STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH, N.C.

C204283

CONTRACT AND
CONTRACT BONDS

FOR CONTRACT NO. C204283

WBS 47532.3.2 NHP-0095(057)

T.I.P NO. I-5986A, I-5877

COUNTY OF CUMBERLAND, HARNETT
THIS IS THE ROADWAY CONTRACT
ROUTE NUMBER I 95 LENGTH 16.900 MILES
LOCATION I-95 WIDENING FROM SOUTH OF I-95 BUS/US-301 (EXIT 56) TO NORTH OF SR-1002 (LONG BRANCH RD) (EXIT 71).

CONTRACTOR S T WOOTEN CORPORATION
ADDRESS P.O. BOX 2408
WILSON, NC 278942408

BIDS OPENED AUGUST 20, 2019
CONTRACT EXECUTION 9/4/2019

-- STATE OF NORTH CAROLINA--
DEPARTMENT OF TRANSPORTATION
RALEIGH, N.C.

FINAL REQUEST FOR PROPOSALS

DESIGN-BUILD PROJECT

TIP I-5986A / I-5877

July 12, 2019
Includes
Addendum No. 1 - April 10, 2019
Addendum No. 2 - June 7, 2019
Addendum No. 3 - July 12, 2019
Addendum No. 4 - July 24, 2019

Vendor#: 3760 PQ

S T WOOTEN CORPORATION

P.O. Box 2408

DATE AND TIME OF TEC WILSON NC 278942408 'M

DATE AND TIME OF PRICE PROPOSAL SUBMISSION: **August 12, 2019** BY **4:00 PM**

DATE AND TIME OF PRICE PROPOSAL OPENING: **August 20, 2019** AT **2:00 PM**

CONTRACT ID: C204283

WBS ELEMENT NO. 47532.3.2

FEDERAL-AID NO. NHP-0095(057)

COUNTIES: Cumberland and Harnett

ROUTE NO. I-95

MILES: 16.9

LOCATION: I-95 widening from south of I-95 Business / US 301 (Exit 56) to north of SR 1002 (Long Branch Road - Exit 71)

TYPE OF WORK: DESIGN-BUILD AS SPECIFIED IN THE SCOPE OF WORK CONTAINED IN THE REQUEST FOR PROPOSALS

NOTICE:

ALL PROPOSERS SHALL COMPLY WITH ALL APPLICABLE LAWS REGULATING THE PRACTICE OF GENERAL CONTRACTING AS CONTAINED IN CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA WHICH REQUIRES THE PROPOSER TO BE LICENSED BY THE N.C. LICENSING BOARD FOR CONTRACTORS WHEN BIDDING ON ANY NON-FEDERAL AID PROJECT WHERE THE BID IS $30,000 OR MORE, EXCEPT FOR CERTAIN SPECIALTY WORK AS DETERMINED BY THE LICENSING BOARD. PROPOSERS SHALL ALSO COMPLY WITH ALL OTHER APPLICABLE LAWS REGULATING THE PRACTICES OF ELECTRICAL, PLUMBING, HEATING AND AIR CONDITIONING AND REFRIGERATION CONTRACTING AS CONTAINED IN CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA. NOT WITHSTANDING THESE LIMITATIONS ON BIDDING, THE PROPOSER WHO IS AWARDED ANY PROJECT SHALL COMPLY WITH CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA FOR LICENSING REQUIREMENTS WITHIN 60 CALENDAR DAYS OF BID OPENING, REGARDLESS OF FUNDING SOURCES.

_____ 5% BID BOND OR BID DEPOSIT REQUIRED

_____

PROPOSAL FORM FOR THE CONSTRUCTION OF CONTRACT NO. C204283

IN CUMBERLAND AND HARNETT COUNTIES, NORTH CAROLINA

Date AUGUST 12 **20** 19

DEPARTMENT OF TRANSPORTATION,

RALEIGH, NORTH CAROLINA

The Design-Build Team herein acknowledges that it has carefully examined the location of the proposed work to be known as Contract No. C204283; has carefully examined the Final Request for Proposals (RFP) and all addendums thereto, specifications, special provisions, the form of contract, and the forms of contract payment bond and contract performance bonds, which are acknowledged to be part of the Contract; and thoroughly understands the stipulations, requirements and provisions. The undersigned Design-Build Team agrees to be bound upon their execution of the Contract and including any subsequent award to them by the Secretary of Transportation in accordance with this Contract to provide the necessary contract payment bond and contract performance bond within fourteen calendar days after the written notice of award is received by them.

The undersigned Design-Build Team further agrees to provide all necessary materials, machinery, implements, appliances, tools, labor, and other means of construction, except as otherwise noted, to perform all the work and required labor to design, construct and complete all the work necessary for State Highway Contract No. C204283 in Cumberland and Harnett Counties by no later than the dates(s) specified in the Final RFP or Technical Proposal, whichever is earlier, and in accordance with the requirements of the Engineer, the Final RFP and Addenda thereto, the 2018 *Standard Specifications for Roads and Structures*, specifications prepared by the Department, the Technical Proposal prepared by the Design-Build Team, at the lump sum price(s) bid by the Design-Build Team in their Price Proposal.

The Design-Build Team shall provide signed and sealed documents prepared by the Design-Build Team, which specifications and plans show the details covering this project and adhere to the items noted above.

The Design-Build Team acknowledges that project documents furnished by the Department are preliminary and provided solely to assist the Design-Build Team in the development of the project design. Unless otherwise noted herein, the Department does not warrant or guarantee the sufficiency or accuracy of any information furnished by the Department.

The Department does not warrant or guarantee the sufficiency or accuracy of any investigations made, nor the interpretations made or opinions of the Department as to the type of materials and conditions to be encountered at the project site. The Design-Build Team is advised to make such independent investigations, as they deem necessary to satisfy their self as to conditions to be encountered on this project. The Design-Build Team shall have no claim for additional compensation or for an extension of contract time for any reason resulting from the actual conditions encountered at the site differing from those indicated in any of the information or documents furnished by the Department except as may be allowed under the provisions of the Standard Specifications.

Although the Department has furnished preliminary designs for this project, unless otherwise noted herein, the Design-Build Team shall assume full responsibility, including liability, for the

project design, including the use of portions of the Department design, modification of such design, or other designs as may be submitted by the Design-Build Team.

The Design-Build Team shall be fully and totally responsible for the accuracy and completeness of all work performed under this contract, and shall indemnify and hold the Department harmless for any additional costs and all claims against the Department or the State which may arise due to errors or omissions of the Department in furnishing the preliminary project designs and information, and of the Design-Build Team in performing the work.

The published volume entitled *North Carolina Department of Transportation, Raleigh, Standard Specifications for Roads and Structures*, January 2018, as well as, all design manuals, policy and procedures manuals, and AASHTO publications and guidelines referenced in the Request For Proposals, with all amendments and supplements thereto, are by reference, incorporated and made part of this contract; that, except as herein modified, all the design, construction and Construction Engineering Inspection included in this contract is to be done in accordance with the documents noted above and under the direction of the Engineer.

If the Design-Build Proposal is accepted and the award is made, the Technical Proposal submitted by the Design-Build Team is by reference, incorporated and made part of this contract. The contract is valid only when signed either by the Contract Officer or such other person as may be designated by the Secretary to sign for the Department of Transportation. The conditions and provisions herein cannot be changed except by written approval as allowed by the Request for Proposals.

Accompanying the Design-Build Proposal shall be a bid bond secured by a corporate surety, or certified check payable to the order of the Department of Transportation, for five percent of the total bid price, which deposit is to be forfeited as liquidated damages in case this bid is accepted and the Design-Build Team shall fail to provide the required payment and performance bonds with the Department of Transportation, under the condition of this proposal, within 14 calendar days after the written notice of award is received by them, as provided in the Standard Specifications; otherwise said deposit will be returned to the Design-Build Team.

TABLE OF CONTENTS

COVER SHEET

PROPOSAL SHEETS

PROJECT SPECIAL PROVISIONS Page No.

Contract Time and Liquidated Damages 1
** **NOTE** ** Deleted *Intermediate Contract Time Number 1 and Liquidated Damages* PSP
Other Liquidated Damages and Incentives 2
Required Provision for INFRA Grant 4
Payout Schedule 4
Mobilization 5
Substantial Completion 5
Submittal of Quantities, Fuel Base Index Price and Opt-Out Option 6
Individual Meetings with Proposers 7
Execution of Bid, Non-Collusion Affidavit, Debarment Certification and Gift Ban Certification 7
Submission of Design-Build Proposal 8
Alternative Technical Concepts and Confidential Questions 9
Schedule of Estimated Completion Progress 14
Disadvantaged Business Enterprise 15
Certification for Federal-Aid Contracts 29
Contractor's License Requirements 30
U. S. Department of Transportation Hotline 30
Cargo Preference Act 30
Subsurface Information 31
Cooperation between Contractors 31
Bid Documentation 31
Twelve Month Guarantee 35
Permanent Vegetation Establishment 35
Erosion & Sediment Control / Stormwater Certification 36
Procedure for Monitoring Borrow Pit Discharge 41
Clearing and Grubbing 43
Burning Restrictions 43
Building and Appurtenance Removal / Demolition 43
Manufactured Quarry Fines in Embankments 44
Drainage Pipe 45
Cement Treated Base Course 46
Price Adjustments for Asphalt Binder 47
Price Adjustments - Asphalt Concrete Plant Mix 48
** **NOTE** ** Deleted Field Office Project Special Provision
Dynamic Message Sign 48
High Definition CCTV Wood Poles and Field Equipment 87

Geotextile for Pavement Stabilization 95
Foundations and Anchor Rod Assemblies for Metal Poles 96
Overhead and Dynamic Message Sign Foundations 103
Roadway Lighting Foundations 105
Lighting 107
High Visibility Traffic Control Devices 122
Work Zone Traffic "Pattern Masking" 123
Sequential Flashing Warning Lights 127
Work Zone Presence Lighting 131
Work Zone Digital Speed Limit Signs 135
Work Zone Performance Pavement Markings 138
Typical Median Access Areas 142
Sound Barrier Wall 152
Architectural Concrete Surface Treatment 154
** **NOTE** ** Deleted Nonwoven Geotextile Interlayer Project Special Provision
Expansion Joint Seal Repair 159
Silane Deck Treatment 163
Silane Barrier Rail Treatment 168
Automated Machine Guidance 173
Use of Unmanned Aircraft System (UAS) 175
Fiber Optic Conduit System (RGC – Hanging) 175
Portable High Definition CCTV Camera for Incident Management 178

GENERAL 182

SCOPES OF WORK

I-5877 Design-Build 201
Roadway 206
Environmental Permits 224
Erosion and Sedimentation Control 230
GeoEnvironmental 245
Geotechnical Engineering 247
Hydraulics 257
ITS 269
Lighting 278
Pavement Management 279
Pavement Markings 290
Public Involvement and Information 293
Right of Way 296
Signing 303
Structures 312
Transportation Management 317
Utilities Coordination 349

PERMITS 358

STANDARD SPECIAL PROVISIONS

Plant and Pest Quarantines 629
Rock and Broken Pavement Fills 630
Polypropylene Culvert Pipe 630
Bridge Approach Fills 632
Alternate Bridge Approach Fills for Integral Abutments 634
Automated Fine Grading 636
Aggregate Subgrade 636
Final Surface Testing 637
Milling Asphalt Pavement 637
Open Graded Asphalt Friction Course, Permeable Asphalt Drainage Course, and Ultra-Thin Bonded Wearing Course 638
Asphalt Concrete Plant Mix Pavements 640
Subsurface Drainage 644
Guardrail End Units, Type TL-3 645
Guardrail Anchor Units and Temporary Guardrail Anchor Units 645
Impact Attenuator Units, TL-3 646
Temporary Shoring 646
On-the-Job Training 658
Availability of Funds – Termination of Contracts 661
NCDOT General Seed Specifications for Seed Quality 662
Errata 665
Title VI and Nondiscrimination 666
Minority and Female Employment Requirements 676
Required Contract Provisions Federal-Aid Construction Contracts 679
General Decision NC190090 01/04/2019 NC90 688
General Decision NC190091 01/04/2019 NC91 693
Division One 698

PROPOSAL FORMS - ITEMIZED SHEET, ETC.

Itemized Proposal Sheet (TAN SHEET)
Fuel Usage Factor Chart and Estimate of Quantities
Listing of DBE Subcontractors
Execution of Bid, Non-Collusion Affidavit, Debarment Certification and Gift Ban Certification
Signature Sheet

*** PROJECT SPECIAL PROVISIONS ***

CONTRACT TIME AND LIQUIDATED DAMAGES

(7-12-7) DB1 G04A

The date of availability for this contract is September 30, 2019, except that the Design-Build Team shall only begin ground disturbing activities as allowed by this Request for Proposals (RFP). The Design-Build Team shall consider this factor in determining the proposed completion date for this project.

The completion date for this contract is defined as the date proposed in the Technical Proposal by the proposer who is awarded the project. The completion date thus proposed shall not be later than May 1, 2024.

When observation periods are required by the special provisions, they are not a part of the work to be completed by the completion date and / or intermediate contract times. Should an observation period extend beyond the Final Completion Date proposed by the Design-Build Team in the Technical Proposal, the performance and payment bonds shall remain in full force and effect until the observation period has been completed and the work accepted by the Department.

The liquidated damages for this contract are **Twenty Thousand Dollars ($20,000.00)** per calendar day. As an exception to this amount, where the contract has been determined to be substantially complete as defined by the *Substantial Completion* Project Special Provision found elsewhere in this RFP, the liquidated damages will be reduced to **Five Thousand Dollars ($5,000.00)** per calendar day.

Where the Design-Build Team who is awarded the contract has proposed a completion date for the contract as required above, but also has proposed an earlier date for substantial completion, then both of these proposed dates will become contract requirements.

Liquidated damages of **Twenty Thousand Dollars ($20,000.00)** per calendar day will be applicable to the early date for substantial completion proposed by the bidder. Liquidated damages of **Five Thousand Dollars ($5,000.00)** per calendar day will be applicable to the Final Completion Date proposed by the bidder where the Design-Build Team has proposed an earlier date for substantial completion.

** **NOTE** ** Deleted *Intermediate Contract Time Number 1 and Liquidated Damages* Project Special Provision

OTHER LIQUIDATED DAMAGES AND INCENTIVES

(3-22-7) (Rev. 2-14-8) DB1 G11

Reference the Transportation Management Scope of Work found elsewhere in this RFP for more information on the following time restrictions and liquidated damages:

Liquidated Damages for Intermediate Contract Time #1 for lane narrowing and lane closures, holiday and special event time restrictions for a single lane on I-95, including all ramps and loops, and NC 295 west of I-95 are $2,500.00 per15-minute period or any portion thereof.

Liquidated Damages for Intermediate Contract Time #2 for lane narrowing and lane closures, holiday and special event time restrictions for two lanes of a three-lane section (in one direction) on I-95 are $3,500.00 per 15-minute period or any portion thereof.

Liquidated Damages for Intermediate Contract Time #3 for lane narrowing and lane closures on I-95 Business, including the southbound exit ramp and entrance loop at Dunn Road (US 301) are $500.00 per 15-minute period or any portion thereof.

Liquidated Damages for Intermediate Contract Time #4 for lane narrowing, lane closure, and holiday and special event time restrictions on Dunn Road (US 301) are $500.00 per 15-minute period or any portion thereof.

Liquidated Damages for Intermediate Contract Time #5 for lane narrowing, lane closure, holiday and special event time restrictions on I-95 Business, including the southbound exit ramp and entrance loop at Dunn Road (US 301) are $2,500.00 per 15-minute period or any portion thereof.

Liquidated Damages for Intermediate Contract Time #6 for road closure time restrictions for construction operations on I-95, including all ramps and loops, are $2,500.00 per 15-minute period or any portion thereof.

Liquidated Damages for Intermediate Contract Time #7 for road closure time restrictions for ramp reconstruction at the I-95 / I-95 Business / US 301 interchange (excluding the southbound exit ramp and entrance loop at Dunn Road (US 301)) are $5,000.00 per calendar day or any portion thereof.

Liquidated Damages for Intermediate Contract Time #8 for road closure time restrictions for the Ramp -Y5RPB-, Ramp -Y5RPC- and Loop -Y5LPA- ramp / loop reconstruction at the I-95 / NC 295 / US 13 interchange are $5,000.00 per calendar day or any portion thereof.

Liquidated Damages for Intermediate Contract Time #9 for road closure time restrictions for ramp / loop pair and associated -Y- Line segment reconstruction at the I-95 / SR 1815 (Wade Stedman Road) interchange are $2,000.00 per calendar day or any portion thereof.

Liquidated Damages for Intermediate Contract Time #10 for road closure time restrictions for ramp / loop pair and associated -Y- Line segment reconstruction at the I-95 / NC 82 interchange are $2,000.00 per calendar day or any portion thereof.

Liquidated Damages for Intermediate Contract Time #11 for road closure time restrictions for -Y- Line reconstruction between the ramp terminals at the I-95 / SR 1815 (Wade Stedman Road) interchange and between the ramp terminals at the I-95 / NC 82 interchange are $2,000.00 per calendar day or any portion thereof.

Liquidated Damages for Intermediate Contract Time #12 for road closure time restrictions for ramp reconstruction at the I-95 / SR 1002 (Long Branch Road) interchange are $2,000.00 per calendar day or any portion thereof.

Liquidated Damages for Intermediate Contract Time #13 for road closure time restrictions for bridge reconstruction on SR 1828 (Baywood Road) over I-95 are $2,500.00 per calendar day or any portion thereof.

** **NOTE** ** Deleted duplicate bullets on Liquidated Damages for road closure time restrictions for bridge reconstruction on SR 1828 (Baywood Road) over I-95.

Liquidated Damages for Intermediate Contract Time #14 for road closure time restrictions for bridge reconstruction on SR 1005 (Smithfield Road) over I-95 are $2,500.00 per calendar day or any portion thereof.

Liquidated Damages for Intermediate Contract Time #15 for road closure time restrictions for bridge reconstruction on SR 1813 (Percy Strickland Road) over I-95 are $2,500.00 per calendar day or any portion thereof.

Liquidated Damages for Intermediate Contract Time #16 for road closure time restrictions for bridge reconstruction on SR 1806 (Sherrill Baggett Road) over I-95 are $2,500.00 per calendar day or any portion thereof.

Liquidated Damages for Intermediate Contract Time #17 for road closure time restrictions for bridge reconstruction on SR 1804 (Rhodes Pond Road) over I-95 are $2,500.00 per calendar day or any portion thereof.

Liquidated Damages for Intermediate Contract Time #18 for road closure time restrictions for bridge reconstruction on SR 1811 (Bud Hawkins Road) over I-95 are $2,500.00 per calendar day or any portion thereof.

Liquidated Damages for Intermediate Contract Time #19 for road closure time restrictions for bridge reconstruction on SR 1002 (Long Branch Road) over I-95 are $2,500.00 per calendar day or any portion thereof.

Liquidated Damages for Intermediate Contract Time #20 for road closure time restrictions for culvert construction on SR 1002 (Long Branch Road) are $2,000.00 per calendar day or any portion thereof.

Liquidated Damages for Intermediate Contract Time #21 for lane closure time restrictions to widen Bridge No. 250339 are $1,000.00 per calendar day or any portion thereof.

Liquidated Damages for Intermediate Contract Time #22 for road closure time restrictions on Dunn Road (US 301) are $500.00 per 15-minute period or any portion thereof.

Liquidated Damages for Intermediate Contract Time #23 for lane closure time restrictions for roundabout construction on US 13 are $500.00 per 15-minute period or any portion thereof.

Liquidated Damages for Erosion and Sedimentation Control efforts apply to this project.

Reference the Erosion and Sedimentation Control Scope of Work found elsewhere in this RFP for additional information under the Erosion Control Damages Section.

REQUIRED PROVISION FOR INFRA GRANT

The Contractor is hereby notified that this project will be partially financed with Infrastructure for Rebuilding America (INFRA) Funds. The Contractor shall assure that all subcontracts, and other contracts for services for an INFRA funded project shall also have this Project Special Provision in their contracts. As such, the Department may require the Contractor to provide reports, and other information as evidence to document the progress and expenditures on the project on a monthly, quarterly and / or yearly basis. No direct payment will be made for providing any reports required by the INFRA Grant.

PAYOUT SCHEDULE

(11-16-09) DB1 G13

No later than 12:00 o'clock noon on the sixth day after the opening of the Price Proposal, the responsive proposer with the lowest adjusted price shall submit a proposed Anticipated Monthly Payout Schedule to the office of the State Contract Officer. The information shall be submitted in a sealed package with the outer wrapping clearly marked "Anticipated Monthly Payout Schedule" along with the Design-Build Team name and the contract number. The Anticipated Monthly Payout Schedule will be used by the Department to establish the monthly funding levels for this project. The Anticipated Monthly Payout Schedule shall parallel, and agree with, the project schedule the Design-Build Team submits as a part of their Technical Proposal. The schedule shall include a monthly percentage breakdown (in terms of the total contract amount percentages) of the work anticipated to be completed. The schedule shall begin with the Date of Availability and end with the Actual Completion Date proposed by the Design-Build Team. If the Payout Schedule is not submitted as stated herein, the Technical and Price Proposals will be considered irregular by the Department, and the bid may be rejected.

Submit updates of the Anticipated Monthly Payout Schedule on March 15, June 15, September 15, and December 15 of each calendar year until project acceptance. Submit all updates to the Resident Engineer with a copy to the State Construction Engineer at 1 South Wilmington St, 1543 Mail Service Center, Raleigh, NC 27699-1543.

MOBILIZATION

(8-28-17) DB1 G15B

Revise the 2018 *Standard Specifications for Roads and Structures* as follows:

Page 8-1, Subarticle 800-2, MEASUREMENT AND PAYMENT

Delete this subarticle in its entirety and replace with the following:

800-2 MEASUREMENT AND PAYMENT

Five percent of the "Total Amount of Bid for Entire Project" shall be considered the lump sum amount for Mobilization. Partial payments for Mobilization will be made beginning with the first partial pay estimate paid on the contract. Payment will be made at the rate of 50 percent of the lump sum amount calculated for Mobilization. The remaining 50 percent will be paid with the partial pay estimate following approval of all permits required in the Environmental Permits Scope of Work for this project.

SUBSTANTIAL COMPLETION

(3-22-07) DB1 G16

When the special provisions provide for a reduction in the rate of liquidated damages for the contract time or an intermediate contract time after the work is substantially complete, the work will be considered substantially complete when the following requirements are satisfied:

1. Through traffic has been placed along the project or along the work required by an intermediate contract time and the work is complete to the extent specified below, and all lanes and shoulders are open such that traffic can move unimpeded at the posted speed. Intersecting roads and service roads are complete to the extent that they provide the safe and convenient use of the facility by the public.

2. The final layers of pavement for all lanes and shoulders along the project or along the work required by an intermediate contract time are complete.

3. Excluding signs on intersecting roadways, all signs are complete and accepted.

4. All guardrails, drainage devices, ditches, excavation and embankment are complete.

5. Remaining work along the project consists of permanent pavement markings, permanent pavement markers or incidental construction that is away from the paved portion of the roadway.

Upon apparent substantial completion of the entire project or the work required by an intermediate contract time, the Engineer will make an inspection of the work. If the inspection discloses the entire project or the work required by an intermediate contract time is substantially complete; the Engineer will notify the Design-Build Team in writing that the work is substantially complete. If the inspection discloses the entire project or the work required by an intermediate contract time is not substantially complete, the Engineer will notify the Design-Build Team in writing of the work that is not substantially complete. The entire project or the work required by an intermediate contract time will not be considered substantially complete until all of the recommendations made at the time of the inspection have been satisfactorily completed.

SUBMITTAL OF QUANTITIES, FUEL BASE INDEX PRICE AND OPT-OUT OPTION

1/23/14 DBI G43

(A) **Submittal of Quantities**

Submit quantities on the *Fuel Usage Factor Chart and Estimate of Quantities* sheet, located in the back of this RFP, following the Itemized Proposal Sheet.

The Design-Build Team shall prepare an Estimate of Quantities that they anticipate incorporating into the completed project and upon which the Price Proposal was based. The quantity breakdown shall include all items of work that appear in the *Fuel Usage Factor Chart and Estimate of Quantities* sheet. Only those items of work which are specifically noted in the *Fuel Usage Factor Chart and Estimate of Quantities* sheet will be subject to fuel price adjustments.

Submittal The submittal shall be signed and dated by an officer of the Design-Build Team. The information shall be copied and submitted in a separate sealed package with the outer wrapping clearly marked "Fuel Price Adjustment" and shall be delivered at the same time and location as the Technical Proposal. The original shall be submitted in the Price Proposal.

Trade Secret Information submitted on the *Fuel Usage Factor Chart and Estimate of Quantities* sheet will be considered "Trade Secret" in accordance with the requirements of G.S. 66-152(3) until such time as the Price Proposal is opened.

(B) **Base Index Price**

The Design-Build Team's Estimate of Quantities will be used on the various partial payment estimates to determine fuel price adjustments. The Design-Build Team shall submit a payment request for quantities of work completed based on the work completed for that estimate period. The quantities requested for partial payment shall be reflective of the work actually accomplished for the specified period. The Design-Build Team shall certify that the quantities are reasonable for the specified period. The base index price for DIESEL #2 FUEL is **$1.9515** per gallon.

(C) **Opt Out of Fuel Price Adjustment**

If the Design-Build Team elects not to pursue reimbursement for Fuel Price Adjustments, a quantity of zero shall be entered for all quantities in the *Fuel Usage Factor Chart and Estimate of Quantities* sheet and the declination box shall be checked. Failure to complete this form will mean that the Design-Build Team is declining the Fuel Price Adjustments for this project.

(D) **Change Option**

The proposer will not be permitted to change the option after the copy of the *Fuel Usage Factor Chart and Estimate of Quantities* sheet is submitted with the Technical Proposal.

(E) **Failure to Submit**

Failure to submit the completed *Fuel Usage Factor Chart and Estimate of Quantities* sheet separately with the Technical Proposal and in the Price Proposal will result in the Technical and Price Proposal being considered irregular by the Department and the Technical and Price Proposal may be rejected.

INDIVIDUAL MEETINGS WITH PROPOSERS

(9-1-11) DB1 G048

The Department will provide at least two Question and Answer Sessions to meet with each proposer individually to specifically address questions regarding the draft Requests for Proposals.

After issuance of the First Industry Draft RFP, the Department will attempt to arrange a meeting between each individual proposer and the affected utility owners.

The Department will afford each proposer one additional meeting with the Department (maximum two-hour time limit) to discuss project specifics and address the proposer's concerns and questions. This meeting may occur at any time after the first Question and Answer Session with the proposers and before two weeks prior to the Technical Proposal submittal date. The proposer shall request this meeting in writing to the State Contract Officer, providing the Department a minimum of one week advance notice of the requested date. The proposer shall also state in the request those disciplines within the Department that are requested to be in attendance. The Department makes no assurance that the request may be honored on that specific date or that all disciplines requested can be in attendance.

EXECUTION OF BID, NON-COLLUSION AFFIDAVIT, DEBARMENT CERTIFICATION AND GIFT BAN CERTIFICATION

(1/24/13) DB1 G52

The Proposer's attention is directed to the various sheets in the Request for Proposals which are to be signed by the Proposer. A list of these sheets is shown below. The signature sheets are

located behind the Itemized Proposal Sheet in this Request for Proposal. The NCDOT bid bond form is available on-line at:

https://connect.ncdot.gov/letting/Pages/Design-Build-Resources.aspx

or by contacting the Records and Documents office at 919-707-6900.

1. Applicable Signature Sheets: 1, 2, 3, 4, 5, or 6 (Bid)

2. Bid Bond dated the day of the Price Proposal submission

The Proposer shall certify to the best of his knowledge all subcontractors, material suppliers and vendors utilized herein current status concerning suspension, debarment, voluntary exclusion, or determination of ineligibility by any federal agency, in accordance with the "Debarment Certification" located behind the *Execution of Bid Non-Collusion Affidavit, Debarment Certification and Gift Ban Certification* signature sheets in this RFP. Execution of the bid signature sheets in conjunction with any applicable statements concerning exceptions, when such statements have been made on the "Debarment Certification", constitutes the Proposer's certification of "status" under penalty of perjury under the laws of the United States.

SUBMISSION OF DESIGN-BUILD PROPOSAL

(9-1-11) (Rev. 8-30-17) DB1 G55A

The Proposer's attention is directed that each Proposer's Design-Build Proposal shall comply with the following requirements in order for that Design-Build Proposal to be responsive and considered for award.

1. The Proposer shall be prequalified with the Department prior to submitting a Design-Build Proposal.

2. The Proposer shall deliver the Technical Proposal and the Price Proposal to the place indicated, and prior to the times indicated in this Request for Proposals.

3. The Price Proposal documents shall be signed by an authorized employee of the Proposer.

4. The Price Proposal shall be accompanied by Bid surety in the form of a Bid Bond or Bid Deposit, dated the day of the Price Proposal submission.

5. If Disadvantaged Business Enterprises (DBE) goals are established for this contract, the Proposer shall complete the form Listing of DBE Subcontractors contained elsewhere in this RFP in accordance with the *Disadvantaged Business Enterprises* Project Special Provision found elsewhere in this RFP.

6. The Design-Build Proposal shall address all the requirements as specified in this Request for Proposals.

In addition to the above requirements, failure to comply with any of the requirements of Article 102-8 of the Standard Special Provisions, Division One (found elsewhere in this RFP), Article 102-9 of the 2018 *Standard Specifications for Roads and Structures,* or Article 102-10 of the 2018 *Standard Specifications for Roads and Structures* and as amended in the Standard Special Provisions, Division One (found elsewhere in this RFP) may result in a Design-Build Proposal being rejected.

ALTERNATIVE TECHNICAL CONCEPTS AND CONFIDENTIAL QUESTIONS

(6-8-11) (Rev. 7-20-17) DB1 G56A

To accommodate innovation that may or may not be specifically allowed by the RFP, or other documents incorporated into the contract by reference, the Design-Build Team has the option of submitting Confidential Questions and Alternative Technical Concepts.

Definitions

A Confidential Question is defined as a private query to the Department containing information whose disclosure could alert others to certain details of doing business in a particular manner.

An Alternative Technical Concept is a private query to the Department that requests a variance to the requirements of the RFP, or other documents incorporated into the contract by reference, that is equal or better in quality or effect, as determined by the Department in its sole discretion, and that have been used elsewhere under comparable circumstances.

Confidential Questions

The Design-Build Team will be permitted to ask Confidential Questions of the Department, and neither the question nor the answer will be shared with other Design-Build Teams. The Department, in its sole discretion, will determine if a question is considered confidential.

Confidential Questions arising prior to issuance of the Final RFP will be allowed during the industry review of the draft RFPs with the individual Design-Build Teams. The Department will answer the Confidential Question verbally at the industry review meeting, if possible, and / or through subtle changes in the Final RFP, which will clarify the scope by either allowing or disallowing the request. To the greatest extent possible, the revision will be made in such a manner as to not disclose the Confidential Question.

After issuance of the Final RFP, Confidential Questions may be submitted to the State Contract Officer via the Design-Build e-mail address (designbuild@ncdot.gov). After evaluation, the State Contract Officer will respond to the question in writing and / or through subtle changes in the Final RFP, as reflected in an addendum, which will clarify the scope by either allowing or disallowing the request. To the greatest extent possible, the revision will be made in such a manner as to not disclose the Confidential Question. Minor questions will not be acknowledged or answered.

If the Design-Build Team includes concepts / work based on the Confidential Questions and answers, the concepts / work shall be discussed in the Technical Proposal.

Alternative Technical Concepts

The Design-Build Team will be allowed to submit a maximum of ten Alternative Technical Concepts. The aforementioned maximum number of ATCs shall include both Preliminary and Formal ATCs. Excluding (1) Formal ATCs that are submitted in response to the Department's favorable review of a Preliminary ATC and (2) ATCs that are deemed to take advantage of an error or omission in the RFP, all ATCs submitted by the Design-Build Team shall count towards the maximum number of allowable ATCs, regardless of the Department's response. (e.g. an ATC submitted by the Design-Build Team that the Department deems does not qualify as an ATC and an ATC that is disqualified shall count towards the maximum number of allowable ATCs). Should the Design-Build Team submit a single ATC with multiple concepts, the Department may (1) return the unevaluated ATC to the proposer requiring resubmittal(s) as an individual concept or (2) consider the ATC submittal multiple ATCs that count towards the maximum number of allowable ATCs.

Initial ATC submittals shall be submitted in accordance with the following deadlines:

- The Design-Build Team will be allowed to submit the maximum number of allowable ATCs prior to the Final RFP distribution.

- The Design-Build Team will be allowed to submit a maximum of five ATCs after the Final RFP distribution provided (1) the ATC submittal does not exceed the aforementioned maximum number of allowable ATCs, and (2) the ATC is received by the Department no later than five weeks prior to the deadline for submitting the Technical Proposal.

The Design-Build Team may include an ATC in the Technical and Price Proposal only if the ATC was received by the Department in accordance with the requirements noted above and it has been approved by the Department (including conditionally approved ATCs, if all conditions are met).

The submittal deadlines above only apply to initial ATC submittals. Resubmittal of an ATC that (1) has been revised in response to the Department's requests for further information concerning a prior submittal, (2) is a Formal ATC for a Preliminary ATC that received a favorable response from the Department, or (3) requests approval of additional required variances to the RFP requirements that were omitted in the original ATC submittal shall be received by the Department no later than two weeks prior to the deadline for submitting the Technical Proposal.

The Design-Build Team shall be solely responsible for reviewing all versions of the RFP, including all Addenda, and determining variances required by a Formal ATC. The Design-Build Team is cautioned that the Department's approval in no way implies that the Design-Build Team has requested approval of all the required variances to the RFP requirements. Additionally, should the Department revise the RFP after a Formal ATC has been approved, the Design-Build Team shall be solely responsible for reviewing the RFP and determining if the ATC deviates from the revised requirements. If necessary, the Design-Build Team must submit a request for

approval of all additional required variance(s) no later than two weeks prior to the deadline for submitting the Technical Proposal.

An ATC shall in no way take advantage of an error or omission in the RFP, or other documents incorporated into the contract by reference. If, at the sole discretion of the Department, an ATC is deemed to take advantage of an error or omission in the RFP, or other documents incorporated into the contract by reference, the RFP will be revised without regard to confidentiality. If at any time, the Department receives a documented question on the project similar to a concept submitted in the form of a Preliminary ATC or Formal ATC, the Department reserves the right to revise the RFP without further regard for confidentiality.

By approving an ATC, the Department acknowledges that the ATC may be included in the design and RFC Plans; however, approval of any ATC in no way relieves the Design-Build Team of its obligation to satisfy (1) other contract requirements not specifically identified in the ATC submittal; (2) any obligation that may arise under applicable laws and regulations; and (3) any obligation mandated by the regulatory agencies as a permit condition.

ATC Submittals

Each ATC submittal shall include three individually bound hard copies and an electronic .pdf file of the entire submittal and shall be submitted to the State Contract Officer at the address provided elsewhere in this RFP. Excluding the ATC distribution letter, the ATC shall not include any reference to the submitter's identity.

Formal ATCs

Each Formal ATC submittal shall include the following information:

1) **Description** - A detailed description and schematic drawings of the configuration of the ATC or other appropriate descriptive information (including, if appropriate, product details [i.e., specifications, construction tolerances, special provisions] and a traffic operational analysis, if appropriate)
2) **Usage** - Where and how the ATC would be used on the project
3) **Deviations** - References to all RFP requirements, or other documents incorporated into the contract by reference, that are inconsistent with the proposed ATC, an explanation of the nature of the deviations from said requirements, and a request for approval of such variance(s)
4) **Analysis** - An analysis justifying use of the ATC and why the variance to the RFP requirements, or other documents incorporated into the contract by reference, should be allowed. **All intersection and interchange reconfigurations shall include corresponding traffic analyses and signing concept.**
5) **Impacts** - Discussion of potential impacts on vehicular traffic, environmental impacts identified, community impact, safety and life-cycle project impacts, and infrastructure costs (including impacts on the cost of repair and maintenance)
6) **History** - A detailed description of other projects where the ATC has been used, the success of such usage, and names and telephone numbers of project owners that can confirm such statements

7) **Risks** - A description of added risks to the Department and other entities associated with implementing the ATC
8) **Costs** - An estimate of the ATC implementation costs to the Department, the Design-Build Team, and other entities (right of way, utilities, mitigation, long term maintenance, etc.)

The Formal ATC, if approved, shall be included in the Price Proposal if the Design-Build Team elects to include it in their Technical Proposal.

Review of ATCs

A panel will be selected to review each ATC, which may or may not include members of the Technical Review Committee. The Design-Build Team shall make no direct contact with any member of the review panel, except as may be permitted by the State Contract Officer. Unapproved contact with any member of the review panel will result in a disqualification of that ATC.

The Department may request additional information regarding a proposed ATC at any time. To the greatest extent possible, the Department will return responses to, or request additional information from, the Design-Build Team within 15 business days of the original submittal of a Formal ATC. If additional information is requested, the Department will provide a response within five business days of receipt of all requested information.

In accordance with the *Individual Meetings with Proposers* Project Special Provision found elsewhere in this RFP, a Design-Build Team's ATC may be discussed during confidential one-on-one meeting(s). Under no circumstances will the Department be responsible or liable to the Design-Build Team or any other party as a result of disclosing any ATC materials, whether the disclosure is deemed required by law, by a court order, or occurs through inadvertence, mistake or negligence on the part of the Department or their respective officers, employees, contractors, or consultants.

In the event that the Department receives 1) ATCs from more than one Design-Build Team or 2) an ATC and a documented question outside of the ATC process that are deemed by the Department, in its sole discretion, to be similar in nature, the Department reserves the right to modify the RFP without further regard for confidentiality.

The Department Response to Formal ATCs

The Department will review each Formal ATC and will respond to the Design-Build Team with one of the following determinations:

1) The ATC is approved.

2) The ATC is not approved.

3) The ATC is not approved in its present form, but may be approved upon satisfaction, in the Department's sole discretion, of certain identified conditions that shall be met or certain clarifications or modifications that shall be made (conditionally approved).

4) The submittal does not qualify as an ATC but may be included in the Design-Build Proposal without an approved ATC (i.e., the concept complies with the baseline requirements of the RFP).

5) The submittal does not qualify as an ATC and may not be included in the Design-Build Proposal.

6) The ATC is deemed to take advantage of an error or omission in the RFP, or other documents incorporated into the contract by reference, in which case the ATC will not be considered, and the RFP will be revised to correct the error or omission.

7) A documented question has been received outside of the ATC process on the same topic and the RFP will be revised to address that question.

8) More than one ATC has been received on the same topic and the Department has elected to exercise its right to revise the RFP. This response could also follow and supersede one of the other previously supplied responses above.

9) The ATC contains multiple concepts and has not been considered. Should the Design-Build Team wish to pursue one or more of the concepts presented in the ATC, a submittal for each individual concept will be required.

Formal ATC Inclusion in Technical Proposal

The Design-Build Team may incorporate one or more approved Formal ATCs as part of its Technical and Price Proposals. If the Department responded to a Formal ATC by stating that it would be approved if certain conditions were met, those conditions shall be stipulated and met in the Technical Proposal or the concept will be deemed in violation of the RFP requirements.

In addition to outlining each implemented Formal ATC, and providing assurances to meet all attached conditions, the Design-Build Team shall also include a copy of the Formal ATC approval letter from the State Contract Officer in each of the twelve Technical Proposals submitted. This letter will be included in the distribution of the Technical Proposals to the Technical Review Committee.

Approval of a Formal ATC in no way implies that the Formal ATC will receive a favorable review from the Technical Review Committee. The Technical Proposals will be evaluated in regards to the evaluation criteria found in this RFP, regardless of whether or not Formal ATCs are included.

The Price Proposal shall reflect all incorporated Formal ATCs. Except for incorporating approved Formal ATCs, the Technical Proposal may not otherwise contain exceptions to, or

deviations from, the requirements of the RFP, or other documents incorporated into the contract by reference.

Preliminary ATCs

At the Design-Build Team's option, a Preliminary ATC submittal may be made that presents a concept and a brief narrative of the benefits of said concept. The purpose of allowing such a Preliminary ATC is to limit the Design-Build Team's expense in the pursuit of a Formal ATC that may be quickly denied by the Department.

To the greatest extent possible, the Department will review Preliminary ATCs within ten business days of submittal and provide written comments that include one of the responses noted below. The Department's response to a Preliminary ATC submittal will be either (1) that the Preliminary ATC is denied; (2) that the Preliminary ATC would be considered as a Formal ATC if the Team so elects to pursue a Formal ATC submission; (3) that an ATC is not required; (4) a documented question has been received outside of the ATC process on the same topic and the RFP will be revised to address that question; (5) more than one ATC has been received on the same topic and the Department has elected to exercise its right to revise the RFP; 6) that the ATC takes advantage of an error or omission in the RFP or other documents incorporated into the contract by reference, in which case the ATC will not be considered and the RFP will be revised to correct the error or omission; or (7) the ATC contains multiple concepts and has not been considered, in which case an ATC for each individual concept will be required. The Department in no way warrants that a favorable response to a Preliminary ATC submittal will translate into a favorable response to a Formal ATC submittal. Likewise, a favorable response to a Preliminary ATC submittal is not sufficient to include the ATC in the Technical Proposal.

SCHEDULE OF ESTIMATED COMPLETION PROGRESS

(9-1-11) (Rev. 8/31/17) DB1 G58

The Design-Build Team's attention is directed to the *Availability of Funds - Termination of Contracts* Standard Special Provision found elsewhere in this RFP. The Department of Transportation's schedule of estimated completion progress for this project, as required by that Standard Special Provision, shall be as follows:

Fiscal Year	Progress (% of Dollar Value)
2020 (07/01/19 – 06/30/20)	23% of Total Amount Bid
2021 (07/01/20 – 06/30/21)	29% of Total Amount Bid
2022 (07/01/21 – 06/30/22)	22% of Total Amount Bid
2023 (07/01/22 – 06/30/23)	17% of Total Amount Bid
2024 (07/01/23 – 06/30/24)	9% of Total Amount Bid

In accordance with Article 108-2 of the 2018 *Standard Specifications for Roads and Structures*, the Design-Build Team shall also furnish its own progress schedule. Any acceleration of the progress as shown by the Design-Build Team's progress schedule over the progress as shown above shall be subject to the approval of the Engineer.

DISADVANTAGED BUSINESS ENTERPRISE

(10-16-07) (Rev. 12-18-18) 102-15(J) SP1 G61 DB1 G061

Description

The purpose of this Special Provision is to carry out the U.S. Department of Transportation's policy of ensuring nondiscrimination in the award and administration of contracts financed in whole or in part with Federal funds. This provision is guided by 49 CFR Part 26.

Definitions

Additional DBE Subcontractors - Any DBE submitted at the time of bid that will not be used to meet the DBE goal. No submittal of a Letter of Intent is required.

Committed DBE Subcontractor - Any DBE submitted at the time of bid that is being used to meet the DBE goal by submission of a Letter of Intent. Or any DBE used as a replacement for a previously committed DBE firm.

Contract Goal Requirement - The approved DBE participation at time of award, but not greater than the advertised contract goal.

DBE Goal - A portion of the total contract, expressed as a percentage, that is to be performed by committed DBE subcontractor(s).

Disadvantaged Business Enterprise (DBE) - A firm certified as a Disadvantaged Business Enterprise through the North Carolina Unified Certification Program.

Goal Confirmation Letter - Written documentation from the Department to the Proposer confirming the Design-Build Team's approved, committed DBE participation along with a listing of the committed DBE firms.

Manufacturer - A firm that operates or maintains a factory or establishment that produces on the premises, the materials or supplies obtained by the Design-Build Team.

Regular Dealer - A firm that owns, operates, or maintains a store, warehouse, or other establishment in which the materials or supplies required for the performance of the contract are bought, kept in stock, and regularly sold to the public in the usual course of business. A regular dealer engages in, as its principal business and in its own name, the purchase and sale or lease of the products in question. A regular dealer in such bulk items as steel, cement, gravel, stone, and petroleum products need not keep such products in stock, if it owns and operates distribution equipment for the products. Brokers and packagers are not regarded as manufacturers or regular dealers within the meaning of this section.

Replacement / Substitution - A full or partial reduction in the amount of work subcontracted to a committed (or an approved substitute) DBE firm.

North Carolina Unified Certification Program (NCUCP) - A program that provides comprehensive services and information to applicants for DBE certification, such that an applicant is required to apply only once for a DBE certification that will be honored by all recipients of USDOT funds in the state and not limited to the Department of Transportation only. The Certification Program is in accordance with 49 CFR Part 26.

United States Department of Transportation (USDOT) - Federal agency responsible for issuing regulations (49 CFR Part 26) and official guidance for the DBE program.

Forms and Websites Referenced in this Provision

DBE Payment Tracking System - On-line system in which the Design-Build Team enters the payments made to DBE subcontractors who have performed work on the project.

https://apps.dot.state.nc.us/Vendor/PaymentTracking/

DBE-IS *Subcontractor Payment Information* - Form for reporting the payments made to all DBE firms working on the project.

https://connect.ncdot.gov/business/Turnpike/Documents/Form%20DBE-IS%20Subcontractor%20Payment%20Information.pdf

RF-1 *DBE Replacement Request Form* - Form for replacing a committed DBE.

http://connect.ncdot.gov/projects/construction/Construction%20Forms/DBE%20MBE%20WBE%20Replacement%20Request%20Form.pdf

SAF *Subcontract Approval Form* - Form required for approval to sublet the contract.

http://connect.ncdot.gov/projects/construction/Construction%20Forms/Subcontract%20Approval%20Form%20Rev.%202012.zip

JC-1 *Joint Check Notification Form* - Form and procedures for joint check notification. The form acts as a written joint check agreement among the parties providing full and prompt disclosure of the expected use of joint checks.

http://connect.ncdot.gov/projects/construction/Construction%20Forms/Joint%20Check%20Notification%20Form.pdf

Letter of Intent - Form signed by the Contractor and the DBE subcontractor, manufacturer or regular dealer that affirms that a portion of said contract is going to be performed by the signed DBE for the estimated amount (based on quantities and unit prices) listed at the time of bid.

http://connect.ncdot.gov/letting/LetCentral/Letter%20of%20Intent%20to%20Perform%20as%20a%20Subcontractor.pdf

Listing of DBE Subcontractors Form - Form for entering DBE subcontractors on a project that will meet this DBE goal contained elsewhere in this RFP.

http://connect.ncdot.gov/municipalities/Bid%20Proposals%20for%20LGA%20Content/08%20DBE%20Subcontractors%20(Federal).docx

Subcontractor Quote Comparison Sheet - Spreadsheet for showing all subcontractor quotes in the work areas where DBEs quoted on the project. This sheet is submitted with good faith effort packages.

http://connect.ncdot.gov/business/SmallBusiness/Documents/DBE%20Subcontractor%20Quote%20Comparison%20Example.xls

DBE Goal

The following DBE goal for participation by Disadvantaged Business Enterprises is established for this contract:

Disadvantaged Business Enterprises **10.0%**

(A) *If the DBE goal is more than zero*, the Design-Build Team shall exercise all necessary and reasonable steps to ensure that DBEs participate in at least the percent of the contract as set forth above as the DBE goal.

(B) *If the DBE goal is zero*, the Design-Build Team shall make an effort to recruit and use DBEs during the performance of the contract. Any DBE participation obtained shall be reported to the Department.

This goal is to be met through utilization of highway construction contractors and / or right of way acquisition firms. Utilization of DBE firms performing design, other preconstruction services, or Construction Engineering and Inspection are not included in this goal.

Directory of Transportation Firms (Directory)

Real-time information is available about firms doing business with the Department and firms that are certified through NCUCP in the Directory of Transportation Firms. Only firms identified in the Directory as DBE certified shall be used to meet the DBE goal. The Directory can be found at the following link.

https://www.ebs.nc.gov/VendorDirectory/default.html

The listing of an individual firm in the directory shall not be construed as an endorsement of the firm's capability to perform certain work.

Listing of DBE Subcontractors

At the time of bid, Proposers shall submit all DBE participation that they anticipate to use during the life of the contract. Only those identified to meet the DBE goal will be considered committed, even though the listing shall include both committed DBE subcontractors and additional DBE subcontractors. Additional DBE subcontractor participation submitted at the time of bid will be used toward the Department's overall race-neutral goal. Only those firms with current DBE certification at the time of Price Proposal opening will be acceptable for listing in the Proposer's submittal of DBE participation. The Design-Build Team shall indicate the following required information:

(1) *If the DBE goal is more than zero,*

(a) Proposers, at the time the Price Proposal is submitted, shall submit a listing of *DBE* participation, including the names and addresses on *Listing of DBE Subcontractors* contained elsewhere in the contract documents in order for the Price Proposal to be considered responsive. Proposers shall indicate the total dollar value of the DBE participation for the contract.

(b) If Proposers have no DBE participation, they shall indicate this on the *Listing of DBE Subcontractors* by entering the word "None" or the number "0." This form shall be completed in its entirety. **Blank forms will not be deemed to represent zero participation**. Price Proposals submitted that do not have DBE participation indicated on the appropriate form will not be read publicly during the opening of the Price Proposals. The Department will not consider these Price Proposals for award and the proposal will be rejected.

(c) The Proposer shall be responsible for ensuring that the DBE is certified at the time of bid by checking the Directory of Transportation Firms. If the firm is not certified at the time of the opening of the Price Proposals, that DBE's participation will not count towards achieving the corresponding goal.

(2) *If the DBE goal is zero*, entries on the *Listing of DBE Subcontractors* are not required for the zero goal, however any DBE participation that is achieved during the project shall be reported in accordance with requirements contained elsewhere in this special provision.

DBE Prime Contractor

When a certified DBE firm proposes on a contract that contains a DBE goal, the DBE firm is responsible for meeting the goal or making good faith efforts to meet the goal, just like any other proposer. In most cases, a DBE proposer on a contract will meet the DBE goal by virtue of the work it performs on the contract with its own forces. However, all the work that is performed by the DBE proposer and any other DBE subcontractors will count toward the DBE goal. The DBE proposer shall list itself along with any DBE subcontractors, if any, in order to receive credit toward the DBE goal.

For example, if the DBE goal is 45.0% and the DBE proposer will only perform 40.0% of the contract work, the prime will list itself at 40.0%, and the additional 5.0% shall be obtained through additional DBE participation with DBE subcontractors or documented through a good faith effort.

DBE prime contractors shall also follow Sections A and B listed under *Listing of DBE Subcontractor* just as a non-DBE proposer would.

Written Documentation – Letter of Intent

The Proposer shall submit written documentation for each DBE that will be used to meet the DBE goal of the contract, indicating the Proposer's commitment to use the DBE in the contract. This documentation shall be submitted on the Department's form titled *Letter of Intent*.

The documentation shall be received in the office of the State Contractor Utilization Engineer or at DBE@ncdot.gov no later than 10:00 a.m. on the sixth calendar day following opening of Price Proposals, unless the sixth day falls on an official state holiday. In that situation, it is due in the office of the State Contractor Utilization Engineer no later than 10:00 a.m. on the next official state business day.

If the Proposer fails to submit the Letter of Intent from each committed DBE to be used toward the DBE goal, or if the form is incomplete (i.e. both signatures are not present), the DBE participation will not count toward meeting the DBE goal. If the lack of this participation drops the commitment below the DBE goal, the Design-Build Team shall submit evidence of good faith efforts, completed in its entirety, to the State Contractor Utilization Engineer or DBE@ncdot.gov no later than 10:00 a.m. on the eighth calendar day following opening of the Price Proposals, unless the eighth day falls on an official state holiday. In that situation, it is due in the office of the State Contractor Utilization Engineer no later than 10:00 a.m. on the next official state business day.

Submission of Good Faith Effort

If the Proposer fails to meet or exceed the DBE goal the Proposer with the apparent adjusted low price shall submit to the Department documentation of adequate good faith efforts made to reach the DBE goal.

A hard copy and an electronic copy of this information shall be received in the office of the State Contractor Utilization Engineer or at DBE@ncdot.gov no later than 10:00 a.m. on the sixth calendar day following opening of the Price Proposals unless the sixth day falls on an official state holiday. In that situation, it is due in the office of the State Contractor Utilization Engineer no later than 10:00 a.m. on the next official state business day. If the Design-Build Team cannot send the information electronically, then one complete set and five copies of this information shall be received under the same time constraints above.

Note: Where the information submitted includes repetitious solicitation letters, it will be acceptable to submit a representative letter along with a distribution list of the firms that were

solicited. Documentation of DBE quotations shall be a part of the good faith effort submittal. This documentation may include written subcontractor quotations, telephone log notations of verbal quotations, or other types of quotation documentation.

Consideration of Good Faith Effort for Projects with DBE Goals More Than Zero

Adequate good faith efforts mean that the Proposer took all necessary and reasonable steps to achieve the goal which, by their scope, intensity, and appropriateness, could reasonably be expected to obtain sufficient DBE participation. Adequate good faith efforts also mean that the Proposer actively and aggressively sought DBE participation. Mere *pro forma* efforts are not considered good faith efforts.

The Department will consider the quality, quantity, and intensity of the different kinds of efforts a Proposer has made. Listed below are examples of the types of actions a proposer will take in making a good faith effort to meet the goal and are not intended to be exclusive or exhaustive, nor is it intended to be a mandatory checklist.

(A) Soliciting through all reasonable and available means (e.g. attendance at pre-bid meetings, advertising, written notices, use of verifiable electronic means through the use of the NCDOT Directory of Transportation Firms) the interest of all certified DBEs who have the capability to perform the work of the contract. The Proposer must solicit this interest within at least ten days prior to the opening of the Price Proposals to allow the DBEs to respond to the solicitation. Solicitation shall provide the opportunity to DBEs within the Division and surrounding Divisions where the project is located. The Proposer must determine with certainty if the DBEs are interested by taking appropriate steps to follow up initial solicitations.

(B) Selecting portions of the work to be performed by DBEs in order to increase the likelihood that the DBE goals will be achieved.

(1) Where appropriate, break out contract work items into economically feasible units to facilitate DBE participation, even when the prime contractor might otherwise prefer to perform these work items with its own forces.

(2) Negotiate with subcontractors to assume part of the responsibility to meet the contract DBE goal when the work to be sublet includes potential for DBE participation (2nd and 3rd tier subcontractors).

(C) Providing interested DBEs with adequate information about the plans, specifications, and requirements of the contract in a timely manner to assist them in responding to a solicitation.

(D) (1) Negotiating in good faith with interested DBEs. It is the Proposer's responsibility to make a portion of the work available to DBE subcontractors and suppliers and to select those portions of the work or material needs consistent with the available DBE subcontractors and suppliers, so as to facilitate DBE participation. Evidence

of such negotiation includes the names, addresses, and telephone numbers of DBEs that were considered; a description of the information provided regarding the plans and specifications for the work selected for subcontracting; and evidence as to why additional agreements could not be reached for DBEs to perform the work.

(2) A proposer using good business judgment would consider a number of factors in negotiating with subcontractors, including DBE subcontractors, and would take a firm's price and capabilities as well as contract goals into consideration. However, the fact that there may be some additional costs involved in finding and using DBEs is not in itself sufficient reason for a proposer's failure to meet the contract DBE goal, as long as such costs are reasonable. Also, the ability or desire of a prime contractor to perform the work of a contract with its own organization does not relieve the Proposer of the responsibility to make good faith efforts. Proposing Design-Build Teams are not, however, required to accept higher quotes from DBEs if the price difference is excessive or unreasonable.

(E) Not rejecting DBEs as being unqualified without sound reasons based on a thorough investigation of their capabilities. The Proposer's standing within its industry, membership in specific groups, organizations, or associates and political or social affiliations (for example, union vs. non-union employee status) are not legitimate causes for the rejection or non-solicitation of bids in the Proposer's efforts to meet the project goal.

(F) Making efforts to assist interested DBEs in obtaining bonding, lines of credit, or insurance as required by the recipient or proposer.

(G) Making efforts to assist interested DBEs in obtaining necessary equipment, supplies, materials, or related assistance or services.

(H) Effectively using the services of available minority / women community organizations; minority / women contractors' groups; Federal, State, and local minority / women business assistance offices; and other organizations as allowed on a case-by-case basis to provide assistance in the recruitment and placement of DBEs. Contact within seven days from the Price Proposals opening the Business Opportunity and Work Force Development Unit at BOWD@ncdot.gov to give notification of the Proposer's inability to get DBE quotes.

(I) Any other evidence that the Proposer submits which shows that the Proposer has made reasonable good faith efforts to meet the DBE goal.

In addition, the Department may take into account the following:

(1) Whether the Proposer's documentation reflects a clear and realistic plan for achieving the DBE goal.

(2) The Proposer's past performance in meeting the DBE goals.

(3) The performance of other proposers in meeting the DBE goal. For example, when the Proposer with the apparent adjusted low price fails to meet the DBE goal, but others meet it, you may reasonably raise the question of whether, with additional reasonable efforts the Proposer with the apparent adjusted low price could have met the goal. If the Proposer with the apparent adjusted low price fails to meet the DBE goal, but meets or exceeds the average DBE participation obtained by other proposers, the Department may view this, in conjunction with other factors, as evidence of the Proposer with the apparent adjusted low price having made a good faith effort.

If the Department does not award the contract to the Proposer with the apparent adjusted low price, the Department reserves the right to award the contract to the Proposer with the next apparent adjusted low price that can satisfy to the Department that the DBE goal can be met or that an adequate good faith effort has been made to meet the DBE goal.

Non-Good Faith Appeal

The State Contractual Services Engineer will notify the Design-Build Team verbally and in writing of non-good faith. A Design-Build Team may appeal a determination of non-good faith made by the Goal Compliance Committee. If a Design-Build Team wishes to appeal the determination made by the Committee, they shall provide written notification to the State Contractual Services Engineer or at DBE@ncdot.gov. The appeal shall be made within two business days of notification of the determination of non-good faith.

Counting DBE Participation Toward Meeting DBE Goal

(A) Participation

The total dollar value of the participation by a committed DBE will be counted toward the contract goal requirement. The total dollar value of participation by a committed DBE will be based upon the value of work actually performed by the DBE and the actual payments to DBE firms by the Design-Build Team.

(B) Joint Checks

Prior notification of joint check use shall be required when counting DBE participation for services or purchases that involves the use of a joint check. Notification shall be through submission of Form JC-1 *(Joint Check Notification Form)* and the use of joint checks shall be in accordance with the Department's Joint Check Procedures.

(C) Subcontracts (Non-Trucking)

A DBE may enter into subcontracts. Work that a DBE subcontracts to another DBE firm may be counted toward the contract goal requirement. Work that a DBE subcontracts to a non-DBE firm does <u>not</u> count toward the contract goal requirement. If a DBE contractor

or subcontractor subcontracts a significantly greater portion of the work of the contract than would be expected on the basis of standard industry practices, it shall be presumed that the DBE is not performing a commercially useful function. The DBE may present evidence to rebut this presumption to the Department. The Department's decision on the rebuttal of this presumption is subject to review by the Federal Highway Administration but is not administratively appealable to USDOT.

(D) Joint Venture

When a DBE performs as a participant in a joint venture, the Design-Build Team may count toward its contract goal requirement a portion of the total value of participation with the DBE in the joint venture, that portion of the total dollar value being a distinct clearly defined portion of work that the DBE performs with its forces.

(E) Suppliers

A Design-Build Team may count toward its DBE requirement 60.0 percent of its expenditures for materials and supplies required to complete the contract and obtained from a DBE regular dealer and 100.0 percent of such expenditures from a DBE manufacturer.

(F) Manufacturers and Regular Dealers

A Design-Build Team may count toward its DBE requirement the following expenditures to DBE firms that are not manufacturers or regular dealers:

(1) The fees or commissions charged by a DBE firm for providing a *bona fide* service, such as professional, technical, consultant, or managerial services, or for providing bonds or insurance specifically required for the performance of a DOT-assisted contract, provided the fees or commissions are determined to be reasonable and not excessive as compared with fees and commissions customarily allowed for similar services.

(2) With respect to materials or supplies purchased from a DBE, which is neither a manufacturer nor a regular dealer, count the entire amount of fees or commissions charged for assistance in the procurement of the materials and supplies, or fees or transportation charges for the delivery of materials or supplies required on a job site (but not the cost of the materials and supplies themselves), provided the fees are determined to be reasonable and not excessive as compared with fees customarily allowed for similar services.

Commercially Useful Function

(A) DBE Utilization

The Design-Build Team may count toward its contract goal requirement only expenditures to DBEs that perform a commercially useful function in the work of a contract. A DBE performs a commercially useful function when it is responsible for execution of the work of the contract and is carrying out its responsibilities by actually performing, managing, and supervising the work involved. To perform a commercially useful function, the DBE shall also be responsible with respect to materials and supplies used on the contract, for negotiating price, determining quality and quantity, ordering the material and installing (where applicable) and paying for the material itself. To determine whether a DBE is performing a commercially useful function, the Department will evaluate the amount of work subcontracted, industry practices, whether the amount the firm is to be paid under the contract is commensurate with the work it is actually performing and the DBE credit claimed for its performance of the work, and any other relevant factors.

(B) DBE Utilization in Trucking

The following factors will be used to determine if a DBE trucking firm is performing a commercially useful function:

(1) The DBE shall be responsible for the management and supervision of the entire trucking operation for which it is responsible on a particular contract, and there shall not be a contrived arrangement for the purpose of meeting DBE goals.

(2) The DBE shall itself own and operate at least one fully licensed, insured, and operational truck used on the contract.

(3) The DBE receives credit for the total value of the transportation services it provides on the contract using trucks it owns, insures, and operates using drivers it employs.

(4) The DBE may subcontract the work to another DBE firm, including an owner-operator who is certified as a DBE. The DBE who subcontracts work to another DBE receives credit for the total value of the transportation services the subcontracted DBE provides on the contract.

(5) The DBE may also subcontract the work to a non-DBE firm, including from an owner-operator. The DBE who subcontracts the work to a non-DBE is entitled to credit for the total value of transportation services provided by the non-DBE subcontractor not to exceed the value of transportation services provided by DBE-owned trucks on the contract. Additional participation by non-DBE subcontractors receives credit only for the fee or commission it receives as a result of the subcontract arrangement. The value of services performed under

subcontract agreements between the DBE and the Design-Build Team will not count towards the DBE contract requirement.

(6) A DBE may lease truck(s) from an established equipment leasing business open to the general public. The lease must indicate that the DBE has exclusive use of and control over the truck. This requirement does not preclude the leased truck from working for others during the term of the lease with the consent of the DBE, so long as the lease gives the DBE absolute priority for use of the leased truck. This type of lease may count toward the DBE's credit as long as the driver is under the DBE's payroll.

(7) Subcontracted / leased trucks shall display clearly on the dashboard the name of the DBE that they are subcontracted / leased to and their own company name if it is not identified on the truck itself. Magnetic door signs are not permitted.

DBE Replacement

When a Design-Build Team has relied on a commitment to a DBE subcontractor (or an approved substitute DBE subcontractor) to meet all or part of a contract goal requirement, the Design-Build Team shall not terminate the DBE for convenience. This includes, but is not limited to, instances in which the Design-Build Team seeks to perform the work of the terminated subcontractor with another DBE subcontractor, a non-DBE subcontractor, or with the Contractor's own forces or those of an affiliate.

The Design-Build Team must give notice in writing both by certified mail and e-mail to the DBE subcontractor, with a copy to the Engineer of its intent to request to terminate and / or substitute, and the reason for the request. The Design-Build Team must give the DBE subcontractor five (5) business days to respond to the Design-Build Team's notice of intent to request termination and / or substitution. If the DBE subcontractor objects to the intended termination / substitution, the DBE, within five (5) business days, must advise the Design-Build Team and the Department of the reasons why the action should not be approved. The five-day notice period shall begin on the next business day after written notice is provided to the DBE subcontractor.

A committed DBE subcontractor may only be terminated after receiving the Department's written approval based upon a finding of good cause for the proposed termination and / or substitution. For purposes of this section, good cause shall include the following circumstances:

(a) The listed DBE subcontractor fails or refuses to execute a written contract.
(b) The listed DBE subcontractor fails or refuses to perform the work of its subcontract in a way consistent with normal industry standards. Provided, however, that good cause does not exist if the failure or refusal of the DBE subcontractor to perform its work on the subcontract results from the bad faith or discriminatory action of the prime contractor.
(c) The listed DBE subcontractor fails or refuses to meet the prime contractor's reasonable, nondiscriminatory bond requirements.
(d) The listed DBE subcontractor becomes bankrupt, insolvent, or exhibits credit unworthiness.

(e) The listed DBE subcontractor is ineligible to work on public works projects because of suspension and debarment proceedings pursuant to 2 CFR Parts 180, 215 and 1,200 or applicable state law.
(f) The listed DBE subcontractor is not a responsible contractor.
(g) The listed DBE voluntarily withdraws from the project and provides written notice of withdrawal.
(h) The listed DBE is ineligible to receive DBE credit for the type of work required.
(i) A DBE owner dies or becomes disabled with the result that the listed DBE contractor is unable to complete its work on the contract.
(j) Other documented good cause that compels the termination of the DBE subcontractor. Provided, that good cause does not exist if the prime contractor seeks to terminate a DBE it relied upon to obtain the contract so that the prime contractor can self-perform the work for which the DBE contractor was engaged or so that the prime contractor can substitute another DBE or non-DBE contractor after contract award.

The Design-Build Team shall comply with the following for replacement of a committed DBE:

(A) Performance Related Replacement

When a committed DBE is terminated for good cause as stated above, an additional DBE that was submitted at the time of bid may be used to fulfill the DBE commitment. A good faith effort will only be required for removing a committed DBE if there were no additional DBEs submitted at the time of bid to cover the same amount of work as the DBE that was terminated.

If a replacement DBE is not found that can perform at least the same amount of work as the terminated DBE, the Design-Build Team shall submit a good faith effort documenting the steps taken. Such documentation shall include, but not be limited to, the following:

(1) Copies of written notification to DBEs that their interest is solicited in contracting the work defaulted by the previous DBE or in subcontracting other items of work in the contract.

(2) Efforts to negotiate with DBEs for specific subbids including, at a minimum:

(a) The names, addresses, and telephone numbers of DBEs who were contacted.
(b) A description of the information provided to DBEs regarding the plans and specifications for portions of the work to be performed.

(3) A list of reasons why DBE quotes were not accepted.

(4) Efforts made to assist the DBEs contacted, if needed, in obtaining bonding or insurance required by the Design-Build Team.

(B) Decertification Replacement

(1) When a committed DBE is decertified by the Department after the SAF (*Subcontract Approval Form*) has been received by the Department, the Department will not require the Design-Build Team to solicit replacement DBE participation equal to the remaining work to be performed by the decertified firm. The participation equal to the remaining work performed by the decertified firm will count toward the contract goal requirement.

(2) When a committed DBE is decertified prior to the Department receiving the SAF (*Subcontract Approval Form*) for the named DBE firm, the Design-Build Team shall take all necessary and reasonable steps to replace the DBE subcontractor with another DBE subcontractor to perform at least the same amount of work to meet the DBE goal requirement. If a DBE firm is not found to do the same amount of work, a good faith effort must be submitted to NCDOT (See A herein for required documentation).

All requests for replacement of a committed DBE firm shall be submitted to the Engineer for approval on Form RF-1 (DBE Replacement Request). If the Prime Contractor or any affiliated companies within the Design-Build Team fails to follow this procedure they may be disqualified from further bidding for a period of up to six months.

Changes in the Work

When the Engineer makes changes that result in the reduction or elimination of work to be performed by a committed DBE, the Design-Build Team will not be required to seek additional participation. When the Engineer makes changes that result in additional work to be performed by a DBE based upon the Design-Build Team's commitment, the DBE shall participate in additional work to the same extent as the DBE participated in the original contract work.

When the Engineer makes changes that result in extra work, which has more than a minimal impact on the contract amount, the Design-Build Team shall seek additional participation by DBEs unless otherwise approved by the Engineer.

When the Engineer makes changes that result in an alteration of plans or details of construction, and a portion or all of the work had been expected to be performed by a committed DBE, the Design-Build Team shall seek participation by DBEs unless otherwise approved by the Engineer.

When the Design-Build Team requests changes in the work that result in the reduction or elimination of work that the Design-Build Team committed to be performed by a DBE, the Design-Build Team shall seek additional participation by DBEs equal to the reduced DBE participation caused by the changes.

Reports and Documentation

A SAF (*Subcontract Approval Form*) shall be submitted for all work which is to be performed by a DBE subcontractor. The Department reserves the right to require copies of actual subcontract agreements involving DBE subcontractors.

When using transportation services to meet the contract commitment, the Design-Build Team shall submit a proposed trucking plan in addition to the SAF. The plan shall be submitted prior to beginning construction on the project. The plan shall include the names of all trucking firms proposed for use, their certification type(s), the number of trucks owned by the firm, as well as the individual truck identification numbers, and the line item(s) being performed.

Within 30 calendar days of entering into an agreement with a DBE for materials, supplies or services, not otherwise documented by the SAF as specified above, the Design-Build Team shall furnish the Engineer a copy of the agreement. The documentation shall also indicate the percentage (60.0% or 100.0%) of expenditures claimed for DBE credit.

Reporting Disadvantaged Business Enterprise Participation

The Design-Build Team shall provide the Engineer with an accounting of payments made to all DBE firms, including material suppliers and contractors at all levels (prime, subcontractor, or second tier subcontractor). This accounting shall be furnished to the Engineer for any given month by the end of the following month. Failure to submit this information accordingly may result in the following action:

(A) Withholding of money due in the next partial pay estimate; or

(B) Removal of an approved Prime Contractor or other affiliated companies within the Design-Build Team from the prequalified bidders' list or the removal of other entities from the approved subcontractors list.

While each contractor (prime, subcontractor, 2nd tier subcontractor) is responsible for accurate accounting of payments to DBEs, it shall be the prime contractor's responsibility to report all monthly and final payment information in the correct reporting manner.

Failure on the part of the Design-Build Team to submit the required information in the time frame specified may result in the disqualification of that Prime Contractor and any affiliate companies within the Design-Build Team from further bidding until the required information is submitted.

Failure on the part of any subcontractor to submit the required information in the time frame specified may result in the disqualification of that Prime Contractor or any affiliate companies within the Design-Build Team from being approved for work on future DOT projects until the required information is submitted.

Design-Build Teams reporting transportation services provided by non-DBE lessees shall evaluate the value of services provided during the month of the reporting period only.

At any time, the Engineer can request written verification of subcontractor payments.

The Design-Build Team shall report the accounting of payments through the Department's DBE Payment Tracking System.

Failure to Meet Contract Requirements

Failure to meet contract requirements in accordance with Subarticle 102-15(J) of the 2018 *Standard Specifications for Roads and Structures* may be cause to disqualify the Prime Contractor or any affiliated companies within the Design-Build Team from further bidding for a specified length of time.

CERTIFICATION FOR FEDERAL-AID CONTRACTS

(3-21-90) DB1 G85

The Proposer certifies, by signing and submitting a Design-Build Proposal, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, *Disclosure Form to Report Lobbying*, in accordance with its instructions.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by *Section 1352, Title 31, U.S. Code*. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

The Proposer also agrees by submitting a Design-Build Proposal that he or she shall require that the language of this certification be included in all lower tier subcontracts, which exceed $100,000 and that all such sub-recipients shall certify and disclose accordingly.

CONTRACTOR'S LICENSE REQUIREMENTS

(7-1-95) DB1 G88

If the Design-Build Team does not hold the proper license to perform any plumbing, heating, air conditioning, or electrical work in this contract, he will be required to sublet such work to a contractor properly licensed in accordance with *Article 2 of Chapter 87 of the General Statutes* (licensing of heating, plumbing, and air conditioning contractors) and *Article 4 of Chapter 87* of the *General Statutes* (licensing of electrical contractors).

U.S. DEPARTMENT OF TRANSPORTATION HOTLINE

(11-22-94) 108-5 DB1 G100

To report bid rigging activities call: **1-800-424-9071**

The U.S. Department of Transportation (DOT) operates the above toll-free hotline Monday through Friday, 8:00 a.m. to 5:00 p.m. eastern time. Anyone with knowledge of possible bid rigging, bidder collusion, or other fraudulent activities should use the hotline to report such activities.

The hotline is part of the DOT's continuing effort to identify and investigate highway construction contract fraud and abuse is operated under the direction of the DOT Inspector General. All information will be treated confidentially and caller anonymity will be respected.

CARGO PREFERENCE ACT

(2-16-16) DB1 G100

Privately owned United States-flag commercial vessels transporting cargoes are subject to the Cargo Preference Act (CPA) of 1954 requirements and regulations found in 46 CFR 381.7. Contractors are directed to clause (b) of 46 CFR 381.7 as follows:

(b) Contractor and Subcontractor Clauses. "Use of United States-flag vessels: The contractor agrees-

"(1) To utilize privately owned United States-flag commercial vessels to ship at least 50 percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to this contract, to the extent such vessels are available at fair and reasonable rates for United States-flag commercial vessels.

(2) To furnish within 20 days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States a legible copy of a rated, 'on-board' commercial ocean bill-of-lading in English for each shipment of cargo described in paragraph (b) (1) of this section to both the Contracting Officer (through the prime

contractor in the case of subcontractor bills-of-lading) and to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590.

(3) To insert the substance of the provisions of this clause in all subcontracts issued pursuant to this contract."

SUBSURFACE INFORMATION

(3-22-07) DBI G112D

Available subsurface information will be provided on this project. The Design-Build Team shall be responsible for additional investigations and for verifying the accuracy of the subsurface information supplied by the Department.

COOPERATION BETWEEN CONTRACTORS

(9-1-11) (Rev. 9-7-17) DBI G133

The Design-Build Team's attention is directed to Article 105-7 of the 2018 *Standard Specifications for Roads and Structures*.

- Project I-5986B / I-5878 / I-5883 is located north of and adjacent to Project I-5986A / I-5877. Project I-5986B / I-5878 / I-5883 has an anticipated July 21, 2020 Let date.

The Design-Build Team on this project shall cooperate with the Contractor or Design-Build Team working within or adjacent to the limits of this project, to the extent that the work can be carried out to the best advantage of all concerned.

BID DOCUMENTATION

(7-31-12) (Rev. 8-3-15) DBI G142

General

The successful Design-Build Team shall submit the original, unaltered bid documentation or a certified copy of the original, unaltered bid documentation used to prepare the Price Proposal for this contract to the Department within ten days after receipt of notice of award of contract. Such documentation shall be placed in escrow with a banking institution or other bonded document storage facility selected by the Department.

The Department will not execute the contract until the original, unaltered bid documentation or a certified copy of the original, unaltered bid documentation has been received by the Department.

Terms

Bid Documentation - Bid Documentation shall mean all written information, working papers, computer printouts, electronic media, charts, and all other data compilations which contain or reflect information, data, and calculations used by the Proposer in the preparation of the Price Proposal. The term *bid documentation* includes, but is not limited to, Design-Build Team

equipment rates, Design-Build Team overhead rates, labor rates, efficiency or productivity factors, arithmetical calculations, and quotations from subcontractors and material suppliers to the extent that such rates and quotations were used by the Proposer in formulating and determining the Price Proposal. The term *bid documentation* also includes any manuals, which are standard to the industry used by the Proposer in determining the Price Proposal. Such manuals may be included in the bid documentation by reference. Such reference shall include the name and date of the publication and the publisher. *Bid Documentation* does not include bid documents provided by the Department for use by the Proposer in bidding on this project. The Bid Documentation can be in the form of electronic submittal (i.e. thumb drive) or paper. If the Bidder elects to submit the Bid Documentation in electronic format, the Department requires a backup submittal (i.e. a second thumb drive) in case one is corrupted.

Design-Build Team's Representative - Officer of the Prime Contractor's company; if not an officer, the Contractor shall supply a letter signed and notarized by an officer of the Prime Contractor's company, granting permission for the representative to sign the escrow agreement on behalf of the Prime Contractor.

Escrow Agent - Officer of the select banking institution or other bonded document storage facility authorized to receive and release bid documentation.

Escrow Agreement Information

A draft copy of the Escrow Agreement will be mailed to the Proposer after the notice of award for informational purposes. The Proposer and Department will sign the actual Escrow Agreement at the time the bid documentation is delivered to the Escrow Agent.

Failure to Provide Bid Documentation

The Proposer's failure to provide the original, unaltered bid documentation or a certified copy of the original, unaltered bid documentation within ten days after the notice of award is received by him may be just cause for rescinding the award of the contract and may result in the removal of the Proposer from the Department's list of qualified bidders for a period of up to 180 days. Award may then be made to the Proposer with the next lowest adjusted price or the work may be readvertised and constructed under the contract or otherwise, as the Department may decide.

Submittal of Bid Documentation

(A) Appointment - Email **specs@ncdot.gov** or call 919.707.6900 to schedule an appointment.

(B) Delivery - A representative of the Bidder shall deliver the original, unaltered bid documentation or a certified copy of the original, unaltered bid documentation to the Department, in a container suitable for sealing, within ten days after the notice of award is received.

(C) Packaging - The container shall be no larger than 15.5 inches in length by 12 inches wide by 11 inches high and shall be water resistant. The container shall be clearly marked on the face and the back of the container with the following information: Bid Documentation, Bidder's Name, Bidder's Address, Date of Escrow Submittal, Contract Number, TIP Number if applicable, and County.

Affidavit

Bid documentation will be considered a certified copy if the proposer includes an affidavit stating that the enclosed documentation is an EXACT copy of the original documentation used by the Proposer to determine the bid for this project. The affidavit shall also list each bid document with sufficient specificity so a comparison may be made between the list and the bid documentation to ensure that all of the bid documentation listed in the affidavit has been enclosed for escrow. The affidavit shall attest that the affiant has personally examined the bid documentation, that the affidavit lists all of the documents used by the proposer to determine the bid for this project, and that all bid documentation has been included. The affidavit shall be signed by a chief officer of the company, have the person's name and title typed below the signature, and the signature shall be notarized at the bottom of the affidavit.

Verification

Upon delivery of the bid documentation, the Department's Contract Officer and the Design-Build Team's representative will verify the accuracy and completeness of the bid documentation compared to the affidavit. Should a discrepancy exist, the Design-Build Team's representative shall immediately furnish the Department's Contract Officer with any other needed bid documentation. The Department's Contract Officer upon determining that the bid documentation is complete will, in the presence of the Design-Build Team's representative, immediately place the complete bid documentation and affidavit in the container and seal it. Both parties will deliver the sealed container to the Escrow Agent for placement in a safety deposit box, vault, or other secure accommodation.

Confidentiality of Bid Documentation

The bid documentation and affidavit in escrow are, and will remain, the property of the Proposer. The Department has no interest in, or right to, the bid documentation and affidavit other than to verify the contents and legibility of the bid documentation unless the Design-Build Team gives written notice of intent to file a claim, files a written claim, files a written and verified claim, or initiates litigation against the Department. In the event of such written notice of intent to file a claim, filing of a written claim, filing a written and verified claim, or initiation of litigation against the Department, or receipt of a letter from the Design-Build Team authorizing release, the bid documentation and affidavit may become the property of the Department for use in considering any claim or in litigation as the Department may deem appropriate.

Any portion or portions of the bid documentation designated by the Proposer as a *trade secret* at the time the bid documentation is delivered to the Department's Contract Officer shall be protected from disclosure as provided by *G.S. 132-1.2*.

Duration and Use

The bid documentation and affidavit shall remain in escrow until 60 calendar days from the time the Prime Contractor receives the final estimate; or until such time as the Design-Build Team:

(A) Gives written notice of intent to file a claim,
(B) Files a written claim,
(C) Files a written and verified claim,
(D) Initiates litigation against the Department related to the contract; or
(E) Authorizes in writing its release.

Upon the giving of written notice of intent to file a claim, filing a written claim, filing a written and verified claim, or the initiation of litigation by the Design-Build Team against the Department, or receipt of a letter from the Design-Build Team authorizing release, the Department may obtain the release and custody of the bid documentation.

The Proposer certifies and agrees that the sealed container placed in escrow contains all of the bid documentation used to determine the Price Proposal and that no other bid documentation shall be relevant or material in litigation over claims brought by the Design-Build Team arising out of this contract.

Release of Bid Documentation to the Contractor

If the bid documentation remains in escrow 60 calendar days after the time the Design-Build Team receives the final estimate and the Design-Build Team has not filed a written claim, filed a written and verified claim, or has not initiated litigation against the Department related to the contract, the Department will instruct the Escrow Agent to release the sealed container to the Prime Contractor.

The Prime Contractor will be notified by certified letter from the Escrow Agent that the bid documentation will be released to the Prime Contractor. The Prime Contractor or his representative shall retrieve the bid documentation from the Escrow Agent within 30 days of the receipt of the certified letter. If the Prime Contractor does not receive the documents within 30 days of the receipt of the certified letter, the Department will contact the Prime Contractor to determine final dispersion of the bid documentation.

Payment

The cost of the escrow will be borne by the Department. There will be no separate payment for all costs of compilation of the data, container, or verification of the bid documentation. Payment at the various contract unit or lump sum prices in the contract will be full compensation for all such costs.

TWELVE MONTH GUARANTEE

(7-15-03) DB1 G145

(A) The Design-Build Team shall guarantee materials and workmanship against latent and patent defects arising from faulty materials, faulty workmanship or negligence for a period of twelve months following the date of final acceptance of the work for maintenance and shall replace such defective materials and workmanship without cost to the Department. The Design-Build Team will not be responsible for damage due to normal wear and tear, for negligence on the part of the Department, and / or for use in excess of the design.

(B) Where items of equipment or material carry a manufacturer's guarantee for any period in excess of twelve months, then the manufacturer's guarantee shall apply for that particular piece of equipment or material. The Department's first remedy shall be through the manufacturer although the Design-Build Team shall be responsible for invoking the warranted repair work with the manufacturer. The Design-Build Team's responsibility shall be limited to the term of the manufacturer's guarantee. NCDOT would be afforded the same warranty as provided by the Manufacturer.

This guarantee provision shall be invoked only for major components of work in which the Design-Build Team would be wholly responsible for under the terms of the contract. Examples include pavement structures, bridge components and sign structures. This provision will not be used as a mechanism to force the Design-Build Team to return to the project to make repairs or perform additional work that the Department would normally compensate the Design-Build Team for. In addition, routine maintenance activities (i.e. mowing grass, debris removal, ruts in earth shoulders, etc.) are not parts of this guarantee.

Appropriate provisions of the payment and / or performance bonds shall cover this guarantee for the project. In addition, failure on the part of the responsible entity(ies) of the Design-Build Team to perform guarantee work within the terms of this provision shall be just cause to remove the responsible entity(ies) from the Department's corresponding prequalified list. The Design-Build Team shall be removed for a minimum of six months and will be reinstated only after all work has been corrected and the Design-Build Team requests reinstatement in writing.

To ensure uniform application statewide the Division Engineer will forward details regarding the circumstances surrounding any proposed guarantee repairs to the Chief Engineer for review and approval prior to the work being performed.

PERMANENT VEGETATION ESTABLISHMENT

(6-11-15) (Rev. 8-30-17) 104 DB01 G160

Establish permanent vegetation stands of the Long Term Stabilization mixtures identified in the Erosion and Sedimentation Control Scope of Work found elsewhere in this RFP. During the period between initial vegetation planting and final project acceptance, perform all work necessary to establish 80% coverage of permanent vegetation within the project limits, as well as, in borrow and waste pits. This work shall include erosion control device maintenance and installation, repair seeding and mulching, supplemental seeding and mulching, mowing, and

fertilizer topdressing, as directed. All work shall be performed in accordance with the Erosion and Sedimentation Control Scope of Work found elsewhere in this RFP and the applicable sections of the 2018 *Standard Specifications for Roads and Structures*.

Once the Engineer has determined that 80% coverage of permanent vegetation has been established, the Design-Build Team will be notified to remove the remaining erosion control devices that are no longer needed. The Design-Build Team shall be responsible for, and shall correct, any areas disturbed by operations performed in permanent vegetation establishment and the removal of temporary erosion control measures, whether occurring prior to or after placing traffic on the project.

EROSION & SEDIMENT CONTROL / STORMWATER CERTIFICATION

(1-16-07) (Rev. 9-20-16) 105-16, 225-2, 16 DB1 G180

General

Schedule and conduct construction activities in a manner that will minimize soil erosion and the resulting sedimentation and turbidity of surface waters. Comply with the requirements herein regardless of whether or not a National Pollutant Discharge Elimination System (NPDES) permit for the work is required.

Establish a chain of responsibility for operations and subcontractors' operations to ensure that the *Erosion and Sediment Control / Stormwater Pollution Prevention Plan* is implemented and maintained over the life of the contract.

(A) *Certified Supervisor* - Provide a certified Erosion and Sediment Control / Stormwater (E&SC/SW) Supervisor to manage the Design-Build Team and subcontractor(s) operations, ensure compliance with Federal, State and Local ordinances and regulations, and manage the Quality Control Program.

(B) *Certified Foreman* - Provide a certified, trained foreman for each construction operation that increases the potential for soil erosion or the possible sedimentation and turbidity of surface waters.

(C) *Certified Installer* - Provide a certified installer to install or direct the installation for erosion or sediment / stormwater control practices.

(D) *Certified Designer* - Provide a certified designer for the design of the erosion and sediment control / stormwater component of reclamation plans and, if applicable, for the design of the project erosion and sediment control / stormwater plan.

Roles and Responsibilities

(A) *Certified Erosion and Sediment Control / Stormwater Supervisor* - The Certified Supervisor shall be Level II and shall be responsible for ensuring the erosion and sediment control / stormwater plan is adequately implemented and maintained on the project and for conducting the quality control program. The Certified Supervisor shall be

on the project within 24 hours notice from initial exposure of an erodible surface to the project's final acceptance. The Certified Supervisor shall perform the following duties:

(1) Manage Operations - Coordinate and schedule the work of subcontractors so that erosion and sediment control / stormwater measures are fully executed for each operation and in a timely manner over the duration of the contract.

(a) Oversee the work of subcontractors so that appropriate erosion and sediment control / stormwater preventive measures are conformed to at each stage of the work.
(b) Prepare the required National Pollutant Discharge Elimination System (NPDES) Inspection Record and submit to the Engineer.
(c) Attend all weekly or monthly construction meetings to discuss the findings of the NPDES inspection and other related issues.
(d) Implement the erosion and sediment control / stormwater site plans requested.
(e) Provide any needed erosion and sediment control / stormwater practices for the Design-Build Team's temporary work not shown on the plans, such as, but not limited to work platforms, temporary construction, pumping operations, plant and storage yards, and cofferdams.
(f) Acquire applicable permits and comply with requirements for borrow pits, dewatering, and any temporary work conducted by the Design-Build Team in jurisdictional areas.
(g) Conduct all erosion and sediment control / stormwater work in a timely and workmanlike manner.
(h) Fully perform and install erosion and sediment control / stormwater work prior to any suspension of the work.
(i) Coordinate with Department, Federal, State and Local Regulatory agencies on resolution of erosion and sediment control / stormwater issues due to the Design-Build Team's operations.
(j) Ensure that proper cleanup occurs from vehicle tracking on paved surfaces and / or any location where sediment leaves the right of way.
(k) Have available a set of erosion and sediment control / stormwater plans that are initialed and include the installation date of Best Management Practices. These practices shall include temporary and permanent groundcover and be properly updated to reflect necessary plan and field changes for use and review by Department personnel, as well as regulatory agencies.

(2) Requirements set forth under the NPDES Permit – The Department's NPDES Stormwater Permit (NCS000250) outlines certain objectives and management measures pertaining to construction activities. The permit references *NCG010000, General Permit to Discharge Stormwater* under the NPDES, and states that the Department shall incorporate the applicable requirements into its delegated Erosion and Sediment Control Program for construction activities disturbing one or more acres of land. The Department further incorporates these requirements on

all contracted bridge and culvert work at jurisdictional waters, regardless of size. Some of the requirements shall be, but are not limited to:

(a) Control project site waste to prevent contamination of surface or ground waters of the state, e.g. from equipment operations / maintenance construction materials, concrete washout, chemicals, litter, fuels, lubricants, coolants, hydraulic fluids, any other petroleum products, and sanitary waste.

(b) Inspect erosion and sediment control / stormwater devices and stormwater discharge outfalls at least once every 7 calendar days, and within 24 hours after a rainfall event of 0.5 inch, or greater, that occurs within a 24-hour period. At the discretion of Division of Water Resources personnel, additional monitoring may be required if the receiving stream is 303(d) listed for turbidity and the project has had documented problems managing turbidity.

(c) Maintain an onsite rain gauge or use the Department's Multi-Sensor Precipitation Estimate website to maintain a daily record of rainfall amounts and dates.

(d) Maintain erosion and sediment control / stormwater inspection records for review by Department and Regulatory personnel upon request.

(e) Implement approved reclamation plans on all borrow pits, waste sites and staging areas.

(f) Maintain a log of turbidity test results as outlined in the Department's Procedure for Monitoring Borrow Pit Discharge.

(g) Provide secondary containment for bulk storage of liquid materials.

