weir shall be placed in a linear fashion to produce a sloping surface. Rock shall be placed with a tight, continuous surface contact between adjoining rock. Rock shall be placed to have no significant gap between adjoining rock. Rock shall be placed to have a final smooth surface along the top plane of the w-weir. No rock shall protrude higher than the other rock in the w-weir leg. A completed w-weir has a smooth, continuous finish grade from the bankfull elevation to the streambed.

Measurement and Payment

W-weirs shall be paid per each structure installed and accepted by the Engineer in the field. Such price and payment shall be full compensation for the items of work including cost for furnishing all materials, labor, equipment, tools, and incidentals required by the above specification.

Payment will be made under:

Bid Item	Pay Item	Pay Unit
13	W-Weir	Each (EA)

7.4 Brush Toe

Description

The work covered by this section consists of collection, storage, preparation, and installation of all materials required for installation of brush toe protection. Brush toe structures are installed along the outer bends of pools as indicated in the Plans and are intended to stabilize the stream bank while providing cover and habitat for fish and benthic macroinvertebrates.

Construction Methods and Materials

Brush toe shall be constructed using the materials listed in the table below having properties consistent with those detailed in Section 3.0 and 6.0 of these Specifications. The backfill material for brush toe shall be Select Material consisting of clay, clay loam or sandy clay loam soil that is free of rock and organic debris.

Structure	Material	Section
Brush Toe	Erosion Control Matting	3.4
	Brush and Woody Debris	6.4

Brush toe protection will be constructed according to the brush toe detail shown on the Plans or as directed by the Engineer. Refer to the Plans for brush toe start station and length along streambank requirements. Over-excavate the stream bank to 5 ft outside bankfull and 0.5 ft below the thalweg. Place a dense layer of woody debris consisting of small branches and roots collected on site and backfill material to fill void spaces. Brush shall be aligned such that the stems are roughly parallel to one another and pointing slightly upstream. Lightly compact the woody debris layer. The top of the woody debris layer shall be at the elevation 1.0 ft above the downstream head of riffle invert elevation following compaction. Place coir matting over the woody debris layer according to the Plans. Place and compact fill material over the coir matting according to the slopes and dimensions in the typical sections. Seed, mulch and install coir matting to the top of bank as shown in the Plans.

Measurement and Payment

Brush toe protection shall be paid per linear foot measured along the bankfull elevation of the structure installed and accepted by the Engineer in the field. Such payment shall be considered full compensation for the items of work, including the cost for furnishing all materials, labor, equipment, tools and incidentals required to construct the brush toe protection.

Payment will be made under:

Bid Item	Pay Item	Pay Unit
14	Brush Toe	Linear Feet (LF)

7.5 Crayfish Glide

Description

The work covered by this section consists of constructing crayfish glide features for the purpose of providing habitat for native crayfish species in the constructed streams.

Construction Methods and Materials

Crayfish glides shall be constructed using selected slab rocks meeting 2' x 2' or 2' x 3' size requirements, or as approved by the Engineer. Slab rocks shall be a minimum 2-3".

All crayfish glides shall be constructed by stacking these selected slab rocks in the glide portion of the stream as located in the Plans. The Contractor shall place the stacks of slab rocks such that the current is swift enough to prevent sediment deposition under or on top of the slab rocks during a flood event. The Contractor shall target five larger stacked slab rock structures per specified glide as identified in the Plans. If larger rocks are unavailable, the Contractor may utilize ten to fifteen smaller slab rocks per structure as approved by the Engineer.

Measurement and Payment

Crayfish glides shall be paid per each glide where the specified number of structures are installed and accepted by the Engineer in the field. Such price and payment shall be full compensation for the items of work including cost for furnishing all materials, labor, equipment, tools, and incidentals required by the above specification.

Payment will be made under:

Bid Item	Pay Item	Pay Unit
15	Crayfish Glide	Each (EA)

7.6 Constructed Riffles

Description

The work covered by this section consists of the construction of various riffle types constructed with on-site or off-site rock and wood and any other materials indicated by details and Specifications. Riffles are installed once local channel excavation is complete.

Construction Methods and Materials

Riffles shall be constructed using the materials having properties consistent with those detailed in Section 6.0 of these Specifications. All riffle types shall be constructed according to the Plans, or as directed by the Engineer in the field. All materials shall be placed neatly and uniformly with an even surface in accordance with the Plans and shall meet the approval of the Engineer. All riffles shall have a low flow channel (thalweg) that does not concentrate flow against the toe of the bank in the form of 0.3'-0.5' V notch.

Native rock encountered during channel excavation shall be identified and stockpiled for use as rock for riffles. The Contractor may supplement native rock with imported rock that resembles the rock found on-site. Rip rap or other non-native gravel aggregates may be utilized as sub-grade material, unless otherwise identified on the Contract Documents. Rock utilized as top dressing (top 6"), as identified in the Contract Documents, must consist of on-site native rock or similar imported material. Riprap is not permissible as top dressing. The Contractor shall refer to the Contract Documents specific to each in-stream structure for rock sizing requirements. The Engineer shall approve all rock prior to use in in-stream structures to ensure conformity. The Contractor shall discard Engineer-rejected rock from the work zone and replace with suitable material at no additional cost to the Owner. Rejected rock may be disposed of on-site as directed by the Engineer.

Constructed Riffle (CR-CR)

Riffles consisting of primarily mixed stone of similar size and distribution of existing bed material. Existing channel substrate will be harvested and used to the extent practicable. Excavate the stream bed in the riffle section and backfill with the stone of the specified size to meet the minimum depth and final grades shown on the Plans.

Angled Log Riffle (CR-ALR)

Angled log riffles are constructed in a manner that incorporates angled logs in and along the stream at locations designated on the Plans, and as directed by the Engineer, to diversify the low flow path. If there is a lack of on-site logs to use in construction of this structure, boulders may be used in their place. Substitution of these materials is considered incidental to the cost of the structure and not considered a change in project scope or activities. Substitutions must be approved by Engineer.

To construct the angled log riffle, excavate the stream bed in riffle sections, place the log or boulder structures to diversify the low flow path, line log or boulder with appropriate filter fabric and then backfill with native stone of the specified size to meet the minimum depth and final grades shown on the Plans. Install logs/boulders with fabric in sequence, with armored glides that cover fabric and protect the log drops. Armored glide shall have a minimum thickness specified in detail at the abutment to log/boulder drops. Armored glides shall be tamped and compacted into place. All stone shall be placed neatly and uniformly with an even surface in accordance with the Plans and shall meet the approval of the Engineer. There shall be a minimum of four logs/boulder sills per structure. The low point of the first and last log in each angled log riffle shall be on the point bar side of the channel. Drops over each log/boulder sill shall not exceed 0.5 feet in height and drops shall be of approximately equal height to equal the total drop over the riffle as depicted on the profile.

Chunky Riffle (CR-CH)

Chunky riffles consist of large cobble/gravel bed material ($D_{50} = 6''$) and boulders (minimum 0.5' H x 1.0' W x 1.5' L). To construct a chunky riffle, over-excavate riffle bed as required to install larger rock, typically boulders. Place boulders in the channel at an irregular pattern such that at least 3 boulders occur every square yard within the chunky riffle according to the Contract Documents or as directed by the Engineer. Place riffle material to within 4" of the total required riffle depth and tamp to compact. Backfill with native sediment and fine sands to establish solid base substrate for placement of finish riffle material. Re-compact as necessary. This is intended to help lock the base substrate in place. It may be necessary to water the sediment in to ensure it mixes in with the base substrate. Place top 4" of riffle material over the base substrate to meet final riffle design per the structure table and the profile. After rock placement is complete, tamp a meandering low flow channel through the riffle substrate. Keep the low flow channel away from the toe of slope.

Measurement and Payment

Constructed riffles shall be paid per linear foot measured along the thalweg of the structure installed and accepted by the Engineer. Such price and payment shall be full compensation for the items of work, including the cost for furnishing all materials including on-site harvest of stone and wood, labor, equipment, tools, and incidentals required by the above specification.

Payment will be made under:

Bid Item	Pay Item	Pay Unit
16	Constructed Riffle (CR-CR)	Linear Feet (LF)
17	Angled Log Riffle (CR-ALR)	Linear Feet (LF)
18	Chunky Riffle (CR-CH)	Linear Feet (LF)

7.7 Floodplain Sill

Description

The work covered by this section consists of the construction of floodplain sill structures placed perpendicular to flow across a floodplain for the purpose of reducing water velocities on the floodplain and preventing concentrated flow paths.

Materials

Refer to Section 6.0 for the material specification for logs.

Construction Methods

Floodplain sills shall be constructed at locations shown on the Plans or as adjusted by the Engineer in the field. A trench shall be dug wide enough and deep enough to place the 8" to 12" diameter logs and 4" of cover soil over the log. Each log shall overlap others by a minimum of 12 inches. Logs should be embedded 5 feet into the valley wall.

Measurement and Payment

The contractor shall provide all labor, materials and equipment required to harvest and install the floodplain sill. Floodplain sills will be paid on a linear foot basis. Such payment shall be considered full compensation for the items of work including the cost for furnishing all materials, labor, equipment, tools, and incidentals required to construct the floodplain sill.

Payment will be made under:

Bid Item	Pay Item	Pay Unit
19	Floodplain Sill	Linear Feet (LF)

8.0 Bridge Crossings

8.1 Prefabricated Pedestrian/Vehicle Bridges

Description

The work covered by this section consists of the installation of two prefabricated span bridge crossings – one each on Fiddlers Run and East Prong Hunting Creek. Bridge design and minimum requirements are listed below. Throughout this section, where specifications vary based on bridge type, variations are identified for individual bridges corresponding to Fiddlers Run (FR) and East Prong Hunting Creek (EPHC):

Fiddlers Run (FR):

Bridge Model: Pedestrian Truss Bridge - Connector - Half Through H Section - Parallel Chords - Pratt Diagonals

Length: 50 ft. (End to End of Truss)

Width: 12 ft. (Between Inside Face of Top Chords)

Design Code: AASHTO LRFD Guide Specifications for Design of Pedestrian Bridges 9th Edition

Design Vehicle: H10 Design Vehicle 90 psf.

Number of Pieces: 1

Finish: A847/A588 (Weathering) SP7

Bridge Decking: Cast-In-Place Reinforced Composite Concrete

Wearing Surface: Concrete

Railing Type: Horizontal L1.25x1.25x1/8 Safety Rails with 4 inch maximum openings

Railing Height: 48 inches

East Prong Hunting Creek (EPHC):

Bridge Model: Site-Specific Modular

Length: 75 ft (out to out girder dimension)

Width: 12 ft (clear between rails)

Design Code: AASHTO LRFD Bridge Design Specifications, 9th Edition, 2020

Live Load: HL-93 Design Vehicle

Max LL Deflection: Length/ 500

Finish: Weathering, SP1 Clean

Bridge Decking: Cast-In-Place Reinforced Composite Concrete

Wearing Surface: Concrete

Railing Type: Horizontal L1.25x1.25x1/8 Safety Rails with 4 inch maximum openings

Railing Height: 48 inches



8.1.0 General

These specifications are for fully engineered half through truss (no overhead bracing) bridge of steel construction and shall be regarded as minimum standards for design and fabrication. The work included under this item shall consist of design, fabricating, finishing and transporting the steel truss bridge superstructure including bearings. These specifications are based on products designed and manufactured by Contech Engineered Solutions LLC.

Definitions

- *Owner*: Entity who ultimately will own the bridge.
- *Engineer*: Engineering Entity or Firm who will be representing the Owner.
- *Contractor*: Entity who will be installing, and/or purchasing, the bridge.
- *Foundation Engineer*: Engineering Entity or Firm who will be designing and detailing the foundation system. The Contractor is responsible for providing foundation shop drawings to the Owner and Engineer.
- *Geotechnical Engineer*: Engineering Entity or Firm who will be responsible for providing the Geotechnical information necessary to design the foundation system. The Owner will provide the Contractor with a geotechnical report. The Contractor is not responsible for geotechnical investigation.
- *Bridge Manufacturer*: Firm who will be designing and supplying the bridge in accordance with these Special Provisions. The Contractor is responsible for determining the qualified bridge manufacturer.

Qualified Bridge Manufacturer

Each Contractor is required to identify their intended Bridge Manufacturer as part of the bid submittal. Qualified Bridge Manufacturers must have at least 5 years of experience fabricating these types of structures and shall have an up-to-date quality certification by AISC as Certified Bridge Fabricator - Advanced (Major) with Fracture Critical Endorsement and Sophisticated Paint Endorsement. All suppliers shall fabricate their product utilizing a modern fabrication facility owned and operated by the Bridge Manufacturer that includes the use of CNC beam drilling machines, no brokers are allowed.

Pre-Approved Bridge Manufacturer:

*Contech Engineered Solutions LLC
(803) 216-4274
Jim Campbell – Bridge Consultant
Jim.Campbell@ContechES.com*

Bridge Manufacturers, other than those listed above, may be used provided the Engineer receives a written request at least 10 days prior to the bid. The written request shall accompany the following information:

- Bridge Manufacturer's Product Literature,
- Name and resume of Bridge Manufacturer's design professional who will be signing and sealing the engineering submittals,
- Copy of current AISC certification,
- Representative copies of detailed drawings, field procedures, calculations, quality control manual, welder's certifications, proof of in-house C.W.I.,
- Listing of projects including owner, location, size, year of fabrication, contact person,
- Certification by the Bridge Manufacturer's Design Professional that the bridge proposed will be in accordance with all project development done up to the date of these specifications.

The above will be evaluated by the Engineer for accuracy and ability to provide the bridge in accordance with these specifications. Bridge Manufactures other than those listed above may only be used if the Engineer provides written approval 5 days prior to the bid. The Engineer's ruling shall be final.

Bridge Manufacturer's Design Professional and Submittals

The Bridge Manufacturer shall have as a direct employee, an engineer who is experienced in bridge design to be in responsible charge of all engineering related task and design. The Bridge Manufacturer's design engineer shall have a minimum of 10 years of experience in bridge design and be a currently licensed civil or structural engineer in the State of North Carolina who will seal and sign the plans.

Engineering drawings, 11x17 format, shall be prepared and submitted to the Contractor or Owner for their review after receipt of the order. Submittal drawings shall be unique drawings, prepared to illustrate the specific portion of the bridge being fabricated. All relative design information such as member size, ASTM/AASHTO material specification, dimensions necessary to fabricate and required welding shall be clearly shown on the drawings. Drawings shall have referenced details and sheet numbers. All drawings shall be stamped, signed and dated by the Bridge Manufacturer's Design Professional.

Structural calculations for the design of the bridge superstructure shall be prepared by the Bridge Manufacturer and submitted for review after receipt of the order. Calculations shall include complete design, analysis and code checks for the controlling members, connectivity and support conditions, truss stability checks, deck design, deflection checks, bearings and all splices.

8.1.1 *Applicable Codes and Standards*

Governing Specifications

Bridge shall be designed in compliance with the AASHTO LRFD Guide Specifications for the Design of Pedestrian Bridges, 2009 (*AASHTO Ped*). Calculations shall be in accordance with this document, and formulas shall reference the appropriate sections.

Other References, Codes, Specifications and Standards

- AASHTO LRFD Bridge Design Specifications, 9th Edition, 2020 (*AASHTO LRFD*)
- AASHTO LRFD Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, First Edition, 2005 (*AASHTO Signs*)
- AISC Steel Construction Manual, 15th Edition, 2017 (*AISC*)
- American Welding Society, Structural Welding Code, D1.1, 2015 (*AWS D1.1*)
- ASCE/SEI 7-10 Minimum Design Loads for Buildings and Other Structures, 2010 (*ASCE 7*)
- Setra Technical Guide for Footbridges, 2006 (*Setra*)
- ANSI/AWC NDC-2015 National Design Specification for Wood Construction, 2015 (*NDS*)
- Tropical Timbers of the World, US Forest Products Laboratory

The AASHTO LRFD Guide Specifications for the Design of Pedestrian Bridges shall control if any conflicting requirements occur with the Other Reference Documents and/or other local Codes.

8.1.2 *Bridge System Type*

Truss Style

The truss style shall be a Connector[®]. The vertical trusses shall be designed such that the top and bottom chord members are parallel for the entire length of bridge. The interior verticals of the trusses shall be perpendicular to the top face of the bottom chord and the end verticals of the trusses shall be plumb. Trusses shall be laid out such that diagonals shall be at an angle of 30-degrees or more with respect to the bottom chord.

Diagonal Style

The vertical truss shall use a single-diagonal, Pratt configuration, where all the diagonals are in tension for gravity loads.

Floor Beam Location

The bridge shall utilize an H-Section configuration where the ends of the floor beams are welded only to the interior face of the verticals. The distance from the top of deck to the bottom of the bottom chord shall be determined by the Bridge Manufacturer during final design.



8.1.3 Bridge Geometry

Span Length

FR - The bridge span length shall be 50'-0" (horizontal straight line dimension) and measured from end to end of the bridge truss, not including the end dam, any deck extension or bearing that extends beyond the end of the truss.

EPHC - The bridge span length shall be 75'-0" (straight line dimension) and measured from end to end of the bridge structure, not including the end angle or any deck extension beyond the end of the stringer.

Width

The bridge width shall be 12'-0" and shall be as measured from the inside face of structural truss elements at the deck level.

Top of Truss Height Above Deck

The top of the top chord shall not be less than 48" above the deck (measured from the high point of the deck). Note that this dimension may be exceeded due to truss height requirements for structural, deflection and vibration requirements.

Lower Steel Clearance

The bridge manufacturer shall determine the distance from the top of the deck (measured from the highest point of the deck) to the bottom of any steel member.

Truss Bay Spacing

The number of bays and the dimension of the panel points shall be determined by the Bridge Manufacturer.

Camber

A single simple-span bridge shall have a vertical camber dimension at the mid-span equal to 100% of the anticipated full dead load deflection. If beam mill camber is adequate to accommodate full dead load deflection, then indicate so on drawings.

Elevation Difference

The top of the decks shall be at the same elevation at each end of the bridge.

Deck

Concrete deck shall have a minimum thickness of 8-inches above the top of the stay-in place forms. Concrete deck shall be flat from one the edge of the traffic lanes to the other edge of the traffic lanes.

8.1.4 Structural Design Loads

Dead Load

The bridge structure shall be designed for the total bridge weight including the final deck system.

Pedestrian Loading (PL)

The bridge structure shall be designed for a uniform pedestrian loading of 90 psf. This loading shall be patterned to produce the maximum load effects. Consideration of dynamic load allowance is not required with this loading.

Vehicle Loading (VL)

FR - When vehicular access is not prevented by permanent physical methods, the superstructure and deck system shall be designed for each of the following concentrated/vehicular loads:

- A concentrated load of 1,000 pounds placed on any area 2.5' by 2.5' square.
- A single truck shall be placed to produce the maximum load effects and shall not be placed in combination with the pedestrian load. The dynamic load allowance need not be considered for this loading. The truck shall be the following:
 - H10 vehicle (20,000 pound two-axle vehicle with 80% to rear axle).



EPHC - Bridge shall be designed for one lane of traffic, supporting HL-93 design vehicle plus Dynamic Load Allowance. The maximum design ADTT (Average Daily Truck Traffic) shall be determined during design by Bridge Manufacture's Engineering Department. Bridge shall also be designed for a T370 Series Conventional Full Truck Owner Specified Vehicle.

Wind Load (WS)

Pedestrian bridges shall be designed for wind loads as specified in *AASHTO Signs*, Articles 3.8 and 3.9. The loading shall be applied over the exposed area in front elevations of both trusses including all enclosures.

In addition to the wind load specified above, a vertical uplift line load as specified in *AASHTO LRFD* Article 3.8.2 and determined as the force caused by a pressure of 20 psf over the full deck width, shall be applied concurrently. This loading shall be applied at the windward quarter point of the deck width.

Seismic (EQ)

The bridge structure shall be designed for seismic loading as specified in Section 3.10 of *AASHTO LRFD*. The transverse loads shall be calculated considering the transverse period of the bridge and longitudinal loads shall be calculated using a period of zero. A response modification factor of 0.8 shall be used for the calculation of forces applied to the bridge anchorage. A response modification factor of 1.0 shall be used for the calculation of bearing reactions. The transverse seismic load shall be applied to all the bearings and the longitudinal seismic load shall be applied to the fixed bearings only. The vertical bearing reactions shall be calculated using an overturning force on the bridge based on the center of gravity of the bridge times the transverse seismic load.

Fatigue Load (FL)

FR - The fatigue loading shall be as specified in Section 11 of *AASHTO Signs*. The Natural Wind Gust specified in Article 11.7.1.2 and the Truck-Induced Gust specified in Article 11.7.1.3 of *AASHTO Signs* only need only be considered, as appropriate.

EPHC - The fatigue loading shall be as specified in *AASHTO LRFD* Article 6.6.

Combination of Loads

The load combinations and load factors to be used shall be as specified in *AASHTO LRFD* Table 3.4.1-1, with the following exceptions:

- Load combinations Strength II, Strength IV, and Strength V need not be considered.
- The load factor for Fatigue I load combination shall be taken as 1.0, and Fatigue II load combination need not be considered.

8.1.5 Structural Design Criteria

Modeling

The bridge shall be modeled and analyzed utilizing a three-dimensional computer software which shall account for moments induced in members due to joint fixity where applicable. Moments due to both truss deflection and joint eccentricity must be considered. All loads listed in Section 8.5 of these specifications shall be applied to the model and analyzed appropriately.

Lateral Frame Design

The bridge shall be designed and proportioned such that appropriate lateral stiffness is provided locally and globally, to ensure that the structure is stable.

For bridges without any overhead members (Half-Through Trusses), the vertical truss members, the floor beams and their connections shall be proportioned to resist a lateral force applied at the top of the truss verticals at the center of the top chord. This lateral force shall be applied as an additional load to the top of the vertical at the center of the top chord, creating a cantilever moment, which is then added to the forces obtained from the three-dimensional model. The magnitude of this lateral force shall not be less than 0.01/K times the average factored design compressive force in the two adjacent top chord members

increased by a factor of safety of 1.33.

The top chord shall be analyzed as a column with elastic lateral supports at the panel points, considering all moments due to in-plane and out-of-plane bending, along with moments due to eccentricities of the members.

The U-Frame Stiffness of the verticals and floor beams shall be as specified in *AASHTO Ped* Article 7.1.2, assuming that the vertical and floor beam connection is rigid. This means that the following must be met:

- On H-Section floor beam connections, the floor beam width shall be at least 80% of the vertical face width in order to prevent any deformation due to tube wall plastification of the vertical member faces under service loads. The connection design will be checked at Strength I & Strength III load combinations.
- On Underhung floor beam connections, the vertical width shall match the bottom chord width in order to transfer vertical moments through the walls of the bottom chord to the verticals with no deformation of the chord side walls due to sidewall yielding or crippling under service loads. The connection design will be checked at Strength I & Strength III load combinations.
- The vertical and floor beam members shall not be connected to faces of the bottom chord at a 90-degrees to one another.
- All fixed end moments in the floor beams and verticals due to floor beam rotations, in addition to the loads derived from a U-Frame analysis have been accounted for in the strength design of the connections.

At no time shall a $K > 2.0$ be used in the design of the top chord.

The end verticals shall be designed as a simple cantilever to carry the loads obtained from the three-dimensional model, plus the cantilever moment due to a lateral load of 0.01 times the axial force in the end vertical, applied laterally at the top end of the end vertical at the center of the top chord.

The floor beams shall be sized for the forces obtained from a simple span, pinned end analysis, or from the forces obtained from the three-dimensional model, whichever controls.

The diagonals and brace diagonals shall be analyzed as pinned-end connection members.

Interior verticals shall be analyzed as pinned-end connections unless longitudinal forces are applied to the verticals such as when the brace diagonals are connected to floor beams on an H-Section floor beam configuration. When longitudinal forces are applied to the verticals they shall be analyzed as fixed-end connections.

All other members shall be analyzed as fixed-end connections.

Deflections

FR - The vertical deflection of the bridge due to the unfactored pedestrian live loading shall not exceed 1/360 of the span length. The horizontal deflection of the bridge under unfactored wind loading shall not exceed 1/360 of the span length.

EPHC - Per the AASHTO LRFD Article 2.5.2.6.2, vehicle load deflection limits are considered optional and are not being used. However, the Bridge Manufacturer will provide an anticipated vehicle load deflection of no more than Span/500.

Fracture

FR - The fracture toughness requirements and designation of Fracture Critical Member and Main Member designation are hereby waived for these structures.

EPHC - The structural system shall be considered a redundant system with Nonfracture-Critical members. The girders shall meet Zone 2 CVN requirements for Nonfracture-Critical members.

Wheel Load Distribution

EPHC - The deck shall be designed to support the maximum wheel load from the design vehicle or owner specified vehicle. For design vehicle or owner specified vehicle, the tire contact area is to be assumed to be 20" transverse and 10" longitudinal.

Concrete Deck Composite Design

EPHC - The concrete deck shall be designed to act as a composite system with the steel stringers. Shear studs shall be shop welded to the top flange of the stringers to ensure composite action and be designed as specified in AASHTO LRFD Article 6.10.10.

Vibrations

Vibration of the structure shall not cause discomfort or concern to the users of the bridges. To assure this, the fundamental frequency (f) of the pedestrian bridge in the vertical direction, without live load, shall be greater than 3.0 hertz (Hz) to avoid the first harmonic. The fundamental frequency of the pedestrian bridge in the lateral direction, shall be greater than 1.3 Hz. If the fundamental frequency cannot satisfy these limitations, then the bridge should be proportioned such that either of the following criteria are satisfied:

$$f \geq 2.86 * \ln(180/W)$$

or

$$W \geq 180 * e^{(-0.35 * f)}$$

Where W is the weight of the bridge in kips and f is the fundamental frequency in the vertical direction in Hz.

For bridges longer than 85 ft and shorter than 125 ft the vertical and horizontal vibration must also meet the requirements for Bridge Class III with a Mean comfort level in accordance with *Setra*.

8.1.6 Deck System

FR - Deck to be comprised of Reinforced Concrete designed to span from floor beam to floor beam.

Reinforced concrete shall be normal weight concrete (145 pounds per cubic foot maximum) and shall have a minimum compressive strength of 4,500 psi at 28 days, with an air content of 6% +/- 1.5%.

Concrete mix design, materials, quality, mixing, placement, finishing and testing shall be in accordance with the requirements of Section 552 of Federal Highway Administration Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects (FP-14). FP-14 can be viewed or downloaded at: <http://flh.fhwa.dot.gov/resources/specs>

The surface of deck concrete shall be finished with a sidewalk finish per Section 552.14(c) of FP-14.

Stay-in-place galvanized (G90 coating) metal form deck shall be used and shall be designed to support the weight of the wet concrete plus a 20 pounds per square foot construction load. Form deck shall be shop attached to floor beams via self-drilling fasteners, welding or power actuated fasteners. Welding shall not be used on painted or galvanized bridges. The longitudinal sheet laps shall be attached with self-drilling self-tapping fasteners at 36-inch maximum spacing. The attachment of the form deck to the floor beams is only necessary to keep the form deck in place during transportation and during the concrete placement. The form deck is not to be used for diaphragm action or composite action and provides no structural benefit to the truss or the deck after the concrete is set. Metal form deck panels shall be of a length to span a minimum of two bays of the truss supports. The top of deck to bottom of form deck shall be as required to support the anticipated loads but shall not be less than 5".

The concrete deck shall be designed to span longitudinally from floor beam to floor beam and to support the loads specified in Section 8.5 of these specifications.

A distribution width of deck is allowed, to support the anticipated vehicle wheel loads. This distribution width (E in feet) shall be the narrower of the following:

- $E = 4 + .06S$
 - Where S is the floor beam spacing minus one-half of the floor beam width.
- One-half of the total driving width of the bridge deck.
- 0.75 times the lateral wheel spacing of the vehicle.
- $0.6S + \text{Wheel Width}$
 - Where S is the floor beam spacing minus one-half of the floor beam width.
 - The Wheel Width (in inches) is $2.5 * \sqrt{\left(\frac{0.01 * P}{2.5}\right)}$, where P is the wheel load in pounds

Reinforcing steel shall be ASTM A615 Grade 60 non-coated bars. All bar bends, anchorage and splices shall be in accordance with AASHTO Specifications. Top reinforcing shall have a minimum clearance of 2" to the top of deck.

Bridge Manufacturer shall designate the estimated slab thickness and reinforcing requirements at time of quotation. These estimates are to be used for quoting purposes only. Actual quantities may vary during the final design process, with costs variances due to any changes to the quantities being the sole responsibility of the contractor. Contractor shall supply all concrete and reinforcing materials.

EPHC - Metal stay-in-place forms shall be used for forming the concrete deck and shall be of zinc-coated (galvanized) structural steel sheet conforming to ASTM Specification A653 with a coating class of G165. The stay-in-place form shall be designed to support all dead loads plus an additional 50 psf for construction loads. The unit working stress in the steel sheet shall not exceed 0.725 times the specified minimum yield strength of the material, or 36ksi, whichever is smaller. Deflection of the stay-in-place form under all dead loads shall not exceed 1/180 of the form span or 1/2-inch, whichever is less. The Bridge Manufacturer is responsible for the design of the stay-in-place forms. Stay-in place forms shall be shop installed by the Bridge Manufacturer as much as possible to minimize field installation.

All reinforcing steel shall be in accordance with ASTM A615 Grade 60 and ASTM A775 for Epoxy-Coated. Size and spacing of the reinforcing steel shall be as designed by the Bridge Manufacturer.

Concrete shall have a minimum 28-day compressive strength ($f'c$) of 4500 psi, air content of 5.5% +/- 1% and a maximum unit weight of 145 lb/ft³.

Concrete mix design, materials, quality, mixing, placement, finishing and testing shall be in accordance with the requirements of Section 552 of Federal Highway Administration Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects (FP-14). FP-14 can be viewed or downloaded at: <http://flh.fhwa.dot.gov/resources/specs>.

8.1.7 Materials of Construction

Structural Steel

All members of the truss and deck support system shall be fabricated from square or rectangular hollow structural shapes (HSS), with the exception that floor beams may be wide flange shapes. All open ends of end posts and floor support beams shall be capped. Drain holes shall be provided for all sections at the low point of the member that may become filled with water.

All bridges shall be fabricated using A847 for HSS sections and A588 for structural shapes and plates.

Minimum nominal thickness of primary hollow structural shapes shall be 1/4". Rolled shapes shall have a minimum thickness of 1/4".

Fasteners

Structural bolts used to field splice or connect all main members shall be ASTM F3125 Grade A325. The



nuts for these structural bolts shall be ASTM A563. The Bridge Manufacturer shall determine the finish of the structural bolts. They will be either Type 3 (Weathering) or Type 1 (Hot-Dipped or Mechanically Galvanized) as specified by the Bridge Manufacturer.

Bolts used for the connection of a wood rub rail shall be 18-8 or 316 Stainless Steel, ¼" diameter carriage bolts.

Screws for the attachment of wood deck shall be steel, 5/16" diameter, six lobe drive, self-tapping screws. The screws shall have flat heads for the screws in the wood and round heads for the screws on the edge cover. The screws shall have a protective coating that will prevent corrosion due to contact with treated wood and environmental exposure.

Self-drilling fasteners for attachment of the form decking shall be #14 x 1" zinc plated hex washer head Tek screws.

Power Actuated fasteners shall be Hilti sheet metal nail X-ENP-19 fastener.

Other miscellaneous fasteners shall be ASTM A307 zinc plated or galvanized, as determined by the Bridge Manufacturer.

8.1.8 Finish

For corrosion resistant high-strength low-alloy (weathering) steel no surface finish treatment is necessary. All exposed surfaces of structural steel to be cleaned in accordance with Steel Structures Painting Council Surface Preparation Specifications No. 7, SSPC -SP7 brush-off blast cleaning. Exposed surfaces of steel shall be defined as those surfaces seen from the deck or from the outside and bottom of the structure. All other surfaces to have standard mill finish. The steel will be allowed to form a protective weathering patina over time.

8.1.9 Attachments

Safety Rails

Safety rail system shall be placed on the inside of the structure, spaced so as to prevent a 4" sphere from passing through the side truss for the full height of the side truss, or 48" , whichever is less. The top of the top chord may be considered the top of the rail system.

Rails system shall consist of horizontal rails. Rails shall be L 1 ¼ x 1 ¼ x 1/8 placed at a 45-degree orientation with both legs welded to truss verticals and with a maximum unsupported length of 6'-0" if placed on the inside of the structure and 7'-0" if placed on the outside of the structure. If the truss vertical spacing is greater than the maximum unsupported length, mid-bay supports will be required. When safety rails are placed on the inside of the structure and not covered by the end vertical, the ends of rail near the end of the bridge shall be mitered at a 45-degree angle, capped and ground smooth. No solid plate covering all rails as a unit will be allowed. Spec Image-Safety Rail TypeSpec Image-Safety Rail SystemSpec Image-Safety Rail System Type

Each element of the pedestrian rail system shall be designed to support a uniformly applied load of 50 pounds per lineal foot, both transversely and vertically, acting simultaneously. In addition, each longitudinal element shall be designed to support a concentrated load of 200 pounds, which will act simultaneously with the above uniform loads at any point and in any direction at the top of the longitudinal element.

The posts of the pedestrian rail system shall be designed for a concentrated load applied at either the center of gravity of the upper longitudinal element or 60" above the top of the walkway, whichever is less. This concentrated load shall be equal to 200 pounds plus 0.05 times the post spacing in feet.

Toe Plate

Toe Plates shall be steel channel shape section, 4" high by 1" wide minimum with the end of the channel legs welded directly to the inside face of the truss verticals. The maximum unsupported length shall be 7'-

0". If the vertical spacing is greater than the maximum unsupported length, mid-bay supports will be required. When the ends of the toe plates near the end of the bridge are not covered by the end verticals, they shall be capped and ground smooth. The bottom of the toe plate shall be placed 2" above the finished height of the deck. All seams of the toe plates shall be fully welded to give the appearance of a continuous member (welding should be located at a support member). If toe plates are incorporated into a safety rail system, they may be modified as needed but shall be a minimum of 4" high.

Expansion Joint

The gap between the end of the bridge deck and the back wall of the foundation system be sized to accommodate bridge movements due to thermal expansion of the bridge over the design temperature range. The gaps shall be covered with a steel cover which attaches to the bridge and extends over the gap and onto the top of the foundation system back wall. The steel cover shall have its edges rounded or beveled at a 45-degree angle. A compression seal sized for movement and rated for pedestrian traffic may be used in place of the steel cover.

8.1.10 Bearings

Bearing Type

Bearing type and size shall be designed by the Bridge Manufacturer based on anticipated loads and movements.

Design Temperature Range

The Design Temperature Range will be site specific and will be determined per *AASHTO LRFD* Article 3.12.2.

Non-Shrink Grouting

The bridge will be supplied with a lower setting plate. This setting plate shall be leveled and shimmed to the proper elevation. The space between the lower surface of the setting plate and the foundation surface shall be filled with a non-shrink grout capable of achieving a minimum compressive strength equal to or greater than the strength of the foundation concrete. The cost of the leveling, shimming, and non-shrink grout shall be the responsibility of the Contractor.

Bearing Plates (EPHC)

Bearing plates shall be used under the stringers at both ends of the bridge and shall be designed to support the anticipated reactions. Bearing plate material shall be ASTM A588. The Bridge Manufacturer should design the bearing plates such that one end of the bridge is fixed, and the other end allows for expansion. All bearing plates should have a minimum of two holes to receive anchor bolts (one on each side of the stringer). For the expansion base plates, holes shall be slotted with a minimum slot length to allow for expansion and contraction. All bearing plates shall be shipped loose for field installation by others; field welded to the stringers by an AWS D1.5 certified welder.

If the longitudinal grade of the bridge is greater than 1.5%, then the bearing plates shall be beveled across their width in order to provide a level bearing condition on the elastomeric pads.

Elastomeric Pads (EPHC)

The Bearing plates will be placed on top of elastomeric pads. Elastomeric pads shall be Grade 4, 60-Durometer Neoprene or natural rubber. Pads may not meet AASHTO LRFD design criteria and are to be used only as leveling pads only.

8.1.11 Foundations

Foundation System

Foundation system shall utilize abutments designed by the Contractor's Foundation Engineer in conjunction with the bridge bearing requirements and dimensions provided by the Bridge Manufacturer and the site-specific geotechnical information provided by the Geotechnical Engineer. All abutment



dimensions and materials shall be shown on the final contract plans.

Anchor Bolts

Bridge Manufacturer shall design the diameter and grade of anchor bolts, based on the shear and tensile strength of the anchor bolt material only. All design considerations regarding concrete breakout strength in shear and tension, pullout strength, concrete side-face blowout strength, concrete pry out strength, embedment depth, type of anchorage or any other concrete failure modes are the responsibility of the Foundation Engineer and shall be shown on the final contract plans. All anchor bolts shall be galvanized. The Foundation Engineer shall determine if the anchor bolts shall be cast-in-place, drilled/epoxy, or expansion anchors. Anchor bolts shall be provided and installed by the Contractor.

8.1.12 Fabrication

Welding

Welding procedures and weld qualification test procedures shall conform to the provisions of *AWS D1.1*. Filler metal shall be in accordance with the applicable AWS Filler Metal Specification and shall match the corrosion properties of the base metal.

Welders

Welders shall be qualified for each process and position used while fabricating the bridge. Qualification tests shall be in accordance with *AWS D1.1*. All weld qualifications and records shall be kept in accordance with the Fabricator's Quality Assurance Manual which has been approved and audited by AISC as the basis for certification.

8.1.13 Quality Control

AISC Certification

The bridge shall be fabricated in a shop owned by the Bridge Manufacturer. This facility shall have up to date quality certification by AISC per Section 8.1.3 of these specifications.

Certified Welder Inspector

The bridge manufacturer shall employ a Certified Weld Inspector (CWI), with endorsement by *AWS QC1*. This CWI shall be present during the complete fabrication of the bridge. The CWI shall provide written documentation that the bridge has been fabricated in accordance with these specifications and the approved design drawings.

Documentation

Material Certifications shall be available for review for all materials within the bridge. Traceability of heat numbers is required for all structural steel.

Documentation showing the performance of all critical quality checks shall also be made available for review by the Engineer or Owner.

Non-Destructive Testing

All welds within the structure, shall be visually inspected for conformance to size, under cut, profile and finish. All shop splices of main truss members shall be magnetic particle tested.

8.1.14 Delivery and Erection

Delivery

Delivery shall be made via truck to a location nearest the site which is accessible to normal over-the-road equipment. All trucks delivering bridge materials will need to be unloaded at the time of arrival. If the erection Contractor needs special delivery or delivery is restricted, they shall notify the Bridge Manufacturer prior to bid date. This includes site issues which may prevent over-the-road equipment from accessing the site. Steerable dollies are not used in the cost provided by the Bridge Manufacturer. Determining the length of bridge section which can be delivered is the responsibility of the Contractor and shall be communicated to the Bridge Manufacturer prior to the bid date.

Installation & Lifting Procedures

The Bridge Manufacturer will provide standard typical written procedures for lifting and splicing the bridge. All actual means, methods, equipment and sequence of erection used are the responsibility of the Contractor.

8.1.15 Warranty

The Bridge Manufacture shall warrant, at the time of delivery, that it has conveyed good title to its steel structure, free of liens and encumbrances created by the Bridge Manufacture, and that its steel structure is free of defects in design, material and workmanship. This warranty shall be valid for a period of one (1) year from the earlier date of delivery or 60 days after final fabrication is complete. Durable tropical hardwood decking and hardwood attachments shall carry a one (1) year warranty against rot, termite damage, or fungal decay. This warranty shall specifically exclude all softwood and decking material such as Treated Southern Yellow Pine, Douglas Fir and Wood thermoplastic composite lumber (e.g. Trex). Paint, galvanizing and other special coatings, if warranted, shall be warranted by the coating manufacturer in accordance with their warranty provisions and are not covered under the Bridge Manufacturer's warranty.

This warranty shall not cover defects in the steel structure caused by abuse, misuse, overloading, accident, improper installation, maintenance, alteration, or any other cause not expressly warranted. This warranty shall not cover damage resulting from or relating to the use of any kind of de-icing material. This warranty shall be void unless owner's records are supplied that show compliance with the minimum guidelines specified in the in the Bridge Manufacture's inspection and maintenance procedures.

Repair, replacement, or adjustment, in Bridge Manufacture's sole discretion, shall be the exclusive remedy for any defects under this warranty. This warranty shall exclude liability for any indirect, consequential, or incidental damages.

Measurement and Payment

Bridge crossings will be measured and paid for per each bridge crossing, including footer installation. No direct payment will be made for other material components; these will be considered incidental to the work covered by the bridge crossings.

Such payment shall be considered full compensation for the items of work, including the cost for furnishing all materials, labor, equipment, tools, incidentals, storage, preparation, installation, removal, and proper disposal of the bridge crossing and components.

Payment will be made under:

Bid Item	Pay Item	Pay Unit
20	Fiddlers Run Bridge Crossing	Each (EA)
21	East Prong Hunting Creek Bridge Crossing	Each (EA)

8.2 Floodplain Culverts

Description

The work in this section consists of installing six (6) 48" smooth-walled corrugated plastic pipe culverts within the floodplain on East Prong Hunting Creek in alignment with the proposed 75' prefabricated bridge as shown on the Plans. Final location and alignment of the culverts may be adjusted in the field as directed by the Engineer.

Materials

Floodplain culvert installation shall consist of smooth-walled corrugated plastic pipe (CPP), bedding material (#57 stone), backfill material, and ABC stone. Pipes to be used for the culvert replacements include six 40' long pipes mitered to slope. Approach slope and miter angle may be adjusted in the field by the Engineer. Backfill material shall be soil that is free of rock and debris consisting of clay, clay loam, or sandy clay loam. Riprap to be

used for culvert replacements include Class A, Class B, and #57 stone. Refer to the NCDOT Standard Specifications for Roads and Structures, Divisions 5 and 10 for sizing requirements.

Construction Methods

Contractor to provide Engineer with installation sequence for floodplain culverts. Installation may occur prior to, concurrent with, or following installation of bridge footers and prefabricated bridge structure. Excavate bedding trench as shown on the Plans. Place #57 stone in the excavated trench to a minimum depth of 6" as shown in the Plans. The bed of #57 stone shall be the full width of the floodplain culvert installation section. Place the pipe on top of the bedding in the trench and backfill with a 50/50 mix of Class A and Class B riprap to a minimum height of 1/3 of the placed culvert, for the length of the culvert, and extending laterally from the culvert a minimum of 12 inches, as shown in the Plans and as directed by the Engineer. Backfill the remaining trench with soil consisting of clay, clay loam, or sandy clay loam in maximum 12" compacted lifts to the proposed trail elevation. Upon achieving final grade, miter pipe to match ground sideslopes on upstream and downstream slopes. Pipe sections may be pre-mitered or cut in the field. Pipes shall not extend more than 6" from finish grade sideslopes, unless otherwise directed by the Engineer.

Measurement and Payment

Floodplain culverts shall be paid as a lump sum item for the installation of the six (6) floodplain culverts. Such price and payment will be full compensation for all work covered for floodplain culverts, including but not limited to all labor, machinery, maintenance, hauling, preparation, and installation to complete the work in an acceptable manner. Pipe, stone, and coarse aggregate backfill will be considered incidental to temporary floodplain culvert installation.

Bid Item	Pay Item	Pay Unit
22	Floodplain Culverts	Lump Sum (LS)

9.0 Planting

9.1 Temporary Seeding

Description

The work in this section consists of furnishing and installing temporary seed in areas specified in the Plans and includes Site preparation and seed bed preparation.

The quantity of temporary seed to be installed will be influenced by the actual conditions that occur during the construction of the project. The quantity of temporary seeding may be increased, decreased, or eliminated entirely as directed by the Engineer. Such variations in quantity will not be considered as alterations in the details of construction or a change in the character of the work.

Refer to Section 1620 of the NCDOT Standard Specifications for Roads and Structures for Temporary Seeding.

Construction Methods and Materials

Temporary seeding shall follow the planting schedule presented in the Plans.

All seed and seed varieties must be free of state and federal noxious weed seed. In addition, none of the following seed will occur in the mix:

- beach vitex
- bushkiller
- Canada thistle
- Crested floating heart
- Eurasian watermilfoil
- loosestrife
- musk thistle
- oxygen-weed
- puncturevine
- round leaf bittersweet
- spiny plumless thistle
- swamp stonecrop
- water chestnut
- water primrose
- water snowflake
- watermoss
- yellow fieldcress
- yellow floating heart

Temporary seed will include the species listed below and will be applied according to the following schedule:

Temporary Seeding				
Pure Live Seed				
Approved Date	Species Name	Common Name	Stratum	Density (lbs/acre)
September 15 – April 1	<i>Secale cereale</i>	Rye grain	Herb	140
April 1 – September 15	<i>Setaria italica</i>	German Millet	Herb	50

All disturbed areas will be seeded with temporary seed. Seeding will be performed using a broadcast spreader. Other methods may be used but must be approved by the Engineer in advance of installation. No seeding will be performed when ambient temperature is below 32° F or 0° C. No seeding will occur when ground is frozen. Groundcover must be established on exposed slopes within 21 calendar days following the completion of grading activities within the active work zone. Permanent groundcover must be established for all disturbed areas within 15 working days or 90 calendar days (whichever is shorter) following completion of construction. The Contractor must guarantee 80% temporary seeding coverage for a term of 1 year following acceptance by the Engineer.

Measurement and Payment

Temporary seeding will be paid per acre broadcasted and accepted by the Engineer in place. Such payment shall be considered full compensation for the items of work, including the cost for furnishing all materials, labor, equipment, tools, incidentals, storage, preparation, and planting of the temporary seed.

Payment will be made under:

Bid Item	Pay Item	Pay Unit
23	Temporary Seeding	Acres (AC)

9.2 Permanent Seeding

Description

This work consists of furnishing and installing permanent seed in areas specified in the Plans. Permanent seeding includes the Floodplain Bench Planting Zones, Bioretention Planting Zones, Park/Bioswale Planting Zone, and the Bioretention Planting Zone identified in the Plans. This work consists of Site preparation, soil amendments, seedbed preparation, seeding and mulching.

The quantity of permanent seeding to be installed will be dependent on the actual conditions that occur during the construction of the project. The quantity of permanent seeding may be increased, decreased, or eliminated entirely as directed. Such variations in quantity will not be considered as alterations in the details of construction or a change in the character of the work.

Refer to Section 1660 in the NCDOT Standard Specifications for Roads and Structures for Seeding and Mulching.

Constructed Methods and Materials

Refer to Section 1060-4 for Seed in the NCDOT Standard Specifications for Roads and Structures. Seed may be mixed by the supplier and is not required to be mixed on Site. All plant sources and materials shall be submitted to the Engineer for approval. Seed will have a Pure Live Seed (PLS) certification equal to or greater than that rate specified on the plant schedules. If the PLS is less than specified, the Contractor will increase the seeding rate to compensate for the PLS difference.