(h) Provide training for employees concerning general erosion and sediment control / stormwater awareness, the Department's NPDES Stormwater Permit NCS000250 requirements, and the applicable requirements of the *General Permit, NCG010000*.

(i) Report violations of the NPDES Permit to the Engineer immediately who will notify the NC Department of Environmental Quality Regional Office within 24 hours of becoming aware of the violation.

(3) Quality Control Program - Maintain a quality control program to control erosion, prevent sedimentation and follow provisions / conditions of permits. The quality control program shall:

(a) Follow permit requirements related to the Design-Build Team and subcontractors' construction activities.

(b) Ensure that all operators and / or subcontractor(s) on site have the proper erosion and sediment control / stormwater certification.

(c) Notify the Engineer when the required certified erosion and sediment control / stormwater personnel are not available on the job site when needed.

(d) Conduct the inspections required by the NPDES Permit.

(e) Take corrective actions in the proper timeframe as required by the NPDES Permit for problem areas identified during the NPDES inspections.

(f) Incorporate erosion control into the work in a timely manner and stabilize disturbed areas with mulch / seed or vegetative cover on a section-by-section basis.

(g) Use flocculants approved by state regulatory authorities where appropriate and where required for turbidity and sedimentation reduction.

(h) Ensure proper installation and maintenance of temporary erosion and sediment control devices.

(i) Remove temporary erosion or sediment control devices when they are no longer necessary as agreed upon by the Engineer.

(j) The Design-Build Team's quality control and inspection procedures shall be subject to review by the Engineer. Maintain NPDES inspection records and make records available at all times for verification by the Engineer.

(B) *Certified Foreman* - At least one Certified Foreman shall be onsite for each type of work listed herein during the respective construction activities to control erosion, prevent sedimentation and follow permit provisions:

(1) Foreman in charge of grading activities
(2) Foreman in charge of bridge or culvert construction over jurisdictional areas
(3) Foreman in charge of utility activities

The Design-Build Team may request to use the same person as the Level II Supervisor and Level II Foreman. This person shall be onsite whenever construction activities as described above are taking place. This request shall be approved by the Engineer prior to work beginning.

The Design-Build Team may request to name a single Level II Foreman to oversee multiple construction activities on small bridge or culvert replacement projects. This request shall be approved by the Engineer prior to work beginning.

(C) *Certified Installers* - Provide at least one onsite, Level I Certified Installer for each of the following erosion and sediment control / stormwater crew:

(1) Seeding and Mulching
(2) Temporary Seeding
(3) Temporary Mulching
(4) Sodding
(5) Silt fence or other perimeter erosion / sediment control device installations
(6) Erosion control blanket installation
(7) Hydraulic tackifier installation
(8) Turbidity curtain installation
(9) Rock ditch check / sediment dam installation
(10) Ditch liner / matting installation
(11) Inlet protection

(12) Riprap placement
(13) Stormwater BMP installations (such as but not limited to level spreaders, retention / detention devices)
(14) Pipe installations within jurisdictional areas

If a Level I *Certified Installer* is not onsite, the Design-Build Team may substitute a Level II Foreman for a Level I Installer, provided the Level II Foreman is not tasked to another crew requiring Level II Foreman oversight.

(D) *Certified Designer* - Include the certification number of the Level III-B Certified Designer on the erosion and sediment control / stormwater component of all reclamation plans and if applicable, the certification number of the Level III-A Certified Designer on the design of the project erosion and sediment control / stormwater plan.

Preconstruction Meeting

Furnish the names of the *Certified Erosion and Sediment Control / Stormwater Supervisor, Certified Foremen, Certified Installers and Certified Designers* and notify the Engineer, in writing, of changes in certified personnel over the life of the contract within two days of change.

Ethical Responsibility

Any company performing work for the North Carolina Department of Transportation has the ethical responsibility to fully disclose any reprimand or dismissal of an employee resulting from improper testing or falsification of records.

Revocation or Suspension of Certification

Upon recommendation of the Chief Engineer to the certification entity, certification for Supervisor, Certified Foremen, Certified Installers and Certified Designer may be revoked or suspended with the issuance of an Immediate Corrective Action (ICA), Notice of Violation (NOV), or Cease and Desist Order for erosion and sediment control / stormwater related issues.

The Chief Engineer may recommend suspension or permanent revocation of certification due to the following:

(A) Failure to adequately perform the duties as defined within this certification provision
(B) Issuance of an ICA, NOV, or Cease and Desist Order
(C) Failure to fully perform environmental commitments as detailed within the permit conditions and specifications
(D) Demonstration of erroneous documentation or reporting techniques
(E) Cheating or copying another candidate's work on an examination
(F) Intentional falsification of records

(G) Directing a subordinate under direct or indirect supervision to perform any of the above actions
(H) Dismissal from a company for any of the above reasons
(I) Suspension or revocation of one's certification by another entity

Suspension or revocation of a certification will be sent by certified mail to the certificant and the Corporate Head of the company that employs the certificant.

A certificant has the right to appeal any adverse action which results in suspension or permanent revocation of certification by responding, in writing, to the Chief Engineer within ten calendar days after receiving notice of the proposed adverse action.

Chief Engineer
1536 Mail Service Center
Raleigh, NC 27699-1536

Failure to appeal within ten calendar days shall result in the proposed adverse action becoming effective on the date specified on the certified notice. Failure to appeal within the time specified shall result in a waiver of all future appeal rights regarding the adverse action taken. The certificant will not be allowed to perform duties associated with the certification during the appeal process. The Chief Engineer will hear the appeal and make a decision within seven days of hearing the appeal. The decision of the Chief Engineer shall be final and will be made in writing to the certificant.

If a certification is temporarily suspended, the certificant shall pass any applicable written examination and any proficiency examination, at the conclusion of the specified suspension period, prior to having the certification reinstated.

Measurement and Payment

Certified Erosion and Sediment Control / Stormwater Supervisor, Certified Foremen, Certified Installers and *Certified Designer* will be incidental to the project for which no direct compensation will be made.

PROCEDURE FOR MONITORING BORROW PIT DISCHARGE

(1-22-13) (Rev. 9-7-17) DB1 G181

Water discharge from borrow pit sites shall not cause surface waters to exceed 50 NTUs (nephelometric turbidity unit) in streams not designated as trout waters and 10 NTUs in streams, lakes or reservoirs designated as trout waters. For lakes and reservoirs not designated as trout waters, the turbidity shall not exceed 25 NTUs. If the turbidity exceeds these levels due to natural background conditions, the existing turbidity level shall not be increased.

If during any operating day, the downstream water quality exceeds the standard, the Design-Build Team shall do all of the following:

(A) Either cease discharge or modify the discharge volume or turbidity levels to bring the downstream turbidity levels into compliance, or

(B) Evaluate the upstream conditions to determine if the exceedance of the standard is due to natural background conditions. If the background turbidity measurements exceed the standard, operation of the pit and discharge can continue as long as the stream turbidity levels are not increased due to the discharge.

(C) Measure and record the turbidity test results (time, date and sampler) at all defined sampling locations 30 minutes after startup and at a minimum, one additional sampling of all sampling locations during that 24-hour period in which the borrow pit is discharging.

(D) Notify DWR within 24 hours of any stream turbidity standard exceedances that are not brought into compliance.

During the Environmental Assessment required by Article 230-4 of the 2018 *Standard Specifications for Roads and Structures*, the Design-Build Team shall define the point at which the discharge enters into the State's surface waters and the appropriate sampling locations. Sampling locations shall include points upstream and downstream from the point at which the discharge enters these waters. Upstream sampling location shall be located so that it is not influenced by backwater conditions and represents natural background conditions. Downstream sampling location shall be located at the point where complete mixing of the discharge and receiving water has occurred.

The discharge shall be closely monitored when water from the dewatering activities is introduced into jurisdictional wetlands. Any time visible sedimentation (deposition of sediment) on the wetland surface is observed, the dewatering activity will be suspended until turbidity levels in the stilling basin can be reduced to a level where sediment deposition does not occur. Staining of wetland surfaces from suspended clay particles, occurring after evaporation or infiltration, does not constitute sedimentation. No activities shall occur in wetlands that adversely affect the functioning of a wetland. Visible sedimentation will be considered an indication of possible adverse impacts on wetland use.

The Engineer will perform independent turbidity tests on a random basis. These results will be maintained in a log within the project records. Records will include, at a minimum, turbidity test results, time, date and name of sampler. Should the Department's test results exceed those of the Design-Build Team's test results, an immediate test shall be performed jointly with the results superseding the previous test results of both the Department and the Design-Build Team.

To plan, design, construct, and maintain BMPs to address water quality standards, the Design-Build Team shall use the NCDOT *Turbidity Reduction Options for Borrow Pits Matrix,* available at the website noted below:

https://connect.ncdot.gov/resources/roadside/FieldOperationsDocuments/TurbidityReductionOptionSheet.pdf

Tier I Methods include stilling basins which are standard compensatory BMPs. Other Tier I methods are noncompensatory and shall be used when needed to meet the stream turbidity standards. Tier II Methods are also noncompensatory and are options that may be needed for protection of rare or unique resources or where special environmental conditions exist at the site which have led to additional requirements being placed in the DWR's 401 Certifications and approval letters, Isolated Wetland Permits, Riparian Buffer Authorization or a DOT Reclamation Plan's Environmental Assessment for the specific site. Should the Design-Build Team exhaust all Tier I Methods on a site exclusive of rare or unique resources or special environmental conditions, Tier II Methods may be required by regulators on a case by case basis per supplemental agreement.

The Design-Build Team may use cation exchange capacity (CEC) values from proposed site borings to plan and develop the Price Proposal for the project. CEC values exceeding 15 milliequivalents per 100 grams of soil may indicate a high potential for turbidity and should be avoided when dewatering into surface water is proposed.

No additional compensation for monitoring borrow pit discharge will be paid.

CLEARING AND GRUBBING

(9-1-11)(Rev. 8-18-15) DB2 R01

With the exception of areas with Permanent Utility Easements, perform clearing on this project to the limits established by Method "III" shown on Roadway Standard Drawing No. 200.03. In areas with Permanent Utility Easements, clearing shall extend to the right of way limits.

BURNING RESTRICTIONS

(7-1-95) DB2 R05

Open burning shall not be permitted on any portion of the right of way limits established for this project. The Design-Build Team shall not burn the clearing, grubbing or demolition debris designated for disposal and generated from the project at locations within the project limits, off the project limits or at any waste or borrow sites in Cumberland County. The Design-Build Team shall dispose of the clearing, grubbing and demolition debris by means other than burning and in accordance with state and local rules and regulations.

BUILDING AND APPURTENANCE REMOVAL / DEMOLITION

(9-1-11) (Rev. 9-7-17) DB2 R12A

The Department will seal all wells and remove all the buildings and appurtenances on the I-5877 project. For the I-5986A project, the following shall be adhered to:

- Unless otherwise as agreed upon by the Department, seal all wells and remove or demolish all buildings and appurtenances, in their entirety, that are located either partially or completely within the project's right of way limits or are located outside the project's

right of way limits but within property purchased as an uneconomical remnant in accordance with Sections 205, 210 and 215 of the 2018 *Standard Specifications for Roads and Structures.*

- Once the Design-Build Team has acquired a parcel and all buildings and appurtenances have been vacated, the Design-Build Team shall immediately notify the Division Right of Way Agent in writing. Upon receipt of the written notification, the Department then requires 60 days to assess and remove any asbestos prior to the Design-Build Team demolishing any building or appurtenance.

MANUFACTURED QUARRY FINES IN EMBANKMENTS

(11-30-16) (Rev. 9-7-17) 235 DB02 R72

Description

This specification addresses the use of manufactured quarry fines that are not classified as select materials. The specification allows the Design-Build Team an option, with the approval of the Engineer, to use manufactured quarry fines (MQFs) in embankments as a substitute for conventional borrow material. Furnish and place geotextile for pavement stabilization in accordance with the *Geotextile for Pavement Stabilization* Project Special Provision found elsewhere in this RFP and the detail developed by the Design-Build Team. Geotextile for pavement stabilization shall be required to prevent pavement cracking and provide separation between the subgrade and pavement section at embankment locations where manufactured quarry fines are utilized and as directed by the Engineer.

Manufactured Quarry Fines (MQF)

Site specific approval of MQFs material shall be required prior to beginning construction as detailed in the preconstruction requirements of this provision.

The following MQFs are unacceptable:

(A) Frozen material
(B) Material with a maximum dry unit weight of less than 90 pounds per cubic foot when tested in accordance with AASHTO T-99 Method A or C
(C) Material with greater than 80% by weight Passing the #200 sieve

Collect and transport MQFs in a manner that will prevent nuisances and hazards to public health and safety. Moisture condition the MQFs as needed and transport in covered trucks to prevent dusting. If MQFs are blended with natural earth material, follow Borrow Criteria in Section 1018 of the 2018 NCDOT *Standard Specifications for Roads and Structures.*

Geotextiles

In embankment areas where MQFs are incorporated, Geotextile for Pavement Stabilization shall be used. The Geotextile for Pavement Stabilization shall adhere to all requirements of the *Geotextile for Pavement Stabilization* Project Special Provision found elsewhere in this RFP.

Preconstruction Requirements

When MQFs are to be used as a substitute for earth borrow material, request written approval from the Engineer at least ninety (90) days in advance of the intent to use MQFs and include the following details:

(A) Description, purpose and location of project
(B) Estimated start and completion dates of project
(C) Estimated volume of MQFs to be used on project with specific locations and construction details of the placement
(D) The names, addresses and contact information for the generator of the MQFs
(E) Physical location of the site at which the MQFs were generated

The Engineer will forward this information to the State Materials Engineer for review and material approval prior to incorporation.

Construction Methods

Place MQFs in the core of the embankment section with at least four feet of earth cover to the outside limits of the embankments or subgrade.

Construct embankments by placing MQFs in level uniform lifts with no more than a lift of ten inches and compacted to at least a density of 95 percent as determined by test methods in AASHTO T-99, Determination of Maximum Dry Density and Optimum Moisture Content, Method A or C depending upon particle size of the product. Provide a moisture content at the time of compaction of within 4.0 percent of optimum but not greater than one percent above optimum as determined by AASHTO T-99, Method A or C.

DRAINAGE PIPE
(9-1-11) DB3 R36

Description

Where shown in the plans, the Design-Build Team shall use Reinforced Concrete Pipe, Corrugated Aluminum Alloy Pipe, Aluminized Corrugated Steel Pipe, Corrugated Polyethylene Pipe (HDPE Pipe) or Polyvinyl-Chloride Pipe (PVC Pipe) in accordance with the following requirements:

- All pipe types shall be subject to the maximum and minimum fill height requirements as found on Roadway Standard Drawing No. 300.01 - Sheet 3 of 3. The appropriate Reinforced Concrete Pipe class and the appropriate gage thickness for Corrugated Aluminum Alloy Pipe and Aluminized Corrugated Steel Pipe shall be selected based on fill height.

- Site specific conditions may limit a particular material beyond what is identified in this Project Special Provision. These conditions include, but are not limited to, abrasion,

environmental, soil resistivity and pH, high ground water and special loading conditions. The Design-Build Team shall determine if additional restrictions are necessary.

- Slope drains shall be Corrugated Aluminum Alloy Pipe, Aluminized Corrugated Steel Pipe, Corrugated Polyethylene Pipe (HDPE Pipe) or Polyvinyl-Chloride Pipe (PVC Pipe).

- Transverse median drains, storm drainage system pipes, and open-ended cross drains shall be Reinforced Concrete Pipe unless the pipe slope is greater than 10%, in which case the pipe shall be either Corrugated Aluminum Alloy Pipe or Aluminized Corrugated Steel Pipe.

CEMENT TREATED BASE COURSE

(7-22-13) (Rev. 9-8-17) DB5 R21A

General

The Design-Build Team shall be responsible for the following:

1. Performing all laboratory tests in a laboratory certified by the AMRL / NCDOT Laboratory Proficiency Program
2. Sampling Aggregate
3. Conducting Laboratory tests to determine:
    a. Job Mix Formula
    b. Quantity of cement required to achieve specified strengths
4. Designating areas to be stabilized by cement treated base course and the required rates of application
5. Conducting field tests to determine unconfined compressive strength

Sampling Aggregate

Aggregate shall be sampled from the proposed aggregate pile at the quarry. An AASHTO classification test with unit weight and optimum moisture determination shall be completed on the sample. The aggregate shall meet the Acceptance Criteria in Column B of Table 1010-4 of the NCDOT Aggregate Sampling Manual.

Job Mix Formula

A job mix formula shall be established for the accepted aggregate three weeks prior to proposed production. During production, the aggregate shall meet the tolerances specified in Table 540-1 of the 2018 *Standard Specifications for Roads and Structures*.

Determine Required Portland Cement Rate

The quantity of Portland cement required shall be 3.0 - 4.0 percent by weight of the aggregate. Mix 3.5% and 4.0% Portland cement, aggregate and water at 1.5% over optimum and cure for

seven days. Select rate of cement that provides a minimum and maximum unconfined compressive strength of 500 psi and 800 psi at seven days, respectively.

Submittals for Review and Approval Prior to Construction

The Design-Build Team shall adhere to the following submittal guidelines:

- Submit all laboratory test results for review and approval
- Submit a sketch in plan view showing areas of the project to be stabilized by Cement Treated Base Course and application rates
- Submit any other documentation that supports the Design-Build Team's recommendations

Construction of Cement Treated Base Course

The Design-Build Team shall construct the Cement Treated Base Course as specified in Section 540 of the North Carolina Department of Transportation 2018 *Standard Specifications for Roads and Structures* except that Articles 540-5, 540-7 and 540-13 do not apply.

Unconfined Compressive Strength

For Cement Treated Base Course, the Design-Build Team shall make field specimens, cure them for seven days and test them in the laboratory. The minimum and maximum acceptable unconfined compressive strength for soil cement shall be 450 psi and 850 psi, respectively. One test shall be required for every 400 feet per lane width at random locations selected using random number tables.

Submittals for Review During Construction

The Design-Build Team shall submit the unconfined compressive strength test results for review and acceptance.

PRICE ADJUSTMENTS FOR ASPHALT BINDER

(9-1-11) (Rev. 9-8-17) DB6 R25

Price adjustments for asphalt binder for plant mix will be made in accordance with Section 620 of the 2018 *Standard Specifications for Roads and Structures.*

The base price index for asphalt binder for plant mix is **$532.92** per ton.

This base price index represents an average of F.O.B. selling prices of asphalt binder at supplier's terminals on July 1, 2019.

PRICE ADJUSTMENTS - ASPHALT CONCRETE PLANT MIX

(9-1-11) (Rev. 9-8-17) DB6 R26

Revise the 2018 *Standard Specifications for Roads and Structures* as follows:

Page 6-15, Article 609-11 and Page 6-31, Article 610-14

Add the following paragraph before the first paragraph:

The "Asphalt Price" used to calculate any price adjustments set forth in this section shall be $40.00 per theoretical ton. This price shall apply for all mix types.

** **NOTE** ** Deleted *Field Office* Project Special Provision

DYNAMIC MESSAGE SIGN (DMS)

(2-7-17) DB 08-04

General Requirements

DMSs used on the State Highway System shall be preapproved on the current NCDOT ITS & Signals 2018 Qualified Products List (QPL) by the date of installation. DMSs not preapproved will not be allowed for use on the project. To ensure compatibility with the existing DMS Control Software deployed in the State, furnish NTCIP compliant DMSs that are fully compatible with Daktronics, Inc. Vanguard Version 4 software (also referred to hereinafter as the "Control Software"). The QPL is available on the Department's website. The QPL website is:

https://connect.ncdot.gov/resources/safety/Pages/ITS-and-Signals-Qualified-Products.aspx

DMS Requirements

Furnish and install DMSs compliant with UL standards 48, 50, and 879.

Add and configure the new DMSs in the system using the Control Software and computer system. Furnish, install, test, integrate and make fully operational the new DMSs at locations shown in the plans.

Furnish operating DMS systems consisting of, but not limited to, the following:

- Full Matrix, 27 pixel high and 90 pixels wide LED DMS with 18" border
- DMS mounting hardware
- DMS controllers, Uninterruptible Power Supplies (UPS), cabinets and accessories with interconnect and power cabling and conduit
- Branch circuit conductors and related equipment
- All other equipment and incidentals required for furnishing, installing, and testing the DMS system and system components

Use only UL listed and approved electronic and electrical components in the DMS system.

MATERIALS

A. Environmental Requirements

Construct the DMS and DMS controller-cabinet so the equipment within shall be protected against moisture, dust, corrosion, and vandalism.

Design the DMS system to comply with the requirements of Section 2.1 (Environmental and Operating Standards) of NEMA TS 4-2005.

B. Full Matrix LED Dynamic Message Sign (DMS)

Construct the DMS to display at least three lines of text that, when installed, are clearly visible and legible to a person with 20/20 corrected vision from a distance of 900 feet in advance of the DMS at an eye height of 3.5 feet along the axis.

When displaying three lines, each line must display at least 15 equally spaced and equally sized alphanumeric individual characters. Each character must be at least 18 inches in height and composed from a luminous dot matrix. The entire LED matrix shall be at the minimum 27 pixels high and 90 pixels wide.

1. DMS Enclosure

The DMS enclosure construction shall comply with the requirements of Section 3 (Sign Mechanical Construction) of NEMA TS 4-2005 as it applies to Walk-in enclosures. The following requirements complement TS 4-2005:

- Construct the DMS with a metal walk-in enclosure excluding the face. Provide an aluminum walking platform inside the enclosure that is at least 28 inches wide. Ensure the width of the walking platform is free of obstructions to a height of seven feet. Construct the enclosure of welded aluminum type 6061-T6, 5052-H38, 5052-H34, or of an Engineer approved alternate at least 1/8-inch thick. Perform all welding of aluminum and aluminum alloys in accordance with the latest edition of AWS D1.2, Structural Welding Code - Aluminum. Continuously weld the seams using Gas Metal Arc Welding (GMAW).

- Provide all exterior and interior DMS enclosure surfaces with natural, mill-finish aluminum. Remove all grind marks and discoloration from the surfaces.

- Provide corrosion resistant nuts, bolts, washers, and other mounting and bonding parts and components used on the exterior of the DMS enclosure and ensure they are sealed against water intrusion.

- Provide one key lockable, hinged, gasket-sealed inspection door for service and maintenance along each side of the enclosure. Install one appropriately sized fire extinguisher within 12 inches of each

maintenance door. Equip the DMS enclosure with internal fluorescent lighting controlled by timers installed close to each inspection door. Make certain no light emitted from the fluorescent tubes or any other light source inside the enclosure not comprising the display is leaked to the outside of the enclosure. Equip the door with a door-hold-open device. Install GFCI duplex utility receptacles every six feet along the width of the DMS in convenient locations for powered service tools.

- Do not place a manufacturer name, logo, or other information on the front face of the DMS or shield visible to the motorist.

- Provide power supply monitoring circuitry to detect power failure in the DMS and to automatically report this fault to the Control Software. This requirement shall be in addition to reporting power failure at the controller cabinet.

- Do not paint the stainless-steel bolts on the Z-bar assembly used for mounting the enclosure.

2. DMS Interior Environment Control

Design the local field controller to monitor and control the interior DMS environment. Design environmental control to maintain the internal DMS temperature within +/- 10° F of the outdoor ambient temperature. Provide the DMS environmental control system with four primary subsystems as follows:

1. Internal Temperature Sensors - Provide the DMS with two internally mounted temperature sensors which are equipped with external thermocouples and which the Field Controller continuously monitors. Design the Field Controller to use this temperature information to determine when to activate and deactivate the environmental control systems described herein. Locate sensors on opposite ends of the upper 1/3 of the LED display matrix with their external thermocouples attached to and making contact with an LED pixel circuit board. Design the thermocouple and LED board to be easily detachable, in the event that one of the units requires removal and replacement. Provide sensors capable of measuring temperatures from -40° F to +185° F. Design the Field Controller to automatically shut down the LED display whenever one or both sensors indicate that LED board temperature has exceeded +140° F, and to automatically restart the LED display whenever the suspect temperature falls below +130° F. Design both shutdown and re-start temperature thresholds to be user-programmable. Design the field controller to report sensor temperatures and DMS shutdown / re-start events to the DMS Control Software.

2. Housing Cooling System - Provide the DMS housing with a cooling system that circulates outside air into the DMS housing whenever the LED board temperature exceeds a user-programmable threshold. Provide this system

with enough ventilation fans to exchange the internal DMS housing air volume at a minimum rate of two times per minute. Provide steel ball-bearing type fans. Mount fans in a line across the upper rear wall of the DMS housing to direct air out of the cabinet. Provide one filtered air intake port for each exhaust fan. Locate intake ports in a line across the lower rear wall of the DMS housing. Provide intake ports with a removable filter that will remove airborne particles measuring 500 microns in diameter and larger. Provide a filter that is of a size and style that is commercially readily available. Program the field controller to activate the DMS housing cooling system whenever the LED board temperature exceeds +90° F and to turn the cooling system off whenever LED board temperature falls below +85° F. On the DMS housing rear exterior wall, cover all air intake and exhaust ports on their top, front, and sides by an aluminum shroud fabricated from 0.090-inch aluminum sheeting. Taper the shrouds at the top. Securely fasten shrouds to the DMS housing and provide gaskets at the interface to prevent water from entering the DMS. Design all air filters and fans to be removable from inside the DMS housing. Provide the DMS housing cooling system with an adjustable timer that will turn fans off after the set time has expired. Provide a timer that is adjustable to at least four hours, and locate it just inside the DMS housing door, within easy reach of a maintenance technician standing outside the DMS doorway.

3. LED Display Cooling System - Provide the DMS with an LED display cooling system which directs air across the LED display modules whenever LED board temperature exceeds a user-programmable threshold. Direct fan-forced air vertically across the backside of the entire LED display matrix using multiple ball-bearing fans. Program the field controller to activate the LED cooling fan system whenever LED board temperature exceeds +90° F and to deactivate the system whenever LED board temperature falls to +85° F. Locate cooling fans so as not to hinder removal of LED display modules and driver boards.

4. Front Face Panel Defog / Defrost System - Provide the DMS with a defog / defrost system which circulates warm, fan-forced air across the inside of the polycarbonate front face whenever LED board temperature falls below a user-programmable threshold. Provide multiple steel ball-bearing fans that provide uniform airflow across the face panel. Program the field controller to activate the defog / defrost system whenever LED board temperature falls below +40° F and to deactivate the defog / defrost system whenever LED board temperature exceeds +106° F. Mount a 100-watt pencil-style heating element in front of each defog / defrost fan to warm the air directed across the DMS face. Design heating elements to be on only when the defog / defrost fans are on.

Install additional fans and / or heaters as needed to maintain the temperature inside the DMS enclosure within the operating temperature range of the

equipment within the DMS enclosure as recommended by the equipment manufacturer(s).

3. Front Panel

Protect the DMS face with contiguous, weather-tight, removable panels. These panels shall be a polycarbonate material that are ultraviolet protected, have an antireflection coating, and are a minimum of 1/8 - inch thick.

Furnish polycarbonate panels with the following characteristics:

- Tensile Strength, Ultimate: 10,000 PSI
- Tensile Strength, Yield: 9,300 PSI
- Tensile Strain at Break: 125%
- Tensile Modulus: 330,000 PSI
- Flexural Modulus: 330,000 PSI
- Impact Strength, Izod (1/8", notched): 17 ft-lbs/inch of notch
- Rockwell Hardness: M75, R118
- Heat Deflection Temperature Under Load: 264 PSI at 270° F and 66 PSI at 288° F
- Coefficient of Thermal Expansion: 3.9X10-5 in/in/F
- Specific Heat: 0.30 BTU/lb/F
- Initial Light Transmittance: 85% minimum
- Change in Light Transmittance, three years exposure in a Southern latitude: 3%
- Change in Yellowness Index, three years exposure in a Southern latitude: less than 5%

For substitutes, submit one 12" x 12" sample of the proposed material together with a description of the material attributes to the Engineer for review and approval. Install a .09" aluminum mask on the front of the panel (facing the motorists) that contains a circular opening for each LED pixel. Prime and coat the front side of the aluminum mask, which faces the viewing motorists, with automotive-grade flat black acrylic enamel paint or an approved equivalent. Guarantee all painted surfaces provide a minimum outdoor service life of 20 years.

Design the panels so they will not warp nor reduce the legibility of the characters. Differential expansion of the DMS housing and the front panel must not cause damage to any DMS component or allow openings for moisture or dust. Glare from sunlight, roadway lighting, commercial lighting, or vehicle headlights must not reduce the legibility or visibility of the DMS. Install the panels so that a maintenance person can easily remove or open them for cleaning.

4. Display Modules

Manufacture each display module with a standard number of pixels, not to exceed an array of 9 x 5, which can be easily removed. Assemble the modules onto the DMS assemblies contiguously to form a continuous matrix to display the required number of lines, characters, and character height.

Design display modules that are interchangeable and replaceable without using special tools. Provide plug-in type power and communication cables to connect to a display module.

Construct each display module as a rectangular array of 5 horizontal pixels by 7 to 9 vertical pixels. Provide the module with an equal vertical and horizontal pitch between pixels, and columns that are perpendicular to the rows (i.e., no slant). Design each module to display:

- All upper and lower case letters
- All punctuation marks
- All numerals 0 to 9
- Special user-created characters

Display upper-case letters and numerals over the complete height of the module. Optimize the LED grouping and mounting angle within a pixel for maximum readability.

Furnish two (2) spare display modules per each DMS installed for emergency restoration.

5. Discrete LEDs

Provide discrete LEDs with a nominal viewing cone of **30 degrees** with a half-power angle of 15 degrees measured from the longitudinal axis of the LED. Viewing cone tolerances shall be as specified in the LED manufacturer's product specifications and shall not exceed +/- 3 degrees half-power viewing angle of 30 degrees.

Provide LEDs that are untinted, non-diffused, high output solid state lamps utilizing indium gallium aluminum phosphide (InGaAlP) technology. Provide T1 ¾, 0.2 inch size LEDs that emit a true amber color at a wavelength of 590 ± 5 nm.

Provide LEDs with a MTBF (Mean Time Before Failure) of at least 100,000 hours of permanent use at an operating point of 140° F or below at a specific forward current of 20mA. Discrete LED failure is defined as the point at which the LED's luminous intensity has degraded to 50% or less of its original level.

Obtain the LEDs used in the display from a single LED manufacturer that have a single part number. Obtain them from batches sorted for luminous output, where the highest luminosity LED is not more than fifty percent more luminous than the lowest luminosity LED when the LEDs are driven at the same forward current. Do not use more than two successive and overlapping batches in the LED display. Document the procedure to be used to comply with this requirement as part of the material submittal.

Individually mount the LEDs on circuit boards that are at least 1/16" thick FR-4 fiberglass, flat black printed circuit board in a manner that promotes cooling. Protect all exposed metal on both sides of the LED pixel board (except the power connector) from water and humidity exposure by a thorough application of acrylic conformal coating. Design the boards so bench level repairs to individual pixels, including discrete LED replacement and conformal coating repair is possible.

Operate the LED display at a low internal DC voltage not to exceed 24 Volts.

Design the LED display operating range to be -20° F to +14° F at 95% relative humidity, non-condensing.

Supply the LED manufacturer's technical specification sheet with the material submittals.

6. LED Power Supplies

Power the LED Display by means of multiple regulated switching DC power supplies that operate from 120 volts AC input power and have an output of 48 volts DC or less. Wire the supplies in a redundant parallel configuration that uses multiple power supplies per display. Provide the supplies with current sharing capability that allows equal amounts of current to their portion of the LED display. Provide power supplies rated such that if one supply fails the remaining supplies will be able to operate their portion of the display under full load conditions (i.e. all pixels on at maximum brightness) and at a temperature of 140° F.

Provide power supplies to operate within a minimum input voltage range of +90 to +135 volts AC and within a temperature range of -22° F to 140° F. Power supply output at 140° F must not deteriorate to less than 65% of its specified output at 70° F. Provide power supplies that are overload protected by means of circuit breakers, that have an efficiency rating of at least 75%, a power factor rating of at least 0.95, and are UL listed. Provide all power supplies from the same manufacturer and with the same model number. Design the power driver circuitry to minimize power consumption.

Design the field controller to monitor the operational status (normal or failed) of each individual power supply and be able to display this information on the Client Computer screen.

7. LED Pixels

A pixel is defined as the smallest programmable portion of a display module that consists of a cluster of closely spaced discrete LEDs. Design each pixel to be a maximum of two inches in diameter.

Construct the pixels with two strings of LEDs. It is the manufacturer's responsibility to determine the number of LEDs in each string to produce the candela requirement as stated herein.

Ensure each pixel produces a luminous intensity of 40 Cd when driven with an LED drive current of 20 mA per string.

Power the LEDs in each pixel in strings. Use a redundant design so that the failure of an LED in one string does not affect the operation of any other string within the pixel. Provide the sign controller with the ability to detect the failure of any LED string and identify which LED string has failed. Submit a complete schematic of the LED power and driver circuits with the material submittals.

8. Character Display

Design display modules to be easily removable without the use of tools. Position cooling fans so they do not prevent removal of an LED pixel board or driver board.

Use continuous current to drive the LEDs at the maximum brightness level. Design the light levels to be adjustable for each DMS / controller so the Engineer may set levels to match the luminance requirements at each installation site.

Design the controller to automatically detect failed LED strings or drivers and initiate a report of the event to the Control Software. Design the controller to be able to read the internal temperature of the DMS enclosure and the ambient temperature outside the DMS enclosure and report these to the Control Software.

9. Display Capabilities

Design the DMS with at least the following message displays:

- Static display
- Flashing display with Dynamic flash rates
- At least two alternating Static and / or Flashing sequences (multi-page messages)

10. DMS Mini Controller

Furnish and install a mini controller inside the DMS that is interconnected with the main controller using a fiber optic cable, CAT-5 cable, or an approved alternate. The mini controller will enable a technician to perform all functions available from the main controller. Provide the mini controller with an LCD /

keypad interface. Size the LCD display screen to allow preview of an entire one-page message on one screen. Provide a 4 x 4 keypad.

Alternatively, install an EIA/TIA-232E port inside the DMS enclosure to enable a maintenance technician to communicate with the DMS main controller and obtain access to and perform all functions of the main controller using a laptop computer.

C. DMS Enclosure Structure Mounting

Mount the DMS enclosure and interconnect system securely to the support structures. Design the DMS enclosure supports to allow full access to the DMS enclosure inspection door.

Furnish and install U-bolt connections of hanger beams to overhead assembly truss chords with a double nut at each end of the U-bolt. Bring the double nuts tight against each other by the use of two wrenches.

Submit plans for the DMS enclosure, mounting description and calculations to the Engineer for approval. Have such calculations and drawings approved by a Professional Engineer registered in the state of North Carolina, and bear his signature, seal, and date of acceptance.

Provide removable lifting eyes or the equivalent on the DMS enclosure rated for its total weight to facilitate handling and mounting the DMS enclosure.

Design the DMS structure to conform to the applicable requirements of the 2013 AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals*, 6th Edition, including the latest interim specifications and the latest interim revisions, and the section titled "DMS Structure" of these Project Special Provisions.

D. DMS / DMS Controller Interconnect

Furnish and install all necessary cabling, conduit, and terminal blocks to connect the DMS and the DMS controller. Use approved manufacturer's specifications and the plans for cable and conduit types and sizes. Use fiber optic cable to interconnect sign and controller. Install fiber optic interconnect centers in the sign enclosure and cabinet to securely install and terminate the fiber optic cable. Submit material submittal cut sheets for the interconnect center.

E. DMS Controller and Cabinet

Furnish and install one DMS controller with accessories per DMS in a new equipment cabinet. Mount the controller cabinet on the DMS support structure. Install cabinet so that the height from the ground to the middle of the cabinet is four feet. Ensure a minimum of three-foot level working surface under each cabinet that provides maintenance technicians with a safe working environment.

Provide the DMS controller as a software oriented microprocessor and with resident software stored in non-volatile memory. The Control Software, controller and communications must comply with the NTCIP Standards identified in these Project Special Provisions. Provide sufficient non-volatile memory to allow storage of at least 500 multi-page messages and a test pattern program.

Furnish the controller cabinet with, but not limited to, the following:

- Power supply and distribution assembly
- Power line filtering hybrid surge protectors
- Radio Interference Suppressor
- Communications surge protection devices
- Industrial-Grade UPS system and local disconnect
- Microprocessor-based controller
- Display driver and control system (unless integral to the DMS)
- Serial interface port for local laptop computer
- Local user interface
- Interior lighting and duplex receptacle
- Adjustable shelves as required for components
- Temperature control system
- All interconnect harnesses, connectors, and terminal blocks
- All necessary installation and mounting hardware

Furnish the DMS controller and associated equipment completely housed in a NEMA 3R cabinet made from 5052 H32 sheet aluminum at least 1/8" thick. Use natural aluminum cabinets. Perform all welding of aluminum and aluminum alloys in accordance with the latest edition of AWS D1.2, Structural Welding Code - Aluminum. Continuously weld the seams using Gas Metal Arc Welding (GMAW).

Slant the cabinet roof away from the front of the cabinet to prevent water from collecting on it.

Do not place a manufacturer name, logo or other information on the faces of the controller cabinet visible to the motorist.

Provide cabinets capable of housing the components and sized to fit space requirement. Design the cabinet layout for ease of maintenance and operation, with all components easily accessible. Submit a cabinet layout plan for approval by the Engineer.

Locate louvered vents with filters in the cabinet to direct airflow over the controller and auxiliary equipment, and in a manner that prevents rain from entering the cabinet. Fit the inside of the cabinet, directly behind the vents, with a replaceable, standard size, commercially available air filter of sufficient size to cover the entire vented area.

Provide a torsionally rigid door with a continuous stainless-steel hinge on the side that permits complete access to the cabinet interior. Provide a gasket as a permanent and weather resistant seal at the cabinet door and at the edges of the fan / exhaust openings. Use a non-absorbent gasket material that will maintain its resiliency after long term exposure to the outdoor environment. Construct the doors so that they fit firmly and evenly against the gasket material when closed. Provide the cabinet door with louvered vents and air filters near the bottom as described in the paragraph above.

The cabinet shall contain a full-height standard EIA 19-inch rack. The rack shall be secured within the cabinet by mounts at the top and bottom.

The rack shall contain a minimum of one (1) pullout drawer. The drawer shall be suitable for storing manuals and small tools, such as screwdrivers. The drawer shall be able to latch in the out position to function as a laptop / utility shelf.

Provide a convenient location on the inside of the door to store the cabinet wiring diagrams and other related cabinet drawings. Provide a Corbin #2 main door lock made of non-ferrous or stainless-steel material. Key all locks on the project alike, and provide ten keys to the Engineer. In addition, design the handle to permit pad-locking.

Provide the interior of the cabinet with ample space for housing the controller and all associated equipment and wiring; use no more than 75% of the useable space in the cabinet. Provide ample space in the bottom of the cabinet for the entrance and exit of all power, communications, and grounding conductors and conduit.

Arrange the equipment so as to permit easy installation of the cabling through the conduit so that they will not interfere with the operation, inspection, or maintenance of the unit. Provide adjustable metal shelves, brackets, or other support for the controller unit and auxiliary equipment. Leave a three-inch minimum clearance from the bottom of the cabinet to all equipment, terminals, and bus bars.

Provide power supply monitoring circuitry to detect power failure and to automatically report the occurrence to the Control Software.

Install two 15-watt fluorescent light strips with shields, one in the top of the cabinet and the other under the bottom shelf. Design both lights to automatically turn on when the cabinet door is opened and turn off when the door closes.

Mount and wire a 120V (+10%) GFCI duplex receptacle of the three-wire grounding type in the cabinet in a location that presents no electrical hazard when used by service personnel for the operation of power tools and work lights.

No cabinet resident equipment shall utilize the GFCI receptacle. Furnish one spare non-GFCI receptacle for future equipment.

Mount a bug-proof and weatherproof thermostatically controlled fan and safety shield in the top of the cabinet. Size the fan to provide at least for two air exchanges per minute. Fuse the fan at 125% of the capacity of the motor. The magnetic field of the fan motor must not affect the performance of the control equipment. Use a fan thermostat that is manually adjustable to turn on between 80° F and 160° F with a differential of not more than 10° F between automatic turn-on and turn-off. Mount it in an easily accessible location, but not within six inches of the fan.

Install additional fans and / or heaters as needed to maintain the temperature inside the cabinet within the operating temperature range of the equipment within the cabinet as recommended by equipment manufacturer(s).

1. Wiring

The requirements stated herein apply wherever electrical wiring is needed for any DMS system assemblies and subassemblies such as controller cabinet, DMS enclosure, electrical panel boards and etc.

Neatly arrange and secure the wiring inside the cabinet. Where cable wires are clamped to the walls of the control cabinet, provide clamps made of nylon, metal, plastic with rubber or neoprene protectors, or similar. Lace and jacket all harnesses or tie them with nylon tie wraps spaced at six inches maximum to prevent separation of the individual conductors.

Individually and uniquely label all conductors. Ensure all conductor labels are clearly visible without moving the conductor. Connect all terminal conductors to the terminal strip in right angles. Remove excess conductor before termination of the conductor. Mold the conductor in such a fashion as to retain its relative position to the terminal strip if removed from the strip. Do not run a conductor across a work surface with the exception of connecting to that work surface. No conductor bundles can be support by fasteners that support work surfaces. Install all connectors, devices and conductors in accordance to manufactures guidelines. Comply with the latest NEC guideline in effect during installation. No conductor or conductor bundle may hang loose or create a snag hazard. Protect all conductors from damage. Ensure all solder joints are completed using industry accepted practices and will not fail due to vibration or movement. Protect lamps and control boards from damage.

No splicing will be allowed for feeder conductors and communication cables from the equipment cabinet to the DMS enclosure.

Insulate all conductors and live terminals so they are not hazardous to maintenance personnel.

Route and bundle all wiring containing line voltage AC and / or shield it from all low voltage control circuits. Install safety covers to prevent accidental contact with all live AC terminals located inside the cabinet.

Use industry standard, keyed-type connectors with a retaining feature for connections to the controller.

Label all equipment and equipment controls clearly.

Supply each cabinet with one complete set of wiring diagrams that identify the color-coding or wire tagging used in all connections. Furnish a water-resistant packet adequate for storing wiring diagrams, operating instructions, and maintenance manuals with each cabinet.

2. Power Supply and Circuit Protection

Design the DMS and controller for use on a system with a line voltage of 120V ± 10% at a frequency of 60 Hz ± 3 Hz. Under normal operation, do not allow the voltage drop between no load and full load of the DMS and its controller to exceed 3% of the nominal voltage.

Blackout, brownout, line noise, chronic over-voltage, sag, spike, surge, and transient effects are considered typical AC voltage defects. Protect the DMS system equipment so that these defects do not damage the DMS equipment or interrupt their operation. Equip all cabinets with devices to protect the equipment in the cabinet from damage due to lightning and external circuit power and current surges.

3. Circuit Breakers

Protect the DMS controller, accessories, and cabinet utilities with thermal magnetic circuit breakers. Provide the controller cabinet with a main circuit breaker sized according to the NEC. Use appropriately sized branch circuit breakers to protect the controller and accessories and for servicing DMS equipment and cabinet utilities.

4. Surge Suppressor

Install and clearly label filtering hybrid power line surge protectors on the load side of the branch circuit breakers in a manner that permits easy servicing. Ground and electrically bond the surge protector to the cabinet within two inches.

Provide power line surge protector that meets the following requirements:

Peak surge current occurrences	20 minimum
Peak surge current for an 8 x 20 microsecond wave-shape	50,000 amperes
Energy Absorption	> 500 Joules
Clamp voltage	240 volts
Response time	<1 nanosecond
Minimum current for filtered output	15 amperes for 120VAC *
Temperature range	-40° F to +158° F

*Capable of handling the continuous current to the equipment

5. Radio Interference Suppressor

Provide each controller cabinet with sufficient electrical and electronic noise suppression to enable all equipment in it to function properly. Provide one or more radio interference suppressors (RIS) connected between the stages of the power line surge suppressor that minimize interference generated in the cabinet in both the broadcast and the aircraft frequencies. Each RIS must provide a minimum attenuation of 50 decibels over a frequency range of 200 KHz to 75 MHz. Clearly label the suppressor(s) and size them at least at the rated current of the main circuit breaker but not less than 50 amperes.

Provide RIS that are hermetically sealed in a substantial metal case which is filled with a suitable insulating compound and have nickel-plated 10/24 brass stud terminals of sufficient external length to provide space to connect #8 AWG wires. Mount them so that the studs cannot be turned in the case. Properly insulate ungrounded terminals from each other, and maintain a surface linkage distance of not less than ¼" between any exposed current conductor and any other metallic parts. The terminals must have an insulation factor of 100-200 MΩ, dependent on external circuit conditions. Use RIS designed for 120 VAC ± 10%, 60Hz, and which meet the standards of UL and the Radio Manufacturers Association.

6. Communications Surge Protector

Equip the cabinet with properly labeled hybrid data line surge protectors that meet the following general requirements:

Surge current occurrences at 2000 ampere, 8 x 20 microsecond waveform	> 80
Surge current occurrences at 400 ampere, 10x700 microsecond waveform	> 80
Peak surge current for 8 x 20 microsecond waveform	10,000 A (2500 A/line)
Peak surge current for 10x700 microsecond waveform	500 A/line
Response time	< 1 nanosecond
Series resistance	< 15 Ω
Average capacitance	1500 pF
Temperature range	-10° F to 150° F
Clamp Voltage	As required to match equipment in application

7. Lightning Arrester

Protect the system with an UL-approved lightning arrester installed at the main service disconnect. It shall meet the following requirements:

Type of design	Silicon Oxide Varistor
Voltage	120 / 240 Single phase, 3 wires
Maximum current	100,000 amps
Maximum energy	3000 joules per pole
Maximum number of surges	Unlimited
Response time one milliamp test	5 nanoseconds
Response time to clamp 10,000 amps	10 nanoseconds
Response time to clamp 50,000 amps	25 nanoseconds
Leak current at double the rated voltage	None
Ground Wire	Separate

8. Uninterruptible Power Supply (UPS)

Provide the cabinet with an industrial grade power conditioning UPS unit to supply continuous power to operate the equipment connected to it if the primary power fails. The UPS must detect a power failure and provide backup power

within 20 milliseconds. Transition to the UPS source from primary power must not cause loss of data or damage to the equipment being supplied with backup power. Provide an UPS with at least three outlets for supplying conditioned AC voltage to the DMS controller. Provide a unit to meet the following requirements:

• Input Voltage Range:	120VAC +12%, -25%
• Power Rating:	1000 VA, 700 Watts
• Input Frequency:	45 to 65 Hz
• Input Current:	7.2A
• Output Voltage:	120VAC +/- 3%
• Output Frequency:	50/60 +/-1 Hz
• Output Current:	8.3A
• Output Crest Factor Ration:	@ 50% Load Up to 4.8:1
	@ 75% Load Up to 3.2:1
	@ 100% Load Up to 2.4:1
• Output THD:	3% Max. (Linear)
	5% Max. (Non-Linear)
• Output Overload:	110% for 10 min; 200% for 0.05 sec.
• Output Dynamic Response:	+/- 4% for 100% Step Load Change
	0.5 ms Recovery Time.
• Output Efficiency	@ 100% Load:90% (Normal Mode)
• Operating Temperature:	-40° F to +165° F
• Humidity:	0% to 95% Non-condensing
• Remote Monitoring Interface:	RS-232
• Protection:	Input/Output Short Circuit
	Input/Output Overload
	Excessive Battery Discharge
• Specifications:	UL1778, FCC Class A, IEEE 587

Provide the UPS unit capable of supplying 30 minutes of continuous backup power to the equipment connected to it when this equipment is operating at full load.

9. Controller Communications Interface

Provide the controller with the following interface ports:

- An EIA/TIA-232E port for remote communication using NTCIP
- An 10/100 Ethernet port for remote communication using NTCIP
- An EIA/TIA-232E port for onsite access using a laptop
- An EIA/TIA-232E auxiliary port for communication with a field device such as a UPS
- Fiber Optic ports for communication with the sign
- RJ45 ports for communication with the sign using CAT-5 cable
- RJ45 ports for communication with mini-controller located inside the sign enclosure

10. Controller Local User Interface

Provide the controller with a Local User Interface (LUI) for at least the following functions:

- On / Off Switch: controls power to the controller.
- Control Mode Switch: for setting the controller operation mode to either remote or local mode.
- LCD Display and Keypad: Allow user to navigate through the controller menu for configuration (display, communications parameter, etc.) running diagnostics, viewing peripherals status, message creation, message preview, message activation, and etc. Furnish a LCD display with a minimum size of 240 x 64 dots with LED back light.

11. Controller Address

Assign each DMS controller a unique address. Preface all commands from the Control Software with a particular DMS controller address. The DMS controller compares its address with the address transmitted; if the addresses match, then the controller processes the accompanying data.

12. Controller Functions

Design the DMS controller to continuously control and monitor the DMS independent of the Control Software. Design the controller to display a message on the sign sent by the Control Software, a message stored in the sign controller memory, or a message created on-site by an operator using the controller keypad.

Provide the DMS controller with a watchdog timer to detect controller failures and to reset the microprocessor, and with a battery backed-up clock to maintain an

accurate time and date reference. Set the clock through an external command from the Control Software or the Local User Interface.

13. DMS Controller Memory

Furnish each DMS controller with non-volatile memory. Use the non-volatile memory to store and reprogram at least one test pattern sequence and 500 messages containing a minimum of two pages of 45 characters per page. The Control Software can upload messages into and download messages from each controller's non-volatile memory remotely.

Messages uploaded and stored in the controller's non-volatile memory may be erased and edited using the Control Software and the controller. New messages may be uploaded to and stored in the controller's non-volatile memory using the Control Software and the controller.

F. Photo-Electric Sensors

Install three photoelectric sensors with ½-inch minimum diameter photosensitive lens inside the DMS enclosure. Use sensors that will operate normally despite continual exposure to direct sunlight. Place the sensors so they are accessible and field adjustable. Point one sensor north or bottom of the sign. Place the other two, one on the back wall and one on the front wall of the sign enclosure. Alternate designs maybe accepted, provided the sensor assemblies are accessible and serviceable from inside the sign enclosure.

Provide controls so that the Engineer can field adjust the following:

- The light level emitted by the pixels elements in each Light Level Mode.
- The ambient light level at which each Light Level Mode is activated.

G. Equipment List

Provide a general description of all equipment and all information necessary to describe the basic use or function of the major system components. Include a general "block diagram" presentation. Include tabular charts listing auxiliary equipment, if any is required. Include the nomenclature, physical and electrical characteristics, and functions of the auxiliary equipment unless such information is contained in an associated manual; in this case include a reference to the location of the information. Include an itemized list of equipment costs.

Include a table itemizing the estimated average and maximum power consumption for each major piece of equipment.

H. Physical Description

Provide a detailed physical description of size, weight, center of gravity, special mounting requirements, electrical connections, and all other pertinent information necessary for proper installation and operation of the equipment.

I. Parts List

Provide a parts list that contains all information needed to describe the characteristics of the individual parts, as required for identification. Include a list of all equipment within a group and a list of all assemblies, sub-assemblies, and replacement parts of all units. Arrange this data in a table, in alpha-numerical order of the schematic reference symbols, which gives the associated description, manufacturer's name, and part number, as well as alternate manufacturers and part numbers. Provide a table of contents or other appropriate grouping to identify major components, assemblies, etc.

J. Character Set Submittal

Submit an engineering drawing of the DMS character set including 26 upper case and lower case letters, ten numerals, an asterisk (*), a dash, a plus sign (+), a designated lane diamond, a slash, an ampersand, and arrows at 0, 45, 90, 135, 180, 225, 270, and 315 degrees.

K. Wiring Diagrams

Provide a wiring diagram for each DMS and each controller cabinet, as well as interconnection wiring diagrams for the system as a whole.

Provide complete and detailed schematic diagrams to component level for all DMS assemblies and subassemblies such as driver boards, control boards, DMS controller, power supplies, and etc. Ensure that each schematic enables an electronics technician to successfully identify any component on a board or assemblies and trace its incoming and outgoing signals.

L. Routine of Operation

Describe the operational routine, from necessary preparations for placing the equipment into operation to securing the equipment after operation. Show appropriate illustrations with the sequence of operations presented in tabular form wherever applicable. Include in this section a total list of the test instruments, aids and tools required to perform necessary measurements and measurement techniques for each component, as well as set-up, test, and calibration procedures.

M. Maintenance Procedures

Specify the recommended preventative maintenance procedures and checks at pre-operation, monthly, quarterly, semi-annual, annual, and "as required" periods to

assure equipment operates reliably. List specifications (including tolerances) for all electrical, mechanical, and other applicable measurements and / or adjustments.

N. Repair Procedures

Include in this section all data and step-by-step procedures necessary to isolate and repair failures or malfunctions, assuming the maintenance technicians are capable of analytical reasoning using the information provided in the section titled "Wiring Diagrams and Theory of Operation."

Describe accuracy, limits, and tolerances for all electrical, physical, or other applicable measurements. Include instructions for disassemblies, overhaul, and re-assemblies, with shop specifications and performance requirements.

Give detailed instructions only where failure to follow special procedures would result in damage to equipment, improper operation, danger to operating or maintenance personnel, etc. Include such instructions and specifications only for maintenance that specialized technicians and engineers in a modern electromechanical shop would perform. Describe special test set-up, component fabrication, and the use of special tools, jigs, and test equipment.

O. Field Trial

At the request of the Engineer, supply a three-character demonstration module with characters of the size and type specified for the project, an appropriate control device and power supply to allow character display within 30 working days of the request. Perform a field trial on this module at a time and location selected by the Engineer.

This trial will allow the Engineer or his selected representatives to test the readability of the DMS at the maximum distance required for specified character size. Test the module with the sun directly above the DMS, and near the horizon in front of and behind the DMS (washout and back-lit conditions).

Construction Methods

A. Description

This article establishes practices and procedures and gives minimum standards and requirements for the installation of Dynamic Message Sign systems, auxiliary equipment and the construction of related structures.

Provide electrical equipment described in this specification that conforms to the standards of NEMA, UL, or Electronic Industries Association (EIA), wherever applicable. Provide connections between controllers and electric utilities that conform to NEC standards. Express wire sizes according to the American Wire Gauge (AWG).

Provide stainless-steel screws, nuts, and locking washers in all external locations. Do not use self-tapping screws unless specifically approved by the Engineer. Use parts made of corrosion-resistant materials, such as plastic, stainless steel, brass, or aluminum. Use construction materials that resist fungus growth and moisture deterioration. Separate dissimilar metals by an inert dielectric material.

B. Layout

Determine the location of each Dynamic Message Sign and obtain the Engineer's approval of the locations prior to installation. It is the Design-Build Team's responsibility to ensure proper elevation, offset, and orientation of all DMS assemblies. The location of service poles as well as conduit lengths shown in the plans are approximate based on available project data. Make actual field measurements to place conduit and equipment at the required location.

C. Construction Submittal

When the work is complete, submit As Built Plans, inventory sheets, and any other data required by the Engineer to show the details of actual construction and installation and any modifications made during installation.

The As-Built Plans shall show: the DMS, controller, and service pole locations; DMS enclosure and controller cabinet wiring layouts; and wire and conduit routing. Show all underground conduits and cables dimensioned from fixed objects

Include detailed drawings that identify the routing of all conductors in the system by cable type, color code, and function. Clearly label all equipment in the DMS system, controller cabinet, and DMS enclosure.

D. Conduit

Install the conduit system in accordance with Section 1715 of the 2018 *Standard Specifications for Roads and Structures* and NEC requirements for an approved watertight raceway.

Make bends in the conduit so as not to damage it or change its internal diameter. Install watertight and continuous conduit with as few couplings as standard lengths permit.

Clean conduit before, during, and after installation. Install conduit in such a manner that temperature changes will not cause elongation or contraction that might damage the system.

Attach the conduit system to and install along the structural components of the DMS structure assemblies with beam clamps or stainless-steel strapping. Install strapping according to the strapping manufacturer's recommendations. Do not use welding or drilling to fasten conduit to structural components. Space the fasteners at no more than four feet for conduit 1.5 inches and larger or six feet for conduit smaller than 1.25 inches.

Place fasteners no more than three feet from the center of bends, fittings, boxes, switches, and devices.

Locate underground conduit as shown in the plans in a manner consistent with these Project Special Provisions.

Do not exceed the appropriate fill ratio on all cable installed in conduit as specified in the NEC.

E. Wiring Methods

Do not pull permanent wire through a conduit system until the system is complete and has been cleaned.

Color-code all conductors per the NEC. Use approved marking tape, paint, sleeves or continuous colored conductors for No. 8 AWG and larger. Do not mark a white conductor in a cable assembly any other color.

Bury underground circuits at the depth shown in the plans and surround it with at least three inches of sand or earth back-fill free of rocks and debris. Compact backfill in six-inch layers. Do not splice underground circuits unless specifically noted in the plans.

F. Equipment and Cabinet Mounting

Mount equipment securely at the locations shown in the plans in conformance with the dimensions shown. Install fasteners as recommended by the manufacturer and space them evenly. Use all mounting holes and attachment points for attaching DMS enclosures and controller cabinets to the structures.

Drill holes for expansion anchors of the size recommended by the manufacturer of the anchors and thoroughly clean them of all debris.

Provide one key-operated, pin tumbler, dead bolt padlock, with brass or bronze shackle and case, conforming to Military Specification MIL-P-17802E (Grade I, Class 2, Size 2, Style A) for each electrical panel and switch on the project. Key all padlocks alike, and provide ten keys to the Engineer.

Provide cabinets with all mounting plates, anchor bolts, and any other necessary mounting hardware in accordance with these Project Special Provisions and the plans.

Seal all unused conduit installed in cabinets at both ends to prevent water and dirt from entering the conduit and cabinet with approved sealing material.

Install a ground bushing attached inside the cabinet on all metal conduits entering the cabinet. Connect these ground bushings to the cabinet ground bus.

G. Work Site Clean-Up

Clean the site of all debris, excess excavation, waste packing material, wire, etc. Clean and clear the work site at the end of each workday. Do not throw waste material in storm drains or sewers.

III. NTCIP Requirements

This section defines the detailed NTCIP requirements for the DMSs covered by these Project Special Provisions and the plans.

References

This specification references several standards through their NTCIP designated names. The following list provides the full reference to the current version of each of these standards.

Implement the most recent version of the standard including any and all Approved or Recommended Amendments to these standards for each NTCIP Component covered by these project specifications.

Table 1: NTCIP Standards

Abbreviated Number	Full Number	Title
NTCIP 1101	**NTCIP 1101:1997**	*Simple Transportation Management Framework*
NTCIP 1201	**NTCIP 1201:1997**	*Global Object Definitions*
NTCIP 1203	**NTCIP 1203:1997**	*Object Definitions for Dynamic Message Signs*
NTCIP 2001	**NTCIP 2001:1997**	*Class B Profile*
NTCIP 2101	**NTCIP 2101**	*SP-PMPP/232* *Subnet Profile for PMPP over RS-232*
NTCIP 2102	**NTCIP 2102**	*SP-PMPP/FSK* *Subnet Profile for PMPP over FSK Modem*
NTCIP 2103	**NTCIP 2103**	*SP-PPP/232* *Subnetwork Profile for PPP over RS232 (Dial Up)*
NTCIP 2104	**NTCIP 2104**	*SP-Ethernet* *Subnet Profile for Ethernet*
NTCIP 2201	**NTCIP 2201**	*TP-Null* *Transport Profile*
NTCIP 2202	**NTCIP 2202**	*TP-Internet* *Internet Transport Profile (TCP/IP and UDP/IP)*
NTCIP 2301	**NTCIP 2301**	AP-STMF AP for Simple Transportation Management Framework

General Requirements

1. **Subnet Level**

Ensure each serial port on each NTCIP Component supports NTCIP 2103 over a dial-up connection with a contractor provided external modem with data rates of 28.8 kbps, 19.2 kbps, 14.4 kbps, 9600 bps, 4800 bps, 2400 bps, 1200 bps, 600 bps, and 300 bps. Enable the NTCIP Component to make outgoing and receive incoming calls as necessary and support the following modem command sets:

- Hayes AT - Command Set
- MNP5
- MNP10
- V.42bis

Ensure each serial port on each NTCIP Component supports NTCIP 2103 over a null-modem connection with data rates of 19.2 kbps, 14.4 kbps, 9600 bps, 4800 bps, 2400 bps, 1200 bps, 600 bps, and 300 bps.

Ensure each serial port on each NTCIP Component supports NTCIP 2101 with data rates of 9600 bps, 4800 bps, 2400 bps, 1200 bps, 600 bps, and 300 bps.

Ensure NTCIP components support NTCIP 2102 and NTCIP 2104.

NTCIP Components may support additional Subnet Profiles at the manufacturer's option. At any one time, make certain only one Subnet Profile is active on a given serial port of the NTCIP Component. Ensure the NTCIP Component can be configured to allow the field technician to activate the desired Subnet Profile and provide a visual indication of the currently selected Subnet Profile.

2. Transport Level

Ensure each NTCIP Component complies with NTCIP 2201 and 2202.

NTCIP Components may support additional Transport Profiles at the manufacturer's option. Ensure Response datagrams use the same Transport Profile used in the request. Ensure each NTCIP Component supports the receipt of datagrams conforming to any of the identified Transport Profiles at any time.

3. Application Level

Ensure each NTCIP Component complies with NTCIP 1101 and 2301 and meets the requirements for Conformance Level 1 (NOTE - See Amendment to standard).

Ensure each NTCIP Component supports SNMP traps. An NTCIP Component may support additional Application Profiles at the manufacturer's option. Ensure Responses use the same Application Profile used by the request. Ensure each NTCIP Component supports the receipt of Application data packets at any time allowed by the subject standards.

4. Information Level

Guarantee each NTCIP Component provides Full, Standardized Object Range Support of all objects required by these Special Provisions unless otherwise indicated below. Make certain the maximum Response Time for any object or group of objects is 200 milliseconds.

Design the DMS to support all mandatory objects of all mandatory Conformance Groups as defined in NTCIP 1201 and NTCIP 1203. Table 2 indicates the modified object requirements for these mandatory objects.

Table 2: Modified Object Ranges for Mandatory Objects

Object	Reference	Project Requirement
ModuleTableEntry	NTCIP 1201 Clause 2.2.3	Contains at least one row with moduleType equal to 3 (software). The moduleMake specifies the name of the manufacturer, the moduleModel specifies the manufacturer's name of the component and the modelVersion indicates the model version number of the component.
MaxGroupAddresses	NTCIP 1201 Clause 2.7.1	At least 1
CommunityNamesMax	NTCIP 1201 Clause 2.8.2	At least 3
DmsNumPermanentMsg	NTCIP 1203 Clause 2.6.1.1.1.1	At least 1*
DmsMaxChangeableMsg	NTCIP 1203 Clause 2.6.1.1.1.3	At least 21
DmsFreeChangeableMemory	NTCIP 1203 Clause 2.6.1.1.1.4	At least 20 when no messages are stored.
DmsMessageMultiString	NTCIP 1203 Clause 2.6.1.1.1.8.3	The DMS supports any valid MULTI string containing any subset of those MULTI tags listed in Table 4
DmsControlMode	NTCIP 1203 Clause 2.7.1.1.1.1	Support at least the following modes: Local External Central Central Override

*** Ensure the Permanent Messages display the content shown in Table 3.**

Ensure the sign blanks if a command to display a message contains an invalid Message CRC value for the desired message.

Table 3: Content of Permanent Messages

Permanent Message Number	Description
1	Permanent Message # 1 blanks the display (i.e. consists of an empty MULTI string). It has a run-time priority of one (1)

Table 4: Required MULTI Tags

Code	Feature
f1	field 1 - time (12hr)
f2	field 2 - time (24hr)
f8	field 8 – day of month
f9	field 9 – month
f10	field 10 - 2 digit year
f11	field 11 - 4 digit year
fl (and /fl)	flashing text on a line by line basis with flash rates controllable in 0.5 second increments.
fo	Font
jl2	Justification – line – left
jl3	Justification – line – center
jl4	Justification – line – right
jl5	Justification – line – full
jp2	Justification – page – top
jp3	Justification – page – middle
jp4	Justification – page – bottom
Mv	moving text
Nl	new line
Np	new page, up to 2 instances in a message (i.e., up to 3 pages/frames in a message counting first page)
Pt	page times controllable in 0.5 second increments.

The NTCIP Component implements all mandatory and optional objects of the following optional conformance groups with FSORS.

Test Heading

a. Time Management

As defined in NTCIP 1201

b. Timebase Event Schedule

As defined in NTCIP 1201. The following list indicates the modified object requirements for this conformance group.

Table 5: Modified Object Ranges for the Timebase Event Schedule Conformance Group

Object	Reference	Project Requirement
MaxTimeBaseScheduleEntries	NTCIP 1201 Clause 2.4.3.1	At least 28
maxDayPlans	NTCIP 1201 Clause 2.4.4.1	At least 14
maxDayPlanEvents	NTCIP 1201 Clause 2.4.4.2	At least 10

c. Report

As defined in NTCIP 1201. The following list indicates the modified object requirements for this conformance group.

Table 6: Modified Object Ranges for the Report Conformance Group

Object	Reference	Project Requirement
maxEventLogConfigs	NTCIP 1201 Clause 2.5.1	At least 50
eventConfigurationMode	NTCIP 1201 Clause 2.4.3.1	The NTCIP Component supports the following Event Configuration Modes: onChange greaterThanValue smallerThanValue
MaxEventLogSize	NTCIP 1201 Clause 2.5.3	At least 200
MaxEventClasses	NTCIP 1201 Clause 2.5.5	At least 16

d. PMPP

e. Font Configuration

As defined in NTCIP 1203. The following list indicates the modified object requirements for this conformance group.

Table 7: Modified Object Ranges for the Font Configuration Conformance Group

Object	Reference	Project Requirement
NumFonts	NTCIP 1203 Clause 2.4.1.1.1.1	At least 4 *
MaxFontCharacters	NTCIP 1203 Clause 2.4.1.1.1.3	At least 127 **

* Upon delivery, the first font is a standard 18" font. The second font is a double-stroke 18" font. The third font is a 28" font. The fourth font is empty.

** Upon delivery, the first three font sets are configured in accordance with the ASCII character set for the following characters:

- "A" thru "Z"- All upper case letters.
- "0" thru "9"- All decimal digits.
- Space (i.e., ASCII code 0x20).
- Punctuation marks shown in brackets [. , ! ? - ' ' " " / ( )]
- Special characters shown in brackets [# & * +< >]

f. DMS Configuration

As defined in NTCIP 1203.

g. MULTI Configuration

As defined in NTCIP 1203. The following list indicates the modified object requirements for this conformance group.

Table 8: Modified Object Ranges for the MULTI Configuration Conformance Group

Object	Reference	Project Requirement
DefaultBackgroundColor	NTCIP 1203 Clause 2.5.1.1.1.1	The DMS supports the following background colors: black
DefaultForegroundColor	NTCIP 1203 Clause 2.5.1.1.1.2	The DMS supports the following foreground colors: amber
DefaultJustificationLine	NTCIP 1203 Clause 2.5.1.1.1.6	The DMS supports the following forms of line justification: left center right full
defaultJustificationPage	NTCIP 1203 Clause 2.5.1.1.1.7	The DMS supports the following forms of page justification: top middle bottom
defaultPageOnTime	NTCIP 1203 Clause 2.5.1.1.1.8	The DMS supports the full range of these objects with step sizes no larger than 0.5 seconds
defaultPageOffTime	NTCIP 1203 Clause 2.5.1.1.1.9	The DMS supports the full range of these objects with step sizes no larger than 0.5 seconds
defaultCharacterSet	NTCIP 1203 Clause 2.5.1.1.1.10	The DMS supports the following character sets: eightBit

h. **Default Message Control** as defined in NTCIP 1203

i. **Pixel Service Control** as defined in NTCIP 1203

j. **MULTI Error Control** as defined in NTCIP 1203

k. **Illumination / Brightness Control**

As defined in NTCIP 1203. The following list indicates the modified object requirements for this conformance group.

Table 9: Modified Object Ranges for the Illumination / Brightness Control Conformance Group

Object	Reference	Project Requirement
dmsIllumControl	NTCIP 1203 Clause 2.8.1.1.1.1	The DMS supports the following illumination control modes: photocell timer manual
dmsIllumNumBrightLevels	NTCIP 1203 Clause 2.8.1.1.1.4	At least 16

l. **Auxiliary I/O**

m. **Scheduling**

As defined in NTCIP 1203. The following list indicates the modified object requirements for this conformance group.

Table 10: Modified Object Ranges for the Scheduling Conformance Group

Object	Reference	Project Requirement
NumActionTableEntries	NTCIP 1203 Clause 2.9.1.1.1.1	At least 21

n. **Sign Status** as defined in NTCIP 1203

o. **Status Error** as defined in NTCIP 1203

p. **Pixel Error Status** as defined in NTCIP 1203

q. **Fan Error Status** as defined in NTCIP 1203

r. **Power Status** as defined in NTCIP 1203

s. **Temperature Status** as defined in NTCIP 1203

Install necessary hardware for the support of items q, r and s above.

Table 11: Some Optional Object Requirements

Object	Reference	Project Requirement
DefaultFlashOn	NTCIP 1203 Clause 2.5.1.1.1.3	The DMS supports the full range of these objects with step sizes no larger than 0.5 seconds
DefaultFlashOff	NTCIP 1203 Clause 2.5.1.1.1.4	The DMS supports the full range of these objects with step sizes no larger than 0.5 seconds
DmsMultiOtherErrorDescription	NTCIP 1203 Clause 2.7.1.1.1.20	If the vendor implements any vendor-specific MULTI tags, the DMS shall provide meaningful error messages within this object whenever one of these tags generates an error.

5. Documentation

Supply software with full documentation, including a CD-ROM containing ASCII versions of the following Management Information Base (MIB) files in Abstract Syntax Notation 1 (ASN.1) format:

- The relevant version of each official standard MIB Module referenced by the device functionality.
- If the device does not support the full range of any given object within a Standard MIB Module, a manufacturer specific version of the official Standard MIB Module with the supported range indicated in ASN.1 format in the SYNTAX and / or DESCRIPTION fields of the associated OBJECT TYPE macro. Name this file identical to the standard MIB Module, except that it will have the extension ".man".
- A MIB Module in ASN.1 format containing any and all manufacturer-specific objects supported by the device with accurate and meaningful DESCRIPTION fields and supported ranges indicated in the SYNTAX field of the OBJECT-TYPE macros.
- A MIB containing any other objects supported by the device.

Allow the use of any and all of this documentation by any party authorized by the Department for systems integration purposes at any time initially or in the future, regardless of what parties are involved in the systems integration effort.

NTCIP Acceptance Testing

Test the NTCIP requirements outlined above by a third-party testing firm. Submit to the Engineer for approval a portfolio of the selected firm. Include the name, address, and a history of the selected firm in performing NTCIP testing along with references. Also provide a contact person's name and phone number. Submit detailed NTCIP testing plans and procedures, including a list of hardware and software, to the Engineer for review and approval ten days in advance of a scheduled testing date. Develop test documents based on the NTCIP requirements of these Project Special Provisions. The acceptance test shall use the NTCIP Exerciser, and / or other authorized testing tools and shall follow the guidelines established in the ENTERPRISE Test Procedures. Conduct the test in North Carolina on the installed system in the presence of the Engineer. Document and certify the results of the test by the firm conducting the test and submit to the Engineer for review and approval. In case of failures, remedy the problem and have the firm retest in North Carolina. Continue process until all failures are resolved. The Department reserves the right to enhance these tests as deemed appropriate to ensure device compliance.

IV. DMS Testing Requirements

General Test Procedure

Test the DMS system in a series of design approval and functional tests. The results of each test must meet the specified requirements. These tests shall not damage the equipment. The Engineer will reject equipment that fails to fulfill the requirements of any test. Resubmit rejected equipment after correcting non-conformities and re-testing; completely document all diagnoses and corrective actions. Modify all equipment furnished under this contract, without additional cost to the North Carolina Department of Transportation, to incorporate all design changes necessary to pass the required tests.

Provide four copies of all test procedures and requirements to the Engineer for review and approval at least 30 days prior to the testing start date.

Only use approved procedures for the tests. Include the following in the test procedures:

- A step-by-step outline of the test sequence, showing a test of every function of the equipment or system tested
- A description of the expected nominal operation, output, and test results, and the pass / fail criteria
- An estimate of the test duration and a proposed test schedule
- A data form to record all data and quantitative results obtained during the test.
- A description of any special equipment, setup, manpower, or conditions required by the test

Provide all necessary test equipment and technical support. Use test equipment calibrated to National Institute of Standards and Technology (NIST) standards. Provide calibration documentation upon request.

Conform to these testing requirements and the requirements of these specifications. The Engineer will reject all equipment not tested according to these requirements. It shall be the Design-Build Team's responsibility to ensure the DMS system functions properly even after the Engineer accepts the DMS test results.

Provide four copies of the quantitative test results and data forms containing all data taken, highlighting any non-conforming results and remedies taken, to the Engineer for approval. An authorized representative of the manufacturer must sign the test results and data forms.

Design Approval Tests

Design Approval Tests are applicable to DMS systems not currently on the QPL.

The Design Approval Tests consists of all tests described in Section 2.2 "DMS Equipment Tests" of NEMA TS 4-2005 (Hardware Standards for Dynamic Message Signs with NTCIP Requirements). Perform all tests and submit certified results for review and approval.

PROTOTYPE – Manufacture a prototype Dynamic Message Sign and controller of the type and size described in the project special provisions. In the Engineer's presence, test the prototype according to the Design Approval and Operational Tests. When all corrections and changes (if any) have been made, the Department may accept the prototype DMS and controller as the physical and functional standard for the system furnished under this contract. The Design-Build Team may use the prototype units on this project if, after inspection and rework (if necessary), they meet all physical and functional specifications. In the case of standard product line equipment, if the Design-Build Team can provide test results certified by an independent testing facility as evidence of prior completion of successful design approval tests, then the Engineer may choose to waive these tests.

In each Design Approval Test, successfully perform the Functional Tests described below. Apply the extreme conditions to all associated equipment unless stated otherwise in these Project Special Provisions (PSP).

Operational Field Test (On-Site Commissioning)

Conduct an Operational Field Test of the DMS system installed on the project to exercise the normal operational functions of the equipment. The Operational Field Test shall consist of the following tests as a minimum:

A. Physical Examination

Examine each piece of equipment to verify that the materials, design, construction, markings, and workmanship comply with the mechanical, dimensional, and assembly requirements of these Project Special Provisions.

Perform the following tests as a minimum:

- Verify that all surfaces are free of dents, scratches, weld burns, or abrasions. Round sharp edges and corners.

- Verify bend radius of cables is not excessive or could potentially cause damage.
- Verify all modules, lamps, and components are properly secured.
- Verify that there are no exposed live terminals.

B. Continuity Tests

Check the wiring to assure it conforms to the requirements of the appropriate paragraphs of this Special Provision.

C. Functional Tests

Perform the following functional tests:

- Start-up and operate the DMS locally using a laptop computer.
- Use automatic (photo-electric sensor controlled), DMS Control Software to switch between "dim", "normal", and "bright" light levels.
- Operation of the DMS with all display elements flashing continuously for 10 minutes at the maximum flash rate.
- Exercise the DMS by displaying static messages, flashing messages, and alternating static and flashing message sequences.
- Automatically poll the DMS by the Control Software at various intervals and verify the data received by Control Software from DMS.
- Download and edit messages using Control Software.
- Execute status request on the DMS controller.
- Observe normal operations during uploading and downloading.
- Input and select messages from the sign controller's local user interface.
- Test sequence activation at chosen intervals.
- Display and verify all stored messages.
- Verify resumption of standard operation upon interruption of electrical power.
- Demonstrate detected failures and response functions.
- Demonstrate proper operation of the Failure Log.
- Set controller clock using the Control Software.
- Execute system shutdown using the Control Software and local user interface.
- Verify detection of a power failure in the DMS enclosure and the report feature of the failure to the Control Software.

Approval of Operational Field Test results does not relieve the Design-Build Team to conform to the requirements in these Project Special Provisions. If the DMS system does

not pass these tests, document a correction or substitute a new unit as approved by the Engineer. Re-test the system until it passes all requirements.

30-Day Observation Period

The 30-Day Observation Period shall be part of work to be completed by the project completion date.

Upon successful completion of all project work, the component tests, the System Test, and the correction of all deficiencies, including minor construction items, the 30-day Observation Period may commence. This observation consists of a 30-day period of normal, day-to-day operations of the new field equipment in operation with the new central equipment without any failures. The purpose of this period is to ensure that all components of the system function in accordance with the plans and these Project Special Provisions.

Respond to system and / or component failures (or reported failures) that occur during the 30-day Observation Period within twenty-four (24) hours. Correct said failures within forty-eight (48) hours. Any failure that affects a major system component as defined below for more than forty-eight (48) hours shall suspend the timing of the 30-day Observation Period beginning at the time when the failure occurred. After the cause of such failures has been corrected, timing of the 30-day Observation Period will resume. System or component failures that necessitate a redesign of any component or failure in any of the major system components exceeding a total of three (3) occurrences shall terminate the 30-day Observation Period and cause the 30-day Observation Period to be restarted from day zero when the redesigned components have been installed and / or the failures corrected. The major system components are:

- DMS Field Controller
- DMS Display Module
- DMS Workstation software

V. DMS Structure

Description

This section includes all design, fabrication, furnishing, and erection of the DMS structures, platforms, walkways, and ladders for access to the DMS inspection doors, and attachment of the DMS enclosures to the structures in accordance with the requirements of these Project Special Provisions and the plans. Fabricate the supporting DMS assemblies from tubular steel. Furnish pedestal type or overhead type DMS assemblies as shown in the plans and as approved by the Engineer.

Cantilevered and Monotube (horizontal truss) DMS structures will not be allowed.

Provide pedestal DMS structures with a minimum of 25 feet clearance from the high point of the road to the bottom of the DMS enclosure.

Provide full-span overhead DMS structures with a minimum of 20 feet clearance from the high point of the road to the bottom of the DMS enclosure.

Design the DMS assemblies (including footings), DMS mounting assemblies, maintenance platforms, and access ladders and submit shop drawings to the Engineer for approval. A Professional Engineer that is registered in the state of North Carolina will prepare such computations and drawings. These must bear his signature, seal, and date of acceptance.

The provisions of Section 900 of the NCDOT 2018 *Standard Specifications for Roads and Structures* apply to all work covered by this section.

The Design-Build Team shall furnish DMS S-dimension drawings for each proposed DMS to the Engineer for approval.

Material

Use materials that meet the following requirements of the NCDOT 2018 *Standard Specifications for Roads and Structures*:

Structural Steel	Section 1072
Overhead Structures	Section 1096
Signing Materials	Section 1092
Organic-Zinc Repair Paint	Article 1080-9
Reinforcing Steel	Sub-article 1070
Direct Tension Indicators	Sections 440 and 1072

Construction Methods

A. General

Fabricate the new DMS assemblies, maintenance platforms, attachment hardware, and access ladders in accordance with the details shown in the approved shop drawings prepared by the Design-Build Team and the requirements of these Project Special Provisions.

No welding, cutting, or drilling in any manner will be permitted in the field, unless approved by the Engineer.

Drill bolt holes and slots to finished size. Holes may also be punched to finished size, provided the diameter of the punched holes is at least twice the thickness of the metal being punched. Flame cutting of bolt holes and slots will not be permitted.

Erect the DMS in accordance with the requirements indicated on the plans and in these Project Special Provisions. Field drill two holes per connection in the Z bars for attaching the DMS to the structure. Use two bolts at each connection. Provide two (2) U-bolts at each U-bolt connections such as 1) each truss chord to sign hanger, or 2) each truss chord

to platform support. Provide two (2) U-bolts at each U-bolt connection where ends of truss chords are supported. Minimum diameter of all U-bolts shall be ½ inch.

Use two coats of a zinc-rich paint to touch up minor scars on all galvanized materials (Refer to Section 1076-6 of the 2018 *Standard Specifications for Roads and Structures*).

For high strength bolted connections, provide direct tension indicator washers.

B. Shop Drawings

Submit to the Engineer for approval a complete design for the DMS assemblies (including footings), maintenance platforms, access ladders, DMS assembly hardware, brackets for supporting the DMS and maintenance platforms. Base the design on the line drawings and correct wind speed in accordance with the latest edition of the 2013 AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals*, 6th Edition, including the latest Interim specifications and the latest interim revisions.

The manufacturer of the DMS assembly must ensure that design of the assembly is compatible with the DMSs for mounting and attachment.

Submit six copies of completely detailed shop drawings and one copy of the design computations for the DMS assembly to the Engineer for approval prior to fabrication. Show in the shop drawings complete design and fabrication details including foundations, provisions for attaching the DMS, maintenance platform and access ladders to supporting structures, applicable material specifications, and any other information necessary for procuring and replacing any part of the complete DMS assembly.

Allow a minimum of 15 working days for shop drawing approval after the Engineer receives them. If revised drawings are necessary, allow an additional 15 working days for review and approval of final shop drawings.

Approval of shop drawings by the Engineer shall not relieve the Design-Build Team of their responsibility for the correctness of drawings, or for the fit of all shop and field connections and anchors.

C. Design and Fabrication

For additional design and fabrication requirements, reference the 2018 NCDOT *Standard Specifications for Roads and Structures*.

1. Dynamic Message Sign Assemblies

Fabricate the supporting structures using tubular members of either aluminum or steel, using only one type of material throughout the project.

Horizontal components of the supporting structures for overhead DMS shall be of a truss design to support the DMS. Truss centerline shall coincide with the

centerline of the DMS design area shown on the structure line drawing developed by the Design-Build Team. Provide permanent camber in addition to dead load camber in accordance with the 2013 AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals,* 6th Edition, including the latest interim specifications and the latest interim revisions. Indicate on the shop drawings the amount of camber provided and the method employed in the fabrication of the support to obtain the camber.

For all U-bolt connections of hanger beams to overhead assembly truss chords, provide U-bolts with a flat washer, a lock washer and double nuts at each end of the U-bolts. All double nuts that are on any U-bolt shall be the same thickness and weight. When assembled, the double nuts shall be brought tight against each other by the use of two wrenches.

Fabricate the attachment assembly for mounting DMS in a manner that will ensure easy removal the DMS.

2. DMS Maintenance Platform (Walkway)

Provide a maintenance platform, a minimum of three feet wide with open skid-resistant surface and safety railing on the DMS assemblies for access to the DMS inspection door. Provide platforms with fixed safety railings along both sides from the beginning of the platform to the inspection door.

Ensure the design, fabrication and installation of the access platforms on new DMS structures complies with the following:

1. The top of the platform grading surface is vertically aligned with the bottom of the DMS door. Ensure the platform extends from the DMS enclosure to the access ladder.
2. The DMS door will open 90-degrees from its closed position without any obstruction from the platform or safety handrails.
3. The platform is rigidly and directly connected to the walkway brackets and there is no uneven surface between sections.
4. Install a 4" x 4" safety angle parallel to and along both sides of the platform and extend it the entire length of the platform. Design the safety angle to withstand loading equivalent to the platform.
5. Ensure the platform design allows full access to the DMS enclosure inspection door with no interference or obstructions.

3. DMS Access Ladder

Provide a fixed ladder, of the same material as the DMS structures, leading to and ending at the access platform. Equip the ladder with a security cover (ladder guard) and lock to prohibit access by unauthorized persons. Furnish locks to operate with a Corbin #2 key and furnish two keys per lock. Design the rungs on 12-inch center to

center typical spacing. The first ladder rung shall be no more than 18 inches above the landing pad. Attach the security cover approximately six feet above the concrete landing. Design the ladder and security cover as a permanent part of the DMS assembly and include complete design details in the DMS assembly shop drawings. Fabricate the ladder and cover to meet all OSHA requirements and applicable state and local codes, including but not limited to providing a ladder cage.

Furnish and install a level concrete pad a minimum of four inches deep, 24 inches wide, and 36 inches long to serve as a landing pad for accessing the ladder. Design the landing pad to be directly below the bottom rung. Access to the ladder shall not be obstructed by the DMS foundation. Provide pre-formed or cast-in place concrete pads.

4. CCTV Extension Pole

Design the DMS assembly to allow the attachment of a CCTV camera to the assembly. Design the CCTV extension pole to provide an attachment height of 45 feet above the finished grade for the camera. The maximum deflection at the top of the CCTV supporting member at 30 mph, non-gusting wind, shall be no more than one inch in any direction. The ultimate design load for the CCTV extension pole shall be AASHTO 2002 50-year wind speed for the area plus 50 pounds camera deadload. Design the CCTV extension pole as an integral part of the DMS assembly and submit the design along with the structural calculations for review and acceptance by the Engineer.

HIGH DEFINITION CCTV WOOD POLE AND FIELD EQUIPMENT

(06-17-15) (Rev. 9-8-17) DB 08-04a

1. HIGH DEFINITION CCTV FIELD EQUIPMENT DESCRIPTION

The Design-Build Team shall provide and install High Definition (1080p) CCTV field equipment described in these Project Special Provisions. Ensure equipment is fully compatible with all features of the existing *VideoPro* video management software currently in use by NCDOT in this Region.

Obtain approval of the camera locations and orientation from the Engineer prior to installing the CCTV camera assemblies.

1.2 MATERIAL

General

The Design-Build Team shall provide and install new CCTV camera assemblies at the locations approved by the Engineer that consist of the following:

1. Dome CCTV camera that contains in a single enclosed unit the following:

    a. CCTV color digital signal processing camera unit with zoom lens, filter, control circuit, and accessories

    b. Motorized pan, tilt, and zoom

c. Pole-mount camera attachment assembly.

d. All necessary cable, connectors and incidental hardware to make a complete and operable system

2. Lightning arrestors installed in-line between the CCTV camera and the equipment cabinet components.

3. A NEMA Type 4 enclosure constructed of aluminum with a clear acrylic dome or approved equal camera unit housing.

Camera and Lens

The Design-Build Team shall provide new ¼-inch charged-coupled device (CCD) color day / night cameras. The Design-Build Team shall provide cameras with automatic gain control (AGC) for clear images in varying light levels. The camera shall meet the following minimum requirements:

• Video signal format:	NTSC compatible resolution, user selectable up to a maximum of 1920 x 1080 (1080p)
• Image sensor resolution:	768 horizontal pixels by 752 vertical pixels
• Automatic gain control (AGC):	0-20 dB, peak-average adjustable
• White balance:	Automatic through the lens with manual override
• Electronic-shutter:	Dip-switch selectable NTSC electronic shutter with speed range from 1/2 of a second (off) to 1/30,000 of a second (NTSC)
• Overexposure protection:	Built-in circuitry or a protection device to prevent any damage to the camera when pointed at strong light sources, including the sun
• Gain control:	Automatic and manual
• Sensitivity:	1.5 lux at 90% scene reflectance
• Sync system:	Internal AC line lock, phase adjustable using remote control, V-sync
• Signal to noise ratio:	Greater than 50 dB
• Video output connection:	1-volt peak to peak, 75 ohms terminated, BNC connector
• Primary voltage:	120 VAC

- Camera voltage: 24 VAC or 24 VDC
- Camera power: 73 VA with heater at 24 VAC or 3A at 24 VDC

Zoom Lens

The Design-Build Team shall provide each camera with a motorized zoom lens with automatic iris control with manual override and neutral density spot filter. The Design-Build Team shall provide lenses that meet the following optical specifications:

- Automatic focus: Automatic with manual override
- Horizontal angle of view: 55.4 degrees at 3.6 mm wide zoom and 2.9 degrees at 82 mm telephoto zoom
- Focal length: 3.6 mm to 124 mm, 30X optical zoom, 12X electronic zoom
- Zoom Speed: 2.9, 4.2 and 5.8 seconds
- Lens aperture: Minimum of f/1.6
- Maximum Sensitivity at 30 IRE: .07 lux at ½ second color, .2 lux at 1/60 second black and white, .015 lux at ½ sec. black and white
- Preset positioning: Minimum of 128 presets

The lens shall be capable of both automatic and remote manual control iris and focus override operation. The lens shall be equipped for remote control of zoom and focus, including automatic movement to any of the preset zoom and focus positions. The Design-Build Team shall provide mechanical or electrical means to protect the motors from overrunning in extreme positions. The operating voltages of the lens shall be compatible with the outputs of the camera control.

Camera Housing

The Design-Build Team shall provide new dome style enclosures for the CCTV assemblies. Equip housing with mounting assemblies for attachment to the pole mount. The enclosures shall be equipped with a sunshield and be fabricated from corrosion resistant aluminum and finished in a neutral color of weather resistant enamel. The enclosure shall meet or exceed NEMA 4X ratings. The viewing area of the enclosure shall be tempered glass.

Pan and Tilt Unit

Equip each new dome style assembly with a pan and tilt unit. The pan and tilt unit shall be integral to dome system. The pan and tilt unit shall be rated for outdoor operation, provide dynamic braking for instantaneous stopping, prevent drift, and have minimum backlash. The dome shall have an auto flip dome rotation to rotate and reposition camera for viewing

objects passing below camera. The Design-Build Team shall provide electronic image stabilization. The pan and tilt units shall meet or exceed the following specifications:

- Pan: Continuous 360 degrees
- Tilt: +2 to -92 degrees minimum
- Presets: Minimum of 128 presets
- Preset accuracy: .1 degree
- Preset pan speed: .1 degrees / second to 200 degrees/second
- Preset tilt speed: .1 degrees / second to 400 degrees/second
- Privacy zones: Minimum of eight user configurable shapes
- Input voltage: 24 VDC or 24 VAC
- Motors: Two-phase induction type, continuous duty, instantaneous reversing
- Preset Positioning: 64 PTZ presets per camera

Control Receiver / Driver

The Design-Build Team shall provide each new camera unit with a control receiver / driver that is integral to the CCTV dome assembly. The control receiver / driver will receive serial asynchronous data initiated from a camera control unit, decode the command data, perform error checking, and drive the pan / tilt unit, camera controls, and motorized lens. As a minimum, the control receiver/drivers shall provide the following functions:

- Zoom in / out
- Automatic focus with manual override
- Tilt up / down
- Automatic iris with manual override
- Pan right / left
- Minimum 64 preset positions for pan, tilt, and zoom

In addition, each control receiver / driver shall accept status information from the pan / tilt unit and motorized lens for preset positioning of those components. The control receiver / driver will relay pan, tilt, zoom, and focus positions from the field to the remote camera control unit. The control receiver / driver shall accept "goto" preset commands from the camera control unit, decode the command data, perform error checking, and drive the pan/tilt and motorized zoom lens to the correct preset position. The preset commands from the camera control unit will consist of unique values for the desired pan, tilt, zoom, and focus positions.

CCTV Camera Attachment to Pole

The Design-Build Team shall provide CCTV attachments that allow for the removal and replacement of the CCTV enclosure as well as providing a weatherproof, weather tight, seal that does not allow moisture to enter the enclosure.

The Design-Build Team shall provide a CCTV camera attachment assembly that is able to support a minimum camera unit dead load of 45 pounds (20.4 kg).

Surge Suppression

Protect all equipment with metal oxide varistors connecting each power conductor to ground.

Protect coaxial cable from each camera by a surge protector at each end of the cable.

1.3 Construction Methods

General

Mount CCTV camera units five feet from the top of the pole or as directed by the Engineer. Position the camera to enable viewing traffic in all directions and as approved by the Engineer.

Mount CCTV cameras on the side of poles nearest intended field of view. Avoid occluding the view with the pole.

Electrical and Mechanical Requirements

Ground all equipment as called for in the 2018 *Standard Specifications for Roads and Structures*, these Project Special Provisions and the plans.

Install surge protectors on all ungrounded conductors entering the CCTV enclosure. House the protectors in a small, ventilated weatherproof cabinet attached near the CCTV attachment point in a manner approved by the Engineer.

2. CCTV EQUIPMENT CABINET

The Design-Build Team shall provide 336 pole mounted cabinets to house CCTV control and communications equipment. The cabinets shall consist of a cabinet housing, 19-inch EIA mounting cage, and power distribution assembly (PDA #3 as described in the CALTRANS TSCES).

The cabinet housing shall conform to sections 6.2.2 (Housing Construction), 6.2.3 (Door Latches and Locks), 6.2.4 (Housing Ventilation), and 6.2.5 (Hinges and Door Catches) of the CALTRANS TSCES. Do not equip the cabinet housings with a police panel.

The cabinet cage shall conform to section 6.3 of the CALTRANS TSCES.

Terminal blocks on the PDA #3 Assembly have internal wiring for the Model 200 switch pack sockets. Do not use terminal blocks on PDA #3 as power terminals for cabinet devices. Do not furnish cabinet with "Input Panels" described in Section 6.4.7.1 of the

TSCES. Do furnish cabinet with "Service Panels" as described in Section 6.4.7.1 of the TSCES and as depicted on drawing TSCES-9 in the TSCES. Use service panel #2.

The Design-Build Team shall provide terminal blocks for power for cabinet CCTV and communications devices as needed to accommodate the number of devices in the cabinet.

Do not furnish cabinets with C1, C5, or C6 harness, input file, output file, monitor units, model 208 unit, model 430 unit, or switch packs.

The Design-Build Team shall provide all conduits, shelving, mounting adapters, and other equipment as necessary to route cabling, mount equipment, and terminate conduit in equipment cabinet.

2.2 Material

Shelf Drawer

The Design-Build Team shall provide a pull out, hinged-top drawer, having sliding tracks, with lockout and quick disconnect feature in the equipment cabinet. The Design-Build Team shall provide a pullout drawer that extends a minimum of 14 inches that is capable of being lifted to gain access to the interior of the drawer. Minimum interior dimensions of the drawer shall be one inch high, 13 inches deep, and 16 inches wide. The Design-Build Team shall provide drawers capable of supporting a 40-pound device or component when fully extended.

Cabinet Light

Each cabinet shall include two (2) fluorescent lighting fixtures (one front, one back) mounted horizontally inside the top portion of the cabinet. The fixtures shall include a cool white lamp and shall be operated by normal power factor UL-listed ballast. A door-actuated switch shall be installed to turn on the applicable cabinet light when the front door or back door is opened. The lights shall be mounted not to interfere with the upper door stay.

Surge Protection for System Equipment

Each cabinet shall be provided with devices to protect the CCTV and communications equipment from electrical surges and over voltages as described below.

Main AC Power Input

Each cabinet shall be provided with a hybrid-type, power line surge protection device mounted inside the power distribution assembly. The protector shall be installed between the applied line voltage and earth ground. The surge protector shall be capable of reducing the effect of lighting transient voltages applied to the AC line. The protector shall be mounted inside the Power Distribution Assembly housing facing the rear of the cabinet. The protector shall include the following features and functions:

- Maximum AC line voltage: 140 VAC
- Twenty pulses of peak current, each of which shall rise in 8 microseconds and fall in 20 microseconds to ½ the peak: 20000 Amperes
- The protector shall be provided with the following terminals:

  - Main Line (AC Line first stage terminal).
  - Main Neutral (AC Neutral input terminal).
  - Equipment Line Out (AC line second state output terminal, 19 amps).
  - Equipment Neutral Out (Neutral terminal to protected equipment).
  - GND (Earth connection).

- The Main AC line in and the Equipment Line out terminals shall be separated by a 200 Microhenry (minimum) inductor rated to handle 10 AMP AC Service.
- The first stage clamp shall be between Main Line and Ground terminals.
- The second stage clamp shall be between Equipment Line Out and Equipment Neutral.
- The protector for the first and second stage clamp shall have an MOV or similar solid state device rated at 20 KA and shall be of a completely solid state design (i.e., no gas discharge tubes allowed).
- The Main Neutral and Equipment Neutral Out shall be connected together internally and shall have an MOV similar solid state device or gas discharge tube rated at 20 KA between Main Neutral and Ground terminals.
- Peak Clamp Voltage: 350 volts at 20 KA (Voltage measured between Equipment Line Out and Equipment Neutral Out terminals. Current applied between Main Line and Ground Terminals with Ground and Main Neutral terminals externally tied together)
- Voltage shall never exceed 350 volts.
- The Protector shall be epoxy-encapsulated in a flame-retardant material.
- Continuous service current: 10 Amps at 120 VAC RMS
- The Equipment Line Out shall provide power to cabinet CCTV and communications equipment and to the 24V power supply.

Ground Bus

The Design-Build Team shall provide a neutral bus that is not connected to the earth ground or the logic ground anywhere within the cabinet. Ensure that the earth ground bus and the neutral ground bus each have ten compression type terminals, each of which can accommodate wires ranging from number 14 through number 4 AWG.

Uninterruptible Power Supply (UPS)

The Design-Build Team shall provide and install one rack mounted UPS in each new cabinet that meet the following minimum specifications:

Output

Output Power Capacity	480 Watts / 750 VA
Max Configurable Power	480 Watts / 750 VA
Nominal Output Voltage	120V

Output Voltage Distortion	Less than 5% at full load
Output Frequency (sync to mains)	57 - 63 Hz for 60 Hz nominal
Crest Factor	up to 5:1
Waveform Type	Sine wave
Output Connections	(4) NEMA 5-15R
Input	
Nominal Input Voltage	120V
Input Frequency	50 / 60 Hz +/- 3 Hz (auto sensing)
Input Connections	NEMA 5-15P
Cord Length	6 feet
Input voltage range for main operations	82 - 144V
Input voltage adjustable range for mains operation	75 -154 V
Battery Type	
Maintenance-free sealed Lead-Acid battery with suspended electrolyte, leak-proof.	
Typical recharge time	2 hours
Communications & Management	
Interface Port(s)	DB-9 RS-232, USB
Control panel	LED status display with load and battery bar-graphs
Surge Protection and Filtering	
Surge energy rating	480 Joules
Environmental	
Operating Environment	32 - 104° F
Operating Relative Humidity	0 - 95%
Storage Temperature	5 - 113° F
Storage Relative Humidity	0 - 95%
Conformance	
Regulatory Approvals	FCC Part 15 Class A, UL 1778

2.3 Construction Methods

For each equipment cabinet installation, use stainless steel banding or other method approved by the Engineer to fasten cabinet to pole. Install equipment cabinets so that the

height to the middle of the enclosure is four feet from ground level. No risers shall enter the top or sides of the equipment cabinet.

Install all conduits, condulets, and attachments to equipment cabinets in a manner that preserves the minimum bending radius of cables and creates water proof connections and seals.

Install a UPS in each cabinet and power all CCTV cameras from the UPS.

Install a level concrete technician pad measuring a minimum four inches thick, 24 inches wide and 36 inches long at the front door of the CCTV equipment cabinet.

3. CCTV WOOD POLES

3.1 Description

Furnish and install wood poles with grounding systems and all necessary hardware in accordance with Section 1720 of the 2018 *Standard Specifications for Roads and Structures*.

3.2 Material

Material, equipment, and hardware furnished under this section shall be pre-approved on the Department's QPL. Refer to Subarticles 1082-3(F) Treated Timber and Lumber – Poles and 1082-4(G) Preservative Treatment - Poles.

CCTV Wood Pole

Unless otherwise specified in the plans, furnish Class 3 or better wood poles to mount CCTV cameras and cabinets that are a minimum of 60' long to permit the CCTV camera to be mounted 45 feet above the ground at the pole.

3.3 Construction Method

Mark final pole locations and receive approval before installing poles. Comply with all requirements of Section 1720-3 of the 2018 *Standard Specifications for Roads and Structures*.

GEOTEXTILE FOR PAVEMENT STABILIZATION (Special)

Description

Supply and install geotextile for pavement stabilization in accordance with the Geotechnical Engineering Scope of Work found elsewhere in this RFP. Geotextile for pavement stabilization shall be required below Aggregate Subgrade Type 1.

Materials

Refer to Division 10 of the 2018 *Standard Specifications for Roads and Structures.*

Item	Section
Geotextiles	1056

Provide Type 5 geotextile for geotextile for pavement stabilization that meets the following tensile strength requirements in the machine direction (MD) and cross-machine direction (CD):

GEOTEXTILE FOR PAVEMENT STABILIZATION REQUIREMENTS		
Tensile Strength	**Requirement (MARV[A])**	**Test Method**
Tensile Strength @ 5% Strain (MD & CD[A])	1,900 lb/ft	ASTM D4595
Ultimate Tensile Strength (MD & CD[A])	4,800 lb/ft	ASTM D4595

A. MD, CD and MARV per Article 1056-3 of the 2018 *Standard Specifications for Roads and Structures.*

Construction Methods

Place geotextile for pavement stabilization below Aggregate Subgrade Type 1. Pull geotextiles taut so they are in tension and free of kinks, folds, wrinkles or creases. Install geotextile for pavement stabilization parallel to the survey or lane line in the MD and adjacent to each other in the CD. Geotextiles in the MD shall be overlapped five feet, and geotextiles overlapped in the CD shall be overlapped 18 inches. Completely cover subgrades with geotextile for pavement stabilization. Hold geotextiles in place with wire staples or anchor pins as needed.

Do not damage geotextile for pavement stabilization when placing aggregate. Do not operate heavy equipment on geotextiles. Place at least four inches of aggregate onto the geotextile prior to operating any heavy equipment on it. Replace any damaged geotextiles to the satisfaction of the Engineer.

FOUNDATIONS AND ANCHOR ROD ASSEMBLIES FOR METAL POLES

(1-17-12) (Rev. 11-22-17) 9, 14, 17 DB9 R05

Description

Foundations for metal poles include foundations for signals, cameras, overhead and dynamic message signs (DMS) and high mount and light standards supported by metal poles or upright trusses. Foundations consist of footings with pedestals and drilled piers with or without grade beams or wings. Anchor rod assemblies consist of anchor rods (also called anchor bolts) with nuts and washers on the exposed ends of rods and nuts and a plate or washers on the other ends of rods embedded in the foundation.

Construct concrete foundations with the required resistances and dimensions and install anchor rod assemblies in accordance with the contract and accepted submittals. Construct drilled piers consisting of cast-in-place reinforced concrete cylindrical sections in excavated holes. Provide temporary casings or polymer slurry as needed to stabilize drilled pier excavations. Use a prequalified Drilled Pier Contractor to construct drilled piers for metal poles. Define "excavation" and "hole" as a drilled pier excavation and "pier" as a drilled pier.

This provision does not apply to foundations for signal pedestals; see Section 1743 of the 2018 *Standard Specifications for Roads and Structures* and 2018 Roadway Standard Drawing No. 1743.01.

Materials

Refer to the 2018 *Standard Specifications for Roads and Structures*.

Item	Section
Conduit	1091-3
Grout, Type 2	1003
Polymer Slurry	411-2(B)(2)
Portland Cement Concrete	1000
Reinforcing Steel	1070
Rollers and Chairs	411-2(C)
Temporary Casings	411-2(A)

Provide Type 3 material certifications in accordance with Article 106-3 of the 2018 *Standard Specifications for Roads and Structures* for conduit, rollers, chairs and anchor rod assemblies. Store steel materials on blocking at least 12" above the ground and protect it at all times from damage; and when placing in the work make sure it is free from dirt, dust, loose mill scale, loose rust, paint, oil or other foreign materials. Load, transport, unload and store foundation and anchor rod assembly materials so materials are kept clean and free of damage. Bent, damaged and / or defective materials shall be rejected.

Use conduit type in accordance with the contract. Use Class A concrete for footings and pedestals, Class Drilled Pier concrete for drilled piers and Class AA concrete for grade beams and wings including portions of drilled piers above bottom of wings elevations. Corrugated temporary casings may be accepted at the discretion of the Engineer. A list of approved polymer slurry products is available from:

connect.ncdot.gov/resources/Geological/Pages/Products.aspx

Provide anchor rod assemblies in accordance with the contract consisting of the following:

(A) Straight anchor rods,

(B) Heavy hex top and leveling nuts and flat washers on exposed ends of rods, and

(C) Nuts and either flat plates or washers on the other ends of anchor rods embedded in foundations.

Do not use lock washers. Use steel anchor rods, nuts and washers that meet ASTM F1554 for Grade 55 rods and Grade A nuts. Use steel plates and washers embedded in concrete with a thickness of at least 1/4". Galvanize anchor rods and exposed nuts and washers in accordance with Article 1076-4 of the 2018 *Standard Specifications for Roads and Structures*. It is not necessary to galvanize nuts, plates and washers embedded in concrete.

Construction Methods

Install the required size and number of conduits in foundations in accordance with the plans and accepted submittals. Construct top of piers, footings, pedestals, grade beams and wings flat, level and within 1" of elevations shown in the plans or as approved by the Engineer. Provide an Ordinary Surface finish in accordance with Subarticle 825-6(B) of the 2018 *Standard Specifications* for *Roads and Structures* for portions of foundations exposed above finished grade. Do not remove anchor bolt templates or pedestal or grade beam forms or erect metal poles or upright trusses onto foundations until concrete attains a compressive strength of at least 3,000 psi.

(A) Drilled Piers

Before starting drilled pier construction, hold a predrill meeting to discuss the installation, monitoring and inspection of the drilled piers. Schedule this meeting after the Drilled Pier Contractor has mobilized to the site. The Resident or Division Traffic Engineer, Design-Build Team and Drilled Pier Contractor Superintendent shall attend this predrill meeting.

Do not excavate holes, install piles or allow equipment wheel loads or vibrations within 20 feet of completed piers until 16 hours after Drilled Pier concrete reaches initial set.

Check for correct drilled pier alignment and location before beginning drilling. Check plumbness of holes frequently during drilling.

Construct drilled piers with the minimum required diameters shown in the plans. Install piers with tip elevations no higher than shown in the plans or as approved by the Engineer.

Excavate holes with equipment of the sizes required to construct drilled piers. Depending on the subsurface conditions encountered, drilling through rock and boulders may be required. Do not use blasting for drilled pier excavations.

Contain and dispose of drilling spoils and waste concrete as directed and in accordance with Section 802 of the 2018 *Standard Specifications for Roads and Structures*. Drilling spoils consist of all materials and fluids removed from excavations.

If unstable, caving or sloughing materials are anticipated or encountered, stabilize holes with temporary casings and / or polymer slurry. Do not use telescoping temporary casings. If it becomes necessary to replace a temporary casing during drilling, backfill the excavation, insert a larger casing around the casing to be replaced or stabilize the excavation with polymer slurry before removing the temporary casing.

If temporary casings become stuck or the Design-Build Team proposes leaving casings in place, temporary casings shall be installed against undisturbed material. Unless otherwise approved, do not leave temporary casings in place for mast arm poles and cantilever signs. The Engineer will determine if casings may remain in place. If the Design-Build Team proposes leaving temporary casings in place, do not begin drilling until a casing installation method is approved.

Use polymer slurry and additives to stabilize holes in accordance with the slurry manufacturer's recommendations. Provide mixing water and equipment suitable for polymer slurry. Maintain the required slurry properties at all times except for sand content

Define a "sample set" as slurry samples collected from mid-height and within two feet of the bottom of holes. Take sample sets from excavations to test polymer slurry immediately after filling holes with slurry, at least every four hours thereafter and immediately before placing concrete. Do not place Drilled Pier concrete until both slurry samples from an excavation meet the required polymer slurry properties. If any slurry test results do not meet the requirements, the Engineer may suspend drilling until both samples from a sample set meet the required polymer slurry properties.

Remove soft and loose material from bottom of holes using augers to the satisfaction of the Engineer. Assemble rebar cages and place cages and Drilled Pier concrete in accordance with Subarticle 411-4(E) of the 2018 *Standard Specifications for Roads and Structures*, except for the following:

(1) Inspections for tip resistance and bottom cleanliness are not required,

(2) Temporary casings may remain in place if approved, and

(3) Concrete placement may be paused near the top of pier elevations for anchor rod assembly installation and conduit placement or

(4) If applicable, concrete placement may be stopped at bottom of grade beam or wings elevations for grade beam or wing construction.

If wet placement of concrete is anticipated or encountered, do not place Drilled Pier concrete until a concrete placement procedure is approved by the Engineer. If applicable, temporary casings and fluids may be removed when concrete placement is paused or stopped in accordance with the exceptions above provided holes are stable. Remove

contaminated concrete from exposed Drilled Pier concrete after removing casings and fluids. If holes are unstable, do not remove temporary casings until a procedure for placing anchor rod assemblies and conduit or constructing grade beams or wings is approved by the Engineer.

Use collars to extend drilled piers above finished grade. Remove collars after Drilled Pier concrete sets and round top edges of piers.

If drilled piers are questionable, pile integrity testing (PIT) and further investigation may be required in accordance with Article 411-5 of the 2018 *Standard Specifications for Roads and Structures*. A drilled pier shall be considered defective in accordance with Subarticle 411-5(D) of the 2018 *Standard Specifications for Roads and Structures* and drilled pier acceptance shall be based in part on the criteria in Article 411-6 of the 2018 *Standard Specifications for Roads and Structures* except for the top of pier tolerances in Subarticle 411-6(C) of the 2018 *Standard Specifications for Roads and Structures*.

If a drilled pier is under further investigation, do not grout core holes, backfill around the pier or perform any work on the drilled pier until the Engineer accepts the pier. If the drilled pier is accepted, dewater and grout core holes and backfill around the pier with approved material to finished grade. If the Engineer determines a pier is unacceptable, remediation shall be required in accordance with Article 411-6 of the 2018 *Standard Specifications for Roads and Structures*. No additional compensation or extension of completion date or time will be allowed for remediation of unacceptable drilled piers or post repair testing.

Permanently embed a plate in or mark top of piers with the pier diameter and depth, size and number of vertical reinforcing bars and the minimum compressive strength of the concrete mix at 28 days.

(B) Footings, Pedestals, Grade Beams and Wings

Excavate as necessary for footings, grade beams and wings in accordance with the plans, accepted submittals and Section 410 of the 2018 *Standard Specifications for Roads and Structures*. If unstable, caving or sloughing materials are anticipated or encountered, shore foundation excavations as needed with an approved method. Notify the Engineer when foundation excavation is complete. Do not place concrete or reinforcing steel until excavation dimensions and foundation material are approved by the Engineer.

Construct cast-in-place reinforced concrete footings, pedestals, grade beams and wings with the dimensions shown in the plans, and in accordance with Section 825 of the 2018 *Standard Specifications for Roads and Structures*. Use forms to construct portions of pedestals and grade beams protruding above finished grade. Provide a chamfer with a 3/4" horizontal width for pedestal and grade beam edges exposed above finished grade. Place concrete against undisturbed soil or backfill and fill in accordance with Article 410-8 of the 2018 *Standard Specifications for Roads and Structures*. Proper

compaction around footings and wings is critical for foundations to resist uplift and torsion forces.

(C) Anchor Rod Assemblies

Size anchor rods for design and the required projection above top of foundations. Determine required anchor rod projections from nut, washer and base plate thicknesses, the protrusion of three to five anchor rod threads above top nuts after tightening and the distance of one nut thickness between top of foundations and bottom of leveling nuts.

Protect anchor rod threads from damage during storage and installation of anchor rod assemblies. Before placing anchor rods in foundations, turn nuts onto and off rods past leveling nut locations. Turn nuts with the effort of one workman using an ordinary wrench without a cheater bar. Report any thread damage to the Engineer that requires extra effort to turn nuts.

Arrange anchor rods symmetrically about center of base plate locations as shown in the plans. Set anchor rod elevations based on required projections above top of foundations. Securely brace and hold rods in the correct position, orientation and alignment with a steel template. Do not weld to reinforcing steel, temporary casings or anchor rods.

Install top and leveling (bottom) nuts, washers and the base plate for each anchor rod assembly in accordance with the following procedure:

(1) Turn leveling nuts onto anchor rods to a distance of one nut thickness between the top of foundation and bottom of leveling nuts. Place washers over anchor rods on top of leveling nuts.

(2) Determine if nuts are level using a flat rigid template on top of washers. If necessary, lower leveling nuts to level the template in all directions or if applicable, lower nuts to tilt the template so the metal pole or upright truss will lean as shown in the plans. If leveling nuts and washers are not in full contact with the template, replace washers with galvanized beveled washers.

(3) Verify the distance between the foundation and leveling nuts is no more than one nut thickness.

(4) Place base plate with metal pole or upright truss over anchor rods on top of washers. High mount luminaires may be attached before erecting metal poles but do not attach cables, mast arms or trusses to metal poles or upright trusses at this time.

(5) Place washers over anchor rods on top of base plate. Lubricate top nut bearing surfaces and exposed anchor rod threads above washers with beeswax, paraffin or other approved lubricant.

(6) Turn top nuts onto anchor rods. If nuts are not in full contact with washers or washers are not in full contact with the base plate, replace washers with galvanized beveled washers.

(7) Tighten top nuts to snug-tight with the full effort of one workman using a 12" wrench. Do not tighten any nut all at once. Turn top nuts in increments. Follow a star pattern cycling through each nut at least twice.

(8) Repeat (7) for leveling nuts.

(9) Replace washers above and below the base plate with galvanized beveled washers if the slope of any base plate face exceeds 1:20 (5%), any washer is not in firm contact with the base plate or any nut is not in firm contact with a washer. If any washers are replaced, repeat (7) and (8).

(10) With top and leveling nuts snug-tight, mark each top nut on a corner at the intersection of two flats and a corresponding reference mark on the base plate. Mark top nuts and base plate with ink or paint that is not water-soluble. Use the turn-of-nut method for pretensioning. Do not pretension any nut all at once. Turn top nuts in increments for a total turn that meets the following nut rotation requirements:

NUT ROTATION REQUIREMENTS (Turn-of-Nut Pretensioning Method)	
Anchor Rod Diameter, inch	**Requirement**
≤ 1 1/2	1/3 turn (2 flats)
> 1 1/2	1/6 turn (1 flat)

Follow a star pattern cycling through each top nut at least twice.

(11) Ensure nuts, washers and base plate are in firm contact with each other for each anchor rod. Cables, mast arms and trusses may now be attached to metal poles and upright trusses.

(12) Between four and 14 days after pretensioning top nuts, use a torque wrench calibrated within the last 12 months to check nuts in the presence of the Engineer. Completely erect mast arm poles and cantilever signs and attach any hardware before checking top nuts for these structures. Check that top nuts meet the following torque requirements:

TORQUE REQUIREMENTS	
Anchor Rod Diameter, inch	**Requirement, ft-lb**
7/8	180
1	270
1 1/8	380
1 1/4	420
≥ 1 1/2	600

If necessary, retighten top nuts in the presence of the Engineer with a calibrated torque wrench to within ± 10 ft-lb of the required torque. Do not overtighten top nuts.

(13) Do not grout under base plate.

OVERHEAD AND DYNAMIC MESSAGE SIGN FOUNDATIONS

(9-11-17) DB9 R07

Description

Sign foundations include foundations for overhead and dynamic message signs (DMS) supported by metal poles or upright trusses. Sign foundations consist of footings with pedestals or drilled piers with or without grade beams or wings, conduit and anchor rod assemblies. Construct sign foundations in accordance with the contract and accepted submittals. Define "cantilever sign" as an overhead cantilever sign support in accordance with Figure 1-1 of the 2013 AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals*, 6th Edition, including the latest interim specifications and the latest interim revisions.

Materials

Use sign foundation materials that meet the *Foundations and Anchor Rod Assemblies for Metal Poles* Project Special Provision found elsewhere in this RFP.

Subsurface Conditions

Assume the following soil parameters and groundwater elevation for sign foundations unless these subsurface conditions are not applicable to sign locations:

(A) Unit weight (γ) = 120 pcf,

(B) Friction angle (ϕ) = 30°,

(C) Cohesion (c) = 0 psf and

(D) Groundwater 7 feet below finished grade.

A subsurface investigation shall be required if the Engineer determines these assumed subsurface conditions do not apply to a sign location and the sign cannot be moved. Subsurface conditions

requiring a subsurface investigation shall include, but are not limited to, weathered or hard rock, boulders, very soft or loose soil, muck or shallow groundwater. No additional compensation or extension of completion date or time will be allowed for subsurface investigations.

Subsurface Investigations

Use a prequalified geotechnical consultant to perform one standard penetration test (SPT) boring in accordance with ASTM D1586 at each sign location requiring a subsurface investigation. Rough grade sign locations to within two feet of finished grade before beginning drilling. Drill borings to two drilled pier diameters below anticipated pier tip elevations or refusal, whichever is higher.

Use the computer software gINT version V8i or later manufactured by Bentley Systems, Inc. with the current NCDOT gINT library and data template to produce SPT boring logs. Provide boring logs sealed by a geologist or engineer licensed in the state of North Carolina.

Sign Foundation Designs

Design sign foundations for the wind zone and clearances shown in the plans and the slope of finished grade at each sign location. Use the assumed soil parameters and groundwater elevation above for sign foundation designs unless a subsurface investigation is performed or required by the Engineer. For sign locations requiring a subsurface investigation, design sign foundations for the subsurface conditions at each sign location. Design footings, pedestals, drilled piers, grade beams and wings in accordance with the 2013 AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals*, 6th Edition, including the latest interim specifications and the latest interim revisions. In some instances, conflicts with drainage structures may dictate sign foundation types.

Design footings in accordance with Section 4.4 of the AASHTO *Standard Specifications for Highway Bridges*. Do not use an allowable bearing pressure of more than 3,000 psf for footings.

Design drilled piers for side resistance only in accordance with Section 4.6 of the AASHTO *Standard Specifications for Highway Bridges* except reduce ultimate side resistance by 25% for uplift. Use the computer software LPILE version 2016 or later manufactured by Ensoft, Inc. to analyze drilled piers. Provide drilled pier designs with a horizontal deflection of less than 1" at top of piers. For cantilever signs with single drilled pier foundations supporting metal poles, use wings to resist torsion forces. Provide drilled pier designs with a factor of safety of at least 2.0 for torsion.

For drilled pier sign foundations supporting upright trusses, use dual drilled piers connected with a grade beam having a moment of inertia approximately equal to that of either pier. The Broms' method is acceptable to analyze drilled piers with grade beams instead of LPILE. Use a safety factor of at least 3.5 for the Broms' design method in accordance with C13.6.1.1 of the 2013 AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals*, 6th Edition, including the latest interim specifications and the latest interim revisions.

Submit boring logs, if any, working drawings and design calculations for acceptance in accordance with Article 105-2 of the 2018 *Standard Specifications for Roads and Structures*. Submit working drawings showing plan views, required foundation dimensions and elevations and typical sections with reinforcement, conduit and anchor rod assembly details. Include all boring logs, design calculations and LPILE output for sign foundation design submittals. Have sign foundations designed, detailed and sealed by an engineer licensed in the state of North Carolina.

Construction Methods

Construct footings, pedestals, drilled piers, grade beams and wings and install anchor rod assemblies for sign foundations in accordance with the *Foundations and Anchor Rod Assemblies for Metal Poles* Project Special Provision found elsewhere in this RFP. Submit boring logs, if any, working drawings and design calculations for acceptance in accordance with Article 105-2 of the 2018 NCDOT *Standard Specifications for Roads and Structures*. Submit working drawings showing plan views, required foundation dimensions and elevations and typical sections with reinforcement, conduit and anchor rod assembly details. Include all boring logs, design calculations and LPILE output for sign foundation design submittals. Have sign foundations designed, detailed and sealed by an engineer licensed in the state of North Carolina.

ROADWAY LIGHTING FOUNDATIONS

(9-12-17) DB9 R09

Description

Roadway lighting foundations include foundations for high mount and light standards. High mount foundations for high mount standards and standard foundations for light standards consist of drilled piers or footings with pedestals, conduit and anchor rod assemblies. Construct roadway lighting foundations in accordance with the contract, 2018 *Roadway Standard Drawings* and accepted submittals. Define "high mount foundation" as a drilled pier including the conduit and anchor rod assembly that meets 2018 Roadway Standard Drawing No. 1402.01. Define "standard foundation" as a drilled pier or footing with pedestal including the conduit and anchor rod assembly that meets 2018 Roadway Standard Drawing No. 1405.01.

Materials

Use roadway lighting foundation materials that meet the *Foundations and Anchor Rod Assemblies for Metal Poles* Project Special Provision found elsewhere in this RFP. Provide metal shrouds for median mounted light standards in accordance with Subarticle 1400-4(I) of the 2018 *Standard Specifications for Roads and Structures*.

Roadway Lighting Foundations

(A) High Mount Foundations

Construct high mount foundations for the wind zone and high mount heights shown in the Final Lighting Plans provided by the Department unless the following assumed site conditions are not applicable to high mount locations:

1) Soil with unit weight (γ) $\geq$ 120 pcf and friction angle (ϕ) $\geq$ 30°,

2) Groundwater at least 7 feet below finished grade and

3) Slope of finished grade 6:1 (H:V) or flatter.

A subsurface investigation and high mount foundation design shall be required if the Engineer determines these assumed site conditions do not apply to a high mount location and the high mount cannot be moved. Subsurface conditions requiring a high mount foundation design include but are not limited to weathered or hard rock, boulders, very soft or loose soil, muck or shallow groundwater. No extension of completion date or time will be allowed for subsurface investigations or high mount foundation designs.

(B) Standard Foundations

Construct standard foundation types for the light standard types shown in the Final Lighting Plans provided by the Department and the site conditions at each light standard location. When weathered or hard rock, boulders or obstructions conflict with standard foundations, submit an alternate standard foundation design for acceptance in accordance with Article 105-2 of the 2018 *Standard Specifications for Roads and Structures*. No extension of completion date or time will be allowed for alternate standard foundations.

Subsurface Investigations

Use a prequalified geotechnical consultant to perform one standard penetration test (SPT) boring in accordance with ASTM D1586 at each high mount location requiring a subsurface investigation. Rough grade high mount locations to within two feet of finished grade before beginning drilling. Drill borings to two drilled pier diameters below anticipated pier tip elevations or refusal, whichever is higher.

Use the computer software gINT version V8i or later manufactured by Bentley Systems, Inc. with the current NCDOT gINT library and data template to produce SPT boring logs. Provide boring logs sealed by a geologist or engineer licensed in the state of North Carolina.

High Mount Foundation Designs

Design high mount foundations for the wind zone and high mount heights shown in the Final Lighting Plans provided by the Department and the slope of finished grade and subsurface

conditions at each high mount location. Design drilled piers, footings and pedestals in accordance with the 2013 AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals*, 6th Edition, including the latest interim specifications and the latest interim revisions.

Design drilled piers for side resistance only in accordance with Section 4.6 of the AASHTO *Standard Specifications for Highway Bridges*. Use the computer software LPILE version 2016 or later manufactured by Ensoft, Inc. to analyze drilled piers. Provide drilled pier designs with a horizontal deflection of less than 0.5" at top of piers.

Design footings in accordance with Section 4.4 of the AASHTO *Standard Specifications for Highway Bridges*. Do not use an allowable bearing pressure of more than 3,000 psf for footings.

Submit boring logs, working drawings and design calculations for acceptance in accordance with Article 105-2 of the 2018 *Standard Specifications for Roads and Structures*. Submit working drawings showing plan views, required foundation dimensions and elevations and typical sections with reinforcement, conduit and anchor rod assembly details. Include all boring logs, design calculations and LPILE output for high mount foundation design submittals. Have high mount foundations designed, detailed and sealed by an engineer licensed in the state of North Carolina.

Construction Methods

Grade around roadway lighting locations with cut and fill slopes as shown on 2018 Roadway Standard Drawing No. 1402.01 or 1405.01. Construct drilled piers, footings and pedestals and install anchor rod assemblies for roadway lighting foundations in accordance with the *Foundations and Anchor Rod Assemblies for Metal Poles* Project Special Provision found elsewhere in this RFP.

For median mounted light standards, place concrete for median barriers and underlying pedestals in the same pour. Construct concrete barriers in accordance with the contract and make concrete median barriers continuous through standard foundations. Coordinate construction of median mounted light standards with sign structures, concrete barriers, drainage structures, etc. to avoid conflicts.

LIGHTING

(5-17-18) DB14 R02-2

1.00 DESCRIPTION

The work covered by this Section consists of furnishing, installing, connecting, and placing into satisfactory operating condition roadway lighting at locations shown on the Final Lighting Plans provided by the Department. Perform all work in accordance with these Special Provisions, the Final Lighting Plans provided by the Department, the National Electrical Code, and North Carolina Department of Transportation "Standard Specifications for Roads and Structures" (2018 *Standard Specifications for Roads and Structures*).

Perform all work in conformance with Division 14 of the 2018 *Standard Specifications for Roads and Structures* except as modified or added to by these Special Provisions. Install all bore pits outside the clear zone, as defined in the AASHTO Roadside Design Guide or as directed by the Engineer.

In addition to the requirements of Division 1400, other specific Sections of the 2018 *Standard Specifications for Roads and Structures* applicable to the work on this project are listed below.

Section 1401	High Mount Standard and Portable Drive Unit
Section 1404	Light Standards
Section 1407	Electric Service Pole and Lateral
Section 1408	Light Control System
Section 1409	Electrical Duct
Section 1410	Feeder Circuits
Section 1411	Electrical Junction Boxes

** **NOTE** ** Deleted Section 1412

2.00 LIGHT STANDARD LIGHT EMITTING DIODE (LED) LUMINAIRES

2.10 DESCRIPTION

Furnish, install and place into satisfactory operation luminaire, either on a bracket arm or directly mounted to the standard, complete with all light sources, drivers, wiring inside standard from circuit conductors to luminaire, in-line breakaway fuseholders and fuses and ground wiring at the pole on light standards less than 55 feet in height.

Type	HPS Replacement Equivalent	Color Temp	Min. % of initial output at 70k hours	Min. Maintained Delivered Lumens
185W LED	250W	3500K ±500K	83%	15,500
285W LED	400W	3500K ±500K	83%	19,150

Third party certified photometric files in IES format are required to be submitted with the catalog cuts for the proposed LED roadway luminaire. Photometric files must show that proposed luminaire will meet or exceed the design shown in the Final Lighting Plans provided by the Department.

The manufacturer shall state the Light Loss Factor (LLF) used in the photometric calculations for the proposed luminaire. LLF shall be calculated as follows:

LLF = Lamp Lumen Depreciation (LLD) x Luminaire Dirt Depreciation (LDD)

- Lamp Lumen Depreciation (LLD) shall be the value calculated and reported by the manufacturer based on the LM-80 and TM-21 reports for the proposed fixture for 70,000 hours at 25° C.
- Luminaire Dirt Depreciation (LDD) = 0.90

2.20 MATERIALS

2.21 LUMINAIRE REQUIREMENTS

A. General Requirements

- LM-79 photometric test reports shall be provided for all LED luminaires. LM-79 luminaire photometric reports shall be produced by an independent test laboratory and include the following:

    - Name of test laboratory. The test laboratory must hold National Voluntary Laboratory Accreditation Program (NVLAP) accreditation for the IES LM-79 test procedure or must be qualified, verified, and recognized through the U.S. Department of Energy's CALiPER program.
    - Report number
    - Date
    - Complete luminaire catalog number. Catalog number tested must match the catalog number of the luminaire submitted, except for variations which do not affect performance.
    - Description of luminaire, LED light source(s), and LED driver(s)
    - Goniophotometry
    - Colorimetry

- LM-80 lumen maintenance test report shall be provided for each respective LED light source.
- Luminaire shall be constructed of a single piece die cast aluminum housing. Each luminaire shall be finished gray in color unless otherwise noted.
- The luminaire shall have a 7 pin ANSI C136.41 compliant photocontrol receptacle for future expansion capabilities.
- Provide a summary of reliability testing performed for LED driver.
- Luminaires maximum total power consumption shall not exceed the values shown in the table above. Nominal luminaire input wattage shall account for nominal applied voltage and any reduction in driver efficiency due to sub-optimal driver loading.
- Luminaire shall have a maximum Backlight, Uplight & Glare (BUG) rating of 3-0-3 and an IESNA distribution of Type II or Type III as required to meet the spacing, the average maintained footcandle level and the average to minimum uniformity ratio requirements shown on the Final Lighting Plans provided by the Department. The same BUG rating and distribution type shall be used throughout the project.
- Minimum Ingress Protection (IP) dust and moisture ratings for the luminaire electrical components (driver and surge protection) and luminaire optical components shall be IP65 and IP66, respectively, as specified in ANSI C136.25.

- Luminaire shall have external and internal labels per ANSI C136.15 and ANSI C136.22, respectively. Internal label shall identify the manufacturer, year and month of manufacture and the manufacturer's part number.
- Luminaire shall have an internal bubble level.
- Luminaires shall start and operate in -20° C to +40° C ambient.
- Luminaires shall be rated for continuous service at an ambient temperature of 40°C (104°F)
- Electrically test fully assembled luminaires before shipment from factory.
- Effective Projected Area (EPA) and weight of the luminaires shall not exceed 1.4 square feet and 46 lbs.
- Luminaires shall be designed for ease of electrical component replacement.
- Luminaires shall be rated for minimum 2G vibration, minimum, per ANSI C136.31.
- LED light sources and drivers shall be RoHS compliant.
- The luminaire manufacturer shall have no less than five (5) years of experience in manufacturing LED-based lighting products and the manufacturing facility must be ISO 9001 certified.
- Luminaire shall have a 1.25" to 2.0" adjustable tenon mount for connection to luminaire bracket arm assembly.
- Pole hardware, nuts, bolts, and washers, etc. shall be made from 18-8 stainless steel, or steel conforming to ASTM A307 galvanized in accordance with ASTM A153.
- Grommets shall be installed in cable entry holes. Cable entry holes shall be free from sharp edges which might cut conductors or an ungloved hand.
- All conductors inside the luminaire shall be neatly secured with tie-wraps as needed to prevent pinch points and assist in trouble shooting.

B. Driver

- Shall be 0V-10V dimmable.
- Rated case temperature shall be suitable for operation in the luminaire operating in the ambient temperature range of -20° C to +40° C.
- Shall be rated for 480VAC at 50/60 Hz and shall operate normally for input voltage fluctuations of ± 10%.
- Shall have a minimum Power Factor (PF) of 0.90 at full input power and across specified voltage range.
- Shall provide UL Class II output.

C. Surge Suppression

- Integral surge protection shall meet ANSI/IEEE C62.45 procedures based on ANSI/IEEE C62.41.2 definitions for standard and optional waveforms for location category C-High 10kV/10kA test, IEC 61000-4-2 (Electrostatic Discharge) 8kV Air/4kV Contact test and IEC 61000-4-4 (Fast Transients).

D. Electromagnetic interference

- Luminaires shall have a maximum Total Harmonic Distortion (THD) of 20% at full input power and across specified voltage range.
- Luminaires shall comply with FCC 47 CFR part 15 non-consumer RFI/EMI standards.

E. Electrical safety testing

- Luminaires shall be listed for wet locations.
- Luminaires shall be UL listed and labeled.

F. Finish

- Luminaires shall be painted with a corrosion resistant polyester powdered paint with a minimum 2.0 mil thickness.
- Luminaires shall exceed a rating of six per ASTM D1654 after 1000 hours of salt spray fog testing per ASTM B117.
- The coating shall exhibit no greater than 30% reduction of gloss per ASTM D523, after 500 hours of QUV testing at ASTM G154 Cycle 6.
- Exterior surfaces shall be smooth and free of burrs.

G. Thermal management

- Mechanical design of protruding external surfaces (heat sink fins) on roadway luminaries shall facilitate hose-down cleaning and discourage debris accumulation.
- Liquids or moving parts will not be allowed for thermal management.

H. Color Quality

- Minimum Color Rendering Index (CRI) of 70 with a Correlated Color Temperature (CCT) of 3000K to 4000K

I. Optics

- Transmissive optical components shall be applied in accordance with OEM design guidelines to ensure suitability for the thermal / mechanical / chemical environment.

J. The following shall be in accordance with corresponding sections of ANSI C136.37

- All internal components shall be assembled and pre-wired using modular electrical connections.

- Terminal blocks shall be used for incoming AC lines. Terminal blocks shall be easily accessible to installers or repair personnel. Wire nuts are prohibited inside the luminaire housing.

K. Latching and hinging

- Refractor and housing door holders and hinges shall be designed to maintain positive control of door to the luminaire body so as not to allow the accidental disengagement of either door.
- Drivers shall be mounted to a housing door designed to be opened from the bottom of the luminaire. Housing door shall allow easy removal for troubleshooting / repair on the ground.

L. Manufacturer or local sales representative shall provide installation and troubleshooting support via telephone and / or e-mail.

2.30 WARRANTY

Provide a minimum ten-year warranty covering maintained integrity and functionality of the luminaire housing, wiring, and connections, LED light source(s) and LED driver. Negligible light output from more than 10 percent of the LED packages constitutes luminaire failure.

Warranty period shall begin after final project acceptance by the Department. Supplier shall furnish documentation of warranty procedures to the Design-Build Team stating that warranty is for NCDOT.

2.40 CONSTRUCTION METHODS

Level and secure each luminaire in all directions. Adjust any luminaires, as directed by the Engineer, to provide optimal illumination distribution.

All LED packages on all luminaires must be operating normally at contract completion. Any luminaire displaying improper operating characteristics prior to contract completion will be replaced by the Design-Build Team at no additional cost to the Department.

3.00 HIGH MAST LIGHT EMITTING DIODE (LED) LUMINAIRES

3.10 DESCRIPTION

Furnish, install and place into satisfactory operation, LED luminaires on high mount standards as detailed in these Special Provisions.

The Design-Build Team shall supply Holophane or Cooper LED high mount luminaires as specified below or approved equal.

Mounting Height	Nos. of Fixtures	Holophane Part Number	Cooper Part Number
120'	8	HMLED3-PK3-40K-HVOLT-G-AW-P7	GAN-AF-10-LED-8-5WQ-AP-MA-4N7
100'	6	HMLED3-PK3-40K-HVOLT-G-AW-P7	GAN-AF-10-LED-8-5WQ-AP-MA-4N7
80'	8	HMLED3-PK1-40K-HVOLT-G-AW-P7	GAN-AF-06-LED-8-5WQ-AP-MA-4N7
60'	4	HMLED3-PK1-40K-HVOLT-G-AW-P7	GAN-AF-06-LED-8-5WQ-AP-MA-4N7

Any alternate luminaire submitted for approval must meet the minimum requirements in the table and sections below.

Mounting Height	Max. LED Fixture Wattage	Number & HPS Replacement Equivalent	Color Temp	Min. % of initial output at 70k hours	Min. Maintained Delivered Lumens (per fixture)
120'	560W	8 x 750W	3500K ±500K	87%	54,000
100'	560W	6 x 750W	3500K ±500K	87%	54,000
80'	335W	8 x 400W	3500K ±500K	87%	27,000
60'	335W	4 x 400W	3500K ±500K	87%	27,000

The Design-Build Team shall supply the Department with current catalog cuts and 3rd party certified photometric data files in Illuminating Engineering Society (IES) format for any alternate high mount luminaire submitted for approval. The Department will thoroughly evaluate alternate luminaires to determine if proposed alternate high mount luminaire meets or exceeds design criteria.

The manufacturer shall state the Light Loss Factor (LLF) used in the photometric calculations for the proposed luminaire. LLF shall be calculated as follows:

LLF = Lamp Lumen Depreciation (LLD) x Luminaire Dirt Depreciation (LDD)

- Lamp Lumen Depreciation (LLD) shall be the value calculated and reported by the manufacturer based on the LM-80 and TM-21 reports for the proposed fixture for 70,000 hours at 25° C.
- Luminaire Dirt Depreciation (LDD) = 0.90

High mount luminaire retrofit LED kits are not an acceptable alternative.

3.20 MATERIALS

3.21 LUMINAIRE REQUIREMENTS

A. General Requirements

- LM-79 photometric test reports shall be provided for all LED luminaires. LM-79 luminaire photometric reports shall be produced by an independent test laboratory and include the following:

    - Name of test laboratory. The test laboratory must hold National Voluntary Laboratory Accreditation Program (NVLAP) accreditation for the IES LM-79 test procedure or must be qualified, verified, and recognized through the U.S. Department of Energy's CALiPER program.
    - Report number
    - Date
    - Complete luminaire catalog number. Catalog number tested must match the catalog number of the luminaire submitted, except for variations which do not affect performance.
    - Description of luminaire, LED light source(s), and LED driver(s)
    - Goniophotometry
    - Colorimetry

- LM-80 lumen maintenance test report shall be provided for each respective LED light source.
- Luminaire shall be constructed of aluminum. Each luminaire shall be finished gray in color unless otherwise noted.
- The luminaire shall have a 7 pin ANSI C136.41 compliant photocontrol receptacle for future expansion capabilities.
- Provide a summary of reliability testing performed for LED driver.
- Luminaires maximum total power consumption shall not exceed the values shown in the table above. Nominal luminaire input wattage shall account for nominal applied voltage and any reduction in driver efficiency due to sub-optimal driver loading.
- Luminaire shall have a maximum Backlight, Uplight & Glare (BUG) rating of 5-0-5 and an IESNA distribution of Type V as required to meet the spacing, the average maintained footcandle level and the average to minimum uniformity ratio requirements shown on the Final Lighting Plans provided by the Department. The same BUG rating and distribution type shall be used throughout the project.
- Luminaire LED modules shall meet dust and moisture rating of IP-66, minimum.
- Luminaire shall have an external label per ANSI C136.15.
- Luminaires shall have an internal label per ANSI C136.22.
- Luminaires shall start and operate in -20° C to +40° C ambient.
- Electrically test fully assembled luminaires before shipment from factory.

- Effective Projected Area (EPA) and weight of the luminaires shall not exceed 1.3 square feet and 65 pounds.
- Luminaires shall be designed for ease of electrical component replacement.
- Luminaires shall be rated for minimum 2G vibration, minimum, per ANSI C136.31-2010
- LED light sources and drivers shall be RoHS compliant.
- The luminaire manufacturer shall have no less than five (5) years of experience in manufacturing LED-based lighting products and the manufacturing facility must be ISO 9001 certified.
- Pole hardware, nuts, bolts, and washers, etc. shall be made from 18-8 stainless steel, or steel conforming to ASTM A307 galvanized in accordance with ASTM A153.

B. Driver

- Shall be 0V-10V dimmable.
- Rated case temperature shall be suitable for operation in the luminaire operating in the ambient temperature range of -20° C to +40° C.
- Shall be rated for 480VAC at 50/60 Hz, and shall operate normally for input voltage fluctuations of ± 10%.
- Shall have a minimum Power Factor (PF) of 0.90 at full input power and across specified voltage range.

C. Surge Suppression

- Integral surge protection shall meet ANSI/IEEE C62.45 procedures based on ANSI/IEEE C62.41.2 definitions for standard and optional waveforms for location category C-High 10kV/10kA test, IEC 61000-4-2 (Electrostatic Discharge) 8kV Air/4kV Contact test and IEC 61000-4-4 (Fast Transients).

D. Electromagnetic interference

- Luminaires shall have a maximum Total Harmonic Distortion (THD) of 20% at full input power and across specified voltage range.
- Luminaires shall comply with FCC 47 CFR part 15 non-consumer RFI/EMI standards.

E. Electrical safety testing

- Luminaires shall be listed for wet locations.
- Luminaires shall be UL listed and labeled.

F. Finish

- Luminaires shall be painted with a corrosion resistant polyester powdered paint with a minimum 2.0 mil thickness.
- Luminaires shall exceed a rating of six per ASTM D1654 after 1000 hours of salt spray fog testing per ASTM B117.
- The coating shall exhibit no greater than 30% reduction of gloss per ASTM D523, after 500 hours of QUV testing at ASTM G154 Cycle 6.

G. Thermal management

- Mechanical design of protruding external surfaces (heat sink fins) shall facilitate hose-down cleaning and discourage debris accumulation.

H. Color Quality

- Minimum Color Rendering Index (CRI) of 70 with a Correlated Color Temperature (CCT) of 3000K to 4000K

I. Optics

- Transmissive optical components shall be applied in accordance with OEM design guidelines to ensure suitability for the thermal / mechanical / chemical environment.

J. The following shall be in accordance with corresponding sections of ANSI C136.37

- All internal components shall be assembled and pre-wired using modular electrical connections.
- Terminal blocks shall be used for incoming AC lines
- Latching and hinging

K. Manufacturer or local sales representative shall provide installation and troubleshooting support via telephone and / or e-mail.

3.30 WARRANTY

Provide a minimum ten-year warranty covering maintained integrity and functionality of the luminaire housing, wiring, and connections, LED light source(s) and LED driver. Negligible light output from more than ten percent of the LED packages constitutes luminaire failure.

Warranty period shall begin after final project acceptance by the Department.

3.40 CONSTRUCTION METHODS

Level and secure each luminaire in all directions. Securely terminate the wiring for each high mount luminaire and include an equipment grounding conductor to bond the housing to the supply cord grounding conductor.

Adjust any luminaires, as directed by the Engineer, to provide optimal illumination distribution.

All LED packages on all luminaires must be operating normally at contract completion. Any luminaire displaying improper operating characteristics prior to contract completion will be replaced by the Design-Build Team at no additional cost to the Department.

4.00 LIGHTING CONTROL SYSTEM

4.10 DESCRIPTION

The work covered under this section consists of furnishing and installing an entire control system, including enclosure, control panel, breakers, terminal blocks, wiring, conduits, lightning arrester, a concrete foundation, metal pole and galvanized slotted channel is also included.

The control system will be standard electrical components in a stainless-steel enclosure mounted on a metal pole with a concrete foundation.

4.20 MATERIALS

Refer to Division 10 of the 2018 *Standard Specifications for Roads and Structures*.

Item	Section
Conduit	1091-3
Portland Cement Concrete, Class A	1000-4
Wire and Cable	1091-2, 1400-2

Provide concrete foundations and wire in accordance with the 2018 *Standard Specifications for Roads and Structures*.

Use a piece of 4" rigid galvanized steel conduit (RGC), embedded in concrete as shown in the Final Lighting Plans provided by the Department, for mounting the control system.

Provide a NEMA type 3R stainless steel enclosure with external stainless mounting flanges, drip shield, back panel and continuous hinge door with a print pocket. Provide a door closing mechanism interlocked with a flange mounted operator handle to prevent the opening of the door with the service circuit breaker in the ON position, except by use of safety override devices.

Provide an enclosure approximately 36" (h) x 30" (w) x 10" (d) unless noted otherwise in the Final Lighting Plans provided by the Department. Provide only openings necessary for the entrance of conduits as shown in the Final Lighting Plans provided by the Department. Do not

use knockouts. Ensure the enclosure conforms with NEC Article 312 and mount the devices so the NEC clearances will be provided, except use 1.5" where not specified or noted in the tables for minimum wire bending space.

Use minimum 1-5/8" x 1-5/8" galvanized slotted steel framing channel with straps and bolts for the mounting brackets and hardware for attaching the enclosure. Use galvanized finish on the brackets and hardware and coat all field cuts or scratches with organic zinc repair paint.

Provide a neutral bar, bonded to the panel, with sufficient box lug type terminals to accept the required number of wires.

Mount components to the back panel with manufacturer supplied mounting brackets or permanently attached screw studs.

Use a service circuit breaker providing a minimum interrupting rating of 22,000 A. Provide thermal magnetic, molded case, permanent trip breakers. Provide multi-tap, solderless, load side box lugs or distribution terminal blocks of the appropriate size. Use insulating material approved for NEMA 3R applications. Provide a breaker with a voltage and amperage rating as indicated in the Final Lighting Plans provided by the Department.

Use feeder circuit breakers which are rated 14,000 A minimum interrupting capacity and have an open type molded case with a non-adjustable thermal magnetic trip setting as noted in the Final Lighting Plans provided by the Department.

Where Communication Gateways are required, provide a single pole, open type gateway circuit breaker rated at 240 VAC phase to ground with a minimum interrupting current capacity of 5,000 A and a high magnetic trip setting of 15 A.

Use a Type 1 surge protection device (SPD) meeting UL 1449 and UL 96A, designed to contain and arrest an arc of 20,000 A. Install the SPD on the load side of the service breaker.

Use terminals and lugs rated for the connection of the appropriate size copper conductors. All conductors shall be made of copper and neatly wrapped in bundles or run in plastic raceways.

Perform all galvanizing in accordance with Section 1076.

Provide a drawing to scale showing the location, brand and catalog number of each component of the control system for approval. The completed light control system shall be marked "Suitable for Use as Service Equipment", in a prominent location in the enclosure, in accordance with NEC Article 409.110. If the control system is not made in a certified UL 60947-4-1A Panel Shop, a third party, recognized by the Department of Insurance as having the authority, shall label the control systems.

4.30 CONSTRUCTION METHODS

Construct the new control system foundation at the new location as shown in Roadway Standard Drawing No. 1408, with the top of the foundation three inches above finished grade.

Fasten the enclosure to the pole by means of a galvanized bracket assembly as shown in the Final Lighting Plans provided by the Department. Make all cuts square and remove all rough edges. Have mounting holes match existing mounting holes of the enclosure.

Arrange all conduits entering the enclosure in a neat symmetrical manner and extend directly downward into the foundation. Install six RGC feeder circuit conduits as shown in the Roadway Standard Drawings.

Install a Control System Junction Box as shown in the Final Lighting Plans provided by the Department. Stub all feeder circuit conduits and spare conduits from Control System in the Control System Junction Box. See Section 1412 of the 2018 *Standard Specifications for Roads and Structures* for junction box construction methods. See the Final Lighting Plans provided by the Department for conduit sizes. Place pull cord in any unused conduits and cap unused conduit in junction box.

To prevent the creation of electrically parallel paths, install a bonded conduit choke on the underground termination point of the system grounding conductor conduit in accordance with NEC Article 250.64(E). Do not terminate the system grounding conduit under the concrete foundation pad.

Install a grounding electrode system consisting of a minimum of two ground rods spaced not less than six feet apart at all new lighting control system panels. Connect ground rods with an appropriately sized bonding jumper.

Apply two coats of organic zinc repair paint to all field cut metal and conduit threads as specified in Article 1076-7 of the 2018 *Standard Specifications for Roads and Structures*.

Install a 4" to 2" galvanized reducing bushing to the top of the 4" RGC the control system enclosure is mounted to. Install a ten-foot section of 2" RGC on the reducing bushing and install a cap on the top of the 2" RGC.

5.00 COMMUNICATION GATEWAY

5.10 DESCRIPTION

The Design-Build Team shall provide and install a communication gateway at each control system location on the project. The communication gateway will be used to provide communication from the control nodes on the luminaires to the central monitoring software. The communication gateway shall be mounted on a piece of rigid galvanized conduit installed above the lighting control panel.

5.20 MATERIAL

The communication gateway shall be a GE LightGrid gateway rated for the voltage shown in the Final Lighting Plans provided by the Department.

Use conduit and conductors as specified in Article 1400-2 of the 2018 *Standard Specifications for Roads and Structures*.

Provide stainless steel straps, galvanized conduit hangers, galvanized bolts, washers and nuts, and liquid-tight flexible metallic conduit (LFMC).

5.30 CONSTRUCTION METHODS

Mount the communication gateway to the 2" RGC pole, installed as part of the control system special provision, using the bands included with the gateway. Remove an existing cable gland in the bottom of the gateway enclosure and replace with a ½" RGC fitting. Install ½" RGC and appurtenances required to route conduit to the bottom of lighting control panel enclosure. Transition RGC to LFMC to make the turn into the bottom of the enclosure. Secure LFMC to bottom of enclosure using a weatherproof fitting. Install a bonding bushing on the LFMC fitting inside the enclosure and attach to bonding jumper inside the enclosure.

Strap standoffs with rigid conduit hangers to the 2" RGC and secure ½" conduit to the conduit hanger. Install #12 THWN conductors inside the ½" RGC for power from the gateway circuit breaker in the control system enclosure to the gateway. Use a UV resistant cable tie to secure the magnetic GPS antenna to the frame.

See Section 7.00 below for commissioning requirements.

6.00 CONTROL NODE

6.10 DESCRIPTION

The Design-Build Team shall provide and install a communication node with each LED luminaire on the project. The communication node will be used to interface with the Department's Statewide lighting control system.

6.20 MATERIALS

The communication node shall be a GE LightGrid version 2.0 node rated for the same service voltage as the luminaire. No other materials are required for this section.

6.30 CONSTRUCTION METHODS

Install communication node on the seven-pin photocell receptacle of the luminaire. The communication node utilizes a twist-lock connection to ensure positive connection to the luminaire.

See Section 7.00 below for commissioning requirements.

7.00 SMART CONTROL SYSTEM INITILIZATION AND COMMISSIONING

7.10 DESCRIPTION

The Communication Gateways and Control Nodes, as described in the prior sections, require commissioning to enable communication with the existing Statewide lighting control system.

The Design-Build Team shall coordinate with Brady / Trane Services (Brady) at 919-232-5764 or warranty.request@bradyservices.com to have Brady commission the smart controls system, incorporate new gateways and control nodes into the LightGrid infrastructure, and troubleshoot communication issues. Brady shall bill the Design-Build Team directly for these services.

The Department will reimburse the Design-Build Team for the actual verified cost of Brady's charges for LightGrid service charges. The LightGrid service charges that the Department will reimburse include efforts by Brady to: commission the newly installed gateways and control nodes; place the GE LightGrid system into 24/7 operation; place the system in normal dusk to dawn operation; and troubleshoot communication issues with the LightGrid system.

7.20 MATERIALS

No materials are required for this section.

7.30 CONSTRUCTION METHODS

As part of this contract, the Design-Build Team shall provide new GE LightGrid gateways and control nodes. See Sections 5.00 and 6.00, respectfully, of these Project Special Provisions for gateway and control node requirements.

As a function of the LightGrid system, the Design-Build Team is unable to turn the lights on for testing during the day. The luminaires installed as part of this project are powered 24 / 7; however, the control node installed on each luminaire has an integral photocontrol, preventing the luminaire from operating during daylight hours.

The Design-Build Team shall notify Brady at least two weeks prior to beginning the construction work. Brady will remotely commission the new LightGrid system, override the internal control node photocontrol and turn all the control nodes on for 24 / 7 operation for the duration of the lighting construction. This will allow the Design-Build Team to turn the lighting circuits on and off during the day via the breakers in the lighting control panel.

The Design-Build Team shall notify Brady again when lighting work is complete. At that point Brady will remotely confirm that there is communication between the control nodes and the gateway, and will place the system to normal dusk to dawn operation.

In the event that a communication failure of some, or all, control nodes or the gateway is encountered, the Design-Build Tea m shall coordinate with Brady to troubleshoot and resolve the failure.

HIGH VISIBILITY TRAFFIC CONTROL DEVICES

(7/12/2019)

Description

In accordance with this RFP, the Design-Build Team shall furnish and install high visibility devices for projects on Interstates and Freeways with durations of 24 months or more. High visibility devices include drums, stationary work zone signs and portable work zone signs. All of these devices shall be new. Used devices are not acceptable.

The purpose of high visibility devices is to enhance the conspicuity of the devices in order to improve both safety and mobility through the interstate and freeway work zones. In addition, using new devices help to ensure they remain in compliance with required retroreflective properties for the full life of the project and to improve the overall appearance of Significant Work Zones throughout the State.

Materials

A) General

Use materials in accordance with the manufacturer's recommendations that will retain both durability and retroreflectivity as described elsewhere in this project special provision for a period of at least 36 months.

The following are required High Visibility devices to be used for Work Zone Performance applications.

- Drums (Type XI fluorescent orange sheeting)
- Stationary Work Zone Signs
- Rigid Portable Work Zone Signs

All drums shall be new and meet the existing requirements of Section 1089-5 of the 2018 NCDOT *Standard Specifications for Roads and Structures* and shall have Type XI fluorescent orange sheeting that meets the retroreflective requirements of Section 1092-2 of the 2018 NCDOT *Standard Specifications for Roads and Structures*.

All stationary work zone signs shall be new and meet the existing requirements of Section 1089-1 of the 2018 NCDOT *Standard Specifications for Roads and Structures*. Legend overlays are prohibited and shall not be accepted on the Interstate / Freeway or associated intersecting roadways.

All portable work zone signs shall be new and have composite substrates as described in Section 1089-1 of the 2018 NCDOT *Standard Specifications for Roads and Structures*. The remainder of the existing requirements of Section 1089-1 of the 2018 NCDOT *Standard Specifications for Roads and Structures* remain. Used sign stands are acceptable.

B) Material Qualifications / Certifications

Only use materials as listed above that are on the NCDOT Approved Products List. In addition, provide a Type 3 Material Certification for all materials in accordance with Section 106-3 and Section 1087-4 of the 2018 NCDOT *Standard Specifications for Roads and Structures*.

(C) Performance

Poor performance of any device or sign at any site, whether or not related to a specific contract may be grounds for removing the material from the NCDOT Approved Products List and / or removing from any project under contract.

Construction Methods

All requirements of Section 1110-3 and Section 1130-3 of the 2018 NCDOT *Standard Specifications for Roads and Structures* shall apply except roll up signs are not permitted for use. The use of skinny drums are prohibited for any nighttime lane closures on Interstates and Freeways.

Maintenance

Replace any sign or drum that prematurely fails due to any damage or defect that causes it to perform unsatisfactorily with an "in kind" device of similar quality and age according to the guidelines set forth in the American Traffic Safety Service Association's (ATSSA) Quality Guidelines for Work Zone Traffic Control Devices. An "in kind" replacement sign or drum is not required to be new, however, it shall be less than one year old and have 100% of its original sheeting area and at least 85% of the retroreflective qualities of a new device, so that it is undetectable adjacent to the original devices and signs placed on the project.

WORK ZONE TRAFFIC "PATTERN MASKING"

(8-25-15) (Rev. 10-1-18)

Description

In accordance with this RFP, the Design-Build Team shall furnish and install Work Zone Traffic "Pattern Masking" material for placement on existing asphalt pavements during work zone operations. The Work Zone Traffic "Pattern Masking" material shall be black in color and used during temporary traffic patterns to completely cover the entire pavement surface; thus masking / concealing the existing pavement markings and allowing the revised work zone pavement markings to be placed on a newly applied black surface. The purpose of the Work Zone Traffic "Pattern Masking" is to eliminate the grind marks and "ghost markings" on pavement surfaces which can create motorist confusion and pavement damage while providing an incomparable

contrast between the revitalized black pavement color and newly applied pavement markings for work zone patterns of up to a year.

Materials

A) General

Use materials in accordance with the manufacturer's recommendations that shall retain a black color for a period of at least 12 months. The black material shall be a flat black color when fully cured and shall completely mask / conceal the existing pavement markings for the same minimum 12-month period.

The black material shall not exhibit glare or retroreflectance in either day or night conditions. To ensure the black material provides ample concealment and does not exhibit excessive glare, the material opaqueness shall be a minimum of 95% and the retroreflective properties shall not exceed 4 mcd/lux/m^2.

The black material shall not adversely affect the ability of the pavement to drain water or make the pavement adversely slick in either dry or wet conditions. The black material shall adhere to the skid properties as described in Section (C) below.

The black material shall not contain any petroleum components or any Volatile Organic Compounds (VOC's).

The black material shall not exhibit excessive cracking or create excessive cracking to the pavement surface after placement.

The black material shall be manufactured to bond successfully to asphalt pavements. The black material shall allow resurfacing treatments to be applied directly over its surface without having to be removed to obtain successful bonding of the new asphalt overlays.

The black material shall be manufactured to receive any type of polyurea, epoxy, polymer, cold applied plastic, and / or thermoplastic pavement marking materials.

B) Material Qualifications / Certifications

The Design-Build Team shall only use Work Zone Traffic "Pattern Masking" materials that are on the NCDOT Approved Products List. In accordance with Article 106-3 of the 2018 NCDOT *Standard Specifications for Roads and Structures*, the Design-Build Team shall 1) provide a Type 3 (Manufacturers) Certification that ensures the black material meets or exceeds the requirements in this provision and 2) provide a Type 5 (Typical Certified Test Report) Certification that ensures the black material has been tested by an independent testing company to verify that the braking / skid requirements, as described in Section (C) below, are met or exceeded.

C) Performance

In accordance with the ASTM E274 or ASTM E303-93 test standards (2008), the Design-Build Team shall provide independent testing laboratory results on the Work Zone Traffic "Pattern Masking" material skid properties.

The black material shall provide the minimum frictional resistance numbers noted below when tested with either test standard:

- The minimum average Skid Number (SN) for ASTM E274 shall be 37.
- The minimum average British Pendulum Number (BPN) for ASTM E303-93 (2008) shall be 37.

At any time the black material fails to adequately keep underlying existing pavement markings concealed, in the Department's sole discretion, the Design-Build Team shall immediately replace the section of the material required to conceal the pavement markings. The work zone travel lane shall retain its black distinguishable appearance throughout the life of the temporary traffic pattern. Normal wearing is expected in the travel lane wheel paths, but the work zone travel lanes shall always have a noticeable black appearance during the minimum 12-month pattern masking life. The Design-Build Team shall replace any material that prematurely fails to keep the underlying existing pavement markings concealed or does not retain its black color contrast, in the Department's sole discretion, for the required minimum 12-month duration.

If a temporary traffic pattern duration is longer than 12 months and the black material does not continue to meet the requirements herein, the Design-Build Team shall replace the material at no cost to the Department.

The Work Zone Pattern Masking material shall retain its black color and continue to conceal the pavement markings underneath after a single snowplow event within its 12-month expected life.

If the work zone experiences more than 1 snowplowing event, the Engineer will determine if the Work Zone Pattern Masking is still performing adequately or if replacement is necessary due to excessive damage caused by snowplow activities. If the material is damaged to the point where 20% or more of the concealed pavement markings are revealed, it shall be replaced, at an eight-inch width to re-conceal the exposed pavement markings, and paid for as extra work in accordance with Subarticle 104-8-(A) of the NCDOT 2018 *Standard Specifications for Roads and Structures* at the unit price of $0.50 per linear foot, unless the traffic pattern is to change within 30 days.

Construction Methods

A) Application Equipment

Except as allowed below, the equipment to apply Work Zone Traffic "Pattern Masking" material shall be truck mounted pneumatic or airless spray machines with suitable arrangement of

atomizing nozzles and controls to assure complete and uniform coverage of the entire pavement surface with consistent thickness as required in this provision.

The Design-Build Team may only use hand applied manual application methods, or any other non-truck mounted application equipment or device, to install black material for applications shorter than 1,000 feet.

The application spray equipment shall be set up in such a manner to apply the Work Zone Traffic "Pattern Masking" material in spray pattern widths to ensure complete and uniform coverage of the entire travelway and to reduce the overlap from multiple passes. If the application equipment isn't equipped to spray a full 12-foot travel lane in a single pass, it shall be set-up to spray a minimum six- foot width. No more than two passes per travel lane will be allowed. A one-inch overlap width shall be required when applying the material in widths less than the full width of a travel lane.

B) Material Application

Regardless of the temporary pattern / traffic shift width, the Work Zone Traffic "Pattern Masking" material shall be applied to the full width and length of the pavement surface. Specifically, throughout the limits of the traffic pattern / traffic shift changes, the Work Zone Traffic "Pattern Masking" material shall mask / conceal the existing pavement markings and provide a new black uniform surface for the placement of the revised pavement markings.

The Work Zone Pattern Masking material shall be applied to the pavement markings being concealed in two separate applications. The first application shall be applied directly onto the existing pavement markings at a width equivalent to the width of the markings being concealed at a uniform thickness of 20 mils. This application doesn't require the application of anti-skid elements. The second application shall be applied on the pavement markings being concealed as well as the entire pavement width at a uniform thickness of 20 mils along with the anti-skid elements at a rate of eight lbs/gallon or greater.

The Design-Build Team has the option of applying the two-coat masking application to the pavement markings in separate passes or in a single pass depending on how the application equipment is configured.

The masking / concealment of individual pavement marking edge lines, skips, mini skips, lane lines or gore lines shall be prohibited.

The Work Zone Traffic "Pattern Masking" material shall be applied at a uniform thickness of 20 mils directly onto the existing pavement.

The Work Zone Traffic "Pattern Masking" material shall be set and / or cured in order to receive pavement markings within ten minutes of installation according to the temperature requirements stated elsewhere in this provision.

C) Surface Preparation

- **Asphalt** - The existing pavement surface shall be swept clean and prepared in accordance with the manufacturer's recommendations to receive the Work Zone Traffic "Pattern Masking" material. Although no existing pavement marking line removal is required, any

loose, flaking or other laitance material, including residual / loose or raised glass beads from existing markings shall be machine broomed or scarifed as directed by the manufacturer before placing the Work Zone Traffic "Pattern Masking" material.

- **Work Zone Traffic Pattern Masking Material shall not be placed on concrete pavements without overlays and / or concrete bridge decks.**

- **The conflicting pavement marking lines shall be removed by water blasting methods only.**

D) Temperature and Weather Limitations

Work Zone Traffic "Pattern Masking" material shall not be applied unless the ambient air temperature and the pavement temperature is 40° F or higher. Do not install Work Zone Traffic "Pattern Masking" material unless the pavement surface is completely dry. Do not install Work Zone Traffic "Pattern Masking" material within four hours of a significant rain event such as a thunderstorm with rainfall intensities equal to or greater than one inch / per hour. Always follow the manufacturer's recommendations for placement during periods of excessive humidity.

Maintenance

There should be no required maintenance of the Work Zone Traffic "Pattern Masking" material. The Design-Build Team shall replace any Work Zone Traffic "Pattern Masking" material that prematurely fails to keep pavement markings masked / concealed and / or retain its black color, in the Department's sole discretion, for the full minimum 12-month duration. Any traffic control and / or material costs due to replacement shall be at no cost to the Department.

SEQUENTIAL FLASHING WARNING LIGHTS
(10/08/2016)

Description

In accordance with this RFP, the Design-Build Team shall furnish and install Sequential Flashing Warning Lights on drums used for merging tapers during nightly work activities on interstates and freeways with speed limits greater than 55 mph and / or facilities that have significant traffic volumes.

The purpose of these lights is to assist the motorist in determining which direction to merge when approaching a lane closure. It is also designed to reduce the number of late merges resulting in devices being struck and having to be reset to maintain positive guidance at the merge point. The successive flashing of the lights shall occur from the upstream end of the merging taper to the downstream end of the merging taper in order to identify the desired vehicle path.

Materials

The Sequential Flashing Warning Lights shall meet all of the requirements for warning lights within the current edition of the Manual of Uniform Traffic Control Devices (MUTCD).

Each light unit shall be capable of operating fully and continuously for a minimum of 200 hours when equipped with a standard battery set.

Each light in the sequence shall be flashed at a rate of not less than 55 times per minute and not more than 75 times per minute. The flash rate and flash duration shall be consistent throughout the sequence.

Supply a Type 3 Certification (Independent Test Lab results) documenting all actual test results for the specified parameters contained in the Institute of Transportation Engineer's (ITE's) *Purchase Specification for Flashing and Steady Burn Warning Lights*. The laboratory shall also identify all manufacturer codes and part numbers for the incandescent lamp or LED clusters, lenses, battery, and circuitry, and the total width of the light with the battery in place. The complete assembly shall be certified as crashworthy when firmly affixed to the channelizing device.

All Sequential Flashing Warning Lights shall be on the NCDOT Work Zone Traffic Control Approved Products List.

Construction Methods

Sequential Flashing Warning Lights shall be used for night time lane closures.

These lights shall flash sequentially beginning with the first light and continuing until the final light.

The Sequential Flashing Warning Lights shall automatically flash in sequence when placed on the drums that form the merging taper.

The number of lights used in the drum taper shall equal the number of drums used in the taper.

Sequential Flashing Warning Lights shall only be mounted on drums.

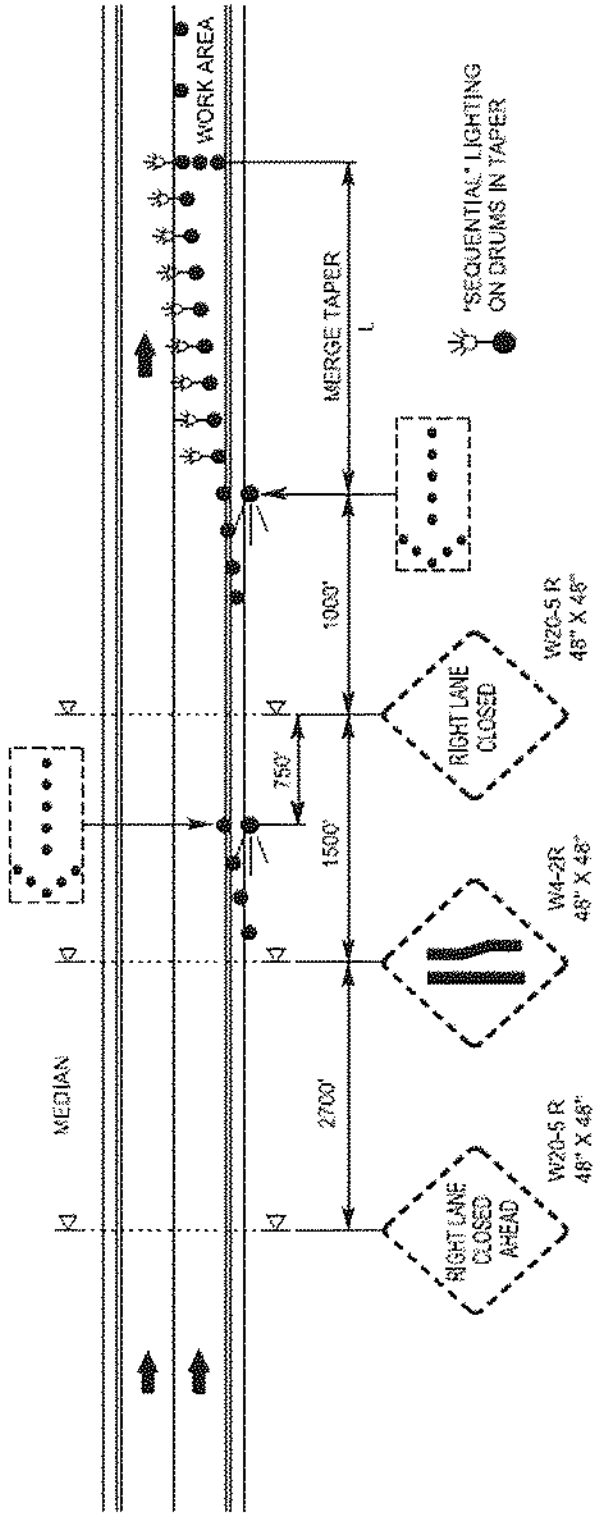
The Sequential Flashing Warning Lights shall be weather independent and visual obstructions shall not interfere with the operation of the lights.

The Sequential Flashing Warning Lights shall automatically sequence when placed in line in an open area with a distance between lights of ten to 100 feet. A ten-foot stagger in the line of lights shall have no adverse effect on the operation of the lights.

If one light fails, the flashing sequence shall continue. If more than one light fails, all of the lights shall be automatically turned to the "off" mode. Non-sequential flashing is prohibited.

When lane closures are not in effect, the Sequential Flashing Warning Lights shall be deactivated.

SEQUENTIAL FLASHING WARNING LIGHTS



WORK ZONE PRESENCE LIGHTING
(10-8-16)

DESCRIPTION

In accordance with this RFP, the Design-Build Team shall furnish and install Work Zone Presence Lighting to supplement the Design-Build Team's construction / task (Portable Construction Lighting) and equipment lighting during nightly work activities on high speed (greater than 55 mph) facilities and / or facilities that have significant traffic volumes and impacts. The purpose of Work Zone Presence Lighting is to alert the motorist to the existence of an active work zone, improve worker visibility, and to assist in compliance of the work zone speed limit by providing lighting throughout the length of the lane closure.

MATERIALS

Anti-glare lighting systems shall be required. Work Zone Presence Lighting shall be in addition to the Design-Build Team's Portable Construction Lighting. Work Zone Presence Lighting shall be installed in accordance with the detail below and the manufacturer's recommendations.

All Work Zone Presence Lighting shall be supplied with a power source to provide the light output as described in the chart below.

Each light unit shall be capable of providing a minimum of 14,000 lumens illuminating a minimum area of approximately 3,000 square feet. The light shall be capable of being elevated to a height of 14 feet above the pavement.

Each light unit support base or mounting stand shall have the capability of being leveled.

Provide Work Zone Presence Lighting listed on the NCDOT Approved Product List.

CONSTRUCTION METHODS

The purpose of Work Zone Presence Lighting is to illuminate areas of the lane closure where construction / task lights are not located. Typical use is during lane closures for resurfacing and milling operations in locations where the pavement is being prepped for paving or milling, as well as where these operations have passed through that involve remaining work items such as rolling, coring / inspecting, shoulder and striping activities.

In addition, Work Zone Presence Lighting is permitted to be installed after the necessary traffic control has been installed for the lane closure(s). Once the lane(s) is closed and the Design-Build Team's operations have begun, the Work Zone Presence Lights can be installed according to the installation locations below.

At the end of the work night, the Work Zone Presence Lights may be removed, up to one hour, before the lane closure(s) is removed or removed after the lane(s) has been reopened since the lights are located outside of the travel lanes and do not give any misinformation to the traveling public.

Immediately replace any lighting unit that is not operational.

Installation Locations

1. Standard Lane Closure Lengths of Two Miles or Less

Position #1: Initially, place the Work Zone Presence Lighting starting one mile downstream of the merge taper and continue until the end of the lane closure. See detail below - Position #1.

Position #2: Once paving operations progress to the point where the construction / task lighting has to be relocated to finish paving for the night, the Work Zone Presence Lighting shall be relocated to the beginning of the lane closure. See detail below - Position #2.

2. Lane Closures Exceeding Two Miles (Must be approved by the Engineer)

Single Work Operations: If the lane closure is longer than two miles within a single work operation, begin installing the Work Zone Presence Lighting at the halfway point of the lane closure length and continue placing the lights until the end of the lane closure. Same procedure for relocation shall be followed as described above.

3. Multiple Work Operations Exceeding Two Miles (Must be approved by the Engineer)

If the lane closure is longer than two miles and two separate operations are working concurrently, treat as two separate locations. The Work Zone Presence Lighting shall be installed at the halfway point in each operation. The lights in the first operation shall end where the second operation begins. The lights in the second operation shall terminate with the end of the lane closure. Same procedure for relocation shall be followed as described above.

Lighting Unit Installation Requirements

The lighting units shall be installed inside the lane closure as shown on the detail below and spaced according to the chart below:

SPACING CHART

Light Output (Lumens)	Illuminated Fixture Area-Minimum (Square Feet)	Maximum Spacing (Feet)	Light Units (Per Mile)
14,000 to 35,000	4'	750'	7
35,001 to 60,000	5'	1,000'	5
Above 60,000	6' or greater	1,320	4

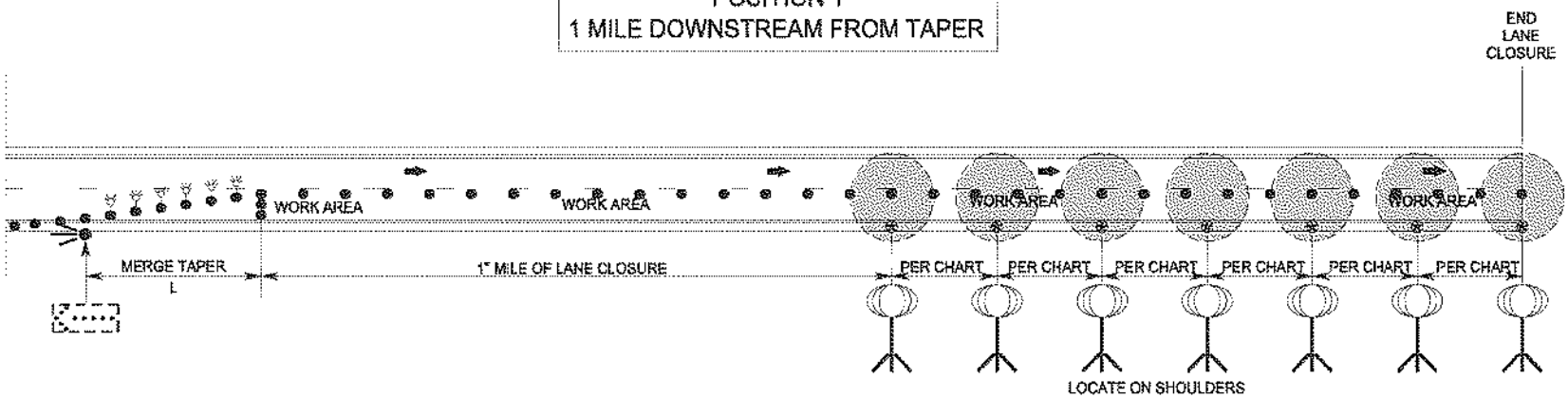
Whenever possible, each light unit shall be placed on a ten-foot paved shoulder according to the above spacing based on the amount of light output for each unit.

Each light unit shall be installed and moved as necessary to allow for efficient paving operations to take place, as well as to not interfere with the Design-Build Team's ability to light the work area. At no time shall Work Zone Presence Lighting be located in the same area as the Design-Build Team's construction / task lighting or conflict with his work operations.

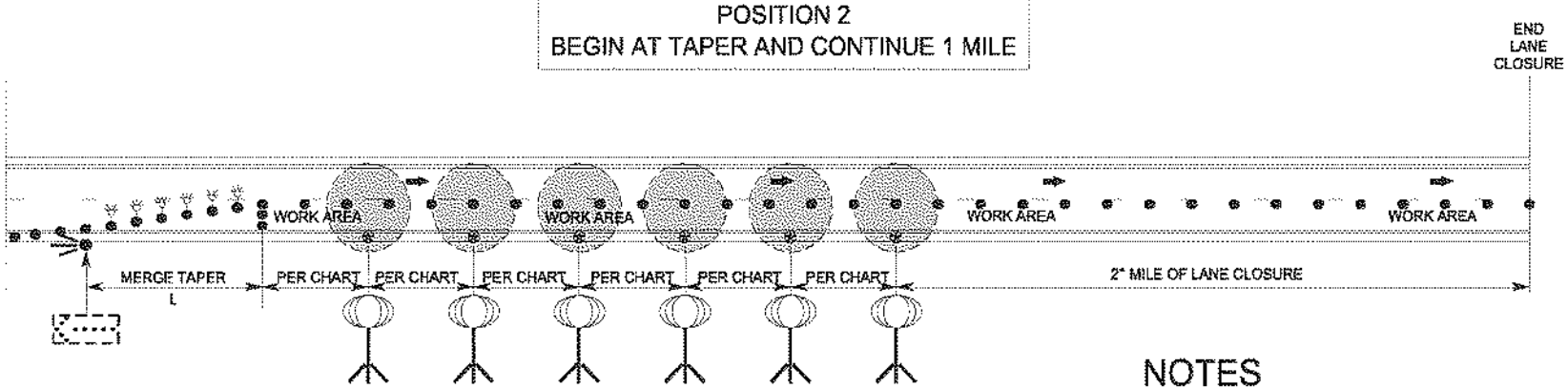
If the Design-Build Team provides sufficient construction / task lighting to meet the luminance requirements of Section 1413-3 of the 2018 *Standard Specifications for Roads and Structures* for the full length of the lane closure or if sufficient existing overhead lighting is present, Work Zone Presence Lighting may be eliminated as directed by the Engineer.

SEQUENTIAL FLASHING WARNING LIGHTS AND WORK ZONE PRESENCE LIGHTING

POSITION 1
1 MILE DOWNSTREAM FROM TAPER



POSITION 2
BEGIN AT TAPER AND CONTINUE 1 MILE



SPACING CHART

LIGHT OUTPUT (LUMENS)	MINIMUM LIGHTED FIXTURE AREA (SQUARE FEET)	MAXIMUM SPACING (FEET)	MAXIMUM LIGHT UNITS (PER MILE)
14,000 TO 35,000	4	750	7
35,001 TO 60,000	5	1,000	5
ABOVE 60,000	6 AND GREATER	1,320	4

NOTES

1) WORK ZONE PRESENCE LIGHTING MAY BE OMITTED FOR THE ENTIRE LANE CLOSURE IF THE CONTRACTOR PROVIDES SUFFICIENT CONSTRUCTION/ TASK LIGHTING TO MEET THE LUMINANCE REQUIREMENTS OF SECTION 1413-3 FOR THE FULL LENGTH OF THE LANE CLOSURE. IF EXISTING OVERHEAD ROADWAY LIGHTING IS FUNCTIONAL AND EXTENDS FOR THE FULL LENGTH OF THE LANE CLOSURE, OR AS DIRECTED BY THE ENGINEER.

2) PLACE ON PAVED OUTSIDE SHOULDER IF POSSIBLE.

3) IF THE LANE CLOSURE IS LONGER THAN 2 MILES USE ADDITIONAL PRESENCE LIGHTING AT THE RECOMMENDED SPACING. BEGIN INSTALLING WORK ZONE PRESENCE LIGHTING AT THE HALFWAY POINT OF THE LANE CLOSURE LENGTH FOR POSITION 1. POSITION 2 WILL BE THE FIRST HALF OF THE LANE CLOSURE LENGTH.

WORK ZONE DIGITAL SPEED LIMIT SIGNS

(10/08/2016)

Description

In accordance with this RFP, The Design-Build Team shall furnish and install Work Zone Digital Speed Limit Signs on interstates and freeways with speed limits greater than 55 mph and or facilities that have significant traffic volumes and impacts. These signs are regulatory speed limit signs with LED displays for the speed limit numbers. The purpose of Digital Speed Limit signs is to easily change work zone speed limits between activities that necessitate the need for a lower speed limit and the ones that do not.

Materials

Digital Speed Limit Signs shall be a minimum 36" wide x 48" high. The speed limit sign (R2-1) shall be black on white with high intensity white prismatic sheeting.

The Digital Speed Limit sign shall be mounted such that the bottom of the sign is seven feet above roadway.

The LED panel shall be a minimum of 18" wide x 28" high. The display on the LED panel shall be amber or white.

The LED numbers shall have a minimum 5 wide by 7 high pixel array with a minimum height of 18".

The LED panel shall have auto brightness / dimming capability.

The black on orange "WORK ZONE" sign shall be mounted above the Speed Limit sign. It shall be 36" wide x 24" high with high intensity prismatic orange sheeting.

The black on white "$250 FINE" sign shall be mounted below the Speed Limit sign. It shall be 36" wide x 24" high with high intensity prismatic white sheeting.

All digital speed limit systems shall have operational software and wireless communications that allows for remote operation and data monitoring. It shall be configured to allow access by the Engineer or his designee to change each sign independently or change the speed limit on all signs at once from a PC, tablet or cellular phone application.