Permanent seed will include the species listed below:

Floodplain Bench Planting Zone Permanent Seeding (20lbs/ac)			
Species	Common Name	Stratum	Density (lbs/ac)
<i>Coreopsis tinctoria</i>	Golden Tickseed	Herb	2.0
<i>Rudbeckia hirta</i>	Blackeyed Susan	Herb	2.0
<i>Sisyrinchium angustifolium</i>	Blue-eyed grass	Herb	1.5

<i>Juncus tenuis</i>	Path Rush	Herb	1.5
<i>Juncus effusus</i>	Common Rush	Herb	1.5
<i>Chamaecrista fasciculata</i>	Partridge Pea	Herb	1.5
<i>Carex cherokeensis</i>	Cherokee Sedge	Herb	1.5
<i>Pycnanthemum tenuifolium</i>	Narrowleaf Mountainmint	Herb	1.5
<i>Helenium autumnale</i>	Sneezeweed	Herb	1.5
<i>Carex crinite</i>	Fringed Sedge	Herb	1.5
<i>Dichanthelium clandestinum</i>	Deer Tongue	Herb	1.0
<i>Conoclinium coelestinum</i>	Blue mistflower	Herb	1.0
<i>Chasmanthium latifolium</i>	River Oats	Herb	1.0
<i>Schizachyrium scoparium</i>	Little Bluestem	Herb	1.0

Bioretention Planting Zone Permanent Seed Mix (20lbs/ac)			
Species	Common Name	Stratum	Density (lbs/ac)
<i>Coreopsis tinctoria</i>	Golden Tickseed	Herb	3.0
<i>Rudbeckia hirta</i>	Blackeyed Susan	Herb	3.0
<i>Juncus tenuis</i>	Path Rush	Herb	2.0
<i>Chamaecrista fasciculata</i>	Partridge Pea	Herb	2.0
<i>Carex cherokeensis</i>	Cherokee Sedge	Herb	2.0
<i>Pycnanthemum tenuifolium</i>	Narrowleaf Mountainmint	Herb	2.0
<i>Conoclinium coelestinum</i>	Blue mistflower	Herb	1.5
<i>Chasmanthium latifolium</i>	River Oats	Herb	1.5
<i>Schizachyrium scoparium</i>	Little Bluestem	Herb	1.5
<i>Panicum virgatum</i>	Switchgrass	Herb	1.5

Park/Bioswale Planting Zone Permanent Seed Mix (20lbs/ac)			
Species	Common Name	Stratum	Density (lbs/ac)
<i>Festuca arundinacea, 'Teton'</i>	Tall Fescue, 'Teton'	Herb	10
<i>Festuca arundinacea, 'FoxHound'</i>	Tall Fescue, 'FoxHound'	Herb	10
<i>Festuca arundinacea, 'Turismo'</i>	Tall Fescue, 'Turismo'	Herb	10

All seed and seed varieties must be free of state and federal noxious weed seed. In addition, none of the following seed will occur in the mix:

- beach vitex
- bushkiller
- Canada thistle
- Crested floating heart
- Eurasian watermilfoil
- loosestrife
- musk thistle
- oxygen-weed
- puncturevine
- round leaf bittersweet
- spiny plumless thistle
- swamp stonecrop
- water chestnut
- water primrose
- water snowflake
- watermoss
- yellow fieldcress
- yellow floating heart

Fertilizer

Refer to Section 1060-2 for Fertilizer in the NCDOT Standard Specifications for Roads and Structures. Fertilizer will be organic fertilizer and not petroleum-based fertilizer. The Contractor is encouraged to conduct an independent soil test and is responsible for recommending soil amendment application rates prior to construction. All soil amendment applications shall occur prior to seeding.

Limestone

Refer to Section 1060-3 for Limestone in the NCDOT Standard Specifications for Roads and Structures. The Contractor is responsible for recommending soil amendment application rates prior to construction.

Mulch

Refer to Section 1060-5 for Mulch in the NCDOT Standard Specifications for Roads and Structures. Seed mulch will consist of straw or wood cellulose mulch. No tacking agent is necessary for areas under erosion control matting.

Water

Water used in the planting or care of vegetation will meet Section 1060-9 requirements of the NCDOT Standard Specifications for Roads and Structures.

The Contractor is responsible for applying soil amendments per these Specifications. All soil amendment applications shall occur prior to seeding.

No seeding will be performed when ambient temperature is below 32° F or 0° C. No seeding will occur when ground is frozen. Seeding will be performed using a broadcast spreader. Other methods may be used but must be approved by Engineer in advance of installation. Seed will be applied within the top ¼” of soil. The seed-to-soil contact will be maximized by firming the soil around the seed with a cultipacker, other similar equipment, or by dragging the surface of the soil with a chain link fence. Immediately after seeding the Site shall be watered lightly but thoroughly so that the top 3” of soil is saturated.

Groundcover must be established on exposed slopes within 21 calendar days following the completion of grading activities within the active work zone. Permanent groundcover must be established for all disturbed areas within 15 working days or 90 calendar days (whichever is shorter) following completion of construction. The Engineer will monitor the Site in the late summer/fall after planting in the previous dormant season. It is the Contractor’s responsibility to ensure a dense stand of herbaceous vegetation on the Site during the first year of growth. The Contractor shall reseed any bare spots greater than 200 square feet to the Specifications at no additional cost. The Contractor is required to complete this within 31 days of the Engineer’s notification.

Measurement and Payment

Permanent seeding will be measured and paid for in acres measured along the surface of the ground that has been completed and accepted by the Engineer. Acreage permanently seeded with Permanent Floodplain Bench Seed Mix will be counted and paid for separately as Permanent Floodplain Bench Seeding, acreage permanently seeded with Permanent Bioretention Seed Mix will be counted and paid for as Permanent Bioretention Seed Mix, and acreage permanently seeded with Park/Bioswale Seed Mix will be counted and paid separately as Permanent Park/Bioswale Seeding. No direct payment will be made for furnishing and applying soil amendments, fertilizer, mulch, or water; such work and materials will be considered incidental to the work covered by Permanent Seeding.

Such payment shall be considered full compensation for the items of work, including the cost for furnishing all materials, labor, equipment, tools, incidentals, storage, preparation, planting, and maintenance of the permanent seed.

Payment will be made under:

Bid Item	Pay Item	Pay Unit
24	Permanent Seeding – Floodplain Bench Planting Zone	Acres (AC)
25	Permanent Seeding – Bioretention Planting Zone	Acres (AC)
26	Permanent Seeding – Park/Bioswale Planting Zone	Acres (AC)

9.3 Live Stakes & Herbaceous Plugs

Description

The work in this section consists of furnishing and installing live stakes on stream banks and other areas in accordance with the Plans and Specifications. Live staking is a standard bioengineering technique which involves planting of dormant plant cuttings using species known to produce roots from cuttings. This section also includes furnishing and installing herbaceous plugs as indicated in the Plans.

The quantity of live stakes and herbaceous plugs to be installed will be influenced by the actual conditions that occur during the construction of the project. The quantity of live stakes and herbaceous plugs may be increased, decreased, or eliminated entirely as directed. Such variations in quantity will not be considered as alterations in the details of construction or a change in the character of the work.

Construction Methods and Materials

Live stake cuttings shall be generally be 0.5" to 1.5" in diameter and shall not exceed two inches (2") in diameter and shall not be less than 0.25" in diameter. Cuttings shall be two feet (2') to three feet (3') in length and reasonably straight.

Live stakes shall be cut at a 45° angle at the basal end and cut flat on the top end. The basal end is the end that will take root and will be the end installed in the ground.

Live stake cuttings shall consist of a mix of the approved plant species as set forth in the Plans. Species selection and percentages may be adjusted based on availability and approval of the Engineer prior to purchase and installation. Final locations and configurations will be determined in the field by the Engineer.

Herbaceous plugs shall consist of the species listed in the Plans. All plant sources and materials will be submitted to the Engineer for approval. The supplier will certify that the origins of the seed for the plants supplied were produced from Hardiness Zone 7b, east of the Mississippi River. Plant material collected from the wild is not allowed unless plant material and source is approved by the Engineer. The Engineer must approve any plant substitutions. Any substitutions must be native to the site's state and physiographic region.

Live stakes shall be planted between November 15 and March 15 and herbaceous plugs shall be planted between April and June unless otherwise approved by the Engineer.

The Engineer is responsible for marking the planting zones prior to the Contractor initiating any permanent vegetative planting. Following the completion of grading and seeding activities, the Engineer shall mark the vegetative planting zones using GPS equipment prior to installing planting. This applies to the limits of permanent vegetation and is not applicable to temporary or permanent seed mixtures.

Plant material with excessive damage or oblique cuts, or with excessive damage to the bark, will not be acceptable. All live materials shall be properly stored to ensure viability. Contractors shall protect plant materials from drying and overheating during transport and during the installation process. Live plant material shall receive continuous shade as well as protection from the wind. Shade fabric, heeling, mulches, plastic covering, and watering are all techniques that may be used.

Live stake harvesting and installation shall occur during the dormant season as determined by local NRCS WETS data. Using the published growing season dates for a local WETS station, the dormant season will be defined as that period of time with a 50% probability that the average daily temperature is less than 28 degrees, based on historic weather data.

Live stakes shall be installed in accordance with the Plans and Specifications. Live stakes will be installed in the ground using a dead blow hammer. The top end of the stake will protrude approximately 3" above the finished ground elevation. On sloped ground surfaces, stakes will be installed perpendicular to the finished grade slope. The live stakes shall be placed so that 80% of their length is buried. All live stakes shall be planted such that the stake is tamped and has full contact between the soil and cutting. In the event of hard ground, a 0.5" metal bar

may be used to initiate a pilot hole for live stakes. The rod must be carefully removed without rotating to enlarge the hole.

Live stakes shall be installed at the spacing and density as shown in the project drawings or as directed by the Engineer.

Live stakes should not be split during installation. Live stakes which are split shall be removed and replaced, or if the split is less than 1/6 of the cutting length, the top may be re-trimmed after installation to remove the damaged portion.

Herbaceous plugs will be installed in the constructed wetland planting zones as identified in the Plans. Herbaceous plugs will be installed at the spacing specified in the Plans.

Measurement and Payment

Live stakes and herbaceous plugs will be measured and paid for at the unit price per each unit installed and accepted by the Engineer. Such payment shall be considered full compensation for the item of work, including the cost for furnishing all materials, labor, equipment, incidentals, storage, preparation, and planting of the live stakes and herbaceous plugs.

Payment will be made under:

Bid Item	Pay Item	Pay Unit
27	Live Stakes	Each (EA)
28	Herbaceous Plugs – In-stream	Each (EA)
29	Herbaceous Plugs – Bioretention	Each (EA)

9.4 Containerized Plants

Description

The work in this section includes the furnishing and installation of 5-gallon containerized plants per location and spacing requirements listed in the Plans. 5-gallon containerized plants shall be planted under the direction of the Owner.

Construction Methods and Materials

Containerized plants shall be installed as indicated on the Plans and at the spacing listed in the Plans, or as directed by the Engineer. Care should be taken to mix species in different planting regions throughout the project. A hole should be dug approximately twice the container diameter at the specified locations. Hole depth should be approximately 2 times the depth of the container. The bottom third of the hole should be backfilled with excavated soil. The container should be removed, and plant placed in the hole with remaining void space backfilled with the excavated soil. A small ridge of soil should be constructed around the backfilled hole to help puddle water over the roots.

Containerized plants shall be a minimum of 18 inches in height (excluding roots and container) and shall be between 0.5 inches and 1.5 inches in diameter. All plant material shall be purchased from a local nursery, with the approval of the Engineer. All containerized plants shall be dormant at the time of acquisition and planting. Outside storage locations should be continually shaded and protected from wind and direct sunlight to prevent trees and shrubs from drying. Species selection may be adjusted depending on availability. Substitute species must be approved by the Owner and Engineer prior to installation.

Measurement and Payment

Containerized plants will be measured and paid for at the unit price per each unit installed and accepted by the Engineer. Such payment shall be considered full compensation for the item of work, including the cost for furnishing all materials, labor, equipment, incidentals, storage, preparation, and planting of the containerized plants.

Payment will be made under:

Bid Item	Pay Item	Pay Unit
30	5-Gallon Containerized Plants	Each (EA)

9.5 Bare Root Planting

Description

The work in this section consists of furnishing and installing riparian and upland plants in the form of bare root plants and trees. The quantity of plants may be increased, decreased, or eliminated entirely as directed by the Engineer. Such variations in quantity will not be considered as alterations in the details of construction or a change in the character of the work.

Construction Methods and Materials

All plant sources and materials will be submitted to the Engineer for approval. The supplier will certify that the origins of the seed for the plants supplied were produced from Hardiness Zone 8, east of the Mississippi River. Plant material collected from the wild is not allowed unless plant material and source is approved by the Engineer. The Engineer must approve any plant substitutions. Any substitutions must be native to the Site's state and physiographic region.

Species selection may be adjusted depending on availability. Substitute species must be approved by the Engineer prior to installation. Plant harvesting and installation shall occur during the dormant season. Refer to the Contract Documents for areas to be planted, types of plants and size of plants to be installed, and spacing. Installation may require cutting a hole in the installed coir matting.

For bare roots, root stock of the plants will be kept moist during transport and storage until planted. Roots stock will be soaked in tree gel consisting of a mixture of endomycorrhizal and ectomycorrhizal fungi. Any undisturbed areas will be mowed to the maximum height of six inches prior to planting. Planting holes will be dug using a mattock or dribble bar. Planting holes will be deep enough that the first lateral root of the root mass will be flush with the surrounding grade. Non-organic debris will be removed from the hole and loose soil will be tamped in the bottom of the hole by hand. Spread plant roots in hole and backfill with soil. Standard landscape staples six (6) inches in length may be used to secure tublings in the stream bank as approved by the Engineer. No planting holes will remain open at the end of each day. All tags, labels, strings, and wire will be removed from the plants unless otherwise directed by the Engineer. No guy wires will be used on any plants unless otherwise directed by the Engineer.

Trees will be planted staggered in rows spaced as stated on the Contract Documents and running in a perpendicular manner to the valley contour. The Planting Contractor will conduct a 'band spray' of a preemergent (Oust[®] or similar) along the row of trees running perpendicular to the valley contour only within the undisturbed areas. Preemergent will not be applied to recently seeded areas including the proposed stream channel. The preemergent will include a dye and will be sprayed in a manner such that ground, or vegetation contact is no greater than two feet in width.

Water will be supplied by the Contractor as needed for plant installation, maintenance, and survival. Furnishing water, as well as equipment and labor to administer water is considered incidental to bare root planting.

Measurement and Payment

Each size of riparian planting will be measured and paid for at the unit price per stem or per each for the herbaceous plugs. Such payment shall be considered full compensation for the items of work, including the cost for furnishing all materials, labors, equipment, tools, incidentals, storage, preparation, planting, short-term maintenance period and extended warranty period of the riparian plants. The Contractor will submit a certified statement each month that documents the quantity of completed units listed below.

Payment will be made under:

Bid Item	Pay Item	Pay Unit
31	Bare Roots	Each (EA)

9.6 Planting Warranty

Description

The work in this section consists of the replanting of permanent vegetation during the warranty period to meet the required performance standards. The Contractor shall warrant vegetation per the terms listed in the table below.

Construction Methods and Materials

The Engineer will inspect the project after completion of planting and the growing season. The Engineer will initially conduct a visual assessment of the floodplains and streambanks to identify areas that may not meet the required survival rates. Upon identification of potentially insufficient survival rates, the Engineer shall inventory representative areas to verify the plant survival rates. The term shall include at least two full growing seasons and will initiate on the date the full site planting is complete and accepted by the Engineer. The following warranty terms shall apply to vegetation:

Type of Vegetation	Performance Standard	Warranty Terms
Permanent Seeding	90% Coverage	One-Year Term
Bare Root Plants	80% Survival	Two-Year Term
Live Stakes	80% Survival	Two-Year Term
Herbaceous Plugs	80% Survival	Two-Year Term

The Engineer shall identify the area(s) that are to be reseeded or replanted and notify the Contractor in writing. The Contractor must return to the Site and reseed or replant within 45 calendar days from the postmarked written notification, or as directed by the Engineer. All replacement seed and plants shall be furnished and installed as specified herein. The cost of replacement shall be borne by the Contractor.

Measurement and Payment

All work completed under this section will be measured and paid for a lump sum for the Planting Warranty. This work includes mobilization, materials, labor, and equipment required by the above specification. The payment schedule for these items will be 100% upon completion of the warranty term (two full growing seasons).

Payment will be made under:

Bid Item	Pay Item	Pay Unit
32	Planting Warranty	Lump Sum (LS)

10.0 Park Features

10.1 Bioswales

Description

A Bioswale is a shallow open-channel drainage way stabilized with turf grass or other vegetation used to convey runoff and filter pollutants. Bioswales capture, treat, and release the stormwater quality runoff volume. Bioswales are vegetated channels that include a 12" thick filter media.

Construction Methods and Materials

Media

Filter media should be developed by removing the existing soil and replacing it with mix of imported or recovered sand, woodchips generated onsite or imported and soil and organic material in the planting layer. Filter media shall be consistent with the following recommendations or as otherwise approved by the Engineer:

- Coarse sand: 50 to 65 percent
- Topsoil: 25 to 35 percent
- Compost or other organic material: 10 to 15 percent

Suitable topsoil should be stockpiled for use in this application from other grading activities. Contractor is responsible for mixing materials. The soil and sand must be uniformly mixed and graded. Organic amendment shall be uniformly mixed into the top 6 inches of the bed.

No other materials or substances must be mixed or dumped within the bioswale area that may be harmful to plant growth or prove a hindrance to the planting or maintenance operations. The soil must be free of noxious weeds.

Excavate a 5' wide, 12" deep trench along the alignment shown on the plans. Backfill with 12" of filter media. Bioswale should be constructed to allow for positive flow through the bioswale, drainage towards the bioretention areas shown on the plans.

Measurement and Payment

Bioswales shall be paid per each linear foot of bioswale installed and accepted by the Engineer in the field. Such price and payment shall be full compensation for the items of work including cost for furnishing all materials, labor, equipment, tools, and incidentals required by the above specification.

Payment will be made under:

Bid Item	Pay Item	Pay Unit
33	Bioswales	Linear Feet (LF)

10.2 Bioretention Areas

Description

The purpose of bioretention areas is to treat stormwater for water quality benefit. The Contractor must protect the bioretention from construction sediment or from excessive flows during construction. Bioretention is built with a sand-based media with other minor constituents, primarily for the purpose of supporting plant growth. The bioretention media mix should have low nutrient content and phosphorous index. The outlets shall be constructed per the Plans and Specifications herein. The bed of the basins will be stabilized with permanent vegetation per the Plans.

If sediment enters the bioretention from the project limits of construction or from the diversion inflow, the Contractor shall be responsible to removed sediment and remediate any sediment contamination of the bioretention media or stone to the satisfaction of the engineer.

Construction Methods and Materials

Media

Filter media should be developed by removing the existing soil and replacing it with mix of imported or recovered sand, woodchips generated onsite or imported and soil and organic material in the planting layer. Filter media shall be consistent with the following recommendations or as otherwise approved by the Engineer:

- Coarse sand: 50 to 65 percent
- Topsoil: 25 to 35 percent
- Compost or other organic material: 10 to 15 percent

Suitable topsoil should be stockpiled for use in this application from other grading activities. Contractor is responsible for mixing materials. The soil and sand must be uniformly mixed and graded. Organic amendment shall be uniformly mixed into the top 6 inches of the bed.

No other materials or substances must be mixed or dumped within the bioretention area that may be harmful to plant growth or prove a hindrance to the planting or maintenance operations. The soil must be free of noxious weeds.

Media depth shall be installed to a minimum depth of 12" below finish grade. Media shall be installed to finish grade (+/- 0.1') as shown on the Plans or as directed in the field by the Engineer.

Mulch layer

Contractor shall apply a minimum of 3" of mulch within the bioretention area atop the media layer, so that the final grade of media and mulch is 3" above finish grade as shown in the Plans.

Outlet Pipe

Contractor shall implement the outlet structure as shown on the Plans. Outlet shall consist of black smooth walled 12" corrugated plastic pipe. Excavate bedding trench a minimum of 6" below and 6" on either side of the proposed pipe location. Place #57 stone in the excavated trench to a minimum depth of 6". The bed of #57 stone shall extend laterally 6" from the pipe wall. Place the pipe on top of the bedding in the trench and backfill with #57 stone to a minimum height of 1/3 of the placed culvert, for the length of the culvert, and extending laterally from the culvert a minimum of 6 inches, as shown in the Plans and as directed by the Engineer. Backfill the remaining trench with soil consisting of clay, clay loam, or sandy clay loam in maximum 12" compacted lifts to the proposed trail elevation.

Upon achieving final grade, miter pipe to match ground sideslopes on upstream side of culvert. The downstream side of the culvert shall be fitted with a galvanized, 12 Ga. 304 stainless steel standard flap gate. Flap gate should be placed downslope of the soil/pipe interface, a minimum of 12", but no more than 24", to limit exposure of the pipe.

Provide all necessary fittings to convert between size and types and to provide tee, angle, or other connections.

The bioretention areas must not be backfilled with media until all contributing drainage areas, including the swale delivering stormwater to it, are stabilized with vegetation or other acceptable methods.

Excavation

Minimize compaction of both the base of the bioretention area (subsoil) and the required backfill by using wide track equipment. Ripping with track hoe teeth, or other suitable method, deep enough to address compaction issues resulting from construction operations (compaction will significantly contribute to reduced hydraulic performance and may result in design failure).

Cells must be dry before backfilling media, pump any excess water prior to backfilling. Use excavator teeth to address compaction, and at a minimum rake top layer of subsoil before placing sand-based media. In the top layer of bioretention media, unless organic matter is pre-mixed into media, place organic matter/soil over the sand, then rototill or surface mix to create a gradation zone. Backfill the remainder of the organic layer to the finish elevation.

Excavated material for media placement must be removed and suitable material may be reused elsewhere within the project area as part of comprehensive grading; unsuitable material shall be removed from the project area. The bottom dimensions of the bioretention media shall be as shown on the plans. The sidewalls of the facility must be roughened. The bottom of the facility should be graded flat with microtopography as directed.

Backfill

The Bioretention media must be placed in lifts of 6" inches. No heavy equipment is allowed in the basin area. If the Bioretention media becomes contaminated during the construction of the facility or during the course of construction thereafter, the contaminated material must be removed and replaced with uncontaminated material.

The planting soil specifications provide enough organic material to adequately supply nutrients from natural cycling. Do not add fertilizer but do add amendments to container planting as indicated on the plans.

Measurement and Payment

Bioretention areas shall be paid per each area installed and accepted by the Engineer in the field. Such price and payment shall be full compensation for the items of work including cost for furnishing all materials, labor, equipment, tools, and incidentals required by the above specification.

Payment will be made under:

Bid Item	Pay Item	Pay Unit
34	Bioretention	Each (EA)

10.3 Asphalt Trail

Description

The work in this section consists of installing the asphalt walking trail as shown on the plans.

Construction Methods and Materials

Materials

Material for this Contract is commonly known as Asphalt Binder and Asphalt Surface

All trails shall be improved with a surface course to the required width of the Greenway Trail Detail.

Plant mixed asphalt shall conform in all aspects to the latest NCDOT Standard Specification. To include design limits, asphalt cement content, and temperature range. A prime coat shall be applied when the base has been in place for seven (7) days or more. The compacted surface shall not be less than one and on-half (1 ½) inched thick.

City Engineer shall be notified prior to use of recycled asphalt.

Materials and workmanship are subject to twelve (12) months guarantee after acceptance of completed work.

Schedule

A paving schedule shall be submitted to the Engineer one (1) week in advance of beginning in order that emergency organizations may be notified and detours arranged if necessary. Work shall be so scheduled as to avoid extremely late working hours in attempts to complete specified phase of work.

Traffic Maintenance

The Contractor shall handle vehicular traffic in the area of work. Signs and flagmen shall be provided during working hours; and signs and lights required for safety reasons shall be maintained by Contractor. Methods and signs must comply with all NCDOT Standards and Regulations.

Temperature Limitations

Surface Course materials being placed in a layer less than 1" thick shall not be placed at an air temperature less than 50 degrees F. Surface course materials being placed at 1" or greater thickness shall not be placed at a temperature less than 40 degrees F.

Spreadings and Finishing

The bituminous mixtures shall be spread by an approved self-contained powered propelled paver. The bituminous mixture shall be placed so as to provide required thickness after compaction. The paver shall be equipped with an activated screen strike off assembly which is designed to be preheated and shall have a sliding shoe attachment which will form a slope on the edge of the mixture which will prevent raveling of the edge when the mixture is compacted.

Pavers shall be operated at forward speeds consistent with satisfactory laying of the mixture. Unevenness of texture, tearing, or shaving occurring during the pavement operation will be considered unsatisfactory and unacceptable work. Throwing back excess material will not be permitted. Pavers shall be equipped with a joint mating device so as to provide a smooth joint after compaction.

Compaction

The latest NCDOT approved mix shall be compacted to a 95% density. Rollers used for compaction shall be equipped with wetting and cleaning devices. Freshly laid asphalt shall first be compacted with tandem steel wheel rollers with maximum weight of ten (10) tons. No more than two (2) passes shall be made over the fresh asphalt with the steel rollers. The asphalt shall then be rolled with a pneumatic tire roller until required density and smoothness of surface is achieved. A final rolling with a steel wheel roller may be required to achieve a smooth riding surface.

Application

Trails shall receive a compacted layer of the latest NCDOT approved mix of the thickness specified on the detail. Tolerances to be as specified in Section 610, Standard Specifications, Jan 1, 1991 Edition. Contractor shall haul stone and asphalt to project site using dump trucks that will not comprise the compacted soil and create rutting of the soil or stone while being installed.

Base and Prime Coat

All surfaces receiving an asphalt coat shall be thoroughly cleaned. The street shall then receive a NC Highway approved tack coat (RS-1H) as described in Section 605 of NCDOT Standard Specifications, January 1, 1990 Edition in an amount of from (.02 to .08 gallons per square yard), sufficient to thoroughly bond existing surface and new bituminous concrete surface. Tack coat will not be applied during foggy, wet or threatening weather. Tack coat will not appear as a separate bid item. Payment for tack coat shall be included in the contract unit prices for SF9.5A mix as stated in the proposal.

Clean Up

Removal of excess bituminous materials shall not lag out of proportion with progress of resurfacing. Where pedestrian traffic is encountered, excess materials shall be immediately removed.

Joints

Placing of surface course shall be as nearly continuous as possible. The roller shall pass over the unprotected end of the freshly laid mixture only when the laying of this course is discontinued for such length of time as to permit the mixture to become chilled or unworkable.

In all cases, including the formation of the joints as hereinafter specified, provision shall be made for proper bond with new surface mixture by cutting and trimming back the joint in order to expose an unsealed or granular surface for the full specified depth of the course.

At the end of the day's work on the surface mixture, joints shall be formed by laying and rolling against boards of the thickness of the compacted mixture placed across the entire width of the pavement, or by such other methods as may be approved by the Engineer. When the laying of surface mixture is resumed, the exposed edge of the joint shall be painted with a thin coat of hot asphalt cement or asphalt cement thinned with naphtha, and the fresh mixture shall be raked against the joint, thoroughly tamped and rolled.

Base Course for Asphalt Paving

Immediately after approval of the sub-grade by the Engineer, a course aggregate base course meeting the requirements of these Specifications shall be placed.

The contractor shall provide adequate and suitable equipment of such capacity and character as will insure the consolidation of the base. The equipment shall be of approved design and shall be maintained in good mechanical condition.

It is the intent of these specifications that the full thickness of base course be placed in successive layers as early as practicable, as work progresses. The next working day after the first layer of base course is placed and compacted; the second layer shall be placed thereon and compacted. Subsequent layers shall follow on the next working day until the full thickness of base course is laid and compacted.

In handling and placing the base course material, care shall be taken to prevent segregation. Each layer of base course shall be of such thickness that it can be compacted to the proper density. No layer shall have a compacted thickness greater than 8 inches.

Each layer of base course shall be immediately and continually machined with motor graders maintaining the required section until it has been thoroughly compacted to 95 percent of the density determined by AASHTO Test Method T-99.

The base course shall be maintained in a moist condition during the compaction operation.

When completed, the base course shall be smooth, hard, dense, unyielding, and well bonded. A broom drag constructed to have at least four transverse rows of broom shall be used in connection with the final finishing and conditioning of the surface of the course aggregate base course if deemed necessary by the engineer.

Measurement and Payment

Asphalt trail shall be paid for in accordance with the following itemized descriptions. Such price and payment shall be full compensation for the items of work including cost for furnishing all materials, labor, equipment, tools, and incidentals required by the above specification.

Trail Grading – Bid price per lump sum for grading of trail and removal of soil to prepare for trail, also backfilling of trail once asphalt has been installed, per plans and specifications.

Trail Stone Base – Bid price per ton for ABC Stone base installed, rolled and compacted to prepare for asphalt pavement, per plans and specifications. Tickets will be collected for payment of item.

Trail Asphalt Binder – Bid price per ton of asphalt binder. Tickets will be collected for payment of item. 2-Inch depth binder to be used at trail entrances and tail leading to Basketball Court area.

Trail Asphalt Surface S9.5B or Equal with Tack Coat – Bid price per ton of S9.5B or equal installed, per plans and specifications. Tickets will be collected for payment of item.

Payment will be made under:

Bid Item	Pay Item	Pay Unit
Alt 11	Trail Grading	Lump Sum (LS)
Alt 12	Trail Stone Base	Tons (TN)
Alt 13	Trail Asphalt Binder	Tons (TN)
Alt 14	Trail Asphalt Surface S9.5B	Tons (TN)

BID PROPOSAL FORM
City of Morganton, North Carolina
Project Name: Bethel Park Restoration
Project Location: City of Morganton
Project Number: N/A

To: The City of Morganton, North Carolina

In compliance with the Bids dated _____, the undersigned bidder hereby offers, for the amount stated below, to furnish all labor, materials, tools, equipment, apparatus, facilities, transportation and permits for the construction of the Project referenced above (or that portion of the Work for the Project assigned to the bidder) described above and hereby agrees to enter into an agreement for the construction of the Project, if accepted by the City Council of the City of Morganton in the amount of:

Bid proposal for Bethel Park Restoration \$ _____

Bid proposal for Asphalt Trail Improvements (bid alternate) \$ _____

Total amount of Base Bid for the combine proposals: \$ _____

The above amount is stated in figures only and is the total amount bid for the entire contract work including all applicable taxes. The undersigned bidder agrees that, if awarded the contract, it will enter into the Agreement providing for the construction of the Work and will commence the Work within the time specified in the written Notice to Proceed and that all work will be completed within the

Contract Times:

Bethel Park Restoration: **240** calendar days.

Asphalt Trail Improvements **60** calendar days.

Further, the undersigned acknowledges receipt of the following addenda:

(addenda dated _____)

(addenda dated _____)

(addenda dated _____)

The bidder should fill in the words “not applicable” for any of the lines left blank above. To be considered, this bid proposal must include a bid bond in the amount and form specified in the Instructions to Bidders.

By submitting a bid, the bidder acknowledges that it has carefully reviewed the bid documents, the General Conditions, any supplemental conditions, all Drawings and Specifications and that it carefully inspected the Project site for any conditions that may affect the Work required by the Contract Documents.

The bidder also acknowledges that Minority Business Enterprise requirements apply to this Project and that the bidder will make a good faith effort at meeting the Minority Business Enterprise goals established by the City of Morganton.

Respectfully submitted,

(Firm Name)

By: _____

Title: _____

License #: _____

Address: _____

					Contractor's Bid Tab	
Item	Spec Section	Description	Quantity	Unit	Unit Price	Extended Total
		Site Preparation				
1	2.2	Mobilization and Demobilization	1	LS		
		Erosion and Sediment Control				
2	3.1	Silt Fence	8781	LF		
3	3.3	Temporary Rock Check Dam	5	EA		
4	3.4	Erosion Control Matting	9555	SY		
5	3.5	Temporary Stream Crossing - Culvert	1	EA		
6	3.6	Temporary Stream Crossing - Timber Mat	4	EA		
7	3.8	Turbidity Curtain	1	LS		
		Demolition				
8	4.1	Site Demolition	1	LS		
		Earthwork				
9	5.1	Grading	1	LS		
10	5.2	Tree Removal	1	LS		
		In-Stream Structures				
11	7.1	Log Sill	5	EA		
12	7.2	Log J-Hook	10	EA		
13	7.3	W-Weir	1	EA		
14	7.4	Brush Toe	990	LF		
15	7.5	Crayfish Glide	5	EA		
16	7.6	Constructed Riffle - CR	559	LF		
17	7.6	Constructed Riffle - ALR	204	LF		
18	7.6	Constructed Riffle - CH	353	LF		
19	7.7	Floodplain Sill	500	LF		
		Bridge Crossing				
20	8.0	Fiddlers Run Bridge Crossing	1	EA		
21	8.1	East Prong Hunting Creek Bridge Crossing	1	EA		
22	8.2	Floodplain Culverts	1	LS		
		Planting				
23	9.1	Temporary Seeding	22.0	AC		
24	9.2	Permanent Seeding - Floodplain Bench Planting Zones	7.8	AC		
25	9.2	Permanent Seeding - Bioretention Planting Zone	0.24	AC		
26	9.2	Permanent Seeding - Park/Bioswale Planting Zone	9.8	AC		

27	9.3	Livestakes	2770	EA		
28	9.3	Herbaceous Plugs - In-stream	2309	EA		
29	9.3	Herbaceous Plugs - Bioretention	642	EA		
30	9.4	5-Gallon Containerized Plants	12	EA		
31	9.5	Bare Roots	2363	EA		
32	9.6	Planting Warranty	1	LS		
		Park Features				
33	10.1	Bioswales	1400	LF		
34	10.2	Bioretention Areas	4	EA		
					Total Base Bid	

					Unit Price	
Alternate Bid Items - Provide Unit Costs ONLY						
Alt 1	3.2	Safety Fence/Tree Protection Fencing		LF		-----
Alt 2	5.1	Bedrock Excavation		CY		-----
Alt 3	5.1	Topsoil Harvesting		CY		-----
Alt 4	6.1	Misc. Boulders		TONS		-----
Alt 5	6.1	Misc. Gravel - #57 Stone		TONS		-----
Alt 6	6.1	Misc. Class ABC		TONS		-----
Alt 7	6.1	Misc. Class A Stone		TONS		-----
Alt 8	6.1	Misc. Class B Stone		TONS		-----
Alt 9	6.1	Misc. Class 1 Stone		TONS		-----
Alt 10	6.1	Misc. Class 2 Stone		TONS		-----

					Unit Price	Extended Total
Alternate Bid Item - Asphalt Trail Improvements - Provide Full Costs						
Alt 11	10.3	Trail Grading	1	LS		
Alt 12	10.3	Trail Stone Base	2,100	TONS		
Alt 13	10.3	Trail Asphalt Binder	165	TONS		
Alt 14	10.3	Trail Asphalt Surface S9.5B	775	TONS		
					Sub-total Asphalt Trail Alt	

State of North Carolina AFFIDAVIT A – Listing of Good Faith Efforts

County of _____

(Name of Bidder)

Affidavit of _____

I have made a good faith effort to comply under the following areas checked:

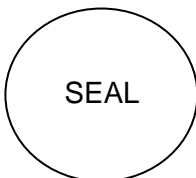
Bidders must earn at least 50 points from the good faith efforts listed for their bid to be considered responsive. (1 NC Administrative Code 30 I.0101)

- 1 – (10 pts)** Contacted minority businesses that reasonably could have been expected to submit a quote and that were known to the contractor, or available on State or local government maintained lists, at least 10 days before the bid date and notified them of the nature and scope of the work to be performed.
- 2 --(10 pts)** Made the construction plans, specifications and requirements available for review by prospective minority businesses, or providing these documents to them at least 10 days before the bids are due.
- 3 – (15 pts)** Broken down or combined elements of work into economically feasible units to facilitate minority participation.
- 4 – (10 pts)** Worked with minority trade, community, or contractor organizations identified by the Office of Historically Underutilized Businesses and included in the bid documents that provide assistance in recruitment of minority businesses.
- 5 – (10 pts)** Attended prebid meetings scheduled by the public owner.
- 6 – (20 pts)** Provided assistance in getting required bonding or insurance or provided alternatives to bonding or insurance for subcontractors.
- 7 – (15 pts)** Negotiated in good faith with interested minority businesses and did not reject them as unqualified without sound reasons based on their capabilities. Any rejection of a minority business based on lack of qualification should have the reasons documented in writing.
- 8 – (25 pts)** Provided assistance to an otherwise qualified minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letters of credit, including waiving credit that is ordinarily required. Assisted minority businesses in obtaining the same unit pricing with the bidder's suppliers in order to help minority businesses in establishing credit.
- 9 – (20 pts)** Negotiated joint venture and partnership arrangements with minority businesses in order to increase opportunities for minority business participation on a public construction or repair project when possible.
- 10 - (20 pts)** Provided quick pay agreements and policies to enable minority contractors and suppliers to meet cash-flow demands.

The undersigned, if apparent low bidder, will enter into a formal agreement with the firms listed in the Identification of Minority Business Participation schedule conditional upon scope of contract to be executed with the Owner. Substitution of contractors must be in accordance with GS143-128.2(d) Failure to abide by this statutory provision will constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of the minority business commitment and is authorized to bind the bidder to the commitment herein set forth.

Date: _____ Name of Authorized Officer: _____
 Signature: _____
 Title: _____



State of _____, County of _____
 Subscribed and sworn to before me this _____ day of _____ 20____
 Notary Public _____
 My commission expires _____

State of North Carolina --AFFIDAVIT B-- Intent to Perform Contract with Own Workforce.

County of _____

Affidavit of _____

(Name of Bidder)

I hereby certify that it is our intent to perform 100% of the work required for the _____

_____ contract.

(Name of Project)

In making this certification, the Bidder states that the Bidder does not customarily subcontract elements of this type project, and normally performs and has the capability to perform and will perform all elements of the work on this project with his/her own current work forces; and

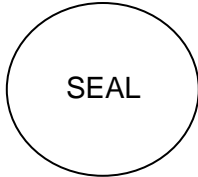
The Bidder agrees to provide any additional information or documentation requested by the owner in support of the above statement. The Bidder agrees to make a Good Faith Effort to utilize minority suppliers where possible.

The undersigned hereby certifies that he or she has read this certification and is authorized to bind the Bidder to the commitments herein contained.

Date: _____ Name of Authorized Officer: _____

Signature: _____

Title: _____



State of _____, County of _____

Subscribed and sworn to before me this _____ day of _____ 20____

Notary Public _____

My commission expires _____

State of North Carolina - AFFIDAVIT C - Portion of the Work to be Performed by HUB Certified/Minority Businesses

County of _____

(Note this form is to be submitted only by the apparent lowest responsible, responsive bidder.)

If the portion of the work to be executed by HUB certified/minority businesses as defined in GS143-128.2(g) and 128.4(a),(b),(e) is equal to or greater than 10% of the bidders total contract price, then the bidder must complete this affidavit.
 This affidavit shall be provided by the apparent lowest responsible, responsive bidder within **72 hours** after notification of being low bidder.

Affidavit of _____ I do hereby certify that on the _____
 (Name of Bidder)

_____ (Project Name)
 Project ID# _____ Amount of Bid \$ _____

I will expend a minimum of _____% of the total dollar amount of the contract with minority business enterprises. Minority businesses will be employed as construction subcontractors, vendors, suppliers or providers of professional services. Such work will be subcontracted to the following firms listed below. Attach additional sheets if required

Name and Phone Number	*Minority Category	**HUB Certified Y/N	Work Description	Dollar Value

*Minority categories: Black, African American (**B**), Hispanic (**H**), Asian American (**A**) American Indian (**I**), Female (**F**) Socially and Economically Disadvantaged (**D**)

**** HUB Certification with the state HUB Office required to be counted toward state participation goals.**

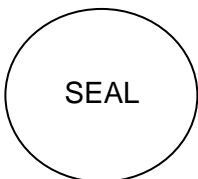
Pursuant to GS143-128.2(d), the undersigned will enter into a formal agreement with Minority Firms for work listed in this schedule conditional upon execution of a contract with the Owner. Failure to fulfill this commitment may constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of this commitment and is authorized to bind the bidder to the commitment herein set forth.

Date: _____ Name of Authorized Officer: _____

Signature: _____

Title: _____



State of _____, County of _____

Subscribed and sworn to before me this _____ day of _____ 20____

Notary Public _____

My commission expires _____

State of North Carolina AFFIDAVIT D – Good Faith Efforts

County of _____

(Note this form is to be submitted only by the apparent lowest responsible, responsive bidder.)

If the goal of 10% participation by HUB Certified/ minority business **is not** achieved, the Bidder shall provide the following documentation to the Owner of his good faith efforts:

Affidavit of _____ I do hereby certify that on the _____
(Name of Bidder)

Project ID# _____ (Project Name) Amount of Bid \$ _____

I will expend a minimum of _____% of the total dollar amount of the contract with HUB certified/ minority business enterprises. Minority businesses will be employed as construction subcontractors, vendors, suppliers or providers of professional services. Such work will be subcontracted to the following firms listed below. (Attach additional sheets if required)

Name and Phone Number	*Minority Category	**HUB Certified Y/N	Work Description	Dollar Value

*Minority categories: Black, African American (**B**), Hispanic (**H**), Asian American (**A**) American Indian (**I**), Female (**F**) Socially and Economically Disadvantaged (**D**)

**** HUB Certification with the state HUB Office required to be counted toward state participation goals.**

Examples of documentation that may be required to demonstrate the Bidder's good faith efforts to meet the goals set forth in these provisions include, but are not necessarily limited to, the following:

- A. Copies of solicitations for quotes to at least three (3) minority business firms from the source list provided by the State for each subcontract to be let under this contract (if 3 or more firms are shown on the source list). Each solicitation shall contain a specific description of the work to be subcontracted, location where bid documents can be reviewed, representative of the Prime Bidder to contact, and location, date and time when quotes must be received.
- B. Copies of quotes or responses received from each firm responding to the solicitation.
- C. A telephone log of follow-up calls to each firm sent a solicitation.
- D. For subcontracts where a minority business firm is not considered the lowest responsible sub-bidder, copies of quotes received from all firms submitting quotes for that particular subcontract.
- E. Documentation of any contacts or correspondence to minority business, community, or contractor organizations in an attempt to meet the goal.
- F. Copy of pre-bid roster
- G. Letter documenting efforts to provide assistance in obtaining required bonding or insurance for minority business.
- H. Letter detailing reasons for rejection of minority business due to lack of qualification.
- I. Letter documenting proposed assistance offered to minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letter of credit, including waiving credit that is ordinarily required.

Failure to provide the documentation as listed in these provisions may result in rejection of the bid and award to the next lowest responsible and responsive bidder.

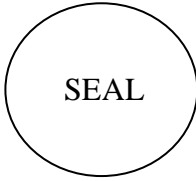
Pursuant to GS143-128.2(d), the undersigned will enter into a formal agreement with Minority Firms for work listed in this schedule conditional upon execution of a contract with the Owner. Failure to fulfill this commitment may constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of this commitment and is authorized to bind the bidder to the commitment herein set forth.

Date: _____ Name of Authorized Officer: _____

Signature: _____

Title: _____



State of _____, County of _____

Subscribed and sworn to before me this _____ day of _____ 20____

Notary Public _____

My commission expires _____



RFP Number (if applicable): _____

Name of Vendor or Bidder: _____

**IRAN DIVESTMENT ACT CERTIFICATION
REQUIRED BY N.C.G.S. 143C-6A-5(a)**

As of the date listed below, the vendor or bidder listed above is not listed on the Final Divestment List created by the State Treasurer pursuant to N.C.G.S. 143-6A-4.

The undersigned hereby certifies that he or she is authorized by the vendor or bidder listed above to make the foregoing statement.

Signature

Date

Printed Name

Title

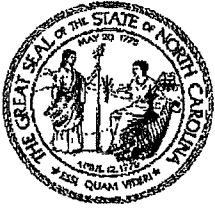
Notes to persons signing this form:

N.C.G.S. 143C-6A-5(a) requires this certification for bids or contracts with the State of North Carolina, a North Carolina local government, or any other political subdivision of the State of North Carolina. The certification is required at the following times:

- When the bid is submitted
- When a contract is entered into (if the certification was not already made when the vendor made its bid)
- When a contract is renewed or assigned

N.C.G.S. 143C-6A-5(b) requires that contractors with the State, a North Carolina local government, or any other political subdivision of the State of North Carolina must not utilize any subcontractor found on the State Treasurer's Final Divestment List.

The State Treasurer's Final Divestment List can be found on the State Treasurer's website at the address www.nctreasurer.com/iran and will be updated every 180 days.



NORTH CAROLINA
DEPARTMENT OF STATE TREASURER
STATE AND LOCAL GOVERNMENT FINANCE DIVISION
AND THE LOCAL GOVERNMENT COMMISSION

JANET COWELL
TREASURER

GREGORY C. GASKINS
DEPUTY TREASURER

Memorandum # 2016-10

TO: All Local Governments, Public Authorities and Their Independent Auditors
FROM: Sharon Edmundson, Director, Fiscal Management Section
SUBJECT: Iran Divestment Act Notice for Local Governments in North Carolina
DATE: February 17, 2016

The North Carolina Department of State Treasurer is providing this letter to Local Government Units to explain new contracting and procurement compliance obligations created by the Iran Divestment Act of 2015 (N.C.G.S. 143C-6A-1 to 6A-9).^{*} Local Government Units should be aware that effective February 26, 2016, this law imposes new obligations on each new bid process, each new contract, and each renewal or assignment of an existing contract. The specific requirements are as follows:

- 1. Local Government Units must obtain a one-page mandatory certification under the Act.** (See sample "Contract Certification" form below for details.)
- 2. Local Government Units may not enter into contracts with any entity or individual found on the State Treasurer's Iran Final Divestment List.** This list will be posted on the Department of State Treasurer's website on February 26, 2016 and will be updated every 180 days. (See "Contract Restrictions" below for details.)

Background

The Iran Divestment Act's requirements applicable to Local Government Units** will become effective on February 26, 2016, at the time the State Treasurer publishes the first list of prohibited companies and individuals (a "Final Divestment List") under the Act.

^{*} The Iran Divestment Act of 2015 can be found online at:

<http://www.ncleg.net/Sessions/2015/Bills/Senate/PDF/S455v5.pdf>

^{**} The Act's requirements use the term "State agency." G.S. 143C-6A-3(7) provides that in the act, the term "State agency" includes not only State departments, boards, and commissions, but also "any political subdivision of the State" such as a Local Government Unit.

Final Divestment List

The Department of State Treasurer develops the Final Divestment List using data from a research vendor, U.S. federal sanctions lists, and other credible information available to the public. It consists of any individual or company, including parent entities and majority owned subsidiaries, that:

- Provided goods or services of \$20,000,000 or more within any 12-month period in the energy sector of Iran during the preceding five years;
- Extended \$20,000,000 or more in credit, under certain circumstances, to another individual or company that will use the credit to provide goods or services in the energy sector in Iran. (G.S. 143C-6A-3(4).)

The Department of State Treasurer will update the Final Divestment List at least every 180 days. The list will be published on the State Treasurer's website at www.nctreasurer.com/Iran and periodically circulated to Local Government Units.

Requirement 1: Contract Certification

For new procurements and new, renewed, or assigned contracts on or after February 26, 2016, each Local Government Unit must obtain a simple certification from each bidder or vendor. The bidder or vendor must affirm that it is not listed on the State Treasurer's Final Divestment List found at www.nctreasurer.com/Iran as of the date of signature. The certification is due at the time a bid is submitted or the time a contract is entered into, renewed, or assigned. (G.S. 143C-6A-5(a).)

We have attached on the next page a short form that can be used for this certification, but Local Government Units are free to instead use their own form or put the required certification in the text of a contract or purchase order. Each Local Government Unit shall maintain its own records demonstrating these certifications.

Requirement 2: Restriction on Contracting

Individuals or companies on the Final Divestment List are ineligible to contract or subcontract with Local Government Units. (G.S. 143C-6A-6(a).) Any existing contracts with these Iran-linked persons will be allowed to expire in accordance with the contract's terms. (G.S. 143C-6A-6(c).)

Contracts valued at less than \$1,000.00 are exempt from this restriction. (G.S. 143C-6A-7(a).) In addition, a Local Government Unit may contract with a listed individual or company if it makes a good-faith determination that (1) the commodities or services are necessary to perform its functions and (2) that, absent such an exemption, it would be unable to obtain those commodities or services. (G.S. 143C-6A-7(c).) Local Government Units shall enter such exemptions into the procurement record.