Digital Speed Limit Signs may be trailer mounted or stationary mounted. The unit shall be Solar powered and have the ability to operate continuously. It shall be supplemented with a battery backup system which includes a 110/120 VAC powered on-board charging system.

The batteries, when fully charged; shall be capable of powering the display for 20 continuous days with no solar power. The unit shall be capable of being powered by standard 110/120 VAC power source.

Store the battery bank and charging system in a lockable, weather and vandal resistant box.

Optional Equipment / Capabilities

Work Zone Digital Speed Limit systems may include speed data collection. If provided, this information shall be available in a spreadsheet format and accessed remotely from a secure cloud location.

The Work Zone Digital Speed Limit systems may have radar equipment to detect approaching speeds.

The Work Zone Digital Speed Limit systems may have flashing beacons. If used, the beacons are to be 12" diameter LED circular yellow. They may be mounted either above, beside or below the sign assemblies and are to be centered horizontally. If used, the beacons shall alternately flash at rates not less than 50 or more than 60 times per minute.

All Work Zone Digital Speed Limit equipment shall be on the NCDOT Work Zone Traffic Control Approved Products List.

Construction Methods

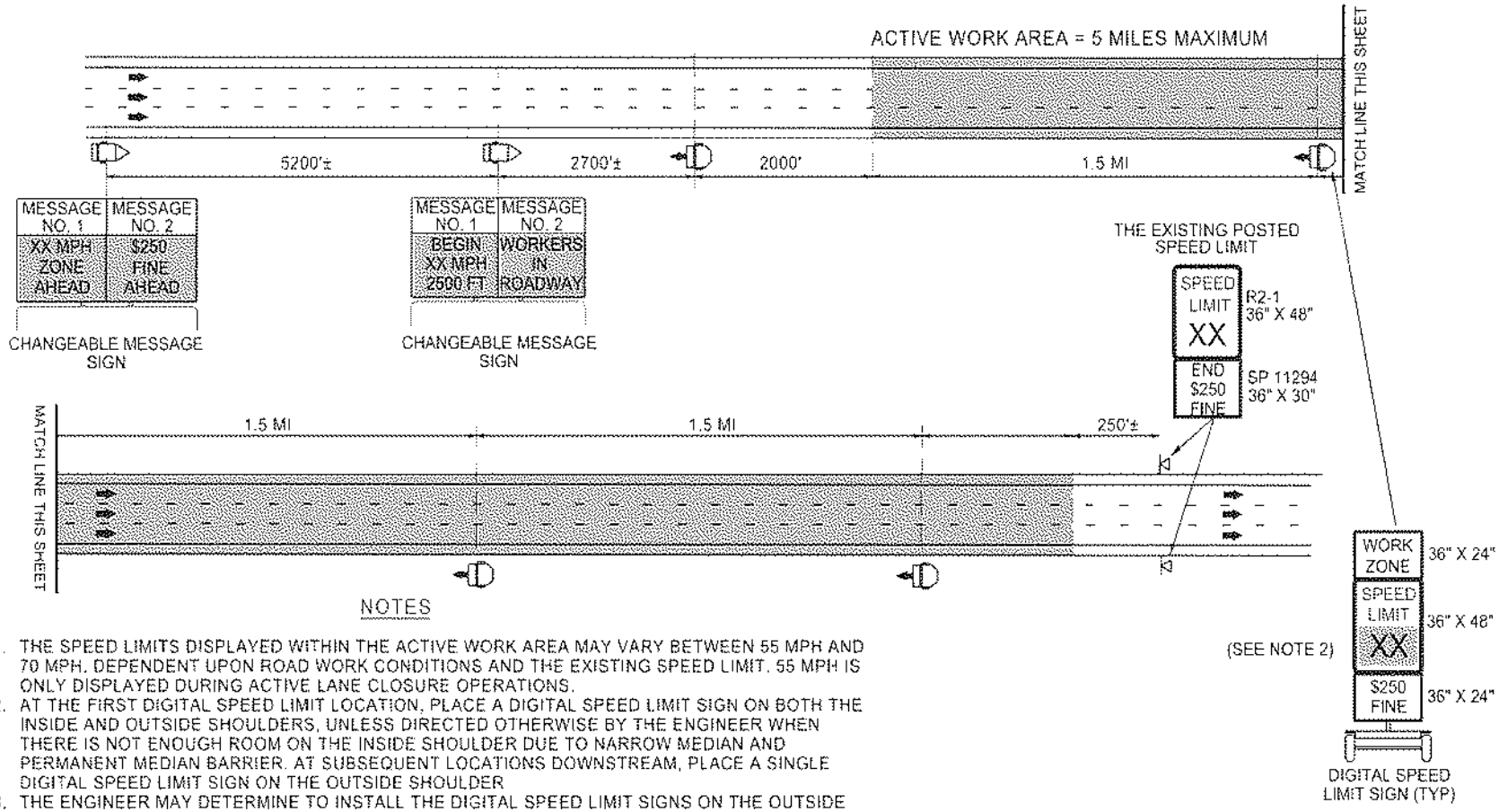
The Speed Limit shall be continuously displayed on the signs. The speed limits are the sole authority of the NCDOT. All speed limits shall be ordinanced by the State Traffic Engineer in order to have a lawfully enforceable speed limit.

The Regional Traffic Engineering Office and the Division Construction Engineer in coordination with the Work Zone Traffic Control Section will provide all Work Zone Speed Limit recommendations based on activities and conditions.

The Design-Build Team be responsible for coordinating with the Engineer when the Work Zone Speed Limits are to be changed and will have to seek approval by the Engineer or his designee before the Speed Limit is changed.

If the system has radar equipment and flashing beacons, the Digital Speed Limit systems shall have beacons activated when the "55 MPH" speed limit is being displayed. At all other speed limit displays (60 MPH, 65 MPH, 70 MPH), the beacons are not to be automatically activated until approaching speeds are detected to be 7 MPH or higher above the posted speed limit. Whenever possible, each trailer mounted unit shall be placed on the paved shoulder and shall have the capability of being leveled.

WORK ZONE "VARIABLE" SPEED LIMIT USING DIGITAL SPEED LIMIT SIGNS FOR INTERSTATE/ FREEWAY RESURFACING



NOTES

1. THE SPEED LIMITS DISPLAYED WITHIN THE ACTIVE WORK AREA MAY VARY BETWEEN 55 MPH AND 70 MPH. DEPENDENT UPON ROAD WORK CONDITIONS AND THE EXISTING SPEED LIMIT. 55 MPH IS ONLY DISPLAYED DURING ACTIVE LANE CLOSURE OPERATIONS.
2. AT THE FIRST DIGITAL SPEED LIMIT LOCATION, PLACE A DIGITAL SPEED LIMIT SIGN ON BOTH THE INSIDE AND OUTSIDE SHOULDERS, UNLESS DIRECTED OTHERWISE BY THE ENGINEER WHEN THERE IS NOT ENOUGH ROOM ON THE INSIDE SHOULDER DUE TO NARROW MEDIAN AND PERMANENT MEDIAN BARRIER. AT SUBSEQUENT LOCATIONS DOWNSTREAM, PLACE A SINGLE DIGITAL SPEED LIMIT SIGN ON THE OUTSIDE SHOULDER
3. THE ENGINEER MAY DETERMINE TO INSTALL THE DIGITAL SPEED LIMIT SIGNS ON THE OUTSIDE SHOULDER OR ON THE MEDIAN SIDE IF THE SIGNS ARE NOT HIGHLY VISIBLE TO ALL MOTORISTS.
4. THIS APPLICATION IS FOR SHORT-TERM ACTIVITIES. THE MAXIUMUM ACTIVE WORK AREA IS 5 MILES.
5. THE DIGITAL SPEED LIMIT SIGNS TAKE PRECEDENCE OVER EXISTING SPEED LIMIT SIGNS. ALL EXISTING SPEED LIMIT SIGNS SHALL BE COVERED OR REMOVED.
6. THE DIGITAL SPEED LIMITS SIGNS WILL BE INSTALLED (TRAILER MOUNTED OR STATIONARY MOUNTED) IN ADVANCE AND SPACED APPROXIMATELY 1.5 MILES THROUGHOUT THE ACTIVE WORK AREA, UNLESS DIRECTED OTHERWISE.
7. NCDOT HAS SOLE AUTHORITY OF THE SPEED LIMITS DISPLAYED ON THE DIGITAL SPEED LIMIT SIGNS.
8. THE WORK ZONE VARIABLE SPEED LIMIT AND THE $250 SPEEDING PENALTY ARE SEPARATE ORDINANCES THAT MUST BE SIGNED BY THE STATE TRAFFIC ENGINEER TO BE VALID AND ENFORCEABLE. WITHOUT A SIGNED ORDINANCE, THE SPEED LIMIT ON A FACILITY SHALL REMAIN UNCHANGED.

WHEN THERE IS NOT ACTIVE WORK IN THE TRAVEL LANE

SPEED LIMIT DISPLAY	CONDITIONS	
	DROP-OFFS BETWEEN OPEN TRAVEL LANES	PAVED SHOULDER DROP-OFFS
USE EXISTING SPEED LIMIT	< 1.0"	≤ 3.0"
REDUCE SPEED LIMIT 5 MPH	1.0" - 2.0"	> 3.0"

DROP-OFFS BETWEEN OPEN TRAVEL LANES SHOULD NOT EXCEED 2.0"

WORK ZONE PERFORMANCE PAVEMENT MARKINGS
(06/04/2015)

Description

The Design-Build Team shall furnish and install Work Zone "Performance" pavement markings that delineate the travel way for work zone traffic patterns on I-95, US Routes, and NC Routes, including all collector distributor roads, ramps and loops. The purpose of Work Zone "Performance" pavement marking is to provide a more durable work zone pavement marking that shall last the full duration of a traffic pattern without requiring replacement or reapplication for a period of up to 12 months. The Work Zone "Performance" pavement markings shall also provide a higher performance level, for both initial and residual retroreflectivity, than standard traffic paints to improve nighttime work zone visibility.

Materials

a) General

Use materials in accordance with the manufacturer's recommendations that shall retain both durability and a minimum retroreflectivity, as described elsewhere in this RFP, for a period of at least 12 months.

On concrete pavement, the Design-Build Team shall provide black contrast "Performance" pavement markings that contrast the white skip lines along through lanes and ramp lanes. The black contrast "Performance" pavement markings shall immediately follow the white skip line at the same width and half the length, or border the long edges of the white skip line at a width of 1.5". Black contrast "Performance" pavement marking shall be matt and non-retroreflective.

The Work Zone "Performance" pavement markings shall be manufactured to bond successfully to both concrete and asphalt pavements. The pavement marking materials shall be applied in a single application. The following are approved materials to be used for Work Zone "Performance" pavement markings:

- Polyurea
- Thermoplastic (Extruded and Sprayed)
- Epoxy
- Polymer (Single System)
- Cold Applied Plastic Type 4

When using Cold Applied Plastic Type 4 pavement markings, place temporary raised markers half on and half off edge lines and centerlines to help secure the tape to the roadway. Markers shall be spaced the appropriate distance apart as described by the 2018 Roadway Standard Drawing No. 1250.01, Sheet 1 of 3.

b) Material Qualifications / Certifications

The Design-Build Team shall only use Work Zone "Performance" pavement marking materials, as listed above, that are on the NCDOT Approved Products List at the time of installation. In accordance with Article 106-3, and Section 1087-4 of the NCDOT *Standard Specifications for Roads and Structures,* the Design-Build Team shall provide a Type 3 Material Certification for all materials, and a Type 3 and Type 4 certification for all reflective media.

Construction Methods

The Design-Build Team shall not use hand applied methods or any other non-truck mounted application equipment / device to install Work Zone "Performance" pavement markings for applications longer than 1,000 feet.

All Work Zone "Performance" pavement markings shall be installed in a single application.

a) Testing Procedures.

All Work Zone "Performance" pavement markings shall be tested by the Department through an independent Mobile Retroreflective Contractor. The Work Zone "Performance" pavement markings will be scanned to ensure the retroreflectivity requirements in Section **c** below are met.

b) Application Equipment

Application equipment shall be in accordance with Section 1205 of the NCDOT *Standard Specifications for Roads and Structures.*

c) Material Application

The Work Zone "Performance" pavement marking material shall be applied at the following minimum thicknesses:

- Polyurea = 20 mils wet
- Epoxy = 20 mils wet
- Thermoplastic (Extruded or Sprayed) = 50 mils wet
- Polymer = 20 mils wet
- Cold Applied Plastic (IV) = Manufacturer's recommendation

The Work Zone "Performance" pavement marking line widths shall be as follows:

- Edge lines, Solid Lane Lines, Skip and Mini-Skip Lines = 6"
- Gorelines = 12"

"No track" dry times for the liquid systems shall be ten minutes or shorter. Traffic shall not be placed on any material until it is sufficiently dry / cured to eliminate wheel tracking.

The minimum level of retroreflectivity for all Work Zone "Performance" pavement marking system selected shall be as follows:

Reflectometer Requirements for Work Zone "Performance" Pavement Markings

Color	Initial	6 Months	12 Months
White	375 mcd/lux/m2	275 mcd/lux/m2	150 mcd/lux/m2
Yellow	250 mcd/lux/m2	150 mcd/lux/m2	100 mcd/lux/m2

For the durations noted in the chart above, the Work Zone "Performance" pavement markings shall adhere to the corresponding retroreflectivity levels.

The Design-Build Team shall notify the Engineer, in writing, a minimum of 7 - 10 days prior to the installation of Work Zone "Performance" pavement markings. The Department will measure initial retroreflectivity levels with a mobile retroreflectomer within 30 days after placement to ensure compliance with the reflectifity levels in the chart above.

Work Zone "Performance" pavement markings shall maintain the retroreflectivity levels for the durations noted above. If the markings appear to be non-performing, in the Engineer's sole discretion, the Engineer may request additional retroreflectivity readings to be performed by the Department. If and when this becomes necessary, the same notification procedure as described above shall be used to have Work Zone "Performance" pavement markings measured by a Mobile Retroreflective Contractor.

If measured and found to be noncompliant, the Design-Build Team shall replace the Work Zone "Performance" pavement markings at no cost to the Department.

All Work Zone "Performance" pavement markings shall be durable enough to withstand a single snow event without showing excessive fatigue in either bonding or retroreflectivity. The Design-Build Team shall replace the Work Zone "Performance" pavement markings if a single snowplow event results in more than 25% of the pavement marking edgelines or skips being physically removed and / or the Work Zone "Performance" pavement markings do not meet the following minimum retroreflectivity values:

Reflectometer Requirements for Work Zone "Performance" Pavement Markings after a Single Snowplowed Event

Color	MINIMUM
White	150 mcd/lux/m2
Yellow	100 mcd/lux/m2

Unless the temporary traffic pattern is to be modified within 30 days, the Design-Build Team shall replace all non-compliant Work Zone "Performance" pavement markings within 30 days of determining they are non-compliant.

If the work zone experiences more than one snow event requiring snowplowing, the retroreflectivity values in the chart above will no longer apply. The Engineer will determine if the pavement markings are performing adequately and / or if replacement is necessary due to excessive damage caused solely by snowplow activities. If the Work Zone "Performance" pavement markings are found to be deficient, solely in the Engineer's discretion, they shall be replaced. In such case, the Work Zone "Performance" pavement markings will be paid for as extra work in accordance with Subarticle 104-8-(A) of the NCDOT *Standard Specifications for Roads and Structures* at the unit price of $0.40 per linear foot. Unless the temporary traffic pattern is to be modified within 30 days, the Design-Build Team shall replace all Work Zone "Performance" pavement markings damaged due to multiple snowplow events within 30 days.

If the Work Zone "Performance" pavement markings need to remain in place longer than 12 months, the markings shall be scanned by a Mobile Retroreflective Contractor. If the Work Zone "Performance" pavement markings meet or exceed the 12-month retroreflectivity requirements noted above, the markings can remain in place. If the Work Zone "Performance" pavement markings do not meet or exceed the 12-month retroreflectivity requirements noted above, the Design-Build Team shall replace the Work Zone "Performance" pavement markings within 15 days of the 12-month duration date at no cost to the Department. If and when this becomes necessary, the same notification procedure as described above shall be used to have Work Zone "Performance" pavement markings measured by a Mobile Retroreflective Contractor.

d) Surface Preparation

Prior to installation, all pavement surfaces to receive Work Zone "Performance" pavement markings shall be swept clean and prepared in accordance with the Manufacturer's recommendation.

e) Temperature and Weather Limitations

Work Zone "Performance" pavement markings shall only be applied when the ambient air temperature and the pavement temperature are 50° F or higher for

thermoplastic and are 40° F or higher for all other materials. The Design-Build Team shall not install Work Zone "Performance" pavement markings unless the pavement surface is completely dry. The Design-Build Team shall not install Work Zone "Performance" pavement markings within four hours of a heavy rain event, (rainfall intensities equal to or greater than 1 inch /per hour).

In the event a traffic shift must occur when the air and / or pavement temperatures are below the aforementioned minimums and / or a rain event occurs four hours prior to or during a planned traffic shift, the Design-Build Team may install temporary pavement marking paint, at the Engineer's sole discretion. Temporary pavement marking paint shall be applied in one application and shall produce a four-inch wide line at 15 mils (wet). Beads that provide the following minimum retroreflectivity shall be applied to the temporary pavement marking paint:

White:	225 mcd / lux / m2
Yellow:	200 mcd / lux / m2

The temporary pavement marking paint with beads shall maintain the minimum retroreflectivity noted above until placement of the Work Zone "Performance" pavement markings

The Design-Build Team shall replace / reapply temporary pavement marking paint with beads that does not adhere to the retroreflectivity requirements noted above at no cost to the Department. The Design-Build Team shall apply the Work Zone "Performance" pavement markings within 90 days of installing the temporary pavement marking paint with beads.

Excluding damage due solely to snowplow events, the Design-Build Team shall replace all Work Zone "Performance" pavement material that debonds and / or does not adhere to the retroreflectivity levels for the corresponding durations noted above at no cost to the Department.

TYPICAL MEDIAN ACCESS AREAS

(5/3/18)

Description

Perform the work covered by this section including, but not limited to, constructing, maintaining, and removing Typical Median Access Areas for construction vehicle ingress to and egress from the median to / from active travel lanes on controlled access facilities.

Typical Median Access Areas are not required when construction vehicle ingress and egress is conducted using lane closures as shown on Roadway Standard Drawing No. 1101.05, Sheet 2 of 2.

Materials

Refer to Divisions 6, 10, 11, 12, and 17 in the 2018 *Standard Specifications for Roads and Structures.*

Provide temporary traffic control devices listed on the NCDOT Approved Products List (APL).

Provide Work Zone Performance Pavement Markings (Reference the Transportation Management Scope of Work found elsewhere in this RFP)

Provide High Visibility Devices (Reference the *High Visibility Traffic Control Devices* Project Special Provision found elsewhere in this RFP)

Flashing Beacon and Detection System

(A) General

Provide flashing beacon and detection system components listed on the NCDOT ITS and Signals Qualified Products List (QPL).

Provide a trailer mounted flashing beacon and warning sign assembly that meets or exceeds the physical and operational requirements of the MUTCD, or other mounting method approved by the Department. The following specifications supplement those basic requirements.

- Provide a totally mobile complete unit capable of being located as traffic conditions demand.
- The warning sign height shall comply with Roadway Standard Drawing No. 1110.01, Sheet 1 of 3, when raised in the upright position.
- The flashing beacon housing assembly shall be of weather resistant construction.

(B) Power System

Provide a unit that is solar powered and supplemented with a battery backup system that includes a 110/120 VAC powered on-board charging system.

The unit shall also be capable of being powered by standard 110/120 VAC power source.

The batteries, when fully charged, shall be capable of powering the display for 20 continuous days with no solar power.

Store the battery bank and charging system in a lockable, weather, and vandal resistant box.

(C) Controller

Provide automatic brightness / dimming of the display and a manual override dimming switch.

The controller shall provide a battery-charge status indicator.

Mobile radio or any other radio transmissions shall not affect the controller.

Store the controller in a lockable, weather and vandal resistant box.

(D) Trailer

Finish all exterior metal surfaces with Federal orange enamel per Federal Standard 595a, color chip ID# 13538 or 12473 respectively. The trailer shall be able to support a 100 mph wind load with the display fully extended.

The trailer shall be equipped with leveling jacks capable of stabilizing the unit in a horizontal position when located on slopes 6:1 or flatter.

The trailer shall be properly equipped in compliance with North Carolina Law governing motor vehicles.

Provide a minimum four-inch wide strip of fluorescent orange retroreflective sheeting to the frame of the trailer. Apply the sheeting to all sides of the trailer. The retroreflective sheeting shall be Grade B that conforms to Article 1092-2 in the 2018 *Standard Specifications for Roads and Structures.* Drums may be supplemented around the unit in place of the sheeting.

(E) Reliability

Provide a sign unit, flashing beacons, and detection system with all components rated to operate at temperatures ranging from -30° F to 165° F.

Construction Methods

See Typical Median Access Detail below.

Temporary Acceleration Lane

Construct a temporary acceleration lane with a minimum length of 1720 feet and a minimum clear width of 12 feet from the face of the positive protection to the active travel lanes. At least 920 feet of parallel merge / diverge area shall be required adjacent to the active travel lanes, in addition to a 300-foot merging taper and a 500-foot channelized acceleration area that includes a 100-foot detection area. The channelized acceleration and detection areas shall have positive protection separating them from the active travel lanes and shall not overlap the 920 feet of parallel merge / diverge area.

For the proposed traffic volumes and durations in areas of temporary median access for construction traffic, the Design-Build Team shall 1) evaluate and upgrade the existing pavement structure, as needed, and 2) design all temporary pavement, in accordance with the Pavement Management Scope of Work found elsewhere in this RFP

Using Work Zone Performance Pavement Markings, install 12-inch yellow diagonal lines (2:1 slope) at 100-foot intervals throughout the upstream half of the parallel merge / diverge area, and at 55-foot intervals throughout the downstream half of the parallel merge / diverge area. Remove any conflicting markings in accordance with Section 1205.

Flashing Beacons and Detection System

Provide High Visibility advance warning signage as shown in the details below. Provide a flashing beacon system with two (2) flashing lights per sign to alert motorists in the active travel lanes of work vehicles entering from the median.

Provide a non-intrusive detection system capable of detecting vehicles in the work area at least 400 feet in advance of the parallel merge / diverge area. The detection system shall be programmed such that passing public traffic in active travel lanes and vehicles in the work area not intending to use the parallel merge / diverge area are not detected.

Once detection occurs, the beacons on the advance warning sign(s) shall begin flashing immediately at a rate of not less than 50 or more than 60 times per minute. The beacons on the advance warning sign(s) shall flash continuously in an alternating pattern at all times that work vehicles are detected. The beacons shall continue flashing for thirty (30) seconds after detection ceases before turning off, and personnel on site shall have the ability to adjust this time based on field conditions. The flashing beacon system shall remain dark when idle.

Expedite repairs due to failure, malfunction or damage to the flashing beacons and / or detection system. Furnish another flashing beacon system or detection system approved by the Department during the repair time. Repair or replace flashing beacon system and / or detection systems immediately; otherwise, suspend all construction activities requiring the use of the Median Access Area until the flashing beacon system and / or detection system is restored to operation.

Perform all maintenance operations recommended by the manufacturer of the flashing beacon system and detection system.

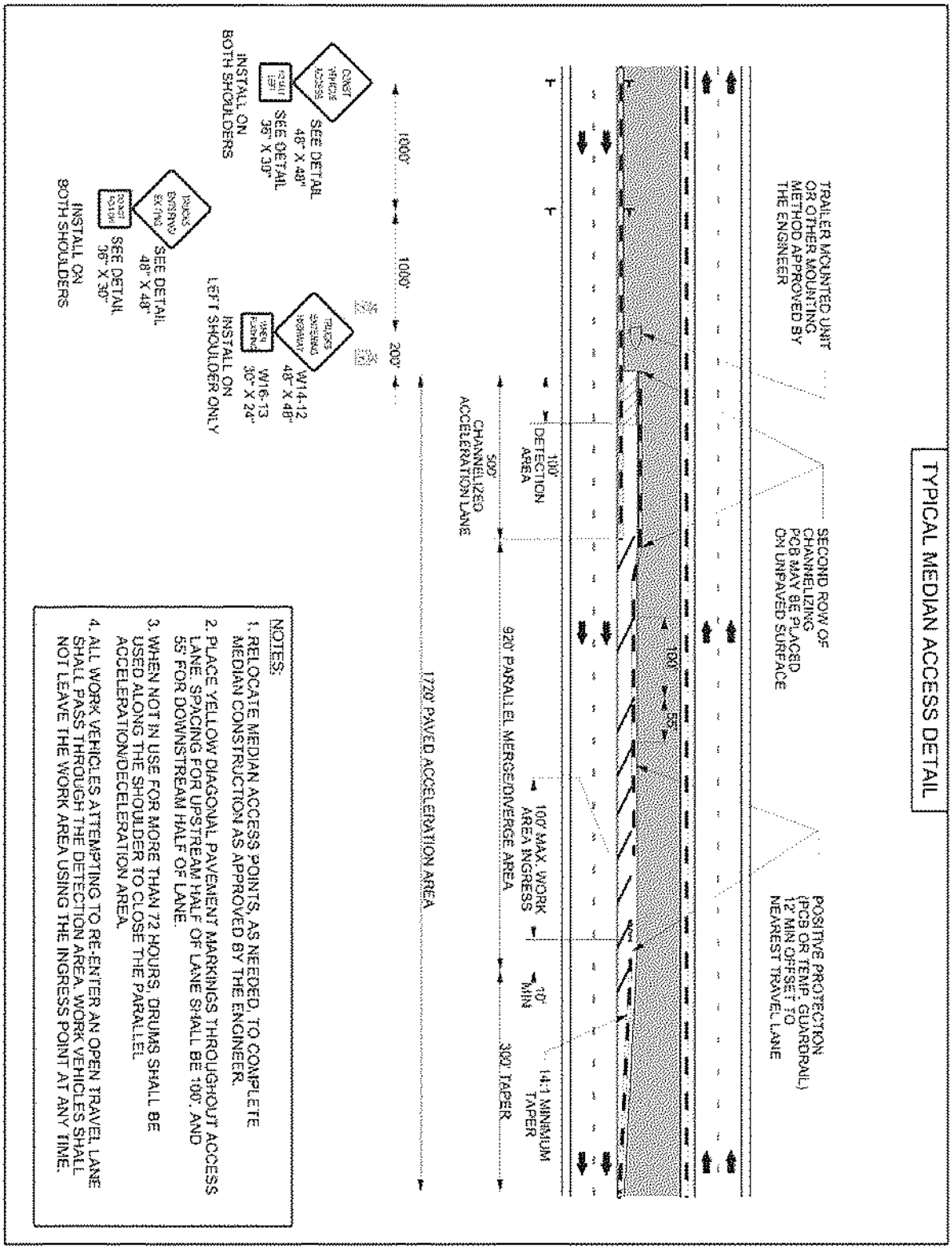
Location, Placement, and Use

Typical Median Access Areas shall not be located within one-half (1/2) mile of any interchange acceleration or deceleration lanes, unless approved by the Department. All proposed locations for Typical Median Access Areas shall be reviewed and approved by the Department prior to installation.

Work vehicles using a particular Median Access Area shall not utilize any interchange ramp (on-ramp or off-ramp) within one (1) mile of the Median Access area.

Typical Median Access Areas installed in accordance with this section will not require the use of temporary lane closures for ingress / egress of work vehicles.

The Design-Build Team shall comply with multiple and single vehicle hauling restrictions as shown in the TMP when performing hauling of equipment or materials to or from the project while using Typical Median Access Areas.



** NOTE ** Detail above has been modified

SIGN NUMBER: WZTC
TYPE: STATIONARY
QUANTITY: SEE PLANS

SIGN WIDTH: 5'-6"
HEIGHT: 5'-6"
TOTAL AREA: 30.3 Sq.Ft.

BORDER TYPE: INSET
RECESS: 0"
WIDTH: 0"
RADII: 0"

NO. Z BARS: 2
LENGTH: 58.0

BACKG COLOR: Fluorescent Orange
COPY COLOR: Black

SYMBOL	X	Y	WID	HT

MAT'L: 0.080" (2.0 mm) ALUMINUM

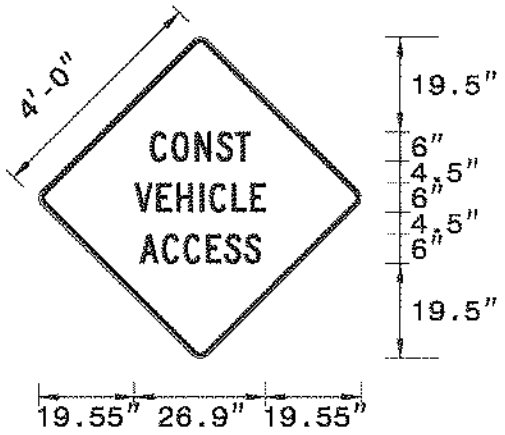
USE NOTES: 1,2

1. Legend and border shall be direct applied black non-reflective sheeting.
2. Background shall be NC GRADE B fluorescent orange retroreflective sheeting.

DESIGN BY: J.Navarrete
PROJECT ID: I5922

CHECKED BY:
LOCATION:

Mar 14, 2018
DIV:WZTC



Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS

Letter spacings are to start of next letter

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		V	E	H	I	C	L	E																			C 2000
	19.6	4.6	4.1	4.7	2	4.8	3.9	3.1	19.6																		26.9
		A	C	C	E	S	S																				C 2000
	20.6	4.6	4.4	4.6	3.8	4.1	3.4	20.6																			24.8

FILENAME: I5922 Sign Designs

NORTH CAROLINA D.O.T. SIGN DETAIL

SIGN NUMBER: WZTC
TYPE: STATIONARY
QUANTITY: SEE PLANS

SIGN WIDTH: 3'-0"
HEIGHT: 2'-6"
TOTAL AREA: 7.5 Sq.Ft.

BORDER TYPE: INSET
RECESS: 0.47"
WIDTH: 0.63"
RADII: 1.5"

NO. Z BARS:
LENGTH:

BACKG COLOR: Fluorescent Orange
COPY COLOR: Black

SYMBOL	X	Y	WID	HT

MAT'L: 0.080" (2.0 mm) ALUMINUM

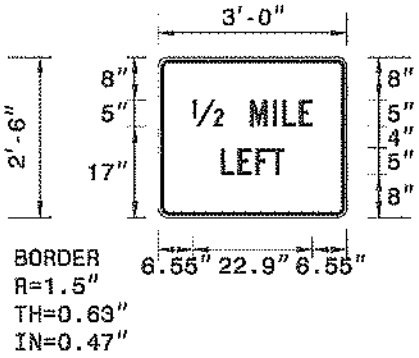
DESIGN BY: J.Navarrete
PROJECT ID: I5922

CHECKED BY:
LOCATION:

Mar 14, 2018
DIV:WZTC

USE NOTES: 1,2

1. Legend and border shall be direct applied black non-reflective sheeting.
2. Background shall be NC GRADE B fluorescent orange retroreflective sheeting.



149

Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS

Letter spacings are to start of next letter																											Series/Size Text Length
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		L	E	F	T																						C 2000
	12	3.3	3.4	2.8	2.8	12																					12.1

FILENAME: I5922 Sign Designs

NORTH CAROLINA D.O.T. SIGN DETAIL

SIGN NUMBER: WZTC
TYPE: STATIONARY
QUANTITY: SEE PLANS

SIGN WIDTH: 5'-6"
HEIGHT: 5'-6"
TOTAL AREA: 30.3 Sq.Ft.

BORDER TYPE: INSET
RECESS: 0"
WIDTH: 0"
RADII: 0"

NO. Z BARS: 2
LENGTH: 58.0

BACKG COLOR: Fluorescent Orange
COPY COLOR: Black

SYMBOL	X	Y	WID	HT

MAT'L: 0.080" (2.0 mm) ALUMINUM

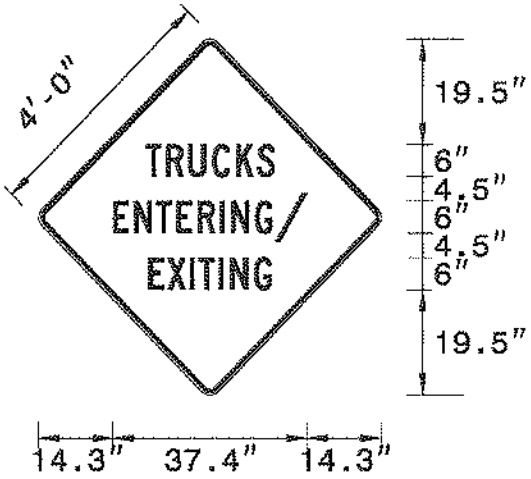
DESIGN BY: J.Navarrete
PROJECT ID: I5922

CHECKED BY:
LOCATION:

Mar 14, 2018
DIV: DIV

USE NOTES: 1,2

1. Legend and border shall be direct applied black non-reflective sheeting.
2. Background shall be MC GRADE B fluorescent orange retroreflective sheeting.



Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS

Letter spacings are to start of next letter

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		E	X	I	T	I	N	G																			C 2000
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FILENAME: I5922 Sign Designs

NORTH CAROLINA D.O.T. SIGN DETAIL

SIGN NUMBER: WZYC
TYPE: STATIONARY
QUANTITY: SEE PLANS

SIGN WIDTH: 3'-0"
HEIGHT: 2'-6"
TOTAL AREA: 7.5 Sq.Ft.

BORDER TYPE: INSET
RECESS: 0.47"
WIDTH: 0.63"
RADII: 1.5"

NO. Z BARS:
LENGTH:

BACKG COLOR: Fluorescent Orange
COPY COLOR: Black

SYMBOL	X	Y	WID	HT

MAT'L: 0.080" (2.0 mm) ALUMINUM

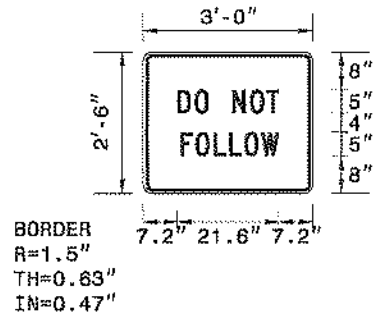
DESIGN BY: J.Navarrete
PROJECT ID: I5922

CHECKED BY:
LOCATION:

Mar 14, 2018
DIV:WZYC

USE NOTES: 1,2

1. Legend and border shall be direct applied black non-reflective sheeting.
2. Background shall be NC GRADE B fluorescent orange retroreflective sheeting.



Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS

Letter spacings are to start of next letter

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		F	O	L	L	O	W			C 2000
	7.9	3.1	3.9	3.3	3.2	3.6	3.8	7.2		20.9

FILENAME: I5922 Sign Designs

NORTH CAROLINA D.O.T. SIGN DETAIL

SOUND BARRIER WALL
(3-6-15) (Rev. 9-11-17)

1.0 DESCRIPTION

This work consists of furnishing precast panels, structural steel, concrete columns, and all other materials; handling, transporting, fabricating, galvanizing, and storing materials; furnishing erection drawings, pile excavation, backfilling, erecting and installing the sound barrier wall members and all other materials as required by the plans, the 2018 *Standard Specifications for Roads and Structures* and this Project Special Provision.

Unless otherwise approved by the Engineer, the Design-Build Team has a choice of ten or 15-foot pile spacing. Pile spacing greater than 15 feet will not be permitted. Provide consistent pile spacing the entire length of the wall. Use odd pile spacing, if necessary, only at the ends of the wall and at turning points, as approved by the Engineer.

A maximum one-foot drop or rise in top of wall elevation between wall sections will be permitted. Elevation changes greater than one foot, if necessary, will be allowed only at the end of the wall. Top of wall elevation changes that result in a jagged appearance shall not be allowed. Unless otherwise approved by NCDOT, the wall shall adhere to the Design Noise Report developed by the Design-Build Team.

(B) ALTERNATE PILE SPACING

As an alternate, the Design-Build Team may submit plans for pile spacing greater than ten feet and less than 15 feet for review and approval. A submittal reducing the post spacing shall include the material and design specifications. The submittal shall also include an elevation view depicting the revised post spacing and proposed top of wall elevations. The proposed top of wall elevations shall be equal to or greater than the dimensions shown in the Design Noise Report developed by the Design-Build Team. The excavated hole diameter, excavation depth and reinforcing steel shall be equal to the amount required for 15-foot pile spacing. A variance in the reinforcing steel will be allowed for the length of horizontal and number of vertical reinforcement bars in the precast panel for the alternate pile spacing.

Submit two sets of detailed plans for review. Include all details in the plans developed by the Design-Build Team, including the size and spacing of required reinforcement necessary to fabricate the precast panels. Have a North Carolina Registered Professional Engineer check, seal and date the aforementioned plans.

(C) ALTERNATE WALL TYPE

Walls that have been assigned "Approved" or "Approved for Provisional Use" status by the Product Evaluation Program will be considered for substitution to the detailed Standard Sound Barrier Wall only when approved by the Department in writing. Alternate walls shall meet all design and construction requirements of this RFP. Alternate wall structural

stability and connection details shall conform to the current edition of the AASHTO LRFD Bridge Design Specifications.

Prior to submittal of Working Drawings, as described herein, submit a copy of the signed NCDOT Product Status Notification Letter and two sets of preliminary plans for review and acceptance. Include material specifications for all components. Once preliminary plans are accepted, submit Working Drawings in accordance with all applicable portions of the requirements herein, including details necessary to fabricate and construct the proposed alternate.

Have a North Carolina Registered Professional Engineer check, seal and date the plans developed by the Design-Build Team and, when requested, calculations.

MATERIALS AND FABRICATION

Provide materials and fabricate members in accordance with the *Architectural Concrete Surface Treatment* Project Special Provision found elsewhere in this RFP, and the requirements of Division 10 of the 2018 *Standard Specifications for Roads and Structures*.

Provide precast panels that are nominally four inches ± ¼ inch thick with a simulated stone masonry textured surface on both faces. All texture shall extend outward from the nominal panel thickness. Furnish three 24" x 24" samples for approval which establish the acceptable variations in color, texture and uniformity. After the color, texture and uniformity of the furnished samples are approved, produce a full scale panel unit meeting design requirements. This mock-up and the furnished samples establish the standard quality for determining approval of the panels. When producing the final installed panels, use fine and coarse aggregate, retarder, and cement from the same source as those used in the approved sample panels.

CONSTRUCTION METHODS

Complete the final survey of existing ground profile after clearing the sound barrier wall area, but prior to submitting any Working Drawings. Submit the final groundline survey with the Working Drawings.

Excavate holes with the diameters shown on the plans. Perform pile excavation to the depths shown on the aforementioned plans and install piles as shown on the plans with a tolerance of ½-inch per foot from vertical. Backfill excavations with concrete after placing piles.

1. Pile Excavation

   Use equipment of adequate capacity and capable of drilling through soil and non-soil including rock, boulders, debris, man-made objects and any other materials encountered. Blasting shall not be permitted to advance the excavation. Blasting for core removal shall only be permitted when approved by the Engineer. Dispose of drilling spoils in accordance with Section 802 of the 2018 *Standard Specifications for*

Roads and Structures and as directed by the Engineer. Drilling spoils shall consist of all excavated material, including but not limited to water removed from the excavation either by pumping or drilling tools.

If unstable, caving or sloughing soils are anticipated or encountered, stabilize excavations with either slurry or steel casing. When using slurry, submit slurry details including product information, manufacturer's recommendations for use, slurry equipment information and written approval from the slurry supplier that the mixing water is acceptable before beginning drilling. When using steel casing, use either the sectional type or one continuous corrugated or non-corrugated piece. Steel casings shall consist of clean watertight steel of ample strength to withstand handling and driving stresses and the pressures imposed by concrete, earth or backfill. Use steel casings with an outside diameter equal to the hole size and a minimum wall thickness of ¼-inch.

2. Concrete Placement

Before placing concrete, center and support the pile in the excavation and check the water inflow rate in the excavation after any pumps have been removed. If the inflow rate is less than six inches per half hour, remove any water and free fall the concrete into the excavation. Ensure that concrete flows completely around the pile. If the water inflow rate is greater than six inches per half hour, propose a concrete placement procedure to the Engineer. The Engineer shall approve the concrete placement procedure before placing any concrete.

Fill the excavation with Class A concrete in accordance with Section 1000 of the 2018 *Standard Specifications for Roads and Structures*, except as modified herein. Provide concrete with a slump of six to eight inches. Use an approved high-range water reducer to achieve this slump. Place concrete in a continuous manner and remove all casings.

WORKING DRAWINGS

In accordance with Article 1077-2 of the 2018 *Standard Specifications for Roads and Structures*, submit casting drawings for the precast face panels for approval prior to casting. Show the inserts, method of handling, and support details used for transportation on casting drawings. Submit metalwork fabrication drawings for approval prior to fabrication of steel wall components. Submit an erection plan and concrete face panel placing plan, including location of various heights of panels, for review and acceptance prior to fabrication of metalwork. Submit five sets of detail drawings for review and acceptance.

ARCHITECTURAL CONCRETE SURFACE TREATMENT

(1-28-15) (Rev. 11-16-17)

1.0 GENERAL

The work covered by this Project Special Provision shall consist of constructing a stained, simulated stone masonry textured surface on both faces of pre-cast concrete panels used in sound barrier walls and retaining walls as indicated on the plans and

herein. The Design-Build Team shall furnish all materials, labor, equipment and incidentals necessary for the construction of architectural concrete surface treatment using simulated stone masonry form liners (molds) and a compatible concrete coloring system.

The Design-Build Team shall use the same source of form liner and color stains for all sound barrier wall panels and retaining walls. The architectural concrete surface treatment shall match the appearance (stone size, stone shape, stone texture, pattern and relief) of natural stone to resemble an ashlar stone pattern with panel staining **on both sides** to match the Gray Palette Color # FS 36270 found in the *Federal Standard 595B – Colors Used in Government Procurement*. All texture shall be in addition to the nominal thickness of the wall panels of four inches ± ¼ inch. Maximum relief of the textured surface shall be 1¼ inch or less. The top 1'-0" of the top panel within each sound barrier wall segment shall have a smooth, non-textured and non-stained finish to resemble faux coping. Concrete columns shall remain unstained in their natural concrete color. There shall be an appreciable contrast between the colors of the unstained concrete columns and the stained panels. For information purposes only, sources of form liners in the ashlar stone pattern include, but are not limited to:

Scott System, Inc.
10777 E. 45th Avenue
Denver, Colorado 80239
http://www.scottsystem.com/
Pattern: Ashlar Stone # 167B

Architectural Polymers, Inc.
1220 Little Gap Road
Palmerton, Pennsylvania 18071
http://www.architecturalpolymers.com/
Pattern: Ashlar Stone # 904A

Fitzgerald Form Liners
1500 East Chestnut Avenue
Santa Ana, California 92701
http://formliners.com/
Pattern: Georgia Ashlar # 16999

The Design-Build Team has the option of supplying an alternative pattern of simulated stone form liner, as long as the pattern selected is approved, in writing, as an equal or approved alternative by the Engineer.

2.0 SUBMITTALS

Shop Drawings – The Design-Build Team shall submit for review and acceptance, plan and elevation views and details showing overall simulated stone pattern, joint locations, form tie locations, and end, edge or other special conditions. The drawings shall include

typical cross sections of applicable surfaces, joints, corners, stone relief, stone size, pitch / working line, mortar joint and bed depths. If necessary, the Design-Build Team shall revise the shop drawings until the proposed form liner patterns and arrangement have been accepted by the Engineer. Shop drawings shall be of sufficient scale to show the detail of all stone and joint patterns. The size of the sheets used for the shop drawings shall be 22" x 34".

The form liner shall be patterned such that long continuous horizontal or vertical lines do not occur on the finished exposed surface. The line pattern shall be random in nature and shall conceal construction joint lines. Special attention shall be given to details for wrapping form liners around corners.

Shop drawings shall be reviewed and accepted prior to fabrication of any form liners.

Sample Sound Wall Panels – After shop drawings have been reviewed and accepted by the Engineer, the Design-Build Team shall construct three 24" x 24" transportable sample panel(s) at the project site. The materials used in construction of the sample panel(s) shall comply with Section 420 of the 2018 *Standard Specifications for Roads and Structures*. The sample panel(s) shall be constructed using form liners approved by the Engineer. Any sample panel that is not approved by the Engineer shall be removed from the project site and a new sample panel produced at no additional expense to the Department.

After the color, texture and uniformity of the furnished samples are approved by the Engineer, produce a full scale unit meeting the design requirements. This mock-up and the furnished samples shall establish the standard quality for determining the panel approval.

Architectural surface treatments and patterns of the finished work shall achieve the same final effect as demonstrated on the approved sample panel(s). Upon approval by the Engineer, the sample panel(s) shall be used as the quality standard for the project. After the approval of the completed structure, the Design-Build Team shall dispose of the sample panels, as directed by the Engineer.

3.0 MATERIAL REQUIREMENTS

Form Liner – The form liner shall be a high quality, reusable product manufactured of high strength urethane rubber or other approved material which attaches easily to the form work system, and shall not compress more than ¼-inch when concrete is poured at a rate of ten vertical feet per hour. The form liners shall be removable without causing deterioration of the surface or underlying concrete.

Form Release Agent – Form release agent shall be a non-staining petroleum distillate free from water, asphaltic, and other insoluble residue, or an equivalent product. Form release agents shall be compatible with the color system applied and any special surface finish.

Form Ties – Form ties shall be set back a minimum of two inches from the finished concrete surface. The ties shall be designed so that all material in the device to a depth of at least two inches back of the concrete face (bottom of simulated mortar groove) can be disengaged and removed without spalling or damaging the concrete. The Design-Build Team shall submit the type of form ties to the Engineer for approval.

Concrete Color System / Stain – Special surface color system shall be performed using approved coloring systems / stains suitable for the purpose intended and applied in a manner consistent with the design intent of the project. The approved sample panel shall be the basis for determining the appropriate color / stain application.

Color stains shall be a special penetrating stain mix as provided by the manufacturer and shall be medium to dark gray to achieve a full, natural color in the finished surface. The stain shall create a surface finish that is breathable (allowing water vapor transmission), and that resists deterioration from water, acid, alkali, fungi, sunlight, and / or weathering. Stain mix shall meet the requirements for mildew resistance of Federal Test Method Standard 144, Method 6271, and requirements for weathering resistance of 1,000 hours accelerated exposure measures by Weatherometer, in accordance with ASTM G 26. Color samples shall be submitted for approval by the Engineer. Final coloring system and the Gray Palette Color # FS 36270 shall be subject to approval by the Engineer.

Anti-Graffiti Coating – The Design-Build Team shall apply anti-graffiti coating that is compatible with the concrete color system / stain. After application, the anti-graffiti coating shall be dry to the touch within one hour and shall achieve a final cure within three hours. The color of the anti-graffiti shall be clear after full cure. The Design-Build Team shall provide one gallon of graffiti remover, thinners, dryers and all necessary components recommended by the manufacturer to the North Carolina Department of Transportation Materials and Tests Unit, Chemical Testing Engineer.

Quality Standards – Manufacturer of simulated stone masonry form liners and custom coloring system shall have at least five years' experience making stone masonry molds and color stains to create formed concrete surfaces to match the natural stone shapes, surface textures and colors.

The Design-Build Team shall schedule a pre-installation conference with a manufacturer representative and the Engineer to assure understanding of simulated stone masonry form liner use, color application, requirements for construction of sample panel(s), and to coordinate the work. The Design-Build Team shall disclose their source of simulated stone masonry manufacturer and final coloration contractor at the Preconstruction Conference.

4.0 CONSTRUCTION

Form Liner Preparation – Prior to each concrete pour, the form liners shall be clean and free of build-up. Each liner shall be visually inspected for blemishes and tears. Repairs shall be made in accordance with the manufacturer's recommendations. Repairs

shall be approved by the Engineer before being used. Form liner panels that do not perform as intended or are no longer repairable shall be replaced.

Form Liner Attachment – Form liners shall be securely attached to forms in accordance with the manufacturer's recommendations, with less than a ¼-inch seam. Blend form liner butt joints into the stone pattern and finish off the final concrete surface. Create no visible vertical or horizontal seams or conspicuous form liner butt joint marks. At locations where the form liners are joined, carefully blend to match the balance of the stone pattern. Form liners shall be installed to withstand anticipated concrete placement pressures without leakage and without causing physical or visual defects. Wall ties shall be coordinated with the form liner system. The Design-Build Team shall have a technical representative from the form liner manufacturer on site for technical supervision during the installation and removal of form liners. Unless allowed by the Engineer, installation and removal of form liners shall not be permitted if the aforementioned technical representative is not present.

Form Release Agent – Form release agent shall be applied in accordance with the manufacturer's recommendations. The material shall be compatible with the form liner material and the concrete coloring system and in accordance with this Project Special Provision. Form release agent shall be worked into all areas, especially pattern recesses.

Patching – Using patching materials and procedures in accordance with the manufacturer's recommendations, all form tie holes and other defects in finished uncolored surface shall be filled or repaired within 48 hours of form removal.

Surface Finish – All surfaces that are to receive coloring agent application shall be free of all laitance, dirt, dust, grease, efflorescence, paint or any other foreign material prior to the application of coloring agent. Cleaning of surfaces shall be accomplished by pressure washing with water set at 3000 psi to remove laitance. The fan nozzle shall be held perpendicular to the surface at a distance of one to two feet. Sandblasting shall not be permitted.

Final surface shall be free of blemishes, discolorations, surface voids, and other irregularities. All patterns shall be continuous without visual disruption.

Reinforced concrete shall be finished in accordance with the 2018 *Standard Specifications for Roads and Structures*, except that curing of concrete shall be done to accommodate the application of coloring and surface finish treatment.

Grout Pattern Joints – Grout pattern joints shall be constructed to simulate the appearance of mortared joints produced in laid up masonry work. Grout pattern joints shall be produced in accordance with the form liner / concrete color system manufacturer.

Color / Stain Application – Finished concrete and patches shall stand in place 30 days after form liners are removed prior to application of coloring / staining agent. Maintain the concrete temperature between 40° F and 85° F during color / stain application and for

48 hours after color / stain application. Consult the manufacturer's recommendations for preparation, application, curing and storage of coloring agents / stains. Treated surfaces located adjacent to exposed soil or pavement shall be temporarily covered to prevent dirt or soil splatter from rain.

Anti-Graffiti Coating Application - The Design-Build Team shall apply anti-graffiti coating after full cure of the color coating. The anti-graffiti coating shall be applied by brush, roller or airless spray when the ambient temperature is between 45° F and 90° F, and the surface temperature is between 50° F and 100° F. Ensure the surface is clean and dry before applying the anti-graffiti coating. The minimum dry film thickness of the anti-graffiti coating shall be 2.0 mils.

Following the completion of all work, repairs of any damage made by other construction operations shall be made to the form lined and colored surfaces, as directed by the Engineer.

Experience and Qualifications – The Design-Build Team shall have a minimum of three consecutive years' experience in architectural concrete surface treatment construction on similar types of projects. The Design-Build Team shall furnish to the Engineer five references who were responsible for supervision of similar projects and will testify to the successful completion of these projects. Include name, address, telephone number, and specific type of application.

** **NOTE** ** Deleted *Nonwoven Geotextile Interlayer* Project Special Provision

EXPANSION JOINT SEAL REPAIR (SPECIAL)

1.0 GENERAL

The work covered by this special provision consists of furnishing and installing the expansion joint seals as shown on the plans developed by the Design-Build Team. All materials, labor, equipment, and incidentals necessary for the proper installation of the expansion joint seals are included.

2.0 MATERIAL

Provide expansion joint seals capable of accommodating a total movement measured parallel to the centerline of the roadway as shown on the plans developed by the Design-Build Team.

Provide an elastomeric component for each expansion joint seal that is a continuous unit for the entire length of the joint. Do not field splice the elastomeric component. Only vulcanized shop splicing of the elastomeric component is permitted. The minimum length of an elastomeric component before shop splicing is 20 feet. However, one piece shorter than 20 feet is permitted. Provide an elastomeric component that is clearly shop marked to indicate the top side and joint location of the elastomeric component. On skewed bridges,

or under unsymmetrical conditions, clearly mark the left side of the elastomeric component. Left is defined as being on the left when facing in the direction of increasing station. Inspect the seals upon receipt to ensure that the marks are clearly visible upon installation.

Make sure the convolution of the gland does not project above the top of the hold-down plates when the joint opening is in the most compressed condition. Use either elastic polychloroprene (neoprene) or ethyl propylene diene monomer (EPDM) for the elastomer that meets the following minimum properties:

	ASTM TEST METHOD	REQUIREMENTS
Hardness, Durometer - Shore A	D2240	60 ± 5, Neoprene (upward corrugated shape - fabric reinforced) 75 ± 5, EPDM and Neoprene (upward non-corrugated shape) 80 ± 5, EPDM (upward corrugated shape-fabric reinforced)
Tensile Strength	D412	2000 psi (min.)
Elongation at Break	D412	250% (min.)
Width of Gland in Relaxed Condition	N/A	10" ± 0.25"
Thickness of Upturned portion of gland	N/A	0.25" non-corrugated shape, -0.032" to +0.032"
Thickness of Upturned portion of gland	N/A	0.1875" corrugated shape, -0.032" to +0.032"
Thickness of Flat portion of gland	N/A	0.1563", -0.032" to +0.032"

For fabric reinforced glands, submit one unreinforced sample per lot number, up to 500 feet of Expansion Joint Seal, to the Engineer for testing.

Inspect the condition of the existing hold-down plates for cracks, deformations or other damage that the Engineer might determine necessitates replacement of a hold-down plate. Replacement plates shall conform to AASHTO M270 Grade 36 steel or approved equal.

Only field splice hold-down plates at crown points, at abrupt changes in the deck slab cross slope, and on lane lines. Splicing within travel lanes is not permitted and splicing on edge lines is not required. Field splice hold-down plates between the edge line and gutter upturn and where necessary for proper installation and alignment is permitted. Show all splice locations on the working drawings for approval. For the location of lane markings at the

expansion joint seal, reference the Structure Plans developed by the Design-Build Team. At the splice locations, locate the hold-down bolts three inches from the end of the hold-down plate. At splice locations where changes in deck slab cross slope occur, cut the ends of hold-down plates parallel to the bridge centerline for skews less than 80° and greater than 100°.

Do not use welded shop splices in hold-down plates.

Replace hold-down bolts with new bolts that conform to ASTM F593 alloy 304 stainless steel. Replace washers with new washers that conform to ASTM F844 except they shall be made from alloy 304 stainless steel.

3.0 SHOP DRAWINGS

Submit nine sets of working drawings to the Engineer for review, comments, and acceptance. Show complete details drawn to scale and include:

- The proposed template details including the makeup of the template.
- The proposed chronology of installation including the sequence and direction of the removal and replacement of the existing gland.
- The proposed method for removing the hold-down plate.

Have someone other than the one who prepares the drawing check all detailed drawings and include the signatures of both the drafter and checker on each sheet of the drawings. The Engineer returns unchecked drawings to the Contractor. Provide all completed drawings well in advance of the scheduled installation time for the expansion joint seal repair.

4.0 INSTALLATION

Expansion Joint Seal Repairs Under Staged Closures

For expansion joint seal repairs that are staged, perform Steps 1 through 4 for the initial stage for gland replacement:

1. Loosen the existing bolts and hold down plates and remove the existing gland. Remove the existing neoprene sealant and clean the existing base angle and hold-down plates of oil, grease, and other latents.

2. Lay the new gland on the base angle and field mark the new gland for the bolt holes. Holes in the new gland shall be punched 7/8" in diameter with a circular hand punch.

3. In order to check for proper alignment, place the new gland and hold-down plates on the base angle. Do not apply new neoprene sealant. Bolt the hold-down plates to the base angle with new bolts and washers, but do not tighten. The engineer shall inspect the joint seal gland, plates, and bolts for proper alignment.

4. After inspection, remove the hold-down plates and new gland. Apply new neoprene sealant to the base angle in accordance with the "installation sketch." Place new gland and hold-down plates on the base angle. Bolt the hold-down plates to the base angle assembly and torque the bolts to 88 ft-lbs with a torque wrench. Check the torque after three (3) hours and, if necessary, retighten to 88 ft-lbs. A final check shall be made at seven (7) days. Torque shall not be less than 80 ft-lbs after seven (7) days.

   After completion of Steps 1 through 4, open to traffic the stage that has had the new gland installed and close to traffic the next adjacent stage requiring a new gland. Continue with Steps 1 through 4 for removal of existing gland and placement of a new expansion joint gland. Proceed similarly for each successive stage. After completion of installation of the joint gland for all stages, traffic may be returned, temporarily, to all stages.

   After completion of installation of the new gland for all stages, perform Step 5 for each closure stage:

5. After proper torqueing, clean the bolt hole recesses and the recess between the joint seal device and concrete, completely fill these recesses with new neoprene sealant.

   Allow sealant applied during Step 5 to cure for a minimum of four hours before allowing traffic on the bridge. Alternatively, and if the sealant has not cured sufficiently to prevent sealant from adhering to passing traffic, the Contractor may propose a method (broadcast sand or other) to prevent sealant from adhering to passing traffic.

   Unless otherwise approved by the Engineer, Step 5 shall be completed within seven days of installation of new gland.

The Engineer shall be notified of any damaged areas, depressions, spalls, cracks, or irregularities of curbs or decks adjacent to the expansion joint. If directed by, the Engineer submit a proposed method of repair and repair material specifications for approval. This work to repair damaged deck or irregularities will be considered extra work.

If the Engineer deems any aspects of the expansion joint seals unacceptable, make necessary corrections.

5.0 INSPECTION

Watertight Integrity Test

- Upon completion of an expansion joint seal, perform a water test on the top surface to detect any leakage. Cover the roadway section of the joint from curb to curb, or barrier

rail to barrier rail, with water, either ponded or flowing, not less than one inch above the roadway surface at all points. Block sidewalk sections and secure an unnozzled water hose delivering approximately one gallon of water per minute to the inside face of the bridge railing, trained in a downward position about six inches above the sidewalks, such that there is continuous flow of water across the sidewalk and down the curb face of the joint.

- Maintain the ponding or flowing of water on the roadway and continuous flow across sidewalks and curbs for a period of two hours. At the conclusion of the test, the underside of the joint is closely examined for leakage. The expansion joint seal is considered watertight if no obvious wetness is visible on the Engineer's finger after touching a number of underdeck areas. Damp concrete that does not impart wetness to the finger is not a sign of leakage.

- If the joint system leaks, locate the place(s) of leakage and take any repair measures necessary to stop the leakage at no additional cost to the Department. Use repair measures recommended by the manufacturer and approved by the Engineer prior to beginning corrective work.

- If measures to eliminate leakage are taken, perform a subsequent water integrity test subject to the same conditions as the original test. Subsequent tests carry the same responsibility as the original test and are performed at no extra cost to the Department.

SILANE DECK TREATMENT (SPECIAL)

DESCRIPTION

This work consists of preparation of concrete bridge deck surfaces and the furnishing and application of alkylalkoxysilane (silane) penetrant sealers, with 100% solids, to seal bridge deck surfaces and cracks. Prepare the surface of the concrete deck and apply the silane bridge deck sealer in accordance with this special provision and as indicated on the plans developed by the Design-Build Team or as approved by the Engineer.

Work includes: bridge deck surface preparation, placement of silane deck sealer, and any incidentals necessary to complete the project, as specified or as indicated on the plans developed by the Design-Build Team.

SUBMITTALS

Submit for approval the following requested items and any other relevant documents:

- A safety data sheet (SDS) for each shipment of the silane materials.
- Silane material information and manufacturer's written preparation and application instructions.

- Certification from an independent testing laboratory that the materials meet the requirements of these provisions. Do not incorporate these materials into the project until the Engineer has accepted and approved the certification for the material.
- The dates of manufacture of the silane materials, their lot numbers and date of shelf-life expiration for each lot number.
- A table indicating the likely cure time, in minutes, to allow vehicular traffic on the silane-treated deck surface. Provide time for the allowable ambient temperature range, in increments of 10° F.
- A work plan for each structure that includes estimated times for surface preparation and silane application.

MATERIAL DELIVERY AND STORAGE

Store at the site sufficient quantities of silane materials to perform the entire application.

Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact. Ensure that each container is clearly marked by the manufacturer with the following information:

a. Manufacturer's name and address.
b. Product name.
c. Date of manufacture.
d. Expiration date.
e. LOT identification number.
f. Container serial number.

Provide the Engineer a certification from the manufacturer, confirming that the silane materials meet the requirements of this special provision. Do not incorporate these materials into the project until the Engineer has accepted and approved the certification for the material. Submit such certification for each LOT of material delivered to the project. In each certification, identify the serial or LOT numbers of the containers certified.

The Engineer may require samples from each LOT or container of materials delivered to the project or from containers at the point of use. When samples are required, furnish samples in accordance with the Engineer's instructions.

Store silane materials in unopened containers in a clean, dry area between 40° F and 90° F. Store containers in a manner that prevents leakage or spillage.

MANUFACTURER'S REPRESENTATIVE

Provide a manufacturer's representative on site for the duration of the surface preparation and silane application work, to provide expert assistance on surface preparation, storage, mixing, application, clean-up, and disposal of materials.

MATERIALS

Provide silane from a single manufacturer and provide silane that conforms to requirements indicated in Table 1, below.

Table 1
SILANE PROPERTIES

Property	Test Method	Requirement
Silane Content		100%
VOC content	EPA method 24	Less than 350 g/l
Surface Appearance after Application		Unchanged
Flash Point	ASTM D3278	140° F, minimum
Resistance to Chloride Ion Penetration	AASHTO T259 and T260	Less than: 0.52 pounds/yd^3(criteria of 1.5) at 1/2 inch level; 0.00 pounds/yd^3(criteria of 0.75) at 1 inch level
Water absorption test	ASTM C 642	0.50% maximum/48 hours; 1.5% maximum/50 days
Scaling resistance	ASTM C 672	(non-air-entrained concrete) 0 rating "No Scaling" (100 cycles)
NCHRP 244		
Water weight gain	Series II - cube test	85% reduction, minimum
Absorbed chloride		87% reduction, minimum
Absorbed chloride	Series IV - Southern climate	95% reduction, minimum

SURFACE PREPARATION

Prepare the surface of the concrete deck for application of the silane by shotblasting in order to remove all existing asphalt, grease, slurry, oils, paint, dirt, striping, curing compound, rust, membrane, weak surface mortar, or any other contaminants that could interfere with the proper adhesion, penetration, and the curing of the silane material.

Prepare a final surface that adheres to the following requirements:

1) For areas to receive deck seal treatment, clean by shotblasting. Where approved by the Engineer, abrasive sandblasting may be used in areas that cannot be accessed by the shotblaster. Select the size of shot or sand, and travel speed of the equipment to provide a uniformly clean surface with a uniform profile. Remove striping to the maximum extent

determined to be practical by the Engineer using up to three passes with shotblasting, sandblasting, or other approved equipment. Do not expose cleaned surfaces to vehicular traffic unless approved by the Engineer. If the deck becomes contaminated before placing the silane deck sealer, shotblast or abrasive sandblast the contaminated areas to the satisfaction of the Engineer, at no additional cost.

2) Prior to silane application, protect cracks on the concrete bridge deck from materials that can interfere with the penetration and the curing of the silane material. Just prior to placement of the silane, remove, by magnets and oil-free compressed air and vacuuming, any loose particles, such that no excess particles remain. The concrete deck shall be completely dry. Power washing will not be allowed.

3) The silane manufacturer may suggest cleaning and preparation methods other than those detailed by this special provision. The Engineer must approve such alternative methods prior to implementation.

SILANE APPLICATION

Test Area

- Test a small area of the surface (minimum five-foot by five-foot) before general application to ensure desired performance results, aesthetics, and application rates and to verify application technique. Allow five - seven days for the product to react fully before evaluating. Application rates may vary depending on field conditions.
- Conduct at least one absorption test in the test area, using a Rilem Tube Test. Acceptable results are no loss of water in the Rilem tube over a period of 20 minutes. Adjust application to achieve required repellent performance.
- The manufacturer's representative shall assist the Contractor in determining the application rates. Use test applications on actual surfaces to determine accurate application rates. Extremely porous surfaces may require two coats of silane.
- Do not begin production application of silane until Engineer has approved the test area, including approval of aesthetics, color, texture, and appearance.

Application

Immediately before placing silane, all exposed surfaces shall be completely dry and blown clean with oil-free compressed air to remove any loose dust and debris. Apply silane as soon as practical after the exposed surfaces have been properly prepared and conditions are satisfactory:

- Stir material thoroughly before and during application.
- Apply silane with low-pressure spray or by flooding, followed by brooming or squeegeeing for even distribution, in accordance with manufacturer's instructions.
- Maintain operating pressures in sprayers used for application of the silane sealer material sufficiently low so that atomization or misting of the material does not occur.

- Begin the application of the silane at the lowest elevation and proceed upward, toward higher elevations, unless otherwise approved by the Engineer.
- Apply even distribution of silane. Avoid ponding of silane; take care when applying the silane, so that running or puddling does not occur.
- Apply silane in a single application to the concrete deck surface with enough material to saturate the surface. Remove excess material with a broom or squeegee and dispose of excess material appropriately. If a second coat is required, it should be applied "wet on wet" before first coat dries.
- Application of sealant by spray methods will not be permitted when wind speeds are 20 mph or higher, or if in the opinion of the Engineer, unsatisfactory results will be obtained. Other application methods or rescheduling will be required.
- Avoid application with hand pump sprayers. For small areas of silane application, the use of hand pump sprayers must be approved by the Engineer.
- Contractor shall protect from overspray all pedestrians, vehicles, plants and vegetation, and other areas not receiving silane application.
- Allow product to penetrate the bridge deck and dry, as required by the manufacturer, prior to opening to traffic.

LIMITATIONS OF OPERATIONS

- Prior to application of any silane sealer, cure concrete or concrete repairs for a minimum of 21 days.
- Do not use silane material after the shelf life date.
- Do not return unused material in opened containers to storage for later use. Either apply such material to appropriate areas on concrete deck surfaces or remove and appropriately dispose of it at offsite locations provided by the Contractor.
- If expansion joints are not being replaced or have been replaced prior to shotblasting, they shall be protected from damage from the shotblasting operation. Deck drains and areas of curb or railing above the proposed surface shall be protected from the shotblasting operation.
- Pick up and store all blast media and contaminants in a vacuum unit. Do not create dust during the blasting operation that will obstruct the view of motorists in adjacent roadways. Store, handle, and dispose of blast media and contaminants in accordance with all applicable local, state, and federal requirements.
- Cover deck joint seal and elastomeric material, plug deck drain scuppers, seal cracks on underside of deck, and use other necessary protective measures to prevent leakage of silane below the concrete deck, to protect waterways, bridge components, pedestrians, vehicles, roadway, vegetation, and any other items or areas below or near the bridge.
- Application of sealant by spray methods will not be permitted during windy conditions, if in the opinion of the Engineer, unsatisfactory results will be obtained. Other application methods or rescheduling will be required.
- Avoid application with hand pump sprayers. For small areas of silane application, the use of hand pump sprayers might be allowed, but must be approved by the Engineer.
- Protect traffic from rebound, dust, overspray, and construction activities. Provide appropriate shielding, as required and / or directed by the Engineer.

- The Contractor shall provide suitable coverings (e.g. heavy-duty drop cloths) as needed to protect all exposed areas not to receive silane treatment, such as asphalt pavement, curbs, sidewalks, parapets, etc.
- Clean and / or repair all damage or defacement resulting from Contractor's operations to the Engineer's satisfaction at no additional cost to the Department.
- The equipment used for silane application must be clean of foreign materials and approved by the Engineer before use.
- The surface to receive the treatment shall be dry for at least 48 hours before treatment and shall be free from sand, surface dust and dirt, oil, grease, chemical films, and other contaminants prior to application of the silane.
- The surface, air, and material temperatures shall be between 40° F and 90° F during application.
- Do not apply silane materials during cold, hot, or wet weather conditions or when adverse weather conditions are forecast within twelve (12) hours of the completion of the silane application. Correct any coating damaged by rain or moisture by an additional application or as required by the silane manufacturer.
- Protect prepared surfaces from precipitation and heavy dew during and after the application of the silane.
- Conduct the work in a continuous operation, with the silane application as soon as practical following surface preparation.
- Apply silane during the lowest temperature period of the day, typically between 1:00 a.m. and 9:00 a.m., when the cracks are open to the greatest extent.
- Clean up, dispose of any surplus material, and restore any disturbed areas unless otherwise directed.
- 100% Silane is a combustible liquid; take appropriate precautions during handling, storage, and operations. KEEP AWAY FROM OPEN FLAME.
- Work crews should wear appropriate personal protection equipment and follow manufacturer's recommendations when applying silane. Refer to the SDS and all applicable local, state, and federal laws, and rules and regulations of authorities having jurisdiction over the project, for specific guidance for personal and environmental protection and safety requirements.

SILANE BARRIER RAIL TREATMENT (SPECIAL)

DESCRIPTION

This work consists of preparation of bridge concrete barrier rail surfaces and the furnishing and application of alkylalkoxysilane (silane) penetrant sealers, with 100% solids, to seal bridge concrete barrier rail surfaces and cracks. Prepare the bridge concrete barrier rail surfaces and apply the silane bridge concrete barrier rail sealer in accordance with this special provision and as indicated on the plans developed by the Design-Build Team, or as approved by the Engineer.

Work includes: bridge concrete barrier rail surface preparation, placement of silane penetrant sealer, appropriate removal and disposal of excess and waste material, and any incidentals necessary to complete the project, as specified or as indicated on the plans developed by the Design-Build Team.

SUBMITTALS

Submit for approval the following requested items and any other relevant documents:

- A safety data sheet (SDS) for each shipment of the silane materials.
- Silane material information and manufacturer's written preparation and application instructions.
- Certification from an independent testing laboratory that the materials meet the requirements of these provisions. Do not incorporate these materials into the project until the Engineer has accepted and approved the certification for the material.
- The dates of manufacture of the silane materials, their lot numbers and date of shelf-life expiration for each lot number.
- A table indicating the likely cure time, in minutes, to allow vehicular traffic on the bridge where the concrete barrier rail surface has been treated. Provide time for the allowable ambient temperature range, in increments of 10° F.
- A work plan for each structure that includes estimated times for surface preparation and silane application.

MATERIAL DELIVERY AND STORAGE

Store at the site sufficient quantities of silane materials to perform the entire application.

Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact. Ensure that each container is clearly marked by the manufacturer with the following information:

a. Manufacturer's name and address.
b. Product name.
c. Date of manufacture.
d. Expiration date.
e. LOT identification number.
f. Container serial number.

Provide the Engineer a certification from the manufacturer, confirming that the silane materials meet the requirements of this special provision. Do not incorporate these materials into the project until the Engineer has accepted and approved the certification for the material. Submit such certification for each LOT of material delivered to the project. In each certification, identify the serial or LOT numbers of the containers certified.

The Engineer may require samples from each LOT or container of materials delivered to the project or from containers at the point of use. When samples are required, furnish samples in accordance with the Engineer's instructions.

Store silane materials in unopened containers in a clean, dry area between 40° F and 90° F. Store containers in a manner that prevents leakage or spillage.

MANUFACTURER'S REPRESENTATIVE

Provide a manufacturer's representative on site for the duration of the surface preparation and silane application work, to provide expert assistance on surface preparation, storage, mixing, application, clean-up, and disposal of materials.

MATERIALS

Provide silane from a single manufacturer and provide silane that conforms to requirements indicated in Table 1, below.

Table 1
SILANE PROPERTIES

Property	Test Method	Requirement
Silane Content		100%
VOC content	EPA method 24	Less than 350 g/l
Surface Appearance after Application		Unchanged
Flash Point	ASTM D3278	140° F, minimum
Resistance to Chloride Ion Penetration	AASHTO T259 and T260	Less than: 0.52 pounds/yd^3(criteria of 1.5) at 1/2 inch level; 0.00 pounds/yd^3(criteria of 0.75) at 1 inch level
Water absorption test	ASTM C 642	0.50% maximum/48 hours; 1.5% maximum/50 days
Scaling resistance	ASTM C 672	(non-air-entrained concrete) 0 rating "No Scaling" (100 cycles)
NCHRP 244		
Water weight gain	Series II - cube test	85% reduction, minimum
Absorbed chloride		87% reduction, minimum
Absorbed chloride	Series IV - Southern climate	95% reduction, minimum

SURFACE PREPARATION

Prepare the bridge concrete barrier rail surfaces for application of the silane in order to remove all existing grease, slurry, oils, paint, dirt, striping, curing compound, rust, membrane, weak surface mortar, or any other contaminants that could interfere with the proper adhesion, penetration, and the curing of the silane material.

Prepare a final surface that adheres to the following requirements:

1) For areas to receive silane treatment, clean by sandblasting or shotblasting. Select the size of shot or sand, and travel speed of the equipment to provide a uniformly clean surface with a uniform profile. Do not expose cleaned surfaces to vehicular traffic unless approved by the Engineer. If the bridge concrete barrier rail surfaces become contaminated before placing the silane treatment, shotblast or abrasive sandblast the contaminated areas to the satisfaction of the Engineer, at no additional cost.
2) Power washing of the bridge concrete barrier rail may be allowed as approved by the Engineer, but the concrete barrier shall be allowed to dry a minimum of 48 hours prior to application of the silane treatment.
3) Prior to silane application, protect cracks on the bridge concrete barrier rail from materials that can interfere with the penetration and the curing of the silane material. Just prior to placement of the silane, remove, by magnets and oil-free compressed air and vacuuming, any loose particles, such that no excess particles remain.
4) Prior to silane application, the bridge concrete barrier rail shall be completely dry.
5) The silane manufacturer may suggest cleaning and preparation methods other than those detailed by this special provision. The Engineer must approve such alternative methods prior to implementation.

SILANE APPLICATION

Test Area

- Test a small area of the surface (minimum two-foot by two-foot) before general application to ensure desired performance results, aesthetics, and application rates and to verify application technique. Allow five - seven days for the product to react fully before evaluating.
- Application rates may vary depending on field conditions and the substrate to be treated.
- Conduct at least one absorption test in the test area, using a Rilem Tube Test. Acceptable results are no loss of water in the Rilem tube over a period of 20 minutes. Adjust application to achieve required repellent performance.
- The manufacturer's representative shall assist the Contractor in determining the application rates. Use test applications on actual surfaces to determine accurate application rates. Extremely porous surfaces may require two coats of silane.
- Do not begin production application of silane until Engineer has approved the test area, including approval of aesthetics, color, texture, and appearance.

Application

Immediately before placing silane, all areas to receive silane treatment shall be completely dry and blown clean with oil-free compressed air to remove any loose dust and debris. Apply silane as soon as practical after the areas to receive silane treatment have been properly prepared and conditions are satisfactory:

- Stir material thoroughly before and during application.
- Apply silane using low-pressure pumping equipment with a wet fan type spray nozzle. Rollers with a 1" nap or brushes are permitted. On vertical surfaces, apply the silane in a flooding application from the bottom upward, in accordance with manufacturer's instructions.
- Maintain operating pressures in sprayers used for application of the silane sealer material sufficiently low, so that atomization or misting of the material does not occur.
- Apply even distribution of silane. Take care when applying the silane, so that running or puddling does not occur.
- Apply silane in a single application to the barrier rail surface with enough material to saturate the surface. Remove excess material with a roller or brush and dispose of excess material appropriately. If a second coat is required, it should be applied "wet on wet" before first coat dries.
- Application of sealant by spray methods will not be permitted when wind speeds are 20 mph or higher, or if in the opinion of the Engineer, unsatisfactory results will be obtained. Other application methods or rescheduling will be required.
- Avoid application with hand pump sprayers. For small areas of silane application, the use of hand pump sprayers must be approved by the Engineer.
- Contractor shall protect from overspray all pedestrians, vehicles, plants and vegetation, and other areas not receiving silane application. Damages that occur due to overspray shall be the responsibility of the Contractor.
- Allow product to penetrate the bridge concrete barrier rail and dry, as required by the manufacturer, prior to opening to traffic.

LIMITATIONS OF OPERATIONS

- Prior to application of any silane sealer, cure concrete or concrete repairs for a minimum of 28 days or as required by the silane manufacturer.
- Do not use silane material after the shelf life date.
- Do not return unused material in opened containers to storage for later use. Either apply such material to appropriate areas on barrier rail surfaces or remove and appropriately dispose of it at offsite locations provided by the Contractor.
- Pick up and store all blast media and contaminants in a vacuum unit. Do not create dust during the blasting operation that will obstruct the view of motorists in roadways adjacent, above, below, or surrounding the silane treatment area. Store, handle, and dispose of blast media and contaminants in accordance with all applicable local, state, and federal requirements.
- Cover deck joint seal and elastomeric material, plug deck drain scuppers, seal cracks on underside of deck, and use other necessary protective measures to prevent leakage of silane below the concrete deck and beyond the concrete barrier rail, to protect waterways, bridge components, pedestrians, vehicles, roadway, vegetation, and any other items or areas below or near the bridge.
- Application of sealant by spray methods will not be permitted during windy conditions, if in the opinion of the Engineer, unsatisfactory results will be obtained. Other application methods or rescheduling shall be required.

- Avoid application with hand pump sprayers. For small areas of silane application, the use of hand pump sprayers might be allowed, but must be approved by the Engineer.
- Protect traffic from rebound, dust, overspray, and construction activities. Provide appropriate shielding, as required and / or directed by the Engineer. Damages that occur due to the Contractors operations shall be the responsibility of the Contractor.
- The Contractor shall provide suitable coverings (e.g. heavy-duty drop cloths) as needed to protect all exposed areas not to receive surface preparation and silane treatment.
- Clean and / or repair all damage or defacement resulting from Contractor's operations to the Engineer's satisfaction at no additional cost to the Department.
- The equipment used for silane application must be clean of foreign materials and approved by the Engineer before use.
- The surface to receive the treatment shall be dry for at least 48 hours before treatment and shall be free from sand, surface dust and dirt, oil, grease, chemical films, and other contaminants prior to application of the silane.
- The surface, air, and material temperatures shall be between 40° F and 90° F during application.
- Do not apply silane materials during cold, hot, or wet weather conditions or when adverse weather conditions are forecasted within twelve (12) hours of the completion of the silane application. Correct any coating damaged by rain or moisture by an additional application or as required by the silane manufacturer.
- Protect prepared surfaces from precipitation and heavy dew during and after the application of the silane.
- Conduct the work in a continuous operation, with the silane application as soon as practical following surface preparation.
- Apply silane during the lowest temperature period of the day, typically between 1:00 a.m. and 9:00 a.m., when the cracks are open to the greatest extent.
- Clean up, dispose of any surplus material, and restore any disturbed areas unless otherwise directed.
- 100% Silane is a combustible liquid; take appropriate precautions during handling, storage, and operations. KEEP AWAY FROM OPEN FLAME.
- Work crews should wear appropriate personal protection equipment and follow manufacturer's recommendations when applying silane. Refer to the SDS and all applicable local, state, and federal laws, and rules and regulations of authorities having jurisdiction over the project, for specific guidance for personal and environmental protection and safety requirements.

AUTOMATED MACHINE GUIDANCE

(1-2-11) 801 DB8 R01

General

This Special Provision contains requirements to be followed if the Design-Build Team elects to use Global Positioning System (GPS) machine control grading, and shall be used in conjunction with Section 801 of the 2018 *Standard Specifications for Roads and Structures*. The use of this technology is referenced as Automated Machine Guidance (AMG).

All equipment using AMG shall be able to generate end results that meet the 2018 *Standard Specifications for Roads and Structures*. The Design-Build Team shall perform test sections for each type of work to be completed with AMG to demonstrate that the system has the capability to achieve acceptable results. If acceptable results cannot be achieved, the Design-Build Team shall conform to the requirements for conventional stakeout.

The Design-Build Team shall be responsible for all errors resulting from the use of AMG and shall correct deficiencies to the satisfaction of the Engineer at no cost to the Department.

Submittals

If the Design-Build Team elects to use AMG, a Digital Terrain Model (DTM) of the design surface and all intermediate surfaces shall be developed and submitted to the Engineer for review and acceptance.

At least 90 days prior to beginning grading operations, the Design-Build Team shall submit to the Engineer an AMG work plan to include, but not be limited to, proposed equipment, control software manufacturer and version, types of work to be completed using AMG, project site calibration report, repetitive calibration methods for construction equipment and rover units to be used for the duration of the project, and local GPS base station to be used for broadcasting differential correction data to rover units (this may include the NC Network RTK). All surveys must be tied to existing project control as established by NCDOT.

Inspection

The Engineer will perform quality assurance checks of all work associated with AMG. If it is determined that work is not being performed in a manner that will assure accurate results, the Engineer may require corrective action at no cost to the Department.

The Design-Build Team shall provide the Engineer with one GPS rover unit for use during the duration of the contract. The rover shall be loaded with the same model that is used with the AMG and have the same capability as rover units used by the Design-Build Team. The rover will be kept in the possession of the Engineer and will be returned to the Design-Build Team upon completion of the contract. All maintenance and repairs required for the rover shall be the responsibility of the Design-Build Team. The Design-Build Team shall provide at least eight hours of formal training to the Engineer on the use of the proposed AMG system.

Subgrade and Base Controls

If the Design-Build Team elects to use AMG for fine grading and placement of base or other roadway materials, the GPS shall be supplemented with a laser or robotic total station. Include details of the proposed system in the AMG work plan. In addition, the following requirements apply for the use of AMG for subgrade and base construction.

- Provide control points at intervals along the project not to exceed 1,000 feet. The horizontal position of these points shall be determined by static GPS sessions or by traverse connection from the original base line control points. The elevation of these

control points shall be established using differential leveling from project benchmarks, forming closed loops where practical. A copy of all new control point information shall be provided to the Engineer prior to construction activities.

- Provide control points and conventional survey grade stakes at 500-foot intervals and at critical points such as, but not limited to, PCs, PTs, superelevation transition points, and other critical points as requested by the Engineer.

- Provide hubs at the top of the finished subgrade at all hinge points on the cross section at 500-foot intervals. These hubs shall be established using conventional survey methods for use by the Engineer to check the accuracy of construction.

USE OF UNMANNED AIRCRAFT SYSTEM (UAS)

(7-1-19) DB1 G092

The Design-Build Team shall adhere to all Federal, State and Local regulations and guidelines for the use of Unmanned Aircraft Systems (UAS). This includes, but is not limited to, US 14 CFR Part 107 *Small UAS Rule*, NC GS 15A-300.2 *Regulation of launch and recovery sites*, NC GS 63-95 *Training required for the operation of unmanned aircraft systems*, NC GS 63-96 *Permit required for commercial operation of unmanned aircraft system*, and NCDOT UAS Policy. The required operator certifications include possessing a current Federal Aviation Administration (FAA) Remote Pilot Certificate, a NC UAS Operator Permit, as well as operating a UAS registered with the FAA.

Prior to beginning operations, the Design-Build Team shall complete the NCDOT UAS - Flight Operation Approval Form and submit it to the Engineer for approval. All UAS operations shall be approved by the Engineer, in writing, prior to beginning the operations.

All Design-Build team members operating UAS shall have UAS specific general liability insurance to cover all operations under this contract.

The use of UAS shall be at the Design-Build Team's discretion. Except as allowed otherwise below, no measurement or payment will be made for the use of UAS. In the event that the Department directs the Design-Build Team to utilize UAS, all costs associated with using UAS will be paid for as extra work, in accordance with Subarticle 104-8(A) of the *Standard Specifications for Roads and Structures*.

FIBER OPTIC CONDUIT SYSTEM (RGC - HANGING) (SPECIAL)

GENERAL

The work covered by this provision consists of furnishing and installing a conduit system suspended beneath structures and buried. This conduit system is for the installation of a future fiber optic cable. Perform all work in accordance with these special provisions, the plans and the National Electrical Code (NEC). Install the conduit system in accordance with NEC requirements as an approved raceway for electrical circuits.

The contractor performing the work described in these special provisions shall have a license of the proper classification from the North Carolina State Board of Examiners of Electrical Contractors.

The licensed Electrical Contractor shall be available on the job site when the work is being performed or when requested by the Engineer. The licensed Electrical Contractor shall have a set of plans and special provisions in his possession on the job site, and must maintain accurate As Built Plans.

MATERIALS

Submit catalog cuts and / or drawings electronically for all proposed materials for the Engineer's review and approval. Include the brand name, stock number, description, size, rating, manufacturing specification on each submittal. Allow fifteen (15) days for submittal review. The Engineer will advise the Design-Build Team of reasons for rejected submittals and will return approved submittals to the Design-Build Team. Do not deliver material to the project prior to submittal approval.

Use terminations to seal the open ends of each conduit to provide watertight protection.

Use rigid galvanized conduit (RGC) in accordance with UL 6 "Rigid Metallic Conduit" with rigid full weight galvanized threaded fittings. Provide factory installed reverse-spin couplings with three set screws, to allow assembly without turning the outer duct, and prevent the coupling from backing off before and after installation. Provide an O-ring gasket in the coupling body to resist pullout and to create a watertight seal. Do not use materials provided by more than one manufacturer.

When deflection couplers are detailed on the plans, use deflection couplers that are designed for use with RGC raceways, and meet all the requirements for RGC conduit stated above. Provide deflection couplers that allow a 30-degree bend in any direction and ¾-inch mis-alignment in all axis. Provide factory installed reverse-spin couplings with three set screws, to allow assembly without turning the conduit, and prevent the coupling from backing off before and after installation. Provide deflection couplers with a middle section consisting of a rubber boot attached by spin couplings and galvanized straps.

Use expansion joints that are designed for use with RGC raceways, and meet the requirements for RGC stated above. Provide expansion joints that allow eight inches of longitudinal movement. Use expansion joints consisting of a female end with a lead-in coupling body and spin coupling, and an exterior sliding joint. Provide expansion joints that have factory installed reverse-spin couplings with three set screws, to allow assembly without turning the conduit and prevent the coupling from backing off before and after installation.

Use transition adapters that allow RGC raceway and PVC raceway to be coupled together. Provide adapters consisting of a threaded female adapter, an outer duct adapter, and a modified coupling body with a sleeve, thin wall couplings and an end spacer.

Provide concrete inserts made of galvanized malleable iron, with internal threads for suspending loads from a fixed point beneath a concrete ceiling or deck where no lateral adjustment is required. Use inserts that can be secured to the concrete forms, preventing movement during concrete placement.

For stabilizers and hangers, use galvanized rods that conform to ASTM-A36 or A-575. Galvanized rods may be threaded on both ends or threaded continuously. Use steel stabilizer clamps and attachment brackets, sized as noted in the plans and hot dipped galvanized per ASTM-A123. Provide high strength bolts, nuts and washers that are galvanized in accordance with Article 1072-5 of the 2018 *Standard Specifications for Roads and Structures*.

Use adjustable clevis-type pipe hangers that allow for vertical adjustment and limited movement of the pipe. Use galvanized pipe hangers that are listed with Underwriters Laboratories, or are Factory Mutual approved for the size conduit shown in the plans. Use hangers that comply with Federal Specification WW-H-171E Type 1 and Manufacturers Standardization Society SP-69 Type 1. Plastic-coat the saddle area of the hanger.

Provide pull lines specifically designed for pulling rope through conduit. Use pull lines made of two-ply line, with a minimum tensile strength of 240 pounds. Use rot and mildew resistant pull lines that are resistant to tangling when being dispensed.

Use mastic that is a permanent, non-hardening, water sealing compound that adheres to metal, plastic, and concrete.

Provide jute that is a burlap-like material used for filling voids and protecting components from waterproofing and adhesive compounds.

Provide zinc rich paint conforming to Section 1080-9 of the 2018 *Standard Specifications for Roads and Structures*.

INSTALLATION

To ensure against corrosion in the area where hot dipped galvanizing has been damaged, cover all raw metal surfaces with a cold galvanized, zinc rich paint.

Stub the raceway out at an accessible location and seal with termination kits designed specifically for that purpose. Use termination kits of the same material as the raceway.

To assure proper movement of the conduit expansion joints, install stabilizers as shown on the plans. Securely fasten the clamps with attachment brackets and stabilizer rods to the conduit at the indicated locations to assure these locations remain stationary. Install the stabilizer rods parallel to the alignment of the conduit, and tilt rod upward at an orientation of 45 degrees to the bottom of the bridge deck.

Insert a pull line in each inner duct with sufficient slack for future use.

Securely fasten all components to prevent movement during concrete placement.

Smooth all sleeve ends and make them flush with surrounding concrete surfaces. Remove burrs and rough edges by filing or grinding. A torch may be used to cut the ends of metal sleeves. Use shields to protect all surfaces during torch-cutting operations.

Place backfill in accordance with Section 300-7 of the 2018 *Standard Specifications for Roads and Structures*.

Fill the space between the raceway and the sleeve with mastic and jute. Install the mastic with a minimum distance of two inches at each end of the sleeve and the remaining interior space filled with jute. Finish the mastic by making it smooth and flush with the concrete.

Coordinate electrical conduit system work with work by others and allow installation of circuitry or fiber optic cables during the construction process, as directed by the Engineer.