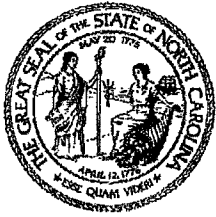
Memorandum #2016-10
Iran Divestment Act
February 17, 2016
Page 3

The Act provides that vendors to Local Government Units may not utilize any subcontractor found on the State Treasurer's Final Divestment List. (N.C.G.S. 143C-6A-5(b).) It is each vendor's responsibility to monitor its compliance with this restriction.

Next Steps

The Department of State Treasurer anticipates distributing the first Final Divestment List on February 26, 2016. Once the List has been distributed, all Local Government Units should meet the contract certification requirements.

If you have questions about the Department of State Treasurer's Iran Divestment Policy, please contact Sharon Edmundson at Sharon.Edmundson@nctreasurer.com or 919-814-4289.



JANET COWELL
TREASURER

NORTH CAROLINA
DEPARTMENT OF STATE TREASURER
INVESTMENT MANAGEMENT DIVISION

FINAL DIVESTMENT LIST – IRAN

As of 26 February 2016

Exercising the duties required under N.C.G.S. 143C-6A-4, the State Treasurer has determined that the following persons appear to be engaged in “investment activities in Iran,” as that term is defined in the North Carolina Iran Divestment Act of 2015, based on federal sanctions lists and other publicly available credible information.

The State Treasurer and North Carolina Retirement Systems may not invest funds with, and must divest any existing investment with, the persons listed below. N.C.G.S. 143C-6A-4.

Persons listed below are ineligible to contract with the State of North Carolina or any political subdivision of the State. N.C.G.S. 143C-6A-6. Any existing contracts with persons listed below shall be allowed to expire in accordance with the terms of the contract. N.C.G.S. 143C-6A-6(c).

The Department of State Treasurer is not responsible for compliance with the Iran Divestment Act by other agencies or political subdivisions of the State of North Carolina. The Department of State Treasurer’s responsibilities are solely focused on implementing G.S. 143C-6A-4, which relates to the Department’s investments, and implementing the Act as it relates to the identification of companies that appear to be engaged in investment activities in Iran.

Companies listed as a result of their own apparent investment activities in Iran

Listed Company	Country	Ticker
Chennai Petroleum Corporation Ltd	India	BSE:500110
China CSSC Holdings Limited	China	SHSE:600150
China Oilfield Services Ltd.	China	SEHK:2883
China Petroleum & Chemical Corp.	China	SEHK:386
China Shipbuilding Industry Company Limited	China	SHSE:601989
Daelim Industrial Co., Ltd.	South Korea	KOSE:A000210
Indian Oil Corporation Limited	India	BSE:530965
ITOCHU Corporation	Japan	TSE:8001
JNK Heaters Co., Ltd.	South Korea	KOSDAQ:A126880
Odfjell SE	Norway	OB:ODF
Oil and Natural Gas Corp. Ltd.	India	NSEI:ONGC
PetroChina Co. Ltd.	China	SEHK:857
PTT Global Chemical Public Company Limited	Thailand	SET:PTTGC
Sinopec Kantons Holdings Limited	Hong Kong	SEHK:934
The Siam Cement Public Company Limited	Thailand	SET:SCC
Welcron Kangwon Co., Ltd.	South Korea	KOSDAQ:A114190

The Act indicates that “persons” subject to the Act include not only companies listed as a result of their own apparent investment activities in Iran, as listed above, but also any “parent entity owning more than 20%” or

any "majority-owned subunit or subsidiary" of that company. N.C.G.S. 143C-6A-3(6) and 6A-4. Subsidiaries and parents of the companies listed above are found in the separate Iran Parent and Subsidiary Guidance list. This list can be found at the address www.nctreasurer.com/iran on the State Treasurer's website.

STATE OF _____

AFFIDAVIT

COUNTY OF _____

NOW COMES Affiant, first being sworn, deposes and says as follows

1. _____ (“the Contractor/Supplier”) has submitted a bid for contract or desired to enter into a contract with the City of Morganton, and I am the _____ of the Contractor/Supplier.

2. As part of my duties and responsibilities pursuant to said bid and/or contract, I attest that the Contractor/Supplier is aware of and in compliance with the requirements of E-Verify, Article 2 of Chapter 64 of the North Carolina General Statutes, to include (mark which applies):

___ After hiring an employee to work in the United States the Contractor/Supplier verifies the work authorization of said employee through E-Verify and retains the record of the verification of work authorization while the employee is employed and for one year thereafter; or

___ The Contractor/Supplier employs less than twenty-five (25) employees in the State of North Carolina.

3. As part of my duties and responsibilities pursuant to said bid and/or contract, I attest that to the best of the Contractor’s/Supplier’s knowledge any subcontractors employed as a part of this bid and/or contract are in compliance with the requirements of E-Verify, Article 2 of Chapter 64 of the North Carolina General Statutes, to include (mark which applies):

___ After hiring an employee to work in the United States the subcontractor verifies the work authorization of said employee through E-Verify and retains the record of the verification of work authorization while the employee is employed and for one year thereafter; or

___ Employs less than twenty-five (25) employees in the State of North Carolina.

Pursuant to North Carolina General Statute § 143-133.3(c)(2), contracts solely for the purchase of apparatus, supplies, materials, and equipment are exempt from the E-Verify provision.

This the _____ day of _____, 20____.

AFFIANT:

Business Name_____

Address_____

Signature_____

Printed Name_____

Title_____

Sworn to and subscribed before me, this the _____ day of _____, 20____.

[OFFICIAL SEAL]

_____, Notary Public

My Commission Expires: _____

FORM OF BID BOND

KNOW ALL MEN BY THESE PRESENTS THAT _____

_____ as principal, and _____, as surety, who is duly licensed to act as surety in North Carolina, are held and firmly bound unto the City of Morganton through _____ as obligee, in the penal sum of _____ DOLLARS, lawful money of the United States of America, for the payment of which, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

Signed, sealed and dated this ____ day of _____, 20_____.

WHEREAS, the said principal is herewith submitting proposal for and the principal desires to file this bid bond in lieu of making the cash deposit as required by G.S. 143-129.

NOW, THEREFORE, THE CONDITION OF THE ABOVE OBLIGATION is such, that if the principal shall be awarded the contract for which the bid is submitted and shall execute the contract and give bond for the faithful performance thereof within ten (10) days after the award of same to the principal, then this obligation shall be null and void; but if the principal fails to so execute such contract and give performance bond as required by G.S. 143-129, the surety shall, upon demand, forthwith pay to the obligee the amount set forth in the first paragraph hereof. Provided further, that the bid may be withdrawn as provided by G.S. 143-129.1.

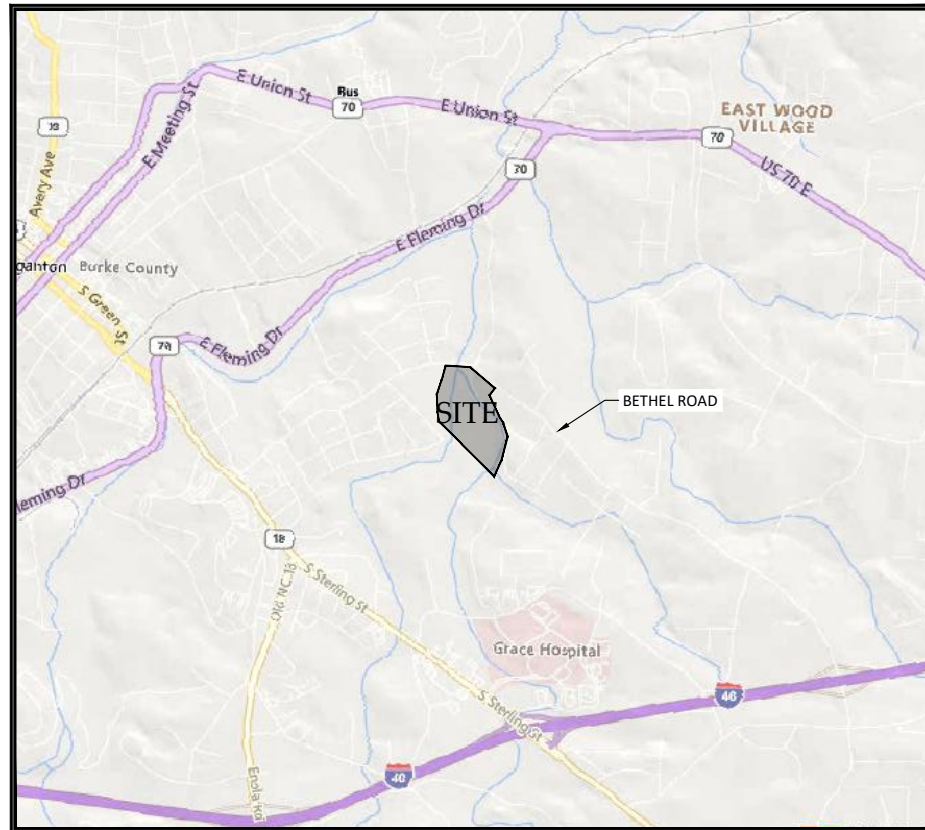
_____(SEAL)
_____(SEAL)
_____(SEAL)
_____(SEAL)
_____(SEAL)

Bethel Park Restoration

Morganton, North Carolina

for

City of Morganton



Vicinity Map
Not to Scale

Address: 600 Bethel Road,
Morganton, NC 28655

Site Coordinates	
Latitude	Longitude
35.7407°	-81.6607°



BEFORE YOU DIG!
CALL 1-800-632-4949
N.C. ONE-CALL CENTER
IT'S THE LAW!



Final Plans
October 16, 2023

Sheet Index

Title Sheet	0.1
Legend	0.2
General Notes and Sequence	0.3
Project Overview	0.4
Demolition Plan	1.0 - 1.4
East Prong Hunting Creek Plan and Profile	2.1.1 - 2.1.5
Fiddlers Run Plan and Profile	2.2.1 - 2.2.4
Grading Plan	3.0 - 3.4
Park Drainage Plan	4.0 - 4.3
Erosion & Sediment Control Plan - Phase 1 - Perimeter Control	5.0 - 5.3
Erosion & Sediment Control Plan - Phase 2 - Stream Construction	5.4 - 5.7
Erosion & Sediment Control Plan - Phase 3 - Park Improvements	5.8 - 5.11
Planting Tables	6.0
Planting Plan	6.1 - 6.4
Details	7.1 - 7.9
Bridge Plan	8.1 - 8.6

Project Directory

Engineering:
Wildlands Engineering, Inc
497 Bramson Ct, Suite 104
Mount Pleasant, SC 29464

Geoff Smith, PE
(843) 814-3308

Owner:
City of Morganton
305 E. Union St. Suite A100
Morganton, NC 28655

Attn: Rob Winkler
(828) 438-5278
rwinkler@morgantonnc.gov



Revisions:	

Legend

Existing Features

- Existing Thalweg
- Existing Property Line
- Existing Major Contour
- Existing Minor Contour
- Existing Overhead Electric
- Existing Underground Electric
- Existing Sanitary Sewer
- Existing Water Line
- Existing Fence (To Be Removed by the City)
- Existing Asphalt Walking Trail (To Be Removed by the City)
- Existing Wetland
- Existing Tree
- Existing Disc Golf Hole (To Be Removed by the City)
- Existing Bridge (To Be Removed by the Contractor)
- Existing Culvert
- Existing Parking Lot

Proposed Features

- Proposed Thalweg Alignment
- Proposed Bankfull
- Proposed Major Contour
- Proposed Minor Contour
- Proposed Conservation Easement
- Proposed Asphalt Walking Trail

Proposed Structures

- Proposed Various Constructed Riffles Per Plans See Details 1-3, Sheet 7.1
- Proposed Crayfish Glide See Detail 4, Sheet 7.1
- Proposed Brush Toe See Detail 1, Sheet 7.2
- Proposed Log Sill See Detail 1, Sheet 7.3
- Proposed Log J-Hook See Detail 3 Sheet 7.3
- Proposed W-Weir See Detail 4, Sheet 7.3
- Proposed Bridge See Sheets 8.1-8.6

Erosion Control Features

- Proposed Temporary Rock Check Dam See Detail 2, Sheet 7.2
- Proposed Stockpile Area See Detail 3, Sheet 7.2
- Proposed Staging/Stockpile Area See Detail 3, Sheet 7.2
- Proposed Temporary Silt Fence See Detail 1, Sheet 7.4
- Proposed Temporary Stream Crossing - Timber Mat See Detail 3, Sheet 7.4
- Proposed Temporary Stream Crossing - Culvert See Detail 4, Sheet 7.4
- Proposed Channel Plug See Detail 2, Sheet 7.5
- Proposed Turbidity Curtain See Detail 3, Sheet 7.5
- Proposed Limits of Disturbance

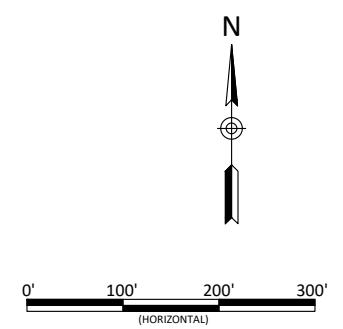
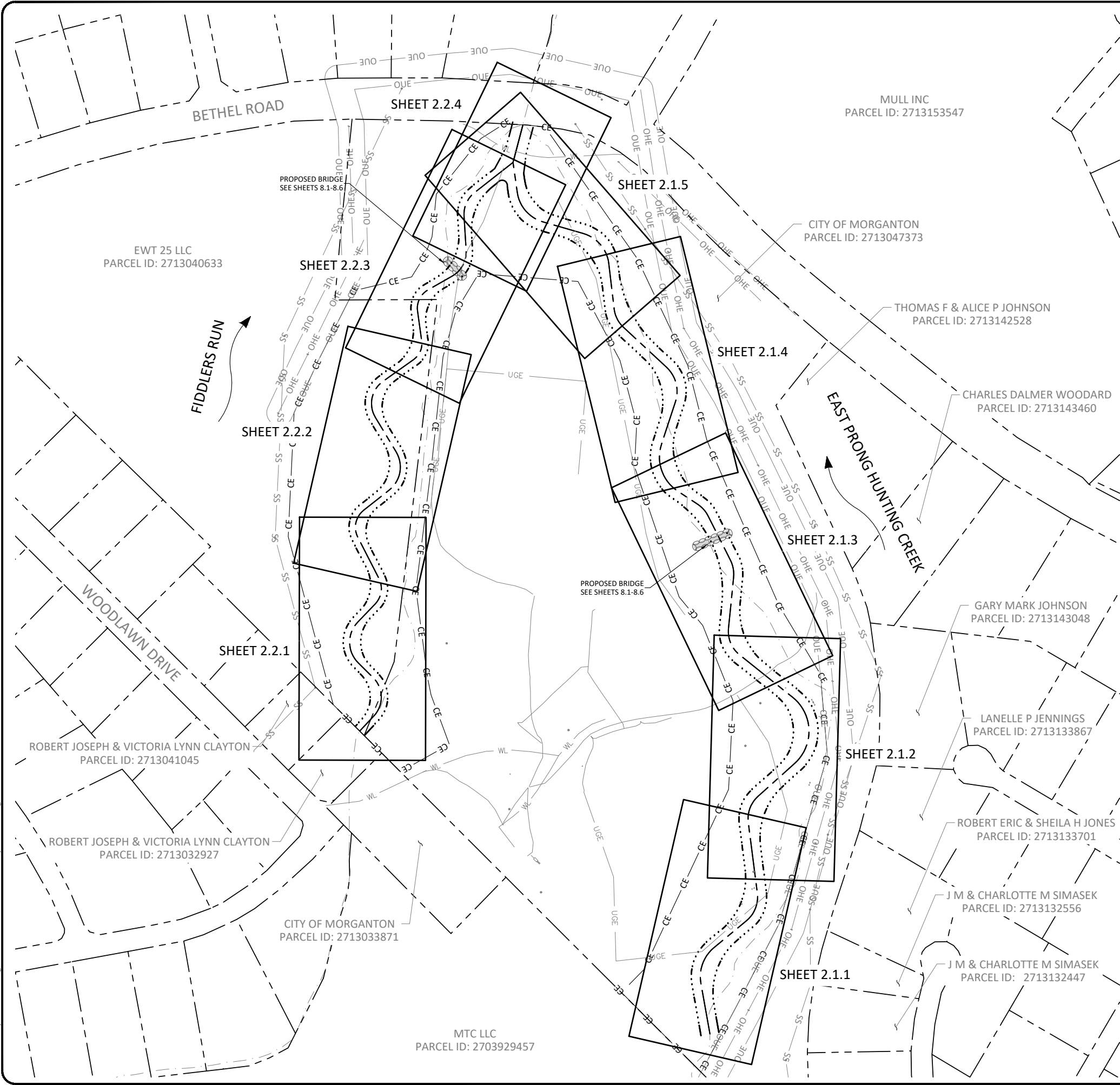


Revisions:

Date: 10.16.2023
Job Number: 005-16357
Project Engineer: GLS
Drawn By: TWW & MK
Checked By: DJH

October 16, 2023

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NC Firm License No. F4831



Bethel Park Restoration
Morganton, North Carolina

Project Overview



Revisions:

Date: 10.16.2023
Job Number: 005-1637
Project Engineer: GJS
Drawn By: JMW & MK
Checked By: DJH

0.4

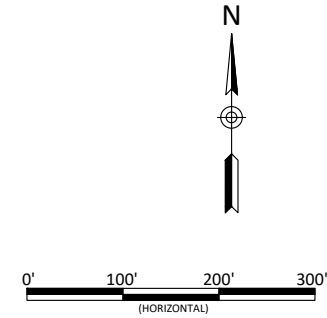
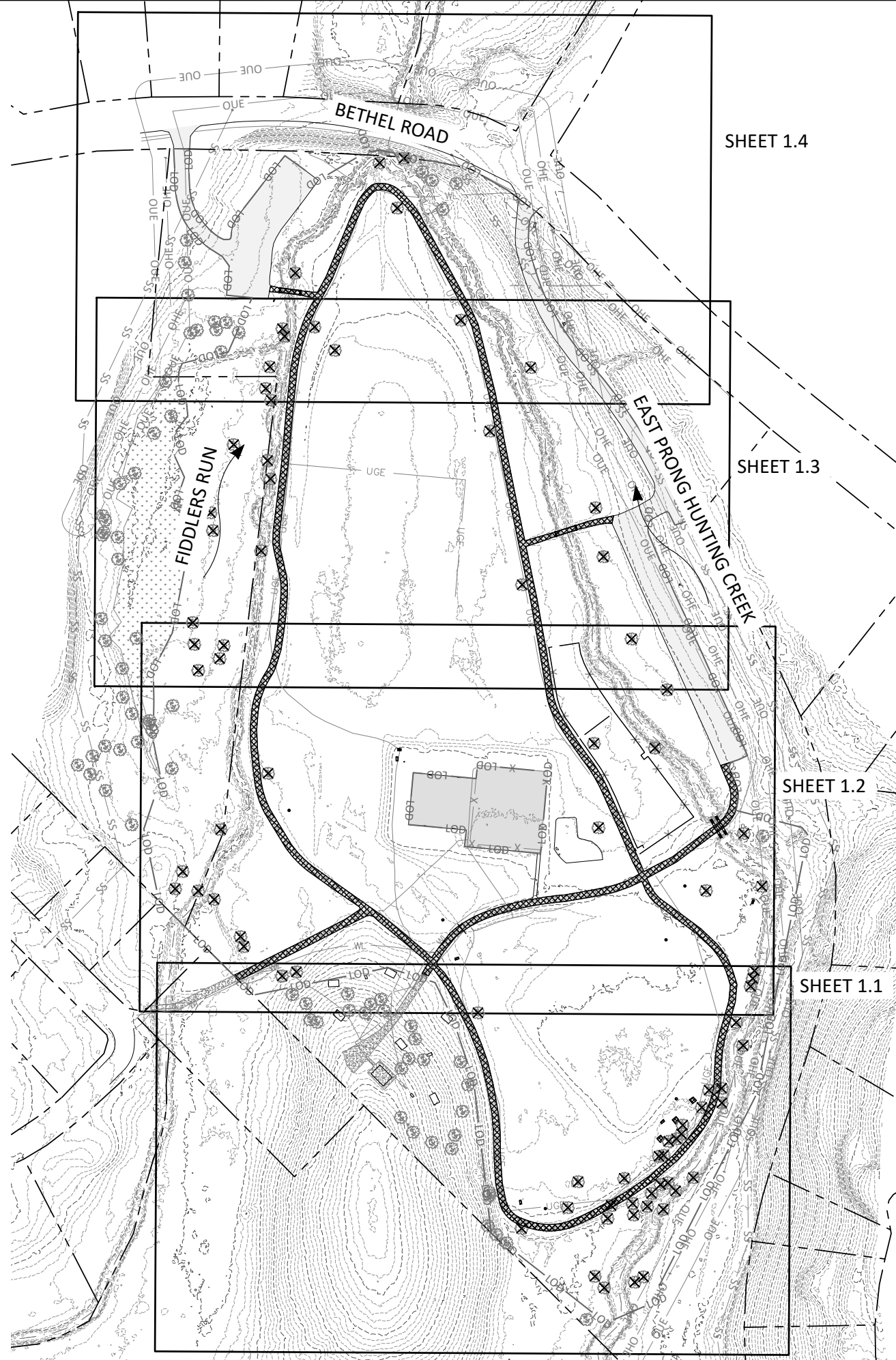
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Demolition Legend

-  EXISTING PARK STRUCTURE TO BE REMOVED
-  EXISTING TREE TO BE REMOVED

NOTES:

1. CITY TO FELL TREES IDENTIFIED ON THE PLANS TO THE MAXIMUM EXTENT PRACTICABLE. THE CONTRACTOR IS RESPONSIBLE FOR MOVING, LIMBING, AND CUTTING TREES TO LENGTHS NECESSARY FOR WOODY STRUCTURE INSTALLATION AS IDENTIFIED IN THE PLANS AND SPECIFICATIONS. STUMPS NOT LOCATED IN THE ALIGNMENT OF THE NEW CHANNEL OR PROPOSED WALKING TRAIL MAY REMAIN IN PLACE AS WOODY DEBRIS. REMOVED STUMPS SHALL EITHER BE CHIPPED FOR REUSE ON SITE OR BY THE CITY, OR DISPOSED OF OFFSITE AS DIRECTED BY THE CITY.
2. DE-ENERGIZED ELECTRIC MAY BE LEFT IN PLACE UNLESS OTHERWISE EXPOSED DURING GRADING ACTIVITIES. WHERE EXPOSURE OCCURS AS PART OF THE GRADING OPERATIONS, THE CONTRACTOR SHALL REMOVE ALL EXPOSED UTILITY WITHIN 5 FEET OF FINISH GRADE.



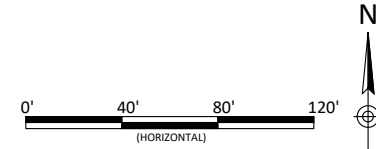
Bethel Park Restoration Morganton, North Carolina

Demolition Plan

Revisions:

Date: 10.16.2023
 Job Number: 005-16357
 Project Engineer: GJS
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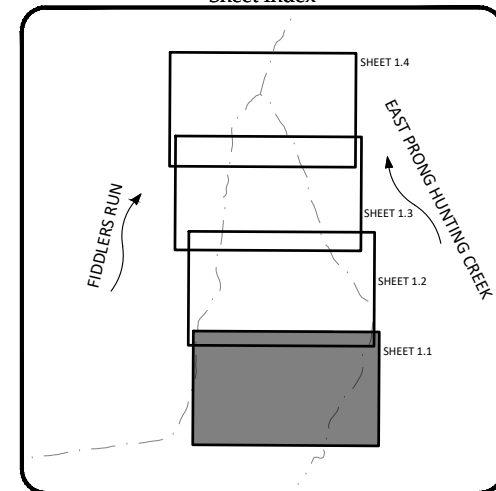
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Sheet Index



Bethel Park Restoration
Morganton, North Carolina

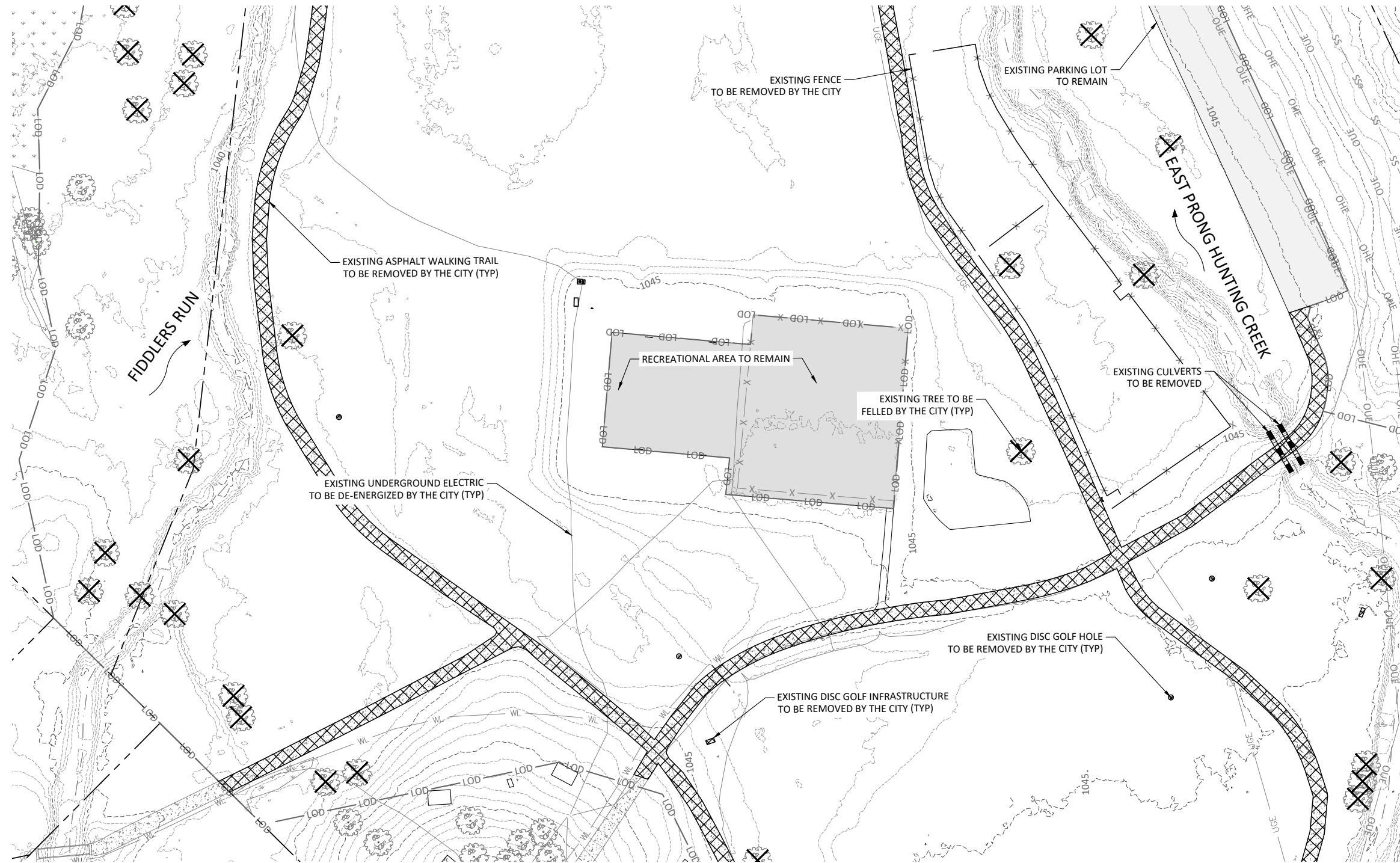
Demolition Plan

Date:	10.16.2023
Job Number:	005-16357
Project Engineer:	GLS
Drawn By:	TWW & MK
Checked By:	DH

1.1

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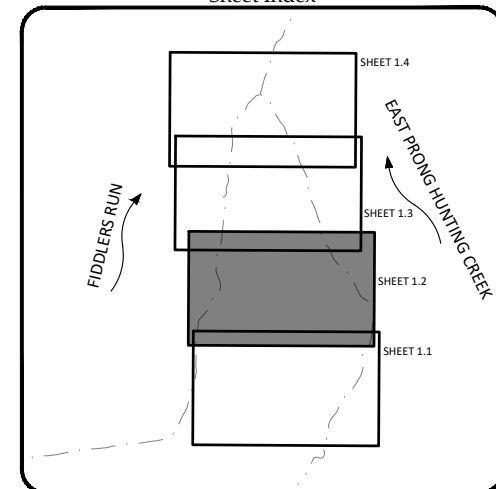




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Sheet Index



Bethel Park Restoration
Morganton, North Carolina

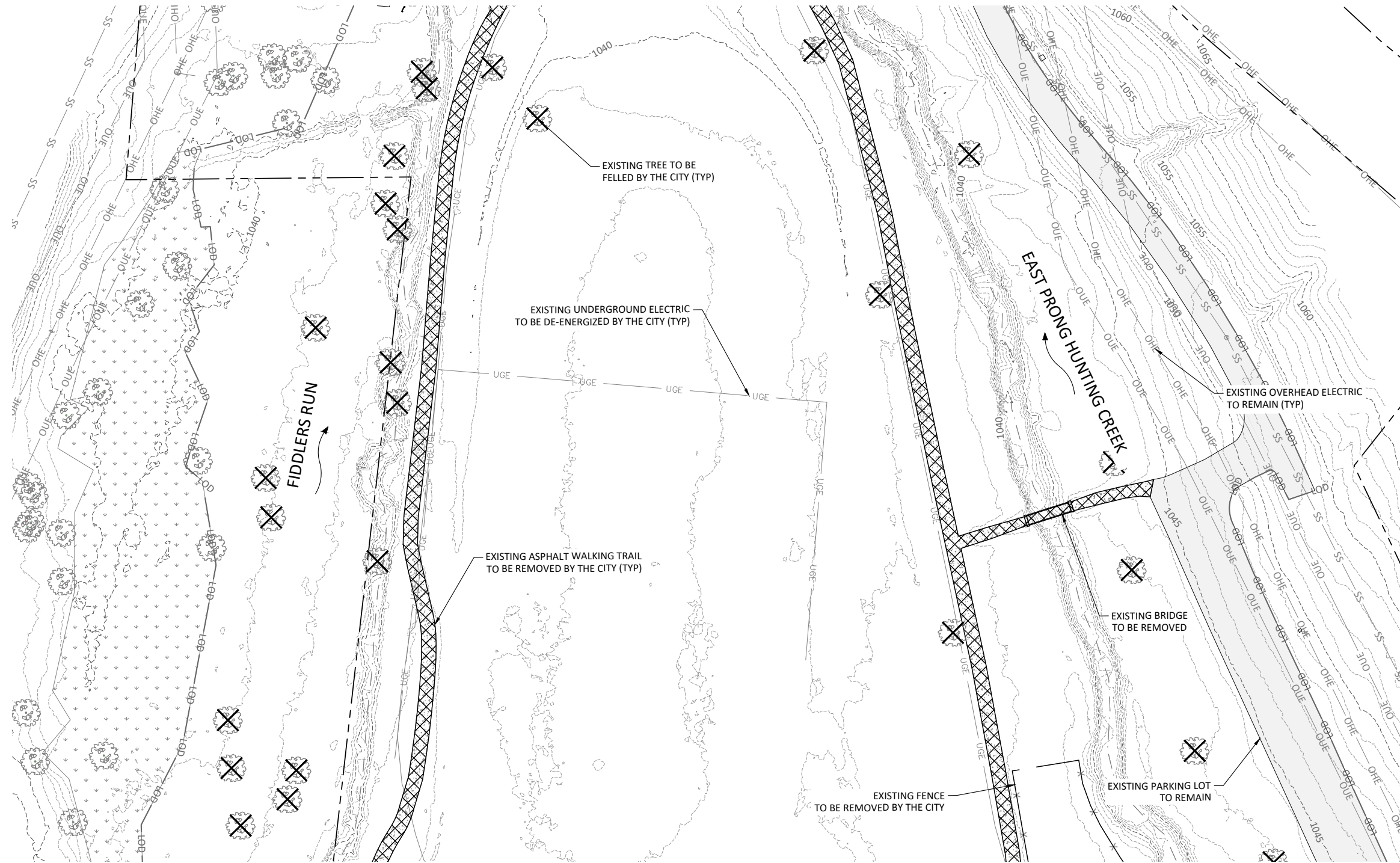
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Revisions:

Date: 10.16.2023
 Job Number: 005-16357
 Project Engineer: GLS
 Drawn By: JWW & MK
 Checked By: DJH

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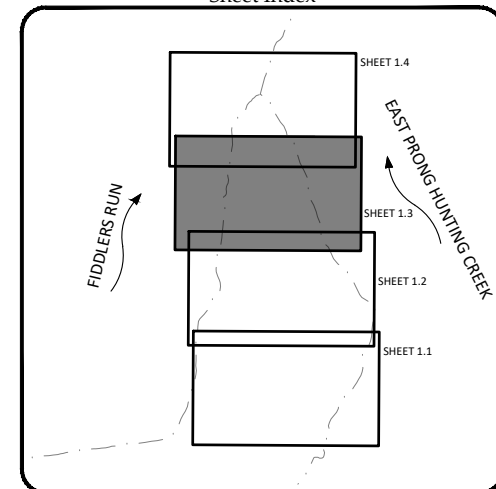




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Sheet Index



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Job Number:	005-16357
Project Engineer:	GLS
Drawn By:	TWW & MK
Checked By:	DH

1.3

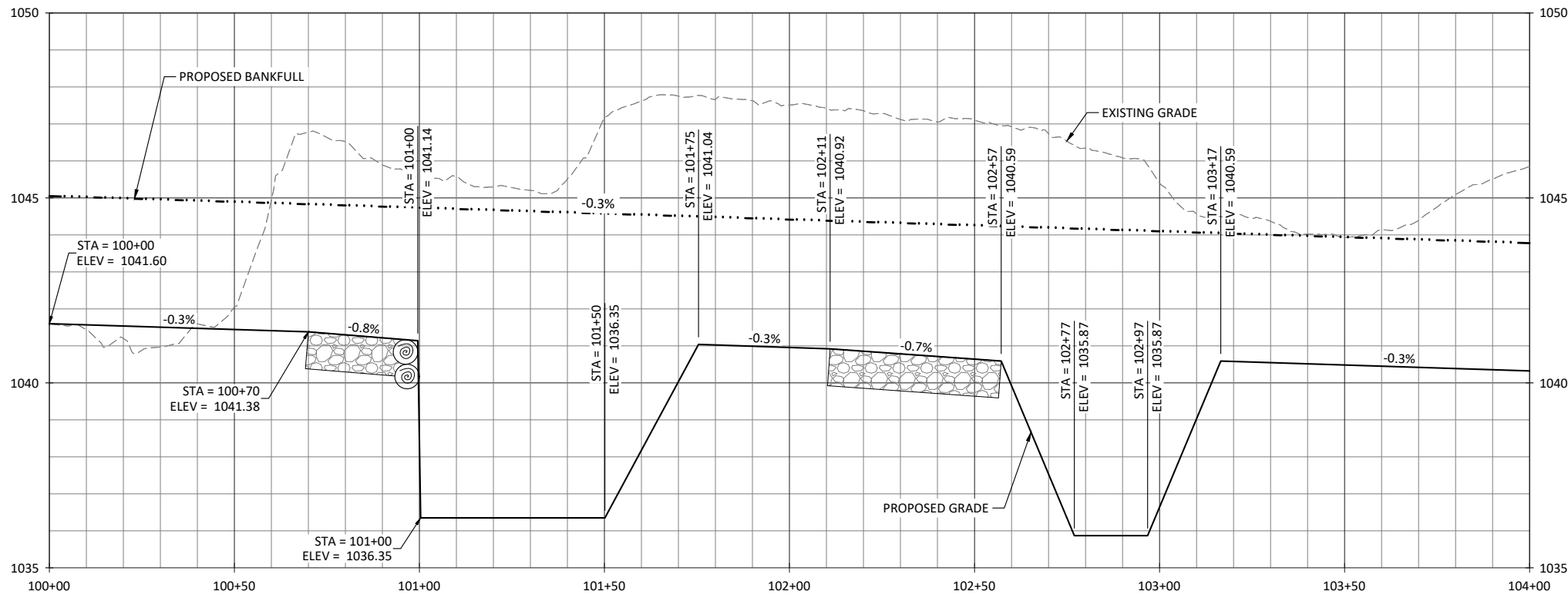
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Bethel Park Restoration
Morganton, North Carolina

Demolition Plan

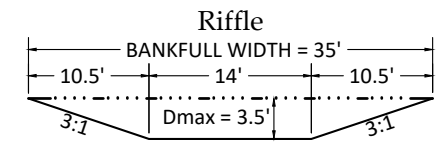


October 16, 2023

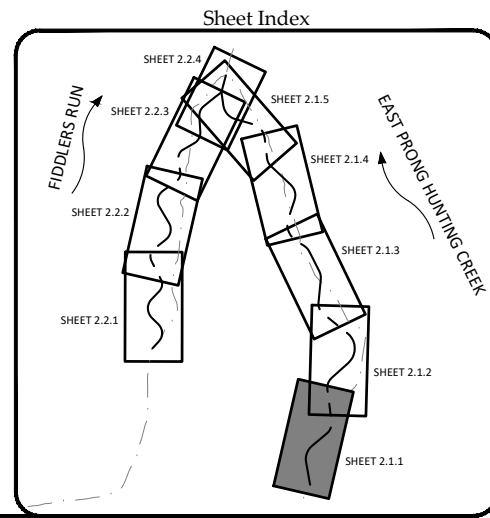
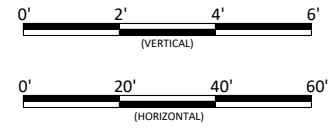
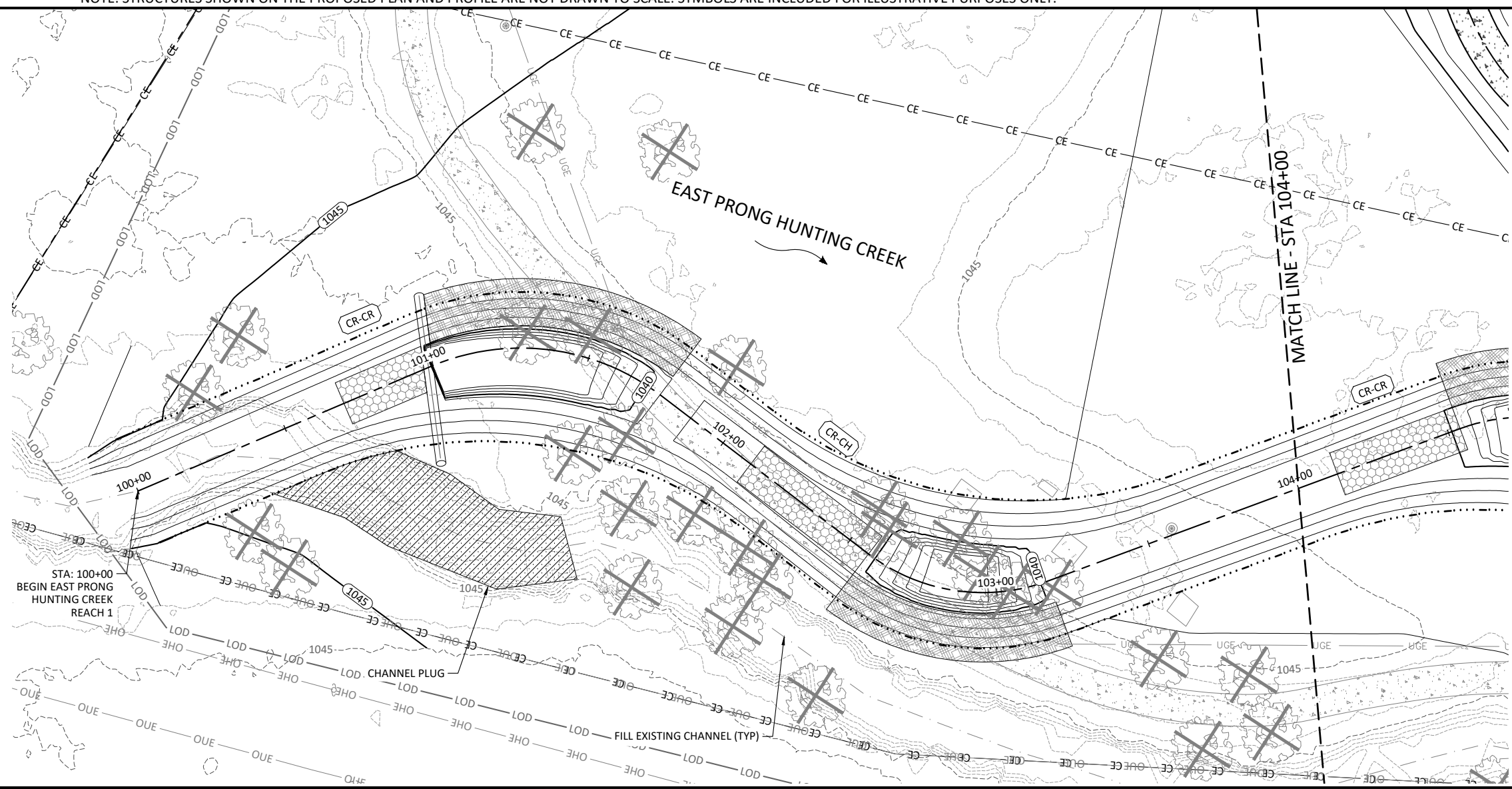
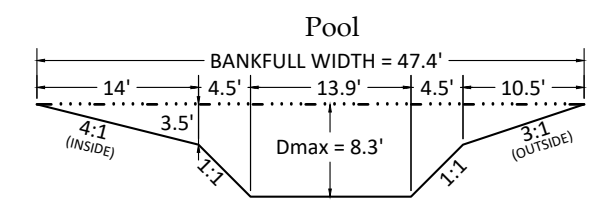


NOTE: STRUCTURES SHOWN ON THE PROPOSED PLAN AND PROFILE ARE NOT DRAWN TO SCALE. SYMBOLS ARE INCLUDED FOR ILLUSTRATIVE PURPOSES ONLY.