Ensure that the concrete inserts are in the proper position and installed correctly, including when they are located in prestressed concrete deck panels.

Keep the raceway system clean of all debris during construction, with the completed system clean and ready for installation of circuitry or fiber optic cables.

The Engineer must inspect and approve all work before concealment.

PORTABLE HIGH DEFINITION CCTV CAMERA FOR INCIDENT MANAGEMENT

1.1 DESCRIPTION

For incident management, the Design-Build Team shall provide and install Portable High Definition CCTV (1080p) field equipment as described in these Project Special Provisions. The equipment shall be fully compatible with all features of the existing *VideoPro* video management software currently in use by NCDOT in this region and at the STOC.

Prior to placement of any Portable CCTV camera assembly, obtain approval of the camera locations from the Engineer.

1.2 MATERIALS

A. Environmental Requirements

The Design-Build Team shall install the Portable CCTV camera assembly and CCTV controller cabinet so the equipment within is protected against moisture, dust, corrosion, and vandalism.

B. Portable High Definition CCTV camera assembly

1. Portable CCTV Camera

Unless noted otherwise in this project special provision, the portable CCTV camera shall adhere to all the requirements noted in Section 1.2 - Material of the *High*

Definition CCTV Wood Pole and Field Equipment Project Special Provision found elsewhere in this RFP.

2. Power Source

- The complete system shall be designed for stand-alone operation by solar power with no outside power sources required.
- The complete system shall be capable of operating from an external power source (120 volts three-wire single phase).
- Batteries shall be deep cycle type and capable of operating the portable CCTV camera for a minimum of 20 days on a full charge without additional charging.
- The unit shall come equipped with a built-in battery charger rated at a minimum of 50 amperes per hour.
- Batteries and electronic controls shall be located in protective housing and shall be provided with locks that restrict access.
- The field controller shall be designed to monitor the operational status (normal or failed) of each individual power supply and be able to display this information on the Client Computer screen.

3. CCTV Camera Support

- The CCTV camera shall be mounted to a vertical post attached to a trailer.
- In accordance with the AASHTO Wind Load Standard, the vertical post, camera assembly and trailer shall be designed to support a 100 mph wind load, with the vertical post fully extended.
- The vertical post shall be raised and lowered with an automated electrically powered hydraulic pump with a manual backup.
- The minimum height from the trailer to the bottom of the camera, in the raised position, shall be thirty (30) feet.
- When erected, the vertical post shall be capable of rotating 360 degrees to allow easy aiming of camera.
- A set screw that holds the tower at the desired rotation angle when deployed, and in the proper orientation for transport when stowed and in the process of being raised / lowered, shall be provided.
- All rollers, pulleys and other hardware shall be either stainless steel or zinc-coated steel to ensure smooth and trouble-free operation for the life of the support.
- The vertical post shall be capable of supporting equipment up to 45.0 pounds with a maximum of four sq. ft. of surface area.
- The vertical post shall be designed to be positioned for both operation and travel, and it shall have a positive locking device for each position.
- Corrosion resistant nuts, bolts, washers, and other mounting and bonding parts and components used on the exterior of the CCTV enclosure shall be provided. All nuts, bolts, washers, and other mounting and bonding parts and components shall be sealed against water intrusion.

4. Portable CCTV Camera Trailer

The Design-Build Team shall provide a portable CCTV camera trailer that meets the following requirements:

- The trailer tongue shall be removable without having to bleed the surge brake system.
- The minimum axle / suspension capacity shall be 3,500 pounds.
- The decking shall be steel.
- The tires shall be 15" with a ply rating of P205-75-15B.
- Four (4) tie down rings, located at approximately the four corners of the trailer, shall be provided.
- The trailer shall be equipped with a 12-volt Class A trailer lighting system.
- The trailer shall be equipped with safety chains.
- The trailer shall be equipped with hydraulic surge brakes.
- The trailer shall be equipped with a 2-5/16 inch ball coupler.
- Red retro-reflective tape, approximately four inches wide, shall be installed the full length of both sides of the trailer, and the full length of the front and the rear of the trailer.
- Lighting shall meet FMVSS and NC State Motor Vehicle Laws.
- The trailer shall be equipped with four (4) crank style leveling jacks, one at each corner of the trailer, with adequate capacity and a large steel footpad to level and stabilize the trailer. All leveling jacks shall pivot to the horizontal position for travel mode.
- The leveling jacks shall allow each unit to be stabilized in a level position when located on slopes up to ten degrees.
- The trailer legs shall be extendible and shall extend a minimum of four-feet laterally from the trailer body in half-foot increments. The extensions shall be lockable with an appropriate mechanism to prevent unintended retraction or extension.

C. Physical Description

Prior to installation of the portable CCTV camera assembly, the Design-Build Team shall provide a detailed physical description of the size, weight, center of gravity, special mounting requirements, electrical connections, and all other pertinent information necessary for proper installation and operation to the Engineer for review and acceptance.

D. Wiring Diagrams

Prior to installation of the portable CCTV camera assembly, the Design-Build Team shall provide a wiring diagram for the CCTV camera and the controller cabinet, as well as the interconnection wiring diagrams for the system, as a whole, to the Engineer for review and acceptance.

For all CCTV assemblies and subassemblies, such as driver boards, control boards, CCTV controller, power supplies, etc., the Design-Build Team shall provide complete and detailed schematic diagrams to component level. Each schematic shall enable an electronics technician to successfully identify any component on a board or assembly and trace its incoming and outgoing signals.

E. Routine of Operation

Prior to installation of the portable CCTV camera assembly, the Design-Build Team shall provide an operational routine to the Engineer, that includes necessary preparations from placing the equipment into operation to securing the equipment after operation. The

operational routine shall include appropriate illustrations with the sequence of operations presented in tabular form, wherever applicable. A total list of the test instruments, aids and tools required to perform necessary measurements and measurement techniques for each component, as well as set-up, test, and calibration procedures shall be included.

1.3 CONSTRUCTION METHODS

A. Description

This article establishes practices and procedures and gives minimum standards and requirements for the installation of Portable CCTV systems, auxiliary equipment and the construction of related structures.

The Design-Build Team shall provide electrical equipment described in this special provision that conforms to the standards of NEMA, UL, or Electronic Industries Association (EIA). Connections between controllers and electric utilities shall conform to NEC standards. Express wire sizes shall be in accordance with the American Wire Gauge (AWG).

The Design-Build Team shall provide stainless steel screws, nuts, and locking washers in all external locations on the trailer. Unless specifically approved by the Engineer, self-tapping screws shall not be allowed. The Design-Build Team shall use parts made of corrosion-resistant materials, such as plastic, stainless steel, brass, or aluminum. All construction materials shall resist fungus growth and moisture deterioration. Dissimilar metals shall be separated by an inert dielectric material.

B. Layout

The Engineer will establish the actual location of each Portable CCTV camera assembly. The Design-Build Team shall ensure the proper elevation, leveling, offset, and orientation of all Portable CCTV assemblies. The locations shown in the plans are based on available project data and are approximate. The Design-Build Team shall make actual field measurements to place the equipment at the required location.

C. Construction Submittal

When the work is complete, The Design-Build Team shall submit As Built Plans, inventory sheets, and any other data required by the Engineer to show the details of the actual location and all modifications made during installation.

At a minimum, the As Built Plans shall show the Portable CCTV camera assembly location on a map with GPS coordinates, and dimensions from fixed objects or intersecting roadways.

D. Work Site Clean-Up

The Design-Build Team shall clean the site of all debris, excess excavation, waste packing material, wire, etc. The Design-Build Team shall not throw waste material in storm drains or sewers.

GENERAL

The State will not be bound by oral explanations or instructions given at any time during the bidding process or after award. Only information that is received in response to this RFP will be evaluated; reference to information previously submitted will not suffice as a response to this solicitation.

NO CONTACT CLAUSE

To ensure that information is distributed equitably to all short-listed Design-Build Teams, all questions and requests for information shall be directed to the State Contract Officer through the Design-Build e-mail address. This precludes any Design-Build team member, or representative, from contacting representatives of the Department, other State Agencies or Federal Agencies either by phone, e-mail or in person concerning the Design-Build Project.

USE OF TERMS

Throughout this RFP and all manuals, documents and standards referred to in the RFP the terms Contractor, Bidder, Design-Builder, Design-Build Team, Team, Firm, Company and Proposer are synonymous.

Throughout this RFP and all manuals, documents and standards referred to in the RFP, the terms NCDOT, Department, Engineer and State are synonymous.

Throughout this RFP and all documents referred to in the RFP, references to the Technical Proposal include all Technical Proposal supplemental information that may be submitted in response to a Best and Final Offer RFP.

DESIGN REFERENCES

Design references developed and published by NCDOT and those developed and published by other agencies and adopted for use by NCDOT which are to be used in the design of this project may be obtained by contacting Contract Standards and Development Unit within the Technical Services Division. Standard prices for materials, which the Department normally sells for a fee, will be in effect. The Design-Build Team shall be responsible for designing in accordance with the applicable documents and current revisions and supplements thereto.

REVIEW OF SUBMITTALS

Major design milestones and required design submittals shall be identified as activities on a CPM, bar chart or other scheduling tool. This schedule shall be submitted to the Design-Build Unit and Resident Engineer concurrently with the first design submittal, or within 30 days of the contract award, whichever is earlier. The schedule shall be revised and resubmitted as design milestones change or as directed by the Design-Build Unit. Submittals will be reviewed within ten working days (15 days for temporary structures, overhead sign assemblies, MSE walls, FEMA compliance documents, curved steel girder working drawings and temporary shoring) from the date of receipt by NCDOT unless otherwise stipulated in the scope of work. All submittals shall be prepared and submitted in accordance with the *Design-Build Submittal*

Guidelines, which by reference are incorporated and made a part of this contract. All submittals shall be made simultaneously to the Design-Build Unit and the Resident Engineer. The Department will not accept subsequent submittals until prior submittal reviews have been completed for that item. The Design-Build Team shall inform the Design-Build Unit in writing of any proposed changes to the NCDOT preliminary designs, Technical Proposal and / or previously reviewed submittals and obtain approval prior to incorporation. The Design-Build Team shall prioritize submittals in the event that multiple submittals are made based on the current schedule. All submittals shall include pertinent Special Provisions. No work shall be performed prior to Department review and acceptance of the design submittals.

OVERVIEW

The Design-Build Project I-5986A / I-5877 widens I-95 to eight lanes and reconstructs interchanges from south of I-95 Business / US 301 (Exit 56) to north of SR 1002 (Long Branch Road - Exit 71) in Cumberland and Harnett Counties. The project is approximately 16.9 miles long.

Project services shall include, but are not limited to:

- **Design Services** – completion of construction plans
- **Construction Services** – necessary to build and ensure workmanship of the designed facility
- **Intelligent Transportation System** – design and construction of ITS components, including CCTV cameras, dynamic message signs (DMS), fiber-optic communications cable and conduit, and ITS integration
- **Permit Preparation / Application** - development of all documents for required permits
- **Right of Way** – acquisition of right of way necessary to construct project
- **As-Constructed Drawings**
- **As-Built Plans**

Construction Engineering Inspection will be provided by the NCDOT Division personnel or will be performed under a separate contract.

The following project planning documents have been completed:

- The I-5877 Categorical Exclusion (CE) was approved on February 16, 2018.
- The I-5986 Categorical Exclusion (CE) was approved on January 31, 2019.

GENERAL SCOPE

The scope of work for this project includes design, construction and management of the project. The design work includes all aspects to widen approximately 14.0 miles of I-95 to an eight-lane divided facility and reconfigure interchanges. Unless allowed otherwise elsewhere in this RFP, the designs shall meet all appropriate latest versions of AASHTO *Policy on Geometric Design of Highways and Streets*, AASHTO *LRFD Bridge Design Specifications*, *Manual of Uniform Traffic Control Devices* and all NCDOT design policies that are current as of the Technical Proposal submittal date or the Best and Final Offer submittal date, whichever is later.

Unless noted otherwise elsewhere in this RFP, all documents referenced herein shall be the edition / version, including all interim revisions, effective on the Design-Build submittal date or the Best and Final Offer submittal date, whichever is later.

Construction shall include, but not be limited to, all necessary clearing, grading, roadway, drainage, structures, utility coordination and relocation, and erosion and sediment control work items for the proposed four-lane facility and installation of the control of access fence. Construction engineering and management shall be the responsibility of the Design-Build Team. Construction shall comply with 2018 NCDOT *Standard Specifications for Roads and Structures* and any special provisions.

Areas of work required for this project shall include, but are not limited to the following items:

Roadway Design
Structure Design
Permit Application
Hydraulic Design
Geotechnical Engineering
GeoEnvironmental
Subgrade Stabilization
Foundation Design for Structures and Roadway
Erosion and Sedimentation Control Design and Implementation
Transportation Management Plan Design and Implementation
Pavement Marking Design
Intelligent Transportation Systems (ITS) Design
Sign Design
Traffic Signals and Signal Timing Plans
Construction
Project Management
Design and Construction Management
Lighting (Construction Only)
Utility Construction
R/W Utilities, Conflicts and / or Construction
Construction Surveying
Location and Surveys
Right of Way Acquisition
Public Involvement and Information

All designs shall be in Microstation format using Geopak software (current version used by the Department).

DESIGN AND CONSTRUCTION PERFORMED BY DESIGN-BUILD TEAM

The design work consists of the preparation of all construction documents to widen approximately 14.0 miles of I-95 to an eight-lane divided facility and reconfigure interchanges as outlined in the Scope of Work section of this RFP. The Design-Build Team shall prepare final designs, construction drawings and special provisions.

Unless noted otherwise elsewhere in this RFP, the Design-Build Team shall acknowledge that project documents furnished by the Department are preliminary and provided solely to assist the Design-Build Team in the development of the project design. The Design-Build Team shall be fully and totally responsible for the accuracy and completeness of all work performed under this contract and shall save the State harmless and shall be fully liable for any additional costs and all claims against the State which may arise due to errors, omissions and negligence of the Design-Build Team in performing the work required by this contract.

There shall be no assignment, subletting or transfer of the interest of the Design-Build Team in any of the work covered by the Contract without the written consent of the State, except that the Design-Build Team may, with prior written notification of such action to the State, sublet property searches and related services without further approval of the State.

The Design-Build Team shall certify all plans, specifications, estimates and engineering data furnished by the Team.

All work by the Design-Build Team shall be performed in a manner satisfactory to the State and in accordance with the established customs, practices, and procedures of the North Carolina Department of Transportation, and in conformity with the standards adopted by the American Association of State Highway Transportation Officials, and approved by the U.S. Secretary of Transportation as provided in Title 23, U.S. Code, Section 109 (b). The decision of the Engineer / State / Department shall control in all questions regarding location, type of design, dimension of design, and similar questions.

Alternate designs, details and / or construction practices (such as those employed by other states, but not standard practice in NC) are subject to Department review and approval, and will be evaluated on a case by case basis.

The Design-Build Team shall not change team members, subconsultants or subcontractors identified in the Statement of Qualifications (SOQ) or Technical Proposal without written consent of the Engineer or the State Contract Officer. In addition, subconsultants and subcontractors not identified in the SOQ or Technical Proposal shall not perform any work without written consent by the Engineer. Individual offices of the Design-Build Team not identified in the Statement of Qualifications or the Technical Proposal submitted shall not perform any work without written consent by the Engineer. Failure to comply with this requirement may be justification for removing the Team from further consideration for this project and disqualification from submitting on future Design-Build Projects.

All firms shall be prequalified by the Department for the work they are to perform. Joint Ventures, LLCs or any legal structure that are different than the existing prequalification status must be prequalified prior to the Price Proposal submittal deadline. Subcontractors need only be prequalified prior to performing the work. Design firms should be prequalified prior to the Technical Proposal submittal deadline. If not prequalified at the time of the Technical Proposal submittal deadline, the prime contractor shall be solely responsible for either (1) ensuring that the design firm is prequalified prior to its first design submittal or (2) replacing that firm with a Prequalified firm.

ACCESS TO PROVIDED MATERIALS

To facilitate distribution of documents that may be helpful to the Design-Build Teams in their development of a Technical and Price Proposal and subsequent designs, project material will be made accessible through a secure web portal. The Design-Build Project Manager for each short-listed team shall provide a list of team members that will require access to this portal. This list shall include the name, e-mail address and North Carolina Identity Management (NCID) for each individual team member. Once the list is complete, it shall be submitted to the Design-Build e-mail address (designbuild@ncdot.gov). No distribution of Provided Materials will be possible prior to this list being submitted and the access privileges established as noted herein.

To create an NCID account, each individual shall go to NCDOT's Connect website (https://connect.ncdot.gov) and click on the "How to get an Account" link and then, "Create NCID".

The Department will obtain access rights for these individuals and notify the Design-Build Project Manager accordingly. Individuals may then re-enter the "Connect" site and login with their NCID account. Once logged in, the Teamsite "I-5986A / I-5877 Project" link will be apparent on the left side of the webpage.

Please note that all material provided, including the material provided through this portal, is provided for informational purposes only and is provided solely to assist the Design-Build Team in the development of the project design unless noted otherwise elsewhere in this RFP. By submitting a Technical Proposal and Price Proposal, the Design-Build Team acknowledges that they are fully and totally responsible for the project design, including the use of portions of the Department design, modification of such design, or other designs as may be submitted by the Design-Build Team, unless noted otherwise elsewhere in this RFP. The Design-Build Team further acknowledges that they are fully and totally responsible for the accuracy and completeness of all work performed, including the determination of the accuracy of the information provided through this portal, and to the extent that the Design-Build Team chooses to rely on such information.

ELECTRONIC PLAN SUBMITTALS AND E-SIGNATURES

The Design-Build Team shall submit all Release for Construction Plans in accordance with the NCDOT e-Signature requirements, including but not limited to providing signed and sealed searchable .pdf files. Reference the website noted below for additional information:

https://connect.ncdot.gov/projects/roadway/pages/private-engineering-firm-resources.aspx

ETHICS POLICY

Employees employed by the Design-Build Team or employees employed by any subconsultant for the Design-Build Team to provide services for this project shall comply with the Department's Ethics Policy. Failure to comply with the Ethics Policy will result in the employee's removal from the project and may result in removal of the Company from the Department's appropriate prequalified list.

APPROVAL OF PERSONNEL

The Department will have the right to approve or reject any personnel, assigned to a project by the Design-Build Team.

In the event of engagement of a former employee of the Department, the Design-Build Team or their subcontractors shall restrict such person or persons from working on any of the Design-Build Team's contracted projects in which the person or persons were "formerly involved" while employed by the State. The restriction period shall be for the duration of the contracted project with which the person was involved. *Former Involvement* shall be defined as active participation in any of the following activities:

Drafting the contract or contract Scopes of Work
Design-Build Team selection
Negotiation of the contract cost (including calculating manhours or fees)
Contract administration

An exception to these terms may be granted when recommended by the Secretary and approved by the Board of Transportation.

The Design-Build Team and their subconsultants / subcontractors shall restrict all personnel embedded within the Department, including but not limited to Design Units and Divisions, from working on any Design-Build procurement / project. Except as allowed otherwise below, the Design-Build Team shall provide a list of all embedded personnel to the Department and a signed Confidentiality Agreement for each embedded employee, as well as their employer and NCDOT Unit Manager. If the Design-Build Team has previously provided a signed Confidentiality Agreement for an embedded employee who's employer and / or NCDOT Unit Manager have not changed, the Design-Build Team shall 1) indicate on the aforementioned list when the original Confidentiality Agreement was provided to the Design-Build Unit (date and TIP Project), 2) provide a copy of the original signed Confidentiality Agreement, or 3) provide a new signed Confidentiality Agreement. The Design-Build Team shall submit the aforementioned list and Confidentiality Agreements to Mr. Ronald E. Davenport, Jr., P.E., State Contract Officer, within ten business days of the issuance of the Industry Draft RFP, and provide updated lists and Confidentiality Agreements, as appropriate, throughout the project procurement / duration.

Failure to comply with the terms stated above in this section may be grounds for termination of this contract and / or not being considered for selection of work on future contracts for a period of one year.

SUBMITTAL OF TECHNICAL AND PRICE PROPOSALS

Technical and / or Price Proposals that do not adhere to all the requirements noted below may be considered non-responsive and may result in the Department not considering the Design-Build Team for award of the contract or reading their Price Proposal publicly.

TECHNICAL PROPOSAL - Hard Copies

Technical Proposals will be accepted until **4:00 p.m. Local Time on Tuesday, July 30, 2019**, at the office of the State Contract Officer:

Mr. Ronald E. Davenport, Jr., PE
Contract Standards and Development
1020 Birch Ridge Drive
Century Center Complex - Building B
Raleigh, NC 27610

No Technical Proposals will be accepted after the time specified.

Hard copies of the Technical Proposal shall be submitted in a sealed package. The outer wrapping shall clearly indicate the following information:

Technical Proposal - Hard Copies
Submitted By: (Design-Build Team's Name)
Design-Build Team Address
Contract Number C204283
TIP Number I-5986A / I-5877
Cumberland and Harnett Counties
I-95 from south of SR 1832 (Murphy Road - Exit 55) to north of SR 1002
(Long Branch Road - Exit 71)

If delivered by mail, the sealed package shall be placed in another sealed package that is addressed to the Contract Officer as stated in the Request for Proposals. The outer package shall also bear the statement "Technical Proposal for the Design-Build of State Highway Contract No. C204283". (Reference the *Submittal of Quantities, Fuel Base Index Price and Opt-Out Option* Project Special Provision found elsewhere in this RFP for additional requirements that are concurrent with the Technical Proposal submittal.)

Technical Proposal Requirements

12 Copies

8 ½ inch by 11-inch pages
No fold out sheets allowed – 24-inch by 36-inch fold out sheets shall only be allowed to present interchange plans in the 11-inch by 17-inch plan sheets

Printed on one side only

Double-spaced

Font size 12 - Within embedded tables, charts, and graphics only, minimal font size 10 is permissible

Excluding the introductory letter to Mr. Ronald E. Davenport, Jr., P.E. (two-page maximum length) and the 11-inch by 17-inch appropriate plan sheets, the maximum number of allowable pages shall be 50 pages.

The aforementioned introductory letter to Mr. Ronald E. Davenport, Jr., PE shall include a statement acknowledging that the NCDOT may destroy all Technical Proposals not retained by the Department, **or** a statement that the NCDOT should return all Technical Proposals not retained by the Department.

Project team members, identified in the Statement of Qualifications, shall not be modified in the Technical Proposal without written approval of the Department. Any such request should be sent to the attention of Mr. Ronald E. Davenport, Jr., PE, at the address below:

NCDOT- Contract Standards and Development
Century Center Complex - Building B
1020 Birch Ridge Drive
Raleigh, NC 27610

TECHNICAL PROPOSAL - Electronic Copy

An electronic copy of the Technical Proposal shall be submitted in a sealed package. The electronic copy shall be created by converting the original MicroStation / GeoPak files into PDF format. The electronic copy shall be scaled to reproduce to the appropriate page format, as defined above. The outer wrapping shall clearly indicate the following information:

Technical Proposal – Electronic Copy
Submitted By: (Design-Build Team's Name)
Design-Build Team Address
Contract Number C204283
TIP Number I-5986A / I-5877
Cumberland and Harnett Counties
I-95 from south of SR 1832 (Murphy Road - Exit 55) to north of SR 1002
(Long Branch Road - Exit 71)

If delivered by mail, the sealed package shall be placed in another sealed package that is addressed to the Contract Officer as stated in the Request for Proposals. The outer package shall also bear the statement "Technical Proposal for the Design-Build of State Highway Contract No. C204283"

PRICE PROPOSAL

Price Proposals will be accepted until **4:00 p.m. Local Time on Monday August 12, 2019**, at the office of the State Contract Officer:

Mr. Ronald E. Davenport, Jr., PE
Contract Standards and Development
1020 Birch Ridge Drive
Century Center Complex - Building B
Raleigh, NC 27610

No Price Proposals will be accepted after the time specified.

Price Proposals shall be submitted in a sealed package. The outer wrapping shall clearly indicate the following information:

Price Proposal
Submitted by (Design-Build Team's Name)
Design-Build Team Address
Contract Number C204283
TIP Number I-5986A / I-5877
Cumberland and Harnett Counties
I-95 from south of SR 1832 (Murphy Road - Exit 55) to north of SR 1002
(Long Branch Road - Exit 71)

The Price Proposal shall be submitted by returning the Request for Proposals with the item sheets completed, and all required signatures and bonds. Failure to execute the required documents may render the Price Proposal non-responsive.

If delivered by mail, the sealed package shall be placed in another sealed package that is addressed to the Contract Officer as stated in the Request for Proposals. The outer package shall also bear the statement "Price Proposal for the Design-Build of State Highway Contract No. C204283".

EVALUATIONS

Decisions based on cost alone will not establish the design standards for the project. Technical Proposals shall address the technical elements of the design and construction of the project. The Technical Review Committee will consider the understanding of the project, the anticipated problems and the solutions to those problems, in addition to other evaluation criteria identified herein.

The Design-Build Team's Technical Proposal shall be developed using narratives, tables, charts, plots, drawings and sketches as appropriate. The purpose of the Technical Proposal is to document the Design-Build Team's understanding of the project, demonstrate the Design-Build Team's capabilities to complete the project, document their selection of appropriate design criteria and state their approach and schedule for completing all design and construction activities.

The review of design plans by the Department is not intended to reflect a reviewer's personal preferences, but rather to ensure that all contract requirements are met, sound engineering judgment is exercised by the Design-Build Team, and that the Design-Build Team adheres to all referenced documents, including but not limited to, design standards, codes, memos and manuals. As such, the Award of the Design-Build contract does not in any way imply that the NCDOT accepts the details of the Technical Proposal submitted by the Design-Build Team.

The Technical Proposal will be evaluated in each of the following major categories:

	EVALUATION FACTORS	POINTS
1.	Management	6
2.	Responsiveness to Request for Proposal	30
3.	Long Term Maintenance	4
4.	Schedule and Milestones	30
5.	Innovation	5
6.	Maintenance of Traffic and Safety Plan	20
7.	Oral Interview	5

TECHNICAL PROPOSAL EVALUATION CRITERIA

1. Management – 6 points

Provide a comprehensive Organizational Chart that identifies the design, quality and construction management, and the relationships with subconsultants / subcontractors. The Chart shall identify all firms and personnel changes (additions, substitutions, deletions) to the Design-Build Team since submittal of the Statement of Qualifications.

Design-Build Team Management

- Describe the Design-Build Team's concept of design management, and identify key positions and subordinate organizational units.
- Describe how the various design disciplines will be coordinated, including how designs developed by different firms and offices will be integrated / consistent.
- Describe how design personnel will interface with the construction personnel.
- List projects, including description and similarity to the subject project that the Design-Build Team's designer(s) have developed Transportation Management Plans; Pavement Marking Plans; and Signing Plans.
- List projects, including description and similarity to the subject project, that the Design-Build Team's right of way firm has performed right of way acquisition services.

Quality Management

- Describe how the Design-Build Team will comply with the design and construction quality control requirements. Specifically, include a narrative that describes the

Design-Build Team's understanding of the Department's quality control philosophy and how the Design-Build Team will implement it for this project.

- Describe any significant design and / or construction quality control issues experienced on NCDOT projects in the last ten years and how those issues will be addressed for this project

Construction Management

- Describe the Design-Build Team's concept of the project construction management organization and how it interrelates with the other elements of the Design-Build Team's organization for the project.
- Provide a brief narrative of the Design-Build Team's proposed plan for performing construction. This description shall include at least the following:

    - Indicate if, and how, the Design-Build Team intends to divide the project into work segments to enable optimum construction performance.
    - Describe the work categories that the Design-Build Team anticipates will be performed by the Design-Build Team's own direct labor force and those categories that will be performed by subcontractors.
    - Describe the Design-Build Team's plans and procedures to insure timely deliveries of materials to achieve the project schedule.
    - Describe the Design-Build Team's approach to site access and material staging.

2. Responsiveness to RFP – 30 points

Natural Environmental Responsibility

- Describe the Design-Build Team's approach to addressing environmental concerns within the project boundaries.
- Identify efforts to minimize impacts on wetlands, streams and other environmentally sensitive areas. Describe any temporary impacts and associated minimization approaches.
- Describe the Design-Build Team's understanding of the overall approach to permitting and the Team's comfort level with obtaining the required permits within the allowed timeframe.
- Identify methods of construction in wetlands and streams.
- Describe all project / construction related Notice of Violations (NOVs) received by any team member within the last five years on projects in the United States and the disposition of each listed NOV.
- Describe the Design-Build Team's approach to Sedimentation and Erosion Control for the project.
- Describe efforts to minimize excavation within the contaminated sites and associated disturbance to underlying soil.
- Provide a narrative overview of the Design-Build Team's Vegetation Management Procedure.

Design Features

- Indicate all modifications to the I-5877 signed and sealed plans provided by the Department.
- Show plan view of design concepts with key elements noted.
- Identify preliminary horizontal and vertical alignments of all roadway elements.
- Identify the appropriate design criteria for each feature, if not provided herein.
- Identify proposed design exceptions and justify why the design exception is necessary.
- Identify proposed deviations to the preliminary design provided by the Department, not required herein.
- Show mainline typical sections.
- Specify the mainline pavement Alternate chosen. The pavement Alternate chosen for the mainline will not be a part of the Technical Proposal evaluation and the selection thereof will not impact the Technical Scores; although an alternate pavement design, as approved as an ATC, may be considered in the evaluation.
- Specify the base option chosen (ABC or asphalt) for all -Y- Lines, ramps, loops, service roads and roundabouts.
- If applicable, specify where all underlying longitudinal joints will be located and demonstrate how the underlying longitudinal joint location will minimize reflective cracking.
- Indicate how longitudinal joints will be located on a lane line or lane midpoint.
- Identify drainage modifications and designs to be implemented.
- Provide a brief summary of the I-95 hydroplaning risk assessment.
- For the drainage structures on I-95 south of the eight-lane typical section, excluding the RCBC at approximately Station 42+00 -L-, and the drainage structures on NC 295 west of I-95, provide a *Box Culverts and Cross Pipes Hydraulic Deficiency Assessment and Proposed Mitigation Table* that contains the box culvert and cross pipe attributes noted in the Hydraulics Scope of Work found elsewhere in this RFP.
- Provide a *Box Culverts and Cross Pipes Hydraulic Assessment Table* that contains the box culvert and cross pipe attributes noted in the Hydraulics Scope of Work found elsewhere in this RFP.
- Identify the months the Department should schedule the interagency hydraulic design review meeting and the interagency permit impacts meeting.
- Discuss the extent and limits of an allowable rise in water elevation in the floodplain(s), identify potentially impacted insurable structures, specify areas anticipated to require additional surveys and estimate the anticipated additional right of way impacts outside the project construction limits.
- Identify all bridge types to be constructed, including any special design features or construction techniques needed.
- Indicate the type and number of bridge expansion joints.
- Identify types of any retaining walls and / or sound barrier walls, if applicable.
- Describe any geotechnical investigations to be performed by the Design-Build Team and note any deviations to NCDOT requirements for subsurface investigations noted in the Geotechnical Scope of Work.
- If applicable, specify the extent of impacts to properties with contaminated soils, indicating the anticipated contamination excavation limits.

- Identify the approximate location of new permanent ITS devices and when they will be installed and operational.
- Identify any aesthetic considerations not required herein that will be part of the design.
- Describe how utility conflicts will be addressed and any special utility design considerations. Describe how the Design-Build Team's design and construction methods minimize the Department's utility relocation costs.
- Describe how the design will affect the Department's right of way costs.
- Provide a Preliminary Signing Concept Map that includes, at a minimum, all anticipated DMS locations, all proposed overhead sign structure locations, all overhead signs, and all ground mounted Type A and B guide signs.

3. Long Term Maintenance – 4 points

- Describe any special materials, not referenced elsewhere in this RFP, incorporated into the project that would result in long term reduction in maintenance.
- Describe any special designs or construction methods that would reduce future maintenance costs to the Department.
- Estimate a minimum ten-year cost saving resulting from incorporation of these special materials, design or construction methods into the project.

4. Schedule and Milestones – 30 points

- Provide a detailed schedule for the project including both design and construction activities. The schedule shall show the sequence and continuity of operations, as well as the month of delivery of usable segments of the project.
- Indicate the specific construction activities that will occur outside jurisdictional resources prior to obtaining the environmental permits and their anticipated start date.
- Indicate how the Design-Build Team will maintain the project schedule if the right of way acquisition process and / or utility relocations are delayed.
- Identify any self-imposed liquidated damages and associated Intermediate Contract Time(s), if applicable.
- Specify the duration, in days, for ICT #7 through ICT #21.
- The schedule shall also include the Design-Build Team's final completion date and, if proposed, their substantial completion date. **These dates shall be clearly indicated on the Project Schedule and labeled "Final Completion Date" and "Substantial Completion Date".**
- ** **NOTE** ** Deleted reference to Intermediate Contract Time #1

5. Innovation – 5 points

- Identify any aspects of the design or construction elements that the Design-Build Team considers innovative. Include a description of alternatives that were considered whether implemented or not.

6. Maintenance of Traffic and Safety Plan – 20 points

Maintenance of Traffic

- Provide a Transportation Management Phasing Concept (TMPC).
- Identify the type of positive median cross-over protection proposed and replacement / resetting requirements.
- Describe the traffic control measures that will be used for each construction phase.
- Describe how traffic will be maintained as appropriate and describe the Design-Build Team's understanding of any time restrictions noted in the RFP.
- Specifically describe how business, school and residential access will be maintained, if applicable.
- Address how hauling will be conducted, including but not limited to, hauling of materials to and from the site and hauling of materials within NCDOT right of way.
- If temporary portable barrier system will be utilized, provide the type and why it is needed.
- If temporary shoring will be required, provide the type and why it is required.
- Include all proposed road closures, detour routes, durations and justifications.
- Identify the need for a Work Zone Speed Limit Reduction Ordinance.
- Identify the need for a Speeding Penalty Ordinance.
- Address where and how law enforcement officers will be used.
- Identify a Traffic Control Supervisor and briefly describe their qualifications for this role.
- Describe the Design-Build Team's approach to providing the public with communication access to project personnel to inquire as to traffic impacts, including vehicular and pedestrian.

Safety Plan

- Describe the safety considerations specific to the project.
- Discuss the Design-Build Team's overall approach to safety.
- Describe any proposed improvements that will be made prior to or during construction that will enhance the safety of the work force and / or travelling public both during and after the project construction.

7. Oral Interview – 5 points

- The Design-Build Team's Project Management Team shall present a brief introduction of the project team and design / construction approach.
- Introductory comments shall be held to no more than 30 minutes.

- The Department will use this interview to ask specific questions about the Design-Build Team's Technical Proposal, background, philosophies and project approach.
- Presentation, questions, and answers shall not exceed 90 minutes. No more than ten people from the Design-Build Team may attend.

The Department will use the information presented in the oral interview to assist in the Technical Proposal evaluation.

Additional Warranty and / or Guarantee

- **The Extra Credit for this project shall be a Maximum of 5 Points.**

A twelve-month guarantee, as outlined in the *Twelve-Month Guarantee* Project Special Provision found elsewhere in this RFP, is required for this project. However, the Design-Build Team may provide additional warranties and / or guarantees at their discretion. The Design-Build Team may be awarded additional points as "extra credit" to be added to the Technical Score.

The Design-Build Team may provide warranties and / or guarantees for major components of the project. Examples of major components are pavements, bridge components and sign structures. If additional warranties and / or guarantees are offered, the Design-Build Team shall indicate in the Technical Proposal the general terms of the warranties and / or guarantees, a list of the items covered, performance parameters, notification and response parameters for corrective action, and evaluation periods. The Department will be responsible for annual inspections of the components covered by all warranties and / or guarantees offered by the Design-Build Team that extend beyond the required Twelve-Month Guarantee. The warranties and / or guarantees shall also define how disputes will be handled.

No direct payment will be made for warranties and / or guarantees. Payment will be considered incidental to the lump sum price for the contract.

SELECTION PROCEDURE

There will be a Technical Review Committee (TRC) composed of five or more senior personnel from involved engineering groups that will evaluate the Technical Proposal on the basis of the criteria provided in the Request for Proposals.

The selection of a Design-Build Team will involve both technical quality and price. The Technical Proposals will be presented to the TRC for evaluation. The TRC shall first determine whether the proposals are responsive to the requirements of the Request for Proposals. The Department reserves the right to ask for clarification on any item in the Technical Proposal. A written response to this request for clarification shall be provided to the Department prior to the opening of the Price Proposals. The contents of the written response may affect the Technical Review Committee's determination of the Technical Proposal's responsiveness and / or the overall evaluation of the Technical Proposal. If any commitments or clarifications provided in the written response conflict with the contents of the Technical Proposal, the contents of the written response will govern and be incorporated into the contract.

Each responsive Technical Proposal shall be evaluated based on the rating criteria provided in the Request for Proposals. The TRC will submit an overall consensus Technical Proposal score for each Design-Build Team to the State Contract Officer.

Quality Credit Evaluation Factors for Technical Proposals

Management	6
Responsiveness to Request for Proposal	30
Long Term Maintenance	4
Schedule and Milestones	30
Innovation	5
Maintenance of Traffic and Safety Plan	20
Oral Interview	5
Maximum Score	**100**

The State Contract Officer will use a table based on the maximum quality credit percentage to assign a Quality Credit Percentage to each proposal based on the proposal's overall Technical Score. The maximum quality credit percentage for this project will be **30%**. The Technical Review Committee may elect to assign point values to the nearest one-half of a point (e.g. 90.5). In this event, the Quality Credit Percentage will be determined by linearly interpolating within the table entitled "Quality Credit Percentage for Technical Proposals".

Quality Credit Percentage for Technical Proposals

Technical Score	Quality Credit (%)	Technical Score	Quality Credit (%)
100	30.00	84	14.00
99	29.00	83	13.00
98	28.00	82	12.00
97	27.00	81	11.00
96	26.00	80	10.00
95	25.00	79	9.00
94	24.00	78	8.00
93	23.00	77	7.00
92	22.00	76	6.00
91	21.00	75	5.00
90	20.00	74	4.00
89	19.00	73	3.00
88	18.00	72	2.00
87	17.00	71	1.00
86	16.00	70	0.00
85	15.00		

The maximum Technical Score, including any extra credit given for warranties or guarantees, shall not exceed 100 points in determining the Quality Credit percentage.

If any of the Technical Proposals are considered non-responsive, the State Contract Officer will notify those Design-Build Teams of that fact. The State Contract Officer shall publicly open the

sealed Price Proposals and multiply each Design-Build Team's Price Proposal by the Quality Credit Percentage earned by the Design-Build Team's Technical Proposal to obtain the Quality Value of each Design-Build Team's Technical Proposal. The Quality Value will then be subtracted from each Design-Build Team's Price Proposal to obtain an Adjusted Price based upon Price and Quality combined. Unless all Proposals are rejected or the Department elects to proceed with the Best and Final Offer process, the Department will recommend to the State Transportation Board that the Design-Build Team having the lowest adjusted price be awarded the contract. The cost of the Design-Build contract will be the amount received as the Price Proposal.

The following table shows an example of the calculations involved in this process.

An Example of Calculating Quality Adjusted Price Ranking

Proposal	Technical Score	Quality Credit (%)	Price Proposal ($)	Quality Value ($)	Adjusted Price ($)
A	95	25.00	3,000,000	750,000	2,250,000
B	90	20.00	2,900,000	580,000	2,320,000
C *	90	20.00	2,800,000	560,000	2,240,000
D	80	10.00	2,700,000	270,000	2,430,000
E	70	0.00	2,600,000	0	2,600,000
* Successful Design-Build Team – Contract Cost $2,800,000					

Opening of Price Proposals

Prior to opening the Price Proposals, the State Contract Officer will provide to each Design-Build Team their Technical Score in a sealed envelope. The sealed envelope will contain that Team's score only.

At the time and date specified, the State Contract Officer will open the Price Proposals and calculate the percentage difference between the Price Proposals submitted and the Engineer's Estimate.

Should all of the Price Proposals be within an acceptable range or below the Engineer's Estimate the State Contract Officer will proceed to calculate the quality credit and publicly read the Price Proposal, Technical Score and Adjusted Price as outlined in the selection procedure above.

Should any one or more of the Price Proposals be within an acceptable range or below the Engineer's Estimate and the remaining Price Proposals exceed an acceptable range of the Engineer's Estimate the State Contract Officer will go to a separate location to calculate the quality credit and determine if the Design-Build Team with the lowest Adjusted Price is within an acceptable range of the Engineer's Estimate. Should the Price Proposal of the Design-Build Team with the lowest Adjusted Price be within an acceptable range of the Engineer's Estimate or below the Engineer's Estimate the State Contract Officer will proceed to publicly read the Price Proposals, Technical Scores and Adjusted Prices. Should the Price Proposal of the Design-Build Team with the lowest Adjusted Price exceed an acceptable range of the Engineer's Estimate the State Contract Officer will publicly read the Price Proposals only and the Department will then determine whether to proceed to request a Best and Final Offer (BAFO) as outlined below.

Should all Price Proposals submitted exceed an acceptable range of the Engineer's Estimate the State Contract Officer will publicly read the Price Proposals only. The Department will then determine whether to proceed to request a Best and Final Offer (BAFO) as outlined below.

In the event that the Department elects to not proceed with a Best and Final Offer (BAFO), then the State Contract Officer will schedule a date and time to publicly reiterate all Price Proposals, and read all Technical Scores and Adjusted Prices.

Provided the Department elects to proceed to request a Best and Final Offer (BAFO), at the date and time specified, the State Contract Officer will open the Best and Final Offer Price Proposals and proceed to publicly read all Price Proposals, Technical Scores and Adjusted Prices.

Best and Final Offer

In the event initial Price Proposals exceed an acceptable range of the Engineer's Estimate or if the Department feels it is necessary for any reason the Department may choose to make amendments to the details of the RFP and request a Best and Final Offer from all the previously short-listed teams. Alternately, the Department may choose to redistribute to the short-listed Design-Build Teams another RFP for the project with no amendments to the RFP scope.

After receipt of the redistributed RFP, the Design-Build Team has the option of changing their Technical Proposal details. If the Design-Build Team changes any component of the Technical Proposal, the TRC will review those amended components of the Technical Proposal and reevaluate the scores accordingly. The Design-Build Team shall highlight the changes to bring them to the Department's attention. A revised consensus Technical Score will be calculated, if appropriate, based on these amendments to the Technical Proposal.

Additional oral interviews will not be held. The Design-Build Teams shall submit both a revised Price Proposal and a revised Technical Proposal (if applicable) at the time, place and date specified in the redistributed RFP. A revised Quality Credit Percentage (if required) and Adjusted Price will be determined. This will constitute the Design-Build Team's Best and Final Offer. Award of the project may be made to the Design-Build Team with the lowest Adjusted Price on this Best and Final Offer.

Stipend

A stipulated fee of **$80,000** will be awarded to each short-listed Design-Build Team that provides a responsive, but unsuccessful, Design-Build Proposal. If a contract award is not made, all short-listed Design-Build Teams that provide a responsive Design-Build Proposal shall receive the stipulated fee. Once award is made, or a decision is made not to award, unsuccessful Design-Build Teams can apply for the stipulated fee by notifying the State Contract Officer in writing and providing an original invoice within 60 days of Award. If the Design-Build Team accepts the stipulated fee, the Department reserves the right to use any ideas or information contained in the Design-Build Proposal and / or Alternative Technical Concepts, whether incorporated into the Design-Build Proposal or not, in connection with any contract awarded for the project, or in connection with any subsequent procurement, with no obligation to pay additional compensation to the unsuccessful Design-Build Team. The stipulated fee shall be paid

to eligible Design-Build Teams within ninety days after the award of the contract or the decision not to award. Unsuccessful Design-Build Teams may elect to refuse payment of the stipulated fee and retain any rights to its Design-Build Proposal and the ideas and information contained therein.

In the event that the Department suspends or discontinues the procurement process prior to the Design-Build Proposal submittal date current at the time of the suspension, no stipulated fee will be paid.

I-5877 DESIGN-BUILD SCOPE OF WORK (7-24-19)

Throughout this RFP, references to signed and sealed plans shall denote all construction plans for I-5877 provided by the Department.

In regard to the I-5877 requirements, the Design-Build Team shall adhere to the following:

- **If the Design-Build Team modifies the I-5877 signed and sealed plans provided by the Department or if a Scope of Work specifically references I-5877, the Design-Build Team shall adhere to the Scope(s) of Work requirements found elsewhere in this RFP. The Design-Build Team shall adhere to all other sections, including but not limited to the Project Special Provisions and Standard Special Provisions, of this RFP for the I-5877 project.**
- **In addition to the Project Special Provisions and Standard Special Provisions found elsewhere in this RFP, the Design-Build Team shall adhere to the July 10, 2019 *I-5877 Project Provisions* provided by the Department.**
- **If this RFP and the July 10, 2019 *I-5877 Project Provisions* provided by the Department have conflicting information, the July 10, 2019 *I-5877 Project Provisions* shall govern (for the I-5877 project only).**
- **The March 7, 2019 *Geotechnical Report - Design and Construction Recommendations (Revised)* provided by the Department**
- **The July 16, 2019 *Geotechnical Report - Design and Construction Recommendations 776+00 to 790+00 (Supplemental)* provided by the Department**
- **The July 18, 2019 *Revised Foundation Report - Structure Foundation Recommendation Report REV3 Bridge No. 37 on SR 1811 over I-95* provided by the Department**
- **The July 18, 2019 *Revised Foundation Report - Structure Foundation Recommendation Report REV1 Bridge No. 57 on SR 1002 over I-95* provided by the Department**

Only Alternative Technical Concepts on pavement designs will be allowed on I-5877. (Reference the Pavement Management Scope of Work found elsewhere in this RFP)

- The Department will provide I-5877 signed and sealed plans for all major work items, including roadway design, structure design, hydraulic design, lighting design, water and sewer design, signing design, pavement marking design, and traffic management systems design. Unless allowed otherwise elsewhere in this RFP, the Design-Build Team shall construct the I-5877 project in accordance with these signed and sealed plans. Excluding quantities, the Department will be responsible for the accuracy and completeness of all signed and sealed plans provided; and will be fully liable for any additional costs due to errors and / or omissions in these plans. The Design-Build Team shall be responsible for the accuracy and completeness of all I-5877 quantities, including all contingencies. The Department will not honor any requests for additional contract time or compensation due to errors and / or omissions in the I-5877 quantities, including all contingencies.

- Excluding modifications required solely due to errors and / or omissions, and allowable pavement design modifications, the Design-Build Team shall be responsible for the accuracy and completeness of all modifications to the I-5877 signed and sealed plans provided by the Department, including but not limited to all items affected by the modifications (e.g. sound barrier wall envelopes and details, culvert size and lengths, bridge lengths, signing, lighting, Interchange Access Report, utility relocations, etc.).

Excluding modifications required solely due to errors and / or omissions, and incorporation of a pavement design alternate provided in the Pavement Management Scope of Work found elsewhere in this RFP, the Design-Build Team shall sign and seal all I-5877 design modifications and all items affected by the design modifications. All I-5877 design modifications shall provide the same or better access, widening improvements and traffic measures of effectiveness, in the Department's sole discretion, included in the I-5877 signed and sealed plans provided by the Department. All I-5877 design modifications shall adhere to the appropriate design, submittal and construction requirements found elsewhere in this RFP. The Department will not honor any requests for additional contract time or compensation for any activity associated with design modifications to the I-5877 signed and sealed plans, including but not limited to public involvement, additional design effort, additional construction effort, permit modification, and / or additional third-party coordination and approvals. The Design-Build Team shall indicate all modifications to the I-5877 signed and sealed plans in the Technical Proposal.

- The Department will provide final Erosion and Sedimentation Control Plans for the I-5877 project.

- The Design-Build Team shall not eliminate or modify any service road on the I-5877 signed and sealed plans.

- Conduct proofrolling in accordance with Section 260 of the 2018 *Standard Specifications for Roads and Structures*. A minimum load capacity of 35 tons shall be required. In areas where proofrolling fails or is not practical, the Engineer will conduct DCP testing in accordance with the following:

  - Where Type 1 aggregate subgrade is required, the Engineer will conduct DCP testing on the soils beneath the Type 1 aggregate subgrade at a spacing of 100 feet when the Design-Build Team has notified the Department that the aggregate subgrade location has been prepared for geotextile for pavement stabilization placement (Reference the Pavement Management Scope of Work, the *Aggregate Subgrade* Standard Special Provision, and the *Geotextile For Pavement Stabilization* Project Special Provision found elsewhere in this RFP). If the DCP tests indicate poor soils beneath the required 12-inch Type 1 aggregate subgrade, the Engineer will provide direction to increase the thickness of the Class IV subgrade stabilization prior to placing the geotextile for pavement stabilization. Payment of the additional Type 1 aggregate subgrade (below the 12 inches required) will be paid for as extra work in accordance with Subarticle 104-8(A) of the 2018 *Standard Specifications for Roads and Structures* at the unit price of $50.00 per cubic yard (in place volume). This payment will be considered full compensation for the additional subgrade undercut, removal and proper disposal of the undercut material, and the placement and compaction of the additional Class IV subgrade stabilization below 12 inches.

  - Where Type 1 aggregate subgrade is not required, the Engineer will conduct DCP testing on the soils beneath the pavement base at a spacing of 100 feet when the

Design-Build Team has notified the Department a location has been prepared (Reference the Pavement Management Scope of Work found elsewhere in this RFP). If the DCP tests indicate poor soils beneath the pavement base, the Engineer will provide direction to undercut and place Class IV subgrade stabilization. Payment of the Class IV subgrade stabilization for these undercut areas will be paid for as extra work in accordance with Subarticle 104-8(A) of the 2018 *Standard Specifications for Roads and Structures* at the unit price of $50.00 per cubic yard (in place volume). This payment will be considered full compensation for the subgrade undercut, removal and proper disposal of the undercut material, and the placement and compaction of the Class IV subgrade stabilization.

- Based on the Department's signed and sealed plans, the Department has coordinated the utility relocation plans, as well as the physical relocation, of dry utilities on the I-5877 project. (Reference the May 7, 2019 I-5877 Utilities by Others Project Special Provisions). The dry utilities on the I-5877 project will be relocated by April 30, 2020. In the event that the Design-Build Team's design modifications require dry utilities to be relocated and / or encased, the following shall be adhered to:

  - All costs associated with the design and construction of the relocation and / or encasement shall be the responsibility of the Design-Build Team and shall be included in the lump sum bid for the entire project.

  - The Department will not honor any requests for additional contract time or compensation for any activity associated with the relocation and / or encasement of dry utilities.

  - The design and construction of all dry utility relocations and / or encasements, as well as the required coordination and agreements, shall be in accordance with the Utilities Coordination Scope of Work found elsewhere in this RFP.

- In accordance with the July 11, 2019 *I-5877 Utility Construction Criteria - Sanitary Sewer Pump Station*, the Design-Build Team shall furnish, install, inspect and coordinate the certification of the sanitary sewer pump station required within the northeast quadrant of the I-95 / Long Branch Road interchange.

- Based on the Department's signed and sealed plans, I-5877 does not require an Interchange Access Report (IAR). If the Design-Build Team revises the roadway design such that I-5877 requires an approved IAR, the Design-Build Team shall re-analyze the interchange(s) and complete an I-5877 IAR, if necessary, for NCDOT and FHWA review and approval.

- For all interchange / intersection modifications, the Design-Build Team shall provide a traffic analysis that utilizes the 2040 Build Alternative - I-5877 projected traffic volumes, and adheres to the July 1, 2015 NCDOT Congestion Management Capacity Analysis Guidelines for the Department's review and acceptance.

- All at-grade intersection modifications shall adhere to the lane configurations noted in the March 2017 *Traffic Operations Technical Memorandum (I-95 Interchange Improvements to SR 1811 (Bud Hawkins Road - Exit 70) and SR 1002 (Long Branch Road - Exit 71) - 2040 Build Alternative 1.* All turn lane lengths shall be the greater of 1) the length as determined by adding the storage length defined in the aforementioned Memorandum and the minimum deceleration length, as defined in the NCDOT Roadway Design Manual (Reference Section 9-1, Figure F-4A), or 2) the NCDOT minimum turn lane lengths as defined in the NCDOT Roadway Design Manual (Reference Section 9-1, Figure 4).

- The Department will provide an approved Design Noise Report for the I-5877 project that is based on the Department's signed and sealed plans. If the Design-Build Team revises the horizontal and / or vertical alignments such that greater noise impacts are possible on the surrounding receptors, the Design-Build Team shall re-analyze and complete a revised Design Noise Report that adheres to the requirements found elsewhere in this RFP, if necessary, for NCDOT and FHWA review and acceptance. If adjustments to, or addition of, sound barrier walls are required as a result of design deviations, the Design-Build Team shall be responsible for all costs associated with the adjustments and / or additions. (Reference the Roadway Scope of Work found elsewhere in this RFP)

- The Design-Build Team may modify the pavement designs (final and temporary) shown in the I-5877 signed and sealed plans by 1) incorporating a pavement design alternate provided in the Pavement Management Scope of Work found elsewhere in this RFP or 2) incorporating a pavement design that has been approved through the ATC process. If the Design-Build Team incorporates a pavement design alternate provided in the Pavement Management Scope of Work found elsewhere in this RFP, the Department will sign and seal the pavement design modifications. If the Design-Build Team incorporates a pavement design alternate that has been approved through the ATC process, the Design-Build Team shall sign and seal the pavement design modifications. (Reference the Pavement Management Scope of Work and the *Alternative Technical Concepts and Confidential Questions* Project Special Provision found elsewhere in this RFP)

- In accordance with the requirements and time restrictions found elsewhere in this RFP, the Design Build Team may modify the signed and sealed Transportation Management Plans (TMP) or completely re-design the TMP. (Reference the Transportation Management Scope of Work found elsewhere in this RFP)

- ** **NOTE** ** Deleted Intermediate Contract Time #1 maintenance requirements

- The Design-Build Team is cautioned that Bridge No. 420057 has a lead-based paint system. The Design-Build Team shall remove existing Bridge No. 420057 (SR 1002 - Long Branch Road) in accordance with the *Standard Specifications for Roads and Structures* with the following exception:

    - As directed by the Engineer, the existing steel beams from Span B and Span C shall be removed and salvaged for the Division of Highways. The Design-Build

Team shall deliver the salvaged steel beams to the Bridge Maintenance Office located at 991 NC 711 Highway in Lumberton, North Carolina. A minimum of forth-eight hours prior to delivering the salvaged steel beams, the Design-Build Team shall notify Bridge Maintenance Supervisor Daniel Leggett at (910) 618-5542. Upon delivery, NCDOT Bridge Maintenance forces will unload the beams.

NCDOT Information Supplied

- The NCDOT will provide the I-5877 electronic design files.
- The NCDOT will provide final and temporary pavement designs for I-5877. The Design-Build Team shall be responsible for any additional temporary pavement designs. (Reference the Pavement Management Scope of Work found elsewhere in this RFP)
- The NCDOT will provide a Geotechnical Subsurface Investigation and Geotechnical Recommendations for I-5877. The Design-Build Team shall be responsible for any additional geotechnical information and recommendations. (Reference the Geotechnical Engineering Scope of Work found elsewhere in this RFP)
- The NCDOT will provide a copy of the I-5877 Categorical Exclusion, the latest list of environmental commitments, municipal agreements and all pertinent approvals and correspondence. The Design-Build Team shall adhere to all commitments stated in the environmental documents.

ROADWAY SCOPE OF WORK (6-25-19)

Throughout this RFP, references to the Preliminary Roadway Plans shall denote the I-5986 Design Public Meeting Map.

Throughout this RFP, references to the mainline and -L- Line shall denote I-95.

Throughout this RFP, I-95 Business dual southbound lanes (-Y1SB-) and I-95 Business dual northbound lanes (-Y1NB-), as designated on the I-5986A Design Public Meeting Map, shall be considered ramps.

** **NOTE** ** Deleted bullet on one set of Roadway Plans

Project Details

- From south of the I-95 / I-95 Business (US 301) interchange (Exit 56) to the southern limits of the I-5877 project, the Design-Build Team shall design and construct an eight-lane divided freeway. Unless noted otherwise elsewhere in this RFP, the Design-Build Team shall design and construct the mainline, including all ramps and loops, providing the same or better access, widening, improvements and traffic measures of effectiveness, in the Department's sole discretion, included in the Preliminary Roadway Plans provided by the Department. The mainline, including all ramps and loops, construction limits shall be of sufficient length to tie to existing based upon the current NCDOT guidelines and standards. The mainline shall be designed and constructed to meet a 75 mph design speed for a level rural freeway designed to interstate standards. The mainline shall be designed and constructed in accordance with the 2011 AASHTO *A Policy on Geometric Design of Highways and Streets*, Table 3-10b (e_{max} = 8%). The Design-Build Team shall provide all other design criteria in the Technical Proposal.

- Along I-95, the Design-Build Team shall design and construct minimum 14-foot outside shoulders (twelve-foot useable shoulder width plus two feet), 12-foot of which shall be full depth paved shoulders, including all acceleration, deceleration and auxiliary lanes, and ramps / loops to the back of the gore (12-foot width).

- Excluding the transitions required to tie to the existing median width, the Design-Build Team shall design and construct a minimum 26-foot full depth paved median along the mainline. The Design-Build Team shall design and construct Type "T" double-faced concrete median barrier on the aforementioned full depth median pavement. Prior to the beginning of the I-95 eight-lane divided typical section, the Design-Build Team shall transition the existing I-95 median width to 26 feet.

- At the south end of the project, the Design-Build Team shall transition from four I-95 southbound lanes to two I-95 southbound lanes in accordance with the following:

  - At the I-95 exit ramp onto I-95 Business (-Y1SB-), the Design-Build Team shall design and construct a three - one split on I-95 southbound. The third southbound lane from the median shall serve as an "Optional Lane", providing a dual-lane exit ramp.

  - Beginning a minimum of 500 feet south of the southern terminus of the Murphy Road southbound entrance ramp taper, the Design-Build Team shall terminate the outside / third I-95 southbound lane. Excluding the advance lane drop signing installed on an overhead sign assembly, required lane reduction signage / pavement markings shall not begin prior to the 500-foot length noted above. (Reference the Signing Scope of Work found elsewhere in this RFP and Roadway Standard Drawing No. 1205.13) Excluding the transition required to tie the remaining two I-95 southbound lanes to existing, the Design-Build Team shall maintain the outside edge of travel from the I-95 exit ramp onto I-95 Business (-Y1SB-) southward to the aforementioned lane drop (the new I-95 southbound lane shall be located within the mainline median).

- ** **NOTE** ** Deleted bullets on the I-95 northern terminus requirements

- The Design-Build Team shall design and construct one-lane ramps that provide a minimum 16-foot lane width. The Design-Build Team shall design and construct two-lane ramps that provide minimum 12-foot lanes. All ramps shall have 14-foot outside shoulders, four-foot of which shall be full depth paved shoulders and 12-foot inside shoulders, four-foot of which shall be full depth paved shoulders.

- The Design-Build Team shall design and construct all directional ramps to meet a 60 mph design speed using the 0.06 maximum superelevation table. The Design-Build Team shall design and construct all bridges on directional ramps with a four-foot outside bridge rail offset and a 12-foot inside bridge rail offset.

- The Design-Build Team shall design and construct loops that adhere to Table 3-29, *Design Widths of Pavements for Turning Roadways,* shown in the 2011 AASHTO *A Policy on Geometric Design of Highways and Streets* - Case II / Condition C for one-lane loops; Case III / Condition C for two-lane loops. All loops shall have 12-foot outside shoulders, four-foot of which shall be full depth paved shoulders. All loops shall have 2'-6" curb and gutter along the inside edge of pavement, with a 14-foot berm. The minimum loop design shall be 30 mph with a minimum 230-foot radius.

- The Design-Build Team shall design and construct all diverging diamond interchanges (DDI) in accordance with the requirements noted below:

  - Between and through the DDI crossovers, the Design-Build Team shall design and construct lane widths that accommodate a WB-67; however, the minimum lane width between and through the DDI crossovers shall be 15 feet. All approach / departure lanes to

/ from the crossovers shall be tapered to the crossover lane-width prior to entering / after exiting the curve approaching / departing the crossover.

- The Design-Build Team shall design and construct lane widths for all spurs (right and left turn movements from / to the ramps) that accommodate a WB-67; however, the minimum spur lane width shall be 15 feet. All approach / departure ramp lanes to / from the spurs shall be tapered to the spur lane width prior to entering / after exiting the spur. Regardless of the spur lane width, all spur alignments shall be located 15 feet from the outside edge of travel lane.

- The four ramp channelization islands shall be grass covered and bordered with 2'-6" curb and gutter.

- Between the DDI crossovers, the Design-Build Team shall provide a minimum ten-foot wide pedestrian accommodation within the -Y- Line median. Along both sides of the aforementioned ten-foot pedestrian accommodation, the Design-Build Team shall provide barrier (2'-6" concrete dual flat-faced barrier with metal handrail and no glare screen) that extends a minimum of 42" above the walking surface. The barrier shall meet AASHTO Manual for Assessing Safety Hardware, TL-2 crash test requirements and terminate with a ten-foot taper that reduces the barrier height to 2'-3". Excluding within the aforementioned ten-foot taper, the handrail shall be installed in accordance with the 10-30-2013 Proposed Pedestrian Safety Rail Detail provided by the Department.

- The curves approaching / departing the crossovers shall slope from the median to the outside at a 0.02 cross slope.

- The Design-Build Team shall design and construct -Y- Lines, service roads and cul-de-sacs / turnarounds providing the same or better access, widening, improvements and traffic measures of effectiveness, in the Department's sole discretion, included in the Preliminary Roadway Plans provided by the Department. The limits of -Y- Line and service road construction shall be of sufficient length to tie to existing based upon the current NCDOT guidelines and standards.

- The Design-Build Team shall design and construct at-grade intersections with the lane configurations noted in the September 2018 *I-5986A Capacity Analysis Memorandum* provided by the Department. At all intersections impacted by the Design-Build Team's design and / or construction, excluding resurfacing, the Design-Build Team shall design and construct turn lanes that adhere to the greater of the following:

  - All turn lane lengths shall adhere to the NCDOT minimum turn lane lengths as defined in the NCDOT *Roadway Design Manual* (Reference Section 9-1, Figure 4).

  - All lengths for the turn lanes required by the September 2018 *I-5986A Capacity Analysis Memorandum* provided by the Department shall adhere to the NCDOT Recommended Treatment for Turn Lanes. These lengths shall be determined by adding the storage length

defined in the aforementioned Memorandums and the minimum deceleration length, as defined in the NCDOT *Roadway Design Manual* (Reference Section 9-1, Figure F-4A).

- Right turn lanes / tapers shall be provided in accordance with the NCDOT Right Turn Lane Warrants, as defined in the NCDOT *Roadway Design Manual* (Reference Section 9-1, Figure F-4C).

- At the I-95 / NC 295 / US 13 interchange, the Design-Build Team shall adhere to the following requirements:

  - Beginning prior to their convergence and extending beyond the Ramp -Y5RPA- spur exit gore, Ramp -Y5RPA- and Ramp -Y5LPDA- shall be separated with a Type "T" double faced concrete barrier, and minimum 14-foot full depth paved shoulders between the edge of travel of both facilities and the face of barrier.

  - The two full-width ramp lanes, one lane from Ramp -Y5RPA- and one lane from Ramp -Y5LPDA-, shall extend completely across Structure No. 250339 on NC 295 southbound. The Design-Build Team shall widen Structure No. 250339 for a typical section that includes one NC 295 through lane and two ramp lanes (total of three lanes) with 12-foot bridge rail offsets on both sides. The lane from Ramp -Y5RPA- shall become the outside NC 295 through lane. All Structure No. 250339 widening shall occur to the outside. (Reference the Structures Scope of Work found elsewhere in this RFP)

  - Beginning a minimum of 500 feet south of Bridge No. 250339, the Design-Build Team shall terminate Ramp -Y5LPDA- in accordance with Roadway Standard Drawing No. 1205.13. (The lane from Ramp -Y5LPDA- shall terminate as a lane drop, not a ramp drop.) Excluding the advance lane drop signing installed on an overhead sign assembly, required lane reduction signage / pavement markings shall not begin prior to the 500-foot length noted above. (Reference the Signing Scope of Work found elsewhere in this RFP)

  - At Exit 34, two of the NC 295 / US 13 northbound lanes shall exit onto I-95 and one lane shall continue onto US 13, resulting in one US 13 through lane continuing through the interchange.

  - The Design-Build Team shall design and construct NC 295 to meet a 70 mph design speed for a level rural freeway designed to interstate standards.

  - The Design-Build Team shall design and construct the improvements shown on the February 28, 2019 *Pembroke Lane / US 13 Intersection Concept Map* with the modifications noted below:

    - The Design-Build Team shall extend the raised median on US 13 to the dual bridges over I-95.

- The roundabout on the aforementioned Concept Map shall be designed and constructed as a multi-lane roundabout in accordance with the requirements herein and Section 6.12.2 of the NCHRP Report 672: *Roundabouts: An Informational Guide* - Second Edition.

- Post-Award, the Design-Build Team shall provide a functional design that details the conversion of the single-lane roundabout to a two-lane roundabout for the Department's review and acceptance.

➢ Excluding the pavement removal shown on the February 28, 2019 *Pembroke Lane / US 13 Intersection Concept Map*, the Design-Build Team shall not remove pavement on NC 295 or US 13 (the NC 295 and US 13 existing pavement that is currently striped out shall be retained and resurfaced, but can be striped out, as needed - Reference the Pavement Management Scope of Work found elsewhere in this RFP)

- Alternative Technical Concepts will **NOT** be allowed for the Pembroke Lane / US 13 intersection shown on the February 28, 2019 *Pembroke Lane / US 13 Intersection Concept Map*. All other I-95 / NC 295 / US 13 interchange (Exit 58) reconfigurations, not required herein, shall require an approved Alternative Technical Concept (ATC). The Design-Build Teams are encouraged to propose modifications to the aforementioned interchange that realign the I-95 northbound to NC 295 / US 13 southbound free flow movement, while maintaining the NC 295 entrance gore north of the existing NC 295 / US 13 / -Y5RPA- at grade intersection and preventing the I-95 northbound to NC 295 / US 13 southbound movement from passing through an at grade intersection.

- The Design-Build Team shall design and construct a diamond interchange at the I-95 / SR 1815 (Wade-Stedman Road) interchange (Exit 61) and at the I-95 / NC 82 (Godwin Falcon Road) interchange (Exit 65). At both the aforementioned interchanges, the Design-Build Team shall design and construct roundabouts at all ramp termini.

- At the I-95 / SR 1815 (Wade-Stedman Road) interchange, the Design-Build Team shall design and construct the following:

  ➢ The service road in Quadrant A shall be routed behind the Shiva Real Estate, LLC parcel and intersect Wade-Stedman Road between the Shiva Real Estate, LLC parcel and the Duke Energy Progress, Inc. parcel.

  ➢ A roundabout shall be designed and constructed at the rerouted service road and Wade-Stedman Road intersection.

  ➢ Access to the Shiva Real Estate, LLC parcel shall be restricted to right-in / right-out.

- ** **NOTE** ** Relocated the bullet on the Pembroke Lane / US 13 Intersection Concept Map

- ** **NOTE** ** Deleted bullet on a single four-legged Long Branch Road / Elm Street Extension / -DR5- intersection

- The Design-Build Team will not be required to design or construct ramps or bridges to accommodate future loops or future auxiliary lanes.

- For all interchange / intersection design modifications, the Design-Build Team shall provide a traffic analysis that adheres to the July 1, 2015 NCDOT *Congestion Management Capacity Analysis Guidelines* for the Department's review and acceptance.

- The Design-Build Team shall design and construct all -Y- Lines such that the through movement is not required to change lanes throughout the project limits.

- Within the project limits, the Design-Build Team shall design and construct minimum eight-foot shoulders, five-foot of which shall be full depth paved shoulders along SR 1815 (Wade-Stedman Road) and NC 82 (Goodwin-Falcon Road). (Reference the Pavement Management Scope of Work found elsewhere in this RFP)

- Unless noted otherwise elsewhere in this RFP, all roundabouts shall adhere to the design and operation parameters as detailed in NCHRP Report 672: *Roundabouts: An Informational Guide* - Second Edition. Prior to incorporating any roundabout not shown on the Preliminary Roadway Plans provided by the Department or any roundabout not required herein, the Design-Build Team shall provide a traffic analysis of the proposed roundabout(s), utilizing the *2040 Build Alternative* - I-5986 projected traffic volumes, and SIDRA Intersection 5.1 or higher analysis software, for NCDOT review and acceptance. In addition to the requirements noted above all roundabouts shall adhere to the following:

  - The Design-Build Team shall design and construct all roundabouts to accommodate a WB-67.

  - The Department prefers that all roadway grades approaching a roundabout are 4.0% or less. Thus, justification, in the Department's sole discretion, shall be provided for all roadway approach grades that are steeper than 4.0%.

  - The Design-Build Team shall design and construct chicanes along the approach roadway when the approach roadway design speed is greater than 50 mph. The Design-Build Team will not be required to provide chicanes between roundabouts located at adjacent ramp terminals.

  - The Design-Build Team shall design and construct five-inch keyed-in monolithic concrete islands for all roundabout approach / departure channelization islands, including the chicane islands.

  - The roundabout center island shall be capped with four inches of concrete. All roundabout approach / departure channelization islands shall be designed and constructed with concrete. The Design-Build Team shall incorporate a red dye into the aforementioned center island and channelization island concrete prior to finishing, and stamp the concrete with a brick pattern. The Design-Build Team shall submit the red dye and brick pattern to the Engineer for review and approval prior to constructing the islands.

- When roundabouts are constructed at adjacent ramp terminals, the Design-Build Team shall design and construct a continuous minimum 16-foot wide concrete median island, with nine-inch offsets to each adjacent travel lane, between the roundabouts. The aforementioned median island shall be a five-inch keyed-in monolithic concrete island.

- Along the outside edge of the roundabout pavement, the Design-Build Team shall design and construct 1'-6" mountable curb and gutter, with a minimum 10-foot berm and minimum five-foot truck apron. The 1'-6" mountable curb and gutter and five-foot truck apron shall extend along all approach / departing roadways to the approach / departing curve radius point. The Design-Build Team shall design and construct minimum five-foot full-depth paved shoulders from the aforementioned 1'-6" curb and gutter limits through 1) the chicane limits or 2) the approach / departure channelization island and associated lane shift taper limits if chicanes are not required.

- The Design-Build Team shall design and construct minimum 18-foot travel lanes inside the roundabout.

- The Design-Build Team shall design and construct 1'-6" mountable curb and gutter between the roundabout lane and the concrete truck apron. The Design-Build Team shall design and construct 2'-6" curb and gutter between the truck apron and the center island.

- At all intersections with restricted movements impacted by the Design-Build Team's design and / or construction methods, excluding resurfacing, the Design-Build Team shall provide five-inch keyed-in concrete monolithic channelization islands, regardless of the island dimensions. (Reference Roadway Standard Drawing No. 852.01)

- In accordance with the NCDOT Right of Way Manual, the Design-Build Team shall develop Service Road Studies for all land-locked parcels and / or as required by variations to the Department's design. If the aforementioned Service Road Studies indicate that service roads are required that are not shown on the Preliminary Roadway Plans provided by the Department, the design and construction costs of the additional service roads shall be as follows:

  - If the Design-Build Team demonstrates, to the Department's sole satisfaction, that the additional service road(s) are required for the Department's preliminary design, the service road(s) design and construction, including all associated NEPA requirements, will be paid for as extra work in accordance with Subarticle 104-8-(A) of the NCDOT *Standard Specifications for Roads and Structures*.

  - If variations to the Department's proposed design and / or construction methods require additional service road(s), the service road(s) design and construction, as well as all associated NEPA requirements, shall be included in the Design-Build Team's lump sum bid for the entire project.

  - The Design-Build Team shall not eliminate any service roads shown on the Preliminary Roadway Plans provided by the Department without the Department's written approval.

- The aforementioned written approval shall occur 1) through the ATC Process prior to Award or 2) through coordination and / or submittals to the Design-Build Unit after Award. (Reference the *Alternative Technical Concepts and Confidential Questions* Project Special Provision found elsewhere in this RFP).

- The Design-Build Team shall design and construct all service roads to meet a minimum 40 mph design speed using the 0.04 superelevation chart. The Design-Build Team shall design and construct all service roads with two 11-foot lanes and six-foot minimum shoulders with a Type "B" ditch as per the NCDOT *Roadway Design Manual.*

- The Design-Build Team shall provide cul-de-sacs on all paved roads that are dead-ended. All cul-de-sacs shall be designed and constructed with a minimum 30-foot radius. The Design-Build Team shall provide turnarounds on all nonpaved roads that are dead-ended. All turnarounds shall accommodate a S-BUS-36 and be constructed with gravel.

- The I-95 crown point shall be located such that the inside lane in each direction of travel slopes towards the median and the remaining lanes slope towards the outside. Except as allowed otherwise below, the I-95 normal crown cross slope shall be 0.020. The normal crown cross slope for the two outermost lanes in each direction of travel shall be steepened (0.025 maximum), as required, to minimize hydroplaning. Prior to the beginning of the I-95 eight-lane divided typical section, the Design-Build Team shall transition the existing mainline pavement cross slope and crown point to tie to existing. (Reference the Hydraulics Scope of Work found elsewhere in this RFP)

- I-95 is a full control of access facility. The Design-Build Team shall bring to the Design-Build Unit's attention any deviations from the proposed control of access and / or right of way shown on the Preliminary Roadway Plans provided by the Department. The proposed control of access and / or right of way limits may deviate in proximity to cultural, historic, or otherwise protected landmarks, including cemeteries, to eliminate / minimize impacts. Prior to negotiating right of way, easements and / or control of access with property owners, the Department shall accept the Right of Way Plans developed by the Design-Build Team.

- Prior to installation, the Design-Build Team shall be responsible for coordinating with, and obtaining approval from, the NCDOT for the control of access fence placement. The Design-Build Team shall be responsible for installation of the control of access fence as noted below:

  - Except as required otherwise below, the Design-Build Team shall install woven wire fence.

  - The Design-Build Team shall replace, in kind, all control of access fence damaged during construction.

  - The Design-Build Team shall install all missing control of access fence, matching the adjacent fence type.

- The Department will provide an approved I-5986A IAR based on the Preliminary Roadway Plans provided by the Department. If the Design-Build Team revises the roadway design such that the approved I-5986A IAR is nullified, the Design-Build Team shall re-analyze the

interchange(s) and complete a revised I-5986A IAR, if necessary, for NCDOT and FHWA review and approval. The Department will not honor any requests for additional contract time or compensation for any effort required to complete the aforementioned activities, including but not limited to additional design effort, additional construction effort, FHWA coordination / approvals, and / or environmental agency coordination / approvals.

- Except as required elsewhere in this RFP and / or to eliminate a design exception, the Design-Build Team shall not further impact any cultural, historical or otherwise protected landmark or topographic feature beyond that shown on the Preliminary Roadway Plans provided by the Department. Unless approved otherwise by the Department, in writing, the Design-Build Team shall not acquire right of way, easements and / or control of access from a parcel with the aforementioned features unless shown on the Preliminary Roadway Plans provided by the Department.

- The Design-Build Team shall design and construct all retaining walls a minimum of ten feet inside the right of way.

- The Design-Build Team shall provide milled rumble strips along the mainline outside and median paved shoulders, including ramp and loop terminals, and acceleration, deceleration and auxiliary lanes, in accordance with the NCDOT Roadway Standard Drawings.

- For all bridges over roadways, the Design-Build Team shall submit vertical and horizontal clearance design calculations at all critical points. The Design-Build Team shall submit post construction survey points for the aforementioned critical points that verify construction adhered to the vertical and horizontal clearances accepted by the Department. The Design-Build Team shall be responsible for all costs associated with correcting vertical and horizontal clearances resulting from any construction variation from the design accepted by the Department.

- Throughout construction areas that consist solely of pavement marking obliterations / revisions and solely of guardrail replacement, the Design-Build Team shall provide a uniform overlay or design and construct a resurfacing grade. Excluding 1) construction areas that consist solely of pavement marking obliterations / revisions that are uniformly overlaid, 2) construction areas that consist solely of guardrail replacement that are uniformly overlaid, 3) construction areas that consist solely of a uniform overlay, and 4) construction areas on service roads that consist solely of drainage structure replacement / supplemental pipe installation, as defined below, the Design-Build Team shall design and construct resurfacing grades for all roadways impacted by construction. All uniform overlays and resurfacing grades shall 1) completely cover the entire pavement surface (travel lanes and paved shoulders) and 2) be extended on a one-way roadway of a divided facility, as required, to provide the same limits for both directions of travel. All resurfacing grades shall adhere to the design criteria and standards, provide all required pavement wedging and adhere to the minimum requirements noted below. For purposes of determining the required resurfacing limits only, the term "construction" below will not apply to construction areas that consist solely of pavement marking obliterations / revisions. (Reference the Pavement Management Scope of Work found elsewhere in this RFP)

- The Design-Build Team shall resurface all lanes and shoulders of an undivided facility throughout the limits of proposed widening and construction.

- Unless noted otherwise elsewhere in this RFP, for both divided and undivided facilities, the Design-Build Team shall resurface all lanes and shoulders within the outermost construction limits of all proposed widening and construction, including **all** gaps along the facility where construction activities are not required.

- The Design-Build Team will not be required to resurface the lanes or shoulders between the gap along Gordon Williams Road where construction activities are not required. However, from the existing southern pavement limits to the proposed southern resurfacing or reconstruction limits in proximity to Godwin Falcon Road, whichever is further south, the Design-Build Team shall provide a uniform overlay on Gordon Williams Road.

- Except as allowed otherwise below, if a construction area on a service road consists solely of drainage structure replacement and / or supplemental pipe installation is located within 500.00 feet of an adjacent construction area, the Design-Build Team shall resurface all service road lanes and shoulders within the construction area and the gap between the construction areas. If the aforementioned adjacent construction area consists of a uniform overlay, in lieu of a resurfacing grade, the Design-Build Team shall provide a uniform overlay within the construction area and the gap between the construction areas. If a construction area on a service road consists solely of drainage structure replacement and / or supplemental pipe installation is located more than 500.00 feet from an adjacent construction, area, the Design-Build Team will not be required to resurface or overlay the gap between the construction areas. (Reference the Hydraulics and Pavement Management Scopes of Work found elsewhere in this RFP)

- In proximity to Percy Strickland Road, the southern terminus of Gordon Williams Road may be designed and constructed in accordance with driveway requirements.

- Excluding the modifications required herein, the Design-Build Team shall inform the Design-Build Unit, in writing, of all proposed design revisions, including but not limited to the following:

  - The Design-Build Team shall note in the Technical Proposal any proposed deviations to the preliminary design shown on the Preliminary Roadway Plans provided by the Department. The Design-Build Team shall be responsible for all activities, as deemed necessary by the Department or the FHWA, resulting from changes to the NCDOT preliminary design, including but not limited to, public involvement, NEPA re-evaluation and / or coordination with other stakeholders. The Department will not honor any requests for additional contract time or compensation for completion of the required activities resulting from changes to the NCDOT preliminary design.

- After the contract has been Awarded, the Design-Build Team shall inform the Design-Build Unit, in writing, of all proposed changes to the design shown in the Technical Proposal.

- After the Department has reviewed and accepted the Design-Build Team's design submittals, the Design-Build Team shall inform the Design-Build Unit, in writing, of any changes to previously reviewed submittals.

The proposed design revisions noted above shall be subject to the Department's review and acceptance.

- Excluding locations where bridge piers, concrete barrier, or overhead sign assemblies reduce the mainline median shoulder width to less than twelve feet, design exceptions will not be allowed for the -L- Line, including all ramps and loops. The Department prefers not to have design exceptions for the -Y- Lines and service roads. If the Design-Build Team anticipates any design exceptions, they shall be clearly noted in the Technical Proposal. Prior to requesting / incorporating a design exception into the Final Plans, the Design-Build Team must obtain prior conceptual approval from the Design-Build Unit. If conceptual approval is obtained, the Design-Build Team shall be responsible for the development and approval of all design exceptions.

- Prior to recording the Right of Way Plans, the Design-Build Team shall locate and install right of way markers that delineate the proposed right of way for all parcels within the project limits. Prior to recording the Right of Way Plans, the Design-Build Team shall locate and install iron pins and metal caps with fiberglass right of way markers to delineate the aforementioned proposed right of way. For all parcels, the Design-Build Team shall locate and install iron pins and metal caps with fiberglass markers that delineate all proposed permanent easements within the project limits. The Design-Build Team shall replace all existing and proposed right of way and permanent easement markers / monuments damaged and / or relocated during construction. A Professional Land Surveyor registered in North Carolina shall certify the placement of all right of way and permanent easement markers / monuments. In accordance with NCDOT Policy, the Department will furnish the metal caps with fiberglass markers.

- The Department will provide an approved I-5986 Traffic Noise Report (TNR) that is based on the Department's preliminary design. The Design-Build Team shall evaluate the **entire** I-5986A project and develop the Design Noise Report (DNR) based on the plans developed by the Design-Build Team, regardless of changes to the Department's preliminary design. The DNR shall be developed in accordance with the NCDOT 2016 Traffic Noise Policy and the NCDOT 2016 Traffic Noise Manual; and be reviewed and accepted by NCDOT. The Design-Build Team shall include all design and construction costs for all sound barrier walls required by the accepted DNR, as well as all costs associated with performing any additional geotechnical investigations necessary to design the foundations, in the lump sum price bid for the entire project. However, the Design-Build Team will not be required to include any designs associated with the proposed sound barrier walls in the Technical Proposal. Prequalification under Discipline Code 441 shall be required for the firm developing the DNR.

The Design-Build Team is cautioned that the TNR is provided to show the general location of potential walls. Thus, as with all information provided by the Department, the TNR is provided for informational purposes only; and the Department will not honor any requests for additional contract time or compensation for any variations between the approved TNR and the approved DNR.

The Department will ballot all benefited receptors to determine which sound barrier walls recommended in the accepted DNR will be constructed. The Design-Build Team shall (1) develop and provide the information required by the Department to complete the balloting process, and (2) attend and / or speak at all balloting meetings and workshops. The Department will require four months to complete the balloting process. The Department will not honor any requests for additional contract time or compensation for the sound barrier wall construction unless the aforementioned four-month timeframe is exceeded. If time were granted, it would only be for that time exceeding the four-month period, which shall begin on the date the Department accepts the DNR developed by the Design-Build Team. The Design-Build shall not construct any sound barrier walls until the balloting process has been completed by the Department.

The Design-Build Team shall only credit the Department the construction cost of all sound barrier walls eliminated by the balloting process. The construction costs of all sound barrier walls eliminated solely by the balloting process shall be deducted from the lump sum amount bid for the entire project.

At all sound barrier walls, the Design-Build Team shall provide 1) a four-foot berm between the wall and fill / cut slopes steeper than 6:1 and 2) a parallel concrete ditch at locations where the final grade slopes toward the wall.

The Design-Build Team shall design and construct all sound barrier walls a minimum of ten feet inside the right of way.

To satisfy the FHWA's Abatement Measure Reporting requirements, the Design-Build Team shall prepare and concurrently submit a summary of the sound barrier walls to be constructed on the project with the final sound barrier wall working drawings submittal. The Design-Build Team shall submit the sound barrier wall summary directly to the NCDOT Traffic Noise and Air Quality Group and include the information noted in Title 23 Code of Federal Regulations Part 772 Section 772.13(f), including but not limited to overall cost and unit cost per square foot.

General

- Unless noted otherwise elsewhere in this RFP, the design shall be in accordance with the 2011 AASHTO *A Policy on Geometric Design of Highways and Streets*, and 2013 Errata, 2002 NCDOT *Roadway Design Manual*, including all revisions effective on the Technical Proposal submittal date, January 2018 NCDOT *Roadway Standard Drawings*, or as superseded by detail sheets located at **https://connect.ncdot.gov/resources/Specifications/Pages/2018-Roadway-Standard-Drawings.aspx**, *Roadway Design Policy and Procedure Manual, Roadway Design Guidelines for Design-Build*

Projects, 2018 NCDOT *Standard Specifications for Roads and Structures,* the Highway Capacity Manual, 6th Edition, and the 2011 AASHTO *Roadside Design Guide*, 4th Edition and 2015 Errata.

- If the NCDOT *Roadway Design Manual*, including all revisions, the 2011 AASHTO *A Policy on Geometric Design of Highways and Streets* and 2013 Errata, the 2018 NCDOT *Roadway Standard Drawings* and / or any other guidelines, standards or policies have desirable and / or minimum values, the Design-Build Team shall use the desirable values unless noted otherwise elsewhere in this RFP. Similarly, in case of conflicting design parameters, and / or ranges, in the various resources, the proposed design shall adhere to the most conservative values, unless noted otherwise elsewhere in this RFP.

- The Design-Build Team shall provide a Drainage Summary Sheet, Earthwork Summary Sheet, Guardrail Summary Sheet, (permanent and temporary) and Pavement Removal Summary Sheet in the Final Roadway Plans and RFC Roadway Plans.

- At all intersections, the Design-Build Team shall not exceed a 0.05 roll-over between the outside edge of travel lane of the primary roadway and the beginning of the proposed grade for the secondary roadway.

- Unless noted otherwise elsewhere in this RFP, all bridge rail offsets shall be the greater of 1) the bridge rail offset as indicated in the NCDOT *Roadway Design Manual*, 2) the approach roadway paved shoulder width, 3) eight feet, or 4) the offset required to achieve stopping sight distance (maximum 12-foot). Narrower bridge rail offsets based on bridge length will not be allowed. The Design-Build Team will not be required to widen existing bridges solely to provide the aforementioned minimum bridge rail offsets.

- Unless noted otherwise elsewhere in this RFP, the maximum allowable cut and fill slope shall be 3:1. (Reference the Geotechnical Scope of Work found elsewhere in this RFP) The slopes in the interchange area shall follow the requirements set forth in the *Roadway Design Guidelines for Design-Build Projects* located on the Design-Build website.

- Outside the project limits, the Design-Build Team will not be allowed to use the NCDOT right of way and / or property for borrow or waste sites. Within the project limits, the Design-Build Team shall adhere to the following:

  - Only clean waste material may be wasted within the NCDOT right of way or property.

  - Excluding crushed concrete, debris shall not be buried within the NCDOT right of way or property.

  - Normal grading operations shall occur, including but not limited to, grading to drain all existing embankments supporting removed roadway sections.

- Unless noted otherwise elsewhere in this RFP, all guardrail / guiderail placement shall be in accordance with the NCDOT *Roadway Standard Drawings* and / or approved details in lieu of

standards. Along all 3:1 fill slopes, constructed at fill heights that are equal to or greater than 12 feet, the Design-Build Team shall install guardrail. Along all fill slopes steeper than 3:1, constructed at fill heights that are equal to or greater than six feet, the Design-Build Team shall install guardrail. Throughout the project limits, the Design-Build Team shall upgrade all existing guardrail in accordance with the aforementioned requirements and the requirements noted below, regardless if the Design-Build Team's design and / or construction impacts the guardrail.

- For existing guardrail that extends 100.00 feet or less outside the project limits, the Design-Build Team shall replace all the existing guardrail.

- For existing guardrail that extends more than 100.00 feet outside the project limits, the Design-Build Team shall tie the proposed guardrail to the existing guardrail outside the project limits.

- In areas that consist solely of guardrail replacement or consist solely of guardrail replacement and a uniform overlay, the Design-Build Team will not be required to widen the existing shoulders. (Reference the Pavement Management Scope of Work found elsewhere in this RFP)

The guardrail / guiderail design shall be submitted for review with the Preliminary Roadway Plans submittal.

- The total outside shoulder width for all facilities with defined usable shoulders shall equal the usable shoulder plus two feet.

- The Design-Build Team shall provide continuous single face concrete barrier between two segments of single face concrete barrier when 1) the two segments are less than 300 feet apart, and 2) guardrail would be required between the two segments.

- At all locations where back to back single face concrete barrier is provided, including but not limited to bridge piers and sign supports, the Design-Build Team shall fill the area between the single face concrete barriers with gravel and cap with four inches of concrete when the area is ten feet wide or less.

- The Design-Build Team shall be responsible for the evaluation of the algebraic difference in rates of cross slope (roll-over) between existing shoulders and roadways and the associated suitability for carrying traffic during construction, if necessary. In the event that the roll-over is found to be unacceptable for the proposed temporary traffic patterns, the Design-Build Team shall be responsible for providing cross slopes that meet design standards and eliminate roll-over concerns.

- Unless noted otherwise elsewhere in this RFP, the design speed for all roadways shall be the greater of the minimum design speed for the facility type, as specified in the 2011 AASHTO *A Policy on Geometric Design of Highways and Streets*, or the anticipated / actual posted speed plus five mph. If a speed limit is not physically posted on an existing facility, General Statues

mandate the speed limit as 55 mph, resulting in a 60 mph design speed. The Design-Build Team shall design and construct SR 1815 (Wade-Stedman Road) and NC 82 (Godwin Falcon Road) to meet a minimum 50 mph design speed.

- The NCDOT shall review and accept the Design-Build Team's Design Criteria prior to the Preliminary Roadway Plans submittal.

- In accordance with the March 19, 2019 memo from Ms. Brenda Moore, PE, State Roadway Design Engineer, and Mr. Brian Hanks, PE, State Structures Engineer, the Design-Build Team will not be required to submit separate Structure Recommendations. Instead, in accordance with the aforementioned Memo, the Design-Build Team shall submit the roadway design information required to develop the Structure General Drawings with the Preliminary Roadway Plans submittal.

- Within the vehicle recovery area, the Design-Build Team shall design and construct single face concrete barrier in front of the traffic face of all shoulder piers, sound barrier walls, retaining walls, and all elements acting as a retaining wall. The aforementioned concrete barrier shall be located 1) beyond the typical section shoulder point and / or 2) a minimum of 12-foot behind the face of curb and gutter, requiring the Design-Build Team to widen the outside shoulder / berm beyond the typical section width. Between the single face concrete barrier and all shoulder piers, sound barrier walls, retaining walls, and all elements acting as a retaining wall, the Design-Build Team shall install minimum one-inch thick joint material. (Reference Section1028-1 of the 2018 *Standard Specifications for Roads and Structures*)

- The Design-Build Team shall design and construct all depressed grass medians and raised medians in accordance with the following:

  - The minimum width of all depressed grass medians shall be eight feet. At all locations where a depressed grass median becomes narrower than eight feet, the Design-Build Team shall design and construct a five-inch keyed-in concrete monolithic island in lieu of the depressed grass median.

  - The Design-Build Team shall install a four-inch concrete cap on all raised medians that are eight feet wide or narrower, measured face to face from the surrounding mountable concrete curb and gutter.

  - All grass covered raised medians shall be designed and constructed with topsoil and appropriate cross slope and median drain with pipe to prevent groundwater and surface water infiltration into the subgrade and / or pavement structure. Prior to construction of the grass covered raised median and / or median drain with pipe, the Design-Build Team shall submit to the Design-Build Unit, for review and acceptance, the proposed number of drains, drain locations within the typical section, topsoil specifications and construction details. Within all proposed grass covered raised median limits, the Design-Build Team shall completely remove and dispose of the existing pavement structure.

- Unless noted otherwise elsewhere in this RFP, the Design-Build Team shall design and construct all lane drops from the outside travel way.

- A sag vertical curve low point will not be allowed on any proposed bridge or approach slab.

- At all -Y- Line / -Y- Line intersection radius points, including service roads, the minimum -Y- Line pavement width shall be 30 feet.

- Excluding grades required to tie to existing, the minimum longitudinal grade shall be 0.30%, unless noted otherwise elsewhere in this RFP. Along -Y- Lines with turf shoulders, a 0.00% grade will be allowed, provided all hydraulic requirements are met. (Reference the Hydraulics Scope of Work found elsewhere in this RFP)

- At all intersections impacted by the Design-Build Team's design and / or construction methods, excluding resurfacing, the following design vehicles shall be required for all turning movements:

  - WB-67 at all ramp / loop intersections with -Y- Lines (For side-by-side turning maneuvers, WB-67 for the outside movement only and SU-30 for inside movement)

  - WB-62 at all other intersections (For side-by-side turning maneuvers, WB-62 for the outside movement only and SU-30 for inside movement)

- Any variations in the Department's proposed design and / or construction methods that nullify any decisions reached between the Department and the environmental agencies; and / or require additional coordination with the environmental agencies shall be the sole responsibility of the Design-Build Team. The Department will not allow any contract time extensions or additional compensation associated with any coordination or approval process resulting from design and / or construction modifications. (Reference the Environmental Permits Scope of Work found elsewhere in this RFP)

- Excluding parcels restricted by Control of Access and undeveloped parcels, the Design-Build Team shall design and construct a minimum of one driveway per parcel. The Design-Build Team shall design and construct all driveways to adhere to the NCDOT *Policy on Street and Driveway Access to North Carolina Highways* and the minimum requirements noted below. Excluding the maximum grade requirement, if the NCDOT *Policy on Street and Driveway Access to North Carolina Highways* and the requirements noted below have conflicting design parameters, the proposed design shall adhere to the aforementioned Policy:

  - The Design-Build Team shall provide horizontal and vertical alignments for all driveways that require 100 feet or longer to tie to existing.

  - Driveways shall not be installed in roundabouts, chicanes, or right turn lanes, including their taper.

  - Excluding grades required to tie to existing, the maximum driveway grade shall be 10.0%.

- For shoulder sections, the minimum driveway turnout for residential and commercial properties shall be 16'-0" and 24'-0", respectively, or the existing width, whichever is greater.

- For curb and gutter sections, the minimum driveway turnout for residential and commercial properties shall be 20'-0" and 28'-0", respectively, or the existing width, whichever is greater.

- The Design-Build Team shall contact Mr. Gary W. Thompson, North Carolina Geodetic Survey Director, prior to disturbing any geodetic monument.

- The project shall follow the NCDOT-FHWA Oversight Agreement. This Agreement will be provided. Any changes that affect previous approvals shall be re-submitted by the Design-Build Team for FHWA acceptance.

- The Design-Build Team shall identify the need for any special roadway design details (i.e. any special drainage structures, rock embankment, rock plating, special guardrail, retaining walls, concrete barrier designs, etc.) and shall provide special design drawings. The Contract Standards and Development Unit may have special details available that can be provided to the Design-Build Team upon request.

- A 4:1 back slope shall extend from the back of the expressway gutter to the clear zone limit. Beyond that, a maximum 3:1 cut slope will be acceptable. The expressway gutter centerline shall be located at the hinge / shoulder point. Expressway gutter shall not be installed in fill sections. Expressway gutter shall only be used to minimize impacts to existing structures, and / or cultural, historical or otherwise protected landmarks or topographic features.

- At all locations with paved shoulders that extend beyond the typical width (i.e. to the face of single face barrier, guardrail, edge of expressway / shoulder berm gutter, etc.), the Design-Build Team shall taper the wider paved shoulder width to the typical paved shoulder width using an 8:1 taper. (Reference the Pavement Management Scope of Work found elsewhere in this RFP)

- Shoulder berm gutter shall not be installed in cut sections.

- Cut and fill slope transitions shall not exceed one increment (e.g. 3:1 to 4:1) per 50 feet.

- The Design-Build Team shall design and construct horizontal and vertical curves at all Points of Intersections (PIs) on the horizontal and vertical alignments, respectively.

- All paved shoulders shall be tapered at 8:1 to the existing pavement at tie-in points.

NCDOT Information Supplied

- The NCDOT will provide copies of the I-5986 Categorical Exclusion, the latest list of environmental commitments, municipal agreements and all pertinent approvals and correspondence. Unless noted otherwise elsewhere in this RFP, the Design-Build Team shall adhere to all commitments stated in the environmental documents.

- The NCDOT will provide electronic surveys to the Design-Build Team. Any supplemental surveys, including but not limited to additional topography, existing and proposed roadway, structure sites, underground and overhead utilities, existing and proposed drainage, wetland delineation, right of way, parcel names, and deed research and descriptions shall be the responsibility of the Design-Build Team to acquire and process. All supplemental surveys shall adhere to the Location and Survey Unit's September 28, 2018 *Proc 2018-4 - L&S Implementation of SharePoint Site Guidelines* and *Proc 2018-6 - L&S Required PEF Attestations for Individually Developed Survey Products* Memorandums. The Design-Build Team shall modify / incorporate boundary information used for the determination and valuation of property solely under the direct supervision of a Professional Land Surveyor registered in North Carolina. Known existing utilities have been located and will be included with the survey data. The Design-Build Team shall be responsible for confirming the location of the utilities and the type / size of facilities. All supplemental Subsurface Utility Engineering (SUE) work shall be the responsibility of the Design-Build Team.

- The NCDOT will provide the I-5986 Design Public Meeting Map. The Design-Build Team is cautioned that the preliminary designs shown on the aforementioned Map is provided solely to assist the Design-Build Team in the development of the project design. The Design-Build Team shall be fully and totally responsible for the accuracy and completeness of the project design, including, but not limited to, the use of the NCDOT's design, the use of portions of the NCDOT's design or modifications to the NCDOT's design.

- The NCDOT will provide the I-5986 electronic design files.

- The NCDOT will provide final pavement designs for I-5986. The Design-Build Team shall be responsible for all temporary pavement designs. (Reference the Pavement Management Scope of Work found elsewhere in this RFP)

- The NCDOT will provide a Geotechnical Subsurface Investigation for I-5986. The Design-Build Team shall be responsible for any additional geotechnical information, all geotechnical recommendations, as well as supplemental structural and roadway investigations. (Reference the Geotechnical Engineering Scope of Work found elsewhere in this RFP)

ENVIRONMENTAL PERMITS SCOPE OF WORK (7-10-19)

General

The Department has obtained a phased US Army Corps of Engineers (USACE) Section 404 Permit and a NC Department of Environmental Quality Division of Water Resources (NCDWR) Section 401 Water Quality Certification for the I-95 project corridor (Projects I-5877, I-5878, I-5883 and I-5986) that includes the I-5877 final design permits. The Design-Build Team shall prepare all designs and documents necessary for the Department to obtain a permit modification for the project final design (I-5986A), including any I-5877 design revisions. Permit applications shall be required for the USACE Section 404 Permit and the NCDWR Section 401 Water Quality Certification.

The Design-Build Team shall not begin ground-disturbing activities in jurisdictional areas until the environmental permits / permit modifications have been issued (this does not include investigative borings covered under a Nationwide Permit No. 6).

The Design-Build Team shall coordinate with the Design-Build Unit to determine if a Preconstruction Notification (PCN) is required for the Nationwide Permit No. 6. If a PCN is required, the Design-Build Team shall submit all necessary documents and forms to the Design-Build Unit for submittal to the appropriate agencies; and shall not perform any geotechnical investigative work within the jurisdictional resource(s) requiring a PCN prior to obtaining the required approval. If a PCN is not required, the Design-Build Team may proceed with geotechnical investigations inside and outside jurisdictional resources, provided all of the Nationwide Permit No. 6 General Conditions are adhered to.

The Design-Build Team may begin construction activities prior to obtaining the aforementioned environmental permits provided that (1) the Department has reviewed and accepted the appropriate design submittal(s); (2) the Department is notified in writing and provides written approval prior to beginning work; and (3) such activities are outside jurisdictional resources. The Design-Build Team is encouraged to advance as many construction activities as possible outside jurisdictional resources prior to issuance of the environmental permits. The Design-Build Team shall indicate the specific construction activities that will occur outside jurisdictional resources prior to obtaining the environmental permits and their anticipated start date in the Technical Proposal.

The Department will allow no direct contact between the Design-Build Team and representatives of the environmental agencies. No contact between the Design-Build Team and the environmental agencies shall be allowed either by phone, e-mail or in person, without representatives of the Department's Environmental Analysis Unit (EAU) - Environment Coordination and Permitting Group (ECAP) or the Division's Environmental Officer (DEO) present. A representative from the Design-Build Unit shall be included on all correspondence.

The I-95 project corridor (Projects I-5877, I-5878, I-5883 and I-5986) is not in the Merger Process used by the environmental agencies and the Department to obtain environmental permits. On Non-Merger Projects, the Department has committed to coordination efforts with the

environmental agencies. Thus, the Design-Build Team shall participate and present information for an interagency hydraulic design review meeting and an interagency permit impacts meeting. These meetings shall adhere to the Concurrence Point 4B and Concurrence Point 4C requirements of the Merger Process used by the environmental agencies and the Department to obtain environmental permits. Specifically, the Design-Build Team shall follow the appropriate details in the document titled "Section 404 / NEPA Merger Process Information" which can be found at the website noted below:

https://connect.ncdot.gov/resources/Environmental/Pages/Merger-Process-Guide.aspx

Unless stipulated otherwise in the Technical Proposal, the Department will schedule the interagency hydraulic design review meeting and the interagency permit impacts meeting for January 2020 and April 2020, respectively. The Design-Build Team shall clearly identify in the Technical Proposal what months they would like the Department to schedule these meetings. Failure on the part of the Design-Build Team to meet these dates shall place all responsibility for delays resulting from missing these dates solely in the hands of the Design-Build Team.

Unless noted otherwise elsewhere in this RFP, the Design-Build Team shall be bound by the terms of all signed planning documents, and approved minutes and commitments of all interagency meetings. The Design-Build Team shall be held accountable for meeting all permit conditions. The Design-Build Team shall be required to staff any personnel necessary to provide permit compliance.

Unless noted otherwise elsewhere in this RFP, the Department will not honor any requests for additional contract time or compensation for any efforts required in order to obtain any permit or permit modification, including but not limited to public involvement, additional design effort, additional construction effort, and / or additional environmental agency coordination and approvals.

Permit Application Process and Timeframe for all Permits except the Nationwide Permit No. 6 for Geotechnical Investigations

It shall be the Design-Build Team's responsibility to acquire information and prepare permit drawings that reflect the impacts and minimization efforts resulting from the aforementioned interagency hydraulic design review meeting and the interagency permit impacts meeting, and from the project as designed by the Design-Build Team. Further, it shall be the Design-Build Team's responsibility to provide these permit impact sheets (drawings) depicting the design and construction details to the Department as part of the permit application. The aforementioned permit impact sheets shall be reviewed and accepted by the Department prior to the permit application submittal. The Design-Build Team shall be responsible for developing the permit application for all jurisdictional impacts. The permit application shall include all utility relocations required by the project. At a minimum, the permit application shall consist of the following:

- Cover Letter
- Completed forms (ENG, etc.) appropriate for impacts

- NCDOT Mitigation Site debit ledger and / or Division of Mitigation Acceptance Letter
- Minutes from the interagency hydraulic design review meeting and the interagency permit impacts meeting
- Stormwater Management Plan
- Permit drawings with and without contours and, if necessary, utility drawings with and without contours
- Wetland Permit Impact Summary Sheets
- Half-size plans
- Mitigation Plan (if required by the Design-Build Team's design and / or construction methods)

The Department will re-verify and update, as needed, the required environmental data that expires prior to permit issuance. These include, but are not limited to, federally protected species, re-verification of wetland jurisdictional areas, historic and archaeological sites, and 303d (impaired) streams.

Excluding the Nationwide Permit No. 6 for geotechnical investigations, the Design-Build Team shall submit one permit application for the entire project. The Design-Build Team shall not submit multiple applications to develop a "staged permitting" process to expedite construction activities in a phased fashion.

Direct coordination between the Design-Build Team, the Design-Build Unit, Resident Engineer, DEO and EAU shall be necessary to ensure proper permit application development. Upon completion of the draft permit application, the Design-Build Team shall concurrently forward the permit application to the Design-Build Unit, Resident Engineer, Division Environmental Officer, Hydraulics Unit and EAU for review and approval. After all revisions are complete, the Department will subsequently forward the permit application to the appropriate environmental agencies.

Any temporary construction measures, including de-watering, construction access, etc. shall be addressed in the permit application. Impacts that result from so-called temporary measures may not be judged to be temporary impacts by the environmental agencies. These issues shall be addressed by the Design-Build Team and reviewed by EAU prior to the interagency hydraulic design review meeting and the interagency permit impacts meeting; and resolved with the environmental agencies during the aforementioned meetings.

The Design-Build Team shall clearly indicate the location and impacts of haul roads and utility relocations in jurisdictional areas. The Design-Build Team shall also identify all proposed borrow and waste sites. Further, the Design-Build Team shall describe the construction methods for all structures that impact jurisdictional resources. The temporary impact descriptions (haul roads, utility relocations, work bridges, etc.) shall include restoration plans, schedules and disposal plans. The aforementioned information, descriptions and details shall be presented during the interagency hydraulic design review meeting and the interagency permit impacts meeting and be included in the permit application.

The NCDOT hereby commits to ensuring, to the greatest extent practicable, that the footprint of the impacts in areas under the jurisdiction of the Federal Clean Water Act will not be increased during the Design-Build effort. In accordance with the Department of Water Resources' NCG 010000, all fill material shall be stabilized and maintained to prevent sediment from entering adjacent waters or wetlands. The Design-Build Team shall be responsible for ensuring that the design and construction of the project will not impair the movement of aquatic life.

Excluding the permit modification required for the project final design (I-5986A), requests made for permit modifications shall only be allowed if the Engineer determines it to be in the best interest of the Department and shall be strongly discouraged. The Design-Build Team shall not take an iterative approach to hydraulic design issues. Prior to submitting the permit application, the hydraulic design shall be complete and accepted by the Department.

The Design-Build Team should expect it to take up to 11 months to accurately and adequately complete all designs necessary for the permit application, submit the permit application to the Department, and obtain permit approvals from the environmental agencies. Environmental agency review time will be approximately 120 days from receipt of a "complete" permit application. No requests for additional contract time or compensation will be allowed if the permits are obtained within this 11-month period. The Department will consider requests for contract time extensions for obtaining the permits only if the Design-Build Team has pursued the work with due diligence, the delay is beyond the Team's control, and the 11-month period has been exceeded. If time were granted it would be only for that time exceeding the 11-month period. This 11-month period is considered to begin on the Date of Availability, as noted elsewhere in this RFP.

The Design-Build Team is advised herein that the approximate timeframes listed above for the NCDWR and the USACE to review a permit application begin only after a fully complete and 100% accurate submittal.

Mitigation Responsibilities of the Design-Build Team

As required by the NEPA Process and the USACE / EPA Section 404(b)(1) Guidelines, to offset potential wetland and surface water impacts, the Department will review the roadway project corridor for potential on-site mitigation opportunities. If no on-site mitigation opportunities are identified, the Department will debit compensatory mitigation for unavoidable impacts to wetlands and surface waters due to the project construction from the NCDOT Debit Ledger assets and / or acquire the compensatory mitigation from the NC Division of Mitigation Services. This amount of mitigation will be based on impacts, as identified in the I-5877 signed and sealed plans and the I-5986A Preliminary Plans provided by the Department.

Any changes proposed by the Design-Build Team to any design or construction detail provided by the Department shall be approved by the Department prior to being submitted to the environmental agencies for their approval.

Should additional jurisdictional impacts result from revised design and / or construction methods, suitable compensatory mitigation for wetlands and / or surface waters shall be the sole

responsibility of the Design-Build Team. Therefore, it is important to note that additional mitigation will have to be approved by the environmental agencies and such approval shall require, at a minimum, the preparation and approval of a Mitigation Plan before permits are approved. To mitigate for these additional jurisdictional impacts, the Design-Build Team shall be responsible for all costs associated with acquiring suitable mitigation. Construction of any on-site mitigation shall be performed by a contractor that has successfully constructed similar on-site mitigation. In the absence of suitable on-site mitigation, the Design-Build Team shall be responsible for acquiring all additional mitigation from the NC Division of Mitigation Services or an approved compensatory mitigation banking source.

The Design-Build Team shall analyze all new areas to be impacted that have not been analyzed during the NEPA Process, including but not limited to borrow sites, waste sites, haul roads and staging areas that are located outside the project right of way. This analysis shall include performing all environmental assessments. These assessments shall require the Design-Build Team to engage the services of a NCDOT prequalified environmental consultant to conduct a full environmental investigation to include, but not be limited to, Federally Listed Threatened and Endangered Species, wetlands, surface waters, avoidance and minimization in jurisdictional areas, compensatory mitigation, FEMA compliance, and historical, archaeological, and cultural resource surveys in these areas. The environmental consultant shall obtain concurrence through EAU, from the U. S. Fish and Wildlife Service, to document compliance with Section 7 of the *Endangered Species Act* for those species requiring such concurrence. In addition, the Design-Build Team shall identify additional mitigation required, identify the amount of time beyond the aforementioned 11-month period, and fulfill all other requirements that the environmental agencies impose to obtain the permit. Any contract time extensions resulting from additional environmental assessments required by the Design-Build Team's design and / or construction methods impacting areas outside those previously analyzed through the NEPA Process shall be solely at the Department's discretion.

Commitments

The NCDOT is committed to incorporating all reasonable and practicable design features to avoid and minimize wetland and surface water impacts; and to provide full compensatory mitigation of all remaining wetland and surface water impacts. Avoidance measures were taken during the planning and NEPA Process and minimization measures were incorporated as part of the preliminary design provided by the Department. The Design-Build Team shall incorporate these avoidance and minimization features, plus any minimization identified during the interagency hydraulic design review meeting and the interagency permit impacts meeting, into the design and / or construction methods at no additional cost or contract time extension.

All work by the Design-Build Team must be accomplished in strict compliance with the plans submitted with the permit application and in compliance with all conditions of the permits and certifications issued by the environmental agencies. The Design-Build Team shall provide each of its contractors and / or agents associated with the construction or maintenance of this project with a copy of the permits and certifications.

Unless noted otherwise elsewhere in this RFP, the Design-Build Team shall strictly adhere to these commitments, as well as others, including but not limited to, those included in the I-5986 Categorical Exclusion, the I-5877 Categorical Exclusion, all permits, all interagency meetings, and all site visits.

Archaeological Sites

No archaeological sites have been determined eligible for the National Register of Historic Places under Criterion D. However, a recorded cemetery, Site 31HT1253, is located outside of the Archaeological Area of Potential Effects (APE), which shall be avoided during design modifications, construction and staging. Site 31HT1253 is located on the Glen Colosky & Loyal Freeman Colosky, III property, Parcel ID Number 1515-43-5001.000, on SR 1002 (Longbranch Road).

If the Design-Build Team discovers any previously undocumented historic or archaeological resources while conducting the authorized work, they shall immediately suspend activities in that area and notify, in writing, the NCDOT Historic Architecture Group Leader, the NCDOT Archaeology Group Leader and the NCDOT Project Development Engineer, as listed below, who will initiate any required State / Federal coordination after a timely initial assessment. The Design-Build Team shall also immediately notify a representative from the Design-Build Unit. Inadvertent or accidental discovery of human remains shall be handled in accordance with North Carolina General Statutes 65 and 70. All questions regarding these discoveries shall be addressed to Mary Pope Furr, NCDOT Historic Architecture Group Leader at (919) 707-6068, Matthew Wilkerson, NCDOT Archaeology Group Leader at (919) 707-6089, or Steve Kendall, PE, NCDOT Division Project Development Engineer at (910) 364-0603.

EROSION AND SEDIMENTATION CONTROL SCOPE OF WORK (7-24-19)

The NCDOT Roadside Environmental Unit will review and accept all Erosion and Sedimentation Control Plans. Clearing & Grubbing and Final Grade Release for Construction (RFC) Erosion Control Plans shall be submitted, accepted and distributed to all NCDOT personnel listed in the Design-Build Submittal Guidelines before **any** land disturbing activities, including clearing and grubbing, can commence. If the Design-Build Team chooses to perform the work in discrete sections, then a complete set of Clearing & Grubbing and Final Grade RFC Erosion Control Plans shall be submitted, accepted, and distributed, as noted above, prior to land disturbing activities, including clearing and grubbing, commencing in that section. No land disturbing activities, including clearing and grubbing, shall occur in any location that does not have accepted Clearing & Grubbing and Final Grade RFC Erosion Control Plans. Refer to the most recent version of the NCDEQ - *Erosion and Sediment Control Planning and Design Manual* for erosion control design guidelines not addressed in this Scope of Work.

To ensure adherence with the April 1, 2019 NCG-010000 General Construction Permit, issued by the North Carolina Department of Environmental Quality, Division of Water Resources, the Design-Build Team shall formally submit a project-wide Vegetation Management Procedure for the Department's review and acceptance prior to any land disturbing activities. After this initial review, the Design-Build Team shall concurrently provide the Resident Engineer and Roadside Environmental Field Operations Engineer updated versions of the Vegetation Management Procedure on a monthly basis. These updated versions will not require formal submittal to the Design-Build Unit, but will be subject to review comments by the aforementioned field personnel. All versions of the Vegetation Management Procedure shall include, but not be limited to, 1) provisions for the early establishment of grasses / vegetation, 2) provisions for obtaining the required 80% permanent vegetation stand, as defined in the April 1, 2019 NCG-01000 General Construction Permit and in accordance with the *Permanent Vegetation Establishment* Project Special Provision found elsewhere in this RFP, by the project final completion date, and 3) procedure and schedule details for fertilizer topdressing, supplemental seeding, mowing and repair seeding. The Vegetation Management Procedure shall be closely coordinated with the grading and hauling operations. The Design-Build Team shall provide a narrative overview of the Vegetation Management Procedure in the Technical Proposal.

From the beginning through the end of construction, the Design-Build Team shall maintain comprehensive "red-line" As-Constructed Drawings that detail when and where permanent / temporary / repair seeding and fertilizer topdressing have been performed.

Erosion and Sedimentation Control Plans shall at a minimum address the following:

1. Complete Set of Plans

A. Clearing and Grubbing Phase

1. Use correct NCDOT symbology.

2. Protect existing drainage structure inlets with Rock Inlet Sediment Trap Type 'A' (RIST-A), Rock Inlet Sediment Trap Type 'C' (RIST-C), Rock Pipe Inlet Sediment Trap Type 'A' (PIST-A), etc.
3. Utilize adequate perimeter controls (temporary silt ditches (TSD), temporary silt fence (TSF), etc.).
4. Clean Water Diversions (CWD) shall not be used to divert offsite runoff through the project construction limits.
5. Utilize skimmer basins and rock measures with sediment control stone (Temporary Rock Sediment Dam Type 'B' (TRSD-B), Temporary Rock Silt Check Type 'A' (TRSC-A), etc.) at drainage outlets.
6. Take into account topography and show existing contour lines on Clearing & Grubbing Plans only.
7. Utilize Temporary Rock Silt Checks Type 'B' (TRSC-B) or wattles to reduce velocity in existing ditches with spacing of 250 feet divided by percentage of ditch grade. Also utilize TRSC-B's in proposed TSD's and temporary diversions (TD).
8. Protect existing streams; do not place erosion control devices in live streams unless permitted by the Division of Water Resources 401 Certification and the Army Corps of Engineers 404 Permit.
9. Sediment basins shall be sized to provide adequate silt storage for 3600 cubic feet per disturbed acre with surface area equal to 435 square feet per cubic foot per second (cfs) of the peak inflow rate, Q10, using 10-year peak rainfall data (NCDEQ - *Erosion and Sediment Control Planning and Design Manual* or NOAA's National Weather Service website **https://hdsc.nws.noaa.gov/hdsc/pfds/** for partial duration (ARI) time series type). A Sediment Basin Designer Spreadsheet will be provided by the NCDOT Roadside Environmental Unit upon request.
10. Skimmer Basins shall be sized to provide adequate silt storage for 1800 cubic feet per disturbed acre with surface area equal to 325 square feet per cubic foot per second (cfs) of the peak inflow rate, Q10, using the 10-year peak rainfall data (NCDEQ - *Erosion and Sediment Control Planning and Design Manual* or NOAA's National Weather Service website **https://hdsc.nws.noaa.gov/hdsc/pfds/** for partial duration (ARI) time series type). Skimmer Basins shall be designed to dewater in two to three days. A Skimmer Basin Designer Spreadsheet will be provided by the NCDOT Roadside Environmental Unit upon request.
11. Design Riser Basins to the following standards:
    a. Surface Area shall be determined by Equation A (sq. feet) = Q10 (cfs) * 435.
    b. Volume requirement shall be 1800 cubic feet per disturbed acre draining to the riser basin.
    c. Riser Pipe shall have a cross-sectional area 1.5 times that of the barrel pipe.
    d. The riser pipe shall be non-perforated with a skimmer attached to the bottom of the pipe, one foot from the bottom of the basin.
    e. See NCDEQ - *Erosion and Sediment Control Planning and Design Manual* for additional design criteria.
12. The minimum and maximum length to width ratio of all Sediment Basins shall be 2:1 and 6:1, respectively.
13. Coir Fiber Baffles shall be installed in all silt basins and sediment dams at drainage outlets. For silt basins with a 20-foot or longer length, three Coir Fiber Baffles shall

be installed with a spacing of 1/4 the basin length. For silt basins with a length less than 20 feet, a minimum of two Coir Fiber Baffles shall be installed, with a spacing of 1/3 the basin length. The Design-Build Team will not be required to show the individual baffles on the Erosion Control Plans, but shall be required to incorporate the Coir Fiber Baffle Detail on the Erosion Control Plans.

14. Include any culvert and / or pipe construction sequence plan sheets in the Clearing & Grubbing Plans; all pipes 48 inches or larger, or any combination of pipes that total 48 inches or more shall require a construction sequence. Prior to installation of pipes smaller than 48 inches in jurisdictional areas, the Design-Build Team shall submit a phasing plan for managing the watercourse to the Resident Engineer for review and acceptance. The phasing plan shall be in accordance with the *Best Management Practices for Construction and Maintenance Activities*.
15. During construction, provide temporary sediment basins that dewater from the surface at all permanent stormwater devices.
16. Utilize Coir Fiber Wattles with Polyacrylamide (PAM) and / or TRSC-As with Matting and PAM in temporary and permanent, existing and proposed ditches at a spacing of 50 feet in areas where sediment basins are not feasible at drainage outlets and in areas where sediment basins at drainage outlets with sediment traps (i.e. PIST-A, RIST-A, etc.), cannot be properly sized to surface area and / or sediment storage requirements due to safety concerns, right of way restrictions, utility conflicts, or other construction limitations approved by the NCDOT Roadside Environmental Unit.
17. Place a device utilizing PAM at all sediment basin inlets.
18. At a maximum spacing of 200 feet, and as directed, utilize Special Sediment Control Fence drainage breaks in silt fence.
19. Do not place erosion control devices that require excavation (i.e. sediment basins, silt ditches, etc.) in wetlands.
20. Within the entire project limits, provide disturbed and undisturbed drainage areas in MicroStation Format.
21. For all drainage outlets where the runoff cannot be treated with a sediment basin and / or the sediment basin cannot be constructed to the required sediment storage or surface area requirements, provide a written explanation.
22. Excluding perimeter Sediment Basins that will function only during Clearing and Grubbing operations, all perimeter Sediment Basins shall be placed outside of fill slopes.

B. Final Grade Phase

1. Use correct NCDOT symbology.
2. Protect existing and proposed drainage structure inlets with RIST-A, RIST-C, PIST-A, etc.
3. Utilize adequate perimeter controls (TSD, TSF, etc.).
4. Clean Water Diversions (CWD) shall not be used to divert offsite runoff through the project construction limits.

5. Utilize TRSC-B's or wattles to reduce velocity in existing and proposed ditches with spacing of 250 feet divided by percentage of ditch grade. Also utilize TRSC-B's in proposed TSD's and TD's.
6. Utilize temporary slope drains and earth berms at top of fill slopes five feet or higher and a fill slope steeper than 4:1, or where there are superelevations above 0.04 and fills are greater than three feet. Maximum slope drain spacing shall be 200 feet.
7. Utilize a rock energy dissipater at the outlet of all slope drains.
8. Devices at all drainage turnouts shall utilize skimmer or sediment control stone (TRSD-B, TRSC-A, etc.) and a spillway with an adequately designed base length to distribute outflow.
9. Sediment basins shall be sized to provide adequate silt storage for 3600 cubic feet per disturbed acre with surface area equal to 435 square feet per cubic foot per second (cfs) of the peak inflow rate, Q10, using 10-year peak rainfall data (NCDEQ - *Erosion and Sediment Control Planning and Design Manual* or NOAA's National Weather Service website **https://hdsc.nws.noaa.gov/hdsc/pfds/** for partial duration (ARI) time series type). A Sediment Basin Designer Spreadsheet will be provided by NCDOT Roadside Environmental Unit upon request.
10. Skimmer Basins shall be sized to provide adequate silt storage for 1800 cubic feet per disturbed acre with surface area equal to 325 square feet per cubic foot per second (cfs) of the peak inflow rate, Q10, using the 10-year peak rainfall data (NCDEQ - *Erosion and Sediment Control Planning and Design Manual* or NOAA's National Weather Service website **https://hdsc.nws.noaa.gov/hdsc/pfds/** for partial duration (ARI) time series type). Skimmer Basins shall be designed to dewater in two to three days. A Skimmer Basin Designer Spreadsheet will be provided by the NCDOT Roadside Environmental Unit upon request.
11. Design Riser Basins to the following standards:
    a. Surface Area shall be determined by Equation A (sq. feet) = Q10 (cfs) * 435.
    b. Volume requirement shall be 1800 cubic feet per disturbed acre draining to the riser basin.
    c. Riser Pipe shall have a cross-sectional area 1.5 times that of the barrel pipe.
    d. The riser pipe shall be non-perforated with a skimmer attached to the bottom of the pipe, one foot from the bottom of the basin.
    e. See NCDEQ - *Erosion and Sediment Control Planning and Design Manual* for additional design criteria.
12. Provide matting for erosion control in all ditch lines, including but not limited to temporary ditch lines (TDs) utilized to divert offsite runoff around construction areas, where the velocity is greater than 2.0 feet / sec, and the shear stress is 1.55 psf or less. For ditch lines with a shear stress above 1.55 psf, Permanent Soil Reinforcement Mat or Rip Rap shall be utilized.
13. Unless otherwise approved by the Roadside Environmental Field Operations Engineer, provide matting for erosion control on all slopes (cut and fill) that are steeper than 4:1 and a height of five feet or greater.
14. Along all slopes (cut and fill) that are 30 feet or higher, place parallel rows of 12-inch Excelsior Wattles at a spacing height of 20 feet.
15. The minimum and maximum length to width ratio of all Sediment Basins shall be 2:1 and 6:1, respectively.

16. Coir Fiber Baffles shall be installed in all silt basins and sediment dams at drainage outlets. For silt basins with a 20-foot or longer length, three Coir Fiber Baffles shall be installed with a spacing of 1/4 the basin length. For silt basins with a length less than 20 feet, a minimum of two Coir Fiber Baffles shall be installed, with a spacing of 1/3 the basin length. The Design-Build Team will not be required to show the individual baffles on the Erosion Control Plans, but shall be required to incorporate the Coir Fiber Baffle Detail on the Erosion Control Plans.
17. During construction, provide temporary sediment basins that dewater from the surface at all permanent stormwater devices.
18. Utilize Coir Fiber Wattles with Polyacrylamide (PAM) and / or TRSC-As with matting and PAM in temporary and permanent, existing and proposed ditches at a spacing of 50 feet in areas where sediment basins are not feasible at drainage outlets, and in areas where sediment basins at drainage outlets with sediment traps (i.e. PIST-A, RIST-A, etc.) cannot be properly sized to surface area and / or sediment storage requirements due to safety concerns, right of way restrictions, utility conflicts, or other construction limitations approved by the NCDOT Roadside Environmental Unit.
19. Place a device utilizing PAM at all sediment basin inlets.
20. At a maximum spacing of 200 feet, and as directed, utilize Special Sediment Control Fence drainage breaks in silt fence.
21. Do not place erosion control devices that require excavation (i.e. sediment basins, silt ditches, etc.) in wetlands.
22. Within the entire project limits, provide disturbed and undisturbed drainage areas in MicroStation Format.
23. For all drainage outlets where the runoff cannot be treated with a sediment basin and / or the sediment basin cannot be constructed to the required sediment storage or surface area requirements, provide a written explanation.
24. All perimeter Sediment Basins shall be placed outside of fill slopes.

C. Intermediate Phase

Intermediate Erosion Control Plans shall only be required if design modifications and / or site conditions require additional erosion control design or design revisions to the RFC Clearing and Grubbing and / or RFC Final Grade Erosion Control Plans. Intermediate Plans shall be submitted for review and shall be accepted prior to construction of any aspect impacted by the revised erosion control design. For any intermediate phase, comply with Section B, "Final Grade Phase" above.

II. Detail Sheets and Notes

A. Provide project specific special notes and details, including but not limited to, skimmer basin, coir fiber wattle with Polyacrylamide (PAM), etc.
B. Provide matting summary sheet(s): matting for erosion control, permanent soil reinforcement mat, and coir fiber mat.
C. Provide reforestation sheet(s): regular, wetland, streambank and / or buffer showing appropriate species.

III. Title Sheet

A. Show correct notes: NCG-01, HQW, ESA, clearing and grubbing, etc.
B. Show correct standards for project
C. List of standard NCDOT symbology
D. Show name and certification number of Level III certified individual responsible for designing and / or reviewing Erosion and Sedimentation Control Plans
E. Show name of primary NCDOT Roadside Environmental Unit Erosion and Sedimentation Control Plan reviewer

IV. Special Provisions

A. Erosion Control Special Provisions are available at the following website:

https://connect.ncdot.gov/resources/roadside/Pages/Soil-Water.aspx

B. References in Erosion Control Special Provisions from the aforementioned website to Method of Measurement, Basis of Payment, or any other statement regarding direct payment for Erosion & Sediment Control measures shall be disregarded.

C. *Erosion & Sediment Control / Stormwater Certification* Project Special Provision found elsewhere in this RFP.

V. Miscellaneous

A. Plan submittals shall include all pertinent design information required for review, such as design calculations, drainage areas, etc.
B. The NCDOT Roadside Environmental Unit will provide a sample set of Erosion and Sedimentation Control Plans (including any special details or special provisions used by the NCDOT Roadside Environmental Unit) and MicroStation Erosion Control Workspace to the Design-Build Team for reference upon request.
C. Plans shall address any environmental issues raised during the permitting process.
D. The Design-Build Team shall allow sufficient time in the proposed schedule to address any comments to the Erosion and Sedimentation Control Plans, as deemed necessary by the NCDOT Roadside Environmental Unit.
E. Temporary access and haul roads, other than public roads, constructed or used in connection with the project shall be considered a part of the project and addressed in the Erosion and Sedimentation Control Plans. Temporary access and haul roads located within the footprint and / or the right of way / easement corridor of the project shall be part of the highway Erosion and Sedimentation Control Plans. Temporary access and haul roads associated with borrow pits and staging areas shall be included in the Reclamation Plan.
F. To contain concrete waste water and associated concrete mix from washing out ready-mix trucks, drums, pumps, or other equipment, provide Concrete Washout Structures at egress points. Concrete Washout Structures must collect and retain all concrete waste water and solids so that this material does not migrate to surface waters or into the ground water. The Concrete Washout Structures are not intended for concrete waste not associated with washout operations. The Concrete Washout Structures may include devices above or below

ground and / or commercially available devices designed specifically to capture concrete waste water. Concrete Washout Structure options may be found in the special provision, available at the website noted in Section IV above. For construction details of an above grade and below grade Concrete Washout Structure, reference the website noted below:

https://connect.ncdot.gov/resources/roadside/SoilWaterDocuments/ ConcreteWashoutStructuredetail.pdf

G. Borrow or waste areas that are part of the project shall require a separate Reclamation Plan, unless the borrow or waste activity is regulated under the *Mining Act of 1971*, or is a landfill regulated by the NCDEQ - Division of Waste Management (DWM). For newly created borrow pit(s) that require dewatering, Borrow Pit(s) Dewatering Basins shall be required and shall be in accordance with the applicable special provisions available at the website noted in Section IV above. The Design-Build Team shall submit the location and permit number for waste / borrow sites covered by the aforementioned Mining Act or regulated by the NCDEQ - DWM concurrently to the Design-Build Unit and the Resident Engineer. For Reclamation Procedures, see:

https://connect.ncdot.gov/resources/roadside/FieldOperationsDocuments/ /ContractedReclamationProcedures.pdf

H. Whenever the Engineer determines that significant erosion and sedimentation continues despite the installation of approved protective practices, the Design-Build Team shall be required to, and shall, take additional protective action.

I. An accepted Erosion and Sedimentation Control Plan shall not exempt the Design-Build Team from making every effort to contain sediment onsite.

J. Any Erosion Control Design revision made during the construction of the project shall be submitted to NCDOT Roadside Environmental Unit by the 15th of the month via the Design-Build Unit. At anytime requested by the Engineer or the NCDOT Roadside Environmental Unit, the Design-Build Team shall provide an updated version of the Erosion and Sedimentation Control Plans for distribution to all parties involved in the construction process.

K. The Design-Build Team shall comply with the North Carolina Administrative Code *Title 15A Environmental Quality* Chapter 4, Sedimentation Control.

L. A pre-submittal meeting shall take place between the NCDOT Roadside Environmental Unit Soil & Water Engineering Section, the Design-Build Team, and any other pertinent NCDOT personnel before any Erosion and Sedimentation Control Designs are submitted to the NCDOT Roadside Environmental Unit. Erosion and Sedimentation Control Plan submittals shall only be reviewed and accepted by the NCDOT Roadside Environmental Unit after the Erosion and Sedimentation Control Pre-Submittal Meeting. The Design-Build Team shall be required to submit a tentative Erosion and Sedimentation Control Plan submittal schedule at the pre-submittal meeting.

M. At a minimum, the Design-Build Team shall bring one erosion control plan sheet with a Clearing & Grubbing erosion control design to the Erosion and Sedimentation Control Pre-Submittal Meeting.

N. All RFC Erosion and Sedimentation Control Plans, including any red line revisions, shall be kept on site at all times throughout the duration of the project.

O. Immediately after the clearing and grubbing erosion control measures have been installed for the entire project, or for individual sections if the Design-Build Team has divided the project into construction segments, the Design-Build Team's erosion and sedimentation control designer shall field verify constructed dimensions and installation of all erosion control devices. After this initial inspection(s), the aforementioned designer shall review the project conditions a minimum of every 30 days during the heavy grading operations, and as directed by the Engineer, to verify the field conditions of disturbed areas draining to erosion control devices and to ensure that the erosion control devices provide the current field condition requirements for sediment storage and surface area. During construction, the NCDOT may conduct separate field inspections of the project conditions and the erosion control devices. The erosion and sedimentation control designer shall make appropriate design revisions to the Clearing and Grubbing, Intermediate Erosion Control Plans and / or Final Grade Erosion Control Plans resulting from / required by the Design-Build Team and / or the Departmental field inspections for the Department's review and acceptance, in accordance with the Design-Build Submittal Guidelines. The Design-Build Team shall concurrently provide written documentation of all field verifications / inspections performed by the Design-Build Team to the NCDOT Roadside Environmental Unit, Soil and Water Engineering and Field Operations Section, and the Resident Engineer. At a minimum, this documentation shall detail what was observed during the field verification / inspection and all resulting required actions with a timeframe for implementation. When the project conditions no longer warrant, in the sole discretion of the Department, inspections by the erosion and sedimentation control designer may cease.

P. The Design-Build Team's erosion and sedimentation control designer shall submit design calculations, for the Department's review and acceptance, for all modifications to the Erosion and Sedimentation Control Plans that result in dimension modifications and / or relocations, other than minor shifts to accurately place, to the devices noted below:

- Riser Basin
- Skimmer Basin and all devices with Skimmers
- Temporary Rock Sediment Dam Type A
- Temporary Rock Sediment Dam Type B
- Temporary Rock Silt Check Type A
- Culvert Construction Sequences
- Temporary and Permanent Stream Channel Relocations

Q. Erosion & Sediment Control / Stormwater Certification shall be required according to the Project Special Provision found elsewhere in this RFP.

R. Prior to installation of any erosion control devices, the Design-Build Team shall verify boundaries of jurisdictional areas in the field and delineate with Safety Fence or flagging. For guidance on Safety Fence and flagging in jurisdictional areas, see:

https://connect.ncdot.gov/resources/roadside/Pages/Field-Operations-Documents.aspx

S. Once RFC Erosion and Sedimentation Control Plans are issued, any major design change or addition, any change that involves calculations, and any addition, deletion, or relocation

of a sediment basin shall be submitted to the NCDOT Roadside Environmental Unit, via the Design-Build Unit, for review and acceptance. Minor changes such as moving silt fence, adding or moving temporary ditches (unless adding new runoff flow to a sediment basin), and adding or moving slope drains shall be reviewed by the Engineer in the field.

T. All erosion control measures with stone extending beyond the construction limits shall be considered temporary fill. If impacted wetland areas are permitted as Hand Clearing, then the aforementioned temporary fill shall be permitted as Temporary Fill in Hand Cleared Areas for Erosion Control. (Reference the Environmental Permits Scope of Work found elsewhere in this RFP)

U. Sediment basins that drain directly into jurisdictional water or have a total drainage area of one acre or more shall be designed and constructed with outlet structures that only withdraw water from the surface. For sediment basins that do not drain directly into jurisdictional water or have less than one acre of total drainage area, surface dewatering outlets or stone outlets may be provided.

V. In accordance with the requirements noted herein, the Design-Build Team shall be responsible for erosion control design, erosion control plans, erosion control plan implementation and maintenance of erosion control measures for all utility installation and relocation work performed by the Design-Build Team. To ensure that the Design-Build Team's erosion control designs, erosion control plan implementation and / or maintenance of erosion control measures do not conflict with the erosion control design, erosion control plan implementation and / or maintenance of erosion control measures for utility installation and / or relocation work performed by others, the Design-Build Team shall coordinate with the utility companies performing Utilities by Others (UBO) work.

W. Ground Cover Stabilization Requirements - NCG010000 (7 - 14 Days)

Ground cover stabilization shall comply with the timeframe guidelines specified by the North Carolina Department of Environmental Quality, Division of Water Resources NCG-010000 General Construction Permit that became effective on April 1, 2019. Excluding the slopes noted below, temporary and permanent ground cover stabilization shall be provided within seven calendar days from the last land-disturbing activity. The Design-Build Team shall label all slopes subject to the seven-day ground cover stabilization requirements on all Erosion and Sedimentation Control Plans submitted to the Department for review and acceptance.

For the slopes noted below, temporary and / or permanent ground cover stabilization shall be provided within 14 calendar days from the last land-disturbing activity:

Slopes between 2:1 and 3:1, with a slope length of ten feet or less
Slopes 3:1 or flatter, with a slope length of 50 feet or less
Slopes 4:1 or flatter

Temporary and / or permanent ground cover stabilization shall be provided in accordance with the provisions in this RFP, the Vegetation Management Procedure developed by the Design-Build Team and the April 1, 2019 NCG-010000 General Construction Permit.

X. Additional Ground Cover Stabilization Requirements

Once the Design-Build Team identifies the area for stabilization due to inactivity, the Design-Build Team shall obtain concurrence from the Engineer and adhere to the following options based on the estimated amount of time the area will remain inactive. If the area stabilized exceeds the estimated timeframe, the Design-Build Team shall implement the next level of stabilization as directed by the Engineer.

All application rates noted below are in pounds per acre.

Short Term Stabilization - For areas that will remain inactive for up to 21 days

Erodible areas shall be stabilized utilizing non-vegetative cover. Non-vegetative cover options include straw mulch, hydraulic applied erosion control products or rolled erosion control products. If straw mulch is used, it shall provide 100% groundcover and be tacked sufficiently to hold the mulch in place for the duration of the inactive period. All other methods shall be installed according to the manufacturer's directions.

Mid-Term Stabilization -For areas that will remain inactive for up to 90 days

Erodible areas shall be stabilized utilizing the following stabilization protocol:

March 1 - August 31	**September 1 - February 28**
50# German or Browntop Millet	50# Rye Grain or Wheat
500# Fertilizer	500# Fertilizer
4000# Limestone	4000# Limestone

At the Engineer's sole discretion, the use of limestone on sandy soils that require topsoil for stabilization may be eliminated. The Design-Build Team shall consult with, and obtain written approval from, the NCDOT Roadside Environmental Unit prior to eliminating limestone.

Upon obtaining written approval from the Engineer, the Design-Build Team may use wood mulch and / or ground clearing and grubbing debris as an option for Mid-Term Stabilization. If approved, the aforementioned mulch and / or debris shall be installed at a thickness that prevents erosion.

Long Term Stabilization - For areas that will remain inactive for more than 91 days

Erodible areas shall be stabilized utilizing the following stabilization protocol:

All Roadway Areas

March 1 – August 31	**September 1 – February 28**
10# Centipede *	10# Centipede *
50# Tall Fescue Cultivars **	50# Tall Fescue Cultivars **
25# Bermudagrass (hulled)	35# Bermudagrass (unhulled)
500# Fertilizer	500# Fertilizer
4000# Limestone	4000# Limestone

* On cut and fill slopes 2:1 or steeper, the Design-Build Team shall apply centipede at a rate of five pounds per acre.

Riparian and Wetland Locations

March 1 – August 31	**September 1 – February 28**
18# Creeping Red Fescue Cultivars ***	18# Creeping Red Fescue Cultivars ***
6# Indiangrass	6# Indiangrass
8# Little Bluestem	8# Little Bluestem
4# Switchgrass	4# Switchgrass
25# Browntop Millet	35# Rye Grain
500# Fertilizer	500# Fertilizer
4000# Limestone	4000# Limestone

Waste and Borrow Areas

March 1 – August 31	**September 1 – February 28**
75# Tall Fescue Cultivars **	75# Tall Fescue Cultivars **
25# Bermudagrass (hulled)	35# Bermudagrass (unhulled)
500# Fertilizer	500# Fertilizer
4000# Limestone	4000# Limestone

**** Approved Tall Fescue Cultivars**

06 Dust
2nd Millennium
3rd Millennium
Apache III
Avenger
Barlexas
Barlexas II
Bar Fa
Barrera
Barrington
Barrobusto
Barvado
Biltmore
Bingo
Bizem
Blackwatch
Blade Runner II
Bonsai
Bravcheart
Bravo
Bullseye
Cannavaro
Catalyst
Cayenne
Cessane Rz
Chipper
Cochise IV
Constitution
Corgi
Corona
Coyote
Darlington
Davinci
Desire
Dominion
Dynamic
Dynasty
Endeavor
Escalade
Essential
Evergreen 2
Falcon IV
Falcon NG
Falcon V
Faith
Fat Cat
Festnova
Fidelity
Finelawn Elite
Finelawn Xpress
Finesse II
Firebird
Firecracker LS
Firenza
Five Point
Focus
Forte
Garrison
Gazelle II
Gold Medallion
Grande 3
Greenbrooks
Greenkeeper
Gremlin
Greystone
Guardian 21
Guardian 41
Hemi
Honky Tonk
Hot Rod
Hunter
Inferno
Innovator
Integrity
Jaguar 3
Jamboree
Justice
Kalahari
Kitty Hawk 2000
Legitimate
Lexington
LSD
Magellan
Matador
Millennium SRP
Monet
Mustang 4
Ninja 2
Ol' Glory
Olympic Gold
Padre
Patagonia
Pedigree
Picasso
Piedmont
Plantation
Proseeds 5301
Prospect
Pure Gold
Quest
Raptor II
Rebel Exeda
Rebel Sentry
Rebel IV
Regiment II
Regenerate
Rendition
Rhambler 2 SRP
Rembrandt
Reunion
Riverside
RNP
Rocket
Scorpion
Serengeti
Shelby
Sheridan
Signia
Silver Hawk
Sliverstar
Shenandoah Elite
Sidewinder
Skyline
Solara
Southern Choice II
Speedway
Spyder LS
Sunset Gold
Taccoa
Tanzania
Trio
Tahoe II
Talladega
Tarheel
Terrano
Titan ltd
Titanium LS
Tracer
Traverse SRP
Tulsa Time
Turbo
Turbo RZ
Tuxedo RZ
Ultimate
Venture
Umbrella
Van Gogh
Watchdog
Wolfpack II
Xtremegreen

***** Approved Creeping Red Fescue Cultivars**

Aberdeen
Boreal
Epic
Cindy Lou

From January 1 – December 31, the Design-Build Team shall apply an additional 20# of Sericea Lespedeza on cut and fill slopes 2:1 or steeper.

Fertilizer shall be 10-20-20 analysis or a different analysis that provides a 1-2-2 ratio applied at a rate that provides the same amount of plant food as a 10-20-20 analysis and as directed.

Soil Analysis

If vegetation establishment indicates a deficiency in soil nutrients or an incurred pH level is present, the Design-Build Team shall take soil samples and apply additional soil amendments to the affected area and as directed.

** **NOTE** ** Deleted bullets requiring soil pH samples and Class B limestone rip rap plating.

Fertilizer Topdressing

In accordance with the requirements noted below, the Design-Build Team shall apply a minimum of one Fertilizer Topdressing application to all permanently seeded areas immediately prior to completion of the project, twice during every growing season from April 1st through September 30th, and at other times as directed.

Fertilizer used for topdressing shall be 10-20-20 analysis applied at a rate of 500 pounds per acre; or a different analysis that provides a 1-2-2 ratio applied at a rate that provides the same amount of plant food as a 10-20-20 analysis and as directed.

Fertilizer used for waste and borrow areas shall be 16-8-8 grade applied at a rate of 500 pounds per acre; or a different analysis that provides a 2-1-1 ratio applied at a rate that provides the same amount of plant food as a 16-8-8 analysis and as directed.

Supplemental Seeding

For all supplemental seeding, the kinds of seed and proportions shall be the same as specified above for *Long Term Stabilization*, with the exception that centipede seed shall not be allowed in the seed mix. The rate of application for supplemental seeding shall be between 25# to 75# per acre. Prior to topdressing, the Design-Build Team shall determine the actual rate per acre for supplemental seeding and submit the supplemental seeding rate and areas to the Department for review and acceptance.

To prevent disturbance of existing vegetation, minimum tillage equipment, consisting of a sod seeder, shall be used to incorporate seed into the soil where degree of slope allows. Where degree of slope prevents the use of a sod seeder, a clodbuster (ball and chain) may be used.

Mowing

The minimum mowing height shall be four inches.

EROSION CONTROL COORDINATION MEETINGS

Preliminary Construction Meeting

Prior to any land disturbing activity, the Engineer will schedule a meeting with Division construction personnel, Design-Build Team senior management, Design-Build Team project staff, NCDOT project staff, consultant engineering / inspection staff, NCDOT Construction Unit, NCDOT Roadside Environmental Unit, Land Quality, Department of Water Resources and any other party associated with activities that impact the overall effectiveness of the project's erosion control.

During this meeting, the attendees shall review the Design-Build Team's Traffic Control Plans and identify potential erosion control issues. All attendees will provide comments, recommendations and supportive information to help facilitate resolution to the aforementioned potential erosion control issues.

Construction Meetings

Once construction begins, the Engineer will schedule monthly meetings to review the erosion control status. All parties listed above for the Preliminary Construction Meeting shall participate in these monthly construction meetings.

During the construction meetings, the erosion control efforts / issues to date will be reviewed and discussed. Additionally, the upcoming construction phases will be reviewed to identify potential erosion control issues. After the construction meeting, a project review may occur to identify site specific issues and identify solutions. The Design-Build Team shall be responsible for all actions, corrections and / or resolutions resulting from the construction meetings and / or subsequent site visits.

The NCDOT senior management will discuss issues that are repeatedly identified on inspection reports and / or discussed during the construction meetings with the Design-Build Team's senior management.

If project activities do not change the erosion control status / conditions, the Engineer may elect to change the construction meeting frequency or cancel a meeting.

EROSION CONTROL DAMAGES

The Design-Build Team shall observe and comply with Federal and State Laws, Local Laws, Ordinances, and Regulations; as well as Orders and Decrees of Bodies having any jurisdiction or authority in accordance with Section 107 of the 2018 NCDOT *Standard Specifications for Roads and Structures*.

The Design-Build Team shall take all reasonable precautions to comply with all regulations of all authorities having jurisdiction over public and private land governing the protection of erosion and sedimentation. Any fines, remediation required or charges levied against the Department for failing to comply with all rules and regulations concerning erosion and sediment control, due to the Design-Build Team's negligence, carelessness, or failure to implement the Erosion and Sedimentation Control Plans and Specifications; or failure to maintain an approved Storm Water Pollution Prevention Plan (SWPPP), regardless of absence of neglect, shall be deducted from monies due the Design-Build Team. In addition to said fines, remediation required, or charges levied, any associated engineering costs or actions taken by the Department in order for the Department to comply with rules and regulations, as a result of the Design-Build Team's negligence, carelessness, or failure to implement the Erosion and Sedimentation Control Plans and Specifications; and / or the SWPPP, regardless of absence of neglect, shall be deducted from the monies due to the Design-Build Team.

GEOENVIRONMENTAL SCOPE OF WORK (8-28-18)

I. DEFINITION

For the purpose of this Scope of Work, contamination / contaminants are defined as any substance that when discharged in any quantity may present an imminent and substantial danger to the public health or welfare. Petroleum is defined as any petroleum-derived product of any kind and in any form, including but not limited to, crude oil, diesel fuel, fuel oil, gasoline, lubrication oil, oil refuse, oil mixed with other waste, oil sludge, petroleum related products or by-products, and all other liquid hydrocarbons, regardless of specific gravity, whether occurring singly or in combination with other substances.

II. DESCRIPTION OF WORK

I-5986A

Sites of concern were identified in the July 26, 2018 *Geotechnical Pre-Scoping Comments* for I-5986. After submittal of the Right of Way / 60% Roadway Plans developed by the Design-Build Team, the Design-Build Team shall hold a right of way consultation with the Department's GeoEnvironmental staff, Design-Build Unit, and key Design-Build team members.

Sites of concern that are noted in the July 26, 2018 *Geotechnical Pre-Scoping Comments* for I-5986 and any other sites of concern identified during the right of way consultation with the Design-Build Team, will be investigated by the Department. The Department shall require 90 days from the date of the aforementioned consultation to investigate and provide Right of Way Recommendations. The Right of Way Recommendations shall be completed prior to the Design-Build Team making offers to purchase the right of way on these sites of concern.

I-5877

Sites of concern were identified in the December 3, 2015 *GeoEnvironmental Haz Mat Report* for I-5877. The Department is in the process of acquiring the right of way for I-5877 and has completed the I-5877 Right of Way Recommendations. (Reference the Right of Way Scope of Work found elsewhere in this RFP)

I-5986A / I-5877

The Design-Build Team shall notify the Design-Build Unit, in writing, of any underground storage tanks (USTs) containing fuel, chemicals, or heating oil tanks discovered during property appraisals. The Department will require 90 days from the date of written notification to investigate and provide Right of Way Recommendations. The Right of Way Recommendations shall be completed prior to the Design-Build Team making offers to purchase the right of way on sites containing USTs.

The Design-Build Team shall adhere to all Right of Way Unit procedures regarding the acquisition of contaminated property and all Right of Way Recommendations provided by

the Department. (Reference the Right of Way Scope of Work found elsewhere in this RFP) After the parcels with identified contamination and / or underground storage tanks (USTs) are acquired and cleared of all above ground structures, the Department will 1) remove from the right of way USTs previously identified and those discovered during the property appraisals, and 2) remove all associated contaminated soil anticipated to require excavation to complete the project. The Department will remove the aforementioned USTs and contaminated soil within 60 days of written notification that the above-ground structures have been removed. All contaminated soil not required for removal to complete the project shall be left in place and undisturbed.

If groundwater is encountered and dewatering is required in areas of known contamination, the Design-Build Team shall containerize the groundwater in vessels provided by the Department. The Department will be responsible for the sampling and disposal of the water.

It is important to note that petroleum contaminated soil may be encountered during any earthwork activity on this project.

III. INFORMATION PROVIDED BY NCDOT

- *Geotechnical Pre-Scoping Comments*, I-5986, July 26, 2018
- MicroStation file for sites of concern
- *GeoEnvironmental Haz Mat Report* (GIE Report), I-5877, December 3, 2015
- I-5877 *Right of Way Recommendations*, November 14, 2018

IV. UNKNOWN CONTAMINATED SITES

The Design-Build Team shall immediately notify the Department if the Design-Build Team's operations encounter or expose any abnormal condition that may indicate the presence of a hazardous, contaminated, and / or toxic material not previously identified. If the Engineer elects to have the Design-Build Team remove and dispose of contaminated material, the removal and disposal of this material shall be performed as extra work in accordance with Article 107-25 of the 2018 NCDOT *Standard Specifications for Roads and Structures.*

GEOTECHNICAL ENGINEERING SCOPE OF WORK (1-28-19)

I. GENERAL

All geotechnical data, tests, computations and supporting subsurface investigations and documentation submitted by the Design-Build Team shall be provided in English Units.

Obtain the services of a firm prequalified for geotechnical work by the NCDOT Geotechnical Engineering Unit at:

https://partner.ncdot.gov/VendorDirectory/default.html

The prequalified geotechnical firm shall prepare foundation design recommendation reports for use in designing structure foundations, roadway foundations, retaining walls, sound barrier foundations, overhead sign structure foundations, and temporary structures.

The Engineer of Record who prepares the foundation design recommendation reports shall be a Professional Engineer registered in the State of North Carolina who has completed a minimum of three geotechnical design projects of scope and complexity similar to that anticipated for this project using the load and resistance factor design (LRFD) method and in accordance with the latest edition of the AASHTO *LRFD Bridge Design Specification*.

The prequalified geotechnical firm shall also determine if additional subsurface information, other than that required and noted elsewhere in this RFP, is required based upon the subsurface information provided by the NCDOT and the final roadway and structure designs. If a determination is made additional subsurface information is required; the Design-Build Team shall use a prequalified geotechnical firm to perform all additional subsurface investigation and laboratory testing in accordance with the current NCDOT Geotechnical Engineering Unit *Guidelines and Procedures Manual for Subsurface Investigations*. Submit additional information collected by the Design-Build Team to the Geotechnical Engineering Unit, via the Design-Build Unit, for review and acceptance. The Design-Build Team shall provide the final Subsurface Investigation report in electronic and hardcopy format to the NCDOT for its records.

Unless noted otherwise herein, the Design-Build Team shall design foundations (except for sign foundations), embankments, slopes, retaining walls, and sound barrier walls in accordance with the current edition of the AASHTO *LRFD Bridge Design Specifications*, NCDOT *LRFD Driven Pile Foundation Design Policy*, all applicable NCDOT Geotechnical Engineering Unit Standard Provisions, NCDOT *Structures Management Unit Manual* and NCDOT *Roadway Design Manual*. The NCDOT *LRFD Driven Pile Foundation Design Policy* is located on the NCDOT Geotechnical Engineering Unit's website at:

https://connect.ncdot.gov/resources/Geological/Pages/default.aspx

For *Geotechnical Guidelines for Design-Build Projects*, the Design-Build Team shall adhere to the guidelines located at the following website:

https://connect.ncdot.gov/letting/Pages/Design-Build-Resources.aspx

A minimum of one standard penetration test (SPT) / rock core borings shall be required per bent for all bridges except dual or triple bridges. A minimum of two SPT / rock core borings shall be required across the roadway typical section at each bent location for dual and triple bridges. All driven piles shall be located within 75 feet of a SPT / rock core boring. All drilled piers and other types of bridge foundations shall be located within 25 feet of a SPT / rock core boring. The Design-Build Team shall extend all borings to a depth of 15 feet or four foundation element diameters, whichever is greater, below the foundation element to show a complete subsurface profile. The Design-Build Team shall be responsible for obtaining the borings noted above for all bents where subsurface information is not sufficient or is warranted by variability in the geology unless the prequalified geotechnical firm submits documented justification that the subsurface investigation provided by the NCDOT is adequate for design purposes and the justification is acceptable to the Department. Any deviations to the requirements noted above shall require acceptance from the NCDOT Geotechnical Engineering Unit prior to the foundation design submittal.

The maximum spacing between borings for retaining walls and sound barrier walls shall be 100 feet, with a minimum of two borings; one at each end of the wall. Drill borings for retaining walls a minimum depth below the bottom of the wall equal to twice the maximum wall height. Boring depths for sound barrier walls shall be to a minimum depth below the bottom of the wall equal to the maximum wall height or to SPT refusal.

II. ADDITIONAL DESIGN REQUIREMENTS

A. Structure Foundations

- Spread footings will not be allowed for bridge foundations.

- Permanent steel casings shall be required for drilled piers that are constructed in six inches or more of water. Permanent steel casings shall also be required for drilled piers constructed on stream banks and within 10 feet of the top of stream banks.

- The 100-year and 500-year design scour elevations shall be equal to the 100-year and 500-year hydraulic scour elevations from the structure survey report developed by the Design-Build Team and accepted by the NCDOT Hydraulics Unit. The design scour elevation may be geotechnically adjusted per standard NCDOT methods.

- End bent fill slopes up to 35 feet in height (defined as the difference between grade point elevation and finished grade at toe of slope) shall be 1.5:1 (H:V) or flatter. End bent fill slopes with heights greater than 35 feet shall be 2:1 or flatter. All end bent cut slopes shall be 2:1 or flatter. All end bent slope protection shall be in accordance with the Structures Management Unit Standard Drawings SP1 and SP2.

- Analyze drilled pier and pile bent foundations using either LPile or FB-Pier. Design drilled piers and vertical piles in pile bents with a sufficient embedment in soil and / or rock to achieve "fixity".

- For box culverts, the Design-Build Team shall submit details for undercut of unsuitable material or recommendations for use of more than one foot of conditioning material to the NCDOT Geotechnical engineering Unit, via the Design-Build Unit, for review and acceptance.

- Retaining walls and / or taller headwalls / end walls shall not be used to reduce the length of proposed culverts and or the length of culvert extensions.

B. Roadway Foundations

- Unless noted otherwise herein, all unreinforced proposed fill and cut slopes, except bridge end bent slopes (Reference Section A – Structure Foundations), shall be 3:1 (H:V) or flatter. Roadway fill and cut slopes shall have a minimum factor of safety of 1.3 for global stability.

- Reinforced soil fill slopes shall only be used to minimize impacts to existing structures, and / or cultural, historical or otherwise protected landmark or topographic features.

- ** **NOTE** ** Deleted bullet on minimum five-foot vertical separation between the groundwater table and the bottom of pavement subgrades for new I-95 through lanes.

- In accordance with the project specifications, Roadway Standard Drawings, and the Erosion and Sedimentation Control Scope of Work found elsewhere in this RFP, provide drainage recommendations, including but not limited to lateral ditches, underdrains, and shoulder drains, for the new I-95 through lanes, existing mainline through lanes, and all -Y- Lines, ramps, loops and service roads designed and constructed on new location, excluding the transitions required to tie to existing, to meet the following conditions:

    - Maintain a minimum two-foot vertical separation between the groundwater table and the bottom of the Class IV aggregate subgrade.

    - Fine aggregate (Class III, Type 1 or 3) may be used for subsurface / pipe underdrains. Shoulder drains shall use coarse aggregate (No. 57 stone).

- ** **NOTE** ** Deleted bullet on Class B rip rap plating requirements

- Where the organic content exceeds 10% by weight, within the construction limits of new embankments and existing embankments to be raised, undercut all organic soils to at least the slope stake line(s).

- Calculate and report estimated settlement and rate of settlement at bridge approach embankments within 250 feet of end bents. Add wait periods, settlement monitoring, and soil improvement techniques that keep long term settlements equal to or less than one inch prior to performing fine grading of the subgrade.

- A minimum of two embankment settlement gages shall be required at each end bent when a waiting period of more than one month is recommended in the foundation design recommendation reports developed by the Design-Build Team. Install settlement plates at least one foot below original grade and begin monitoring prior to placing first lift of the embankment.

- Calculate and report estimated settlement and rate of settlement for roadway embankments. Add wait periods, settlement monitoring, and soil improvement techniques that keep long term settlements equal to or less than four inches prior to performing fine grading of the subgrade.

- Where computed settlement is greater than six inches in roadway embankments, monitor settlement across the width of the embankment at a maximum spacing interval of 250 feet using settlement gages or other approved methods.

- Soil improvement techniques that mitigate long term settlement problems or transfer the embankment load to a deeper bearing stratum are acceptable means to accelerate construction. All soil improvement techniques shall follow the current industry standard practices and the guidelines of *Ground Improvement Methods FHWA publication NHI-04-001* or *Geosynthetic Design and Construction Guidelines FHWA-HI-95-038.*

- Mitigate all unsuitable soils to the extent required to improve the stability of the proposed embankment, walls, or subgrade. Use any suitable material to backfill undercut areas except when employing shallow undercut in accordance with Section 505 of the NCDOT 2018 *Standard Specifications for Roads and Structures* which requires the use of Select Material, Class IV. For undercut backfilling in water, use Select Material, Class III.

- ** **NOTE** ** Deleted bullet on top half of new embankment requirements.

- Conduct proofrolling in accordance with Section 260 of the 2018 *Standard Specifications for Roads and Structures*. A minimum load capacity of 35 tons shall be required. In areas where proofrolling fails or is not practical, the Engineer will conduct DCP testing in accordance with the following:

    - Where Type 1 aggregate subgrade is required, the Engineer will conduct DCP testing on the soils beneath the Type 1 aggregate subgrade at a spacing of 100 feet when the Design-Build Team has notified the Department that the aggregate subgrade location has been prepared for geotextile for

pavement stabilization placement (Reference the Pavement Management Scope of Work, the *Aggregate Subgrade* Standard Special Provision, and the *Geotextile For Pavement Stabilization* Project Special Provision found elsewhere in this RFP). If the DCP tests indicate poor soils beneath the required 12-inch Type 1 aggregate subgrade, the Engineer will provide direction to increase the thickness of the Class IV subgrade stabilization prior to placing the geotextile for pavement stabilization. Payment of the additional Type 1 aggregate subgrade (below the 12 inches required) will be paid for as extra work in accordance with Subarticle 104-8(A) of the 2018 *Standard Specifications for Roads and Structures* at the unit price of $50.00 per cubic yard (in place volume). This payment will be considered full compensation for the additional subgrade undercut, removal and proper disposal of the undercut material, and the placement and compaction of the additional Class IV subgrade stabilization below 12 inches.

- Where Type 1 aggregate subgrade is not required, the Engineer will conduct DCP testing on the soils beneath the pavement base at a spacing of 100 feet when the Design-Build Team has notified the Department a location has been prepared (Reference the Pavement Management Scope of Work found elsewhere in this RFP). If the DCP tests indicate poor soils beneath the pavement base, the Engineer will provide direction to undercut and place Class IV subgrade stabilization. Payment of the Class IV subgrade stabilization for these undercut areas will be paid for as extra work in accordance with Subarticle 104-8(A) of the 2018 *Standard Specifications for Roads and Structures* at the unit price of $50.00 per cubic yard (in place volume). This payment will be considered full compensation for the subgrade undercut, removal and proper disposal of the undercut material, and the placement and compaction of the Class IV subgrade stabilization.

C. Permanent Retaining Wall Structures

- Retaining walls or abutment walls will not be allowed at stream crossings or where more than five feet of scour is calculated at the base of the wall.

- For design and construction of mechanically stabilized earth (MSE) retaining walls, refer to the NCDOT *Policy for Mechanically Stabilized Earth Retaining Walls* which can be found at the NCDOT Geotechnical Engineering Unit's website at:

  https://connect.ncdot.gov/resources/Geological/Pages/Products.aspx

- With the exception of walls covered by a Roadway Standard Drawing, design and construct permanent retaining walls in accordance with the applicable NCDOT *Standard Specifications for Roads and Structures* or Geotechnical Engineering Unit Project Special Provisions, which can be provided upon request by the Design-Build Team. Geotechnical Provisions and Notes can be found at the NCDOT Geotechnical Engineering Unit's website at:

https://connect.ncdot.gov/resources/Geological/Pages/Geotech_Provisions_Notes.aspx

- Submit a wall layout and design for each retaining wall. The wall layout submittal shall include at least the following.
    - Wall envelope with top of wall, bottom of wall, existing ground, and finished grade elevations at incremental stations
    - Wall alignment with stations and offsets
    - Typical sections showing top and bottom of wall, drainage, embedment, slopes, barriers, fences, etc.
    - Roadway plan sheets showing the wall (half size)
    - Roadway cross sections sheets showing the wall (half size)
    - Traffic Control Plans showing the wall (half size)

- For project retaining walls requiring a design not covered by a Roadway Standard Drawing, the wall layout submittal shall also include the following.
    - Calculations for sliding, overturning, bearing capacity, global stability, and settlement
    - Details of conflicts with utilities and drainage structures

- Locate retaining walls at toes of slopes unless restricted by right of way limits. The Design-Build Team shall submit global stability calculations for slopes at retaining walls and obtain acceptance from the NCDOT prior to construction. Excluding slopes at bridges, as defined under the Structure Foundations Section above, all slopes behind walls shall be 3:1 (H:V) or flatter.

- Drainage over the top of retaining walls and sags in the top of walls shall not be allowed. Direct runoff above and below walls away from walls, if possible, or collect runoff at the walls and transmit it away. Curb and gutter or cast-in-place single faced barrier with paving up to the wall shall be required when runoff cannot be directed away from the back or front of the wall. In accordance with the NCDOT Roadway Design Manual – Section 6-7A, Figure 3, the Design-Build Team shall design and construct a paved concrete ditch, with a minimum 12-inch depth, at the top of all retaining walls with slopes draining towards the wall, and a four-foot bench between the wall and fill / cut slopes steeper than 6:1 (H:V).

- Precast or cast-in-place coping shall be required for walls without a cast-in-place face with the exception of when a barrier is integrated into the top of the wall. Extend coping or cast-in-place face a minimum of 12 inches above where the finished or existing grade intersects the back of the wall.

- Provide a six-foot chain-link fence or handrail, as directed by the Engineer, on top of the facing, coping or barrier, or immediately behind, all proposed walls and

existing walls to remain in place that are a minimum of 30.0" tall and will not have a slope behind the wall in the final condition.

- When using abutment retaining walls with deep foundations, the end bent deep foundation shall be designed and constructed with one of the following.
    - A single row of plumb piles with brace piles battered toward the wall
    - A single row of plumb piles with MSE reinforcement connected to the back of the cap
    - An integral abutment with a single row of plumb piles and no reinforcement connected to the back of the cap in accordance with FHWA GEC 11 pages 6-8 through 6-10
    - Drilled piers

- All deep foundations for end bents with abutment retaining walls shall extend a minimum of ten feet below the retaining wall foundation or leveling pad. For drilled-in piles behind such retaining walls, the penetration can be reduced to five feet below the bottom of the wall provided the Design-Build Team analyzes and determines that the vertical piles are "fixed" in natural ground such that the decrease in pile embedment shall not significantly increase the top deflection under lateral loading. The calculations and supporting documentation for this analysis shall be submitted to the NCDOT for review and acceptance prior to construction.

D. Temporary Structures

- Design temporary retaining structures, which include earth retaining structures and cofferdams, in accordance with current allowable stress design AASHTO *Guide Design Specifications for Bridge Temporary Works*, the *Temporary Shoring* Standard Special Provision found elsewhere in this RFP and the applicable NCDOT Project Special Provisions available upon request by the Design-Build Team. The only submittal required to use the standard sheeting design is the "Standard Shoring Selection Form".

- Traffic control barrier on top of walls shall be in accordance with the NCDOT Work Zone Traffic Control Unit details available upon request by the Design-Build Team. If anchored barrier is required, then anchor the barrier in accordance with NCDOT 2018 Roadway Standard Drawing No. 1170.01.

III. ADDITIONAL CONSTRUCTION REQUIREMENTS

- The Design-Build Team shall investigate, propose, and submit proposed remedial measures to the NCDOT Geotechnical Engineering Unit for review and acceptance (prior to incorporating recommended remedial measures into the project) for any construction problems related to the following.

  - Foundations
  - Retaining walls
  - Sound barrier walls
  - Subgrades
  - Settlement
  - Slopes
  - Construction vibrations

- The prequalified geotechnical firm which prepares the foundation designs shall review and approve all pile driving hammers and drilled pier construction sequences. After the prequalified geotechnical firm has approved these submittals, the Design-Build Team shall submit them to the NCDOT for review and acceptance prior to beginning construction. Hammer approvals should be submitted prior to performing any pile driving and shall be performed using GRLWEAP Version 2010 or later.

- The prequalified geotechnical firm which prepares the original foundation designs shall be responsible for any necessary changes to the foundation designs revising analysis, recommendations, and reports as needed. All changes shall be based upon additional information, subsurface investigation and / or testing. Send copies of revised designs, including additional subsurface information, calculations and any other supporting documentation to the NCDOT for review and acceptance.

- The prequalified geotechnical firm which prepares the embankment design for a bridge or roadway fill shall review any necessary settlement monitoring data at least weekly and provide monthly updates to the NCDOT geotechnical engineering unit. This same firm will issue a release letter ending the wait period for an embankment fill once the settlement criteria listed elsewhere in this RFP is met. Settlement monitoring data and recommendations should be submitted to the Design-Build Unit for review and acceptance prior to issuing a release letter.

- The Design-Build Team shall be responsible for any damage and / or claim caused by construction, including but not limited to damage caused by vibration (see Article 107-14 of the NCDOT 1018 Standard Specifications for Roads and Structures). The Design-Build Team shall be responsible for deciding if any pre- and post-construction monitoring and inventories need to be conducted. Any monitoring and inventory work shall be performed by a prequalified consulting firm.

- Prequalification of contractors is not required for pile excavation or drilled-in pile holes that are 30 inches in diameter or less. Class A concrete or grout shall be required to backfill holes for drilled-in piles.

- Use Pile Driving Analyzer (PDA) testing on a minimum of two production piles for each pile size and type for each bridge with driven piles using the approved hammer driving system for the pile. Changes in hammer driving systems and / or

additional similar hammer driving systems would require additional PDA testing. Additional PDA testing may be warranted based on AASHTO *LFRD Bridge Design Specifications* and should be recommended as needed by the geotechnical foundation design engineer and submitted to the NCDOT for review and acceptance.

- The PDA Consultant shall perform PDA testing, provide PDA reports, and develop pile driving criteria. All recommendations shall be submitted to NCDOT for review and acceptance prior to driving any production piles at the applicable bridge.

- For drilled piers the following shall apply.

    - Use current NCDOT inspection forms for drilled piers available on the NCDOT Geotechnical Engineering Unit's webpage. Construct and inspect drilled piers in accordance with Section 411 of the 2018 NCDOT *Standard Specifications for Roads and Structures* and the *Drilled Piers* Project Special Provision located on the NCDOT Geotechnical Engineering Unit's website.

    - The Department will inspect drilled piers using the Shaft Inspection Device (SID) for any pours using the wet method of concrete placement and for any drilled pier excavations that cannot be visually inspected or have remained open longer than 24 hours that cannot be dewatered due to unstable soil or rock.

    - The Design-Build Team shall notify Matt Hilderbran, PE by e-mail (mrhilderbran@ncdot.gov) a minimum of five days prior to required SID testing, followed by a confirmation two days prior to required SID testing. The Design-Build Team shall notify Matt Hilderbran of all SID testing cancellations as soon as possible at the e-mail address noted above and at (919) 329-4015.

    - Install Crosshole Sonic Logging (CSL) tubes in all drilled piers. CSL test a minimum of 25% of drilled piers at each bridge or one per bent, whichever is greater. If a CSL test identifies any defect in the drilled pier, the Department has the right to request additional CSL testing and / or tomography as needed. The Department will determine which piers will be CSL tested. Submit CSL and tomography test information and results to the Geotechnical Engineering Unit, via the Design-Build Unit, for review and acceptance.

    - Drilled pier tip elevations shall not be changed during construction unless the prequalified geotechnical firm which prepares the bridge foundation design redesigns the drilled pier from either an SPT / rock core boring, performed in accordance with ASTM standards at the subject pier location, or observations of the drilled pier excavation. If a drilled pier is designed

based on a boring, do not drill a boring inside an open drilled pier excavation. Locate the boring within three pier diameters of the center of the subject pier and drill to a depth of two pier diameters below the revised tip elevation. If a drilled pier is redesigned based upon observations of the drilled pier excavation, the geotechnical engineer of record shall be present during the excavation to determine the actual subsurface conditions.

- The geotechnical grade point shall be defined as the location where the proposed subgrade and natural ground intersect. At all geotechnical grade points, the Design-Build Team shall undercut the existing soils within two feet of the bottom of the proposed subgrade in accordance with the requirements below.
    - The undercut shall extend along the profile to a point where the elevation difference from the bottom of the proposed subgrade to natural ground is greater than two feet, or to 25 feet on each side of the geotechnical grade point, whichever is less.
    - The lateral extent of the undercut shall extend to a point where the elevation difference from the bottom of the proposed subgrade to natural ground is greater than two feet or to one foot outside of the paved shoulder / face of curb of the proposed roadway typical section, whichever is less.
    - The base of the undercut shall parallel the proposed subgrade.
- Send copies of any inspection forms related to foundations, settlement, sound barrier walls, or retaining wall to the NCDOT for review.

HYDRAULICS SCOPE OF WORK (6-21-19)

Project Details

- The Design-Build Team shall employ a private engineering firm to perform hydraulic design for all work required under this contract. The private engineering firm must be prequalified for Tier II hydraulic design work under the Department's normal prequalification procedures prior to the Technical Proposal submittal date.

- The Design-Build Team shall hold a pre-design meeting with the Design-Build Unit and Hydraulics Review Engineer upon acceptance of the Preliminary Roadway Plans developed by the Design-Build Team.

Storm Drainage System Design

- The Design-Build Team shall design all storm drainage systems using Geopak Drainage, including but not limited to incorporating discharges from allowable routing programs.

- Raised median island cuts will not be allowed.

- Slotted concrete median barrier will not be allowed for permanent installations.

- All drainage system improvements shall be contained within the right of way. When tying directly to existing downstream systems located outside the right of way that are hydraulically deficient during the design storm, the Design-Build Team shall provide an OTCB or 2GI within the right of way limits.

- The Design-Build Team shall use a minimum ditch grade of 0.3% and avoid constructing ditches in wetlands.

- At a minimum, the Design-Build Team shall install traffic bearing grated drop inlets with steel frames and flat steel grates at the following locations:

  - Within a temporary travel lane

  - Within four feet of a temporary and / or permanent travel lane

- Existing and proposed longitudinal pipe (trunkline) shall not be located beneath the proposed roadway travel lanes.

- The Design-Build Team shall provide additional outlet protection at all pipe outlets with a ten-year partial flow velocity greater than 15 fps. The aforementioned outlet protection shall mitigate erosive velocities to receiving downstream channels.

Hydraulic Spread

- The hydraulic spread shall not encroach into any operational lane beyond the limits noted below:

  - For roadways, the hydraulic spread shall not exceed the values specified in Table 10-1 of the current North Carolina Division of Highways *Guidelines for Drainage Studies and Hydraulics Design*.

  - For shoulder facilities, including those with expressway gutter and shoulder berm butter, the hydraulic spread shall not encroach into a permanent travel lane and shall not encroach more than two feet into an operational temporary travel lane.

  - For bridges on alignments with design speeds greater than 45 mph, the hydraulic spread shall not encroach into an operational permanent or temporary through lane on a bridge. The hydraulic spread shall not encroach more than a distance that equals half the lane width or six feet, whichever is less, into an operation permanent or temporary exclusive turn lane.

  - For bridges on alignments with design speeds equal to or less than 45 mph, the hydraulic spread shall not encroach more than four (4) feet into an operational permanent or temporary through lane or exclusive turn lane.

  - For existing bridges with no alteration to the travel lanes or shoulders (location and / or widths), hydraulic spread will be allowed to encroach into an operational travel lane to an extent equal to that present in the existing (pre-project) conditions.

- The Design-Build Team shall analyze spread for all bridges identified in the Structures Scope of Work found elsewhere in this RFP and, as necessary, provide mitigation that adheres to the hydraulic spread requirements noted above. If required, the Design-Build Team shall adhere to the bridge drainage system requirements noted below:

  - The Design-Build Team shall design bridge drainage without the use of bridge scuppers (open-grated inlets) or closed / suspended drainage systems. If deck drains are used on the bridge, they shall be vertical pipes at the flow line through the deck with no elbow and shall be consistent with that shown in the current NCDOT Stormwater Best Management Practices Toolbox.

  - The Design-Build Team shall use 4" deck drains adjacent to pedestrian facilities.

  - The Design-Build Team shall provide bridge drainage features that prevent direct discharge into waterways or onto any existing / future greenway, travel lane or paved shoulder.

  - The maximum allowable deck drain spacing shall be 12-foot on center.

Hydroplaning Analysis

- Excluding areas that the Design-Build Team will be uniformly overlaying the existing pavement structure, the Design-Build Team shall perform a hydroplaning risk assessment and, as necessary, provide mitigation that minimizes hydroplaning risk for all new and existing roadways within the construction limits. (Reference the Roadway and Pavement Management Scopes of Work found elsewhere in this RFP). The Design-Build Team shall include a brief summary of the I-95 hydroplaning risk assessment in the Technical Proposal.

- The Design-Build Team shall utilize one of the following methods to perform the hydroplaning risk assessment:

  - *Hydraulic Engineering Circular 22*, 3rd Edition, 2009

  - *AASHTO Highway Drainage Guidelines*, 2007

  - *AASHTO Drainage Manual*, 2014

  - *GDOT Drainage Design for Highways*, 2017

  - *FDOT Hydroplaning Risk Analysis Design Guidance*, HP Program, 2014

- The Design-Build Team shall give particular attention to areas with zero super elevation in a crest and / or sag vertical curve, and reversal points.

- The Design-Build Team shall develop a Final Design Hydroplaning Risk Assessment Report that shall be included with the Preliminary Roadway Plans submittal for the Department's review and acceptance.

- In addition to Final Design Hydroplaning Risk Assessment Report, the Design-Build Team shall develop a Construction Hydroplaning Risk Assessment and Mitigation Plan Report that shall be included with the Traffic Control Plans submittal for the Department's review and acceptance. The aforementioned Report shall identify a process that evaluates and avoids concentrated flow across travel lanes where speeds are in excess of 45 mph during construction phasing. (Reference the Transportation Management Scope of Work found elsewhere in this RFP)

Stormwater Management

- In accordance with the NCDOT Stormwater Best Management Practices Toolbox and the NCDOT Post-Construction Stormwater Program, effective on the Technical Proposal submittal date, the Design-Build Team shall develop a Stormwater Management Plan that, at a minimum, demonstrates the following:

  - To the maximum extent practicable, stormwater runoff shall be diverted away from surface waters.

- To the maximum extent practicable, on-site stormwater control measures shall be employed to minimize water quality impacts.

- Underground detention will not be allowed. No additional right of way will be acquired solely for stormwater management.

- In accordance with the *Guidelines for Drainage Studies and Hydraulics Design*, including all addenda, memos and revisions, the Design-Build Team shall prepare Outlet Analyses for the increases in discharge due to the proposed project and take appropriate action to ensure that any increases are appropriately mitigated. Such mitigation measures shall first consider long-term maintenance of the proposed mitigation. Except as otherwise noted, improvements to receiving channels shall be implemented before implementing any basin type structures.

- Direct connections from impervious surfaces to the receiving waters shall be minimized to the maximum extent practicable.

Drainage Structures

Throughout this RFP, the term *drainage structures* shall include box culverts, cross pipes, drainage boxes and storm drainage systems.

- Unless allowed otherwise elsewhere in this RFP, the Design-Build Team shall replace **all** existing pipes within the existing / proposed right of way of the mainline, and all -Y- Lines, service roads, ramps, loops and interchange quadrants with the appropriate pipe type, in accordance with the *Drainage Pipe* Project Special Provision found elsewhere in this RFP.

- Unless allowed otherwise elsewhere in this RFP, the Design-Build Team shall replace **all** existing drainage boxes with the appropriately sized drainage box.

- Unless allowed otherwise elsewhere in this RFP, the Design-Build Team shall replace **all** existing box culverts with the appropriately sized reinforced concrete box culvert.

- Unless required otherwise elsewhere in this RFP, the Design-Build Team will not be required to replace drainage structures within construction limits that consist solely of 1) a uniform overlay or 2) a uniform overlay with guardrail replacement. The Design-Build Team will not be required to analyze, supplement or replace drainage structures within construction limits that consist solely of pavement marking obliterations and / or revisions.

- The Design-Build Team shall not install permanent elliptical pipe. Elliptical pipe will only be allowed in temporary conditions and all elliptical pipe shall be removed prior to final project acceptance.

- Within the existing / proposed right of way, the Design-Build Team shall analyze the existing drainage structures on the following facilities for hydraulic and structural deficiencies:

- Excluding the reinforced concrete box culvert on I-95 at approximately Station 42+00 -L-, on I-95 from the southern limits of I-5986A to the beginning of the eight-lane section, including all ramps and loops
- Excluding all drainage structures under I-95, on NC 295 / US 13 west of the existing SR 1863 (Pembroke Lane) / US 13 intersection, including all ramps and loops
- Excluding all drainage structures under the I-95 Business southbound exit ramp and entrance loop at Dunn Road (US 301), on sections of facilities that are uniformly overlaid, including but not limited to areas that consist of a uniform overlay with guardrail replacement

Using the hydraulic discharges for the future build-out land use projections and the **50-year frequency**, existing drainage structures that do not adhere to the requirements in Sections 9.5.1.3 and 9.5.2.3 of the *Guidelines for Drainage Studies and Hydraulic Design*, including all addenda, memos and revisions, and / or the freeboard and HW/D requirements noted below, shall be deemed hydraulically deficient. Based on these analyses, the following shall be adhered to:

- In accordance with the requirements below, the Design-Build Team shall provide the appropriate hydraulic mitigation for 1) all hydraulically deficient drainage structures and 2) all hydraulically and structurally deficient drainage structures, including but not limited to replacement.
    - For major hydraulic crossings (crossings with a hydraulically effective waterway opening of thirty (30) square feet or more, excluding any area that is buried below the streambed) located within construction limits that consist solely of 1) a uniform overlay or 2) a uniform overlay with guardrail replacement, the Design-Build Team will be allowed to mitigate hydraulic deficiencies, and hydraulic and structural deficiencies with a single supplemental pipe. If a single supplemental pipe will not provide the appropriate mitigation, in the Department's sole discretion, the Design-Build Team shall 1) remove and dispose of the existing hydraulically, or hydraulically and structurally deficient box culvert(s) and / or pipe(s) and 2) replace the aforementioned box culvert(s) and / or pipe(s) with a single reinforced concrete box culvert that consists of three maximum barrels.
    - For all other hydraulic crossings, the Design-Build Team will be allowed to mitigate hydraulic deficiencies, and hydraulic and structural deficiencies with a single supplemental pipe. If a single supplemental pipe will not provide the appropriate hydraulic mitigation, in the Department's sole discretion, the Design-Build Team shall 1) remove and dispose of the existing hydraulically, or hydraulically and structurally deficient box culvert(s) and / or pipe(s) and 2) replace the aforementioned box culvert(s) and / or pipe(s) with a single reinforced concrete box culvert, that consists of three maximum barrels, or a single pipe.
    - Inlet improvements outside of the right of way shall not be allowed to mitigate for hydraulically deficient box culverts and / or pipes.