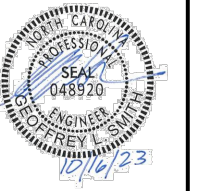
Typical Sections - Reach 1



Station 100+00 - 104+00



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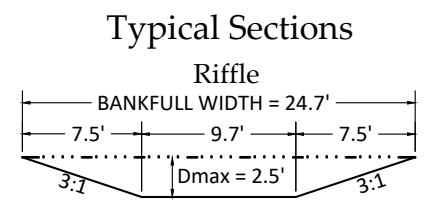
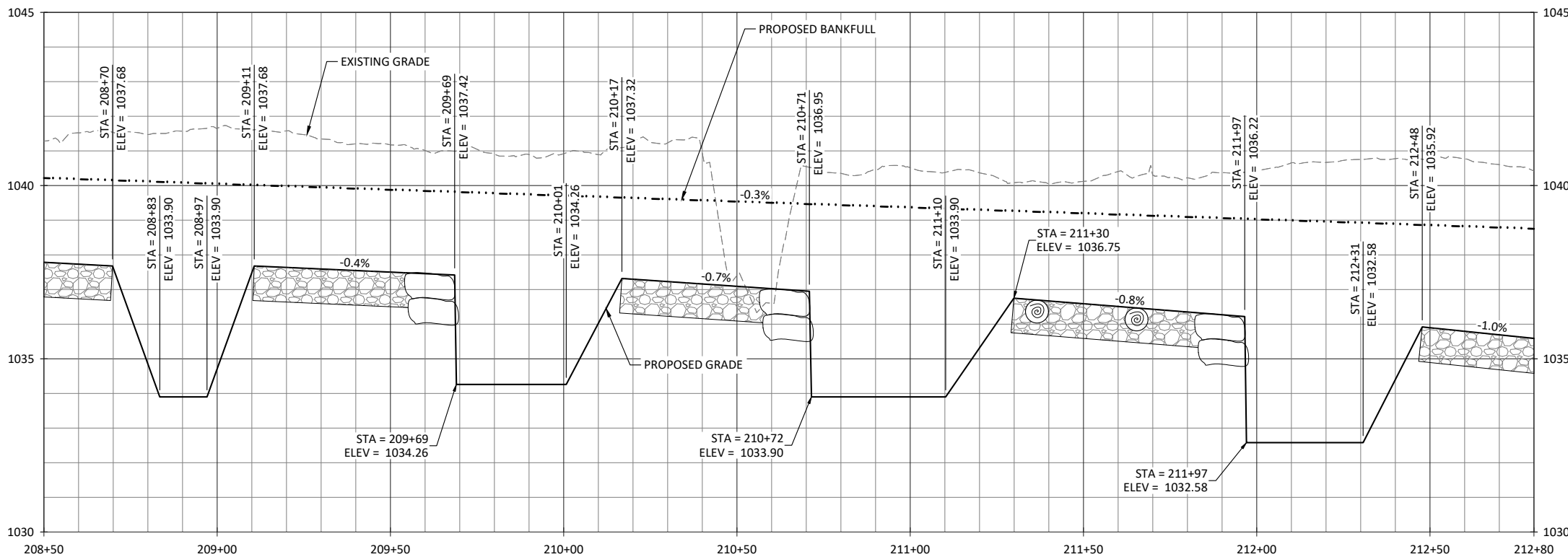
Bethel Park Restoration
Morganton, North Carolina
East Prong Hunting Creek Plan and Profile
Reach 1

Date:	10.16.2023
Job Number:	005-16357
Project Engineer:	GLS
Drawn By:	TWW & MK
Checked By:	DHT
Revisions:	

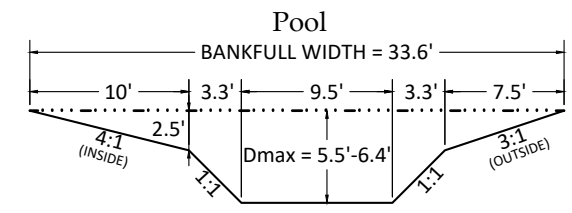
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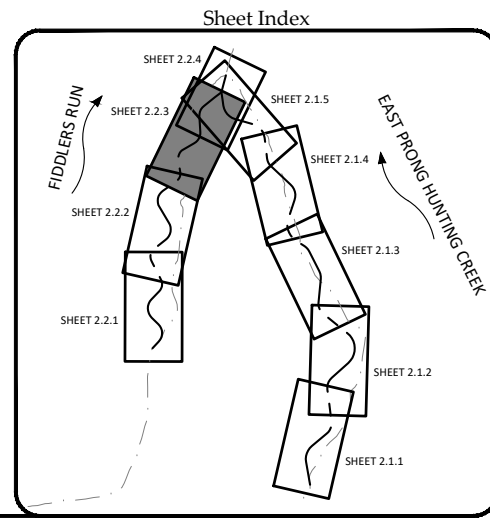
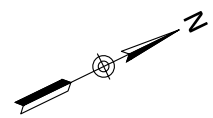
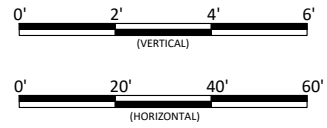
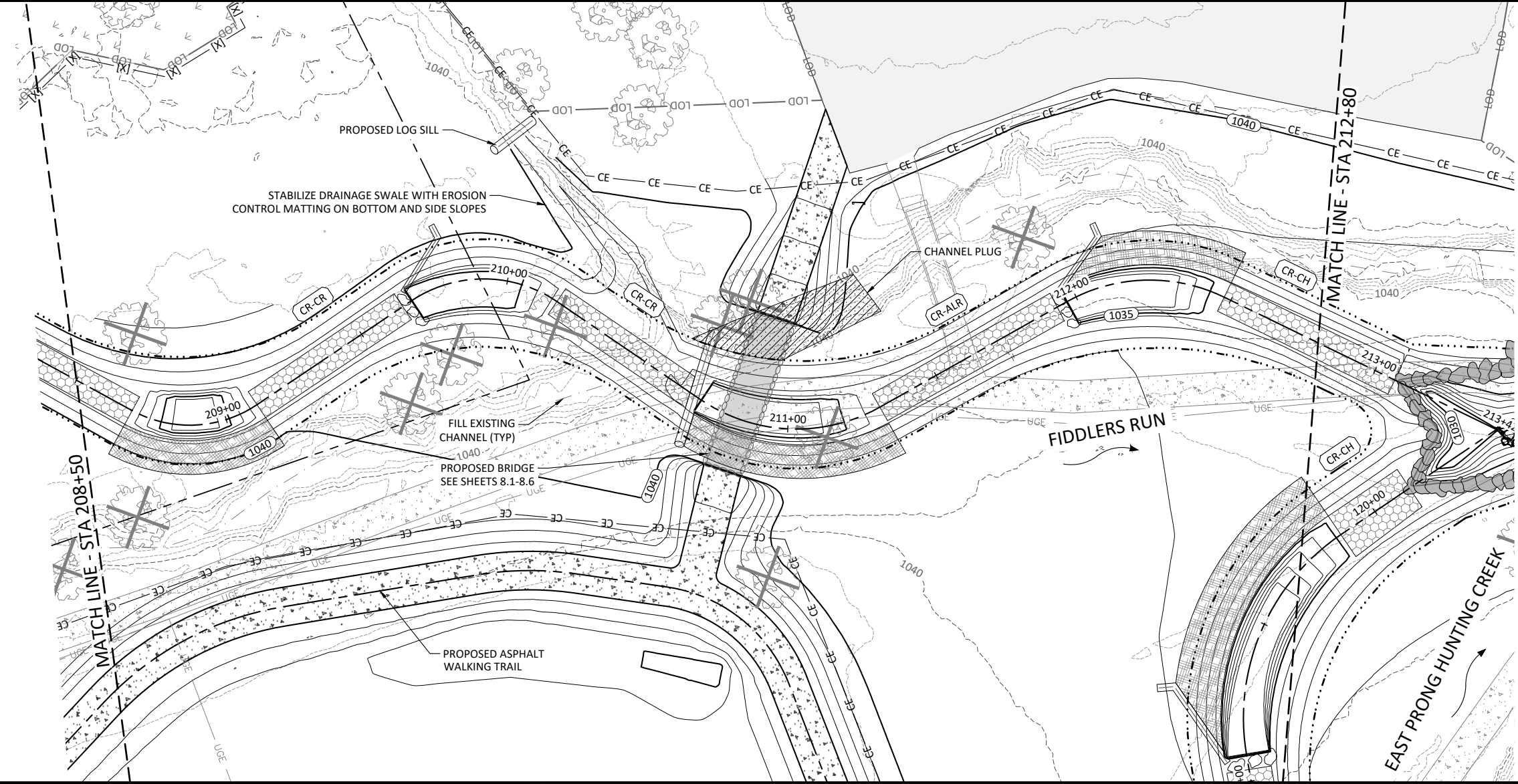
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Station 208+50 - 212+80



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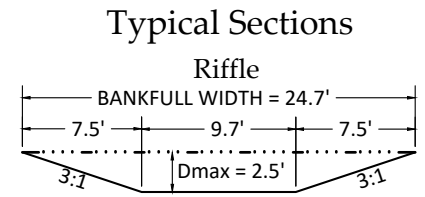
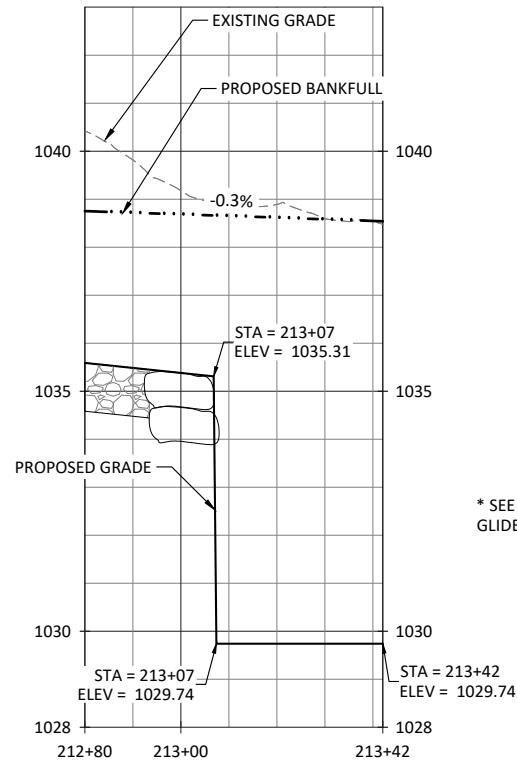
Bethel Park Restoration
 Morganton, North Carolina
 Fiddlers Run Plan and Profile



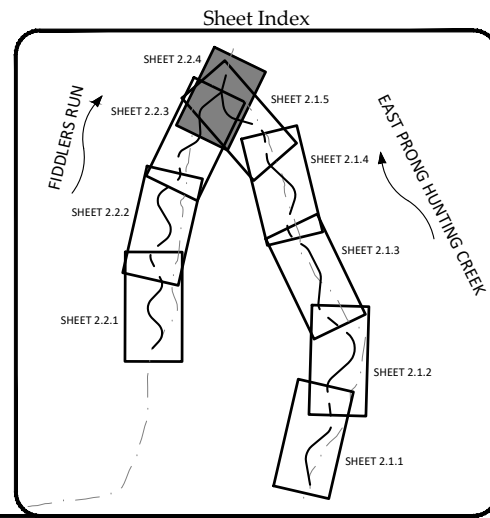
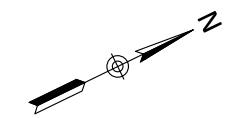
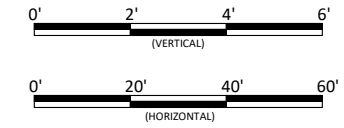
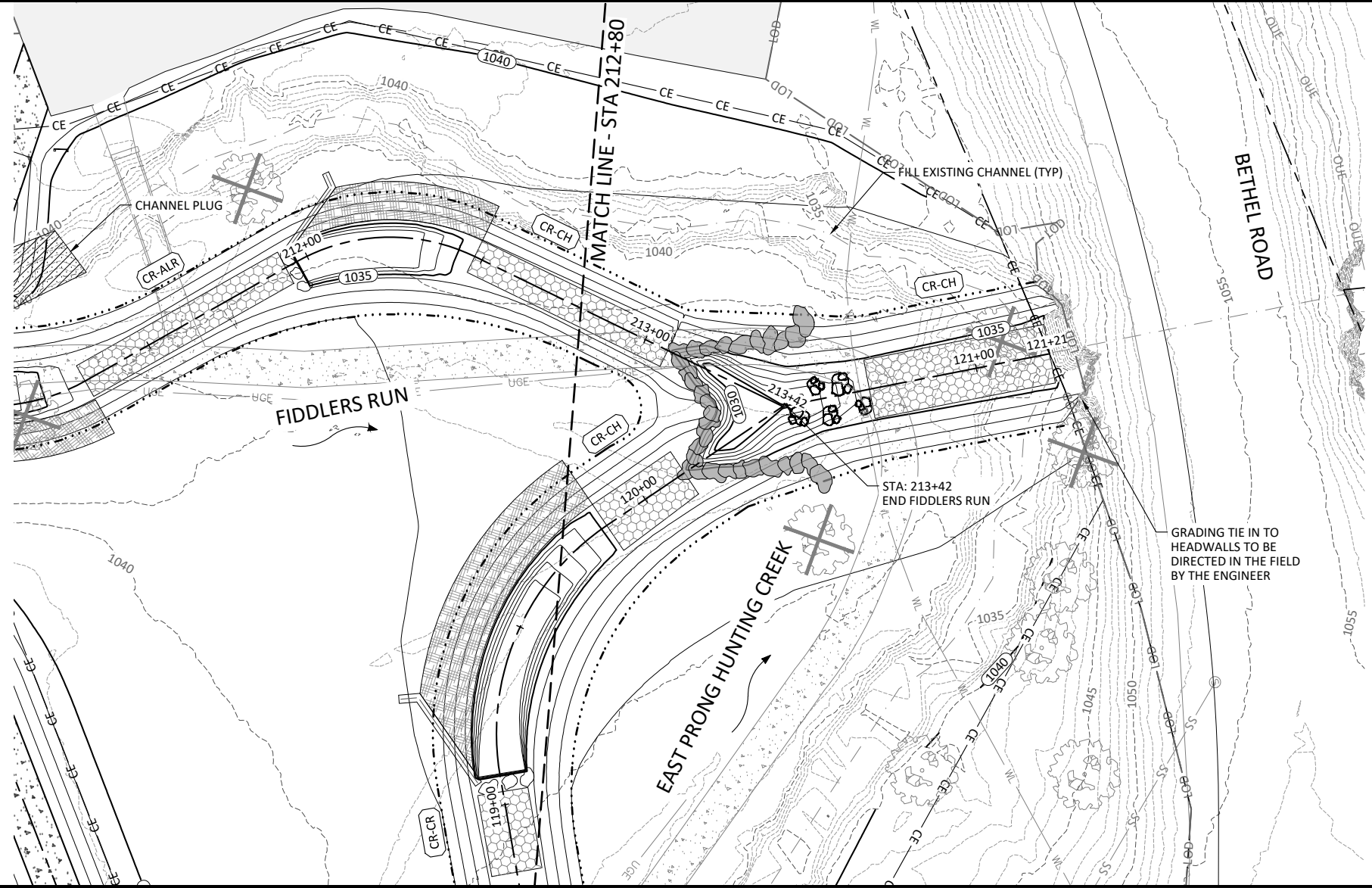
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Job Number:	005-16357
Project Engineer:	GLS
Drawn By:	TWW & MK
Checked By:	DHT

2.2.3

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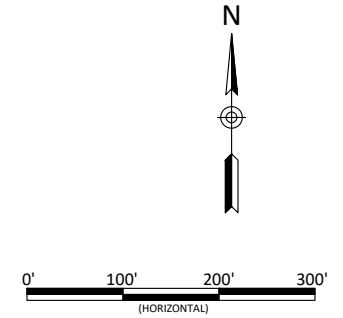
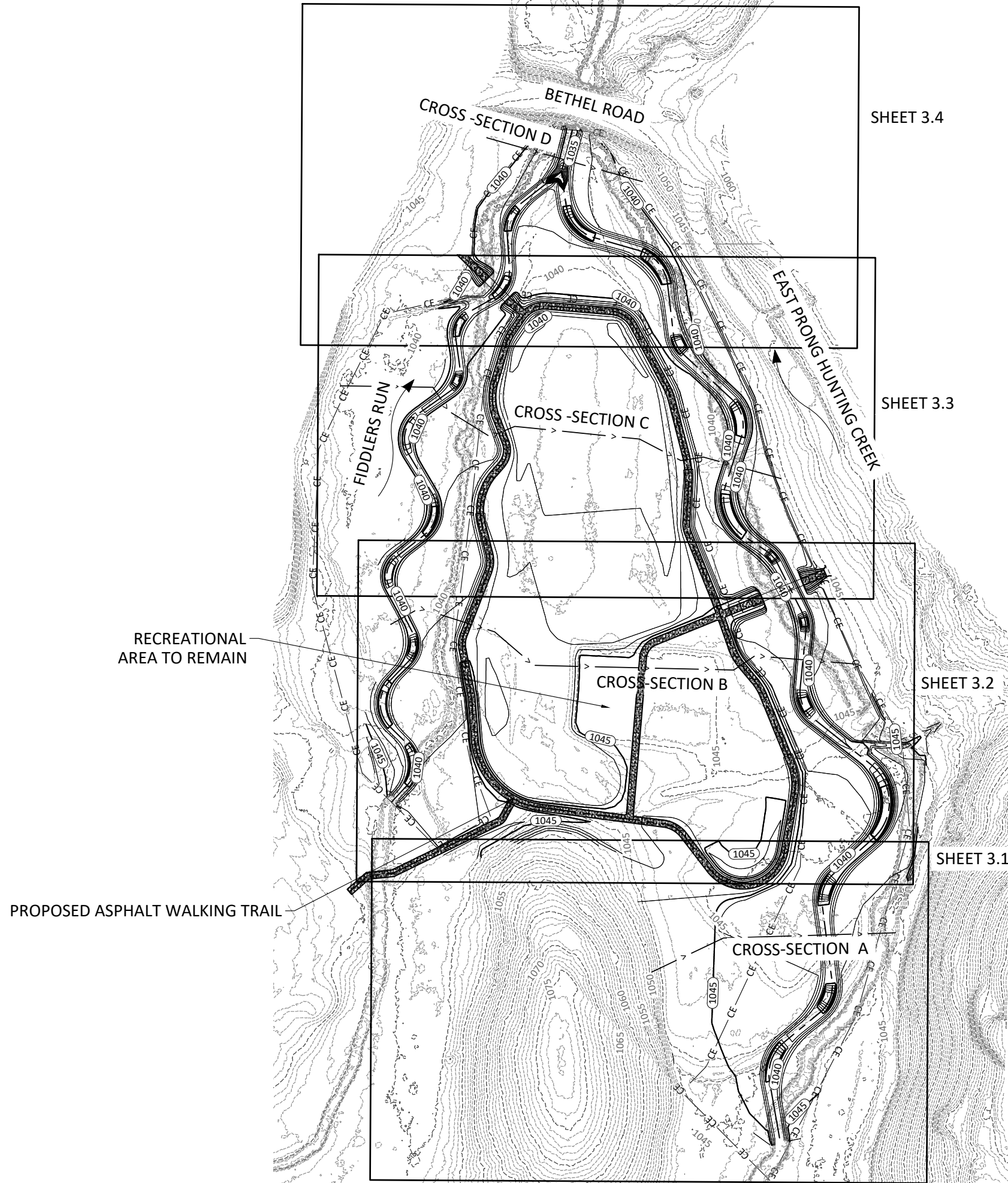


Bethel Park Restoration
Morganton, North Carolina
Fiddlers Run Plan and Profile

Revisions:

Date: 10.16.2023
Job Number: 005-16357
Project Engineer: GLS
Drawn By: TWW & MJK
Checked By: DJH

2.2.4



Bethel Park Restoration
Morganton, North Carolina

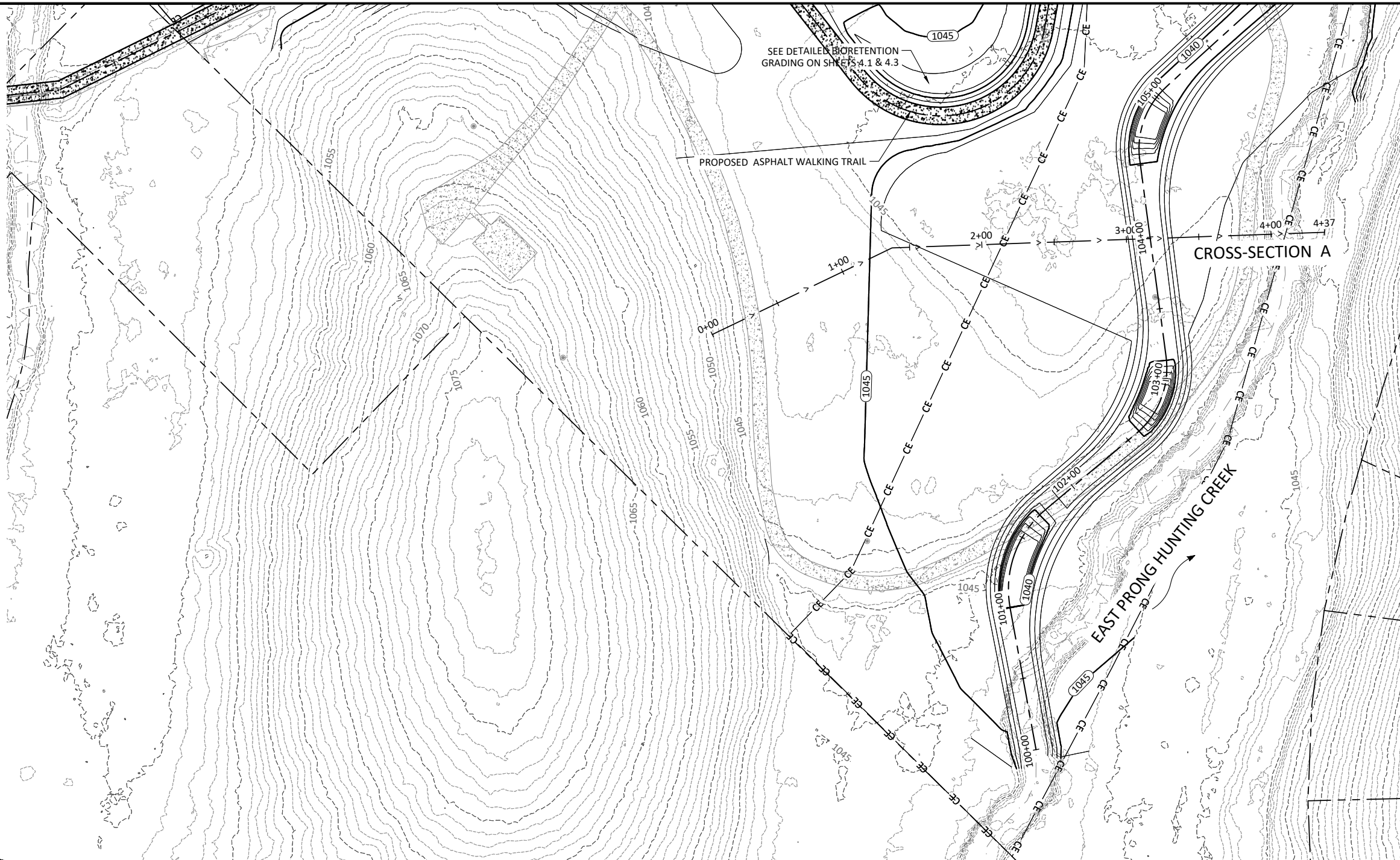
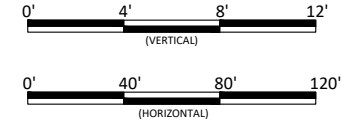
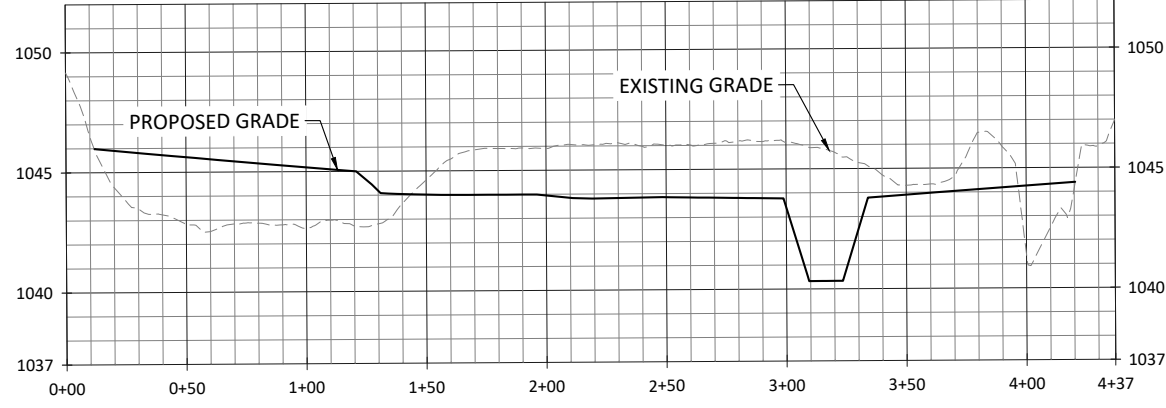
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Revisions:

Date: 10.16.2023
Job Number: 005-16357
Project Engineer: GLS
Drawn By: TWW & MK
Checked By: DH

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Cross-Section A



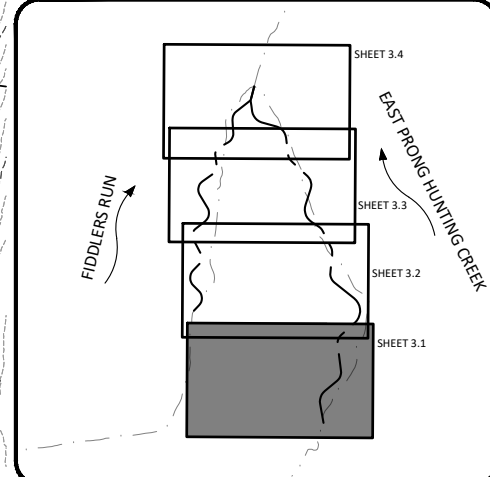
SEE DETAILED BORENTENTION GRADING ON SHEETS 4.1 & 4.3

PROPOSED ASPHALT WALKING TRAIL

CROSS-SECTION A

EAST PRONG HUNTING CREEK

Sheet Index



Bethel Park Restoration
Morganton, North Carolina

Grading Plan

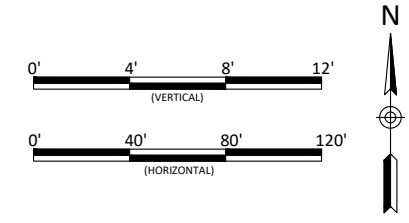
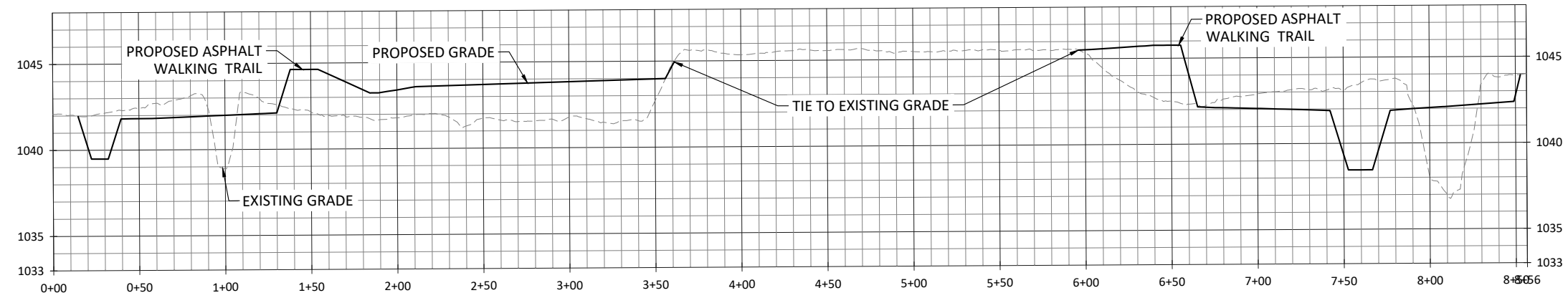
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Date: 10.16.2023
Job Number: 005-16357
Project Engineer: GLS
Drawn By: JMW & MK
Checked By: DJH

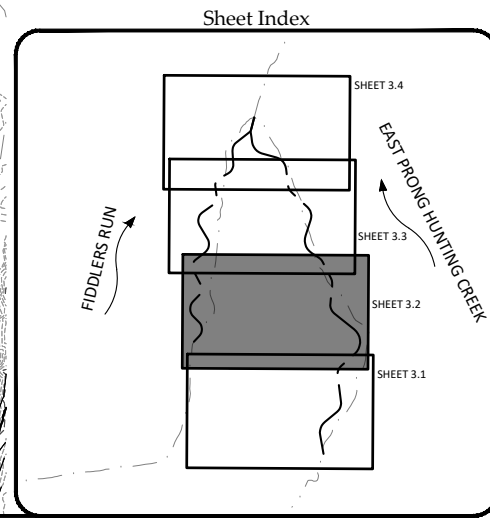
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Cross-Section B



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Morganton, North Carolina
Grading Plan

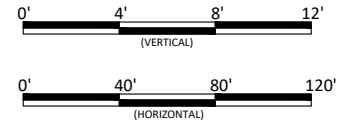
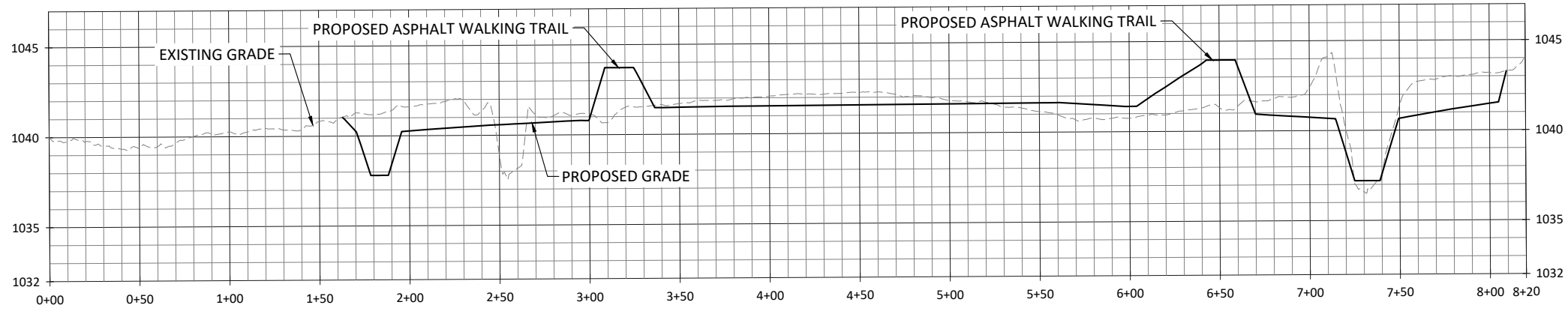
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Job Number: 005-16357
Project Engineer: GLS
Drawn By: JWW & MJK
Checked By: DJH

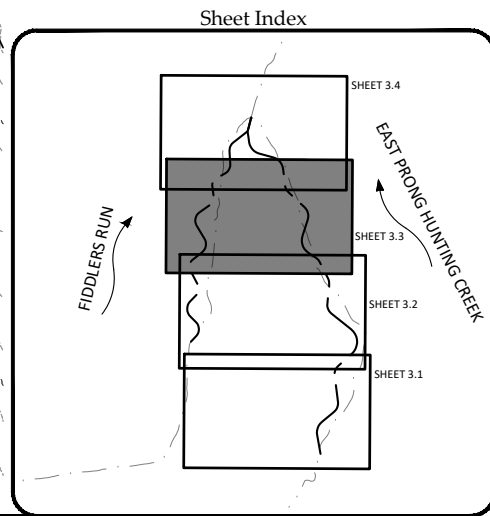
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Cross-Section C



October 16, 2023
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Bethel Park Restoration
Morganton, North Carolina
Grading Plan

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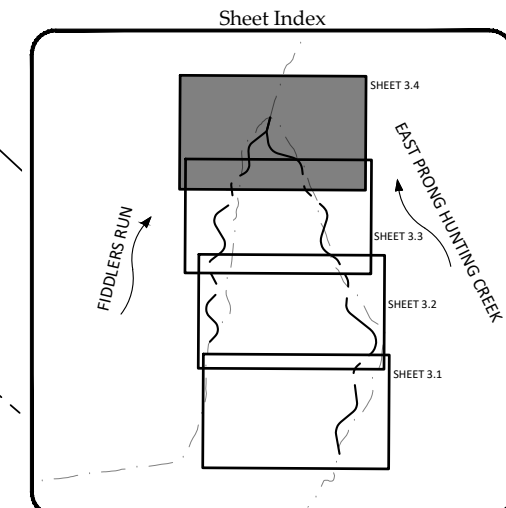
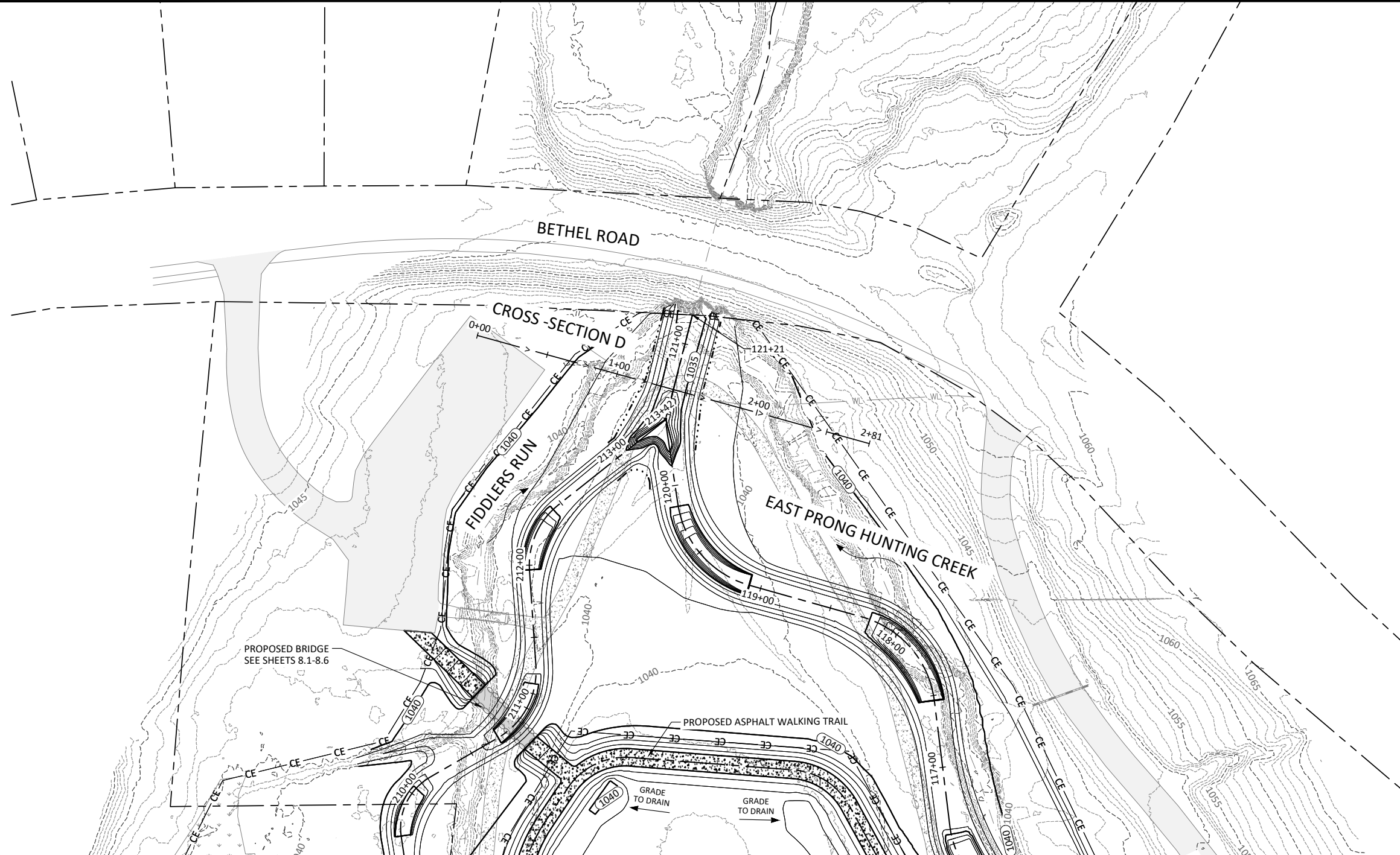
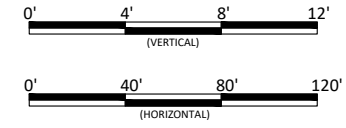
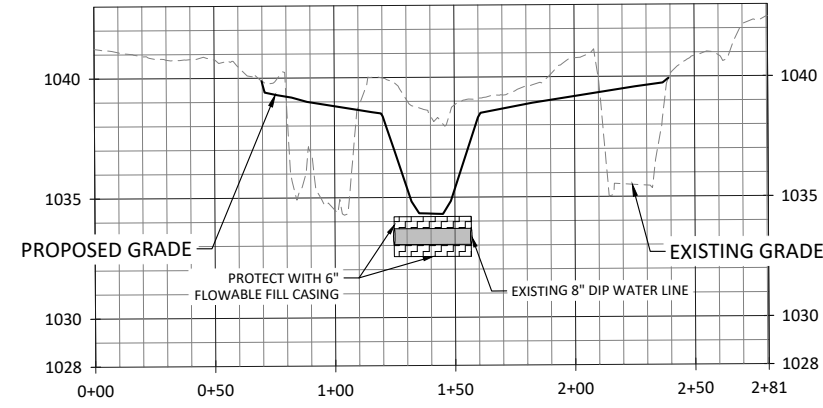
Date: 10.16.2023
Job Number: 005-1637
Project Engineer: GLS
Drawn By: TWV & MK
Checked By: DHT

3.3

Sheet

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Cross-Section D



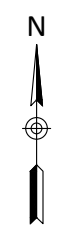
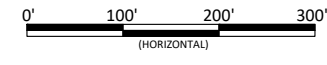
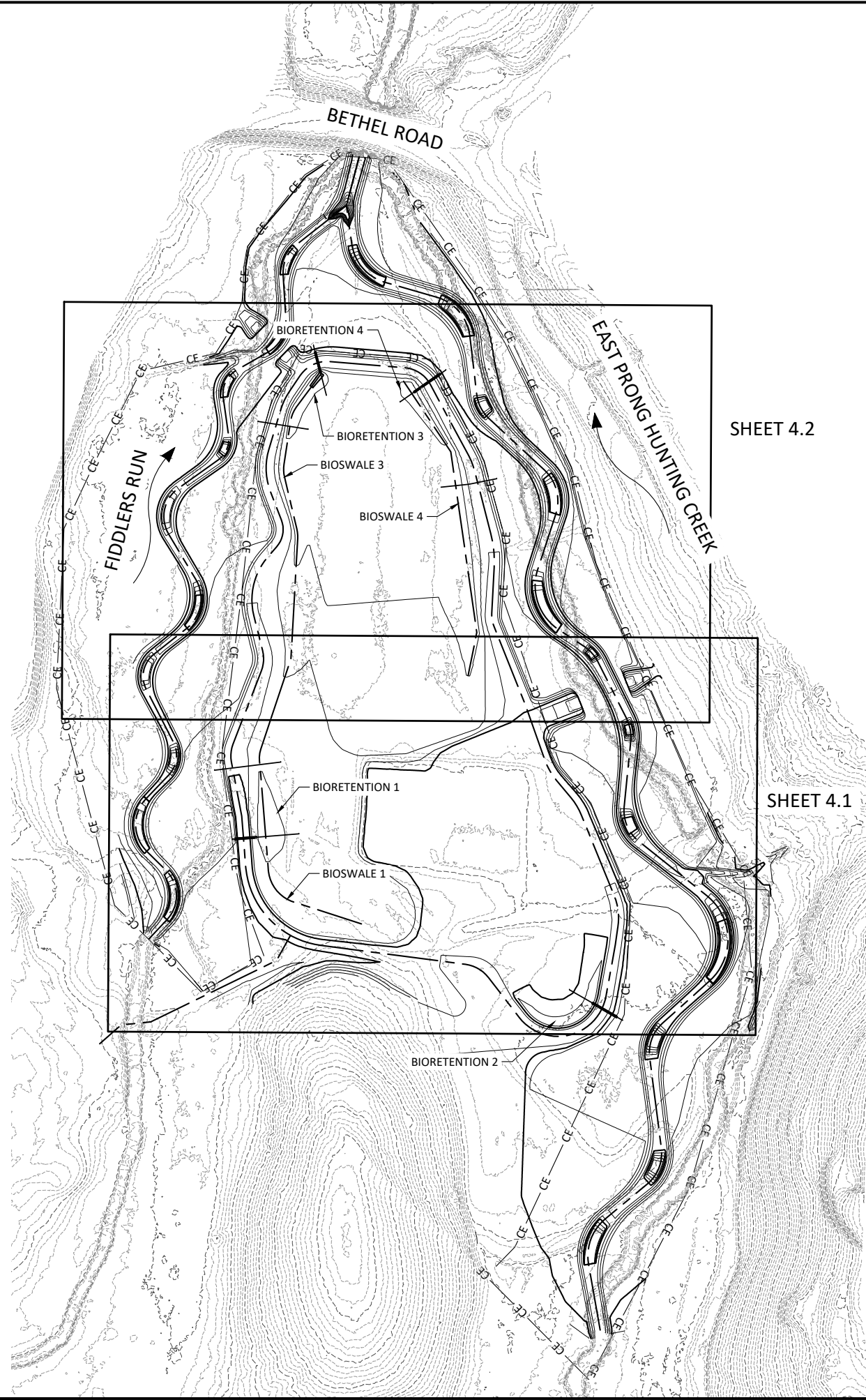
Bethel Park Restoration
Morganton, North Carolina

Grading Plan

Revisions:

Date: 10.16.2023
Job Number: 005-16357
Project Engineer: GLS
Drawn By: JWW & MK
Checked By: DHT

3.4



Revisions:

Date: 10.16.2023
 Job Number: 005-16357
 Project Engineer: GLS
 Drawn By: TWW & MK
 Checked By: DJH

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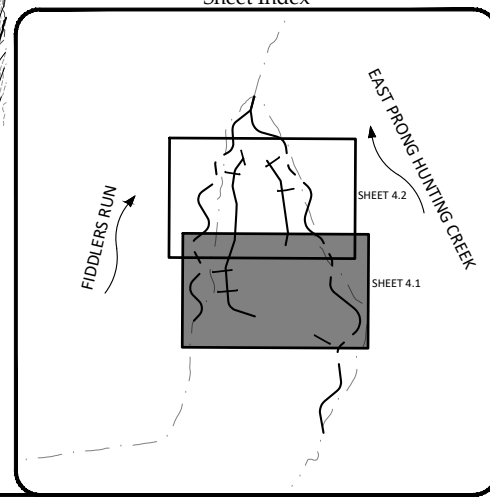
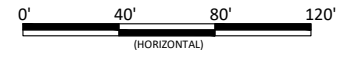
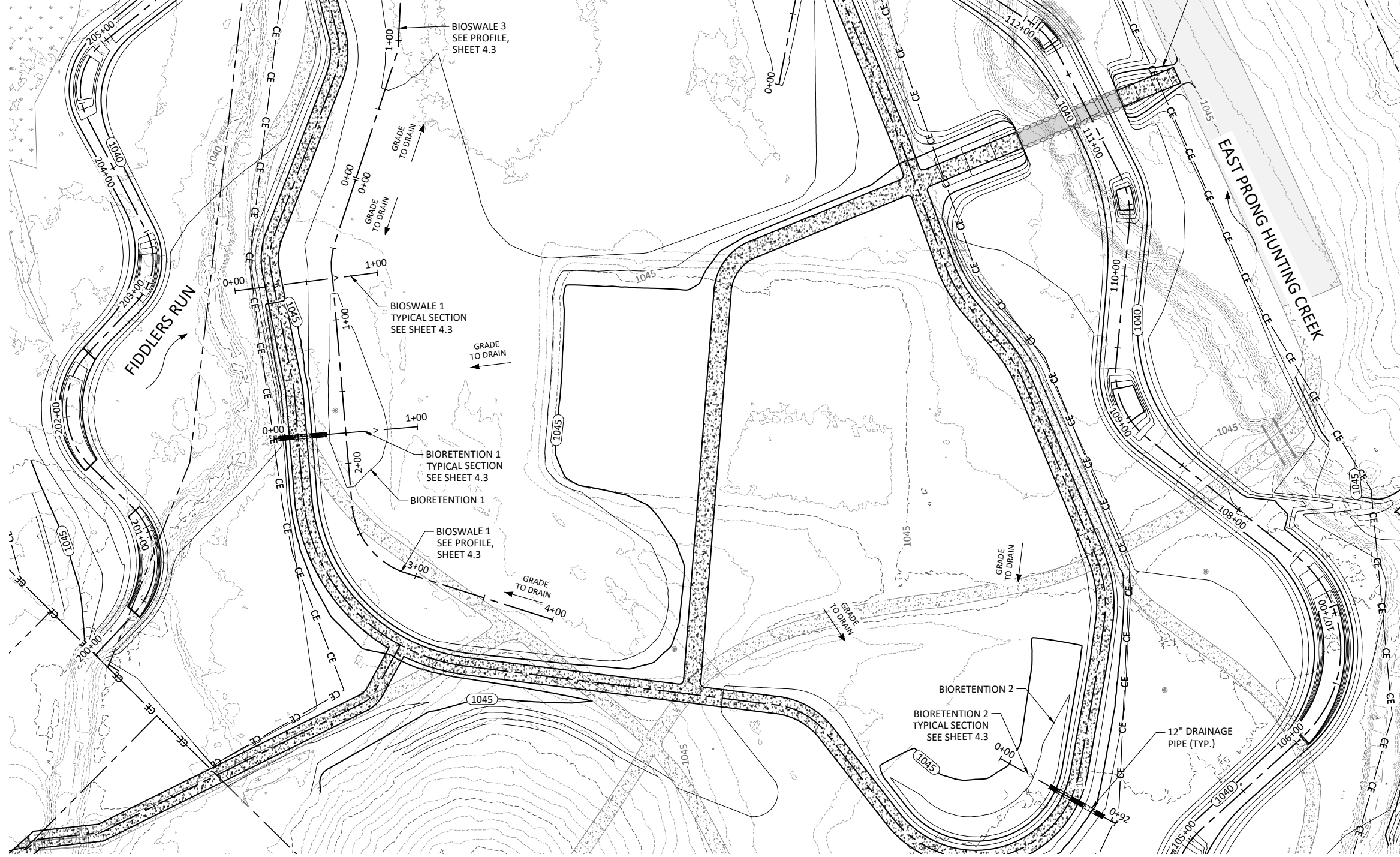
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Bethel Park Restoration
 Morganton, North Carolina

Park Drainage Plan



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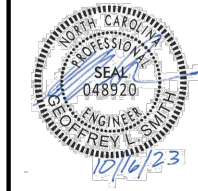
Bethel Park Restoration
Morganton, North Carolina
Park Drainage Plan

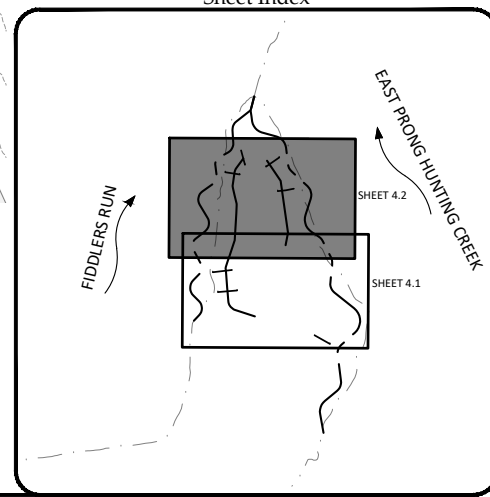
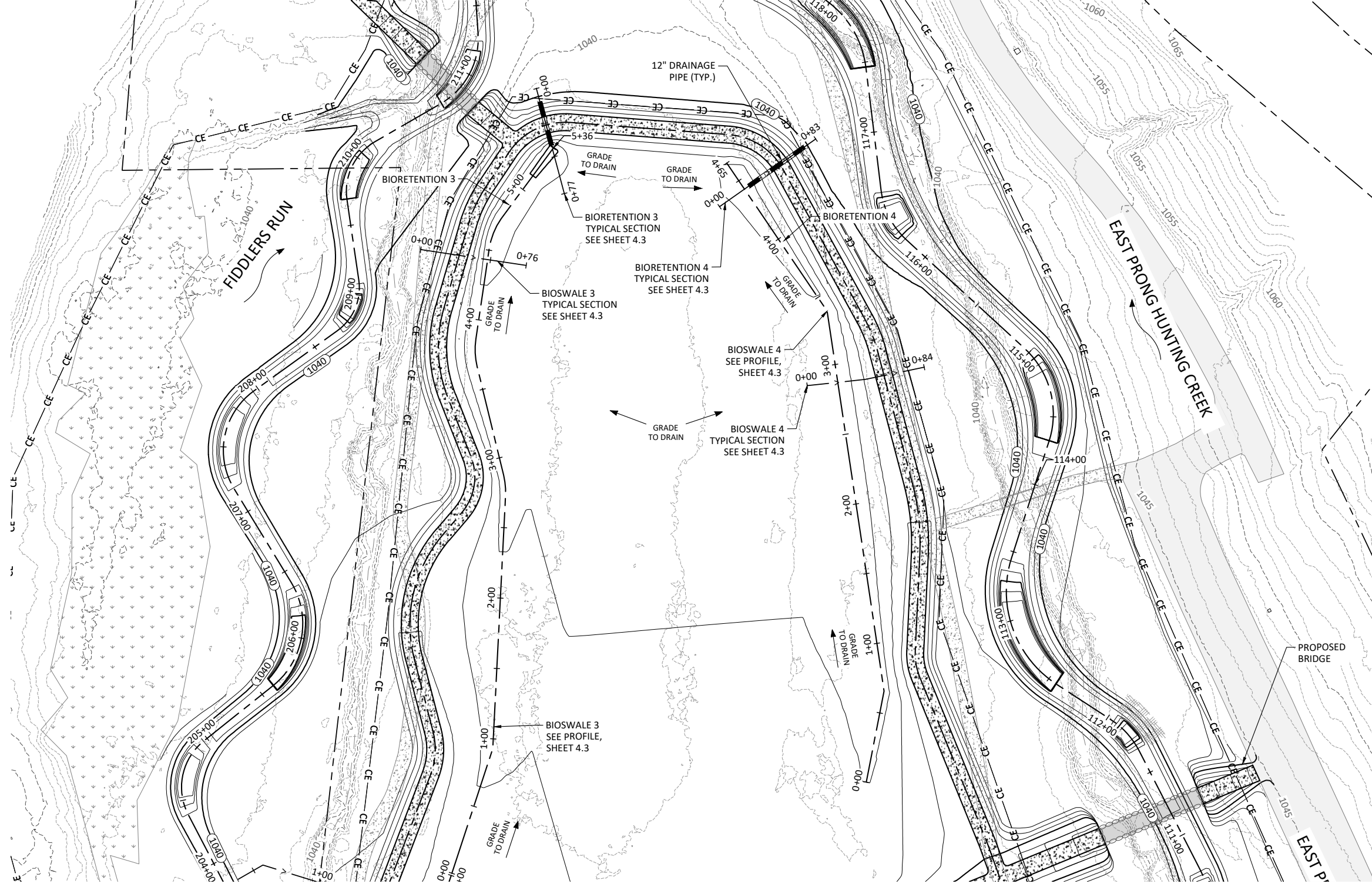
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Date:	10.16.2023
Job Number:	005-16357
Project Engineer:	GLS
Drawn By:	TWW & MJK
Checked By:	DHJ

4.1

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Bethel Park Restoration
Morganton, North Carolina
Park Drainage Plan

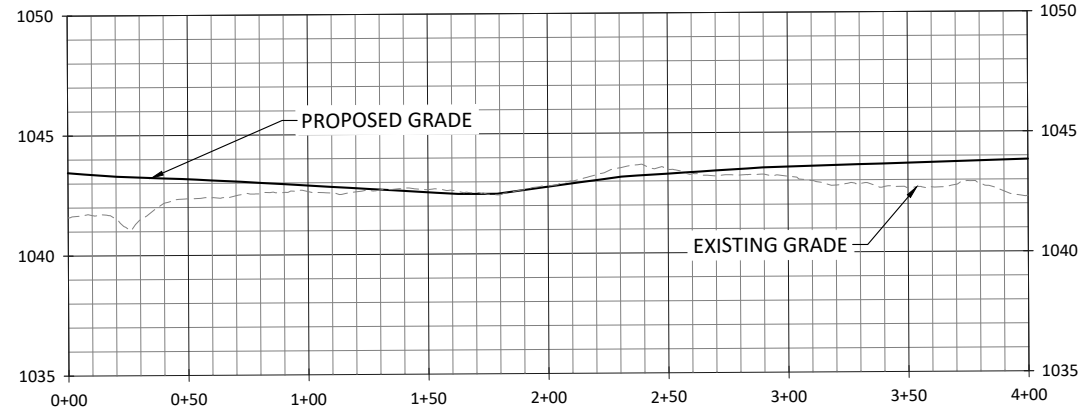
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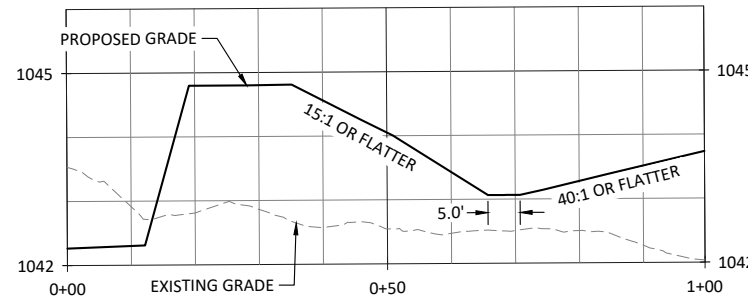
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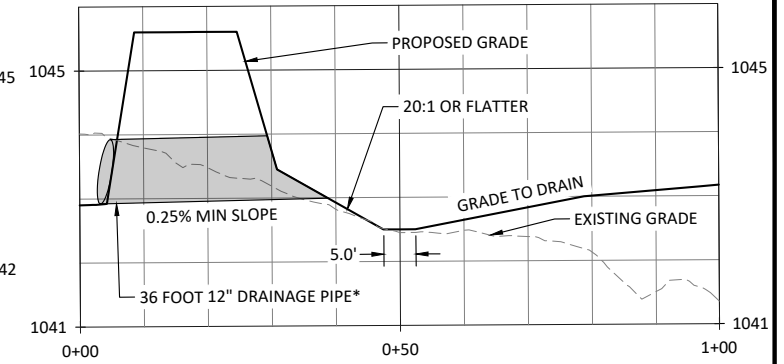
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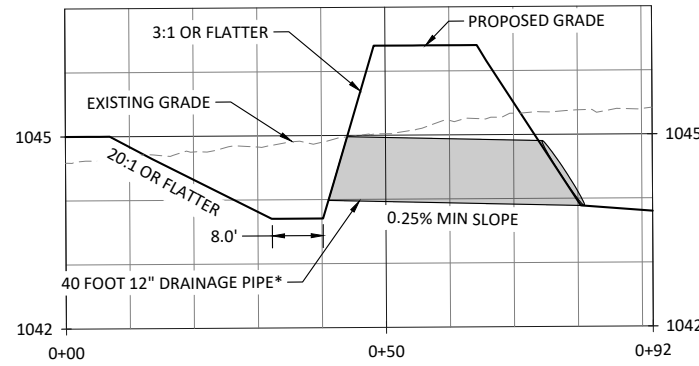
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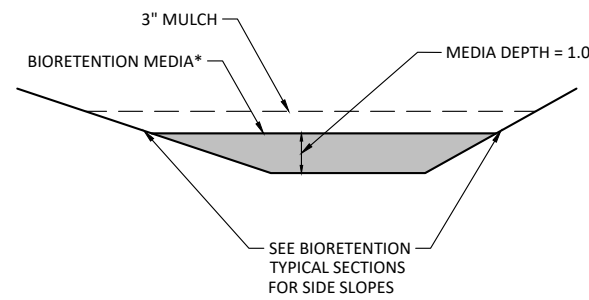
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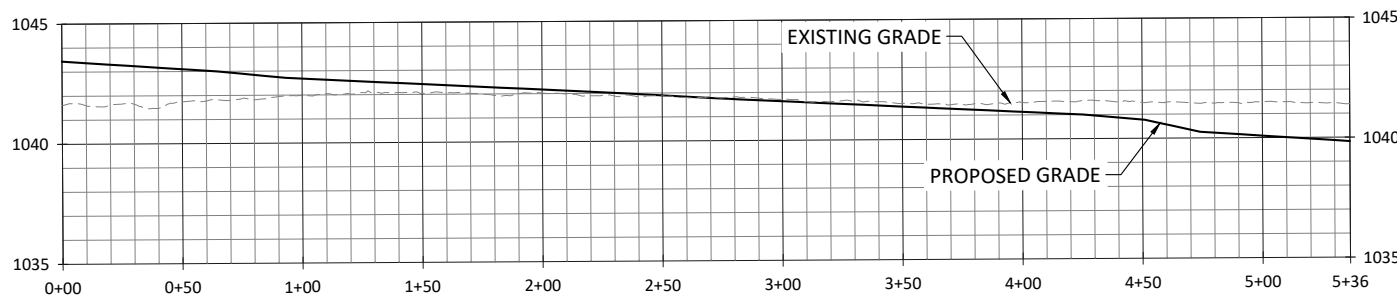
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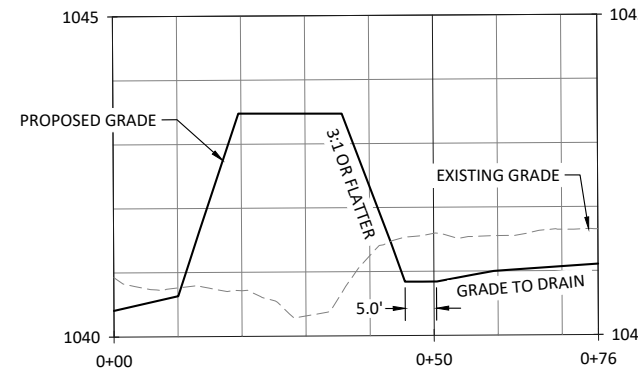
Bioretention Media* Typical Section



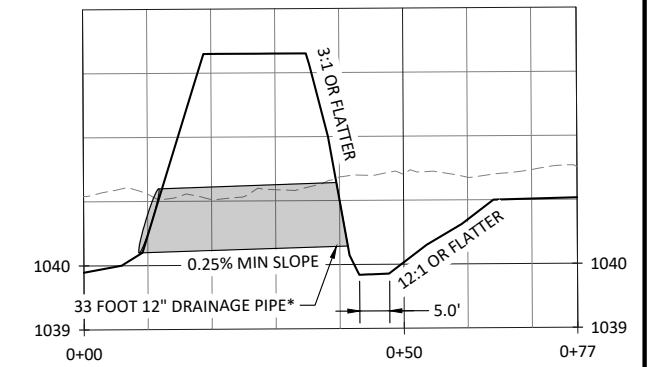
Bioswale 3 Profile



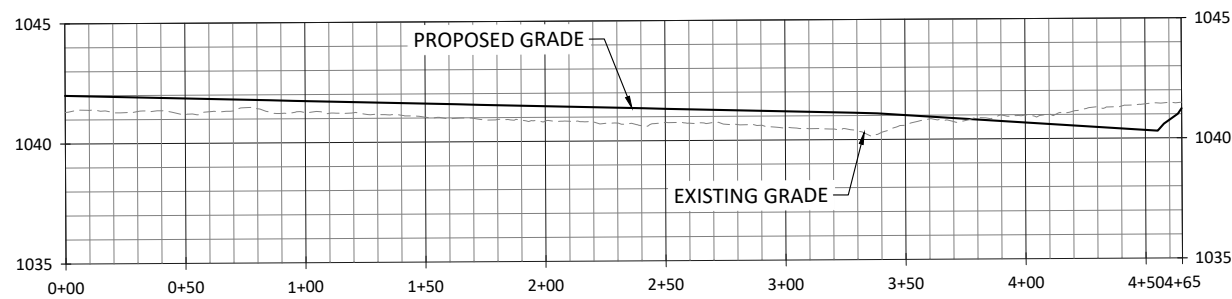
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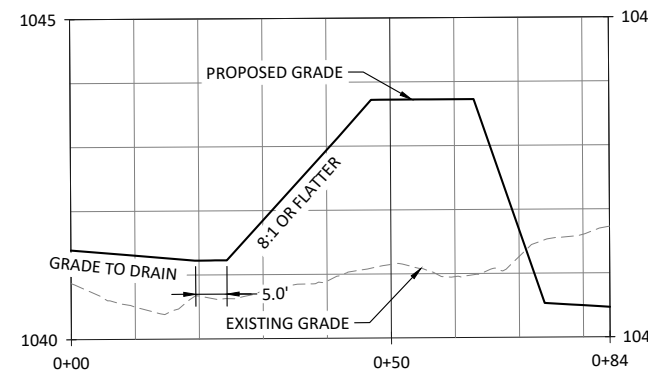
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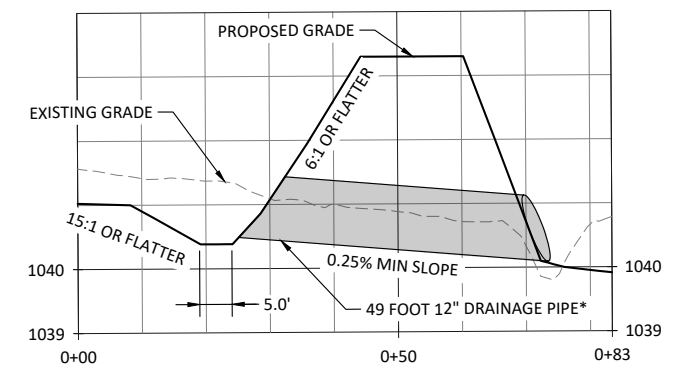
Bioswale 4 Profile



Bioswale 4 Typical Section



Bioretention 4 Typical Section

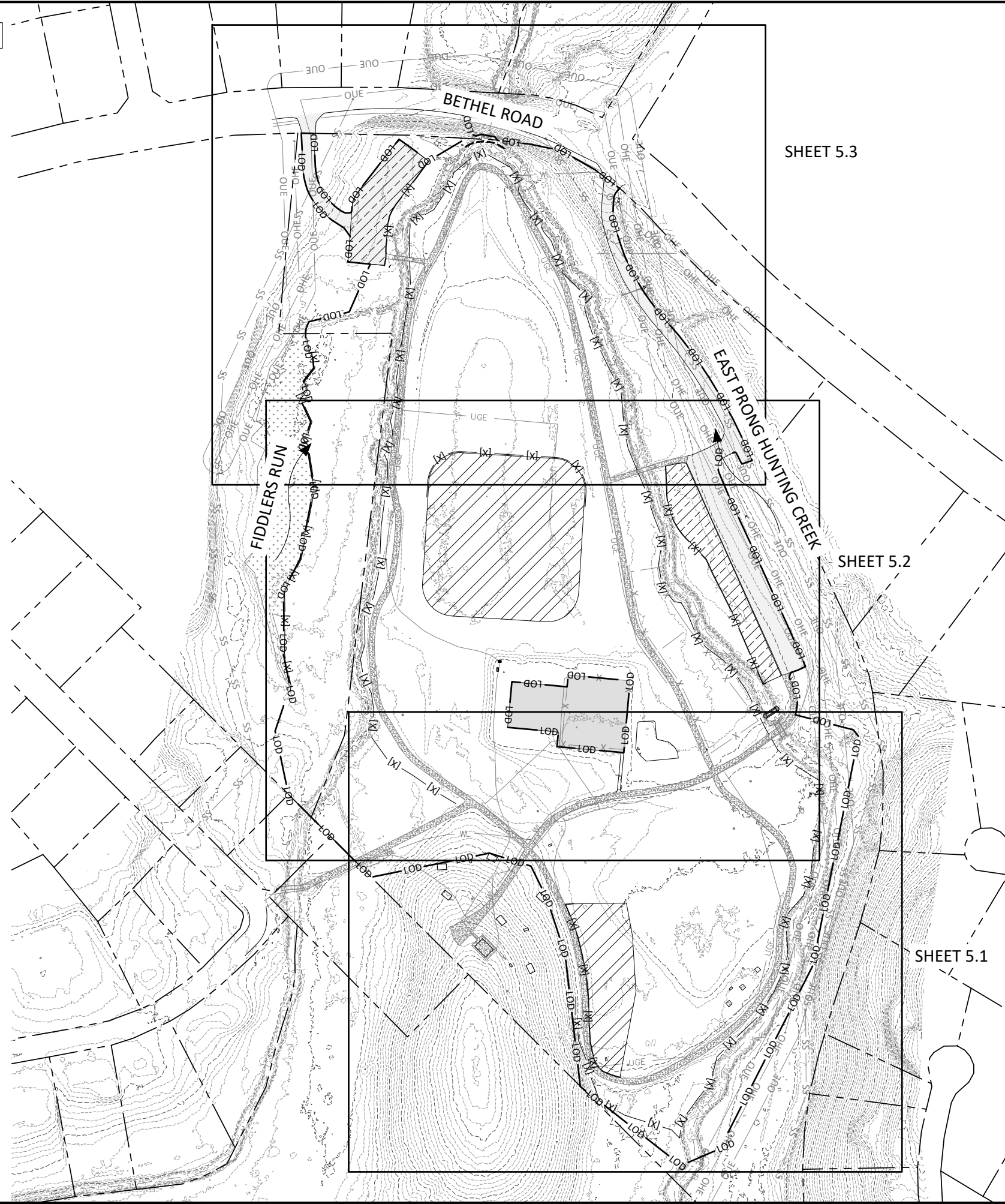


*SEE SPECIFICATIONS FOR DETAILS RELATED TO THE 12" DRAINAGE PIPES, MULCH, AND BIORETENTION MEDIA.



Revisions:

LIMITS OF DISTURBANCE = 24.8 ACRES



Bethel Park Restoration
Morganton, North Carolina

Erosion & Sediment Control Plan - Phase 1 - Perimeter Control

Date:	10.16.2023
Job Number:	005-16357
Project Engineer:	GLS
Drawn By:	TWW & MJK
Checked By:	DHJ

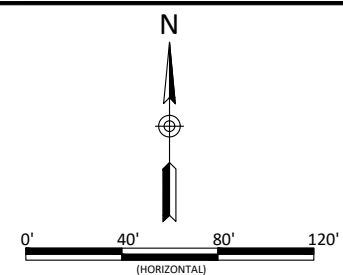
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Revisions:	



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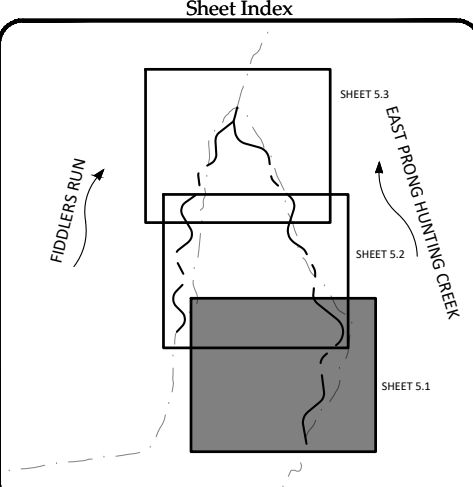
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— LOD — LOD —	LIMITS OF DISTURBANCE
	STOCKPILE AREA
	STAGING/STOCKPILE AREA
	TURBIDITY CURTAIN
	TREE TO BE FELLED
— [X] — [X] — [X] —	PHASE 1 SILT FENCE
	PHASE 1 CHECK DAM



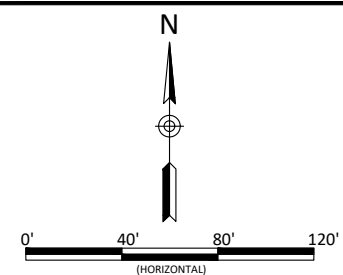
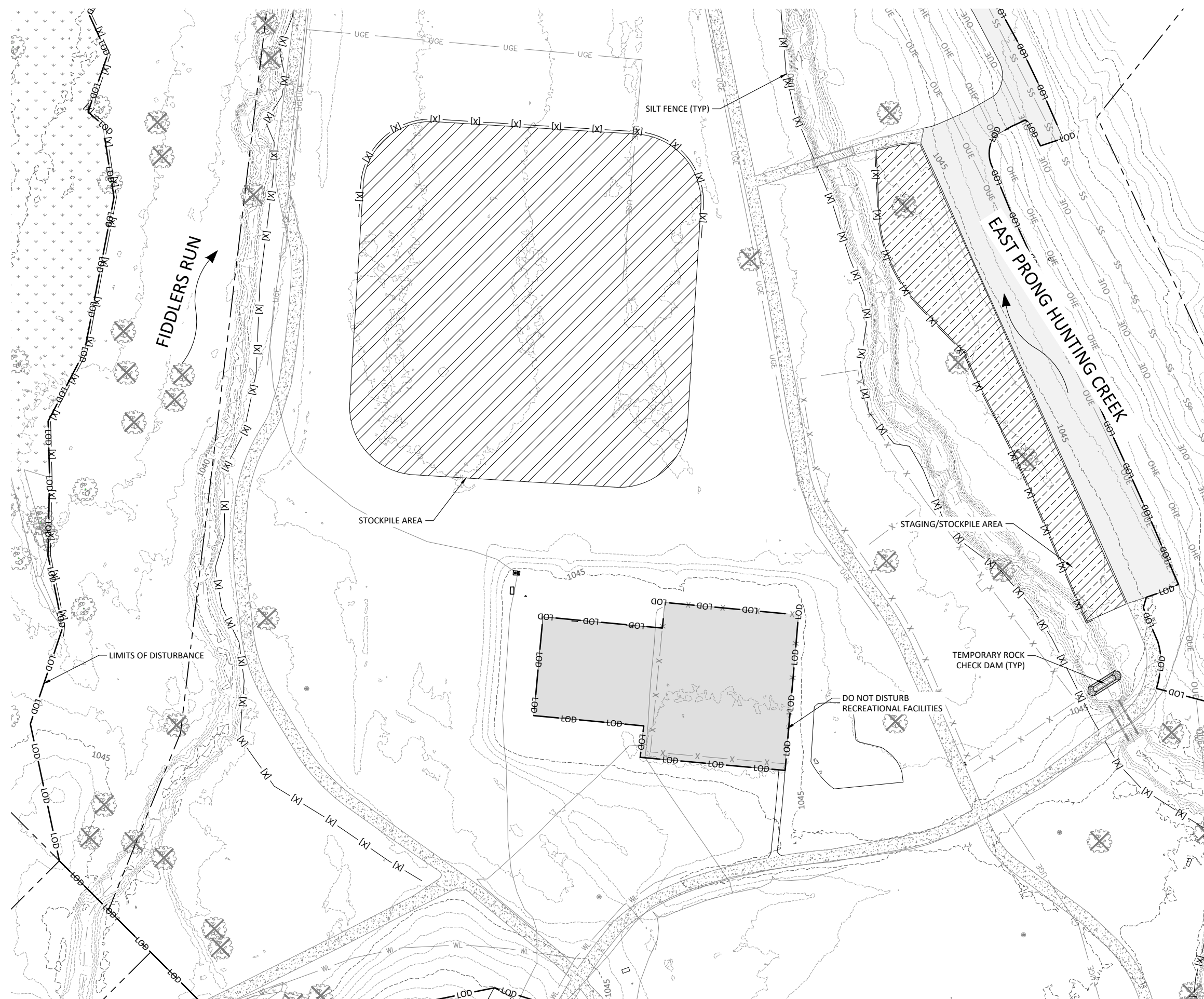
Bethel Park Restoration Morganton, North Carolina

Erosion & Sediment Control Plan - Phase 1 - Perimeter Control



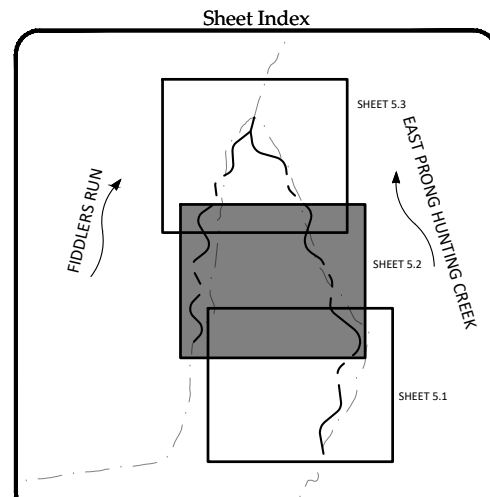
Date:	10.16.2023
Job Number:	005-1637
Project Engineer:	GLS
Drawn By:	TWW & MK
Checked By:	DH

5.1



Legend

— LOD — LOD —	LIMITS OF DISTURBANCE
[Hatched Area]	STOCKPILE AREA
[Diagonal Hatched Area]	STAGING/STOCKPILE AREA
-----	TURBIDITY CURTAIN
X	TREE TO BE FELLED
[X] — [X] — [X]	PHASE 1 SILT FENCE
[Dam Symbol]	PHASE 1 CHECK DAM



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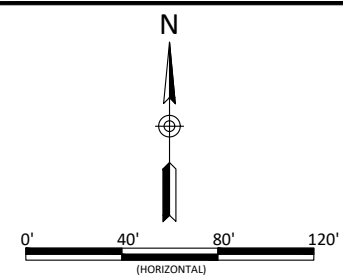
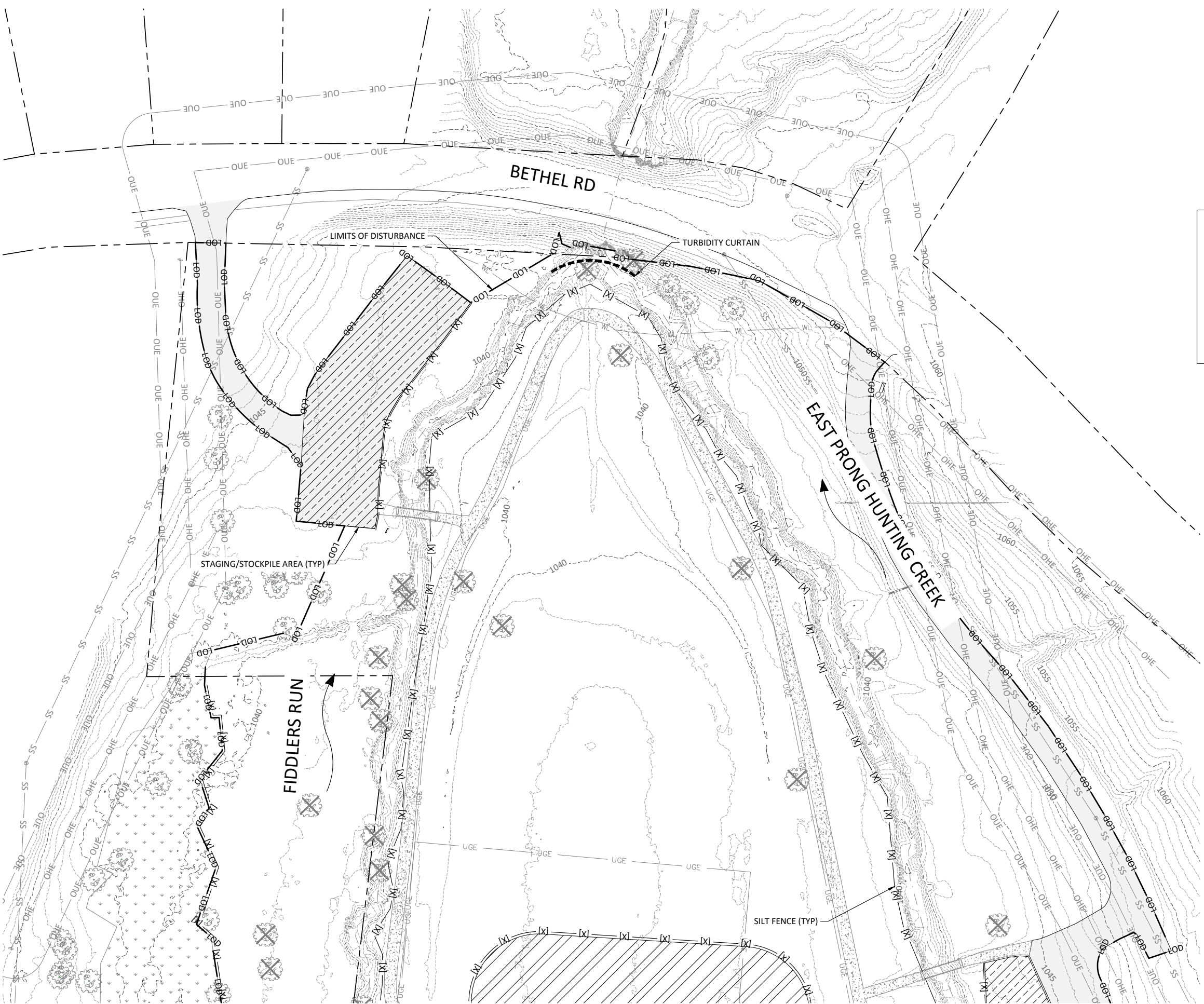
Bethel Park Restoration
Morganton, North Carolina

Erosion & Sediment Control Plan - Phase 1 - Perimeter Control

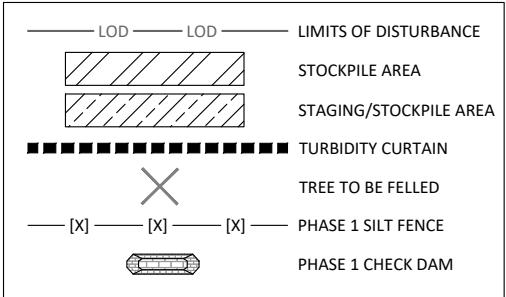
Date:	Revisions:
10.16.2023	
Job Number: 005-1637	
Project Engineer: GLS	
Drawn By: JWW & MK	
Checked By: DJH	

5.2

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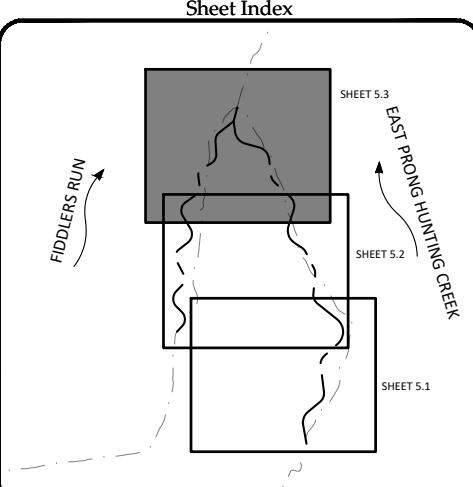


Legend



Bethel Park Restoration Morganton, North Carolina

Erosion & Sediment Control Plan - Phase 1 - Perimeter Control

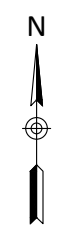
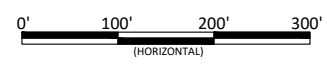
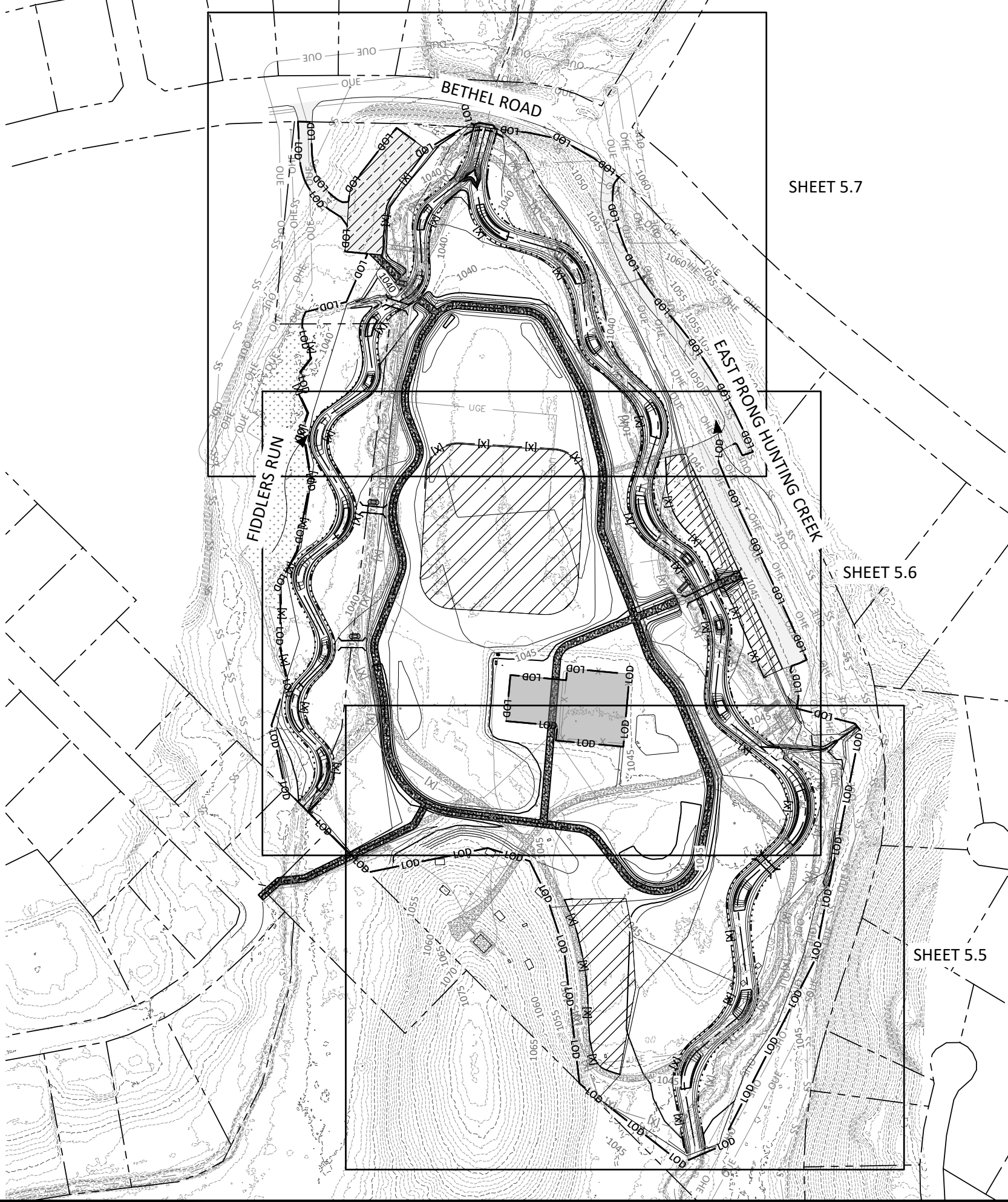


Date:	10.16.2023
Job Number:	005-1637
Project Engineer:	GLS
Drawn By:	TWW & MK
Checked By:	DH

5.3

October 16, 2023

LIMITS OF DISTURBANCE = 24.8 ACRES



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Bethel Park Restoration
Morganton, North Carolina

Erosion & Sediment Control Plan - Phase 2 - Stream Construction

Revisions:

Date: 10.16.2023
 Job Number: 005-16357
 Project Engineer: GLS
 Drawn By: TWW & MJK
 Checked By: DJH

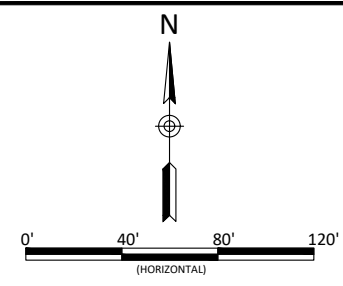
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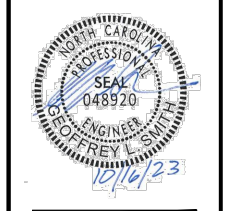
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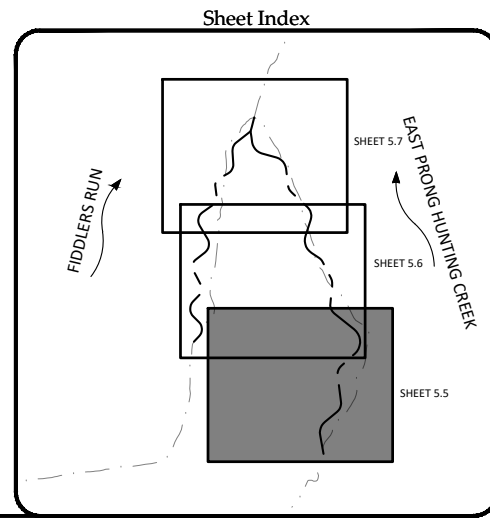
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— LOD — LOD —	LIMITS OF DISTURBANCE
	STOCKPILE AREA
	STAGING/STOCKPILE AREA
	TURBIDITY CURTAIN
	TREE TO BE FELLED
[X] [X] [X]	PHASE 1 SILT FENCE
	PHASE 1 CHECK DAM
[X] [X] [X]	PHASE 2 SILT FENCE
	PHASE 2 CHECK DAM
	TEMPORARY STREAM CROSSING - TIMBER MAT
	TEMPORARY STREAM CROSSING - CULVERT



Bethel Park Restoration
Morganton, North Carolina

Erosion & Sediment Control Plan - Phase 2 - Stream Construction

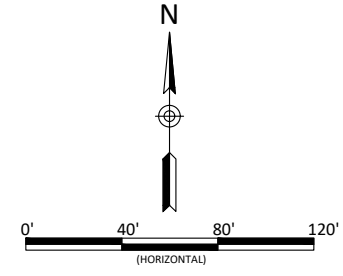
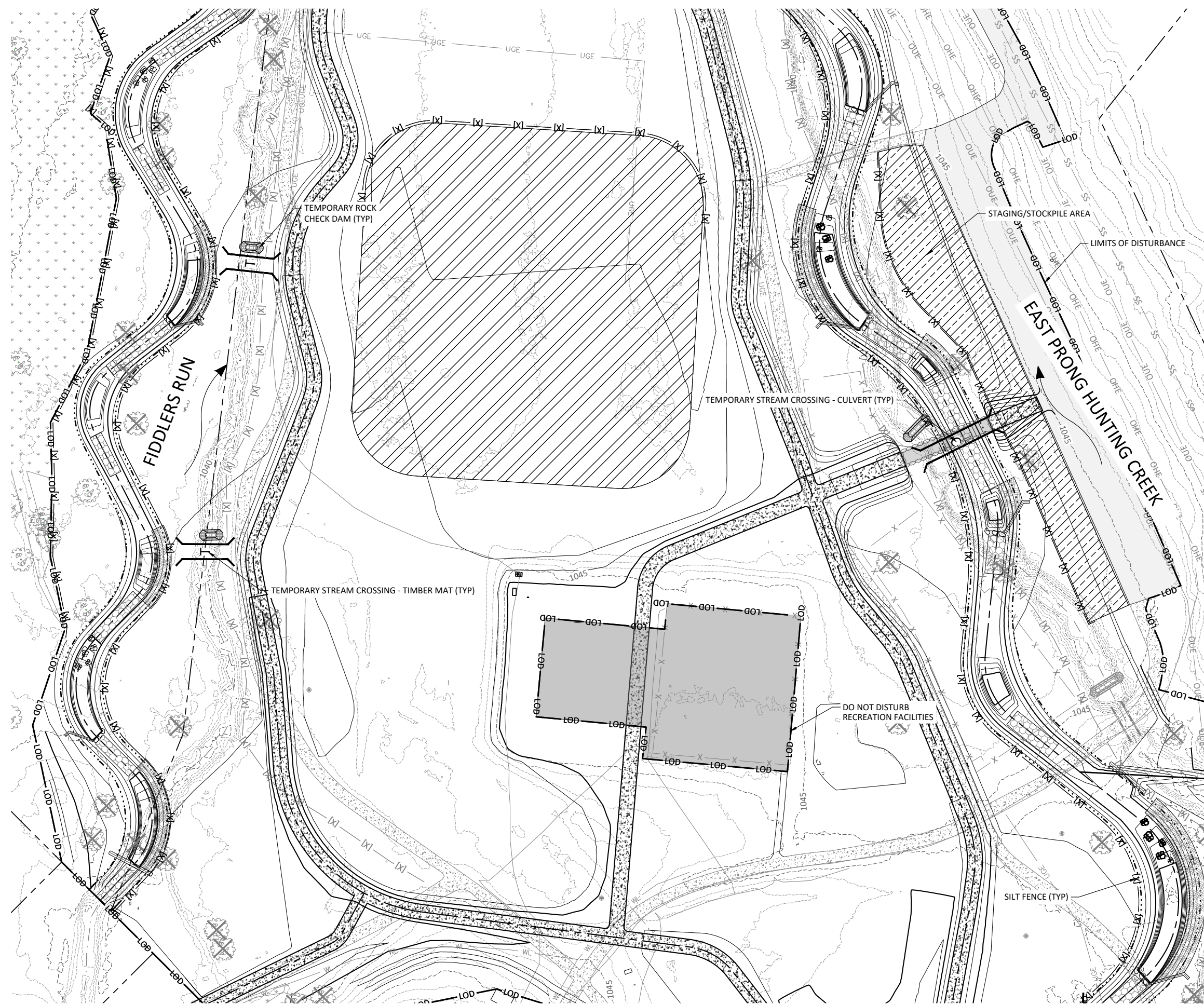


Date:	10.16.2023
Job Number:	005-1637
Project Engineer:	GLS
Drawn By:	TWW & MK
Checked By:	DHJ

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October 16, 2023
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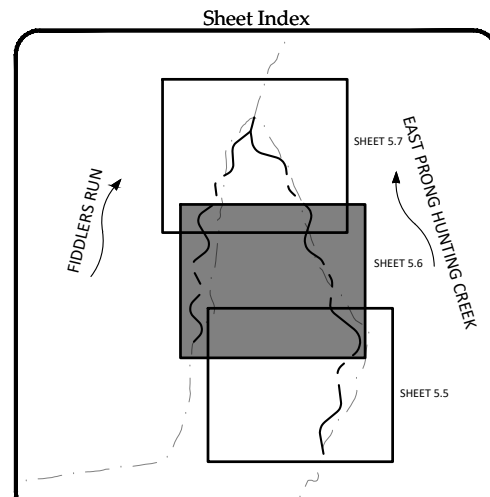
— LOD — LOD —	LIMITS OF DISTURBANCE
	STOCKPILE AREA
	STAGING/STOCKPILE AREA
	TURBIDITY CURTAIN
	TREE TO BE FELLED
— [X] — [X] — [X] —	PHASE 1 SILT FENCE
	PHASE 1 CHECK DAM
— [X] — [X] — [X] —	PHASE 2 SILT FENCE
	PHASE 2 CHECK DAM
	TEMPORARY STREAM CROSSING - TIMBER MAT
	TEMPORARY STREAM CROSSING - CULVERT

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Bethel Park Restoration
Morganton, North Carolina

Erosion & Sediment Control Plan - Phase 2 - Stream Construction

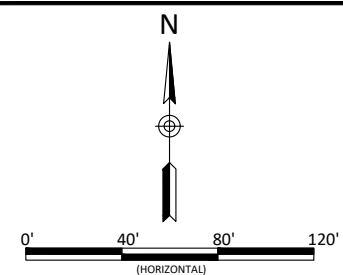


Revisions:

Date: 10.16.2023
Job Number: 005-1637
Project Engineer: GLS
Drawn By: JWW & MK
Checked By: DHJ

5.6

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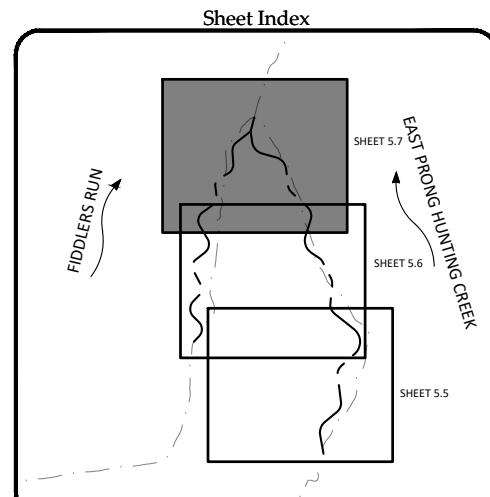
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[Hatched Box]	STOCKPILE AREA
[Hatched Box]	STAGING/STOCKPILE AREA
[Thick Dashed Line]	TURBIDITY CURTAIN
[X]	TREE TO BE FELLED
[X] [X] [X]	PHASE 1 SILT FENCE
[Symbol]	PHASE 1 CHECK DAM
[X] [X] [X]	PHASE 2 SILT FENCE
[Symbol]	PHASE 2 CHECK DAM
[Symbol]	TEMPORARY STREAM CROSSING - TIMBER MAT
[Symbol]	TEMPORARY STREAM CROSSING - CULVERT



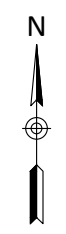
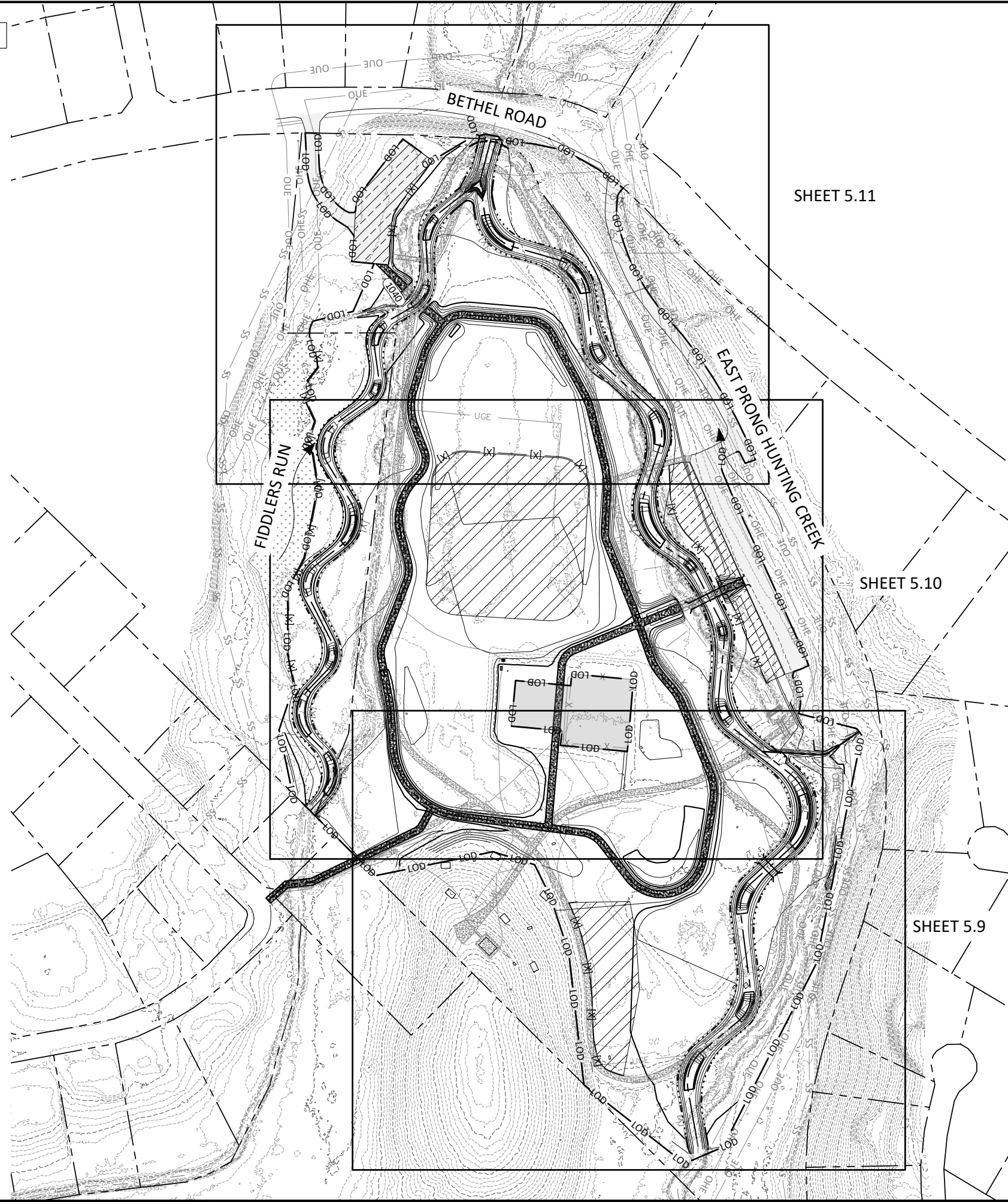
Bethel Park Restoration Morganton, North Carolina

Erosion & Sediment Control Plan - Phase 2 - Stream Construction



Date:	10.16.2023
Job Number:	005-1637
Project Engineer:	GLS
Drawn By:	TJW & MK
Checked By:	DH

LIMITS OF DISTURBANCE = 24.8 ACRES



Bethel Park Restoration
Morganton, North Carolina

Erosion & Sediment Control Plan - Phase 3 - Park Improvements

Date:	10.16.2023
Job Number:	005-16357
Project Engineer:	GLS
Drawn By:	TWW & MJK
Checked By:	DHJ

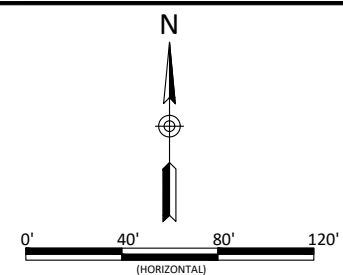
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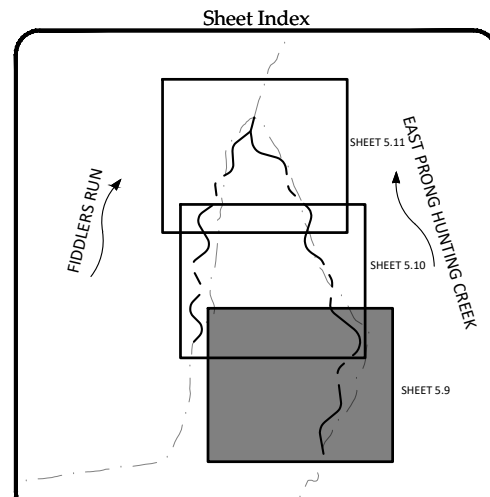
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— LOD — LOD —	LIMITS OF DISTURBANCE
[Hatched Area]	STOCKPILE AREA
[Hatched Area]	STAGING/STOCKPILE AREA
[Dashed Line]	TURBIDITY CURTAIN
[X]	TREE TO BE FELLED
[X] [X] [X]	PHASE 2 SILT FENCE
[Symbol]	PHASE 2 CHECK DAM
[X] [X] [X]	PHASE 3 SILT FENCE
[Symbol]	FINISHED TRAIL
[Symbol]	TEMPORARY STREAM CROSSING - TIMBER MAT PHASE 2
[Symbol]	TEMPORARY STREAM CROSSING - TIMBER MAT
[Symbol]	TEMPORARY STREAM CROSSING - CULVERT



Bethel Park Restoration
Morganton, North Carolina

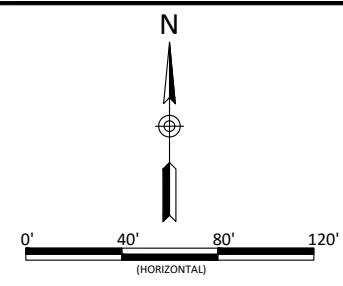
Erosion & Sediment Control Plan - Phase 3 - Park Improvements



Date:	10.16.2023
Job Number:	005-1637
Project Engineer:	GLS
Drawn By:	TWW & MK
Checked By:	DH

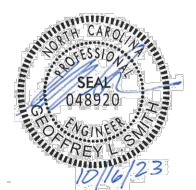
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October 16, 2023
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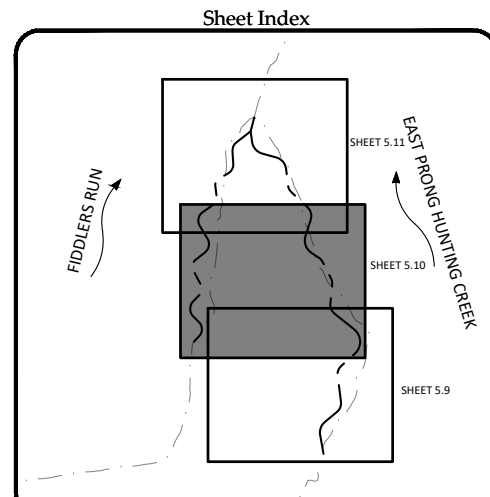
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— LOD — LOD —	LIMITS OF DISTURBANCE
	STOCKPILE AREA
	STAGING/STOCKPILE AREA
	TURBIDITY CURTAIN
	TREE TO BE FELLED
[X] [X] [X]	PHASE 2 SILT FENCE
	PHASE 2 CHECK DAM
[X] [X] [X]	PHASE 3 SILT FENCE
	FINISHED TRAIL
	TEMPORARY STREAM CROSSING - TIMBER MAT PHASE 2
	TEMPORARY STREAM CROSSING - TIMBER MAT
	TEMPORARY STREAM CROSSING - CULVERT