- Based on build-out discharges, the Design-Build Team shall identify all hydraulically deficient drainage structures and note their proposed mitigation in the Technical Proposal. At a minimum, in the Technical Proposal, Volume II, the Design-Build Team shall 1) identify all hydraulically deficient storm drainage systems and the proposed mitigation on the plans and 2) provide a *Box Culverts and Cross Pipes Hydraulic Deficiency Assessment and Proposed Mitigation Table* that contains the box culvert and cross pipe attributes noted below:

  - Station
  - Existing Box Culvert / Cross pipe Details
  - Drainage Area
  - Percent impervious or "C" value used
  - Discharge method used
  - Build-out discharges (Design year and 100 year)
  - Hydraulically Deficient (Yes / No) for Build-out Discharges
  - Proposed Mitigation Structures(s) Details
  - HW/D for Build-out Discharges at Existing Structure without Mitigation
  - HW/D for Build-out Discharges at Existing Structure with Mitigation
  - Hydraulic Freeboard at Sag for Build-out Discharges at Existing Structure without mitigation
  - Hydraulic Freeboard at Sag for Build-out Discharges at Existing Structure with mitigation
  - HW/D for Build-out Discharges for Mitigation Structure(s)
  - Hydraulic freeboard at Sag for Build-out Discharges at Mitigation Structure(s)
  - Comments

- To ensure that all pipes and box culverts retained for drainage purposes are structurally sound, the Design-Build Team shall provide appropriate documentation, in the Department's sole discretion, for the Department's review and approval prior to any hydraulic design submittal. At a minimum, the aforementioned documentation shall include a video inspection of each pipe and box culvert retained for drainage purposes, and a corresponding inspection report. The video inspection shall be performed with a Closed Circuit Television Video (CCTV) steerable pipe crawler / rover that is tethered to a cable reel and capable of capturing 360° views from within the pipe or box culvert. The inspection report shall identify the elements noted below for each pipe and box culvert retained for drainage purposes:

  - Structural integrity of each joint, in its entirety, including but not limited to joint failure, joint separation and joint offsets
  - Longitudinal, transverse circumferential and multi-directional cracking
  - Spalling
  - Seepage and infiltration into the pipe
  - Pipe failures, including but not limited to deferential settlement, material deformation and puncture holes

The Design-Build Team shall also provide the location of each item noted above, as measured from the outlet end of the pipe. If, for any reason, the video inspection or report is incomplete or inconclusive, the Design-Build Team shall perform another inspection and develop another report at no additional cost to the Department. Prior to performing any storm drain clean-out required for the aforementioned video inspections, the Design-Build Team shall obtain approval from the Engineer. In accordance with Subarticle 104-8(A) of the 2018 *Standard Specifications for Roads and Structures*, required storm drain clean-out will be paid for as extra work.

- As directed by the Engineer, the Design-Build Team shall provide the appropriate structural mitigation for all structurally deficient box culverts and / or pipes. Structural mitigation, for structural deficiencies in box culverts and / or pipes, including but not limited to all repairs, will be paid for as extra work in accordance with Subarticle 104-8(A) of the 2018 *Standard Specifications for Roads and Structures*.

- Post Award, the Design-Build Team shall analyze the existing reinforced concrete box culverts on I-95 at approximately Station 42+00 -L- and on SR 1832 (Murphy Road) that carry Reese Creek for the 50-year and 100-year design storms. The analysis shall include a determination of the existing freeboard for both storm events. For those storms that the freeboard is less than 1.5', as measured from the shoulder point, the Design-Build Team shall develop a preliminary design that supplements and / or replaces the existing reinforced concrete box culverts to achieve the required 1.5' freeboard. The Department will determine if either preliminary design will be carried forward to final design and construction. The Design-Build Team shall include all costs associated with the aforementioned analysis and preliminary designs in the lump sum price bid for the entire project. In accordance with Subarticle 104-8(A) of the *Standard Specifications for Roads and Structures*, all final design and construction costs required to mitigate the existing freeboard deficiency will be paid for as extra work. The Design-Build Team will not be required to include the analysis or preliminary design in the Technical Proposal.

- The Design-Build Team shall develop discharges for all drainage structures based upon the future build-out land use projections. At a minimum, the Design-Build Team shall assume a level of future urbanization with a percent impervious area of at least 25%. The Design-Build Team shall not include the effects of storage when computing discharges for hydraulic design and analysis for areas less than 50% impervious. For drainage areas where impervious surfaces are greater than 50%, routing will be allowed. EPA SWMM, USACE HMS, Win TR-20, HydroCADD or equivalent are acceptable programs for routing. A storm drainage duration of 24 hours shall be used in developing the hydrograph.

- Revise the *Guidelines for Drainage Studies and Hydraulic Design as follows:*

  - Table 7-1, Peak Discharge Design Frequency

    - Design frequency for Temporary / Detours, Storm Drain System on Grade shall be ten years.

- Design frequency for Temporary / Detours, Storm Drain System at Sags (without relief) shall be 25 years.

- Table 7-2, Peak Discharge Method Selection
  - Rational Method is acceptable up to the lower limit of the applicable USGS methods.
  - Delete the NCDOT Hwy. Hydrologic Charts column

- Delete Appendix C - NCDOT Hydrologic Charts

- Excluding 1) new drainage structures on I-95 and I-95 ramps / loops, from the southern limits of I-5986A to the beginning of the eight-lane typical section, 2) new drainage structures on NC 295 / US 13, and existing NC 295 / US 13 ramps / loops, west of the existing SR 1863 (Pembroke Lane) / US 13 intersection, and 3) new drainage structures on sections of existing facilities that are uniformly overlaid, including but not limited to areas that consist of a uniform overlay with guardrail replacement, for new drainage structures, Table 7-1, Design Frequency
  - Along the mainline, replace the 50-year frequency for Bridges, Culverts and Cross Pipes with a 100-year frequency
  - Along the mainline, replace the 50-year frequency for Storm Drain Systems at Sags (without relief) with a 100-year frequency

- Section 8.5.2.8 Freeboard
  - Delete the second bullet and replace with the following statement:

    All existing bridges to be replaced with new bridges shall adhere to the freeboard requirements for new location bridges.

- Section 15.6 Temporary Encroachment in Regulatory Floodway
  - Section 15.6 is not applicable on this project. The Design-Build Team shall assume all liability for any flood damages resulting from the temporary encroachment.

- For all proposed box culverts and pipes, a minimum 1.5-foot freeboard shall be required below the shoulder point during the design storm. The Design-Build Team shall not steepen slopes, reduce easements and / or reduce right of way solely to obtain the aforementioned freeboard requirement.

- A maximum HW/D = 1.2 shall not be exceeded for all proposed box culverts and pipes during the design storm.

- All storm drainage systems shall maintain a hydraulic grade line that is a minimum of 0.5 feet below the inlet rim elevation or top of junction box; and shall adhere to all other requirements as identified in Chapter 10 of the *Guidelines for Drainage Studies and Hydraulic Design*.

- In the Technical Proposal, Volume II, the Design-Build Team shall provide a *Box Culverts and Cross Pipes Hydraulic Assessment Table* that contains the attributes noted below for all new box culverts and cross pipes 18" in diameter or greater:

  - Station
  - Proposed drainage structure details
  - Drainage Area
  - Percent Impervious or "C" value used
  - Discharge method used
  - Built-Out Discharges (Design Year and 100 Year)
  - FEMA Crossing (Yes / No)
  - Water Surface Elevation Natural Condition
  - Water Surface Elevation with Drainage Structure
  - HW/D for Build-out Discharges
  - Hydraulic Freeboard for Build-out Discharges
  - Comments

- If the I-95 crown point must be raised more than 12.0 inches solely to accommodate a single line of pipe, the Design-Build Team may install a dual line of pipes in accordance with the requirements noted below:

  - Maximum size for a single line of pipe shall be 72 inches in diameter, including but not limited to pipes that are upsized to allow for a buried inlet / outlet condition.
  - Minimum size for a dual line of pipes shall be the existing pipe size diameter or 24 inches in diameter, whichever is greater, including but not limited to pipes that are upsized to allow for a buried inlet / outlet condition.
  - Maximum size for a dual line of pipes shall be 54 inches in diameter, including but not limited to pipes that are upsized to allow for a buried inlet / outlet condition.

- For all cross structures requiring a hydraulically effective waterway opening of thirty square feet or more, excluding any area that is buried below the streambed, a reinforced concrete box culvert shall be required. The minimum reinforced concrete box culvert barrel height (inside dimension) shall be six feet, with a minimum six-foot clear opening height above the streambed. The minimum reinforced concrete box culvert barrel width (inside dimension) shall be six feet.

- Except as allowed otherwise elsewhere in this RFP, cross drainage shall be conveyed with a single drainage structure (pipe or box culvert). More than two lines of pipe and / or more than three box culvert barrels serving the same watershed shall not be allowed. In accordance with the requirements found elsewhere in this RFP, supplemental pipes shall only be allowed on the following facilities:

  - On I-95 from the southern limits of I-5986A to the beginning of the eight-lane typical section, including all ramps and loops

- Excluding beneath I-95 and proposed I-95 ramps and loops, on NC 295 / US 13 west of the existing SR 1863 (Pembroke Lane) / US 13 intersection, including all existing ramps and loops
- On SR 1814 (J. T. Matthews Road)
- On sections of facilities that are uniformly overlaid, including but not limited to areas that consist of a uniform overlay with guardrail replacement

- Unless noted otherwise elsewhere in this RFP, the Design-Build Team shall remove or fill with flowable fill all existing pipes.

- All proposed drainage boxes, including but not limited to catch basins, drop inlets and junction boxes, shall have a grate or manhole access.

Permit Coordination

- The Design-Build Team shall conduct an interagency hydraulic design review meeting and an interagency permit impacts meeting prior to the final submittal of the environmental permit applications. (Reference the *Environmental Permits Scope of Work* found elsewhere in this RFP.) All work resulting from the interagency hydraulic design review meeting and the interagency permit impacts meeting shall be the Design-Build Team's responsibility. A minimum of five weeks prior to the appropriate interagency meeting, the Design-Build Team shall provide 1) hydraulic plans and 2) permit drawings, calculations, and impact sheets for the USACE 404 Permit and the NCDWR Section 401 Certification to the Design-Build Unit. The Design-Build Team shall take minutes of the interagency hydraulic design review meeting and the interagency permit impacts meeting, and provide them to the Department within three business days of the aforementioned meetings.

FEMA Regulated Streams

- For all FEMA regulated streams impacted by the Design-Build Team's design and / or construction, the Design-Build Team shall adhere to the current *Guidelines for Drainage Studies and Hydraulics Design*, including all addenda, memos and revisions, and the following requirements:

  - The Design-Build Team shall prepare a CLOMR or MOA package for the Department's submittal to the North Carolina Floodplain Mapping Program (NCFMP). The Design-Build Team shall obtain NCFMP approval prior to performing any construction activity in a FEMA regulated floodplain.

  - Where a CLOMR is required, the spanning structure shall be designed such that only 0.5 feet of rise occurs between the Corrected Effective and the Revised Conditions for the 100-year water surface elevation.

  - The Design-Build Team shall notify the Design-Build Unit, in writing, of all structures that may require purchase due to an increase in the 100-year water surface elevation. The Department will be responsible for all surveys to ascertain insurable structures within the

impacted area of the floodplain(s). The Design-Build Team shall discuss the extent and limits of the rise in water elevation in the floodplain(s), identify potentially impacted insurable structures, specify areas anticipated to require additional surveys and estimate the anticipated additional right of way impacts outside the project construction limits in the Technical Proposal. (Reference the Right of Way Scope of Work found elsewhere in this RFP.)

- The Department will be responsible for all fees associated with the CLOMR(s) and / or MOA(s).

- The Design-Build Team shall ensure that construction and / or removal of all structures in FEMA regulated floodplains adheres to the approved CLOMR(s) and / or MOA(s). Within three months of completion of work in a FEMA-regulated floodplain, the Design-Build Team shall provide As-Built Plans of the site, and a completed As-Built Certification Review Form that verifies construction adheres to the approved CLOMR(s) and / or MOA(s).

- The Design-Build Team shall prepare a new FEMA model and / or package and be responsible for all associated costs resulting from any construction variation from the approved CLOMR(s) and / or MOA(s).

- The Department will allow no direct contact between the Design-Build Team and the NCFMP representatives. No contact between the Design-Build Team, the NCFMP and / or personnel under contract with NCFMP shall be allowed by phone, e-mail, or in person, without Department representatives present. A representative from the Design-Build Unit shall be included on all correspondence.

- Temporary impacts due to construction and / or on-site detour traffic that 1) last longer than one year and / or 2) encroach into the floodway, shall be reviewed by the Design-Build Team for changes in the water surface elevations that could impact structures or have adverse impacts to the surrounding property. The results of the review shall be submitted to the Hydraulics Unit in a report format for the Department's coordination with NCFMP.

General

- The Design-Build Team's design shall be in accordance with the information on the following website, the version of the following references effective on the Technical Proposal submittal date, and the contract requirements contained herein:

  - The North Carolina Division of Highways Hydraulics Unit website:

    https://connect.ncdot.gov/resources/hydro/pages/default.aspx

  - The North Carolina Division of Highways *Guidelines for Drainage Studies and Hydraulics Design*, including all addenda, memos and revisions, excepted as may be amended herein

- The NCDOT *Best Management Practices for Construction and Maintenance Activities*
- The NCDOT *Stormwater Best Management Practices Toolbox*
- The NCDOT *Post-Construction Stormwater Program*
- The NCDOT *Design-Build Submittal Guidelines*

In case of conflicting design parameters, and / or ranges, in the various resources, the proposed design shall adhere to the *Guidelines for Drainage Studies and Hydraulics Design*, including all addenda, memos and revisions, unless noted otherwise elsewhere in this RFP.

ITS SCOPE OF WORK (7-1-19)

GENERAL

A pre-design meeting shall take place between the NCDOT ITS Section, the Design-Build Team, the Division Traffic Engineer, the Regional Traffic Engineer, Statewide Transportation Operations Center (STOC) Engineer and any other pertinent NCDOT personnel before ITS designs begin. The pre-design meeting shall, at a minimum, address equipment types, intended placement locations and scheduled installation and removal of devices, as well as the use of any portable equipment intended for the purpose of meeting the requirements of an ITS system. ITS Plan submittals shall only be reviewed and accepted by the NCDOT ITS Section after this pre-design meeting.

The Design-Build Team shall coordinate with the Division Traffic Engineer, the Regional Traffic Engineer, the STOC Engineer and the Integrated Corridor Management (ICM) Team throughout the project duration.

Design, furnish, and install new ITS devices within the project limits. Integrate the new DMS and CCTV devices into the existing computer and network hardware and software at the NCDOT Division 6 Traffic Services center at 558 Gillespie Street, Fayetteville, NC 28301 and the STOC at 1636 Gold Star Drive, Raleigh NC 27607. Major items of work include, but are not limited to, the following:

- Install Twelve (12) New Closed-Circuit Television Cameras (CCTV)
- Install Five (5) New Dynamic Message Signs (DMS) on pedestal structures
- Removal of Two (2) Over-Height Vehicle Warning Systems
- Junction boxes (Electrical and Oversized)
- Wood Poles
- Electrical service equipment
- Temporary / portable CMS and CCTV assemblies as identified herein

Furnish and install guardrail to protect permanent ITS devices and temporary concrete traffic barrier to protect temporary ITS devices, as required.

Determine the new location of each ITS device, obtain the Engineer's approval of the location, install the devices and implement test procedures, then integrate the devices into the existing computer and network hardware and software at the NCDOT Division 6 Traffic Services and the STOC.

Prior to any underground work, locate existing utilities, communications cable, power cable, and adjust work activities to protect these facilities. Immediately cease work and notify the Engineer and the affected owners if damage to existing utilities occurs. Repair damages to existing utilities, communications cable, and / or power cable at no cost to the Department.

Perform all work in accordance with the *Dynamic Message Sign*, the *High Definition CCTV Wood Pole and Field Equipment*, and the *Portable High Definition CCTV Camera for Incident*

Management Project Special Provisions found elsewhere in this RFP, the 2018 NCDOT *Standard Specifications for Roads and Structures* and the 2018 NCDOT *Roadway Standard Drawings and the ITS & Signals Generic Project Special Provisions Version 18.2* found at the following website:

https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx

PROJECT OPERATION REQUIREMENTS

It is the Department's desire to provide uninterrupted traffic incident management and traveler information operations throughout the life of the project. Thus, the Design-Build Team shall identify the approximate location of the new ITS devices and when they will be installed and operational in their permanent location in the Technical Proposal.

The Design-Build Team shall keep the existing DMSs and CCTVs operational until a permanent device or portable replacement device is installed and integrated with the NCDOT Division 6 Traffic Services and the STOC. Portable Changeable Message Signs (CMS) used to replace existing DMSs, and portable CMSs required along I-95 and alternate routes for incident management shall be in addition to the CMSs required for work zone traffic control during construction. (Reference the Transportation Management Scope of Work found elsewhere in this RFP)

All permanent and portable ITS devices shall communicate via cell modems supplied by the Department. The Design-Build Team shall request the modems through the Engineer at least six (6) weeks prior to scheduled installation.

The Design-Build Team shall remove and deliver all existing DMS and CCTV equipment and all cell modems used for portable ITS devices to the NCDOT Division 6 Traffic Services Office at 558 Gillespie Street, Fayetteville, NC 28301. Contact Frank West, Jr. at (910) 364-0606 two weeks in advance to coordinate the delivery of the afore mentioned equipment.

REMOVE OVER-HEIGHT VEHICLE WARNING SYSTEMS

The Design-Build Team shall maintain the operation of the Over-Height Warning System as directed by the Engineer. Any temporary disruptions in the operations of the Over-Height Warning System shall require plans approved by the Engineer detailing how the Over-Height Warning System will be augmented during the disruption.

The Design-Build Team shall obtain the Engineer's written approval prior to disconnecting and removing the Over-Height Vehicle Warning System and any associated equipment. The Design-Build Team shall verify that adequate vertical clearance exists at the structures for which the systems was installed to protect prior to removal.

The Design-Build Team shall remove and deliver the existing Over-Height Vehicle Warning System equipment including, but not limited to sensors, detectors, poles, cabinets, signs, and flashers to the NCDOT Division 6 Traffic Services Office at 558 Gillespie Street, Fayetteville,

NC 28301. Contact Frank West, Jr. at (910) 364-0606 two weeks in advance to coordinate the delivery of the aforementioned equipment.

DESIGN REQUIREMENTS

➢ Communications

Design the field-to-center communication network using Cellular Modem technology. For all equipment not specified herein, provide product specifications for the Department's review and approval prior to incorporation. Furnish and install all new field equipment within the project limits and all central equipment at the NCDOT Division 6 Traffic Services Office and the STOC.

The Department will furnish all cellular modems used on the project. The Design Build Team shall request the modems through the Engineer at least six (6) weeks prior to scheduled installation.

Remove existing communications equipment and deliver removed equipment to the Division 6 Traffic Services Office at 558 Gillespie Street, Fayetteville, NC 28301.

➢ CCTV Cameras

The Design-Build Team shall strategically locate and install twelve (12) new CCTV cameras. Seven (7) CCTV cameras shall be on new 60-foot wood poles at the locations that provide optimum viewing. New CCTV Camera installations including equipment cabinets shall comply with the requirements of the *High Definition CCTV Wood Pole and Field Equipment* Project Special Provision found elsewhere in this RFP. Five (5) CCTV cameras shall be installed by attaching one to each proposed DMS on the project using an extension pole. (Reference the Dynamic Message Sign (DMS) Project Special Provision found elsewhere in this RFP)

Install one CCTV camera on a wood pole at each of the following locations:

- I-95 at Murphy Road (Exit 55)
- I-95 Business at US 301 (near Murphy Road)
- I-95 at I-95 Business / US 301 (Exit 56)
- I-95 at NC-295 / US 13 (Exit 58)
- I-95 at MM 60
- I-95 at SR 1815 (Wade Stedman Road - Exit 61)
- I-95 at NC 82 (Exit 65)

Install one CCTV camera on the DMS at each of the following locations:

- I-95 southbound shoulder near MM 58
- I-95 southbound shoulder near MM 59
- I-95 northbound shoulder near MM 61

- I-95 southbound shoulder near MM 64
- I-95 northbound shoulder near MM 68

Excluding the CCTV cameras attached to the afore mentioned DMSs, determine the exact location of each CCTV camera, obtain the Engineer's written approval of the locations, and install the cameras. All components required for the CCTV installations shall be new. Furnish site surveys, including but not limited to bucket truck surveys, to ensure camera coverage areas are acceptable.

Install new electrical service equipment at all new CCTV locations. Install solar power assembly equipment at any CCTV location where power service is not available. Obtain approval from the Engineer for any solar power location. Comply with the National Electrical Code (NEC), the National Electrical Safety Code (NESC), the 2018 NCDOT *Standard Specification for Roads and Structures*, the Project Special Provisions, and all local ordinances. All work involving electrical service shall be coordinated with the appropriate utility company and the Engineer.

Prior to beginning any activity that will impede the I-95 traffic, in the Department's sole discretion, the Design-Build Team shall deploy portable CCTVs at the following locations. The portable CCTVs shall communicate with NCDOT Division 6 Traffic Services and the STOC, via Department supplied cell modems.

- I-95 at Murphy Road (Exit 55)
- I-95 Business at US 301 (near Murphy Road)
- I-95 at I-95 Business / US 301 (Exit 56)
- I-95 near MM 60
- I-95 at SR 1815 (Wade Stedman Road - Exit 61)
- US 301 at SR 1815 (Wade Stedman Road)
- US 301 at NC 82
- I-95 at SR 1811 (Bud Hawkins Road - Exit 70)
- US 301 at SR 1811 (Bud Hawkins Road)
- US 301 at SR 1002 (Long Branch Road)
- US 13 at US 421
- US 13 at the Newton Grove Traffic Circle

Portable CCTV deployments shall comply with the requirements of the *Portable High Definition CCTV Camera for Incident Management* Project Special Provision found elsewhere in this RFP.

➢ **Dynamic Message Signs (DMS)**

The Design-Build Team shall strategically locate, design, and install five (5) new pedestal mount DMSs with a CCTV extension pole at the top of each DMS assembly. Design the extension pole as an integral part of the DMS assembly. DMSs shall not be located behind sound barrier walls. Furnish and install new DMS and associated equipment as defined in the *Dynamic Message Sign* Project Special Provisions found elsewhere in this RFP.

Install one DMS at each of the following locations:

- I-95 southbound shoulder near MM 58
- I-95 southbound shoulder near MM 59
- I-95 northbound shoulder near MM 61
- I-95 southbound shoulder near MM 64
- I-95 northbound shoulder near MM 68

The DMSs installed under this project shall be selected from the most current version of the NCDOT ITS & Signals Qualified Products List.

Determine the exact location of the DMSs by coordinating with the Engineer. Obtain the Engineer's written approval of the locations and install the DMSs.

Install new electrical service equipment at all new DMS locations. Comply with the National Electrical Code (NEC), the National Electrical Safety Code (NESC), the 2018 NCDOT *Standard Specifications for Roads and Structures*, the Project Special Provisions, and all local ordinances. All work involving electrical service shall be coordinated with the appropriate utility company and the Engineer.

MATERIALS & CONSTRUCTION

Furnish and install new materials and hardware unless stated otherwise elsewhere in this RFP. Adhere to the requirements of the 2018 NCDOT *Standard Specifications for Roads and Structures* and the 2018 NCDOT *Roadway Standard Drawings and the ITS & Signals Generic Project Special Provisions Version 18.2.*

➢ CCTV Cameras

Install each stand-alone CCTV camera on a 60-foot Class 3 wood pole. Install CCTV equipment in a 336S equipment cabinet mounted on the pole. Install the following minimum equipment in each CCTV equipment cabinet:

- Power equipment including power supplies, circuit breakers, surge protectors, and other related materials.
- Cellular modem

Perform all work in accordance with the *High Definition CCTV Wood Pole and Field Equipment* Project Special Provision found elsewhere in this RFP, and other standards listed elsewhere in this RFP.

➢ Dynamic Message Signs (DMS)

Install DMSs on a single metal pedestal type structure with ladders, ladder safety cages, platforms, CCTV extension poles, and walkways leading to the DMS maintenance access door. The bottom of each DMSs should be 25 feet higher than the highest point of the roadway.

Install DMS equipment in an approved equipment cabinet mounted on the structure. Install the following minimum equipment in each DMS equipment cabinet:

- DMS controller
- UPS and power equipment including power supplies, circuit breakers, surge protectors, and other related materials.
- Cellular Modem

Perform all work in accordance with the *Dynamic Message Sign* Project Special Provisions found elsewhere in this RFP, and other standards listed elsewhere in this RFP.

➢ **Conduit**

Except as required otherwise in the Structures Scope of Work found elsewhere in this RFP, furnish and install one (1) – 2 inch conduit (for power) and all necessary hardware by trenching or directional drilling in accordance with Section 1715 of the 2018 NCDOT *Standard Specifications for Roads and Structures* for installing the power service to the ITS devices. Conduit shall not be placed in the median or under the roadway, except for lateral traverse crossings. (Reference the Electrical Service Section below)

The conduit attached to the proposed bridges shall be terminated in a junction box at each end of the bridge beyond the approach slab. Ensure junction boxes are installed in an area of flat ground and that are easily accessible for future conduit installations. (Reference the Structures Scope of Work found elsewhere in this RFP)

➢ **Junction Boxes**

- **Electrical**

Furnish and install junction boxes (pull boxes) with all necessary hardware in accordance with Sections 1098-5 and 1716 of the 2018 NCDOT *Standard Specifications for Roads and Structures*. Provide standard junction boxes with minimum inside dimensions of 16"(l) x 10"(w) x 10"(d) for electrical service. Install junction boxes at maximum intervals of three hundred (300) feet or at locations where underground splicing is necessary.

Provide junction box covers with standard "Electric" logo, pull slots and stainless-steel pins.

- **Communications**

Furnish and install junction boxes (pull boxes) with all necessary hardware in accordance with Sections 1098-5 and 1716 of the 2018 NCDOT *Standard Specifications for Roads and Structures*. Provide junction boxes with minimum inside dimensions of 36"(l) x 24"(w) x 36"(d) with mouse holes to accommodate horizontal conduit entrances

into the junction box for future fiber installations. Furnish junction boxes that are H-20 load rated and have a steel lid.

Provide junction box covers with standard "NCDOT Fiber Optic" logo, pull slots and stainless-steel pins.

- **Wood Poles**

Furnish and install wood poles, with all necessary grounding systems and hardware necessary in accordance with Section 1720 of the 2018 NCDOT *Standard Specifications for Roads and Structures*. Provide wood poles sized as necessary for the intended application.

Use 60-foot CCTV Class 3 wood poles as defined in the *High Definition CCTV Wood Pole and Field Equipment* Project Special Provision. Use 40-foot Class 4 wood poles for approved applications.

Use 6" x 6" x 8' treated wood posts for underground electrical service structures.

Furnish and install related items of work including but not limited to risers with weatherhead or heat shrink tubing and all necessary hardware in accordance with Section 1720 of the 2018 NCDOT *Standard Specifications for Roads and Structures*.

- **Electrical Service**

Furnish and install new electrical services rated 100 Amps for overhead service or 200 Amps for underground service, 240/120 VAC service drops for the each new ITS device. Furnish and install related items of work, including, but not limited to service entrance equipment, service conductors, feeder conductors, disconnects, junction boxes, risers, guy assemblies, and wood poles with all necessary hardware in accordance with Section 1700 of the 2018 NCDOT *Standard Specifications for Roads and Structures*. (Reference the Utilities Coordination Scope of Work found elsewhere in the RFP for additional coordination / approval requirements and payment responsibilities)

OTHER CODES AND STANDARDS

All ITS materials shall conform to the latest version of the applicable standards of the National Electrical Code (NEC), National Electric Manufacturer's Association (NEMA), the Underwriters' Laboratories, Inc. (UL), the Electronic Industries Association (EIA), the International Municipal Signal Association (IMSA), and the National Electrical Safety Code (NESC). All materials and workmanship must conform to the requirements of the NESC, standards of the American Society for Testing and Materials (ASTM); American National Standards Institute (ANSI). Comply with all federal laws, state laws, and city codes in accordance with the 2018 NCDOT *Standard Specifications for Roads and Structures*.

SUBMITTALS

Submit a set of 50% preliminary plans, 100% unsealed set of project plans, including specifications for materials, catalog cuts, and installation and testing requirements for review. Upon acceptance of the Department, provide a 100% set of sealed plans and specifications to the Department. No construction of the ITS devices shall begin until the Department has accepted the 100% sealed plans and specifications. Provide the Department a minimum of 10 working days for each review.

QUALIFIED PRODUCTS LIST

Submit a listing of items on the NCDOT 2018 Qualified Products List (QPL) to receive approval for use on the project. Catalog cuts will not be required for items on the QPL. The QPL website is:

https://connect.ncdot.gov/resources/safety/Pages/default.aspx

ADDITIONAL REQUIREMENTS

For all ITS devices and components within the entire project limits (I-5986A and I-5877), the Design-Build Team shall comply with the following requirements:

- **Maintenance and Repair**

The Design-Build Team shall maintain and repair all ITS components within the project scope, including but not limited to, ITS devices, ITS conduit system, and all related ITS components, from the beginning of construction until the final acceptance of the project by the NCDOT. After acceptance of the project, the Design-Build Team shall be responsible for repairing the system due to faulty materials or workmanship in accordance with the *Twelve Month Guarantee* Project Special Provision found elsewhere in this RFP, or longer if the Design-Build extends the aforementioned warranty period.

- **Plan of Record Documentation**

Prepare and submit to the Department Plan of Record (POR) documentation that depicts the conduit and ITS device locations. Submit final POR documentation in electronic and hard copy format for Department approval. Provide electronic plans in MicroStation (latest release in use by the Department) format on CD. Submit hard copy documentation on 22 x 34 inch plan sheets. POR documentation shall include the final location and depth of conduits, wiring external to the cabinets, locations of splice enclosures, junction box locations, and SMFO cable terminations. Include in the POR documentation real world coordinates for all ITS devices, splice enclosures, junction boxes, and equipment cabinets installed or utilized under this project. Provide the coordinates in feet units using the North Carolina State Plane coordinate system (1983 North American Datum also known as NAD '83). Furnish coordinates that do not deviate more than 1.7 feet in the horizontal plane and 3.3 feet in the vertical plane. Global positioning system (GPS) equipment able to obtain the coordinate data within these tolerances may be used.

- **Integration**

Upon completion of the ITS device installations, integrate the new devices with the NCDOT Division 6 Traffic Services Office – Transportation Management System and the STOC. Ensure all existing ITS devices along the project corridor remain integrated with the NCDOT Division 6 Traffic Services Office - Transportation Management System and the STOC.

Modify, as necessary, the existing central hardware and software modules including but not limited to databases, to provide operators access to new devices through the operators' Graphical User Interface. Coordinate with and obtain the Engineer's approval prior to starting any work in the NCDOT Division 6 Traffic Services Office - Transportation Management System or modifying any existing hardware or software.

- **Testing**

Develop unit and system test plans and procedures for each ITS device and all associated components and submit to the Engineer for review and approval.

Upon completion of the ITS device installations, conduct unit and system tests according to the approved test plan and procedures. Provide all necessary test equipment.

In case of failures and substandard performance, the Design-Build Team shall identify the cause, repair or replace the faulty parts and components and repeat the test. If the problem persists, the entire unit causing the problem shall be replaced prior to retest.

After successful completion of all unit and system tests, submit the test reports along with the record of repairs and part replacements to the Engineer.

LIGHTING SCOPE OF WORK (6-24-19)

The Design-Build Team shall provide and install roadway lighting equipment and materials, in accordance with the Final Lighting Plans provided by the Department, Division 14 of the 2018 NCDOT *Standard Specifications for Roads and Structures*, and the *Roadway Standard Drawings*, except as amended below. Prior to the Technical Proposal submittal date, the NCDOT will provide the Preliminary Lighting Plans. The Department will finalize the lighting design based upon the Design-Build Team's Release for Construction (RFC) Roadway Plans.

The Design-Build Team shall include all costs required to construct the roadway lighting shown in the aforementioned Preliminary Lighting Plans provided by the Department in their lump sum price bid for the entire project. The Department shall only compensate the Design-Build Team for additional lighting construction costs that result from design revisions 1) required elsewhere in this RFP, 2) incorporated at the Department's discretion and / or 3) that result from errors or omissions in the Department's Preliminary Lighting Plans. The Design-Build Team shall be solely responsible for all additional lighting construction costs that result from design revisions incorporated at the Design-Build Team's discretion.

After the RFC Roadway Plans have been accepted by the Department, the Design-Build Team shall submit MicroStation files of the RFC Roadway Plans for the Department to complete the lighting design. The Design-Build Team shall allow the Department fifteen days after this submittal to update and finalize the lighting design.

The Design-Build Team shall allow ten days for Department review of each submittal for all materials including poles and foundation designs. An additional ten days shall be required for pole submittals from vendors that do not commonly do business with the Department.

Reference the Transportation Management Scope of Work found elsewhere in this RFP for time restrictions and lane closure requirements.

Reference the *Lighting* Project Special Provision found elsewhere in this RFP for additional requirements.

MAINTENANCE

Throughout construction, the Design-Build Team shall assume responsibility for routine maintenance of the newly installed lighting system(s) in accordance with Division 14 of the 2018 NCDOT *Standard Specifications for Roads and Structures*, except as amended below.

- NCDOT will assume maintenance responsibility for the completed lighting systems after the project is accepted, and there is no chance of construction-related damage.

- The Design-Build Team shall replace all newly installed non-functional lighting system components within the project limits. All luminaires must be fully operational at project acceptance.

PAVEMENT MANAGEMENT SCOPE OF WORK (7-9-19)

I-95 REQUIREMENTS

The pavement design for the I-95 travel lanes, the I-95 median paved shoulders and the I-95 outside paved shoulders shall consist of one of the alternates below. The Design-Build Team shall specify the pavement alternate chosen in the Technical Proposal.

I-95 Shoulder Reconstruction

At a minimum, the Design-Build Team shall remove and dispose of / recycle the existing I-95 median and outside paved shoulders within the limits noted below:

- In the northbound direction - From Station 75+00 -L- to Station 640+00 -L-
- In the southbound direction - From the I-5986A southern project limits to Station 640+00 -L-
- In both the northbound and southbound directions - From Station 651+50 -L- to Station 690+00 -L-
- In the northbound direction - From Station 690+00 -L- to the I-5877 southern project limits
- In the southbound direction - From Station 770+25 -L- to the I-5877 southern project limits

Within the aforementioned limits, the Design-Build Team shall remove and dispose of / recycle the I-95 shoulder pavement structure, in its entirety, to the top of the soil subgrade, including but not limited to the removal and disposal of existing aggregate base course. Within the aforementioned limits, the Design-Build Team shall resurface the existing I-95 pavement that remains in place with a minimum 3.0" of I19.0C and 3.0" of S9.5D and use the alternate pavement design chosen, as defined above, for all widening. (Reference the Roadway Scope of Work found elsewhere in this RFP)

Required I-95 Travel Lane and Shoulder Reconstruction

At a minimum, the Design-Build Team shall completely reconstruct (remove, dispose of / recycle and replace) the I-95 pavement structure, including but not limited to all travel lanes, acceleration / deceleration lanes, median paved shoulders and outside paved shoulders, within the limits noted below:

- In the northbound and southbound directions - From Station 640+00 -L- to Station 651+50 -L-
- In the southbound direction - From Station 690+00 -L- to Station 770+25 -L-

Within the aforementioned limits, the Design-Build Team shall remove and dispose of / recycle the I-95 pavement structure, in its entirety, to the top of the soil subgrade, including but not limited to the removal and disposal of existing aggregate base course. Within the

aforementioned limits, the Design-Build Team shall install the I-95 pavement design chosen, as defined above. (Reference the Roadway Scope of Work found elsewhere in this RFP)

Potential I-95 Travel Lane and Shoulder Reconstruction

In accordance with the requirements below, additional I-95 travel lane and shoulder reconstruction may be allowed / required solely due to the Design-Build Team's proposed grade:

- In sections of I-95 where the proposed crown point is raised less than 17.0 inches above the existing crown point, the Design-Build Team may elect to reconstruct the I-95 pavement structure in lieu of resurfacing the existing pavement, as required elsewhere in this RFP. If the Design-Build Team elects to reconstruct these sections, the Design-Build Team shall remove and dispose of / recycle the existing travel lane, median shoulder and outside shoulder pavement structures, in their entirety, to the top of the soil subgrade, including but not limited to the removal and disposal of existing aggregate base course. Within these reconstruction sections, the Design-Build Team shall install the I-95 pavement design chosen, as defined above.

- In sections of I-95 where the proposed crown point is raised between 17.0 inches and 29.0 inches above the existing crown point, the Design-Build Team shall reconstruct the I-95 pavement structure. Within these sections, the Design-Build Team shall remove and dispose of / recycle the existing travel lane, median shoulder and outside shoulder pavement structures, in their entirety, to the top of the soil subgrade, including but not limited to the removal and disposal of existing aggregate base course. Within these reconstruction sections, the Design-Build Team shall install the I-95 pavement design chosen, as defined above.

- In sections of I-95 where the proposed crown point is raised greater than 29.0 inches above the existing crown point, the Design-Build Team shall 1) break-up the existing travel lane, median shoulder and outside shoulder pavement structures into pieces with the longest dimension no larger than three feet, 2) construct the appropriate embankment and 3) reconstruct the pavement structures with the I-95 pavement design chosen, as defined above.

I-95 Pavement Resurfacing / Uniform Overlay

Excluding the I-95 sections noted below, the Design-Build Team shall resurface the I-95 pavement that remains in place (travel lanes and shoulders) with a minimum 3.0" of 119.0C and 3.0" of S9.5D and use the alternate pavement design chosen, as defined above, for all widening. (Reference the Roadway Scope of Work found elsewhere in this RFP)

- I-95 northbound from the I-5986A southern project limits to Station 75+00 -L-
- Sections of I-95 in proximity to Bridge No. 250147 on SR 1832 (Murphy Road) over I-95, in proximity to Bridge No. 250142 on I-95 Business over I-95, and in proximity to

Bridge No. 250013 on NC 295 / US 13 over I-95 that require milling, as allowed below, to maintain the required vertical clearance.

- Sections of I-95 that consist solely of pavement marking obliterations and / or revisions
- Sections of I-95 that consist of travel lane and / or shoulder reconstruction
- Sections of I-95 where the existing pavement structure is broken-up

From the I-5986A southern project limits to Station 75+00 -L-, the Design-Build Team shall uniformly overlay the I-95 northbound travel lanes and shoulders with a minimum pavement depth that equals half the full thickness of the surface course of the pavement design chosen, as defined above.

At Bridge No. 250147 on SR 1832 (Murphy Road) over I-95, Bridge No. 250142 on I-95 Business over I-95, and Bridge No. 250013 on NC 295 / US 13 over I-95, the Design-Build Team shall mill 3.0" of the existing I-95 pavement that remains in place (shoulders and travel lanes) and uniformly overlay with 3.0" of S9.5D to the limits required to maintain the existing minimum vertical clearance at each bridge.

Throughout the I-95 construction limits that consist solely of pavement marking obliterations and / or revisions, the Design-Build Team shall uniformly overlay the existing pavement (travel lanes and shoulders) with a minimum pavement depth that equals half the full thickness of the surface course of the pavement design chosen, as defined above.

I-95 Full-Depth Pavement Repair

In accordance with Section 654 of the 2018 *Standard Specifications for Roads and Structures*, the Design-Build Team shall repair (remove, dispose of / recycle and reconstruct) the I-95 pavement structure at locations identified by the Engineer that are outside the limits defined in the **I-95 Travel Lane and Shoulder Reconstruction** section above and at locations required to remove and / or place pipe lines and reinforced concrete box culverts.

The Design-Build Team shall include in their lump sum price bid for the project, all costs associated with full-depth pavement repairs required solely to remove and / or to place pipe lines and reinforced concrete box culverts, including but not limited to pavement repairs that extend three feet from the outside diameter of the pipe / box culvert in each direction. The Design-Build Team shall be responsible for **all** I-95 pavement repair costs associated with open-cut installation of drainage pipes 48" in diameter or smaller, including but not limited to repairs required outside the three-foot dimensions noted above.

Within all sections of I-95 full-depth pavement repair, the Design-Build Team shall install the Alternate 1 pavement design, as defined below. The I-95 full-depth pavement repairs that are 1) outside the limits defined in the **I-95 Travel Lane and Shoulder Reconstruction** section above, 2) outside the limits required solely to remove and / or to place pipe lines greater than 48" in diameter, as defined above, and 3) outside the limits required solely to remove and / or to replace reinforced concrete box culverts, as defined above will be paid for as extra work in accordance with Subarticle 104-8(A) of the 2018 *Standard Specifications for Roads and Structures* at the unit price of $200.00 per square yard. All work tasks required for the I-95 full-depth pavement repair, including but not limited to traffic control and portable lighting, shall be considered inclusive in the aforementioned unit price.

ALTERNATE 1 – ASPHALT PAVEMENT (FULL-DEPTH ASPHALT)

I-95 Travel Lane, Median Shoulder and Outside Shoulder Pavement Design

The pavement design for the I-95 travel lanes, I-95 median paved shoulder and I-95 outside paved shoulder shall consist of the following:

3.0" S9.5D
3.0" I19.0C
11.0" B25.0C
12" Type 1 Aggregate Subgrade (*Aggregate Subgrade* Standard Special Provision found elsewhere in this RFP)

ALTERNATE 2 – ASPHALT PAVEMENT (AGGREGATE BASE COURSE)

I-95 Travel Lane, Median Shoulder and Outside Shoulder Pavement Design

The pavement design for the I-95 travel lanes, I-95 median paved shoulder and I-95 outside paved shoulder shall consist of the following:

3.0" S9.5D
3.0" I19.0C
6.5" B25.0C
10.0" ABC
12" Type 1 Aggregate Subgrade (*Aggregate Subgrade* Standard Special Provision found elsewhere in this RFP)

ALTERNATE 3 – ASPHALT PAVEMENT (CEMENT TREATED AGGREGATE BASE COURSE)

I-95 Travel Lane, Median Shoulder and Outside Shoulder Pavement Design

The pavement design for the I-95 travel lanes, I-95 median paved shoulder and I-95 outside paved shoulder shall consist of the following:

3.0" S9.5D
3.0" I19.0C
5.0" B25C
8.0" CTBC
12" Type 1 Aggregate Subgrade (*Aggregate Subgrade* Standard Special Provision found elsewhere in this RFP)

OTHER REQUIREMENTS

Other pavement designs for this project are listed in **Table 1** below:

Table 1

Lines on I-5986A	Surface	Intermediate	Base	ABC	Stab
I-95 Business / US 301 (-Y1-)	3.0" S9.5D	4.0" I19.0C	3.0" B25.0C	-	Yes
Ramps and Loops at Exit 58	3.0" S9.5D	4.0" I19.0C	3.0" B25.0C	-	Yes
Ramps and Loops at Exits 61 and 65	3.0" S9.5D	2.5" I19.0C	4.0" B25.0C	-	Yes
-Y3- (SR 1828 - Baywood Road)	3.0" S9.5B	-	4.5" B25.0C	-	No
SR 1863 (Pembroke Lane), including the realignment and spur that ties to existing	3.0" S9.5B	4.0" I19.0C	4.0" B25.0C	-	No
-Y5- (US 13 / NC 295)	3.0" S9.5D	4.0" I19.0C	5.0" B25.0C	-	Yes
-Y5- (US 13) east of the I-95 interchange	3.0" S9.5C	4.0" I19.0C	5.0" B25.0C	-	No
-Y6- (SR 1005 - Smithfield Road), -Y20- (SR 1814 - J T Matthews Road), -SR3- (SR 1856 - Elva Wallace Road), -Y8- (SR 1813 - Percy Strickland Road), -SR5- (SR 1860 - Gordon Williams Road), -Y21- (SR 1859 - Leitha Lane), -Y10- (SR 1806 - Sherrill Baggett Road), and -Y11- (SR 1804 - Rhodes Pond Road)	3.0" S9.5B	-	4.0" B25.0C	-	No
-Y7- (SR 1815 - Wade - Stedman Road)	3.0" S9.5B	2.5" I19.0C	4.0" B25.0C	-	No
-Y9- (NC 82 - Godwin - Falcon Road)	3.0" S9.5B	-	5.5" B25.0C	-	No
Roundabouts **	3.0" S9.5B	4.0" I19.0C	4.0" B25.0C	-	No
Roundabout *** on -Y5- (US 13)	3.0" S9.5C	4.0" I19.0C	5.5" B25.0C	-	No
All other service roads	3.0" S9.5B	-	-	8" *	No

* Use prime coat at normal application rate.
** Excluding the roundabout on US 13, roundabouts shall include a 7.0" jointed concrete truck apron that includes a 4 x 4 W3.5 x W3.5 wire mesh reinforcement.
*** Roundabout on US 13 shall include a 10.0" jointed concrete truck apron that includes a 4 x 4 W3.5 x W3.5 wire mesh reinforcement with a minimum of 6.0" ABC.

** **NOTE** ** Deleted **Table 2**

The subgrade stabilization shown in **Table 1** above shall consist of 12" Type 1 Aggregate Subgrade (Reference the *Aggregate Subgrade* Standard Special Provision found elsewhere in this RFP)

For the service road pavement design noted in **Table 1** above, the Design-Build Team may substitute an asphalt base course layer for the ABC layer. If such an alternative is proposed, the Design-Build Team shall use B25.0C base course. The additional thickness of the asphalt base course, used as a substitute for the ABC layer, shall be equal to half of the proposed ABC thickness specified for the roadway.

For the -Y- Lines, ramps, loops, service road and roundabout pavement designs noted in **Table 1** above, the Design-Build Team may substitute an ABC layer for an asphalt base course layer. If such an alternative is proposed, the thickness of the ABC layer, used as a substitute for the asphalt base course layer, shall be equal to twice the proposed asphalt base course layer thickness specified for the roadway. If an asphalt surface course is placed directly on the ABC layer, the Design-Build Team shall apply prime coat.

The Design-Build Team shall maintain the same pavement design throughout the -Y- Line, ramp, loop, service road and round about construction limits. In the Technical Proposal, the Design-Build Team shall specify the base option chosen (ABC or asphalt) for all -Y- Lines, ramps, loops, service roads and roundabouts. The Design-Build Team may substitute an asphalt base course layer for an ABC layer, as described above, for tie-ins and narrow widening.

Unless noted otherwise elsewhere in this RFP, the Design-Build Team shall resurface the existing pavement (travel lanes and shoulders) of all -Y- Lines, ramps, loops and service road with a minimum depth that equals the full thickness of the surface course provided in **Table 1** above. (Reference the Roadway Scope of Work found elsewhere in this RFP)

From Dunn Road (US 301) to US 13, the Design-Build Team shall uniformly mill the existing SR 1863 (Pembroke Lane) pavement that will be retained (travel lanes and shoulders) 1.5". Within the SR 1863 (Pembroke Lane) realignment and spur construction limits, including but not limited to the area required to tie to existing, the Design-Build Team shall resurface the existing pavement that is retained (travel lanes and shoulders) with a minimum 1.5" S9.5B. From Dunn Road (US 301) to the most western resurfacing limits, the Design-Build Team shall uniformly overlay the existing SR 1863 (Pembroke Lane) pavement (travel lanes and shoulders) with 1.5" S9.5B. (Reference the Roadway Scope of Work found elsewhere in this RFP)

Within the US 13 / NC 295 construction limits, the Design-Build Team shall resurface the existing pavement that remains in place (travel lanes and shoulders) with a minimum 1.5" S9.5D. Where the existing US 13 / NC 295 paved shoulders are proposed to be incorporated into a permanent travel lane, the Design-Build Team shall remove and dispose of / recycle the US 13 / NC 295 shoulder pavement structure, in its entirety, to the top of the soil subgrade, including but not limited to the removal and disposal of existing aggregate base course. (Reference the Roadway Scope of Work found elsewhere in this RFP)

Outside the resurfacing and reconstruction limits of each ramp, loop and flyover at the I-95 / NC 295 / US 13 interchange, the Design-Build Team shall uniformly overlay the existing pavement (travel lanes and shoulders) with 1.5" S9.5D. (Reference the Roadway Scope of Work found elsewhere in this RFP).

At the I-95 / Wade Steadman Road interchange (Exit 61) and the I-95 / Godwin Falcon Road interchange (Exit 65), the Design-Build Team shall completely reconstruct the pavement structure for all ramps. Throughout the limits of all existing ramps at the aforementioned interchanges, the Design-Build Team shall remove and dispose of / recycle the ramp travel lane(s), inside shoulder and outside shoulder pavement structures, in their entirety, to the top of the soil subgrade, including but not limited to the removal and disposal of existing aggregate base course. Within the limits of the proposed ramp alignments at the aforementioned interchanges, the Design-Build Team shall construct new pavement in accordance with the appropriate pavement design in **Table 1**.

At the I-95 / I-95 Business interchange, the Design-Build Team shall uniformly overlay the existing I-95 Business travel lanes, ramps and shoulders (-Y1NB- and -Y1SB-) from the northern limits of the bridge replacement project on I-95 Business over Dunn Road (US 301) to the southern resurfacing limits of each ramp with 1.5" S9.5D. Along the entire existing I-95 Business southbound exit ramp and entrance loop at Dunn Road (US 301), the Design-Build Team shall uniformly mill the existing pavement (travel lanes and shoulders) 1.5" and uniformly overlay with 1.5" S9.5D.

At the I-95 / Murphy Road interchange (Exit 55), the Design-Build Team shall resurface the existing ramps with a minimum of 1.5" S9.5D to a length sufficient to provide pavement cross slope roll-overs within the gore area that adhere to design standards. Outside the resurfacing grades, the Design-Build Team shall uniformly overlay the existing ramps with 1.5" S9.5D. Between the ramps, including the ramp terminal intersections to the outermost radius points, the Design-Build Team shall uniformly overlay the existing pavement on Murphy Road (travel lanes and shoulders) with 1.5" S9.5D.

** **NOTE**** Relocated and combined I-95 / NC 295 / US 13 interchange overlay requirements

Within the NC 82 construction limits, the Design-Build Team shall uniformly mill the existing pavement (travel lanes and shoulders) 1.5" and resurface with a minimum 3.0" S9.5B. (Reference the Roadway Scope of Work found elsewhere in this RFP)

** **NOTE** ** Relocated and combined the Pembroke Lane requirements

** **NOTE** ** Deleted Interstate Drive and Longbranch Road bullets

Throughout the -Y- Line, ramp, loop and service road construction limits that consist solely of pavement marking obliterations and / or revisions, the Design-Build Team shall uniformly overlay the existing pavement (travel lanes and shoulders) with a minimum pavement depth that equals half the full thickness of the surface course as provided in **Table 1** above.

On all ramps and loops, the adjacent through lane pavement design shall extend to the back of the gore (12-foot width).

Longitudinal joints of all surface course layers shall not be located in the final traffic pattern wheel path. If applicable, the Design-Build Team shall indicate in the Technical Proposal where all underlying longitudinal joints will be located and demonstrate how the underlying longitudinal joint location will minimize reflective cracking.

Unless noted otherwise elsewhere in this RFP, the minimum narrow widened width shall be six feet. The minimum narrow widened width may be reduced to four feet only if the Design-Build Team demonstrates that their equipment properly compacts narrow widening and obtains prior Department written approval. Tapers that tie proposed pavement to existing pavement are excluded from the narrow widening requirements noted above.

In areas where the existing -Y- Line or ramp paved shoulders are proposed to be incorporated into a permanent travel lane, the Design-Build Team shall be responsible for evaluating the existing paved shoulder regarding its suitability for carrying the projected traffic volumes. In the event that the existing paved shoulder is found to be inadequate, the Design-Build Team shall be responsible for upgrading the existing paved shoulder to an acceptable level or replacing the existing paved shoulder. The Design-Build Team shall submit their evaluation and proposed use of existing paved shoulders to the Design-Build Unit for review and acceptance or rejection.

Unless noted otherwise elsewhere in this RFP, the Design-Build Team shall pave from 1) the edge of all paved shoulders to the face of all single face barrier / guardrail, including but not limited to areas that consist solely of guardrail replacement, 2) from the edge of all paved shoulders to the edge of all expressway / shoulder berm gutter and 3) from the edge of all paved shoulders to the face of proposed retaining walls and sound barrier walls located on the outside shoulder with 6" of ABC (or 4" B25.0C), a split seal and at least two lifts of surface course. If a split seal is not used, the ABC pavement design shall require prime coat at the normal application rate. In these areas, the Design-Build Team's installation of ABC or black base shall be consistent with the pavement type for the specific roadway. As an alternative to the above pavement design for paving the shoulders to the face of the aforementioned features, the Design-Build Team may use the adjacent travel lane pavement design.

The Design-Build Team shall place a minimum of 6" ABC or 4" B25.0C under all single face barrier, expressway / shoulder berm gutter and curb and gutter.

All driveways, up to the radius point, shall be constructed with the full-depth pavement design of the intersecting roadway. The entire impacted length of all non-concrete driveways with a 10% grade shall be constructed with 1.5" S9.5B (or S9.5C) and 8" ABC with prime coat. Unless otherwise noted above, the Design-Build Team shall adhere to the following for all driveway construction:

- For existing gravel and soil driveways, use 8" ABC.

- For existing asphalt driveways, use 1.5" S9.5B (or S9.5C) and 8" ABC with prime coat, or 2.0" S9.5B (or S9.5C) and 6" ABC with prime coat.
- For existing concrete driveways, use 6" jointed concrete reinforced with woven wire mesh.

The Design-Build Team shall be responsible for the design of all temporary pavements and for the evaluation of existing shoulders and roadways regarding their suitability for carrying traffic during construction, if necessary. In the event that the existing shoulders and / or roadways are found to be inadequate for the proposed temporary traffic volumes and duration, the Design-Build Team shall be responsible for upgrading the pavement to an acceptable level. Excluding the Lane Distribution Factors for inside widening, temporary pavements shall be designed in accordance with the NCDOT *Pavement Design Procedure - AASHTO 1993 Method* dated January 4, 2019. Temporary pavements for inside widening shall be designed using the Lane Distribution Factors for outside widening in the NCDOT *Pavement Design Procedure - AASHTO 1993 Method* dated January 4, 2019. Temporary pavement designs and associated calculations shall be submitted for review and acceptance using the Design-Build submittal process prior to incorporation. The expected duration for traffic on temporary pavement must be included as part of the submittal.

The rate of application and the maximum and minimum thickness per application and layer shall be in accordance with the NCDOT Roadway Design Manual and 2019 Asphalt QMS manual.

Excluding the high side of superelevated sections, the Design-Build Team shall design and construct median and outside shoulder drains and outlets at the locations noted below for the I-95 pavement alternates:

- Throughout crest vertical curves located in cut sections
- Throughout all sag vertical curves
- Where the grade is less than 1%.

Where installed on the outside shoulder, outlets shall be provided approximately every 300 feet. Where installed on the median shoulder, outlet locations shall not exceed 500 feet, and all outlets shall be located at drainage structures. Shoulder drains shall be placed to drain the entire pavement structure. The shoulder drain design and outlet locations shall be submitted to the Design-Build Unit for review and acceptance.

When a uniform overlay or resurfacing grade ties to an existing curb, bridge and / or pavement, the Design-Build Team shall perform incidental milling, such that the new pavement ties flush with the existing feature(s). In superelevated sections of facilities with existing curb on both sides of the typical section, the Design-Build Team shall uniformly mill the entire pavement width to a depth that equals the required surface layer pavement thickness noted above. When tying to the aforementioned feature(s), the Design-Build Team shall not reduce the minimum required surface layer pavement thickness noted above. At existing pavement ties, the Design-Build Team shall perform incidental milling for a minimum distance of six feet at curb sections, and 25 feet per surface course lift at bridges and the beginning / end of construction. The Design-

Build Team shall not perform incidental milling more than 72 hours prior to placement of the asphalt surface layer.

ALTERNATIVE TECHNICAL CONCEPTS

Alternative Technical Concepts that provide an alternate I-5986A and / or I-5877 pavement design will be considered subject to the following restrictions:

- ATCs on pavement design will be permitted on the mainline travel lanes, mainline shoulders, -Y- Lines, ramps, loops and service roads; and shall not be submitted until after issuance of the Second Industry Draft Request for Proposals.

- Unless noted otherwise elsewhere in this RFP, the pavement design in the ATC shall be determined using the method in the NCDOT *Pavement Design Procedure - AASHTO 1993 Method* dated January 4, 2019.

- The pavement design in the ATC (permanent and temporary) shall be signed and sealed by a professional engineer registered in the State of North Carolina that has experience in pavement design. The ATC submittal shall include a brief resume or description of the designer's pavement design experience.

- For all incorporated permanent mainline travel lane, mainline shoulder, ramp and loop ATC pavement designs, the Design-Build Team shall include in the Technical Proposal a minimum three-year extension of the 12-month guarantee. (Reference the *Twelve Month Guarantee* Project Special Provision found elsewhere in this RFP)

- The permanent mainline travel lane pavement design in the ATC shall adhere to the design parameters noted below.

    - All asphalt pavement designs shall include 12" Aggregate Subgrade in accordance with *Aggregate Subgrade* Standard Special Provision found elsewhere in this RFP.

    - Full Depth Asphalt

        - Minimum 17.0" thickness

    - Asphalt on ABC

        - Minimum 12.5" asphalt thickness

        - Minimum 10.0" ABC thickness

- Asphalt on CTBC
  - Minimum 11.0" asphalt thickness
  - 8" CTBC thickness – Cement treated base course shall be in accordance with the *Cement Treated Base Course* Project Special Provision found elsewhere in this RFP.
- Asphalt overlay on existing pavement structure
  - Minimum 6" asphalt thickness asphalt that consists of at least 3.0" S9.5D and 3.0" I19.0C.

- The permanent mainline shoulder, -Y- Line, ramp, loop and service road pavement designs in the ATC shall adhere to the design parameters noted below
  - Mainline shoulders, ramps and loops
    - Pavement design shall provide a minimum pavement depth that equals the full thickness of the pavement designs presented elsewhere in this Scope of Work.
    - All mainline shoulder designs shall include 12" Aggregate Subgrade in accordance with the *Aggregate Subgrade* Standard Special Provision found elsewhere in this RFP.
  - -Y- Lines
    - Pavement design shall provide a minimum pavement depth that equals the full thickness of the -Y- Line pavement design listed in **Table 1** above.
  - Service Roads
    - Pavement design shall provide a minimum pavement depth that equals the full thickness of the service road pavement design listed in **Table 1** above.

ATCs complying with the above restrictions will be evaluated by a technical review panel in accordance with the usual ATC process with the exception that the NCDOT reserves the right to engage a recognized pavement design expert to assist with the ATC evaluations. (Reference the *Alternative Technical Concepts and Confidential Questions* Project Special Provision found elsewhere in this RFP)

PAVEMENT MARKINGS SCOPE OF WORK (9-18-18)

General

The Design-Build Team shall prepare Final Pavement Marking Plans in accordance with the latest edition of the *Manual on Uniform Traffic Control Devices* (MUTCD) effective on the Technical Proposal submittal date, the 2018 NCDOT Roadway Standard Drawings, the *Guidelines for Preparation of Traffic Control and Pavement Marking Plans for Design-Build Projects*, the *Design-Build Submittal Guidelines* and the contract requirements contained herein.

Final Pavement Marking Plan Requirements

The Design-Build Team shall select a Private Engineering Firm (PEF) that has experience designing and sealing Pavement Marking Plans for NCDOT on comparable projects. The Design-Build Team shall list projects in the Technical Proposal, including description and similarity to the subject project, for which the PEF developed Pavement Marking Plans.

The Design-Build Team shall develop Pavement Marking Plans that maintain all types of traffic (motorists, bicyclists, and pedestrians within the highway, including persons with disabilities, in accordance with the Americans with Disabilities Act of 1990 (ADA), Title II, Paragraph 35.130) as defined by the *Manual for Uniform Traffic Control Devices* (MUTCD).

If sidewalk is constructed, the Design-Build Team shall show and station all curb ramps in the Pavement Marking Plans for signalized intersections, non-signalized intersections and points of pedestrian crossings. Curb ramps shall be constructed per current ADA standards and with guidance from the 2018 NCDOT Roadway Standard Drawings. If the roadway geometry does not allow for the use of standard details, contact the Contract Standards and Development Unit for alternate approved curb ramp designs.

Final Pavement Marking Project Limits

The Design-Build Team shall install all pavement markings and markers located within and outside the project limits, resulting from the project construction. The Final Pavement Marking Plans shall address all required modifications to existing pavement markings and markers located outside the project limits to ensure appropriate tie-ins. At a minimum, the Design-Build Team shall modify existing pavement markings and markers located outside the project limits to ensure that all lanes in each direction are open to traffic.

Pavement Markings, Markers and Delineation

The Design-Build Team shall submit a complete set of Final Pavement Marking Plans that includes the -L- Line, and all -Y- Lines, ramps / loops, and service roads for review and acceptance. The Design-Build Team shall not place any final pavement markings or markers until the aforementioned Final Pavement Marking Plans are reviewed and accepted by the Department.

The Design-Build Team shall coordinate with the Transportation Management Plans for necessary traffic control devices that will remain at the completion of the project.

The Design-Build Team shall use pavement marking and marker products that conform to all NCDOT requirements and are listed on the NCDOT's Approved Products List. The use of any devices that are not shown on the Approved Products List shall require written approval from the NCDOT Signing and Delineation Unit prior to incorporation.

The Design-Build Team shall install pavement markings and markers in accordance with the 2018 NCDOT *Standard Specifications for Roads and Structures*, and in accordance with the manufacturer's procedures and specifications.

In accordance with the NCDOT Roadway Standard Drawing No. 1205.08, Sheet 1 of 8, and guidance found on the Signing and Delineation Unit's webpage, the Design-Build Team shall install wrong-way ramp arrow pavement markings and markers on all exit ramps / loops.

The Design-Build Team shall install pavement markings and pavement markers on the final surface as follows:

Road	Marking	Marker
Asphalt Surfaces	Thermoplastic	**Travel Lanes** • Snowplowble Markers on I-95 • Match existing on all other roadways **Bridge Decks** • Raised Markers on mainline bridge decks • Match existing on -Y- Line bridge decks
Concrete Surfaces	Polyurea with Highly Reflective Media	

On concrete surfaces, the Design-Build Team shall install Heated-in-Place Thermoplastic or Cold Applied Plastic (Type II or III) markings for stop bars, symbols, characters, crosswalks, and diagonals.

On asphalt surfaces, the Design-Build Team shall install Heated-in-Place Thermoplastic or Extruded Thermoplastic markings for stop bars, symbols, characters, crosswalks, and diagonals.

On all Full Control of Access interstate facilities and US Routes the Design-Build Team shall install six-inch wide pavement markings, (i.e., lane line, edge line and skips) for the final pavement marking. The Design-Build Team shall install gore lines that are twice the edge line width.

Using approved methods, the Design-Build Team shall remove residue and surface laitance on concrete bridge decks prior to placing final pavement marking materials. In accordance with approved methods and the 2018 *Standard Specifications for Road and Structures*, the Design-

Build Team shall remove curing compound from all other concrete surfaces prior to placing final pavement marking materials.

The Design-Build Team shall only remove pavement markings from asphalt surfaces by grinding.

The Design-Build Team shall only remove pavement markings from concrete surfaces by hydroblasting.

The Design-Build Team shall tie proposed pavement marking lines to existing pavement marking lines.

The Design-Build Team shall replace any pavement markings that have been damaged by the end of each day's operation.

PUBLIC INVOLVEMENT AND INFORMATION SCOPE OF WORK (2-13-19)

General

NCDOT will take the lead role on this project and be responsible for a portion of the public involvement and information efforts, through the Department's Public Involvement Group and Communications Office, respectively. At a minimum, the Design-Build Team shall designate a contact for public involvement and information inquiries / coordination.

The Design-Build Team shall hold an initial project coordination meeting with NCDOT at least six weeks prior to the start of construction to discuss project impacts to the public. This information will be used by the Department to create a Public Involvement and Information Plan.

The Department will develop, with assistance from the Design-Build Team, the specific list of target audiences for this project. The following groups are identified as typical target audiences to receive informational materials:

- Governmental agencies
- Municipalities directly affected by construction
- Transportation services
- Emergency services
- Neighborhood groups and private homes
- Industry and businesses
- Chamber of Commerce
- Individual schools affected by the project
- County / City school systems
- Any other organization as deemed necessary by the Department.

The Department will be responsible for establishing, creating, maintaining and updating a project website. However, throughout the project duration, the Design-Build Team shall coordinate public involvement activities with the NCDOT Public Involvement Officer assigned to the project; and provide weekly updates, photos and other needed announcements to the Communications Office to ensure the accuracy of the aforementioned project website.

In the Technical Proposal, the Design-Build Team shall discuss their approach to providing the public access to project personnel for inquiries on vehicular and pedestrian traffic impacts.

The Design-Build Team shall include in their lump sum bid for the project, all costs associated with their involvement in the Public Involvement and Information Scope of Work.

Public Involvement

Unless noted otherwise elsewhere in this RFP, the NCDOT Public Involvement Group will be responsible for the activities noted below:

- Organizing public meetings, including venue selection, reservation and fee

- Excluding colored maps, developing and producing informational print materials for all meetings and workshops
- Soliciting and administering advertisements, as deemed necessary
- Mailings to the identified target audiences, including postage
- If necessary, developing and producing informational print materials for Limited English Proficiency (LEP) outreach
- Web page updates related to public involvement efforts

To ensure that project information can be distributed to the public using standard methods, including but not limited to newspaper notices, the Design-Build Team shall coordinate with the Public Involvement Officer assigned to the project.

The Design-Build Team shall also coordinate with the Public Involvement Officer to promote public awareness for this project. The amount of public involvement required for this project shall be directly based on the Design-Build Team's Transportation Management Plans and construction details. The Design-Build Team's responsibilities shall include, but are not limited to, the following:

- Providing information requested by the Department to develop and produce informational printed materials for all meetings and workshops
- Developing and providing colored maps for presentation at all public meetings / workshops
- Providing details surrounding the impacts to the public
- Providing advance notice to the Department of upcoming project impacts
- Assisting the Department in the development of the target audience list
- At a minimum, the Design-Build Team shall attend and speak at Public Information Meetings and Local Government Officials Meetings during development of the preliminary design. The aforementioned meetings shall occur prior to the interagency hydraulic design review meeting and cover the design modifications required elsewhere in this RFP, as well as all design modifications incorporated by the Design-Build Team. (Reference the Environmental and Hydraulics Scopes of Work found elsewhere in this RFP) The Design-Build Team shall attend and speak at other public meetings / workshops as required herein.
- Hand delivery of time sensitive informational materials

The minimum public involvement requirements solely associated with the Transportation Management Plans shall include, but are not limited to the following:

- Public Meetings – If Beginning of Construction meeting for area businesses and residents is held, attending and / or speaking at this event.

- Distribution of Informational Materials - For beginning of construction and for all road closures with detour routes, the Design-Build Team shall be responsible for providing time sensitive informational material, provided by the Department, directly to the target audiences. If the Design-Build Team informs the Department of the aforementioned

activities less than thirty (30) calendar days in advance, the Design-Build Team shall hand deliver the materials to the impacted target audiences.

Public Information

Unless noted otherwise elsewhere in this RFP, the NCDOT Communications Office will be responsible for the activities noted below:

- Providing media announcements
- Scheduling interviews, as needed
- Website updates related to project progress

To ensure that project information can be distributed to the public using standard methods, including but not limited to notifying media outlets and updating the project website, the Design-Build Team shall inform the Department at least thirty (30) calendar days in advance of any construction activity that will significantly impact the public. These activities shall include, but are not limited to, the start of construction, major traffic shifts, road closures, ramp closures, detours, night work and project completion.

Throughout construction, the aforementioned Design-Build contact shall provide weekly updates to the NCDOT Communications Office, including, but not limited to, traffic control phasing, graphic illustrations, project pictures, etc.

RIGHT OF WAY SCOPE OF WORK (7-2-19)

**** NOTE ** Prior to negotiating property acquisition with property owners, the Design-Build Team shall meet with the appropriate NCDOT Location and Surveys, Right of Way and Design-Build personnel.**

I-5877

Excluding the I-5877 parcels designated for delay of entry below, the Department anticipates acquiring the right of way, easement and control of access for I-5877 by August 31, 2019, as shown on the I-5877 signed and sealed plans provided by the Department. In the event additional right of way, easements, and / or control of access are needed to construct the project beyond that which is shown on the aforementioned signed and sealed plans, the Design-Build Team shall acquire the additional right of way, easement and / or control of access in accordance with the provisions of this Scope of Work.

The cost of the right of way, easement and control of access, as shown on the I-5877 signed and sealed plans provided by the Department, will be borne by the Department. The cost of both the acquisition services and the actual cost of any additional right of way, easement and / or control of access as required by the Design-Build Team's design or construction methods (including all erosion control measures), beyond that shown on the aformentioned signed and sealed plans, shall be the responsibility of the Design-Build Team. The following exception applies to this paragraph:

> If the Design-Build Team demonstrates to the Department's sole satisfaction that the project cannot be constructed, or water and / or sewer facilites relocated / constructed, within the right of way, easements and / or control of access as shown on the I-5877 signed and sealed plans provided by the Department, the Department will bear the cost for the portion of the additional right of way, easement and / or control of access that is satisfactorily demonstrated by the Design-Build Team as needed to construct the I-5877 project. All acquisition services shall remain the responsibility of the Design-Build Team.

Through the Advance Acquisition Process, the Department has acquired the parcel noted below:

- Parcel No. 901 - Archie Graham Jernigan - Parcel ID No. 0215160079

Unless allowed otherwise by the Department, in writing, the Design-Build Team shall not access the I-5877 parcels noted below prior to the Department acquiring a right of entry:

- For the parcels noted below, the Department anticipates acquiring a right of entry to the following I-5877 parcels by September 16, 2019. The right of entry will allow the Design-Build Team to access only the proposed right of way as shown on the I-5877 signed and sealed plans provided by the Department.
    - Parcel No. 10, 16, 22, 24, 25, 40 and 189

- For the parcels noted below, the Department anticipates acquiring a right of entry to the following I-5877 parcel by September 30, 2019. The right of entry will allow the Design-Build Team to access only the proposed right of way as shown on the I-5877 signed and sealed plans provided by the Department.
    - Parcel No. 11
- For the parcels noted below, the Department anticipates acquiring a right of entry to the following I-5877 parcels by October 18, 2019. The right of entry will allow the Design-Build Team to access only the proposed right of way as shown on the I-5877 signed and sealed plans provided by the Department.
    - Parcel Nos. 12, 18, 26, 30, 36, 163, 184 and 188
- For the parcels noted below, the Department anticipates acquiring a right of entry to the following I-5877 parcels by November 15, 2019. The right of entry will allow the Design-Build Team to access only the proposed right of way as shown on the I-5877 signed and sealed plans provided by the Department.
    - Parcel Nos. 37, 161, 162, 166, 171, 173, 174, 181, 182, 187, 192, 196 and 198
- For the parcels noted below, the Department anticipates acquiring a right of entry to the following I-5877 parcels by February 21, 2020. The right of entry will allow the Design-Build Team to access only the proposed right of way as shown on the I-5877 signed and sealed plans provided by the Department.
    - Parcel Nos. 21, 29, 41, 169, 170, 180 and 183

I-5986A and I-5877

Excluding the aforementioned I-5877 acquisitions performed by the Department, the Design-Build Team shall carry out the following responsibilities for all right of way, easements and / or control of access acquisitions required by the Design-Build Team's design, including all design revisions required by this RFP, and / or construction methods:

- The Design-Build Team shall employ qualified, competent personnel who are currently **approved by the NCDOT Right of Way Unit,** herein after referred to as the Department, to provide all services necessary to perform all appraisal (except appraisal reviews and updated appraisals required solely for condemned parcels), negotiation and relocation services required for all right of way, control of access and easements, including but not limited to Permanent Utility Easements, necessary for completion of the project in accordance with G.S. 136-28.1 of the General Statutes of North Carolina, as amended, and in accordance with the requirements set forth in the *Uniform Appraisal Standards and General Legal Principles for Highway Right of Way*, the *North Carolina Department of Transportation's Right of Way Manual*, the *North Carolina Department of Transportation's Rules and Regulations for the Use of Right of Way Consultants*, the *Code of Federal Regulations*, and Chapter 133 of the *General Statutes of North Carolina* from Section 133-5 through 133-18, hereby incorporated by reference,

including the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended. The Design-Build Team shall field stake all right of way, control of access and easements, including but not limited to utility easements, in accordance with the requirements noted above. For a list of firms currently approved, the Design-Build Team should contact Mr. Terry Niles, in the NCDOT Right of Way Unit, at 919-707-4400. The Design-Build Team shall perform the services as set forth herein and furnish and deliver to the Department reports accompanied by all documents, including but not limited to all revisions and electronic design files, necessary for the settlement of claims and the recordation of deeds, or necessary for condemnation proceedings covering said properties. Excluding the aforementioned I-5877 acquisitions performed by the Department, the Design-Build Team, acting as an agent on behalf of the State of North Carolina, shall provide right of way acquisition services for TIP I-5986A / I-5877 in Cumberland and Harnett Counties.

- Acquisition services required outside of the project construction limits due solely to an allowable rise in the floodplain water elevation on insurable structures will be considered extra work and paid for in accordance with Article 104-7 of the 2018 NCDOT *Standard Specifications for Roads and Structures*.

- Unless noted otherwise elsewhere in this RFP, with respect to the payments, costs and fees associated with the acquisition of right of way, easements and / or control of access, the Department will be responsible for only direct payments to property owners for negotiated settlements, recording fees, any relocation benefits, and deposits and fees involved in the filing of condemnation claims. The Department will assume responsibility for all costs associated with the litigation of condemned claims, including testimony by the appraiser(s). The Design-Build Team shall be responsible for all other acquisition services related to payments, costs and fees, including but not limited to attorney fees required for all non-condemnation acquisitions.

- A Department representative will be available to provide technical guidance on right of way acquisition procedures and to make timely decisions on approving relocation benefits and approving administrative adjustment settlements on behalf of the Department over and above the authority granted to the Department Right of Way Consultant Project Managers.

- The Design-Build Team shall verify / determine the prior rights and / or compensable interest for an existing utility prior to acquiring the corresponding Permanent Utility Easement. (Reference the Utilities Coordination Scope of Work found elsewhere in this RFP)

- The Design-Build Team shall submit a right of way project tracking report and right of way quality control plan to the Department. The Department standard forms and documents shall be used to the extent possible.

- The Design-Build Team shall provide a current title certificate for each parcel as of the date of closing or the date of filing of condemnation, unless required otherwise in the NCDOT December 21, 2018 *Right of Way Manual*.

- The Department will prepare all Condemnation Maps. The Design-Build Team shall prepare all Final Condemnation Reports. Upon approval of the Final Condemnation Report, the Department will require a minimum of eight weeks to file the condemnation claim. For all plan revisions on condemned parcels that modify the area acquired, modify the control of access and / or impact the appraised value, the Design-Build Team shall be responsible for the following:

  - The Design-Build Team shall notify the Division Right of Way Agent, the Area Negotiator, Area Appraiser, and the Attorney General, in writing, that revisions have been made that impact a condemned parcel, and provide updated plan sheets and revised area takes.

  - The Design-Build Team shall consult with the Attorney General and the Area Appraiser to determine the status of the negotiations and appraisal(s).

  - If the Attorney General and / or Area Appraiser recommend an updated appraisal, the Design-Build Team shall provide an updated Summary Sheet to the Area Appraiser for the Department's use in obtaining an updated appraisal(s).

  - Upon receipt of the approved updated appraisal(s), the Design-Build Team shall develop a revised written offer. If settlement is not reached, the Design-Build Team shall submit an updated Final Condemnation Report. If settlement is reached, the Design-Build Team shall notify the Attorney General and Area Appraiser in writing and submit an updated Final Condemnation Report with all necessary documentation.

  - The Department will be responsible for payment for the additional deposit to the Attorney General's Office and the Attorney General will prepare and file an Amendment to the Declaration of Taking.

- The following shall be required:

  - Unless otherwise approved by the NCDOT Assistant State Negotiator, in writing, the Design-Build Team shall provide right of way, control of access and easement descriptions in metes and bounds format (bearings and distances). The Design-Build Team shall provide exhibits, diagrams and / or other information required to verify the aforementioned descriptions.

  - In accordance with the NCDOT December 21, 2018 *Right of Way Manual*, the Design-Build Team may prepare red-line adjustments for parcels that are not condemned. The Department must approve a red-line adjustment, in writing, prior to the Design-Build Team making an offer based on the red-line adjustment.

  - The Design-Build Team shall prepare, execute and record documents conveying title to acquired properties to the Department with the Register of Deeds.

  - The Design-Build Team shall deliver all executed and recorded deeds and easements to the Department.

- For all property purchased in conjunction with the project, title shall be acquired in fee simple or easement and shall be conveyed to "The North Carolina Department of Transportation", free and clear of all liens and encumbrances except permitted encumbrances.

- In accordance with the Location and Survey Unit's September 28, 2018 *Proc 2018-3 - Creating NCDOT Right of Way Plan Sheets for LET Projects* and *Proc 2018-5 - Elimination of Need to Request Control Sheets and Property Ties and RW Series Development Timeline* Memorandums (references to timelines in the aforementioned Memos shall be disregarded), the Design-Build Team shall develop the following right of way items:

  - Right of Way series of plan sheets ("R/W" series of plan sheets) that delineate the existing property information, property ties, proposed centerline data, existing and proposed right of way, existing and proposed easements, and existing and proposed control of access. The "R/W" series of plan sheets shall be signed and sealed by a Professional Land Surveyor registered in the State of North Carolina. The Professional Land Surveyor's signature and seal shall attest that the right of way monuments were placed under their responsible charge.

  - A table of control points for the proposed centerline alignments ("D series of plan sheets).

  - A table of proposed right of way and permanent easement control points ("E" series of plan sheets) that shall be signed and sealed by a Professional Land Surveyor registered in the State of North Carolina.

- It is understood and agreed by and between the parties hereto that all reports, surveys, studies, specifications, memoranda, estimates, etc., secured by and for the Design-Build Team shall become and remain the sole property of the Department upon termination or completion of the work, and the Department shall have the right to use same for any public purpose without compensation to the Design-Build Team.

- The Design-Build Team shall prepare appraisals in accordance with the Department's *Uniform Appraisal Standards and General Legal Principles for Highway Right of Way Acquisitions*. The Design-Build Team's appraiser shall be on the Department's approved state certified appraiser list. The Design-Build Team may request its state certified appraiser(s) be added to the approved state certified appraiser list, subject to approval by the Department's Area Appraiser and State Appraiser.

- The Department will develop or contract with a private firm to develop and provide a second appraisal for parcels as noted below:

  - All parcels with an initial appraisal, with just compensation, equal to or greater than one million dollars ($1,000,000.00).

  - All parcels where the initial appraisal indicates damages to the remaining property equal to or greater than two hundred fifty thousand dollars ($250,000.00), where damages to the

remaining property are defined as a loss in value to the remaining land, and / or improvements and / or a cost to cure.

- The NCDOT, or its agent, will provide appraisal reviews complying with the Department's *Uniform Appraisal Standards and General Legal Principles for Highway Right of Way Acquisitions*. The reviewer will ensure that the appraisal meets the Department's guidelines and requirements, conforms to acceptable appraisal standards and techniques, does not include any non-compensable items or exclude any compensable items and that the value conclusions are reasonable and based on facts presented in the appraisal. The reviewer has the authority to approve, adjust, request additional data or corrections, or not to recommend and request another appraisal. Within ten business days from the date of receipt, all appraisals and / or appraisal corrections will be reviewed by NCDOT Review Appraisers or Review Appraisers under contract to the corresponding NCDOT Area Appraisal Office. The NCDOT will sign as approving any and all appraisals to be used in acquisitions.

- The NCDOT will provide relocation reviews and approvals for all Replacement Housing Payment calculations and all Rent Supplement Payment calculations prior to the Design-Build Team making any offers to the displacees. Within five business days of the receipt of the Replacement Housing Payment or Rent Supplement Payment calculation documentation, which shall include all documentation required for an Evaluation Package, the Department will approve the calculation, and the signed FRM15-D will be returned to the Design-Build Team, or a request for an updated calculation or documentation will be presented to the Design-Build Team for further handling. At this time, the Relocation Coordinator in the NCDOT Right of Way Unit is the approving authority for the aforementioned calculations.

- The Design-Build Team shall coordinate with the Health Department to determine if septic systems can be relocated / modified to remain operational. To assist with the aforementioned determinations, the Design-Build Team may utilize a third-party consultant to perform the septic system inspections only if the Health Department approves the third-party consultant, in writing, prior to the inspections beginning. The Department will only be responsible for the Health Department fees and / or third-party fees associated with these determinations. The Design-Build Team shall determine the relocation / modification design and construction costs required for the septic systems to remain operational and include these costs in the property right of way appraisals. (Reference the Utilities Coordination Scope of Work found elsewhere in this RFP)

- All Claims for Payment involving relocation benefits must be submitted to the NCDOT Relocation Coordinator in the Right of Way Unit for approval and processing.

- At the conclusion of the right of way acquisition process, the Design-Build Team shall provide a right of way certification to the Division Right of Way Agent.

- The Design-Build Team shall prepare Right of Way Transmittal Summaries and / or Narrative Appraisals for all right of way, control of access and easement acquisitions. Claim Reports will not be allowed for any acquisition.

- In accordance with Chapter 133 of the *General Statutes of North Carolina*, Section 133-40, the Council of State must approve acquisition of property with contaminated soil. Thus, prior to acquiring right of way, control of access and / or easement from any parcel with contaminated soil, the Design-Build Team shall provide a written priority list of all properties with contaminated soil that require right of way, control of access and / or easement acquisition to the Division Right of Way Agent, the Area Negotiator, the Area Appraiser, and the Real Property Coordinator, Terry Niles. At a minimum, the aforementioned priority list shall contain the following information:

  - Project TIP Number, description and county
  - Parcel number(s) requiring acquisition of contaminated soil
  - Acquisition Appraisal(s)
  - GeoEnvironmental Impact Evaluation and Hazardous Materials Report provided by the Department
  - Description, with metes and bounds, of the area(s) to be acquired

  The Department will require 90 days from receipt of the information noted above to coordinate with the Council of State and obtain their approval for the acquisition of contaminated property.

SIGNING SCOPE OF WORK (5-22-19)

Project Description

The Design-Build Team shall prepare Signing Plans for the entire project limits, including but not limited to, advance and other necessary signing outside of the roadway construction limits.

Websites and References

The Design-Build Team shall prepare Signing Plans in accordance with the information on the following websites, the version of the following references effective on the Technical Proposal submittal date, and the contract requirements contained herein:

- The Signing and Delineation Unit website

  https://connect.ncdot.gov/resources/safety/Pages/Signing-and-Delineation.aspx

- Traffic Engineering Practices, Policies, and Legal Authority (TEPPL)

  https://connect.ncdot.gov/resources/safety/Teppl/Pages/Teppl-Select-Topics.aspx

- *Manual on Uniform Traffic Control Devices* (MUTCD)

  http://mutcd.fhwa.dot.gov/kno_2009r1r2.htm

- *NC Supplement to the Manual on Uniform Traffic Control Devices*

  https://connect.ncdot.gov/resources/safety/TrafficSafetyResources/2009%20NC%20Supplement%20to%20MUTCD.pdf

- *Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals* (AASHTO)

  https://bookstore.transportation.org/collection_detail.aspx?ID=126

- *Guidelines for Preparation of Signing Plans for Design-Build Projects*

  https://connect.ncdot.gov/letting/Pages/Design-Build-Resources.aspx

- *Design-Build Submittal Guidelines*

  https://connect.ncdot.gov/letting/Pages/Design-Build-Resources.aspx

- NCDOT *Standard Specifications for Roads and Structures*

- NCDOT *Roadway Standard Drawings*

In case of conflicting design parameters, and / or ranges, in the various resources, the proposed design shall adhere to the most conservative values, unless noted otherwise elsewhere in this RFP.

Signing Requirements for Technical Proposal

The Design-Build Team shall select a Private Engineering Firm (PEF) that has experience in the preparation, design, and sealing of Signing Plans for NCDOT on comparable projects. The Technical Proposal shall list projects, where the Signing Plans were developed by the PEF, including description and similarity to the subject project.

The Design-Build Team shall include a Preliminary Signing Concept Map in the Technical Proposal. At a minimum, the aforementioned Concept Map shall include all anticipated DMS locations, all proposed overhead sign structure locations, all overhead signs, and all ground mounted Type A and B guide signs.

Signing Plans Submittal Requirements

The Design-Build Team shall concurrently submit the 25% Preliminary Signing Plans to the recipients in the Design-Build Submittal Guidelines and the ITS Unit for review of the DMS locations.

Prior to submitting the 50% Preliminary Signing Plans, the Design-Build Team, the Division Traffic Engineer, the Regional Traffic Engineer, the Signing and Delineation Regional Engineer and the Design-Build Unit shall meet to discuss and review the Design-Build Team's 25% Preliminary Signing Plans.

The Design-Build Team shall provide 25% Pavement Markings Plans that have been reviewed and accepted by the Department and the latest Roadway Plans with the 50% Preliminary Signing Plans submittal.

Signs to be Furnished by Design-Build Team

The Design-Build Team shall furnish signs in accordance with the specifications provided by the NCDOT.

Signing Project Limits

Unless noted otherwise elsewhere in this RFP, the Design-Build Team shall design, fabricate and install all Type A, B, D, E and F signs and supports (including overhead sign structures) required through the construction limits of the mainline, as well as all -Y- Lines, all service roads, all turn-arounds / cul-de-sacs, all ramps and all loops. Unless noted otherwise elsewhere in this RFP, the Design-Build Team shall design, fabricate and install all signs required beyond the roadway construction limits of the mainline, all -Y- Lines, all service roads and all turn-arounds / cul-de-sacs to ensure adequate advance signage and spacing is provided.

Sign Designs

The Design-Build Team shall include all sign designs in the Signing Plans. All sign designs shall be prepared using the latest version of GuideSign software.

The Design-Build Team shall design, fabricate and install all signs required for the mainline, all -Y- Lines, all ramps, all loops, all service roads, and all turn-arounds / cul-de-sacs, including Type A and B overhead signs, Type A, B, and D ground mounted signs, and exit gore signs. The Design-Build Team shall size and locate all Type E signs (warning and regulatory) and Type F signs (route marker assemblies).

The Design-Build Team shall design, fabricate and install mile markers for I-95 at **1/2-mile** intervals along both sides of the mainline. The Design-Build Team shall install each mile marker on one three-pound U-channel post. Mile markers shall be located at the outside shoulder point or a maximum of 15 feet from the edge of travel lane. The Design-Build Team shall install mile markers such that the bottom of the mile marker shall be four feet above the edge of travel lane (edgeline) elevation. Excluding whole mile locations, mile marker designs shall be in accordance with the Intermediate Reference Location Signs (D10-2a) referenced in the Standard Highway Signs (2004 Edition and the 2012 Supplement to the 2004 Edition). At whole mile locations, mile marker designs shall be in accordance with the Reference Location Signs (D10-2) referenced in the Standard Highway Signs (2004 Edition and the 2012 Supplement to the 2004 Edition).

The Design-Build Team shall design, fabricate and install mile markers and exit numbers in accordance with the mile numbers provided by the Department.

At all interchange exit loops and / or as required by the MUTCD Table 2C-5, the Design-Build Team shall fabricate and install advisory speed signing as shown in Figure 2C-3 of the MUTCD. In addition to signing shown in Table 2C-5 of the MUTCD, the advisory speed signing shall include W13-6, W13-7, W1-13R, and E13-1P signs.