Bethel Park Restoration
Morganton, North Carolina

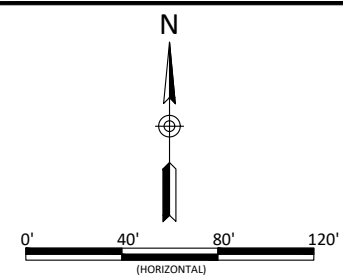
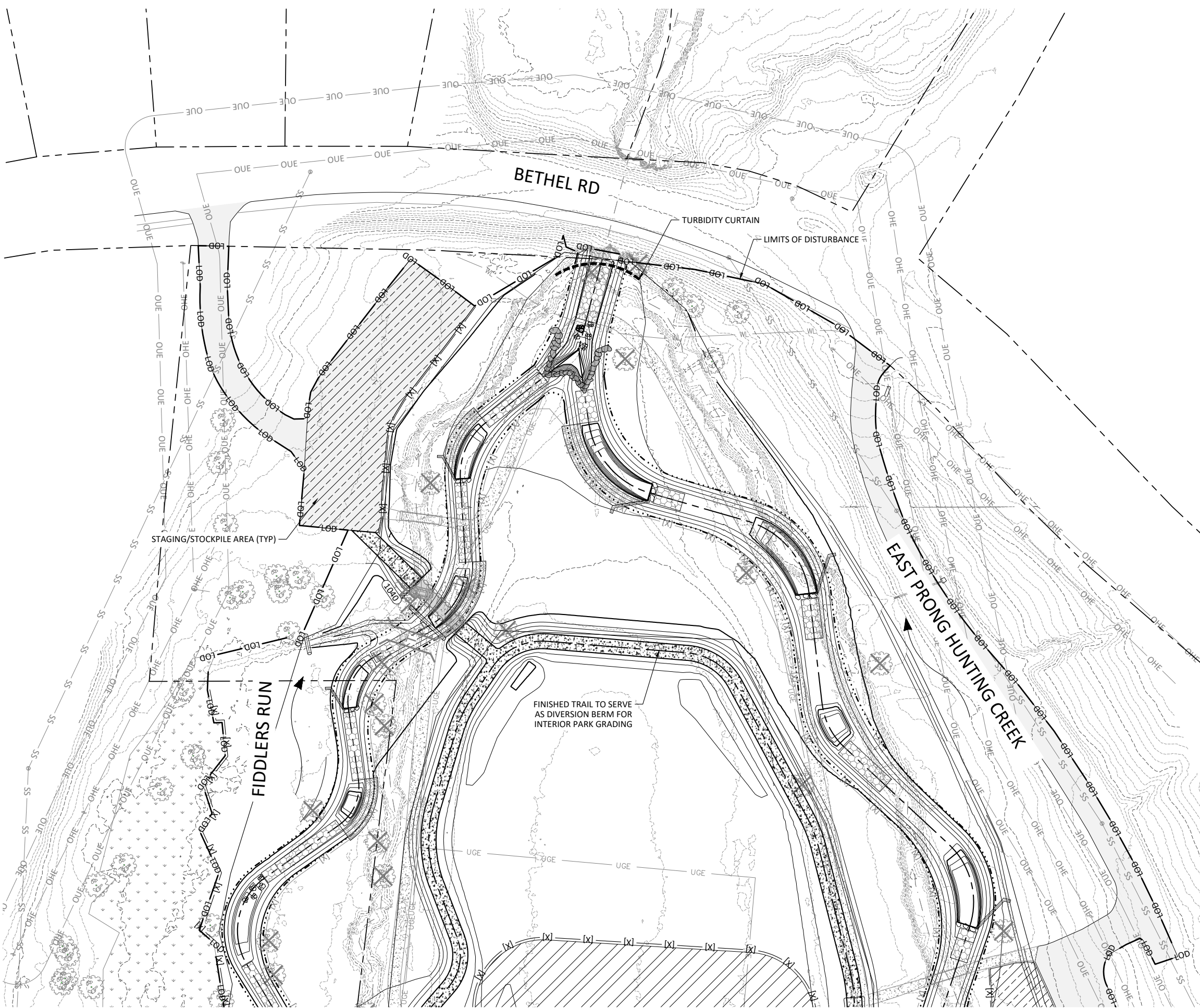
Erosion & Sediment Control Plan - Phase 3 - Park Improvements



Date:	10.16.2023
Job Number:	005-1637
Project Engineer:	GLS
Drawn By:	TWW & MK
Checked By:	DH

5.10

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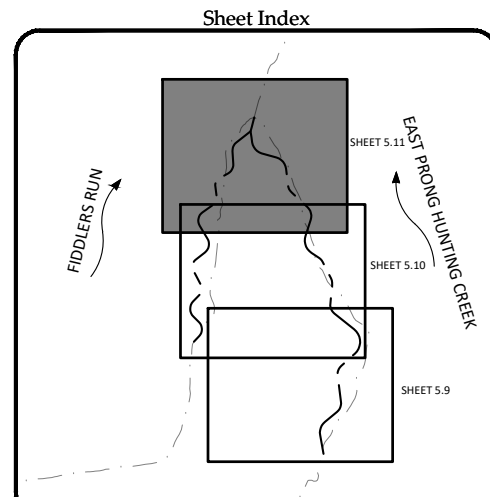


Legend

— LOD — LOD —	LIMITS OF DISTURBANCE
	STOCKPILE AREA
	STAGING/STOCKPILE AREA
	TURBIDITY CURTAIN
	TREE TO BE FELLED
— [X] — [X] — [X] —	PHASE 2 SILT FENCE
	PHASE 2 CHECK DAM
— [X] — [X] — [X] —	PHASE 3 SILT FENCE
	FINISHED TRAIL
	TEMPORARY STREAM CROSSING - TIMBER MAT PHASE 2
	TEMPORARY STREAM CROSSING - TIMBER MAT
	TEMPORARY STREAM CROSSING - CULVERT



Bethel Park Restoration
Morganton, North Carolina
 Erosion & Sediment Control Plan - Phase 3 - Park Improvements



Date:	10.16.2023
Job Number:	005-1637
Project Engineer:	GLS
Drawn By:	TJW & MK
Checked By:	DHJ

5.11

Planting Zones

Streambank Planting Zone						
Live Stakes						
Species	Common Name	Indiv. Spacing	Stratum	% of Stems	Quantity	Wetland Indicator Status
<i>Cornus amomum</i>	Silky Dogwood	5'	Shrub	35%	970	FACW
<i>Salix sericea</i>	Silky Willow	5'	Shrub	25%	692	OBL
<i>Cephalanthus occidentalis</i>	Buttonbush	5'	Shrub	25%	692	FACW
<i>Sambucus canadensis</i>	Elderberry	5'	Shrub	15%	416	FACW
				100%	2770	
Herbaceous Plugs						
<i>Juncus effusus</i>	Common Rush	3'	Herb	35%	808	-
<i>Carex vulpinoidea</i>	Fox Sedge	3'	Herb	20%	462	-
<i>Carex lurida</i>	Shallow Sedge	3'	Herb	25%	577	-
<i>Lobelia cardinalis</i>	Cardinalflower	3'	Herb	20%	462	-
				100%	2309	

Floodplain Bench Planting Zone #1						
Bare Root (303 stems/ac)						
Species	Common Name	Spacing	Stratum	% of Stems	Quantity	Wetland Indicator Status
<i>Acer saccharinum</i>	Silver Maple	12'	Tree	15%	262	FACW
<i>Platanus occidentalis</i>	Sycamore	12'	Tree	20%	349	FACW
<i>Betula nigra</i>	River Birch	12'	Tree	20%	349	FACW
<i>Aesculus sylvatica</i>	Painted Buckeye	12'	Shrub-Tree	10%	174	FAC
<i>Calycanthus floridus</i>	Sweetshrub	12'	Shrub	10%	174	FAC
<i>Amelanchier arborea</i>	Downy Serviceberry	12'	Tree	10%	174	FAC
<i>Itea virginica</i>	Virginia Sweetpire	12'	Shrub	5%	87	OBL
<i>Viburnum dentatum</i>	Arrowwood Viburnum	12'	Shrub	5%	87	FAC
<i>Ilex verticillata</i>	Winterberry	12'	Shrub	5%	87	FACW
				100%	1743	

Floodplain Bench Planting Zone #2						
Bare Root (303 stems/ac)						
Species	Common Name	Spacing	Stratum	% of Stems	Quantity	Wetland Indicator Status
<i>Lindera benzoin</i>	Northern Spicebush	12'	Shrub	15%	93	FAC
<i>Itea virginica</i>	Virginia Sweetpire	12'	Shrub	10%	62	OBL
<i>Vaccinium corymbosum</i>	Highbush Blueberry	12'	Shrub	15%	93	FACW
<i>Viburnum dentatum</i>	Arrowwood Viburnum	12'	Shrub	15%	93	FAC
<i>Calycanthus floridus</i>	Sweetshrub	12'	Shrub	15%	93	FAC
<i>Ilex verticillata</i>	Winterberry	12'	Shrub	15%	93	FACW
<i>Hamamelis virginiana</i>	Witchhazel	12'	Shrub	15%	93	FACU
				100%	620	

Bioretention Planting Zone						
Herbaceous Plugs (2,723 plugs/ac)						
Species	Common Name	Spacing	Stratum	% of Stems	Quantity	Wetland Indicator Status
<i>Juncus effusus</i>	Common Rush	4'	Herb	20%	129	FACW
<i>Sisyrinchium angustifolium</i>	Blue-eyed grass	4'	Herb	15%	96	FACW
<i>Sagittaria latifolia</i>	Duck-potato	4'	Herb	15%	96	OBL
<i>Lobelia cardinalis</i>	Cardinalflower	4'	Herb	15%	96	FACW
<i>Pycnanthemum tenuifolium</i>	Narrowleaf Mountain mint	4'	Herb	10%	64	FACW
<i>Asclepias incarnata</i>	Swamp Milkweed	4'	Herb	10%	64	OBL
<i>Verbena hastata</i>	Blue Verbena	4'	Herb	10%	64	FACW
<i>Saururus cernuus</i>	Lizard's Tail	4'	Herb	5%	33	OBL
				100%	642	

Bioretention Planting Zone					
5-Gallon Containerized Plants					
Species	Common Name	Spacing	Stratum	Quantity	Wetland Indicator Status
<i>Lindera benzoin</i>	Northern Spicebush	-	Shrub	2	FAC
<i>Vaccinium corymbosum</i>	Highbush Blueberry	-	Shrub	2	FACW
<i>Viburnum dentatum</i>	Arrowwood Viburnum	-	Shrub	2	FAC
<i>Calycanthus floridus</i>	Sweetshrub	-	Shrub	2	FAC
<i>Ilex verticillata</i>	Winterberry	-	Shrub	2	FACW
<i>Hamamelis virginiana</i>	Witchhazel	-	Shrub	2	FACU
				12	

- Notes:
- Not all species of containerized plants listed above are intended for use. Select from the list above based on availability or preference to satisfy the number of plants as indicated on the plans.
 - Location and quantity to be determined by City Staff.

Seeding

Floodplain Bench Planting Zones				
Permanent Seed Mix (20 lbs/ac)				
Species	Common Name	Stratum	Density (lbs/acre)	Wetland Indicator Status
<i>Coreopsis tinctoria</i>	Golden Tickseed	Herb	2.0	FAC
<i>Rudbeckia hirta</i>	Blackeyed Susan	Herb	2.0	FACU
<i>Sisyrinchium angustifolium</i>	Blue-eyed grass	Herb	1.5	FACW
<i>Juncus tenuis</i>	Path Rush	Herb	1.5	FAC
<i>Juncus effusus</i>	Common Rush	Herb	1.5	OBL
<i>Chamaecrista fasciculata</i>	Partridge Pea	Herb	1.5	FACU
<i>Carex cherokeensis</i>	Cherokee Sedge	Herb	1.5	FACW
<i>Pycnanthemum tenuifolium</i>	Narrowleaf Mountainmint	Herb	1.5	FACW
<i>Helenium autumnale</i>	Sneezeweed	Herb	1.5	FACW
<i>Carex crinita</i>	Fringed Sedge	Herb	1.5	OBL
<i>Dichanthelium clandestinum</i>	Deer Tongue	Herb	1.0	FAC
<i>Conoclinium coelestinum</i>	Blue mistflower	Herb	1.0	FAC
<i>Chasmanthium latifolium</i>	River Oats	Herb	1.0	FACU
<i>Schizachyrium scoparium</i>	Little Bluestem	Herb	1.0	FACU

Park Seed Mix		
Permanent Seed Mix (30 lbs/ac)		
Species	Common Name	Density (lbs/ac)
<i>Festuca arundinacea</i> , 'Teton'	Tall Fescue, 'Teton'	10
<i>Festuca arundinacea</i> , 'FoxHound'	Tall Fescue, 'FoxHound'	10
<i>Festuca arundinacea</i> , 'Turismo'	Tall Fescue, 'Turismo'	10

Temporary Seed Mix			
Pure Live Seed			
Species	Common Name	Density (lbs/ac)	Approved Date
<i>Secale cereale</i>	Rye Grain	140	Sep 15 - April 1
<i>Setaria italica</i>	German Millet	50	April 1 - Sep 15

Bioretention Planting Zone				
Permanent Seed Mix (20 lbs/ac)				
Species	Common Name	Stratum	Density (lbs/acre)	Wetland Indicator Status
<i>Coreopsis tinctoria</i>	Golden Tickseed	Herb	3.0	FAC
<i>Rudbeckia hirta</i>	Blackeyed Susan	Herb	3.0	FACU
<i>Juncus tenuis</i>	Path Rush	Herb	2.0	FAC
<i>Chamaecrista fasciculata</i>	Partridge Pea	Herb	2.0	FACU
<i>Carex cherokeensis</i>	Cherokee Sedge	Herb	2.0	FACW
<i>Pycnanthemum tenuifolium</i>	Narrowleaf Mountainmint	Herb	2.0	FACW
<i>Conoclinium coelestinum</i>	Blue mistflower	Herb	1.5	FAC
<i>Chasmanthium latifolium</i>	River Oats	Herb	1.5	FACU
<i>Schizachyrium scoparium</i>	Little Bluestem	Herb	1.5	FACU
<i>Panicum virgatum</i>	Switchgrass	Herb	1.5	FAC

Bethel Park Restoration
Morganton, North Carolina

Planting Tables

Revisions:

Date: 10.16.2023

Job Number: 005-16357

Project Engineer: GLS

Drawn By: TWV & MK

Checked By: DHT



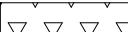
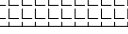
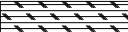

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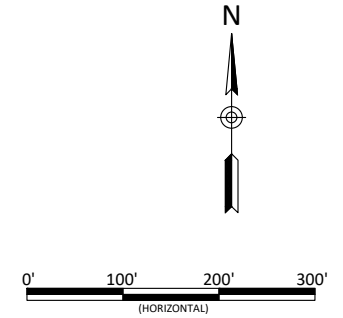
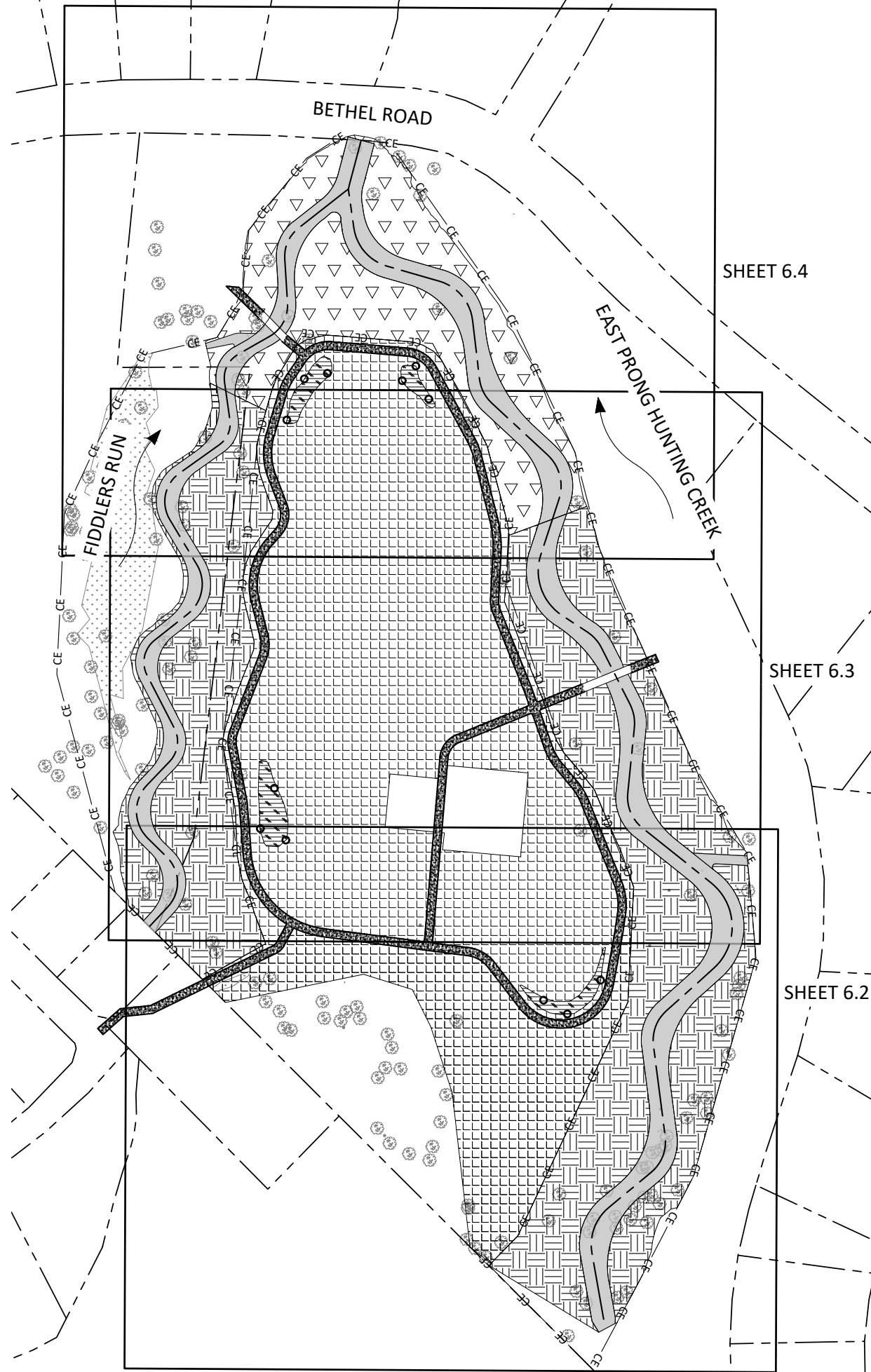
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WILDLANDS
ENGINEERING
497 Bramson Ct, Suite 104
Mount Pleasant, SC 29464
Tel: 843.277.6221
NC Firm License No. F-6831



Planting Zones

-  Streambank Planting Zone
See Detail 1 & Detail 4, Sheet 7.6.
-  Floodplain Bench Planting Zone #1
See Detail 2, Sheet 7.6.
-  Floodplain Bench Planting Zone #2
See Detail 2, Sheet 7.6.
-  Park Seeding Zone
-  Bioretention Planting Zone
-  Containerized Plants
See Detail 3, Sheet 7.6.

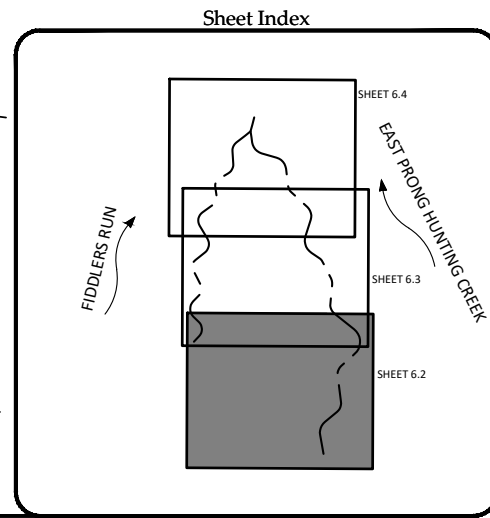
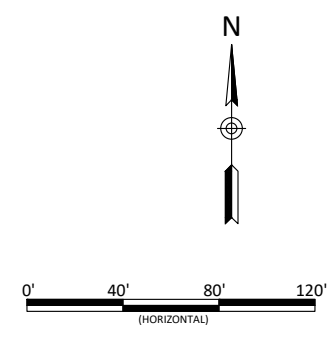


Bethel Park Restoration
Morganton, North Carolina
Planting Plan Overview

Revisions:

Date: 10.16.2023
Job Number: 005-16357
Project Engineer: GLS
Drawn By: TWW & MK
Checked By: DJH

October 16, 2023
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Date: 10.16.2023
 Job Number: 005-16357
 Project Engineer: GLS
 Drawn By: TWW & MJK
 Checked By: DJH

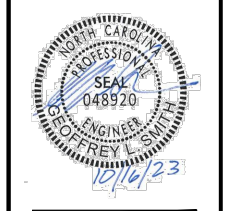
Revisions:

Bethel Park Restoration
Morganton, North Carolina
 Planting Plan

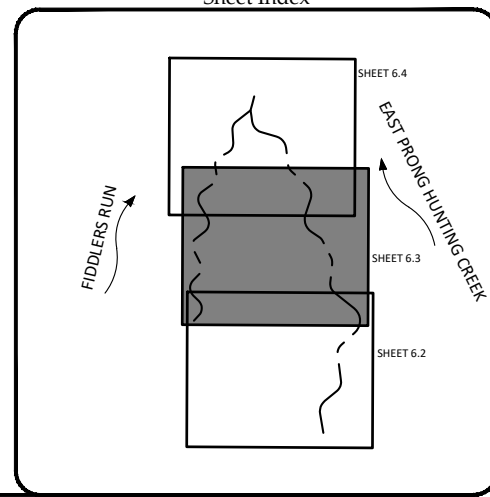
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Sheet

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October 16, 2023
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Bethel Park Restoration
Morganton, North Carolina

Planting Plan

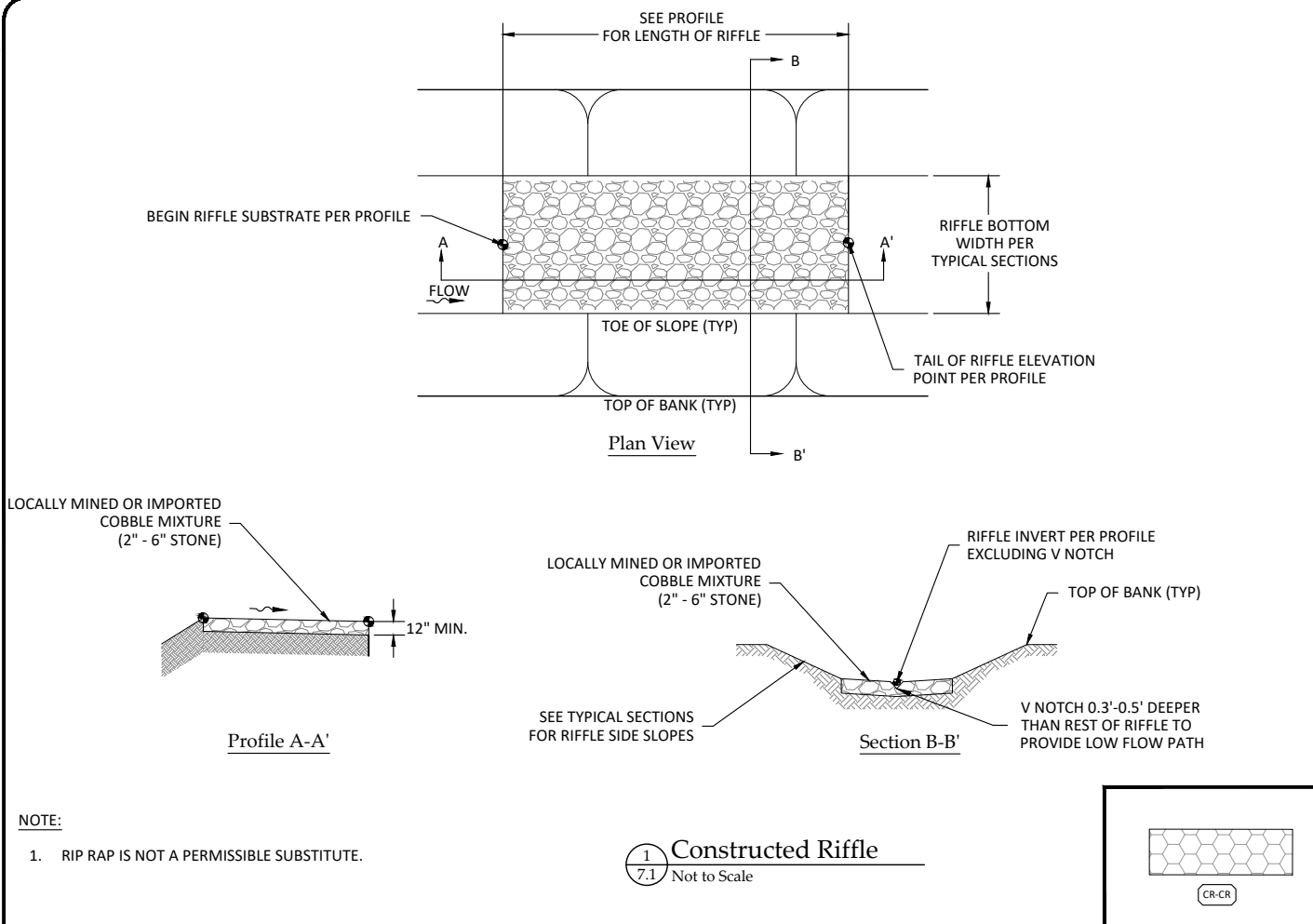
Date:	10.16.2023
Job Number:	005-16357
Project Engineer:	GLS
Drawn By:	TWW & MK
Checked By:	DH

6.3

Sheet

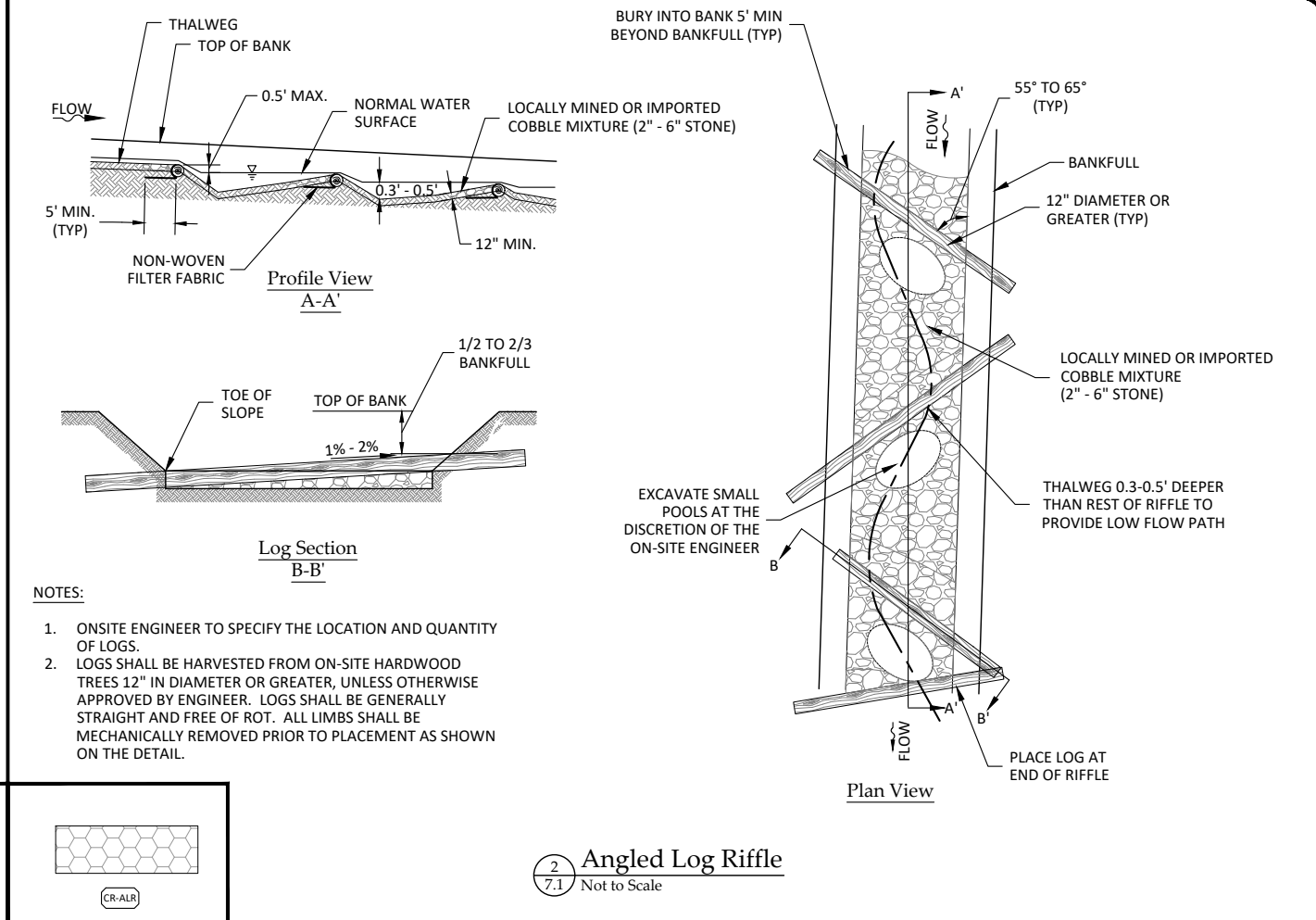
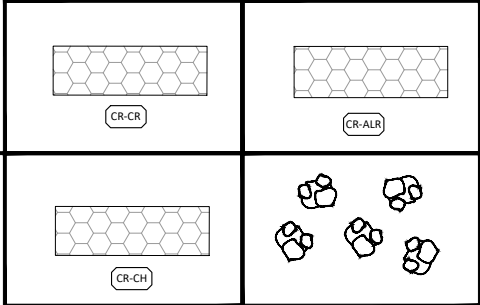


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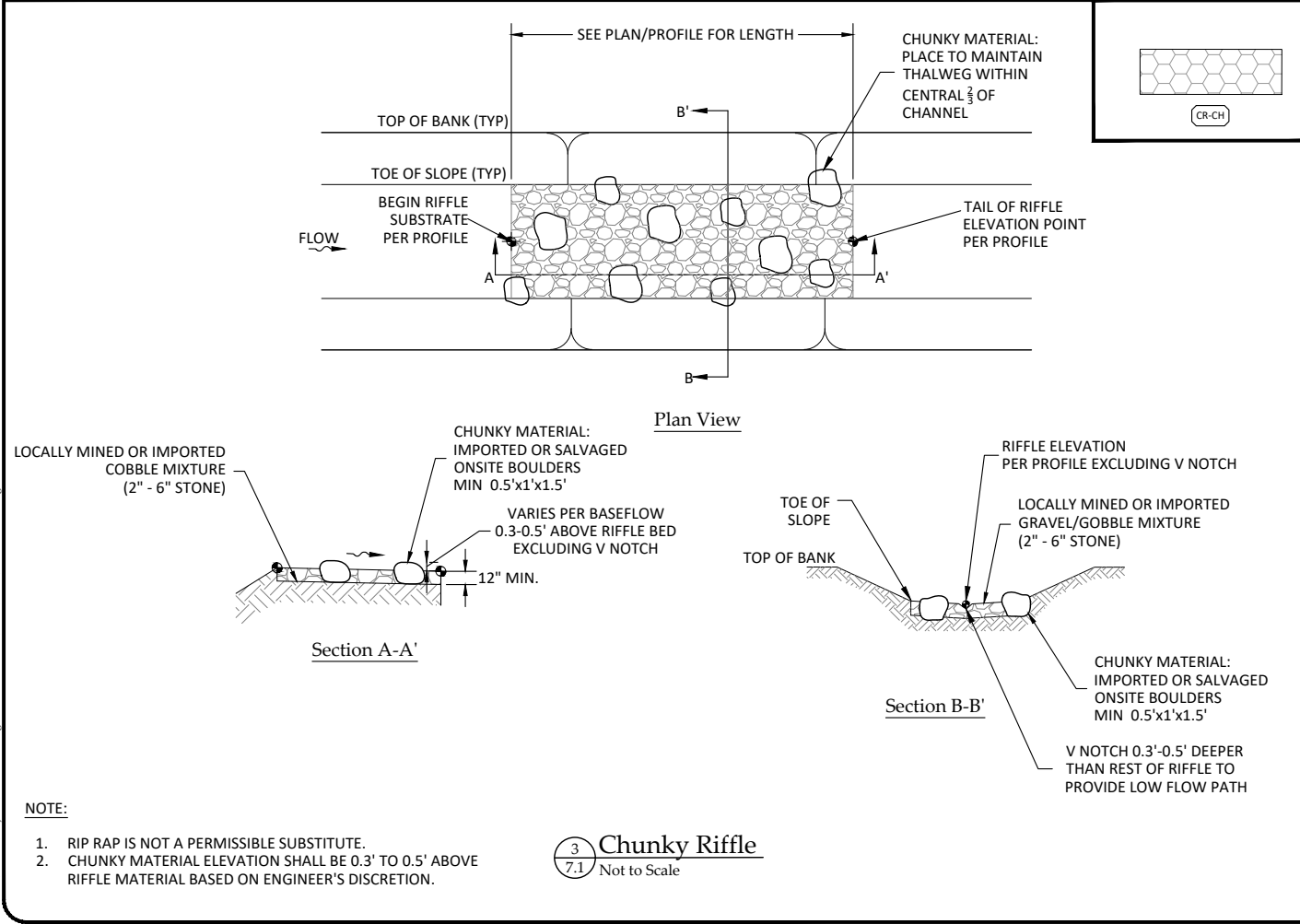
NOTE:
1. RIP RAP IS NOT A PERMISSIBLE SUBSTITUTE.

1
7.1
Constructed Riffle
Not to Scale



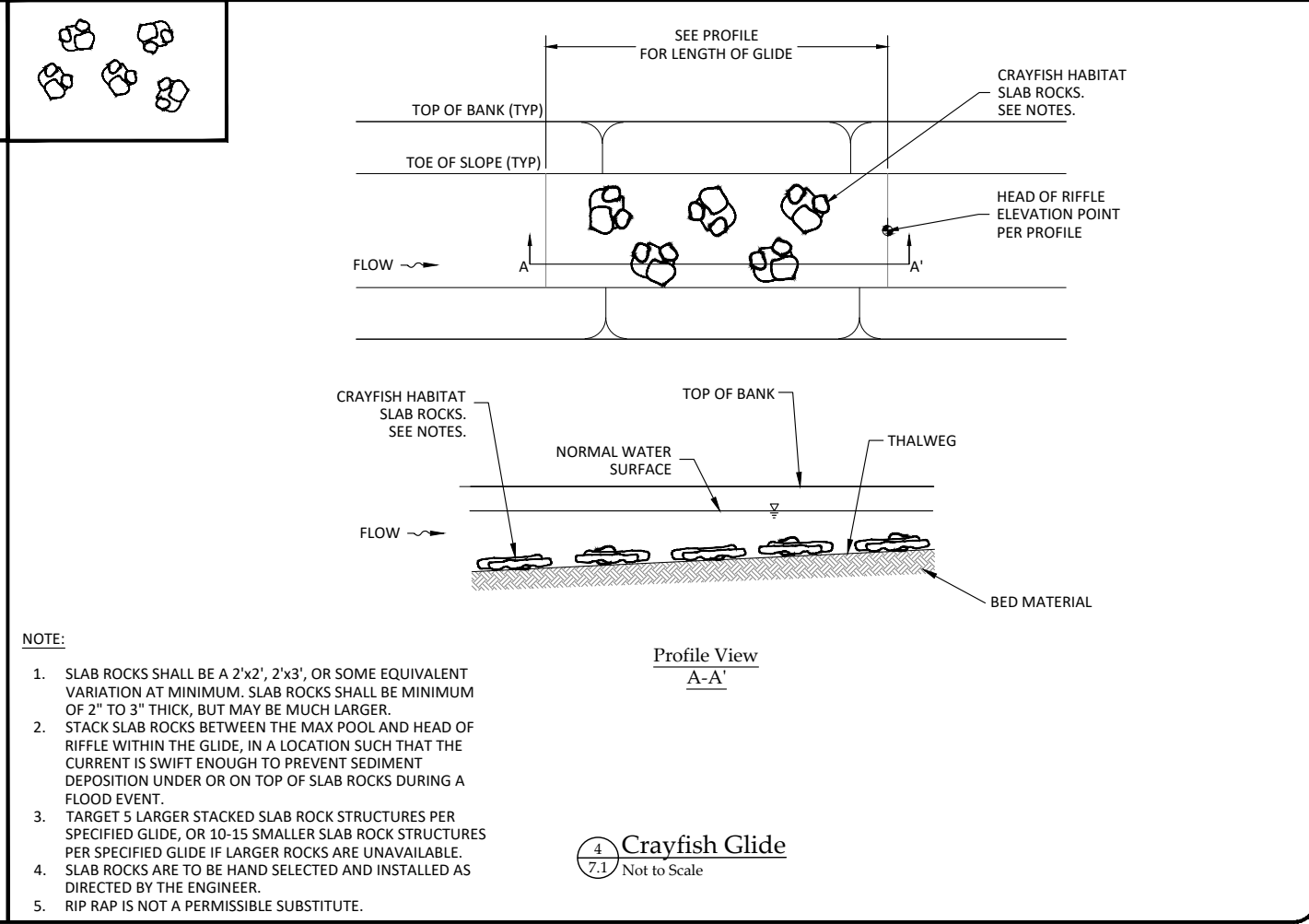
NOTES:
1. ONSITE ENGINEER TO SPECIFY THE LOCATION AND QUANTITY OF LOGS.
2. LOGS SHALL BE HARVESTED FROM ON-SITE HARDWOOD TREES 12" IN DIAMETER OR GREATER, UNLESS OTHERWISE APPROVED BY ENGINEER. LOGS SHALL BE GENERALLY STRAIGHT AND FREE OF ROT. ALL LIMBS SHALL BE MECHANICALLY REMOVED PRIOR TO PLACEMENT AS SHOWN ON THE DETAIL.

2
7.1
Angled Log Riffle
Not to Scale



NOTE:
1. RIP RAP IS NOT A PERMISSIBLE SUBSTITUTE.
2. CHUNKY MATERIAL ELEVATION SHALL BE 0.3' TO 0.5' ABOVE RIFFLE MATERIAL BASED ON ENGINEER'S DISCRETION.

3
7.1
Chunky Riffle
Not to Scale

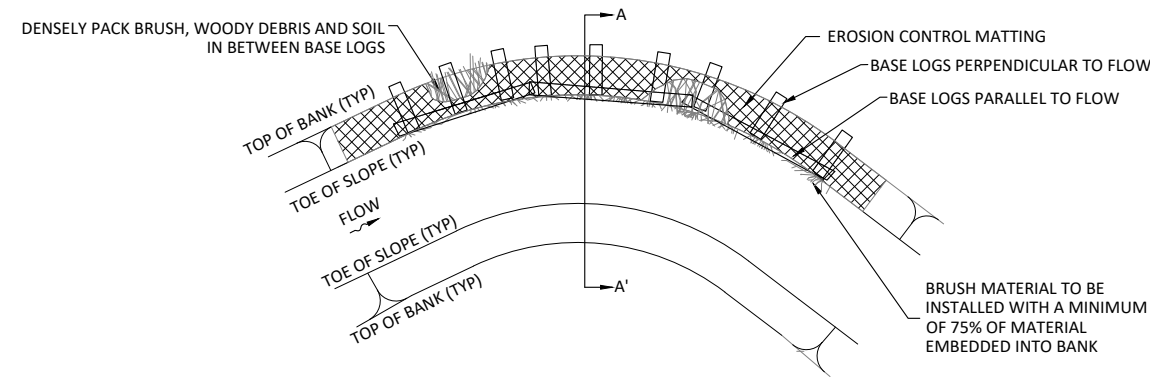


NOTE:
1. SLAB ROCKS SHALL BE A 2'x2', 2'x3', OR SOME EQUIVALENT VARIATION AT MINIMUM. SLAB ROCKS SHALL BE MINIMUM OF 2" TO 3" THICK, BUT MAY BE MUCH LARGER.
2. STACK SLAB ROCKS BETWEEN THE MAX POOL AND HEAD OF RIFFLE WITHIN THE GLIDE, IN A LOCATION SUCH THAT THE CURRENT IS SWIFT ENOUGH TO PREVENT SEDIMENT DEPOSITION UNDER OR ON TOP OF SLAB ROCKS DURING A FLOOD EVENT.
3. TARGET 5 LARGER STACKED SLAB ROCK STRUCTURES PER SPECIFIED GLIDE, OR 10-15 SMALLER SLAB ROCK STRUCTURES PER SPECIFIED GLIDE IF LARGER ROCKS ARE UNAVAILABLE.
4. SLAB ROCKS ARE TO BE HAND SELECTED AND INSTALLED AS DIRECTED BY THE ENGINEER.
5. RIP RAP IS NOT A PERMISSIBLE SUBSTITUTE.

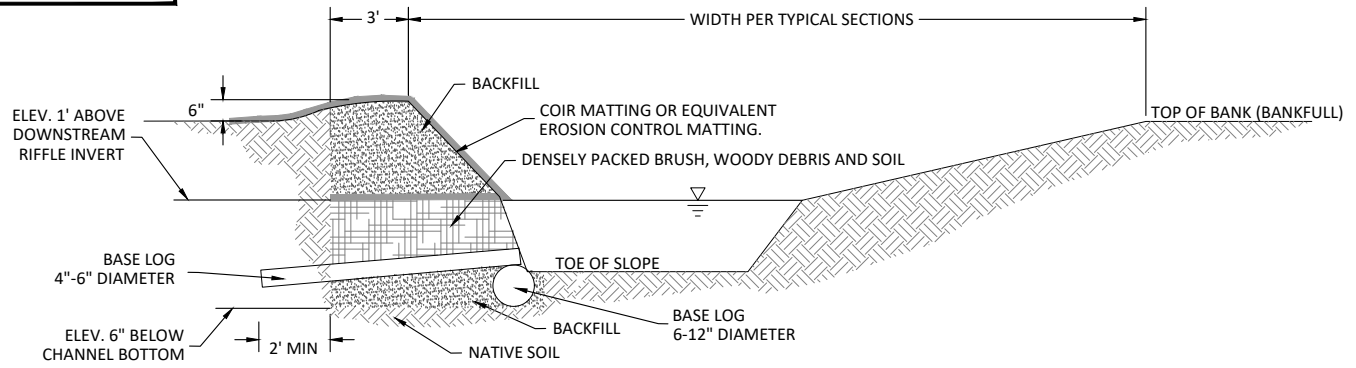
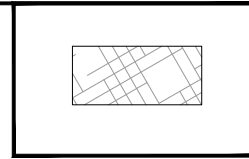
4
7.1
Crayfish Glide
Not to Scale



Date:	10.16.2023
Job Number:	005-16357
Project Engineer:	GLS
Drawn By:	TWW & MK
Checked By:	DHJ



Plan View



Section A-A'

NOTES:

1. OVEREXCAVATE 5' OUTSIDE OF TOP OF BANK (BANKFULL).
2. INSTALL BASE LOGS PARALLEL TO FLOW AT TOE OF SLOPE. DIAMETER 6"-12".
3. INSTALL BASE LOGS PERPENDICULAR TO FLOW AT INTERVALS ALONG BANK, RESTING ON TOP OF PARALLEL BASE LOGS. PARALLEL BASE LOGS SHALL BE 6"-12" DIAMETER. PERPENDICULAR BASE LOGS SHALL BE 4"-6" DIAMETER.
4. INSTALL A DENSE LAYER OF BRUSH/WOODY DEBRIS, WHICH SHALL CONSIST OF SMALL BRANCHES AND ROOTS COLLECTED ON-SITE AND SOIL TO FILL ANY VOID SPACE. LIGHTLY COMPACT BRUSH/WOODY DEBRIS LAYER.
5. BRUSH SHOULD BE ALIGNED SO STEMS ARE ROUGHLY PARALLEL AND INSTALLED POINTING SLIGHTLY UPSTREAM.
6. INSTALL COIR MATTING OVER BRUSH/WOODY DEBRIS AND BACKFILL LAYER.
7. INSTALL EARTH BACKFILL OVER BRUSH/WOODY LAYER ACCORDING TO TYPICAL SECTION DIMENSIONS.
8. SEED, MULCH AND FASTEN COIR MATTING PER PLANS AND DETAILS.
9. ONSITE ENGINEER ENGINEER SHALL APPROVE SELECT WOODY DEBRIS PRIOR TO INSTALLATION.

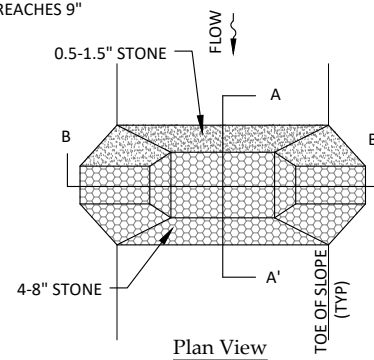
1 Brush Toe
7.2 Not to Scale

NOTES:

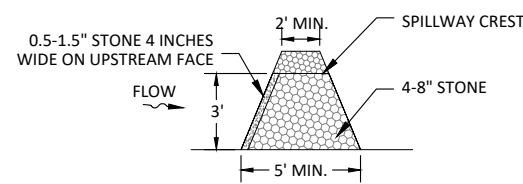
1. INSTALL AS SHOWN IN THE PLANS BELOW ACTIVE WORK AREA TO CAPTURE SEDIMENT.

MAINTENANCE NOTES

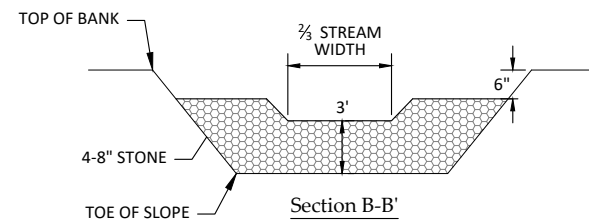
1. ALL ROCK SILT CHECK DAMS SHOULD BE INSPECTED AT LEAST ONCE WEEKLY OR AFTER 0.25" OF PRECIPITATION WITHIN 24 HOURS.
2. ROCK SILT CHECK DAMS COLLAPSING, WATER BYPASSING THE DAMS, OR OTHER DAM FAILURES SHOULD BE REPAIRED WITHIN 24 HOURS.
3. SEDIMENT TRAPPED BEHIND ROCK SILT CHECK DAMS SHOULD BE CAREFULLY REMOVED ONCE DEPTH REACHES 9"



Plan View

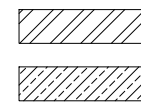
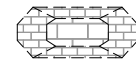


Section A-A'



Section B-B'

2 Temporary Rock Check Dam
7.2 Not to Scale



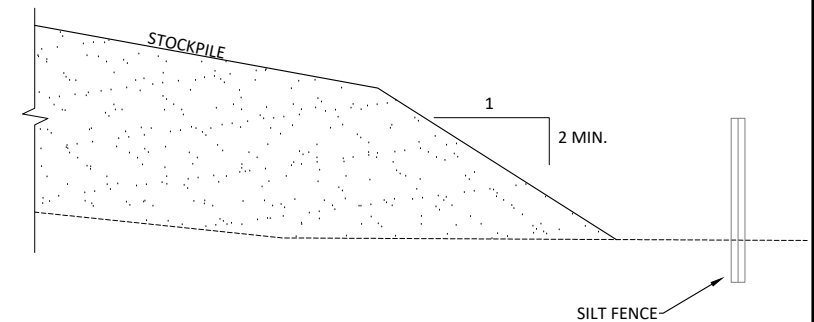
NOTES:

1. STOCKPILES STAGING AREAS SHALL ONLY BE PLACED IN AREAS DESIGNATED ON THE PLANS.
2. SILT FENCE SHALL BE PLACED ON STREAM SIDE OF ALL STOCKPILES.
3. LOCATE EARTHEN MATERIAL STOCKPILE AREAS AT LEAST 50 FEET AWAY FROM STORM DRAIN INLETS, SEDIMENT BASINS, PERIMETER SEDIMENT CONTROLS AND SURFACE WATERS UNLESS IT CAN BE SHOWN NO OTHER ALTERNATIVES ARE REASONABLY AVAILABLE.
4. PROTECT THE STOCKPILE WITH SILT FENCE INSTALLED ALONG THE TOE OF SLOPE WITH A MINIMUM OFFSET OF FIVE FEET FROM THE TOE OF STOCKPILE.

MAINTENANCE NOTES:

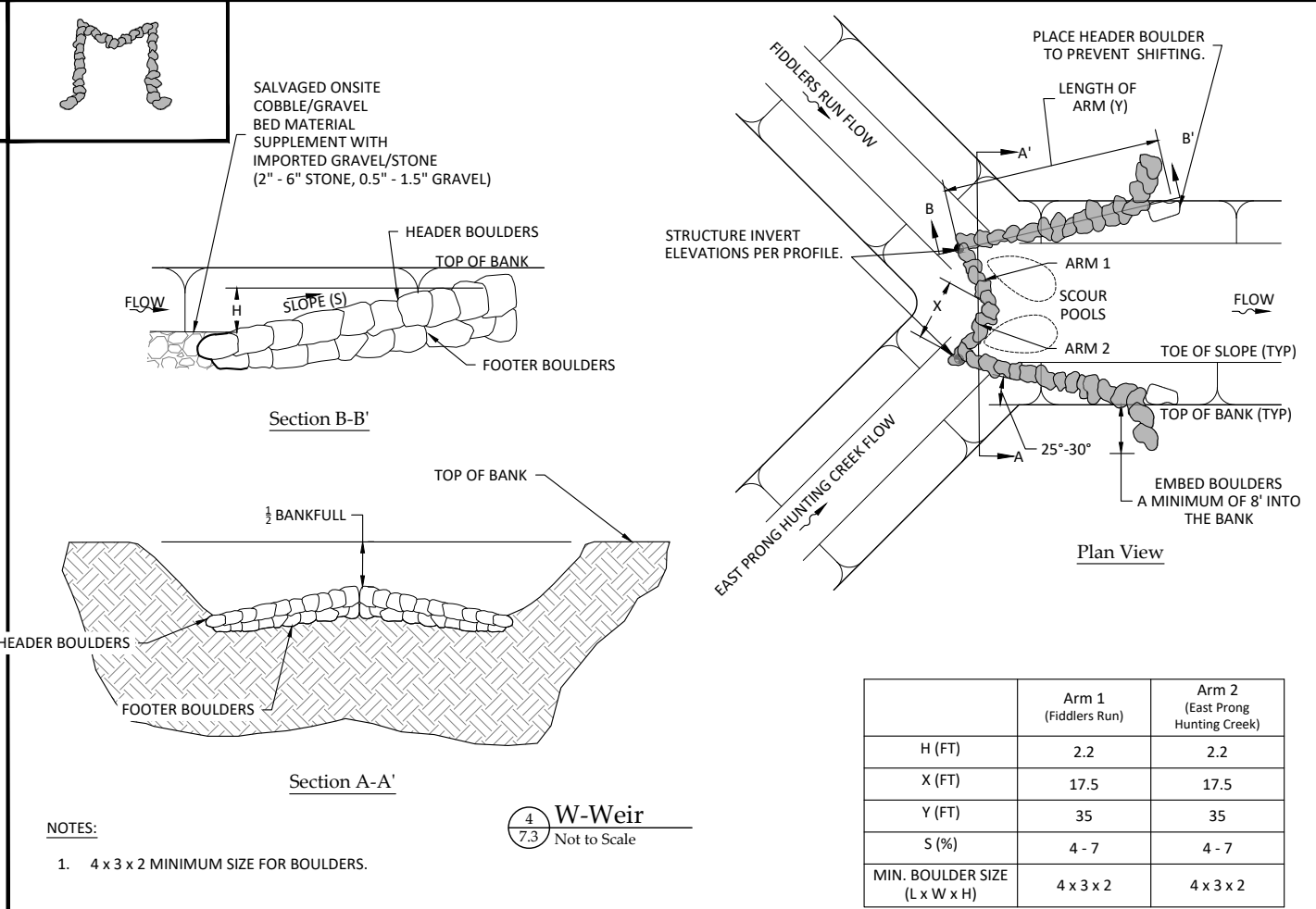
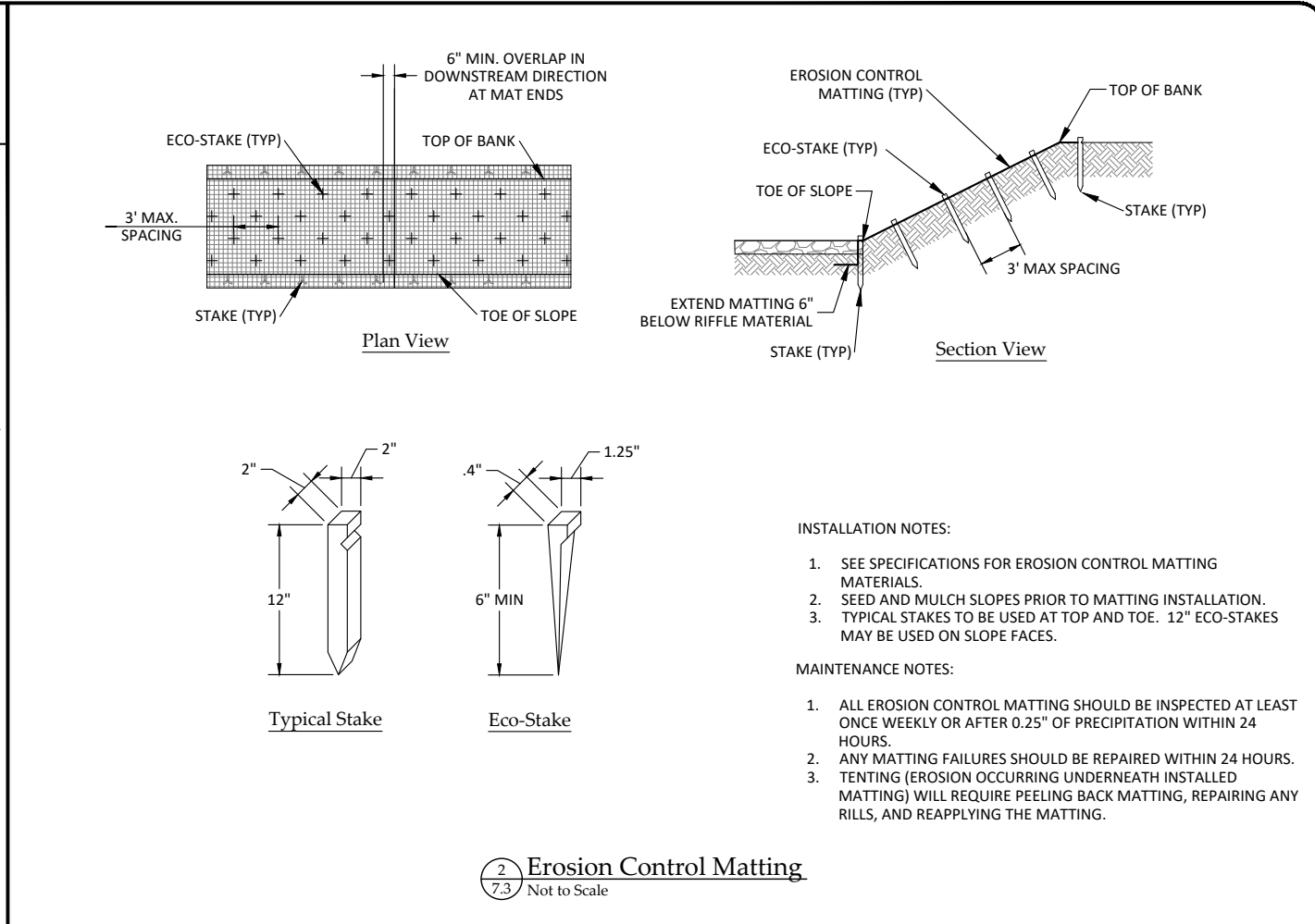
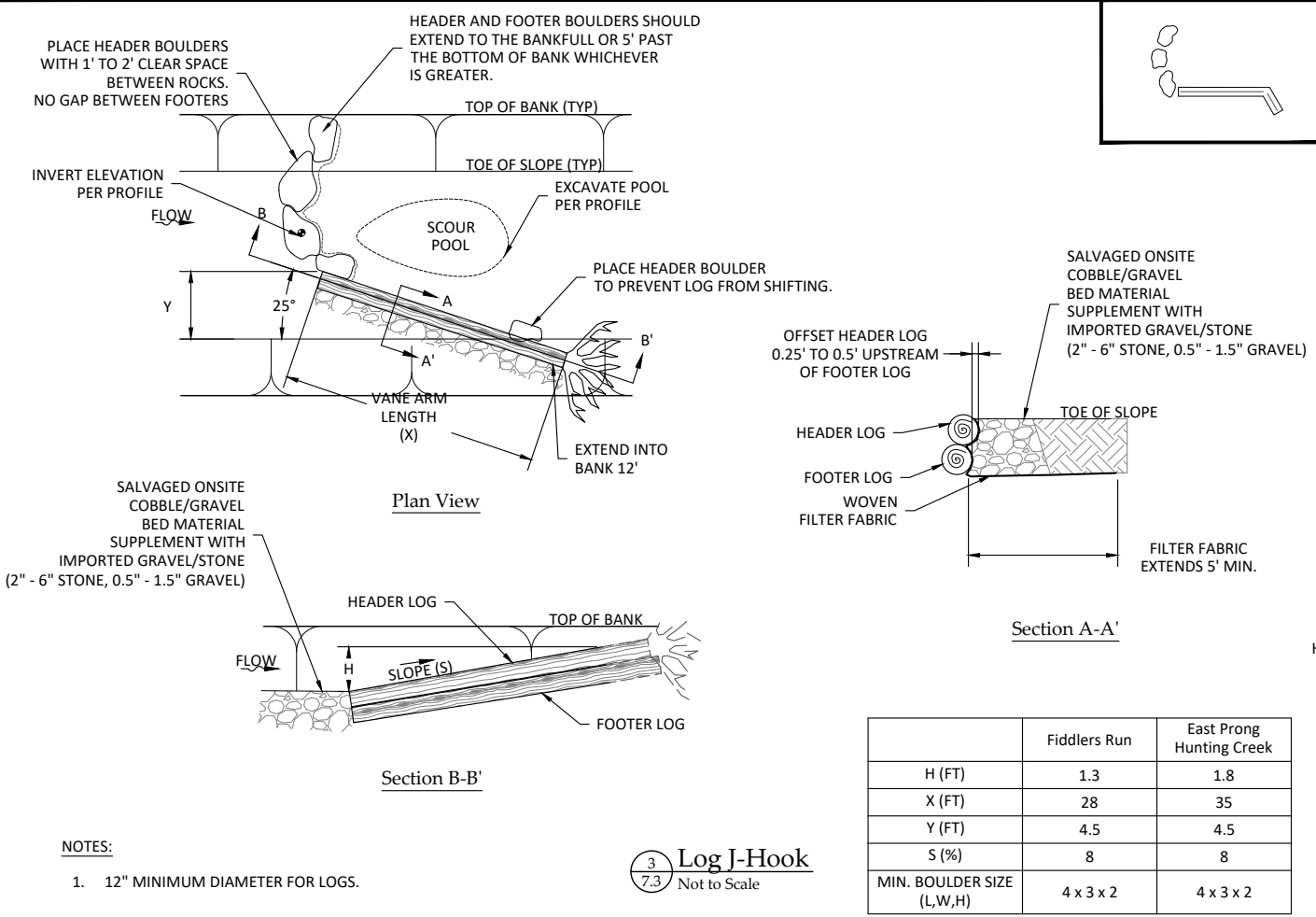
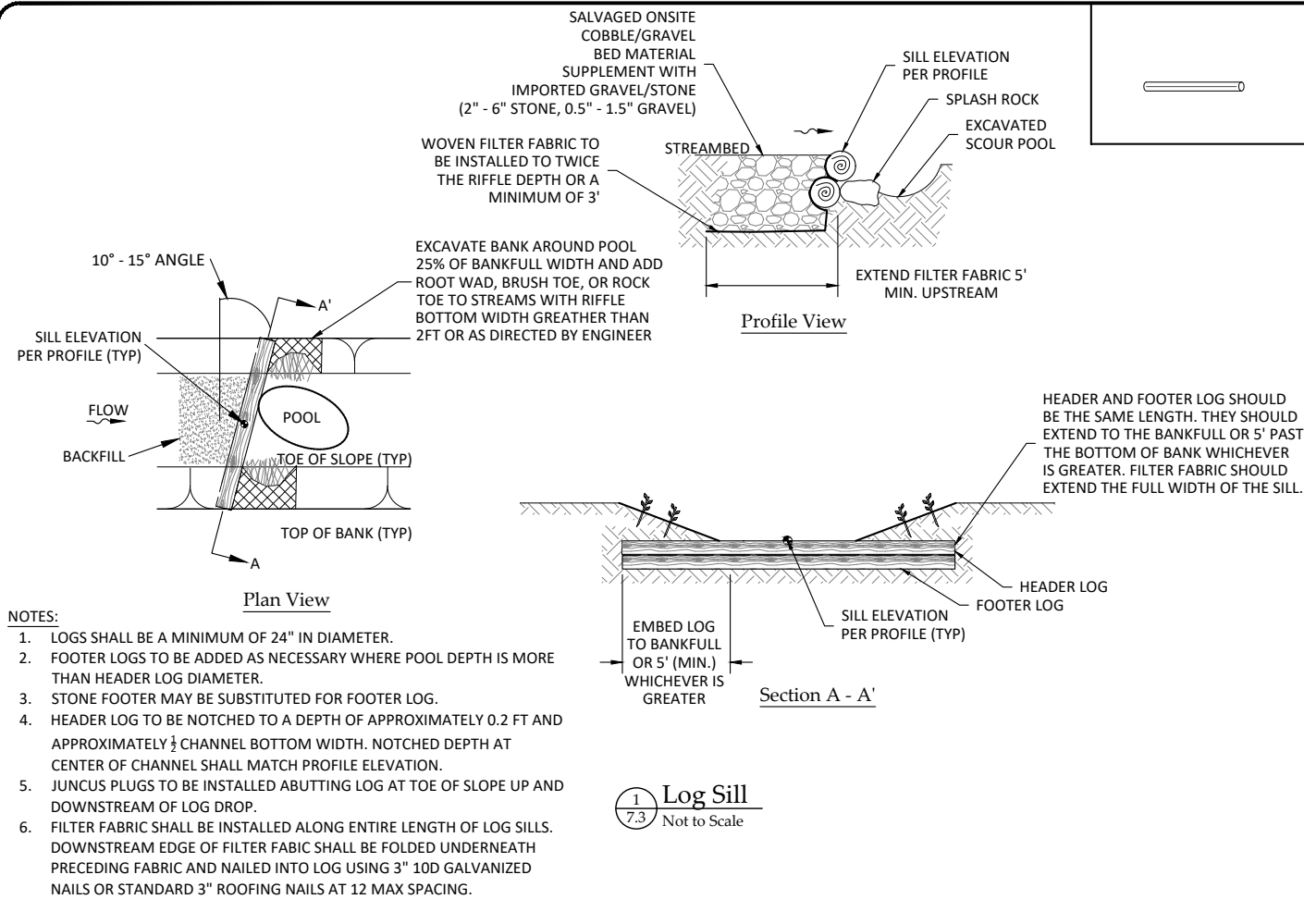
1. ALL STOCKPILE AREAS AND SILT FENCES SHALL BE INSPECTED AT LEAST ONCE PER WEEK OR AFTER 0.25" OF PRECIPITATION WITHIN 24 HOURS.
2. SILT FENCE SHOULD BE INSPECTED FOR TEARS, UNTRENCHED AREAS, OR OTHER FAILURES AND REPAIRED WITHIN 24 HOURS
3. SEDIMENT SHALL BE REMOVED FROM BEHIND THE SILT FENCE ONCE DEPTH REACHES 6"
4. ANY SOIL STOCKPILES LEFT IN PLACE FOR LONGER THAN 7 DAYS SHALL BE SEEDED AND MULCHED OR OTHERWISE STABILIZED.

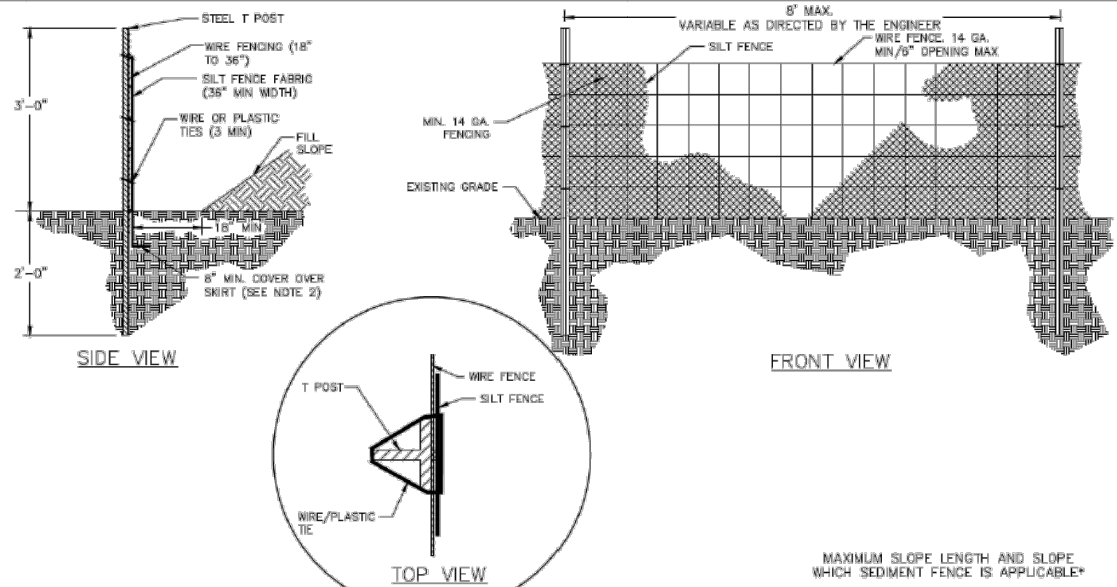
3 Stockpile and Staging Area
7.2 Not to Scale



Revisions:

Date:	10.16.2023
Job Number:	005-16357
Project Engineer:	GLS
Drawn By:	TWW & MK
Checked By:	DHJ





- NOTES:**
- SILT FENCE MUST BE PLACED 18" (MIN) FROM TOE OF SLOPE. IT CAN NOT BE USED TO HOLD BACK FILL MATERIALS.
 - BOTTOM 12 INCHES OF SILT FENCE MUST BE BURIED. PLACE IT IN A TRENCH 8" DEEP AND 4" WIDE.
 - USE SILT FENCE ONLY WHEN DRAINAGE AREA DOES NOT EXCEED 1/4 ACRE AND NEVER IN AREAS OF CONCENTRATED FLOW OR IN A STREAM BED.

MAXIMUM SLOPE LENGTH AND SLOPE WHICH SEDIMENT FENCE IS APPLICABLE*

SLOPE	SLOPE LENGTH (FT)	MAXIMUM AREA (SQ FT)
<2%	100	10,000
2 TO 5%	75	7,500
5 TO 10%	50	5,000
10 TO 20%	25	2,500
>20%	15	1,500

* TABLE INFORMATION TAKEN FROM THE NORTH CAROLINA EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL, DETAIL 6.62A.

City of Asheville, NC
Standard Specifications
and Details Manual

**STANDARD TEMPORARY
SILT FENCE**

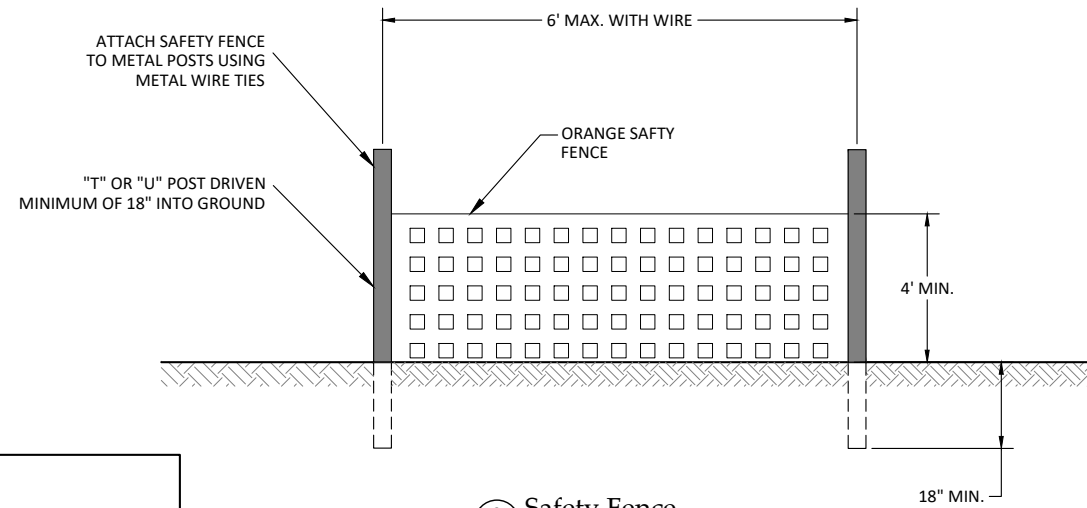
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6/6/15	MINOR GRAPHIC REP. REVISIONS	7.01

MAINTENANCE NOTES:

- ALL SILT FENCE SHOULD BE INSPECTED AT LEAST ONCE WEEKLY OR AFTER 0.25" OF PRECIPITATION WITHIN 24 HOURS.
- TEARS IN THE FENCE, UNTRENCHED AREAS, OR OTHER FENCE FAILURES SHOULD BE REPAIRED WITHIN 24 HOURS.
- SEDIMENT TRAPPED BEHIND SILT FENCE SHOULD BE CAREFULLY REMOVED ONCE DEPTH REACHES 6".

1
7.4
Temporary Silt Fence
Not to Scale

MATERIAL SPECIFICATIONS		
PHYSICAL PROPERTY	TESTS	REQUIREMENTS
MATERIAL	N/A	POLYETHYLENE
RECOMENDED COLOR	N/A	"INTERNATIONAL ORANGE"
TENSILE YIELD	ASTM D638	AVE. 2000 LBS. PER 4' WIDE
ULTIMATE TENSILE STRENGTH	ASTM D638	AVE. 2900 LBS. PER 4' WIDE
ELONGATION AT BREAK (%)	ASTM D638	GREATER THAN 1000%
CHEMICAL RESISTANCE	N/A	INERT TO MOST CHEMICALS AND ACIDS

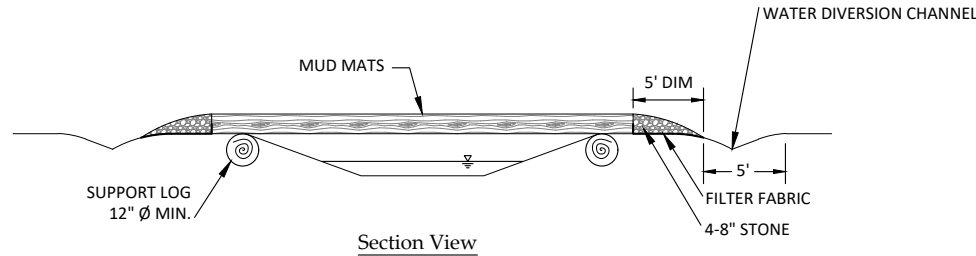


2
7.4
Safety Fence
Not to Scale

[X] SAF

[T] [C]

Temporary Stream Crossing - Timber Mats



INSTALLATION NOTES:

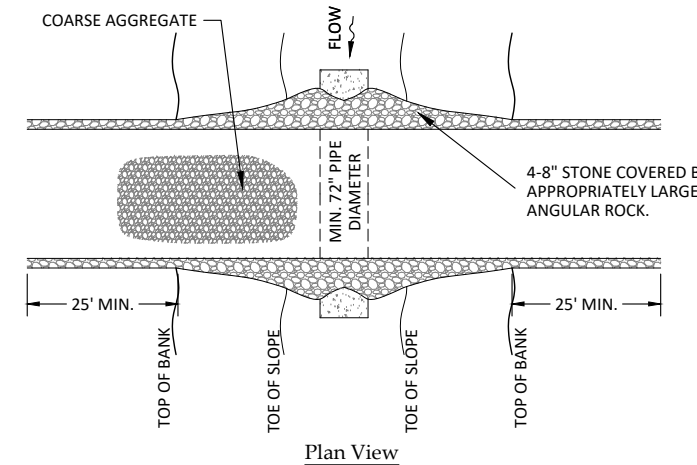
- CONSTRUCT STREAM CROSSING WHEN FLOW IS AT OR BELOW NORMAL BASEFLOW.
- BRIDGE MATS SHALL BE PLACED FROM ABOVE RATHER THAN DRAGGED INTO PLACE.
- MINIMIZE CLEARING AND EXCAVATION OF STREAMBANKS. DO NOT EXCAVATE CHANNEL BOTTOM.
- INSTALL STREAM CROSSING PERPENDICULAR TO THE FLOW.
- MAINTAIN CROSSING SO THAT RUNOFF IN THE CONSTRUCTION ROAD DOES NOT ENTER CHANNEL. SMALL DIVERSION CHANNELS, ADDITIONAL ROCK, OR STRAW/COIR WATTLES MAY BE REQUIRED. INSTALL AS DIRECTED.
- STABILIZE AN ACCESS RAMP OF CLASS B STONE TO THE EDGE OF THE MUD MAT.
- CONTRACTOR SHALL DETERMINE APPROPRIATE RAMP ANGLE ACCORDING TO EQUIPMENT USED.
- PLUG GAPS BETWEEN MATS WITH FILTER FABRIC TO PREVENT LOSS OF SOIL THROUGH GAPS.
- ADDRESS STEEP TRANSITIONS TO THE CROSSING THAT PRESENT AN EROSION OR SEDIMENTATION RISK WITH APPROPRIATE COUNTERMEASURES SUCH AS STONE OR END OF DAY COVER OR SEDIMENT BARRIER APPLICATIONS.

MAINTENANCE NOTES:

- ALL TEMPORARY STREAM CROSSINGS SHOULD BE INSPECTED AT LEAST ONCE WEEKLY OR AFTER 0.25" OF PRECIPITATION WITHIN 24 HOURS.
- IF EXCESSIVE SEDIMENT IS BEING TRACKED ON TOP OF MATS THEN REMOVE WITH SHOVEL AND DISPOSE OF PROPERLY.
- TERRACE SLOPES ENTERING AND EXITING FROM CROSSINGS MUST BE WELL MAINTAINED. DIVERT SURFACE RUNOFF AWAY FROM CROSSINGS, APPLY WATTLES AT THE END OF EACH DAY WHEN RAIN IS ANTICIPATED, APPLY SURFACE STONE AS NECESSARY.

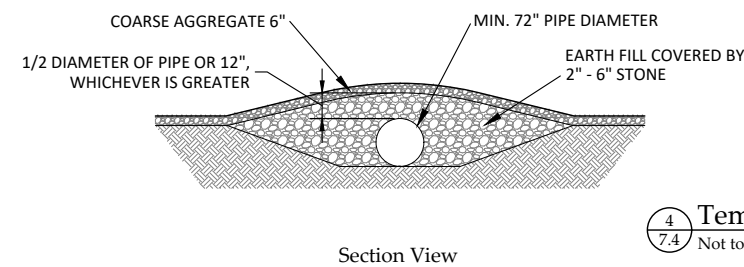
3
7.4
Temporary Stream Crossing - Timber Mats
Not to Scale

Temporary Stream Crossing - Culvert

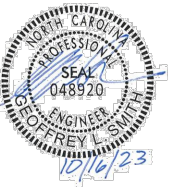


NOTES:

- TEMPORARY STREAM CROSSING LOCATIONS INCLUDED IN THE ESC PLANS.
- CONSTRUCT STREAM CROSSING WHEN FLOW IS AT NORMAL BASEFLOW.
- MINIMIZE CLEARING AND EXCAVATION OF STREAM BANKS. DO NOT EXCAVATE CHANNEL BOTTOM.
- INSTALL STREAM CROSSING PERPENDICULAR TO THE FLOW.
- MAINTAIN CROSSING SO THAT RUNOFF IN THE CONSTRUCTION ROAD DOES NOT ENTER EXISTING CHANNEL.
- MIN. 72" DIAMETER PIPE TO BE APPROXIMATELY 20' IN LENGTH AND A COMPRISED OF A MATERIAL DECIDED AT THE DISCRETION OF THE CONTRACTOR.



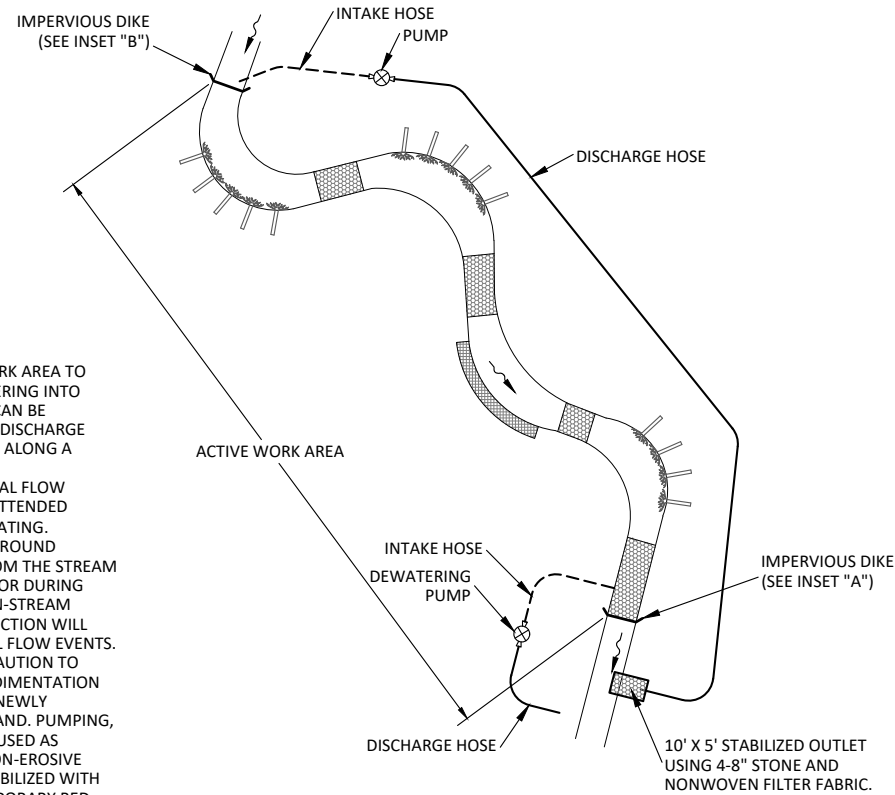
4
7.4
Temporary Stream Crossing - Culvert
Not to Scale



Revisions:

NO.	DATE	DESCRIPTION

Date: 10.16.2023
Job Number: 005-16357
Project Engineer: GLS
Drawn By: TWY & MJK
Checked By: DJH

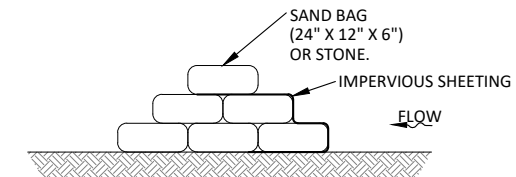


Plan View

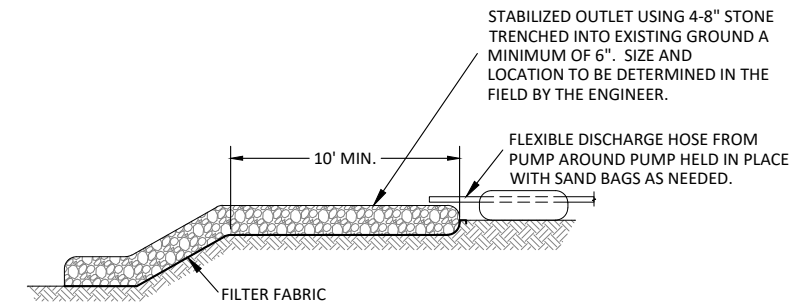
1 Pump Around System
7.5 Not to Scale

NOTE:

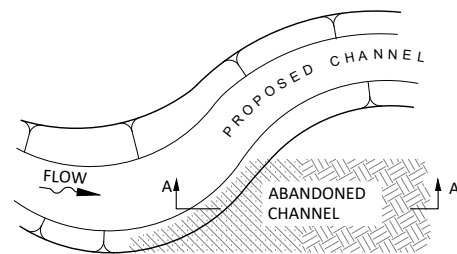
1. DEWATER SILT-LADEN WATER IN WORK AREA TO REMOVE VISUAL TURBIDITY. DEWATERING INTO GRASS IS ACCEPTABLE IF TURBIDITY CAN BE REMOVED USING THIS METHOD. ALL DISCHARGE MUST BE RETURNED TO THE STREAM ALONG A STABILIZED, NON-EROSIVE OUTLET.
2. PUMP-AROUND SYSTEM AND PHYSICAL FLOW DIVERSIONS SHALL NOT BE LEFT UNATTENDED WHILE SYSTEMS ARE IN-PLACE/OPERATING.
3. INSTREAM DIVERSIONS AND PUMP-AROUND EQUIPMENT SHALL BE REMOVED FROM THE STREAM AND WETLAND IN ANTICIPATION OF OR DURING BANKFULL PRECIPITATION EVENTS. IN-STREAM GRADING AND STRUCTURE CONSTRUCTION WILL NOT BE ALLOWED DURING BANKFULL FLOW EVENTS.
4. THE CONTRACTOR SHALL TAKE PRECAUTION TO PROTECT AGAINST EROSION AND SEDIMENTATION WHEN TURNING WATER BACK INTO NEWLY CONSTRUCTED CHANNEL AND WETLAND. PUMPING, STONE, AND SANDBAGS SHOULD BE USED AS NECESSARY TO DIRECT FLOW IN A NON-EROSIVE WAY. CHANNELS MUST BE FULLY STABILIZED WITH MATTING AND PERMANENT OR TEMPORARY BED STABILIZATION MATERIAL/STRUCTURES PRIOR TO RELEASING WATER INTO THESE AREAS.
5. LOCATIONS WHERE PUMP AROUND SYSTEMS WILL BE NECESSARY MAY BE DETERMINED AT THE DISCRETION OF THE CONTRACTOR OR AS DIRECTED BY THE ENGINEER.



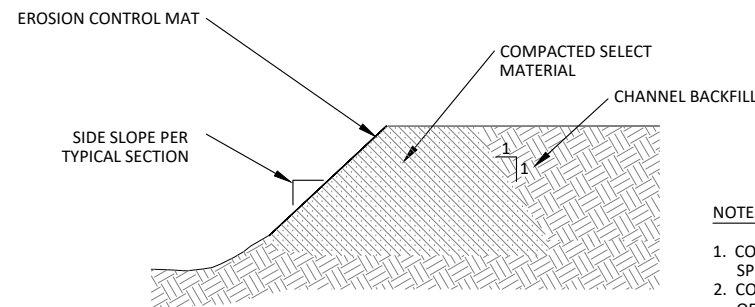
Inset "A"
Impervious Dike



Inset "B"
Stabilized Outlet



Plan View



Section A-A'

2 Channel Plug
7.5 Not to Scale

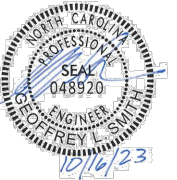
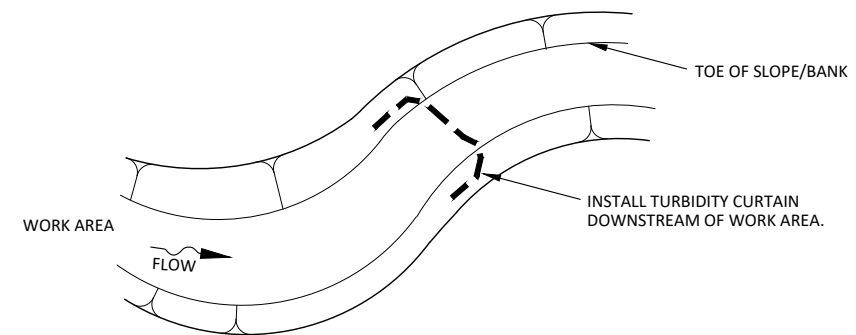
NOTES:

1. COMPACT SOIL IN 6-12 INCH LIFTS AS NOTED IN THE SPECIFICATIONS.
2. COMPACTION RATES MUST MEET THE REQUIREMENTS OF SECTION 235-3 (C) OF 2018 NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES TO OBTAIN A MINIMUM 95% COMPACTION RATE.
3. SELECT MATERIAL SHALL CONSIST OF CLAY, CLAY LOAM, OR SANDY CLAY LOAM AND MUST BE FREE OF ROCK AND ORGANIC MATERIAL.
4. CHANNEL PLUGS SHALL HAVE A MINIMUM LENGTH OF 40 LINEAR FEET ALONG THE ABANDONED CHANNEL, EXCEPT THAT THE CHANNEL PLUG NEAR THE TIE IN OF EAST PRONG HUNTING CREEK SHALL BE 80 LINEAR FEET ALONG THE ABANDONED CHANNEL.

NOTES:

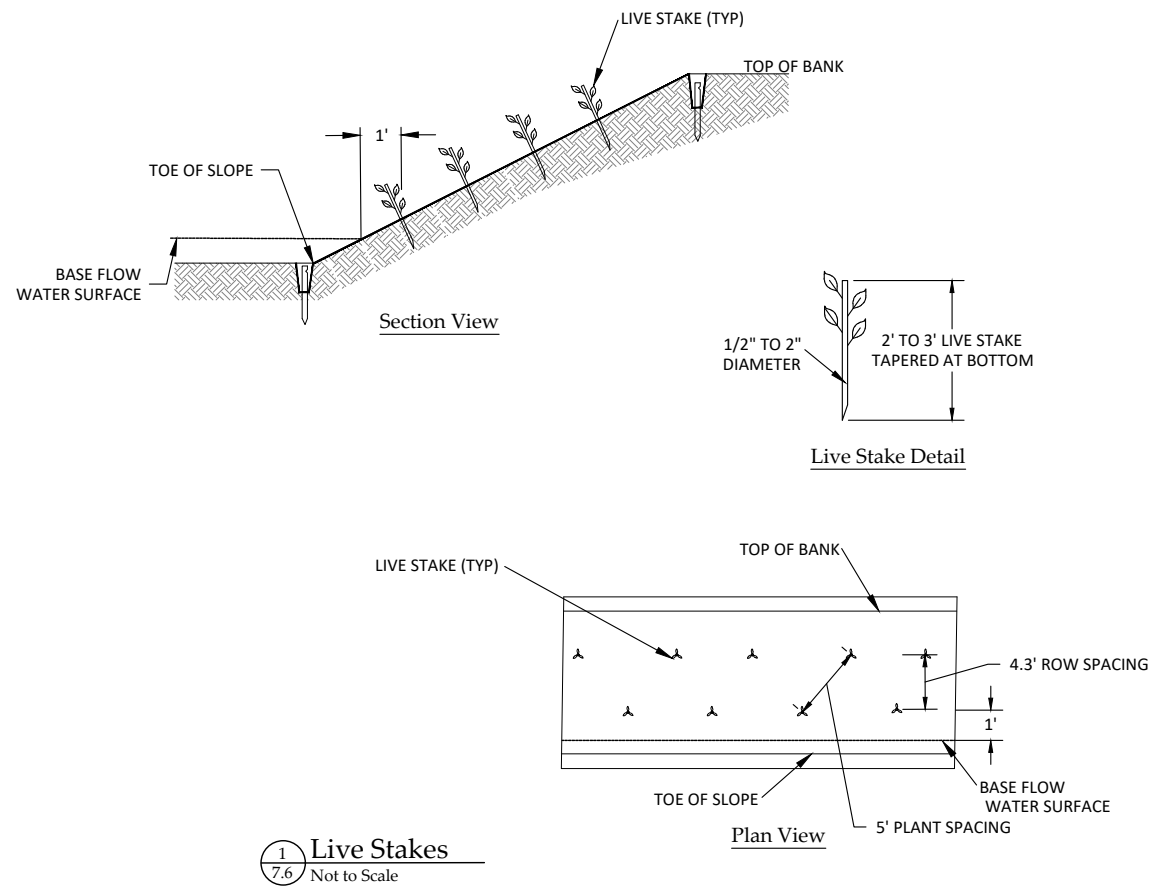
1. TURBIDITY CURTAIN SHOULD BE INSTALLED DIRECTLY DOWNSTREAM OF WORK AREA AND INSTALLED IN STREAM TO CAPTURE ANY STREAM FLOW THAT CONTACTS WORK AREA.
2. TURBIDITY CURTAIN SHOULD BE SUITABLE FOR USE IN MOVING WATER AND INSTALLED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
3. RECOMMENDED USE OF ELASTEC TYPE II DOT FASTWATER SCREEN OR SIMILAR REPLACEMENT.
4. TURBIDITY CURTAIN SHOULD BE INSPECTED, MAINTAINED, AND ADJUSTED DAILY TO ENSURE PROPER FUNCTION.

3 Turbidity Curtain
7.5 Not to Scale

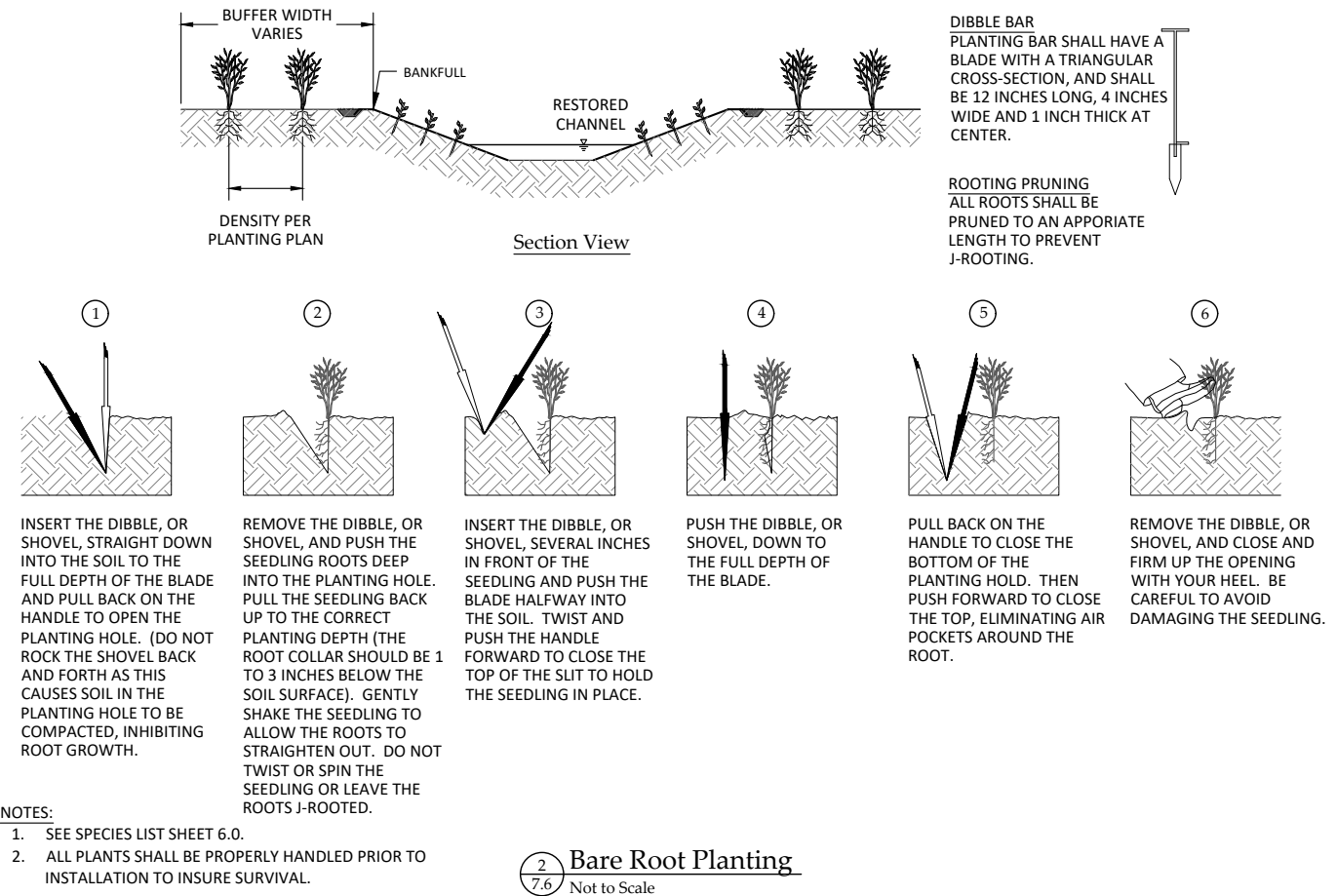


Revisions:

Date: 10.16.2023
Job Number: 005-16357
Project Engineer: GLS
Drawn By: JMW & MK
Checked By: DJH

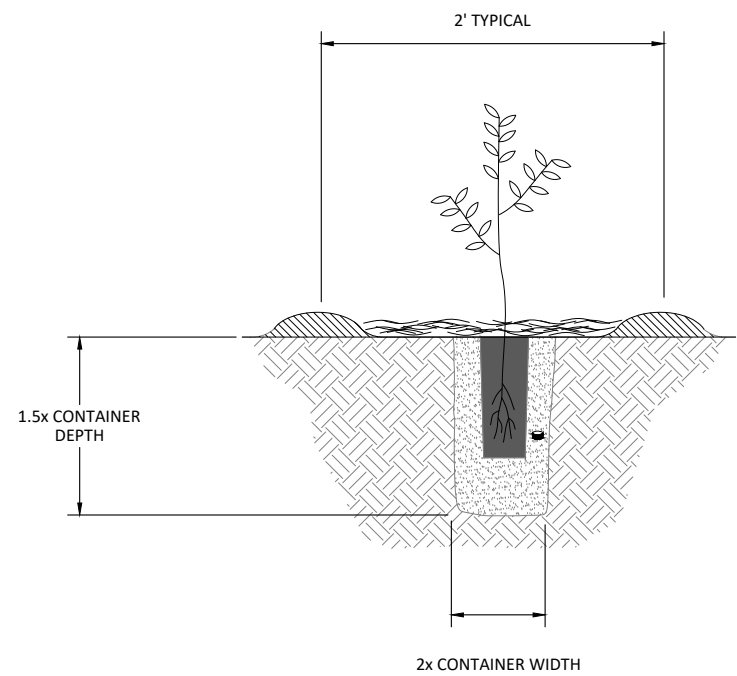


1 Live Stakes
7.6 Not to Scale

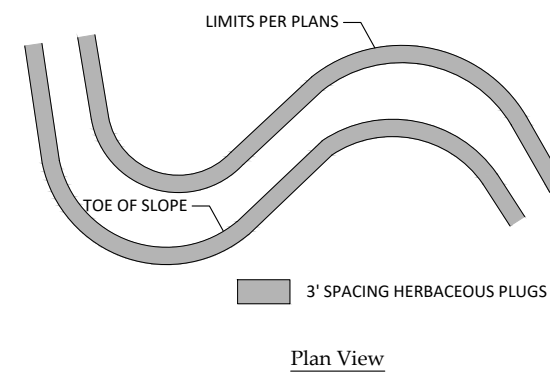


- NOTES:
1. SEE SPECIES LIST SHEET 6.0.
 2. ALL PLANTS SHALL BE PROPERLY HANDLED PRIOR TO INSTALLATION TO INSURE SURVIVAL.

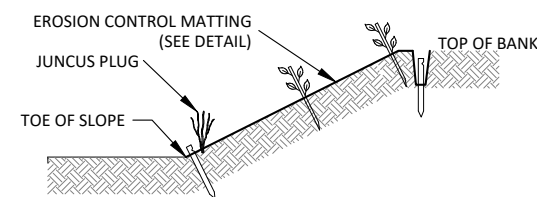
2 Bare Root Planting
7.6 Not to Scale



3 Containerized Planting
7.6 Not to Scale



Plan View



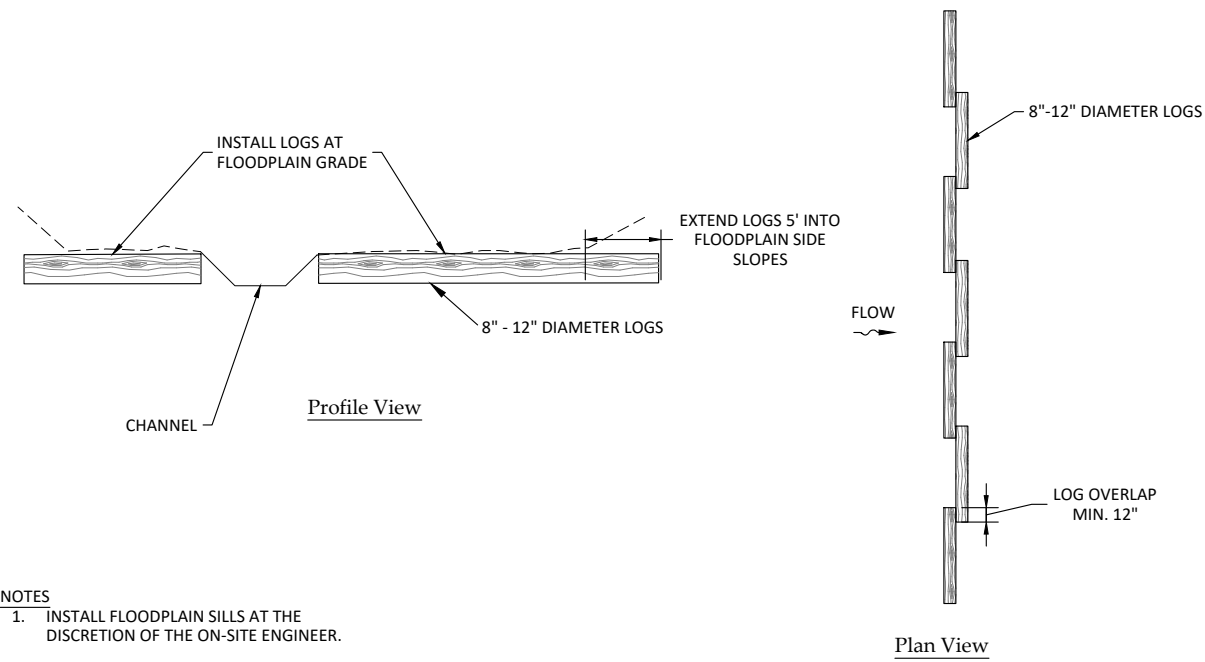
Section View

- NOTE:
1. HERBACEOUS PLUGS TO BE PLANTED IN AREAS AS SHOWN ON PLANS AND DIRECTED BY THE ENGINEER.
 2. SEE SHEET 6.0 FOR PLANTING LIST.

4 Herbaceous Plugs
7.6 Not to Scale

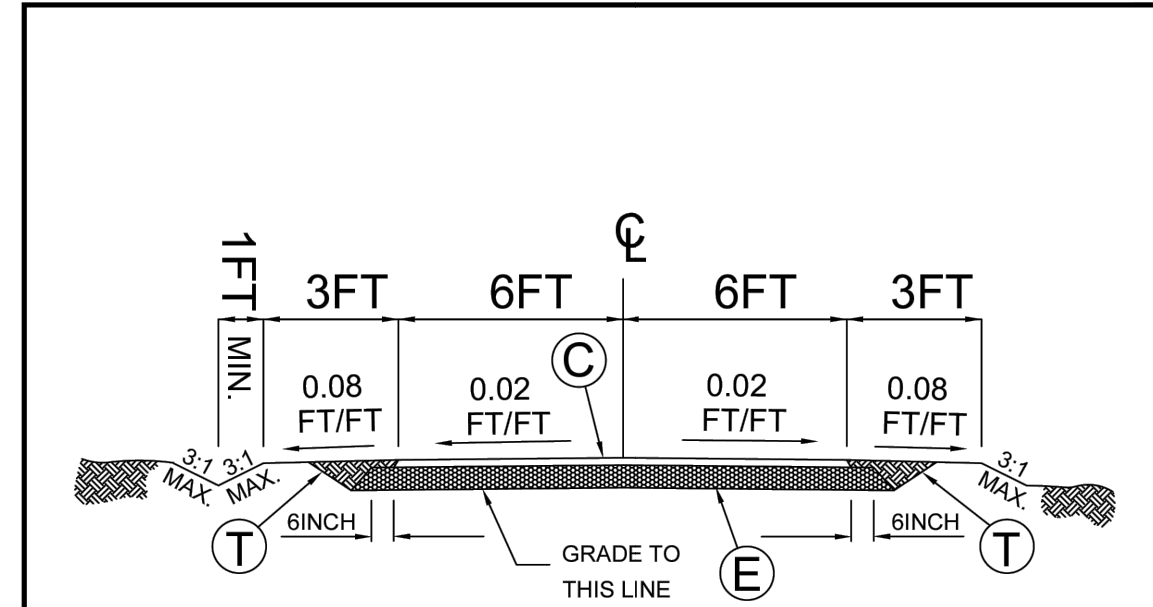


Revisions:



NOTES
 1. INSTALL FLOODPLAIN SILLS AT THE DISCRETION OF THE ON-SITE ENGINEER.

1
 7.7 **Floodplain Sill**
 Not to Scale



TYPICAL MULTIPURPOSE SECTION

NOTE: SHOULDER SLOPES MAY VARY DUE TO PAVEMENT CROSS-SECTION SLOPE, SEE CROSS SECTIONS

PAVEMENT SCHEDULE	
C	PROP. APPROX. 2INCH BIT. CONC. SURFACE COURSE, TYPE I-2, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. IN EACH OF TWO LAYERS
E	PROP. APPROX. 6INCH AGGREGATE BASE COURSE
T	EARTH MATERIAL

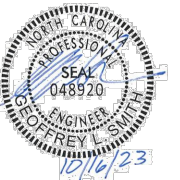
NOT TO SCALE



**BETHEL PARK
 MULTIPURPOSE TRAIL**

CITY OF MORGANTON

STD. NO.	DATE
905	10-06-23
SHEET 1 OF 1	



Bethel Park Restoration
 Morganton, North Carolina

Details

Revisions:

Date: 10.16.2023
 Job Number: 005-16357
 Project Engineer: GJS
 Drawn By: TWW & MK
 Checked By: DJH

7.7

PART III SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION A: SELF-INSPECTION

Self-inspections are required during normal business hours in accordance with the table below. When adverse weather or site conditions would cause the safety of the inspection personnel to be in jeopardy, the inspection may be delayed until the next business day on which it is safe to perform the inspection.

Table with 3 columns: Inspect, Frequency (during normal business hours), Inspection records must include: (1) Rain gauge, (2) E&SC Measures, (3) Stormwater outfalls (SDCs), (4) Perimeter of site, (5) Streams or wetlands onsite or offsite, (6) Ground stabilization measures.

NOTE: The rain inspection resets the required 7 calendar day inspection requirement.

PART III SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION B: RECORDKEEPING

1. E&SC Plan Documentation

The approved E&SC plan as well as any approved deviation shall be kept on the site. The approved E&SC plan must be kept up-to-date throughout the coverage under this permit.

Table with 2 columns: Item to Document, Documentation Requirements. Rows include: (a) Each E&SC measure has been installed, (b) A phase of grading has been completed, (c) Ground cover is located and installed, (d) The maintenance and repair requirements for all E&SC measures have been performed, (e) Corrective actions have been taken.

2. Additional Documentation to be Kept on Site

In addition to the E&SC plan documents above, the following items shall be kept on the site and available for inspectors at all times during normal business hours, unless the Division provides a site-specific exemption based on unique site conditions that make this requirement not practical:

- (a) This General Permit as well as the Certificate of Coverage, after it is received.
(b) Records of inspections made during the previous twelve months. The permittee shall record the required observations on the Inspection Record Form provided by the Division or a similar inspection form that includes all the required elements.

3. Documentation to be Retained for Three Years

All data used to complete the e-NOI and all inspection records shall be maintained for a period of three years after project completion and made available upon request. [40 CFR 122.41]

PART III SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION C: REPORTING

1. Occurrences that Must be Reported

Permittees shall report the following occurrences:

- (a) Visible sediment deposition in a stream or wetland.
(b) Oil spills if:
- They are 25 gallons or more,
- They are less than 25 gallons but cannot be cleaned up within 24 hours,
- They cause sheen on surface waters (regardless of volume), or
- They are within 100 feet of surface waters (regardless of volume).
(c) Releases of hazardous substances in excess of reportable quantities under Section 311 of the Clean Water Act...
(d) Anticipated bypasses and unanticipated bypasses.
(e) Noncompliance with the conditions of this permit that may endanger health or the environment.

2. Reporting Timeframes and Other Requirements

After a permittee becomes aware of an occurrence that must be reported, he shall contact the appropriate Division regional office within the timeframes and in accordance with the other requirements listed below.

Table with 2 columns: Occurrence, Reporting Timeframes (After Discovery) and Other Requirements. Rows include: (a) Visible sediment deposition, (b) Oil spills and release of hazardous substances, (c) Anticipated bypasses, (d) Unanticipated bypasses, (e) Noncompliance with the conditions of this permit.

PART II, SECTION G, ITEM (4) DRAW DOWN OF SEDIMENT BASINS FOR MAINTENANCE OR CLOSE OUT

Sediment basins and traps that receive runoff from drainage areas of one acre or more shall use outlet structures that withdraw water from the surface when these devices need to be drawn down for maintenance or close out unless this is infeasible.

- (a) The E&SC plan authority has been provided with documentation of the non-surface withdrawal and the specific time periods or conditions in which it will occur.
(b) The non-surface withdrawal has been reported as an anticipated bypass in accordance with Part III, Section C, Item (2)(c) and (d) of this permit.
(c) Dewatering discharges are treated with controls to minimize discharges of pollutants from stormwater that is removed from the sediment basin.
(d) Vegetated, upland areas of the sites or a properly designed stone pad is used to the extent feasible at the outlet of the dewatering treatment devices described in Item (c) above,
(e) Velocity dissipation devices such as check dams, sediment traps, and riprap are provided at the discharge points of all dewatering devices, and
(f) Sediment removed from the dewatering treatment devices described in Item (c) above is disposed of in a manner that does not cause deposition of sediment into waters of the United States.

NCG01 SELF-INSPECTION, RECORDKEEPING AND REPORTING

EFFECTIVE: 04/01/19



Revisions table with columns for revision number, date, and description.

GROUND STABILIZATION AND MATERIALS HANDLING PRACTICES FOR COMPLIANCE WITH THE NCG01 CONSTRUCTION GENERAL PERMIT

Implementing the details and specifications on this plan sheet will result in the construction activity being considered compliant with the Ground Stabilization and Materials Handling sections of the NCG01 Construction General Permit (Sections E and F, respectively). The permittee shall comply with the Erosion and Sediment Control plan approved by the delegated authority having jurisdiction. All details and specifications shown on this sheet may not apply depending on site conditions and the delegated authority having jurisdiction.

SECTION E: GROUND STABILIZATION

Required Ground Stabilization Timeframes		
Site Area Description	Stabilize within this many calendar days after ceasing land disturbance	Timeframe variations
(a) Perimeter dikes, swales, ditches, and perimeter slopes	7	None
(b) High Quality Water (HQW) Zones	7	None
(c) Slopes steeper than 3:1	7	If slopes are 10' or less in length and are not steeper than 2:1, 14 days are allowed
(d) Slopes 3:1 to 4:1	14	-7 days for slopes greater than 50' in length and with slopes steeper than 4:1 -7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones -10 days for Falls Lake Watershed
(e) Areas with slopes flatter than 4:1	14	-7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones -10 days for Falls Lake Watershed unless there is zero slope

Note: After the permanent cessation of construction activities, any areas with temporary ground stabilization shall be converted to permanent ground stabilization as soon as practicable but in no case longer than 90 calendar days after the last land disturbing activity. Temporary ground stabilization shall be maintained in a manner to render the surface stable against accelerated erosion until permanent ground stabilization is achieved.

GROUND STABILIZATION SPECIFICATION

Stabilize the ground sufficiently so that rain will not dislodge the soil. Use one of the techniques in the table below:

Temporary Stabilization	Permanent Stabilization
<ul style="list-style-type: none"> Temporary grass seed covered with straw or other mulches and tackifiers Hydroseeding Rolled erosion control products with or without temporary grass seed Appropriately applied straw or other mulch Plastic sheeting 	<ul style="list-style-type: none"> Permanent grass seed covered with straw or other mulches and tackifiers Geotextile fabrics such as permanent soil reinforcement matting Hydroseeding Shrubs or other permanent plantings covered with mulch Uniform and evenly distributed ground cover sufficient to restrain erosion Structural methods such as concrete, asphalt or retaining walls Rolled erosion control products with grass seed

POLYACRYLAMIDES (PAMS) AND FLOCCULANTS

- Select flocculants that are appropriate for the soils being exposed during construction, selecting from the *NC DWR List of Approved PAMS/Flocculants*.
- Apply flocculants at or before the inlets to Erosion and Sediment Control Measures.
- Apply flocculants at the concentrations specified in the *NC DWR List of Approved PAMS/Flocculants* and in accordance with the manufacturer's instructions.
- Provide ponding area for containment of treated Stormwater before discharging offsite.
- Store flocculants in leak-proof containers that are kept under storm-resistant cover or surrounded by secondary containment structures.

EQUIPMENT AND VEHICLE MAINTENANCE

- Maintain vehicles and equipment to prevent discharge of fluids.
- Provide drip pans under any stored equipment.
- Identify leaks and repair as soon as feasible, or remove leaking equipment from the project.
- Collect all spent fluids, store in separate containers and properly dispose as hazardous waste (recycle when possible).
- Remove leaking vehicles and construction equipment from service until the problem has been corrected.
- Bring used fuels, lubricants, coolants, hydraulic fluids and other petroleum products to a recycling or disposal center that handles these materials.

LITTER, BUILDING MATERIAL AND LAND CLEARING WASTE

- Never bury or burn waste. Place litter and debris in approved waste containers.
- Provide a sufficient number and size of waste containers (e.g dumpster, trash receptacle) on site to contain construction and domestic wastes.
- Locate waste containers at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
- Locate waste containers on areas that do not receive substantial amounts of runoff from upland areas and does not drain directly to a storm drain, stream or wetland.
- Cover waste containers at the end of each workday and before storm events or provide secondary containment. Repair or replace damaged waste containers.
- Anchor all lightweight items in waste containers during times of high winds.
- Empty waste containers as needed to prevent overflow. Clean up immediately if containers overflow.
- Dispose waste off-site at an approved disposal facility.
- On business days, clean up and dispose of waste in designated waste containers.

PAINT AND OTHER LIQUID WASTE

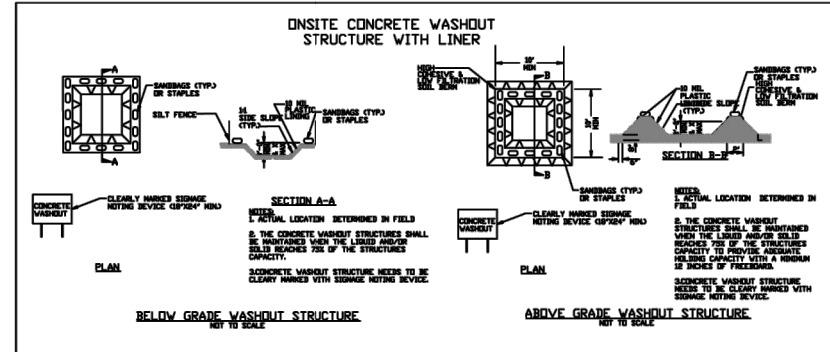
- Do not dump paint and other liquid waste into storm drains, streams or wetlands.
- Locate paint washouts at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
- Contain liquid wastes in a controlled area.
- Containment must be labeled, sized and placed appropriately for the needs of site.
- Prevent the discharge of soaps, solvents, detergents and other liquid wastes from construction sites.

PORTABLE TOILETS

- Install portable toilets on level ground, at least 50 feet away from storm drains, streams or wetlands unless there is no alternative reasonably available. If 50 foot offset is not attainable, provide relocation of portable toilet behind silt fence or place on a gravel pad and surround with sand bags.
- Provide staking or anchoring of portable toilets during periods of high winds or in high foot traffic areas.
- Monitor portable toilets for leaking and properly dispose of any leaked material. Utilize a licensed sanitary waste hauler to remove leaking portable toilets and replace with properly operating unit.

EARTHEN STOCKPILE MANAGEMENT

- Show stockpile locations on plans. Locate earthen-material stockpile areas at least 50 feet away from storm drain inlets, sediment basins, perimeter sediment controls and surface waters unless it can be shown no other alternatives are reasonably available.
- Protect stockpile with silt fence installed along toe of slope with a minimum offset of five feet from the toe of stockpile.
- Provide stable stone access point when feasible.
- Stabilize stockpile within the timeframes provided on this sheet and in accordance with the approved plan and any additional requirements. Soil stabilization is defined as vegetative, physical or chemical coverage techniques that will restrain accelerated erosion on disturbed soils for temporary or permanent control needs.



CONCRETE WASHOUTS

- Do not discharge concrete or cement slurry from the site.
- Dispose of, or recycle settled, hardened concrete residue in accordance with local and state solid waste regulations and at an approved facility.
- Manage washout from mortar mixers in accordance with the above item and in addition place the mixer and associated materials on impervious barrier and within lot perimeter silt fence.
- Install temporary concrete washouts per local requirements, where applicable. If an alternate method or product is to be used, contact your approval authority for review and approval. If local standard details are not available, use one of the two types of temporary concrete washouts provided on this detail.
- Do not use concrete washouts for dewatering or storing defective curb or sidewalk sections. Stormwater accumulated within the washout may not be pumped into or discharged to the storm drain system or receiving surface waters. Liquid waste must be pumped out and removed from project.
- Locate washouts at least 50 feet from storm drain inlets and surface waters unless it can be shown that no other alternatives are reasonably available. At a minimum, install protection of storm drain inlet(s) closest to the washout which could receive spills or overflow.
- Locate washouts in an easily accessible area, on level ground and install a stone entrance pad in front of the washout. Additional controls may be required by the approving authority.
- Install at least one sign directing concrete trucks to the washout within the project limits. Post signage on the washout itself to identify this location.
- Remove leavings from the washout when at approximately 75% capacity to limit overflow events. Replace the tarp, sand bags or other temporary structural components when no longer functional. When utilizing alternative or proprietary products, follow manufacturer's instructions.
- At the completion of the concrete work, remove remaining leavings and dispose of in an approved disposal facility. Fill pit, if applicable, and stabilize any disturbance caused by removal of washout.

HERBICIDES, PESTICIDES AND RODENTICIDES

- Store and apply herbicides, pesticides and rodenticides in accordance with label restrictions.
- Store herbicides, pesticides and rodenticides in their original containers with the label, which lists directions for use, ingredients and first aid steps in case of accidental poisoning.
- Do not store herbicides, pesticides and rodenticides in areas where flooding is possible or where they may spill or leak into wells, stormwater drains, ground water or surface water. If a spill occurs, clean area immediately.
- Do not stockpile these materials onsite.

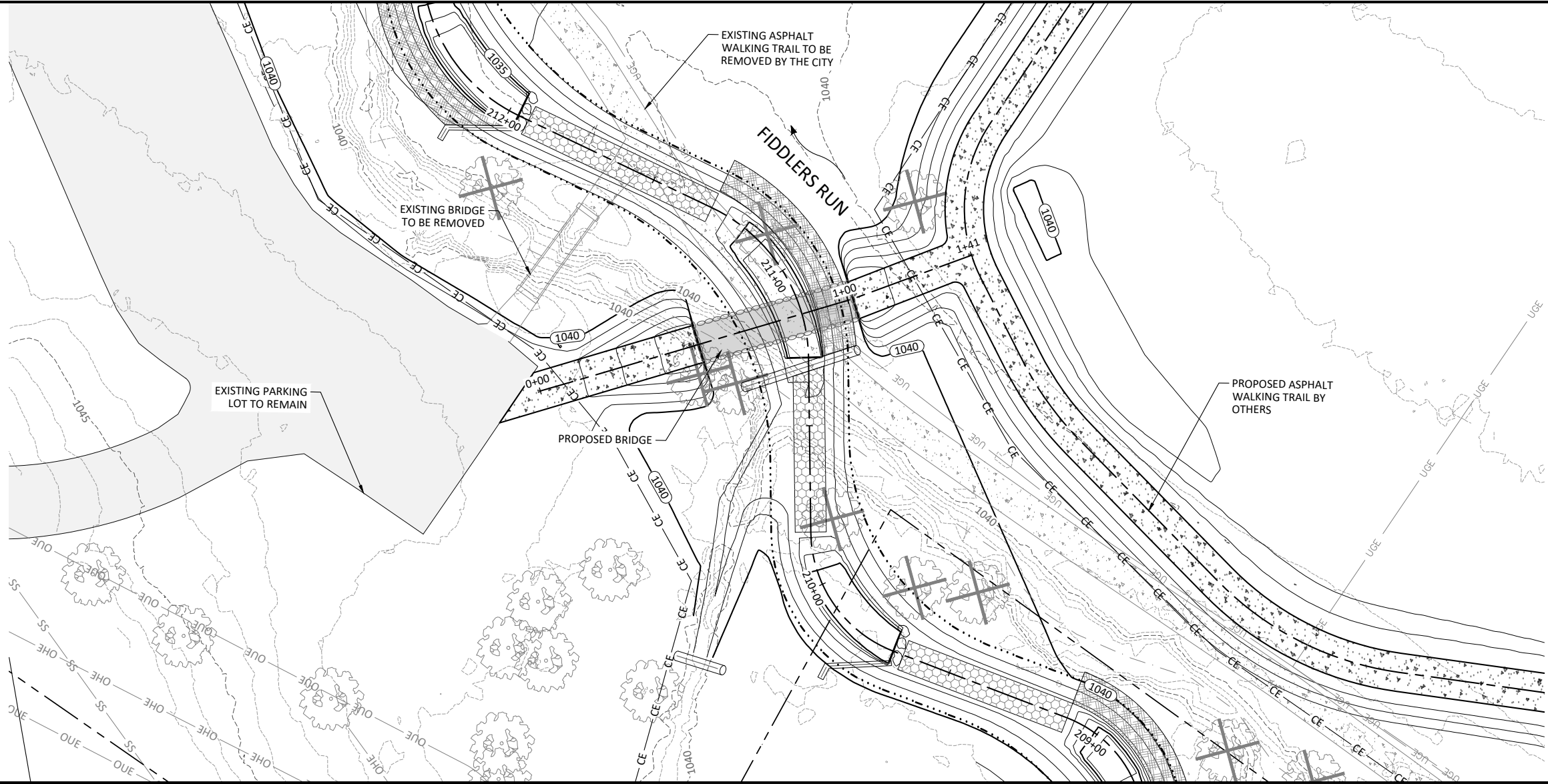
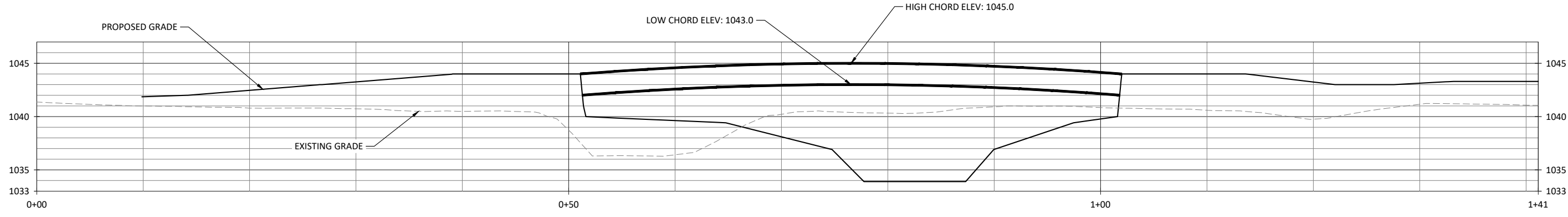
HAZARDOUS AND TOXIC WASTE

- Create designated hazardous waste collection areas on-site.
- Place hazardous waste containers under cover or in secondary containment.
- Do not store hazardous chemicals, drums or bagged materials directly on the ground.



Revisions:

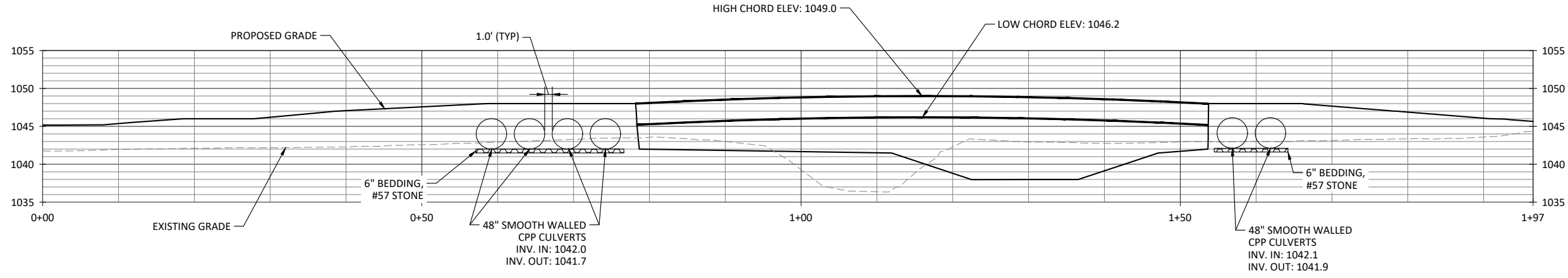
Date: 10.16.2023
Job Number: 005-16357
Project Engineer: GLS
Drawn By: JWW & MK
Checked By: DJH



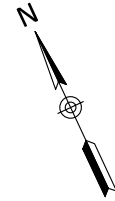
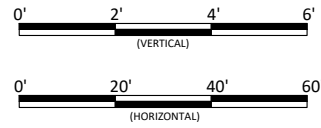
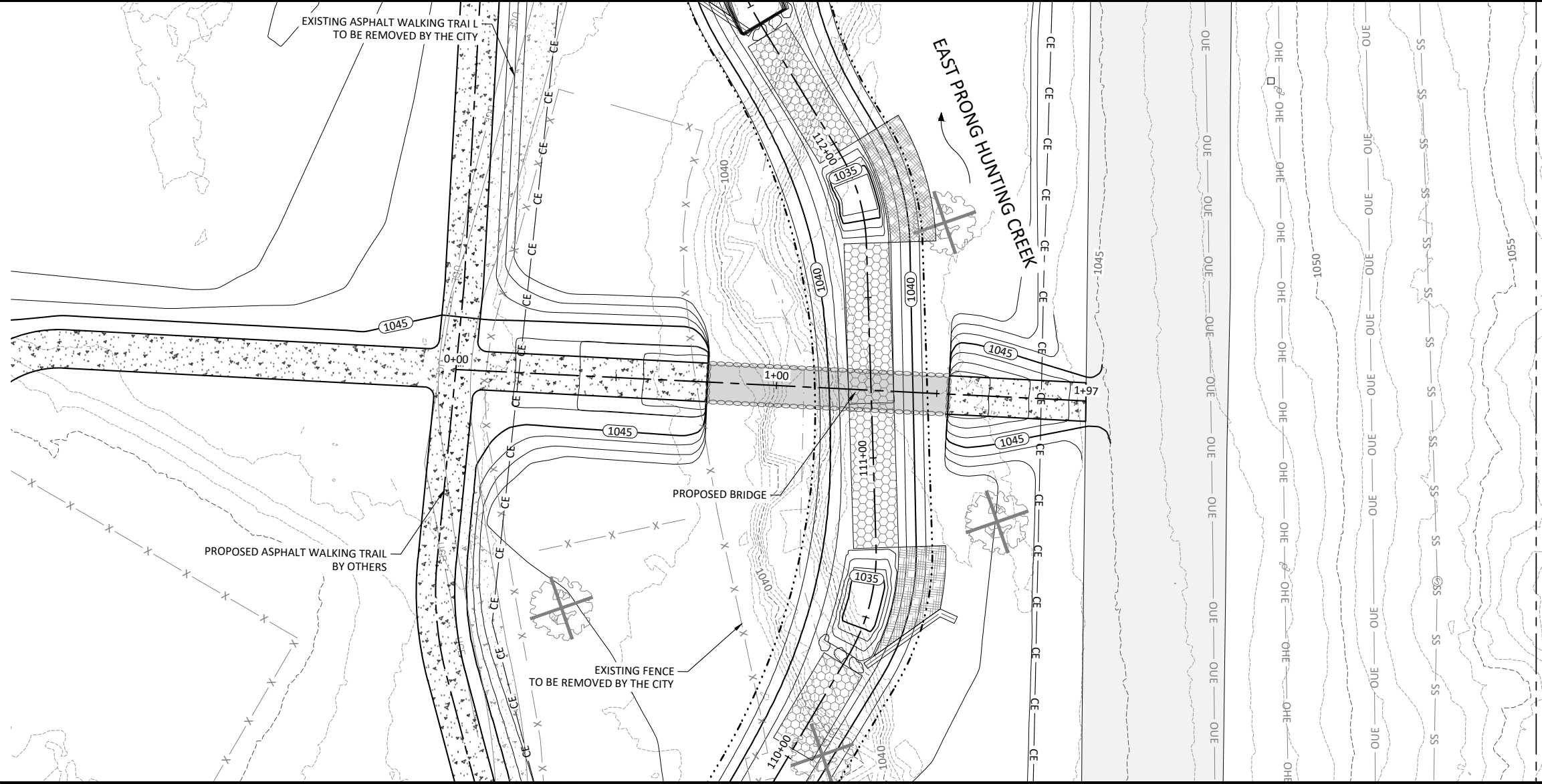
Bethel Park Restoration
Morganton, North Carolina
Fiddlers Run - Proposed Bridge

Revisions:

Date: 10.16.2023
Job Number: 005-16357
Project Engineer: GILS
Drawn By: JWW & MK
Checked By: DJH



NOTE: PROPOSED CULVERTS WILL BE 50' LONG AND MITERED TO MATCH ADJACENT GRADES.



Bethel Park Restoration
Morganton, North Carolina

East Prong Hunting Creek - Proposed Bridge

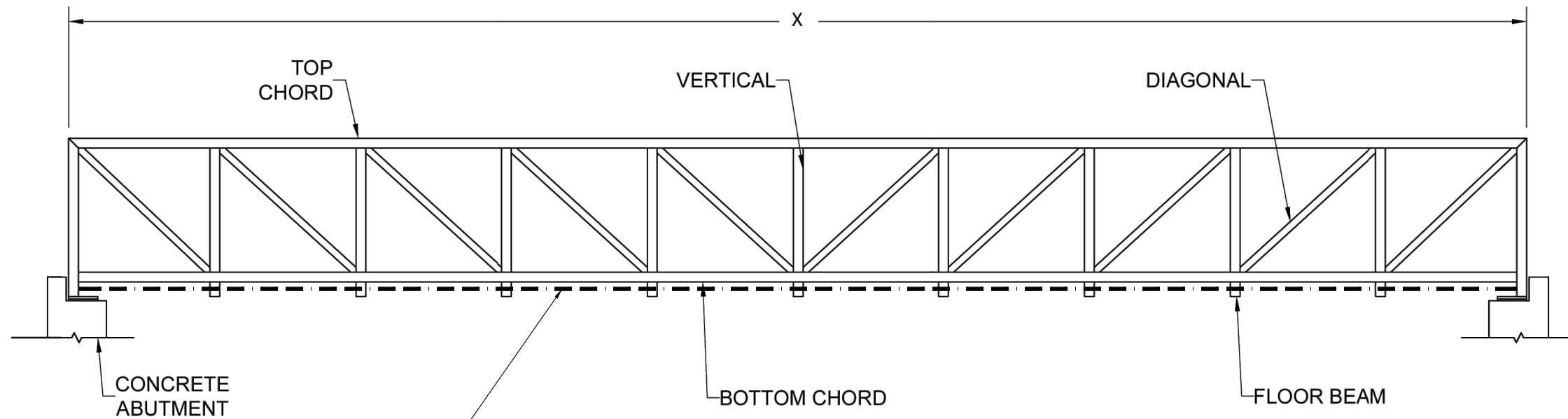
Revisions:

Date: 10.16.2023
Job Number: 005-1637
Project Engineer: GLS
Drawn By: JWW & MK
Checked By: DJH

8.2



BRIDGE SUMMARY
Connector Pedestrian Bridge
Deck Type: Concrete
Bridge Finish: Weathering Steel



THREE 3" PVC CONDUITS*,
 MINIMUM HORIZONTAL SPACING
 OF 2' FOR FUTURE USE BY CITY.
 SEE SHEET 8.4 FOR SPACING

BRIDGE ELEVATION

* EAST PRONG HUNTING CREEK BRIDGE ONLY

BRIDGE SPAN (X)	
EAST PRONG HUNTING CREEK	75'
FIDDLERS RUN	50'

The graphic information and details contained in these plans is schematic in nature. The plans, elevations and sections have been developed automatically in a way that demonstrates your current input in a relative and proportional manner. The details included in these plans have been selected to represent commonly built construction assemblies. These are not Engineering drawings, and as such, the details may vary in the final design for your project depending on many variables that are selected in your final scope of work and specifications.

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 800-338-1122 513-645-7000 513-645-7993 FAX

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 BRIDGE
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 DRAWING

Bethel Park
 Pedestrian Bridge
 Morganton, North Carolina

PRELIMINARY
 NOT FOR CONSTRUCTION

PROJECT NUMBER: 222437	DATE: 9/5/2023
DESIGNED: DYOB	DRAWN: DYOB
CHECKED:	APPROVED:
SHEET NO.: 1	OF 4

WILDLANDS
 ENGINEERING
 497 Bramson Ct, Suite 104
 Mount Pleasant, SC 29464
 Tel: 843.277.6221
 NC Firm License No. F-0831

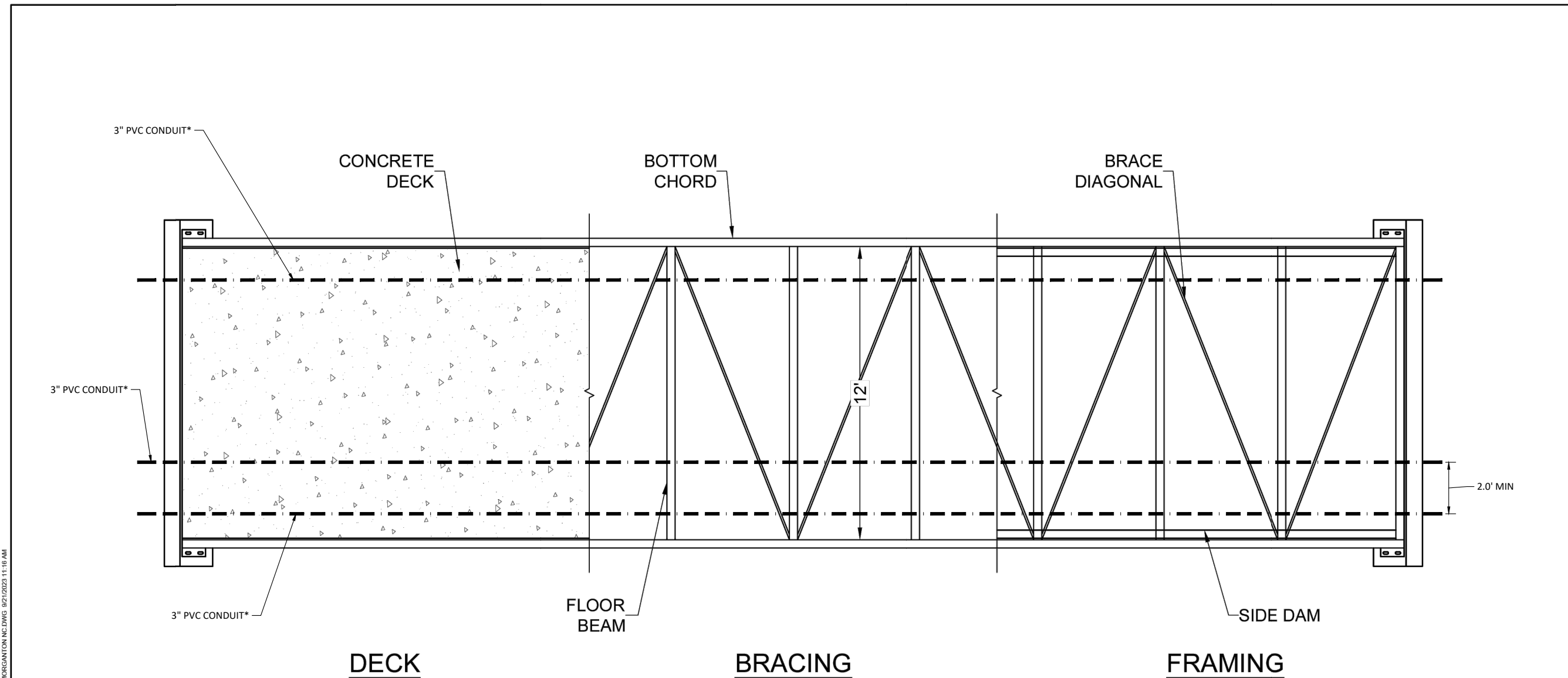


Bethel Park Restoration
 Morganton, North Carolina
 Bridge Details

Revisions:

Date: 10.16.2023
 Job Number: 005-16357
 Project Engineer: GLS
 Drawn By: JWW & MK
 Checked By: DJH

8.3



BRIDGE PLAN

* EAST PRONG HUNTING CREEK BRIDGE ONLY

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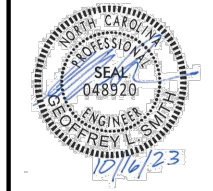
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BRIDGE

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DRAWING

Bethel Park
Pedestrian Bridge
Morganton, North Carolina

PRELIMINARY
NOT FOR CONSTRUCTION

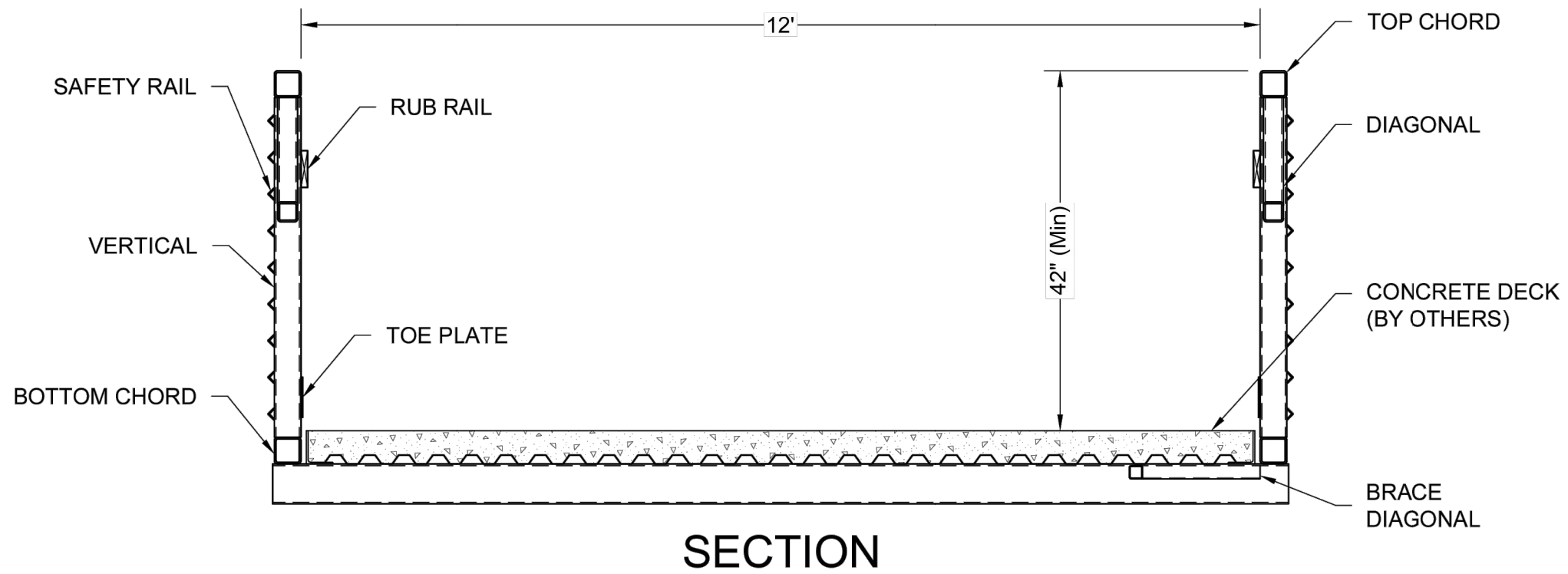
PROJECT NUMBER: 222437	DATE: 9/5/2023
DESIGNED: DYOB	DRAWN: DYOB
CHECKED:	APPROVED:
SHEET NO.: 2 OF 4	



Bethel Park Restoration
Morganton, North Carolina
Bridge Details

Revisions:

Date: 10.16.2023
Job Number: 005-16357
Project Engineer: GJS
Drawn By: JWW & MJK
Checked By: DJH



SECTION

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CONTINENTAL
BRIDGE

CONTECH
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DRAWING

Bethel Park
Pedestrian Bridge
Morganton, North Carolina

PRELIMINARY
NOT FOR CONSTRUCTION



PROJECT NUMBER: 222437	DATE: 9/5/2023
DESIGNED: DYOB	DRAWN: DYOB
CHECKED:	APPROVED:
SHEET NO.: 3 OF 4	



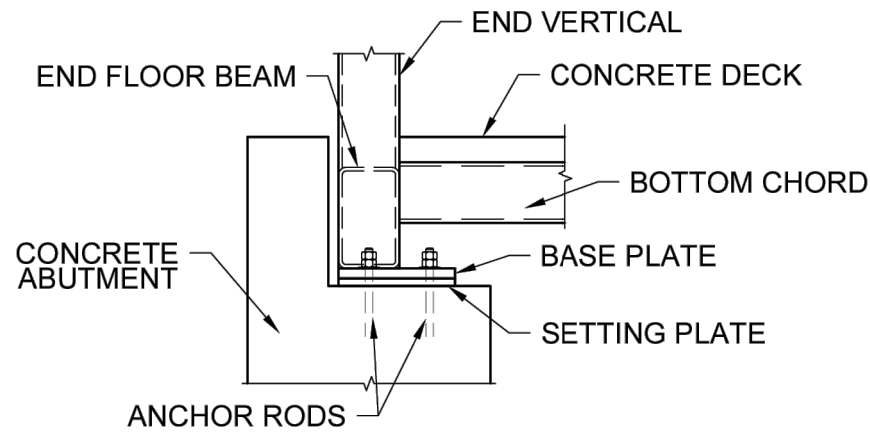
Bethel Park Restoration
Morganton, North Carolina

Bridge Details

Revisions:

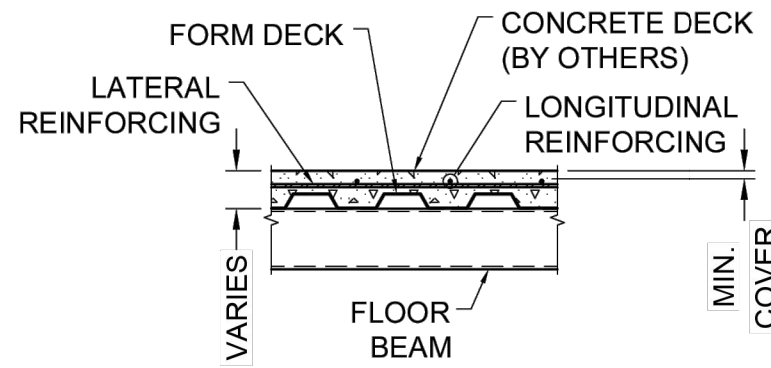
Date: 10.16.2023
Job Number: 005-16357
Project Engineer: GLS
Drawn By: JMW & MK
Checked By: DJH

8.5

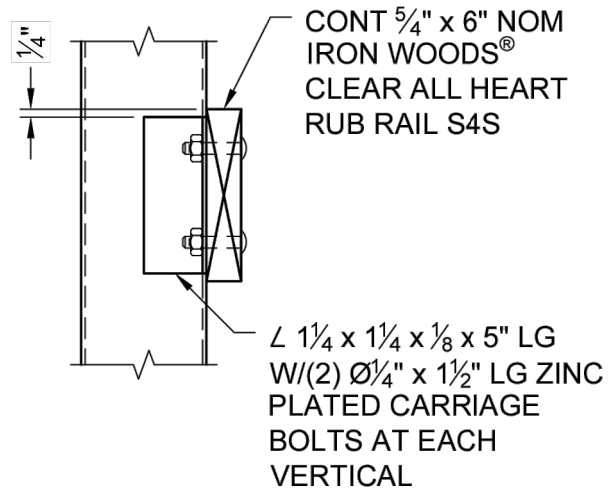


BEARING SIDE VIEW

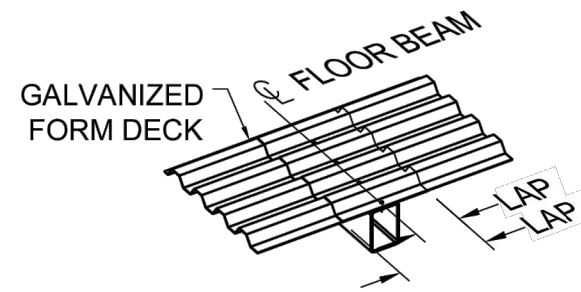
INFORMATION PROVIDED FOR REPRESENTATION ONLY.
ACTUAL BEARING DIAGRAMS TO BE BASED ON FINAL DESIGN.



CONCRETE DECK REINFORCING



RUB RAIL DETAIL



FORM DECK DETAIL

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CONTINENTAL
BRIDGE

CONTECH
DYOB
DRAWING

Bethel Park
Pedestrian Bridge
Morganton, North Carolina

PRELIMINARY
NOT FOR CONSTRUCTION

PROJECT NUMBER: 222437	DATE: 9/5/2023
DESIGNED: DYOB	DRAWN: DYOB
CHECKED:	APPROVED:
SHEET NO.: 4	OF 4



Bethel Park Restoration
Morganton, North Carolina
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