The Design-Build Team shall design, fabricate and install 30" x 36" Chevron Alignment signs (W1-8) along all interchange loops. Each Chevron Alignment sign shall be:

- Installed on two U-channel posts spaced 24" apart with cross bracing
- Located and installed so the bottom of the sign is four feet above the edge of the travel lane elevation (left edge of the loop)

The first Chevron Alignment sign shall be installed as close as practical after the exit gore sign (approximately 20' from the exit gore sign), and shall not interfere with or block the exit gore sign. The first five Chevron Alignment signs shall be spaced approximately 40' apart and oriented to optimize the view of approaching motorists. After these first five Chevron Alignment signs, or beyond the midpoint of the curve, Chevron Alignment sign spacing shall adhere to the MUTCD requirements.

Prior to submittal of RFC Signing Plans, the Design-Build Team shall coordinate with the Signing and Delineation Unit and the Design-Build Unit on destination cities and / or street names on guide signs.

Logo Signs (Blue Service Signs with Specific Business Panels)

The Design-Build Team will not be responsible for designing, locating or installing any additional Logo Signs not located within the project limits on the Technical Proposal submittal date.

Prior to project completion, the Design-Build Team shall relocate, reinstall and / or replace all existing Logo Signs located within the project limits on the Technical Proposal submittal date that are impacted by the Design-Build Team's design and / or construction methods.

If damage occurs to the Logo Signs and / or the business panels during construction, the Design-Build Team shall immediately notify the Division Logo Coordinator. The Design-Build Team shall replace all Logo Signs and / or business panels that are damaged during construction. If the Logo Signs are replaced, the Design-Build Team shall remove the business panels and deliver them to the Division Logo Coordinator. During project construction, the Design-Build Team shall maintain the Logo Signs order of preference in accordance with the MUTCD Section 2J.01.

Sign Sheeting Requirements for Overhead Signs

The Design-Build Team shall design and fabricate all overhead signs with Grade A retro-reflective sheeting for sign legends (text), borders, and all Interstate, US and NC route shields and arrows. The Design-Build Team shall design and fabricate all overhead signs with Grade C retro-reflective sheeting for the background.

Black non-reflective sheeting shall be used for all black arrows, legends (text), and borders on overhead signs.

Speed Limit

The posted speed limit for the mainline (I-95) shall be 70 mph. (Reference the Roadway Scope of Work found elsewhere in this RFP)

Interstate, US and NC Route Designation

The Design-Build Team shall coordinate all interstate, US and NC highway routing with the Traffic Mobility and Safety Division of NCDOT. Prior to designing any signs that display new or revised Interstate, US or NC routes, the Design-Build Team shall confirm all highway routes with the Department. Concurrent with the Release for Construction (RFC) Signing Plans submittal, the Design-Build Team shall notify the State Signing and Delineation Engineer, in writing, of all new or revised Interstate, US or NC routes.

Sign Locations

The Design-Build Team shall determine the station location of all signs and sign structures.

The Design-Build Team shall provide a minimum of two advanced guide signs for all freeway / expressway interchange approaches.

To avoid placing a sign or sign structure in a location that might be in conflict with future roadway projects and / or limit its usefulness / lifespan, the Design-Build Team shall coordinate all proposed sign designs and locations with the Department.

Ground Mounted Sign Supports

The Design-Build Team shall design, fabricate and install ground mounted signs supports in accordance with the NCDOT Roadway Standard Drawings. The associated software for the design of Type A and B ground mounted sign supports, may be referenced on the website noted below:

https://connect.ncdot.gov/resources/safety/Pages/Signing-and-Delineation.aspx

Prior to installation, the Design-Build Team shall 1) field verify all Type A and B ground mounted sign supports, 2) recalculate the field verified S-Dimensions, using the latest edition of the design software on the website noted above, and 3) revise the beam sections, where applicable. The Design-Build Team shall use the most recent version of the ground mounted sign support selection workbook tool, in accordance with the submittal schedule outlined in the "Instructions" tab of the tool.

Unless otherwise approved by the Department, the vertical mounting height for ground mounted Type D, E and F signs shall be a minimum of seven feet and maximum of eight feet from the edge of the travel lane to the bottom of the sign.

On freeways and expressways, the minimum lateral offset for Type A and B ground mounted signs on breakaway supports shall be 30 feet, unless approved otherwise by the Department. The lateral offset shall be measured from the edge of the travel lane closest to the shoulder to the closest sign edge.

On freeways and expressways, all Type A and B ground mounted signs on simple (non-breakaway) supports shall be protected by guardrail, barrier or another form of approved positive protection. The minimum lateral distance between the face of guardrail and the closest sign edge shall be six feet.

Unless noted otherwise elsewhere in this RFP, all Type D, E and F signs shall be installed on U-channel posts in accordance with the NCDOT Roadway Standard Drawings. Type D signs shall not exceed eight feet in width and / or 24 square feet. Unless positively protected, all Type D signs shall be installed on a maximum of two U-channel posts.

Proposed Overhead Sign Structures

The Design-Build Team shall consider the proposed roadway geometry, number of lanes, and all advisory signing needs when selecting the type of overhead signing for a given location. At a minimum, the Design-Build Team shall provide overhead signing at the locations identified in the MUTCD, Section 2E.24 - Signing for Interchange Lane Drops, Section 2A.17 - Overhead Sign Installations, Items A - M, and the following locations, unless allowed otherwise elsewhere in this RFP:

- An option lane at a freeway / expressway multi-lane exit or freeway / ramp split (use Arrow Per Lane signs)
- A freeway lane ends (freeway lane drop)
- Three or more lanes on a freeway

The wind speed for the overhead sign structure and foundation designs for this project shall be 90 mph.

The Design-Build Team shall design, fabricate and install overhead sign supports and foundations in accordance with Section 906 of the NCDOT *Standard Specifications for Roads and Structures*, the *Foundations and Anchor Rod Assemblies for Metal Poles*, and *Overhead and Dynamic Message Sign Foundations* Project Special Provisions found elsewhere in this RFP.

The vertical clearance beneath all proposed overhead sign assemblies shall be no less than 17 feet and no greater than 18 feet. For all proposed overhead sign assemblies, the Design-Build Team shall submit documentation that verifies the actual vertical clearance at all critical points.

For all overhead sign assemblies mounted on concrete median barrier, the Design-Build Team shall design, fabricate and install median barrier footing and median transitional barrier in accordance with the 2018 Roadway Standard Drawing No. 854.05.

The maximum span length for cantilever overhead sign structures shall be 52 feet.

Lighting and walkways will not be required on any overhead sign assembly.

Overhead signs shall not be attached to existing or proposed bridges.

Excluding Interchange Sequence Signs on median barrier, pedestal mounted overhead signs will not be allowed.

Proposed Overhead Wind Load Area

Overhead sign structures shall be designed for proposed and future signs. The designer shall determine wind load areas and include the wind load areas on the overhead sign structure drawings. The wind load area for the sign structures shall be determined according to the following:

- **Case A**, Identified Future Signs: For sign structures that have an identified need for larger future signs, the future signs shall be designed and shown on the overhead sign structure drawings. Future sign messages, sizes, and positions shall be shown on the elevation drawings. The largest potential wind load area shall be used for the design of the overhead structure.

- **Case B**, General Future Wind Load Area: For overhead signs without identified future signs, the structure shall be designed for a larger wind load area to accommodate future signs that are not identified at the time of the structure design. General future wind load area sizes and positions shall be shown on the elevation drawings. The general future wind load area shall be computed as follows:

  - The wind load area shall be rectangular for each primary sign including secondary and supplemental signs.

  - The wind load area width shall extend two feet outside the proposed primary sign on each side of the sign. In cases where the wind load areas of two signs intersect, the taller area shall take priority. For cantilever structures, the wind load area shall be flush with the edge of the primary sign at the cantilevered end, such that the wind load areas do not extend past the end of a cantilever sign structure.

  - The wind load area height shall extend two feet below the bottom of each sign and two feet above the top of each sign, including secondary and supplemental signs as well as the spacing between signs according to Roadway Standard Drawing No. 904.20, and excluding temporary "all traffic exit" signs. The minimum vertical clearance shall be measured from the bottom of the lowest wind load area.

- **Case C**, Exceptions from Case B: The following are exempted from Case B, general future wind load areas:

  - Arrow Per Lane Signs

  - Interchange Sequence Signs on median barrier

Existing Overhead Structures

Prior to modifying an existing overhead sign assembly to accommodate proposed signs that exceed the original wind load area, the Design-Build Team shall perform a structural analysis of the overhead sign structure. The Design-Build Team shall obtain Department acceptance of the structural analysis prior to construction. The Design-Build Team shall replace all existing overhead sign assemblies determined to be structurally inadequate for the proposed modifications, in the Department's sole discretion. The Design-Build Team may modify an existing overhead sign assembly to accommodate proposed signs that do not exceed the original wind load area without performing the aforementioned structural analysis.

When the aforementioned structural analysis determines that an existing overhead sign structure is structurally adequate to be retained or the proposed wind load area does not require a structural

analysis, the Design-Build Team shall remove and dispose of all the existing overhead signs. The Design-Build Team shall install new signs on the retained existing overhead sign structure that adhere to the requirements herein. The Design-Build Team shall prepare Structure Line Drawings that depict 1) the existing signs to be removed, 2) the existing sign sizes, 3) the new sign designs, 4), the vertical clearance of all new signs, 5) the new signs positioning over travel lanes, 6) the lateral placement from supports, 7) the original wind load area, and 8) confirmation that the proposed wind load area does not exceed the original wind load area.

If the Department can't provide existing overhead structure line drawings or shop drawings of the existing overhead sign structure, the Design-Build Team shall design and install new overhead sign structures.

The minimum vertical clearance beneath all existing overhead sign assemblies that are retained shall be 17 feet. For all existing overhead sign assemblies retained, the Design-Build Team shall submit documentation that verifies the actual vertical clearance at all critical points.

Shop Drawings for Overhead Sign Structures

The Design-Build Team shall prepare a shop drawing for each proposed and modified overhead sign structure for the Department's review and acceptance. For shop drawing design and submittal requirements, see *Guidelines for Preparation of Signing Plans for Design-Build Projects* and the NCDOT *Standard Specifications for Roads and Structures.*

Guardrail or other Positive Protection for Overhead Sign Supports

Except as allowed otherwise below, overhead sign supports shall be located a minimum of 40 feet from the edge of the outside travel lane to the center of the sign supports. To minimize right of way, utility, drainage and / or jurisdictional impacts, or to allow a cantilever overhead sign assembly in lieu of a full-span overhead sign assembly, the minimum 40-foot offset may be reduced, at the Department's sole discretion. All overhead sign supports that are not located a minimum of 40 feet from the edge of the outside travel lane to the center of the sign support shall be protected by guardrail or other NCDOT approved positive protection. When an overhead sign support is protected by guardrail, the face of the guardrail shall be located a minimum of eight feet from the center of the sign support.

The Design-Build Team shall review the protection for all existing overhead structure supports that are retained to determine if the existing positive protection meets current requirements. If the positive protection does not meet current requirements, the Design-Build Team shall design and construct new positive protection that adheres to the current requirements.

Cable-guide rail shall not be used as positive protection for overhead sign supports.

Verification of Theoretical Information shown on Structure Line Drawings

The Design-Build Team shall verify the information on the Structure Line Drawings prior to submittal of shop drawings for the Department's review and acceptance. At a minimum, the

aforementioned verification shall include confirmation of the sign(s) positioning over lanes, span length, sign offsets, s drops, and the slopes at the center line of the support / upright. When theoretical dimensions or slopes are revised during construction, the Design-Build Team shall submit a revised Structure Line Drawing with the shop drawing.

Removal and Disposal of Existing Signs

The Design-Build Team shall determine which existing signs, sign supports, overhead signs, and / or overhead sign supports will not be needed or relevant when the project is completed. The Design-Build Team shall remove and dispose of these signs and sign supports.

Temporary Sign and Support Design

The Design-Build Team shall locate, design and install all temporary signs and sign supports. (Reference the Signing Requirements Section of the Transportation Management Scope of Work found elsewhere in this RFP for additional temporary signing requirements)

Sign Maintenance

During project construction, the Design-Build Team shall maintain all existing signs within the project limits (including all Logo Signs and temporary sign installations that may be required by the Transportation Management Plans) to ensure the signs are in good condition, perform as intended, and are visible to motorists. (Reference Articles 901-4 and 1092-2 of the NCDOT *Standard Specifications for Roads and Structures*) All signs and supports remaining / existing at the completion of this project shall be plumb, oriented correctly and adhere to AASHTO requirements.

CADD Files

After acceptance of RFC Signing Plans, the Design-Build Team shall provide the final Signing Plans to the Department in .pdf and MicroStation format.

Construction Revisions

After submittal of RFC Signing Plans, the Design-Build Team shall submit all construction revisions to the Department for review and acceptance prior to incorporation.

As-Built Plans

After project completion, the Design-Build Team shall provide final electronic Signing Plans to the Department. At a minimum, these Signing Plans shall include all revisions that occurred during construction, as well as field verifications for ground mounted sign supports and overhead structures. These Signing Plans shall be provided in .pdf and MicroStation format.

STRUCTURES SCOPE OF WORK (6-20-19)

Project Details

The Design-Build Team shall design and construct the structures necessary to complete the project, including but not limited to, the following:

- Bridge(s) for I-95 northbound to NC 295 southbound (Goldsboro Road) ramp over I-95 at US 13 / NC 295 (Exit 58)
- Widen Bridge 250339 on NC 295 over Dunn Road (US 301)
- Replace Bridge 250152 on SR 1828 (Baywood Road) over I-95
- Replace Bridge 250153 on SR 1005 (Smithfield Road) over I-95
- Replace Bridge 250154 on SR 1815 (Wade-Stedman Road) over I-95
- Replace Bridge 250155 on SR 1813 (Percy Strickland Road) over I-95
- Replace Bridge 250019 on NC 82 (Godwin-Falcon Road) over I-95
- Replace Bridge 250156 on SR 1806 (Sherrill Baggett Road) over I-95
- Replace Bridges 250157 and 250158 on I-95 over Black River with a single structure
- Replace Bridge 250159 on SR 1804 (Rhodes Pond Road) over I-95
- ** **NOTE** ** Bridge 420037 incorporated into the I-5877 signed and sealed plans (Reference the Design-Build Scope of Work found elsewhere in this RFP)
- ** **NOTE** ** Bridge 420057 incorporated into the I-5877 signed and sealed plans (Reference the Design-Build Scope of Work found elsewhere in this RFP)
- All retaining walls required by the Design-Build Team's design
- All sound barrier walls required by the Design-Build Team's design (Reference the Roadway Scope of Work found elsewhere in this RFP)
- All reinforced concrete box culverts required by the Design-Build Team's design

Except as allowed otherwise below, the Design-Build Team shall rehabilitate Bridge 250303 on SR 1863 (Pembroke Lane) over I-95 in accordance with the requirements found under the Rehabilitation of Existing Structures section in this Scope of Work. In lieu of rehabilitating the aforementioned structure, the Design-Build Team has the option to replace the structure. If the Design-Build Team elects to replace the aforementioned structure, the minimum typical section shall be as follows:

- Bridge 250303 - Two 12-foot lanes with a twelve-foot westbound offset and a four-foot eastbound offset

- The Design-Build Team shall design and construct the Bridge 250152 replacement structure (bridge on SR 1828 (Baywood Road) over I-95) such that the future typical section noted below can be built beneath the structure:

  - Six 12-foot I-95 northbound lanes - four lanes to be built as part of this project and two additional future lanes to be built by others

  - Five 12-foot I-95 southbound lanes - four lanes to be built as part of this project and one additional future lane to be built by others

- Minimum 14-foot outside shoulders, 12-foot of which shall be full depth paved shoulders

- Minimum 26-foot full-depth paved median

The Design-Build Team shall prepare functional horizontal and vertical designs that verify the aforementioned future I-95 typical section can be built without the need 1) to obtain a design exception, including but not limited to the future horizontal sight distance requirements; and 2) to modify the bridge and / or retaining walls.

All bridges shall meet the approved roadway typical sections and grades. Bridge geometry (width, length, skew, span arrangement, etc.) shall be in accordance with the accepted Structure Recommendations and / or the accepted Hydraulic Bridge Survey Report prepared by the Design-Build Team.

Unless noted otherwise elsewhere in this RFP, the minimum vertical clearance for bridges constructed over all interstates, freeways and arterials shall be 17'-0". The minimum vertical clearance for bridges constructed over all local roads and collector roads shall be 15'-6". The minimum vertical clearance for bridges constructed over all multiuse paths, and greenways shall be 10'-0".

The Design-Build Team shall maintain the existing minimum vertical clearance for Bridge 250147 on SR 1832 (Murphy Road) over I-95, Bridge 250142 on I-95 Business over I-95, and Bridge 250013 on NC 295 / US 13 over I-95. (Reference the Pavement Management Scope of Work found elsewhere in this RFP)

The Department desires that the minimum vertical clearance of Bridge 250339 on NC 295 over Dunn Road (US 301) be 17' - 0". However, the minimum vertical clearance of Bridge 250339 shall be 16' - 0".

Proposed bridge barrier rails for Bridge 250154 and 250019 shall be per Standard Drawing CBR2. All other bridge barrier rails shall be per Standard Drawing CBR1.

The minimum horizontal setbacks from the closest edge of travel lane to face of barrier in front of walls shall be 14'-0" for bridges over interstates, freeways, and arterials.

Bridges over waterways shall be designed and constructed with spill through slopes with rip rap protection. End bents and end slopes at each end of a bridge shall have the same appearance.

End bents shall be integral if the criteria listed in the NCDOT *Structures Management Unit Manual* is met. The criteria in Section 6.2.3.2 of the NCDOT *Structures Management Unit Manual* shall apply to all roadways, including Secondary Routes that meet the criteria for North Carolina Routes.

Link slabs may be used for bridges with spans up to 100 feet, provided the adjacent spans have girders that are the same depth.

The Design-Build Team shall furnish and install a four-inch duct conduit system for future communications cable on all proposed bridges over I-95 and the bridge on I-95 over Black River. For additional details reference the ITS Scope of Work and the *Fiber Optic Conduit System (RGC - Hanging)* Project Special Provision found elsewhere in this RFP.

Unless noted otherwise elsewhere in this RFP, the following will not be allowed on the project:

- Cored slab, box beam, fracture critical, deck girder and cast-in-place deck slab bridges
- Precast bridge barrier rails
- Precast reinforced box culverts
- Metal plate arch culverts
- Interior pile bents at roadway grade separations
- Attachment of sign structures to bridges
- Bridge attachments in the overhang of roadway grade separation structures
- Casting of conduit in the bridge deck or barrier rail for roadway bridges
- Bridge piers adjacent to a roadway shoulder, excluding interior median piers
- Modular expansion joints
- Monotube or cantilever DMS (if required on project) support structures
- Shallow foundations behind MSE abutment walls

Structure Removal

The Design-Build Team is cautioned that Bridges 250155 and 250156 have lead based paint systems.

Rehabilitation of Existing Structures

If the Design-Build Team does not replace Bridge 250303, the Design-Build Team shall rehabilitate Bridge 250303 in accordance with the following requirements and project special provisions noted below:

- Properly prepare existing concrete bridge deck and concrete barrier rails and apply Silane Treatment to the bridge deck, and the traffic face and top of bridge rails
- Remove and replace the foam joint seals

Project Special Provisions found elsewhere in this RFP:

- Expansion Joint Seal Repair
- Silane Deck Treatment
- Silane Barrier Rail Treatment

Box Culverts

As required by the Design-Build Team's design, the Design-Build Team shall design and construct all proposed reinforced concrete box culverts and replace all existing reinforced concrete box culverts. Reinforced concrete box culvert designs shall be in accordance the Hydraulic Culvert

Survey Reports prepared by the Design-Build Team and accepted by the Department. (Reference the Hydraulics Scope of Work found elsewhere in the RFP)

Sound Barrier Walls

The Design-Build Team shall design and construct all sound barrier walls required by the Design-Build Team's design. (Reference the Roadway Scope of Work found elsewhere in this RFP)

Regardless of wall height, sound barrier walls shall be designed in accordance with the latest edition of the AASHTO *LRFD Bridge Design Specifications* with a minimum base wind pressure of 40 psf.

All proposed sound barrier wall surfaces shall have equivalent surface treatment. (Reference the *Architectural Concrete Surface Treatment* Project Special Provisions found elsewhere in this RFP)

All ground mounted sound barrier walls shall be detailed in accordance with Structure Standard Drawings SBW1 and SBW2, and concrete piles shall be used. (Reference the *Sound Barrier Wall* and *Architectural Concrete Surface Treatment* Project Special Provisions, and the Roadway Scope of Work found elsewhere in this RFP)

The Design-Build Team shall apply non-sacrificial anti-graffiti coating on all exposed surfaces of sound barrier walls and all retaining walls, including MSE walls. (Reference the *Architectural Concrete Surface Treatment* Project Special Provision found elsewhere in this RFP)

General

The Design-Build Team's primary design firm shall be on the Department's list of firms qualified for structure design and maintain an office in North Carolina.

Unless allowed or directed otherwise in this RFP, designs shall be in accordance with the latest editions of the *AASHTO LRFD Bridge Design Specifications* (with exceptions noted in the NCDOT *Structures Management Unit Manual*), NCDOT *LRFD Driven Pile Foundation Design Policy*, NCDOT *Structures Management Unit Manual* (including Policy Memos) and NCDOT *Bridge Policy Manual.*

Use of Florida Department of Transportation Prestressed Florida I-Beams (FIB), the Prestressed Concrete Committee for Economic Fabrication (PCEF) prestressed concrete girders, and Modified Bulb Tee girders will be allowed. However, the structural details associated with the aforementioned items, including but not limited to mild reinforcing and reinforcing cover, shall be subject to Department review and acceptance post-award.

Unless allowed or directed otherwise in this RFP, all construction and materials shall be in accordance with 2018 NCDOT *Standard Specifications for Roads and Structures*, NCDOT *Structures Management Unit Project Special Provisions* and NCDOT *Structures Management Unit Standard Drawings*.

Alternate designs, details or construction practices (such as those employed by other states, but not standard practice in NC) are subject to Department review and approval, and will be evaluated on a case by case basis.

TRANSPORTATION MANAGEMENT SCOPE OF WORK (7-9-19)

Laws, Standards and Specifications

The Design-Build Team shall design the Transportation Management Plan (TMP) in accordance with the requirements of this RFP and the version of the standards listed below that are effective on the Technical Proposal submittal date.

- NCDOT *Standard Specifications for Roads and Structures*
- NCDOT *Roadway Standard Drawings*
- NCDOT *Supplement to the Manual on Uniform Traffic Control Devices* (NCSMUTCD)
- FHWA *Manual on Uniform Traffic Control Devices* (MUTCD)
- NCDOT *Roadway Design Manual*
- Americans with Disabilities Act of 1990 (ADA)
- AASHTO *A Policy on Geometric Design of Highways and Streets*
- AASHTO *Roadside Design Guide*
- FHWA *Standard Highway Signs*
- NCDOT *Guidelines for Preparation of Traffic Control and Pavement Marking Plans for Design-Build Projects*
- NCDOT *Design-Build Submittal Guidelines*
- FHWA *Rule on Work Zone Safety and Mobility* (23 CFR 630 Subpart J and K)
- Transportation Research Board *Highway Capacity Manual*

References

The Design-Build Team shall use the references provided on the site below as supplementary guidelines and requirements for the design and implementation of the Transportation Management Plan (TMP).

https://connect.ncdot.gov/projects/WZTC/Pages/default.aspx

Transportation Management Plans

The Design-Build Team shall prepare Transportation Management Plans (TMP) that include Temporary Traffic Control Plans (TTCP), an Incident Management Plan (IMP), a Traffic Operations Plan (TOP), the requirements of which are included in this Scope of Work, and a Public Information Plan (PIP) through coordination with the Department and in accordance with the Public Information Scope of Work found elsewhere in this RFP.

The Design-Build Team shall produce TMPs for each phase of work that impacts road users. The TMPs shall include details of all planned detours, traffic control devices, striping, and signage applicable to each phase of work. The information on the TMP shall be of sufficient detail to allow verification of design criteria and safety requirements, including, but not limited to, typical sections, alignment, striping layout, drop off conditions, and temporary drainage. The Design-Build Team shall develop TMPs that include procedures to communicate TMP information to the public about road and travel conditions within the work zone and affected roadway network.

A Transportation Management Phasing Concept (TMPC) shall be prepared by the Design-Build Team to present the Design-Build Team's approach to all areas covered under the TMP, including but not limited to hauling of materials to, from, and within the project right of way. The Design-Build Team shall include the TMPC in the Technical Proposal. The Design-Build Team shall submit the TMPC for Department review and acceptance and shall address NCDOT comments on the TMPC prior to commencing production of the TMP for each phase of work or any construction. Any changes to the TMPC after acceptance by NCDOT shall require a submittal for review prior to any future phasing submittals.

The Design-Build Team shall select a Private Engineering Firm (PEF) that has experience developing TMPs on comparable projects for the North Carolina Department of Transportation (NCDOT) and shall list these comparable projects in the Technical Proposal.

In the event any self-imposed liquidated damages are included in the Technical Proposal an Intermediate Contract Time(s) shall be established and shall become part of the Contract.

General Requirements

When lane and / or shoulder closures are not in effect, maintain the existing number of travel lanes on all roads. For existing travel lanes that are 11-foot wide or wider, maintain a minimum of 11-foot travel lanes at all times. For existing travel lanes that are narrower than 11 feet, maintain the existing travel lane widths at all times.

Unless permitted otherwise elsewhere in this RFP, maintain existing shoulder widths. Maintain four-foot wide inside and outside paved shoulders in each direction of I-95 unless temporary barrier is placed on the paved shoulder. Under structures only, maintain a minimum two-foot wide paved shoulder adjacent to I-95 through lanes and a minimum one-foot wide paved shoulder adjacent to ramps.

The Design-Build Team shall maintain positive median cross-over protection for the entire I-95 project limits. The Design-Build Team shall indicate in the Technical Proposal the type of positive protection proposed and replacement / resetting requirements.

All traffic control devices, including portable concrete barrier and bridge barrier rails, shall be placed / located a minimum two-foot offset (shy distance) from the edge of an open travel lane, unless allowed otherwise elsewhere in this RFP.

Placement of temporary barrier systems shall be shown on the (TMPC). Temporary barrier systems shall be designed in accordance with the following requirements:

- Determine the need for temporary barrier in accordance with the FHWA *Rule on Temporary Traffic Control Devices* (23 CFR 630 Subpart K). Reference the NCDOT Work Zone Traffic Control website noted below for examples and *Guidelines on the Use of Positive Protection in Work Zones*.

https://connect.ncdot.gov/projects/WZTC/Pages/Design-Resources.aspx

- The Design-Build Team shall adhere to the AASHTO *Roadside Design Guide* in determining the length of need, flare rate, and clear zone. The Design-Build Team shall adhere to the possible deflection of the proposed temporary barrier system in accordance with NCHRP-350, *Recommended Procedures for the Safety Performance Evaluation of Highway Features* deflections from crash testing and MASH (2016 AASHTO *Manual for Assessing Safety Hardware*). Providing less than the minimum deflection distance shall require the use of anchored temporary barrier systems in accordance with the NCDOT *Standard Specifications for Roads and Structures*.

- When temporary barrier is used continuously on one or both sides of a direction of I-95 travel for a distance greater than one mile, the Design-Build Team shall provide a paved motorist breakdown area on the right side of the I-95 travelway every mile, unless the outside useable paved width (clear distance between edge of travel lane and face of barrier) is ten feet or greater. All breakdown areas shall be a minimum of one thousand feet long and fourteen feet wide, ten feet of which shall be pavement. All breakdown areas shall be identified on the project with Changeable Message Signs and / or stationary signs placed in advance of the breakdown area, as approved by the Department. Prior to incorporation, the Design-Build Team shall submit a temporary pavement design for the breakdown areas. (Reference the Pavement Management Scope of Work elsewhere in this RFP)

- All temporary barrier systems utilized for traffic control shall be placed on a paved surface. Unless permitted otherwise by the barrier manufacturer, the paved surface shall extend a minimum of two feet behind all unanchored barrier.

- ** **NOTE** ** Deleted bullet on temporary barrier placement.

- The Design-Build Team shall not place temporary barrier along any shifting taper, including but not limited to, existing, temporary and / or proposed shifting tapers.

- When barrier is placed on a roadway shoulder, the Design-Build Team shall install shoulder closure signs and devices in advance of the barrier in accordance with the NCDOT Roadway Standard Drawings.

- The Design-Build Team shall not place temporary barrier in the gore area. In accordance with ICT #7 - #10 and #12, the Design-Build Team shall temporarily close the ramp or loop if the work cannot be safely performed without placing temporary barrier in the gore area.

The design speed for temporary interstate, US and NC alignments that exceed seven continuous days shall not be lower than the current posted speed limit. The design speed for temporary interstate and US alignments for time periods of seven continuous days or less shall not be lower than 20 mph below the existing posted speed limit. The design speed for temporary NC alignments for time periods of seven continuous days or less shall be the higher of 20 mph below the posted

speed limit or 35 mph. The design speed for temporary alignments on secondary routes, regardless of duration, shall be the higher of 10 mph below the posted speed limit or 35 mph. All temporary alignments both horizontally and vertically shall be approved by the Engineer before construction initiates.

The NCDOT Roadway Standard Drawing No. 1101.11 shall be used to calculate the length of temporary merges for lane closures and temporary traffic shifts. All interstate traffic shifts shall be designed to the full "L" lengths (half-length shifting alignments will not be allowed). For temporary traffic patterns that will remain in place for a period longer than three days, including but not limited to traffic shifts, merges, and temporary alignments, breaks in the superelevation and / or breaks in a normal crown section will not be allowed within the shifting taper. Excluding the aforementioned temporary traffic patterns, breaks in the superelevation and / or breaks in a normal crown section shall only occur on a lane line or lane midpoint, and shall not exceed 0.04.

Temporary traffic shifts that are not covered by a standard and / or requiring vertical grades shall be considered a temporary alignment. All temporary alignments shall adhere to the NCDOT *Roadway Design Manual*, AASHTO, *A Policy on Geometric Design of Highways and Streets* and the most current Transportation Research Board *Highway Capacity Manual*.

Maintain access to all residences, schools, bus stops, mass transit facilities (park and ride lots), emergency services and businesses at all times. Prior to incorporation, obtain written approval from the Engineer on method to maintain access.

In accordance with the revised NCDOT *Pedestrian Guidelines* found on the Work Zone Traffic Control Section website, current bicycle and pedestrian access and mobility shall be maintained to all roadways where it currently exists.

Through traffic traveling in the same direction shall not be split. (i.e. separation by any type of barrier, bridge piers, existing or proposed median, etc.).

Prior to incorporation, obtain written approval from the Engineer for all road and / or access point closures.

Prior to incorporation, all offsite detour routes shall receive Department written approval and shall adhere to the following requirements:

- Except as allowed in ICT #6, I-95 shall not be closed.
- Except as allowed in ICT #7, I-95 Business shall not be closed.
- US 13 and NC 295 shall not be closed.
- Except as allowed in ICT #9 and #11, SR 1815 (Wade Stedman Road) shall not be closed.
- Except as allowed in ICT #10 and #11, NC 82 shall not be closed.

- Except as allowed in ICT #22, Dunn Road (US 301) shall not be closed.
- Except as allowed in ICT #6 - #10, #12 and #18, all ramps, loops and flyovers shall remain open.
- The Design-Build Team shall not concurrently close -Y5LPA- and -Y5RPB-.
- The Design-Build Team shall not concurrently close the ramp pairs at the I-95 / SR 1815 (Wade Stedman Road) interchange. (Reference ICT #9)
- The Design-Build Team shall not concurrently close the ramp pairs at the I-95 / NC 82 interchange. (Reference ICT #10)
- The Design-Build Team shall not concurrently close -Y- Lines with overlapping detours.
- The Design-Build Team shall not permanently close any existing ramp or loop until the proposed replacement ramp or loop that provides traffic the same movement as the movement to be closed is open to traffic in the final pattern.
- ** **NOTE** ** Deleted bullet on offsite detours.
- The Design-Build Team shall be responsible for investigating all detour routes including but not limited to, analyzing traffic capacity, investigating impacts to emergency services and schools, analyzing design characteristics to ensure the design supports the traffic volumes (existing traffic volumes plus detoured traffic volumes), and investigating pavement structural adequacy including any bridge postings on the detour route. The aforementioned investigations shall be submitted with the recommended detour route.
- As determined by the Engineer, the Design-Build Team shall provide improvements required to accommodate detoured traffic prior to utilizing detour routes.
- Offsite detours that have non-signalized at-grade railroad crossings shall not be allowed.
- Submit detour routes and all associated sign designs for review and acceptance prior to incorporation.
- All proposed road closures, detour routes, durations and justifications shall be incorporated into the Technical Proposal. (All proposed road closures, detour routes, durations and justifications incorporated into the Technical Proposal shall require Department approval.)
- Use only state maintained roads for off-site detour routes.

On all roadways within the project limits, the Design-Build Team shall provide safe access for wide-loads and oversized permitted vehicles through the work zone. Safe access shall entail,

but is not limited to, a sufficient pavement structure (Reference the Pavement Management Scope of Work found elsewhere in this RFP), maintaining the existing vertical clearance of overhead structures, providing the required vertical clearance on proposed overhead structures and providing the minimum horizontal clear widths as follows:

Roadway	Minimum Clear Width
I-95, NC routes, US routes, and all ramps and loops	20 feet
All other roadways	18 feet

The Design-Build Team shall coordinate with the Division Maintenance Engineer, Resident Engineer, Division 6 Traffic Engineer, and Statewide Transportation Operations Center (STOC) to manage traffic operations within the work zone and other roadways within the network that may be affected by the work zone activities. Coordination shall include, but not be limited to, providing notification of planned lane or road closures, traffic detours, public information, traffic management, access management, incidents, etc.

On all roads, the Design-Build Team shall make all modifications to existing pavement markings, markers and / or signing located outside the project limits that are necessitated by the TMP.

The Design-Build Team shall provide a smooth pavement surface for traffic at all times. The Design-Build Team shall not place traffic on lanes containing rumble strips.

All on-site detours shall meet the minimum number of existing lanes per direction and shall adhere to all temporary alignment requirements noted elsewhere in the RFP. A pavement transition, suitable for the posted speed limit shall be provided at all on-site detour interfaces.

The Design-Build Team shall take steps to minimize disruptions to existing roadway facilities during construction and shall demonstrate how the traffic control phasing, minimizes inconvenience to motorists on all roads.

The Design-Build Team shall provide and utilize Changeable Message Signs (CMS) as follows:

- The Design-Build Team shall provide CMSs that have the functionality to be operated locally in the field and controlled remotely from the STOC. All CMSs provided must be fully National Transportation Communications for ITS Protocol (NTCIP) compliant, on the NCDOT Approved Products List, Full Matrix and capable of communicating with the existing software utilized by the STOC staff on the date of the Technical Proposal submittal. No vendor specific or third-party software will be allowed. The Design-Build Team shall not begin any construction that involves lane closures on any road until all CMSs and all other devices are installed and communicating with the STOC.

- For traffic control purposes during construction, the Design-Build Team shall provide and operate a minimum of one CMS per direction on I-95 that provides general information about the construction activities within the project limits. Prior to implementation, the Design-Build Team shall coordinate all messages on these CMSs with the Resident Engineer, Division 6 Traffic Engineer, and the STOC. These CMSs shall be in addition to any other CMSs required by the NCDOT Roadway Standard Drawings or required for incident management use.

- In addition to the CMSs required above and the CMSs required in the ITS SOW found elsewhere in this RFP, the Design-Build Team shall provide and operate a minimum of 12 CMSs to display alternate route information ahead of the project detour points for incidents on I-95. These 12 CMSs shall be installed, operated, and maintained from the initiation of project construction to project completion. The 12 CMSs shall be used to provide project information approved by the Division Maintenance Engineer, Resident Engineer, Division 6 Traffic Engineer, and Statewide Transportation Operations Center (STOC) including but not limited to construction activities and incident management information. The positioning of these incident management CMSs shall be coordinated with, and approved by, the Resident Engineer, Division 6 Traffic Engineer, and the STOC.

- The Design Build Team shall be responsible for ensuring that alternate routes for incident management are signed with either existing stationary alternate route signing or provide temporary stationary alternate route signing to guide detoured motorists along the alternate route back to the original road. The Design-Build Team shall provide a plan, for approval by the Resident Engineer, Division 6 Traffic Engineer, and STOC that shows the alternate routes to be used for incident management, the approximate locations of CMSs, along with their respective messages, and existing and temporary stationary alternate route signing to be used for incident management. The Design-Build Team shall coordinate with the Resident Engineer, Division 6 Traffic Engineer, and the STOC when alternate route information needs to be displayed. In the event of an incident, the STOC will take remote control of the applicable CMSs to provide incident management information to motorists. Upon incident clearance and resumption of normal traffic flow, the STOC will allow the Design-Build Team to regain control of the CMSs.

- The Design-Build Team shall fabricate, install, relocate, and maintain the CMSs and stationary signs during construction of the project. Upon completion of the project, or as directed by the Engineer, the Design-Build Team shall remove and / or dispose of the CMSs and stationary signs.

- The Design-Build Team shall coordinate on a 24-hour basis with the Resident Engineer, Division 6 Traffic Engineer, and the STOC to provide relevant and timely travel information throughout the work zone and along alternate routes.

"Connected" Lane Closure Devices

The Design-Build Team shall provide and utilize "Connected" Lane Closure Devices in accordance with the following requirements.

- **Materials**

The "Connected" Lane Closure Devices shall be designed and built to transmit the location and direction of the lane closure to navigational companies such as WAZE, HERE, Google Maps, INRIX, etc. and be on the NCDOT Approved Products List or approved by the Work Zone Traffic Control Section. The "Connected Lane Closure Devices shall be capable of obtaining wireless communication by both cellular and satellite technology.

The initial "Connected" Lane Closure Device shall be designed and attached to the flashing arrow panel in such a manner that it is only activated when either the left or right arrows are displayed, not when the flashing arrow panel is operated in caution mode. When the lane closure is removed, and the flashing arrow panel turned off, the connected device shall automatically turn off simultaneously.

The second "Connected" Lane Closure Device shall be installed on a crashworthy traffic control device and have an easily accessible power switch and a small status indicator light that is mounted so it is visible when passing by at operating speeds. When switched to the "ON" position, the light shall indicate that the device has established communication and is transmitting. The light may be either steady burn or flashing.

- **Construction Methods**

Only one "Connected" Lane Closure Device flashing arrow board per group of lane closures shall be installed. Supplemental flashing arrow panels in advance of the first lane closure taper or flashing arrow panels in subsequent lane closures (for double and triple lane closures) shall not have "Connected" Lane Closure Devices. Subsequent lane closures occurring downstream where lanes have been reopened shall require additional "Connected" Lane Closure Devices

The second "Connected" Lane Closure Device shall be manually turned ON and OFF by staff installing and removing the lane closure unless the device can be operated by the initial "Connected" Lane Closure Device. The unit shall be turned on immediately upon installation of the lane closure and turned off immediately upon removal of the lane closure.

- **Technical Requirements**

The "Connected" Lane Closure Device shall report direction of travel within one of the following four quadrants: North, East, South, or West.

The "Connected" Lane Closure Devices shall be run for the length of the lane closure.

The GPS within the "Connected" Lane Closure Device shall have a horizontal accuracy of 50 feet, 95% of the time.

The "Connected" Lane Closure Device information, including the location, shall be transmitted within five minutes of initiation and updated every 15 minutes. In addition of transmitting information to the Department, the Design-Build Team shall keep the connected device information for one year after the Departments' final acceptance of the project. Information shall include timestamps, device name, direction and GPS location. This information shall be made available to the Department upon request.

The battery voltage shall be collected at least once an hour. The information shall be stored and available for troubleshooting. The system shall transmit an alert if the battery voltage of a "Connected" Lane Closure Device is under a specified threshold.

The system shall transmit an alert if a "Connected" Lane Closure Device is not transmitting its position for a period of one hour.

Lane Closure Notice (LCN)

The Design-Build Team shall issue a Lane Closure Notice (LCN) to NCDOT and affected government entities a minimum of thirty (30) calendar days prior to the publication of any notices or placement of any traffic control devices associated with lane closures, detour routing or other change in traffic control requiring lane closures. The Design-Build Team will be allowed to issue a single LCN for multiple / consecutive lane closures that occur in the same location.

For a LCN utilizing a non-NCDOT controlled facility, the Design-Build Team shall secure concurrence, in writing, from the controlling government entity. A LCN shall contain the estimated date, time, duration and location of the proposed work. The Design-Build Team shall keep NCDOT informed of any and all changes or cancellations of proposed lane closures prior to the date of their implementation.

If an emergency condition should occur, a LCN shall be provided to NCDOT within two (2) days after the event. For non-NCDOT controlled facilities, the Design-Build Team shall immediately notify the controlling government entity.

Road Closure Notice (RCN)

Proposed road closures on any road shall be approved by the Engineer prior to incorporation in the Transportation Management Plans.

The Design-Build Team shall issue a Road Closure Notice (RCN) to NCDOT and affected government entities a minimum of thirty (30) calendar days prior to the publication of any notices or placement of any traffic control devices associated with road closures, detour routing or other change in traffic control requiring road closures.

For a RCN utilizing a non-NCDOT controlled facility, Design-Build Team shall secure concurrence in writing from the controlling government entity. A RCN shall contain the estimated

date, time, duration, and location of the proposed work. The Design-Build Team shall keep NCDOT and any other affected government entity informed of any and all changes or cancellations of proposed road closures prior to the date of their implementation.

If an emergency condition should occur, a RCN shall be provided to NCDOT within two (2) days after the event. For non-NCDOT controlled facilities, the Design-Build Team shall immediately notify the controlling government entity.

Project Operations Requirements

A. Time Restrictions

The following are Time Restrictions and notes that shall be included with the TMP General Notes, unless noted otherwise elsewhere in this RFP:

1. **Intermediate Contract Times #1 - #5 for Lane Narrowing, Lane Closure, Holiday and Special Event Time Restrictions.**

   Unless allowed otherwise elsewhere in this RFP, the Design-Build Team shall maintain the existing traffic pattern and shall not close or narrow a single lane of traffic during the periods and times below.

Intermediate Contract Time	Facility	Days	Time Restrictions
1	I-95, including all ramps and loops, and NC 295 west of I-95	Monday through Thursday	8:00 a.m. to 7:00 p.m.
1	I-95, including all ramps and loops, and NC 295 west of I-95	Friday through Sunday	7:00 a.m. to 9:00 p.m.

   In locations where there are three or more lanes in a direction of travel on I-95, the Design-Build Team shall maintain the existing traffic pattern and shall not close or narrow two lanes of traffic during the times below.

Intermediate Contract Time	Facility	Days	Time Restrictions
2	I-95	Monday through Sunday	6:00 a.m. to 11:00 p.m.

   The Design-Build Team shall maintain the existing traffic pattern and shall not close or narrow a single lane of traffic during the times below, unless otherwise permitted elsewhere in this RFP.

Intermediate Contract Time	Facility	Days	Time Restrictions
3	I-95 Business, including the southbound exit ramp and entrance loop at Dunn Road (US 301)	Monday through Friday	7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m.
4	Dunn Road (US 301)	Monday through Friday	7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 7:00 p.m.

In addition, the Design-Build Team shall not close or narrow a lane of traffic on the aforementioned facilities, detain, and / or alter the traffic flow on or during holidays, holiday weekends, special events, or any other time when traffic is unusually heavy. At a minimum, these requirements / restrictions shall apply to the following schedules:

(a) For New Year's between the hours of 7:00 a.m. December 31st and 8:00 p.m. January 2nd. If New Year's Day is on a Friday, Saturday, Sunday or Monday then between the hours of 7:00 a.m. December 31st and 9:00 p.m. the following Tuesday.

(b) For Easter, between the hours of 7:00 a.m. Thursday and 9:00 p.m. Monday.

(c) For Memorial Day, between the hours of 7:00 a.m. Friday and 8:00 p.m. Tuesday.

(d) For Independence Day, between the hours of 7:00 a.m. July 3rd and 8:00 p.m. July 5th. If Independence Day is on a Friday, Saturday, Sunday or Monday, then between the hours of 7:00 a.m. the Thursday before Independence Day and 8:00 p.m. the Tuesday after Independence Day.

(e) For Labor Day, between the hours of 7:00 a.m. Friday and 8:00 p.m. Tuesday.

(f) For Thanksgiving Day, between the hours of 7:00 a.m. Tuesday and 8:00 p.m. Monday.

(g) For Christmas, between the hours of 7:00 a.m. the Friday before the week of Christmas Day and 8:00 p.m. the following Tuesday after the week of Christmas Day.

Liquidated Damages for Intermediate Contract Time #1 for the above lane narrowing, lane closures, holiday and special event time restrictions for a single lane on I-95, including all ramps and loops, and NC 295 west of I-95 are $2,500.00 per 15-minute period or any portion thereof.

Liquidated Damages for Intermediate Contract Time #2 for the above lane narrowing lane closures, holiday and special event time restrictions for two lanes of a three-lane section (in one direction) on I-95 are $3,500.00 per 15-minute period or any portion thereof.

Liquidated Damages for Intermediate Contract Time #3 for the above lane narrowing and lane closures on I-95 Business, including the southbound exit ramp and entrance loop at Dunn Road (US 301), are $500.00 per 15-minute period or any portion thereof.

Liquidated Damages for Intermediate Contract Time #4 for the above lane narrowing, lane closures, holiday and special event time restrictions on Dunn Road (US 301) are $500.00 per 15-minute period or any portion thereof.

Liquidated Damages for Intermediate Contract Time #5 for the above lane narrowing, lane closure, holiday and special event time restrictions on I-95 Business, including the southbound exit ramp and entrance loop at Dunn Road (US 301) are $2,500.00 per 15-minute period or any portion thereof.

2. **Intermediate Contract Time #6 for Road Closure Restrictions for Construction Operations**

Unless allowed otherwise elsewhere in this RFP, at a minimum, the Design-Build Team shall maintain the existing traffic pattern and follow the road closure restrictions for all roadways listed below. When a road closure is used, the Design-Build Team shall reopen the travel lanes by the end of the road closure duration to allow the traffic queue to deplete before re-closing the roadway.

Unless allowed otherwise elsewhere in this RFP, the Design-Build Team shall 1) not close any direction of travel on the following roads or any ramps / loops during the times noted below; and 2) only close the following roads or any ramps / loops for the operations listed in this intermediate contract time. Using a median crossover, exclusively for the operations listed below, shall be defined as a closure of a direction of travel.

A crossover providing one lane in each direction on I-95 will be allowed for the purpose of bridge demolition, and girder, overhang, and falsework installation and / or removal during the times set forth below. No other roads shall be put in a crossover pattern. If the Design-Build Team elects to use a crossover for the aforementioned activities, during the times set forth below, the crossover shall be designed and constructed to meet a design speed of no more than 20 mph below the posted speed limit prior to implementation of a reduced work zone speed limit. Unless approved otherwise by the Engineer, in writing, the maximum allowable distance between the crossovers shall be 2,750.00 feet. The Design-Build Team shall monitor the traffic queue during operation of the crossover. Should the traffic queue extend to the advance warning signs, traffic shall be returned to the existing number of lanes in each direction until the traffic queue is depleted.

Facility	Days	Time Restrictions
I-95, including all ramps and loops	Monday through Sunday	6:00 a.m. to 11:00 p.m.

For the operations noted below, the maximum road closure duration shall not exceed **thirty (30) minutes** without an approved offsite detour. With an approved offsite detour, the roadways listed may be closed from 11:00 p.m. to 6:00 a.m. for the operations listed below.

- Bridge demolition
- Girder, overhang, and falsework installation and / or removal
- Installation of overhead sign assemblies and / or work on existing overhead sign assemblies over travel lanes

Proposed road closures for any road within the project limits shall be approved by the Engineer, in writing, prior to incorporation in the TMP.

Liquidated Damages for Intermediate Contract Time #6 for the above road closure time restrictions for construction operations on I-95, including all ramps and loops, are $2,500.00 per 15-minute period or any portion thereof.

3. **Intermediate Contract Times #7 and #8 for Ramp / Loop Reconstruction**

One road closure, with an approved offsite detour, will be permitted for the reconstruction of each ramp / loop listed below, for the maximum durations listed below. The Design-Build Team shall not concurrently close any ramps or loops at interchanges adjacent to the interchange undergoing ramp / loop reconstruction.

Intermediate Contract Time	Interchange	Duration
7	I-95 / I-95 Business / US 301	14 Consecutive Calendar Days Per Ramp (excluding the southbound exit ramp and entrance loop at Dunn Road (US 301))
8	The following ramps / loops at I-95 / NC 295 / US 13: Ramp -Y5RPB- Ramp -Y5RPC- Loop -Y5LPA-	30 Consecutive Calendar Days Per Ramp / Loop

The date of availability shall be the date the Design-Build Team elects to close the ramp / loop. The Design-Build Team shall provide the Engineer a minimum of 30 days written notice prior to the date of availability. The date of completion shall be the number of consecutive calendar days proposed by the Design-Build Team in the Technical Proposal, and such number of consecutive calendar days proposed shall not be greater than the days noted above.

Liquidated Damages for Intermediate Contract Time #7 for the above road closure time restrictions for ramp reconstruction at the I-95 / I-95 Business / US 301 interchange (excluding the southbound exit ramp and entrance loop at Dunn Road (US 301)) are $5,000.00 per calendar day or any portion thereof.

Liquidated Damages for Intermediate Contract Time #8 for the above road closure time restrictions for the Ramp -Y5RPB-, Ramp -Y5RPC- and Loop -Y5LPA- ramp / loop reconstruction at the I-95 / NC 295 / US 13 interchange are $5,000.00 per calendar day or any portion thereof.

4. **Intermediate Contract Times #9, #10 and #11 for Ramp / Loop and -Y- Line Reconstruction**

One road closure, with an approved offsite detour, will be permitted for the reconstruction of the ramps / loops and -Y- Lines listed below, for the maximum durations listed below. The Design-Build Team shall not concurrently close any ramps or loops at interchanges adjacent to the interchange undergoing ramp and / or -Y- Line reconstruction.

Intermediate Contract Time	Interchange	Duration
9	I-95 / SR 1815 (Wade Stedman Road)	45 Consecutive Calendar Days per Ramp / Loop Pair and Associated -Y- Line Segment *
10	I-95 / NC 82	45 Consecutive Calendar Days per Ramp / Loop Pair and Associated -Y- Line Segment *
11	SR 1815 (Wade Stedman Road) between the ramp terminals and NC 82 between the ramp terminals	90 Consecutive Calendar Days

* **Pair** shall be defined as the entrance and exit ramp / loop in the same direction within an interchange. **Associated -Y- Line Segment** shall be defined as the roadway approach to the interchange that is located outside the interchange quadrants and provides access to the entrance and exit ramp / loop pair that is closed.

The 45 consecutive calendar day ramp / loop pair and associated -Y- Line segment closures shall occur consecutively for a maximum of 90 consecutive calendar day road closure at each interchange.

At each interchange, the -Y- Line closure between the ramp terminals shall occur concurrently with the ramp / loop and associated -Y- Line segment closures.

The date of availability shall be the date the Design-Build Team elects to close the first ramp / loop pair at each interchange. The Design-Build Team shall provide the Engineer a minimum of 30 days written notice prior to the date of availability. The date of completion for the ramp / loop pair and associated -Y- Line segment closure shall be the number of consecutive calendar days proposed by the Design-Build Team in the Technical Proposal, and such number shall not be greater than 45 consecutive calendar days. The date of completion of the -Y- Line closure between the ramp terminals shall be the sum of the number of consecutive calendar days proposed by the Design-Build Team in the Technical Proposal for both ramp / loop pair and associated -Y- Line segment closures at each interchange, and such number shall not be greater than 90 consecutive calendar days.

Liquidated Damages for Intermediate Contract Time #9 for the above road closure time restrictions for ramp / loop pair and associated -Y- Line segment reconstruction at the I-95 / SR 1815 (Wade Stedman Road) interchange are $2,000.00 per calendar day or any portion thereof.

Liquidated Damages for Intermediate Contract Time #10 for the above road closure time restrictions for ramp / loop pair and associated -Y- Line segment reconstruction at the I-95 / NC 82 interchange are $2,000.00 per calendar day or any portion thereof.

Liquidated Damages for Intermediate Contract Time #11 for the above road closure time restrictions for -Y- Line reconstruction between the ramp terminals at the I-95 / SR 1815 (Wade Stedman Road) interchange and between the ramp terminals at the I-95 / NC 82 interchange are $2,000.00 per calendar day or any portion thereof.

5. **Intermediate Contract Time #12 for Ramp Reconstruction**

One road closure, with an approved offsite detour, will be permitted for the reconstruction of the ramps listed below, for the maximum duration listed below. The Design-Build Team shall not concurrently close any ramps or loops at interchanges adjacent to the interchange undergoing ramp reconstruction.

Intermediate Contract Time	Interchange	Duration
12	I-95 / SR 1002 (Long Branch Road)	45 Consecutive Calendar Days Total for **All** Ramps

The date of availability shall be the date the Design-Build Team elects to close the ramps. The Design-Build Team shall provide the Engineer a minimum of 30 days written notice prior to the date of availability. The date of completion shall be the number of consecutive calendar days proposed by the Design-Build Team in the Technical Proposal, and such number of consecutive calendar days proposed shall not be greater than the days noted above.

Liquidated Damages for Intermediate Contract Time #12 for the above road closure time restrictions for ramp reconstruction at the I-95 / SR 1002 (Long Branch Road) interchange are $2,000.00 per calendar day or any portion thereof.

6. **Intermediate Contract Times #13 - #19 for Bridge Reconstruction**

One road closure with an approved offsite detour will be permitted for the removal and reconstruction of each bridge and adjacent roadway improvements for the maximum durations listed below.

Intermediate Contract Time #	Bridge	Duration	Liquidated Damages (per calendar day or any portion thereof)
13	On SR 1828 (Baywood Road) over I-95	365 Days	$2,500.00
14	On SR 1005 (Smithfield Road) over I-95	365 Days	$2,500.00
15	On SR 1813 (Percy Strickland Road) over I-95	365 Days	$2,500.00
16	On SR 1806 (Sherrill Baggett Road) over I-95	365 Days	$2,500.00
17	On SR 1804 (Rhodes Pond Road) over I-95	365 Days	$2,500.00
18	On SR 1811 (Bud Hawkins Road) over I-95, including all ramps and loops	365 Days	$2,500.00
19	On SR 1002 (Long Branch Road) over I-95	365 Days	$2,500.00

The date of availability shall be the date the Design-Build Team elects to close the road. The Design-Build Team shall provide the Engineer a minimum of 30 days written notice prior to the date of availability. The date of completion shall be the number of calendar days proposed by the Design-Build Team in the Technical Proposal, and such number of calendar days proposed shall not be greater than the days noted above.

7. **Intermediate Contract Time #20 for Culvert Reconstruction**

During ICT #19, one road closure with an approved offsite detour will be permitted to construct the culvert on SR 1002 (Long Branch Road), near Station 20+50 -Y13-, for the maximum duration listed below.

Facility	Days	Time Restrictions
SR 1002 (Long Branch Road)	Monday through Sunday	90 Consecutive Calendar Days

The date of availability shall be the date the Design-Build Team elect to close the road. The Design-Build Team shall provide the Engineer a minimum of 30 days written notice prior to the date of availability. The date of completion shall be the number of consecutive calendar days proposed by the Design-Build Team in the Technical Proposal, and such number of consecutive calendar days proposed shall not be grater than the days noted above.

Liquidated Damages for Intermediate Contract Time #20 for the above road closure time restrictions for culvert construction on SR 1002 (Long Branch Road) are $2,000.00 per calendar day or any portion thereof.

8. **Intermediate Contract Times #21 for widening Bridge No. 250339**

The Design-Build Team will be allowed to close one southbound (westbound) NC 295 lane to widen Bridge No. 250339 for a duration not to exceed 270 consecutive calendar days. The date of availability shall be the date the Design-Build Team elects to close one NC 295 southbound (westbound) lane. The Design-Build Team shall provide the Engineer a minimum of 30 days written notice prior to the date of availability. The date of completion shall be the number of consecutive calendar days proposed by the Design-Build Team in the Technical Proposal, and such number of consecutive calendar days proposed shall not be greater than the days noted above.

Liquidated Damages for Intermediate Contract Time #21 for the above lane closure time restriction to widen Bridge No. 250339 are $1,000.00 per calendar day or any portion thereof.

9. **Intermediate Contract Time #22 for Dunn Road (US 301) Road Closure Time Restrictions for Bridge Widening**

The Design-Build Team shall maintain the existing traffic pattern on Dunn Road (US 301) and follow the road closure time restrictions below. When a road closure is reopened, the Design-Build Team shall allow the traffic queue to deplete before re-closing the roadway.

Unless allowed otherwise elsewhere in this RFP, the Design-Build Team shall not close any direction of travel on Dunn Road (US 301) during the times noted below and shall only close Dunn Road (US 301) to widen Bridge #250339.

Facility	Days	Time Restrictions
Dunn Road (US 301)	Monday through Sunday	7:00 a.m. to 7:00 p.m.

The maximum road closure duration shall not exceed **thirty (30) minutes** without an approved offsite detour. With an approved offsite detour, the roadways listed may be closed from 7:00 p.m. to 7:00 a.m.

Proposed road closures for any road within the project limits shall be approved by the Engineer, in writing, prior to incorporation in the TMP.

Liquidated Damages for Intermediate Contract Time #22 for the above road closure time restrictions on Dunn Road (US 301) are $500.00 per 15-minute period or any portion thereof.

10. **Intermediate Contract Time #23 for US 13 Lane Closure Restrictions for Roundabout Construction**

The Design-Build Team shall maintain the existing traffic pattern on US 13 and follow the lane closure time restrictions below. When a lane closure is reopened, the Design-Build Team shall allow the traffic queue to deplete before re-closing the roadway.

Unless allowed otherwise elsewhere in this RFP, the Design-Build Team shall not close or narrow a single lane of traffic on US 13 during the times noted below and shall only close or narrow a lane of traffic on US 13 to construct the roundabout.

Facility	Days	Time Restrictions
US 13	Monday through Friday	7:00 a.m. to 9:00 p.m. and 4:00 p.m. to 7:00 p.m.

Liquidated Damages for Intermediate Contract Time #23 for the above lane closure time restrictions for roundabout construction on US 13 are $500.00 per 15-minute period or any portion thereof.

B. Hauling Restrictions

The Design-Build Team shall adhere to the hauling restrictions noted in the NCDOT *Standard Specifications for Roads and Structures*.

The Design-Build Team shall conduct all hauling operations as follows:

- The Design-Build Team shall not conduct any hauling operations against the flow of traffic of an open travelway unless an approved temporary traffic barrier or guardrail separates the traffic from the hauling operation.

- The Design-Build Team shall not haul during the lane narrowing, lane closure, holiday and special events time restrictions listed in ICT #1 - #3 and ICT #5 unless the hauling operation occurs completely behind temporary traffic barrier or guardrail and does not impact traffic operations.

- All entrances and exits for hauling to and from the work zone shall be shown on the TMP and be in accordance with the NCDOT Roadway Standard Drawings or

the *Typical Median Access Areas* Project Special Provision found elsewhere in this RFP.

- Haul vehicles shall not enter and / or exit an open travel lane at speeds more than 10 mph below the posted speed limit.

- A hauling access point to the I-95 median will be allowed at the south end and north end of the project and the locations are subject to Department approval. Additional hauling access points to the I-95 median shall be limited to three per direction, at a location chosen by the Design-Build Team and approved by the Department. The median hauling access points may be moved during construction, as approved by the Department.

- All hauling entrances, exits and crossings shall be shown on the TMP.

- Signs with activated Beacons or LED flashers shall be installed and used when hauling from the median. These signs shall be activated once haul vehicles are detected to warn motorists of vehicles entering the highway from the median. (Reference the *Typical Median Access Areas* Project Special Provision found elsewhere in this RFP)

- Hauling operations that perpendicularly cross a roadway shall require Transportation Management Plans and shall be subject to the time restrictions, and holiday and special event time restrictions listed in ICT #1 - #3 and ICT #5. Excluding hauling operations that are conducted entirely behind a temporary traffic barrier or guardrail, single vehicle hauling shall not be allowed ingress and egress from any open travel lane during the following time restrictions:

Single Vehicle Hauling

Facility	Days	Time Restrictions	Advance Warning Requirements
I-95, including all ramps and loops	Monday through Thursday	No Restrictions	Actuated Advance Warning Signing and Devices
I-95, including all ramps and loops	Friday, Saturday and Sunday	10:00 a.m. to 4:00 p.m.	Actuated Advance Warning Signing and Devices

Excluding hauling operations that are conducted entirely behind a temporary traffic barrier or guardrail, multi-vehicle hauling shall not be allowed ingress and egress from any open travel lane during the following time restrictions:

Multi-Vehicle Hauling

Facility	Days	Time Restrictions	Advance Warning Requirements
I-95, including all ramps and loops	Monday through Thursday	Noon to 6:00 p.m.	Actuated Advance Warning Signing and Devices
I-95, including all ramps and loops	Friday, Saturday and Sunday	10:00 a.m. to 7:00 p.m.	Actuated Advance Warning Signing and Devices

The Design-Build Team shall address how hauling will be conducted in the Technical Proposal, including but not limited to, hauling of any materials to and from the site and hauling material within the NCDOT right of way.

C. Lane and Shoulder Closure Requirements

On two-lane, two-way facilities, the Design-Build Team shall not install more than one (1) mile of lane closure in any one direction on any roadway within the project limits or in conjunction with this project, measured from the beginning of the merge taper to the end of the lane closure.

On multi-lane facilities, the Design-Build Team shall not install more than two (2) miles of lane closure in any one direction, measured from the beginning of the merge taper to the end of the lane closure.

Simultaneous lane closures in any one direction on any road within the project limits shall be installed as follows:

- For two simultaneous lane closures, a minimum of two (2) miles shall be provided between lane closures.
- For three simultaneous lane closures or more, a minimum of three (3) miles shall be provided between lane closures.

The distance between lane closures noted above shall be measured from the end of one closure to the first sign of the next lane closure.

The Design-Build Team shall remove lane closure devices from the lane when work is not being performed behind the lane closure or when a lane closure is no longer needed.

When barrier is placed on the roadway shoulder, the Design-Build Team shall install shoulder closure signs and devices in advance of the barrier using NCDOT Roadway Standard Drawings.

When personnel and / or equipment are working within 15 feet of an open travel lane, the Design-Build Team shall close the nearest open shoulder using NCDOT Roadway Standard Drawings, unless the work area is protected by an approved temporary traffic barrier or guardrail.

When personnel and / or equipment are working on the shoulder adjacent to an undivided facility and within five feet of an open travel lane, the Design-Build Team shall, at a minimum, close the nearest open travel lane using NCDOT Roadway Standard Drawings, unless the work area is protected by an approved temporary traffic barrier or guardrail.

When personnel and / or equipment are working on the shoulder adjacent to a divided facility and within ten feet of an open travel lane, the Design-Build Team shall, at a minimum, close the nearest open travel lane using NCDOT Roadway Standard Drawings, unless the work area is protected by an approved temporary traffic barrier or guardrail.

When personnel and / or equipment are working within a lane of travel of an undivided or divided facility, the Design-Build Team shall, at minimum, close the lane using the NCDOT Roadway Standard Drawings. The Design-Build Team shall conduct the work so that all personnel and / or equipment remain within the closed travel lane.

The Design-Build Team shall not perform work involving heavy equipment within 15 feet of the edge of travelway when work is being performed behind a lane closure on the opposite side of the travelway.

D. Pavement Edge Drop off Requirements

Using suitable compacted material, the Design-Build Team shall backfill at a 6:1 slope up to the edge and elevation of the existing pavement in areas adjacent to an open travel lane that has an edge of pavement drop-off as follows:

- Elevation differences that exceed two inches on roadways with posted speed limits of 45 mph or greater and a paved shoulder four-foot wide or less.
- Elevation differences greater than three inches on roadways with posted speed limits less than 45 mph and with a paved shoulder four-foot wide or less.
- Refer to the current AASHTO *Roadside Design Guide* for proper treatment of all other conditions.

Do not exceed a difference of two inches in elevation between open lanes of traffic for nominal lifts of 1.5 inches. Install advance warning "UNEVEN LANES" signs (W8-11) 1,000 feet in advance and a minimum of every half mile throughout the uneven area.

E. Traffic Pattern Alterations

The Design-Build Team shall notify the Engineer, in writing, at least thirty (30) calendar days prior to any traffic pattern alteration. (Reference the Public Information Scope of Work found elsewhere in this RFP for public information requirements)

F. Signing

The Design-Build Team shall install advance work zone warning signs when work is within 40 feet from the edge of travel lane and no more than three days prior to the beginning of construction.

When no work is being conducted for a period longer than one week, the Design-Build Team shall remove or cover all advance work zone warning signs, as directed by the Engineer. Stationary work zone warning signs shall be covered with an opaque material that prevents reading of the sign at night by a driver traveling in either direction.

When portable work zone signs are not in use for periods longer than 30 minutes, the Design-Build Team shall lay the portable work zone sign flat on the ground and collapse the sign stand and lay it flat on the ground.

The Design-Build Team shall install and maintain all detour signing and devices required for road closures. The Design-Build Team shall cover or remove all detour signs within and off the project limits when a detour is not in operation.

The Design-Build Team shall ensure proper signing (including but not limited to guide signs) is in place at all times during construction, as required by the *MUTCD*. All temporary signing shall be shown on the TMP or Temporary Signing Plans to be reviewed and approved by the Work Zone Traffic Control Section and / or the Signing and Delineation Unit prior to incorporation.

G. Traffic Barrier

The Design-Build Team shall use only an NCDOT approved temporary traffic barrier system and adhere to the following requirements:

- Install temporary traffic barrier system a maximum of two (2) weeks prior to beginning work in any location. Once the temporary traffic barrier system is installed at any location, proceed in a continuous manner to complete the proposed work in that location.

- Place all temporary barrier used for traffic control directly on an asphalt or concrete surface.

- Temporary barrier used for traffic control shall not act as a retaining wall.

- Once the temporary traffic barrier system is installed and no work has been or will be performed behind the temporary traffic barrier system for a period longer than two (2) months, remove / reset the temporary traffic barrier system unless the barrier is protecting traffic from a hazard.

- Excluding water filled barrier, protect the approach end of temporary traffic barrier system at all times during the installation and removal of the barrier by either a truck mounted impact attenuator (maximum 72 hours) or a temporary crash cushion.

- Excluding water filled barrier, protect the approach end of temporary traffic barrier system from oncoming traffic at all times by a temporary crash cushion unless the approach end of temporary traffic barrier system is offset from oncoming traffic as follows:

Posted speed limit (MPH)	Minimum offset (feet)
40 or less	15
45 - 50	20
55	25
60 mph or higher	30

- Install temporary traffic barrier system with the traffic flow, beginning with the upstream side of traffic. Remove the temporary traffic barrier system against the traffic flow, beginning with the downstream side of traffic.

- Install drums to close or keep closed tangent sections of the roadway until the temporary traffic barrier system can be placed or after the temporary barrier system has been removed. The distance, in feet, between drums shall be no greater than twice the posted speed limit (mph).

- The Design-Build Team shall minimize the presence of portable concrete barrier along acceleration ramps / loops. At acceleration ramps / loops and all other merging tapers, including but not limited to, lane drop merges and / or temporary lane closure merges, the Design-Build Team shall install temporary traffic barrier system in a manner that provides a minimum of 200 feet from the end of the pavement marking taper to the beginning of the barrier taper. All lanes shall first be closed using channelizing devices and pavement markings.

- The Design-Build Team shall be responsible for providing proper connection between the existing bridge rail and the temporary barrier system and include this information in the appropriate plans.

H. Traffic Control Devices

The Design-Build Team shall use traffic control devices that conform to all NCDOT requirements and are listed on the NCDOT Approved Products List. The Approved Products List may be referenced on the following website:

https://apps.dot.state.nc.us/vendor/approvedproducts/

The use of any devices that are not shown on the Approved Product List shall require written approval from the Design-Build Unit prior to incorporation.

Channelizing device spacing shall not exceed a distance in feet equal to twice the posted speed limit. Channelization devices shall be spaced ten feet on-center in radii. Channelization devices shall be two feet off the edge of an open travelway, when lane closures are not in effect. Skinny drums shall only be allowed as defined in Section 1180 of the NCDOT *Standard Specifications for Roads and Structures*.

Place Type III barricades, with "ROAD CLOSED" signs (R11-2) attached, of sufficient length to close entire roadway. Stagger or overlap barricades to allow for ingress or egress.

Place sets of three drums perpendicular to the edge of the travelway on 500-foot centers when unopened lanes are closed to traffic. These drums shall be in addition to channelizing devices.

Portable changeable message signs should be placed off the shoulder of the roadway and behind a traffic barrier, if practical. Where a traffic barrier is not available to shield the portable changeable message sign, it should be placed off the shoulder and outside of the clear zone. If a portable changeable message sign must be placed on the roadway shoulder or within the clear zone, it should be delineated with retro reflective temporary traffic control (TTC) devices. When portable changeable message signs are not being used to display TTC messages, they should be relocated such that they are outside of the clear zone or shielded behind a traffic barrier and turned away from traffic. If relocation or shielding is not practical, the portable changeable message signs shall be delineated with retro reflective TTC devices.

I. Temporary Pavement Markings, Markers and Delineation

General

The Design-Build Team shall show temporary pavement markings on the Transportation Management Plans that meet the requirements of the RFP and the *Guidelines for Preparation of Traffic Control and Pavement Marking Plans for Design-Build Projects*.

The Design-Build Team shall use pavement marking and marker products that conform to all NCDOT requirements and are listed on the NCDOT Approved Products List. The use of any devices that are not shown on the NCDOT Approved Products List shall require written approval from the Design-Build Unit prior to incorporation.

The Design-Build Team shall install temporary pavement markings that are the same width as existing pavement markings. For roadways that do not have existing pavement markings, the Design-Build Team shall install temporary pavement markings that are the same width as required for the final pavement markings in the Pavement Markings Scope of Work found elsewhere in this RFP.

The Design-Build Team shall not place temporary markings on the final asphalt pavement surface unless the temporary markings are placed in the exact location of the final pavement markings.

The Design-Build Team shall trace existing and / or proposed monolithic island locations with the proper color pavement marking prior to removal and / or installation. The Design-Build Team shall place drums to delineate existing and / or proposed monolithic islands after removal and / or before installation.

The Design-Build Team shall tie proposed pavement marking lines to existing pavement marking lines.

Temporary pavement markings on the final concrete surface shall only be removed by hydroblasting.

By the end of each day's operation, the Design-Build Team shall mask / conceal all conflicting markings, replace all damaged markings, and remove / replace all conflicting / damaged markers.

Remove all conflicting markers and snowplowable marker castings.

The Design-Build Team shall readjust the markings, markers, and / or signing located outside the project limits to the existing / proposed pattern when the temporary changes are no longer needed.

I-95
INCLUDING ALL RAMPS AND LOOPS

The Design-Build Team shall install Work Zone Performance Pavement markings on the interim surface for temporary traffic patterns. (Reference the *Work Zone Performance Pavement Markings* Project Special Provision found elsewhere in this RFP) The Design-Build Team shall install temporary raised pavement markers on the interim surface for temporary traffic patterns.

Prior to shifting traffic to a new pattern, the Design-Build Team shall mask / conceal all conflicting markings by 1) applying a "Pattern Masking" in accordance with the *Work Zone Traffic "Pattern Masking"* Project Special Provision found elsewhere in this RFP or 2) applying a uniform pavement overlay that consists of a Type D mix. (Reference the Pavement Scope of Work found elsewhere in this RFP)

ALL OTHER ROADS AND STRUCTURES

The Design-Build Team shall install temporary pavement markings and temporary pavement markers on the interim surface or temporary pattern as follows:

Road	Marking	Marker
All roads and structures, except I-95 ramps and loops	Any Marking on the Approved Product List	Raised Temporary

The Design-Build Team may use any type of pavement markings on the NCDOT Approved Products List for temporary patterns. However, the Design-Build Team shall maintain a minimum retroreflectivity for pavement markings (existing and temporary markings) at all times during construction, as follows:

White: 125 mcd / lux / m2
Yellow: 100 mcd / lux / m2

When using Cold Applied Plastic Type 4 pavement markings, place temporary raised markers half on and half off edge lines and centerlines to help secure the tape to the roadway. Markers shall be spaced the appropriate distance apart as described by the Roadway Standard Drawing No. 1250.01, Sheet 1 of 3.

Prior to shifting traffic to a new pattern, the Design-Build Team may remove conflicting lines by traditional methods or mask / conceal the conflicting markings.

Unless noted otherwise in this RFP, removal of the temporary pavement markings on asphalt surfaces (other than I-95 and all ramps and loops) shall be accomplished by an NCDOT approved system to minimize damage to the road surface. Temporary pavement markings shall not be obliterated with any type of Black Pavement Markings (paint or other material).

The Design-Build Team shall remove all temporary pavement markings without removing more than 1/32 inch of the pavement surface.

J. Temporary Traffic Signals

Use the following notes if the Design-Build Team proposes temporary traffic signals for maintenance of traffic:

- Notify the Engineer in writing a minimum of two months before a temporary traffic signal installation is required.
- Shift and revise all signal heads as shown on the accepted Traffic Signal Plans.

K. Traffic Shifts

All straight line traffic shifts on interstates shall be designed for the full L distance (L = width of traffic shift X speed limit in mph). In addition, solid white line pavement markings shall be used to separate the travel lanes in straight line traffic shifts equal to or greater than six foot on any road having two or more travel lanes in a direction.

L. Traffic Control Supervisor

The Design-Build Team shall furnish a Traffic Control Supervisor for the entire project (I-5986A and I-5877) who is knowledgeable of Transportation Management Plan design, devices and application, and has full authority to ensure traffic is maintained in accordance with the plans and specifications.

The Traffic Control Supervisor shall be on the entire project site (I-5986A and I-5877) overseeing all road closures and median crossover operations to ensure traffic control devices are properly installed and adjusted as necessary. The Traffic Control Supervisor shall also make necessary changes to the traffic control operations and aide in the monitoring of traffic queuing.

The Design-Build Team shall identify a Traffic Control Supervisor in their Technical Proposal that has the following qualifications:

(1) A minimum 24 months of On-the-Job Training in supervision and work zone set up and implementation on similar projects.

(2) Be certified by responsible party (contractor or NCDOT) to have the required experience and training and is qualified to perform the duties of this position. If certified by the Contractor, a notarized certification letter shall be furnished to the Engineer at the preconstruction meeting. The letter shall state the Traffic Control Supervisor is qualified, and state that the Traffic Control Supervisor has the authority to ensure traffic is maintained in accordance with the contract documents.

The Traffic Control Supervisor for the entire project (I-5986A and I-5877) shall perform the following:

(1) During construction, be available or on call 24 hours per day, 7 days per week to direct / make any necessary changes in the traffic control operations in a timely and safe manner. The Design-Build Team shall provide NCDOT the name of the Traffic Control Supervisor and support personnel, and the phone number(s) where they can be reached 24 hours per day, seven days per week.

(2) Coordinate and cooperate with traffic control supervisors of adjacent, and overlapping construction projects, as well as construction projects in proximity to the subject project, to ensure safe and adequate traffic control setup is maintained throughout the entire project (I-5986A and I-5877) at all times, including periods of construction inactivity.

(3) Coordinate and cooperate with the NCDOT Statewide Operations Center (STOC) to ensure proper messages are displayed on the CMSs and DMSs

(4) Provide traffic control setup that ensures safe traffic operations and workers' safety throughout the construction area.

(5) Attend all scheduled traffic control coordination meetings, as required by the Engineer.

(6) Monitor traffic delays and backups within the work zone.

M. Work Zone Presence Lighting and Sequential Flashing Lights

The Design-Build Team shall provide portable temporary lighting to conduct night work in accordance with the NCDOT *Standard Specifications for Roads and Structures*.

In addition, the Design-Build Team shall incorporate Work Zone Presence Lighting and Sequential Flashing Lights into all lane closures on I-95 in accordance with the *Work Zone Presence Lighting* and *Sequential Flashing Warning Lights* Project Special Provisions found elsewhere in this RFP.

N. Drainage

The Design-Build Team shall provide proper drainage for all temporary alignments and / or traffic shifts.

O. Law Enforcement

Law enforcement officers may be used to maintain traffic through the work area and / or intersections. The use of law enforcement officers shall adhere to the following requirements:

- The Design-Build Team shall be responsible for coordinating with the law enforcement agency for the use of law enforcement officers.
- The Design-Build Team shall only utilize officers who are outfitted with law enforcement uniforms and marked vehicles, which are equipped with proper lights mounted on top of the vehicle and agency emblems.
- The Design-Build Team shall coordinate with the Engineer where and how law enforcement officers will be used during construction.

The Design-Build Team shall address where and how law enforcement officers will be used in the Technical Proposal.

P. No Parking / Tow Away Zone Ordinance

Prior to construction, the Department will obtain a No Parking / Tow Away Zone Ordinance on I-95. The Design-Build Team shall provide and install proper signing for the No Parking / Tow Away Zone Ordinance as follow:

- 1000 feet in advance of the "Begin Road Work" signs
- On all on-ramps within the project limits
- A minimum of every 3000 feet in each direction

Q. Shoulder Sweeping

At a minimum, the Design-Build Team shall conduct monthly sweeping operations on shoulders within the project and a minimum of one mile beyond the project limits in each direction on I-95.

R. Work Zone Speed Limits

All speed limits shall be ordinanced by the State Traffic Engineer in order to have a lawfully enforceable speed limit; therefore, no speed limit messages / signs shall be installed prior to receiving a signed ordinance. NCDOT has sole authority of the speed limits displayed within the work zone.

Work Zone Variable Speed Reduction and $250 Speeding Penalty Ordinances

A Work Zone Variable Speed Reduction is intended to temporarily reduce the speed within the work zone at spot locations of short duration (1 day up to 30 days) where the temporary traffic control is usually to be removed within the same day. A Work Zone "Variable" Speed Limit cannot be in operation continuously (24/7) for a period exceeding 30 calendar days.

For lane closure operations on I-95, the Design-Build Team may request a Work Zone Variable Speed Limit Reduction to 55 mph and a $250 Speeding Penalty for all speed limit conditions. The Design-Build Team shall request these measures in writing to the State Work Zone Engineer four weeks before construction is to begin in order to provide proper time for ordinancing each of these. All speed limit reductions shall be displayed on Digital Speed Limit Signs. (Reference the *Work Zone Digital Speed Limit Signs* Project Special Provision found elsewhere in this RFP)

When the variable speed limit reductions are in effect, cover any existing speed limit signs located within the active work area that conflict with the variable speed limit reduction.

The speed limit shall be returned to the current posted speed limit when the lane closure is removed and traffic is returned to the existing pattern.

The Design-Build Team shall be responsible for coordinating with the Engineer when the Work Zone "Variable" Speed Limits are to be changed and shall obtain approval from the Engineer before the Speed Limit is changed.

For all other operations, the Transportation Management Plan shall be designed to accommodate the current posted speed limit.

Digital Speed Limit Signs (DSLS)

The Design-Build Team shall furnish and install Work Zone Digital Speed Limit Signs (DSLS) to continuously display the work zone speed limit. (Reference the *Work Zone Digital Speed Limit Signs* Project Special Provision found elsewhere in this RFP.)

Work Zone Speed Limit Reduction Ordinance

If, at the Department's sole discretion, the Design-Build Team can justify that the TMPs cannot be designed to adhere to the existing I-95 posted speed limit requirements, the Design-Build Team shall submit a formal Work Zone Speed Limit Reduction Ordinance request to the Design-Build Unit for approval. The request shall state the type of ordinance requested, why the ordinance is needed and why the TMPs cannot be designed to avoid the need. The request shall also include an Engineering Study that justifies the need for a Work Zone Speed Limit Reduction Ordinance. (Reference the criteria listed in the NCDOT Work Zone Traffic Control Guidelines) Upon receipt of the formal request, the Design-Build Team shall allow six weeks for the Work Zone Speed Limit Reduction Ordinance to be approved. The Design-Build Team shall provide and install proper signing for all approved Work Zone Speed Limit Reduction Ordinances. The Design-Build Team shall identify the need for a Work Zone Speed Limit Reduction Ordinance in the Technical Proposal.

S. Project Coordination

The Design-Build Team shall coordinate with all Contractors and NCDOT Resident Engineers in charge of any project in the vicinity of this project for any work that may affect the construction, traffic operations, and placement of temporary traffic control devices (including advance warning signs) on all roads within the project limits and associated with this project.

At a minimum, the Design-Build Team shall coordinate with the Division Traffic Engineer, Law Enforcement, Emergency Services and the Work Zone Traffic Control Section to schedule and attend Traffic Safety and Operations Meetings. These meetings shall be held to monitor and assess safety and mobility during construction. The Traffic Safety and Operations Meetings shall be held on an as needed basis during project construction. Additional Traffic Safety and Operations Meetings shall be held to address any specific issue, as directed by the Engineer.

T. Temporary Shoring

The Design-Build Team shall be responsible for all required temporary shoring, including but not limited to designing, providing, installing, maintaining and removing. Temporary shoring for the maintenance of traffic is defined as shoring necessary to provide lateral support to the side of an excavation or embankment parallel to an open travelway when a theoretical 2:1 (H:V) slope from the bottom of the excavation or embankment intersects the existing ground line closer than five feet from the edge of pavement of the open travelway. The Design-Build Team shall identify locations where temporary shoring for maintenance of traffic will be required on the Transportation Management Phasing Concept. The Design-Build Team shall install temporary traffic barrier as shown on a detail available from Work Zone Traffic Control that provides design information on the temporary traffic barrier location in relation to the temporary shoring and traffic location. The NCDOT Geotechnical Engineering Unit and Work Zone Traffic Control websites have more information on temporary shoring. (Notes related to Temporary Shoring are not required in the General Notes sheet for the Transportation Management Plans.)

The Design-Build Team shall adhere to the additional shoring requirement located on the Work Zone Traffic Control and Geotechnical Engineering Unit websites:

https://connect.ncdot.gov/projects/WZTC/Pages/default.aspx

https://connect.ncdot.gov/resources/Geological/Pages/default.aspx

The Design-Build Team shall identify on the appropriate traffic control details where temporary shoring will be used by providing station limits, offsets, cut sections, the type of shoring and where temporary traffic barrier will be located, if needed.

UTILITIES COORDINATION SCOPE OF WORK (6-5-19)

**** NOTE ** Within 45 days of contract execution, the Design-Build Team shall meet with representatives of all the utility companies and the appropriate NCDOT Utility and Design-Build personnel.**

The Design-Build Team shall obtain the services of a Professional Services Firm (PSF) knowledgeable in the NCDOT Utility Coordination Process involved with utility relocation / installation and highway construction. The aforementioned PSF shall be responsible for coordinating all utility relocations, removals and / or adjustments where the Design-Build Team and utility owner, with concurrence from the Department, determine that such work is essential for highway safety and performance of the required highway construction. Coordination shall be for all utilities whether or not they are specifically identified in this Scope of Work and shall include any necessary utility agreements when applicable. NCDOT will be the approving authority for all utility agreements and approval of plans.

During the procurement phase, the Department will allow no direct contact, either by phone, e-mail or in person, between the Design-Build Team and utility owners until after the meetings between each individual proposer and the affected utility owners. After the aforementioned meetings and during the project duration, the Design-Build Team will only be allowed direct contact with the utility owners when the aforementioned PSF is present. (Reference the *Individual Meeting with Proposers* Project Special Provision found elsewhere in this RFP)

In accordance with the requirements herein, the Design-Build Team shall relocate / coordinate the relocation of all existing facilities that are 1) within existing or proposed full control of access and only accessible from a freeway through lane and / or directional ramp, 2) in physical conflict with construction, 3) within the existing or proposed right of way and structurally inadequate, and / or 4) within the existing or proposed right of way and consist of unacceptable material. (Reference the NCDOT Policies and Procedures for Accommodating Utilities on Highway Rights of Way - January 1, 1975, Revised April 1, 1993) Proposed / relocated underground facilities that are located beneath the pavement structure shall only be allowed to cross the roadway as close to perpendicular as possible.

Project Details

The Design-Build Team shall be responsible for verifying the utility locations, type of facilities, and identifying the utility owners in order to coordinate the relocation of any utilities, known and unknown, in conflict with the project. The following utilities are known to be located within the project construction limits:

Utility Owner	Utility Type	Cost Responsibility
CenturyLink	Telecommunications	Utility Company
Cumberland County (NORCRESS)	Water / Sewer	Design-Build Team
Duke Energy	Power	Utility Company or NCDOT (w/ Approved Prior Rights)
Eastover Sanitary District	Water / Sewer	Design-Build Team
Harnett County	Water / Sewer	Design-Build Team
Piedmont Natural Gas	Gas (Distribution)	Utility Company or NCDOT (w/ Approved Prior Rights)
Atlantic Coast Pipeline	Gas (Transmission)	Utility Company
South River EMC	Power	Utility Company or NCDOT (w/ Approved Prior Rights)
Spectrum (TWC)	CATV	Utility Company
Spirit Communications	Telecommunications	Utility Company
Town of Dunn	Water / Sewer	Design-Build Team
Town of Falcon	Water	Design-Build Team
Windstream	Telecommunications	Utility Company or NCDOT (w/ Approved Prior Rights)

Water and Sewer

After the Department accepts the Preliminary Roadway Plans developed by the Design-Build Team, a pre-design meeting shall take place between representatives from the water and sewer facility owners and the appropriate Utilities Unit and Design-Build Unit representatives. The Department will only accept water and sewer design submittals after the aforementioned pre-design meeting has been held.

If the Design-Build Team's design and / or construction, including but not limited to haul roads and all temporary conditions resulting from the Design-Build Team's methods of operation or sequence of work, requires the relocation and / or protection of the existing water and / or sewer facilities structural integrity, including but not limited to encasement, lining and bridging, designs shall be coordinated with the NCDOT Utilities Unit. All costs associated with the design and construction for relocation and / or protection of these existing water and / or sewer facilities structural integrity, including but not limited to encasement, lining and bridging, shall be the responsibility of the Design-Build Team and shall be included in the lump sum bid for the entire project. The Design-Build Team shall develop designs; prepare all plans for needed agreements

and permits; submit permits directly to the agencies and obtain approval from the agencies. The Design-Build Team shall be responsible for all permit fees.

For all parcels with access to existing water and / or sewer facilities that the project subdivides, the Design-Build Team shall design and construct water / sewer facility extensions to all sub-divided parcels, including but not limited to the sub-divided parcel with the existing water / sewer access, if necessary. The aforementioned water facility extensions shall be installed completely within the right of way. The aforementioned sewer facility extensions shall be installed completely within the right of way or a recorded easement. All costs associated with the design and construction of water / sewer facility extensions to sub-divided parcels shall be included in the Design-Build Team's lump sum bid for the entire project.

The Design-Build Team shall coordinate all water and sewer designs with the NCDOT Utilities Unit and the utility owners or their representatives.

The relocation and / or encasement of all water and sewer facilities shall be done in accordance with the NCDOT policies and standards, as well as the latest water and sewer design requirements / specifications from each individual utility company. In the event of conflicting design parameters in the requirements noted above, the proposed design shall adhere to the most conservative values. The materials and appurtenances proposed by the Design-Build Team shall require approval by both NCDOT and the appropriate utility owner prior to installation.

The Design-Build Team shall concurrently submit all water and sewer design submittals to the State Utilities Manager, via the Design-Build Unit, and the appropriate utility owner for review and acceptance. All water and sewer design submittals shall include a title sheet, plan sheets, profile sheets and special provisions, if required. All water and sewer design submittals shall include all the aforementioned information in a full-size .pdf and hard copy, and a half-size hard copy. The Department will send the plans, with the appropriate agreement, to the utility owner for their review and concurrence. Excluding the Release for Construction Water and / or Sewer Plans, the Design-Build Team shall allow the utility owners 30 days to review each water and / or sewer design submittal. At a minimum, the water and / or sewer design submittals shall consist of the following:

(A) Preliminary Water and / or Sewer Plans shall be submitted after the Department accepts the 100% Hydraulic Plans.

(B) Final Water and / or Sewer Plans shall be submitted after the Department accepts the Right of Way / 60% Roadway Plans.

(C) Release for Construction Water and / or Sewer Plans shall be submitted after the Department accepts the Final Water and / or Sewer Plans.

Upon completion of the water and sewer relocations and protective measures, the Design-Build Team shall provide lump sum construction costs for the relocations and protective measures that are separated by individual utility owner and TIP Project.

Utility Relocation Plans

Excluding water and sewer conflicts, if the Design-Build Team's design and / or construction create a utility conflict, the Design-Build Team shall request that the utility owner submit relocation plans (Highway Construction Plans to be provided by the Design-Build Team to utility owners) that show existing utilities and proposed utility relocations for approval by the NCDOT.

In .pdf format, the Design-Build Team shall electronically submit one half-size set and one full size set of the Utility Relocation Plans to the NCDOT State Utilities Manager, via the Design-Build Unit, for review and approval. The Department shall approve the Utility Relocation Plans prior to any utility relocation work beginning. The Design-Build Team shall also be responsible for submitting the appropriate agreements to be used with the Utility Relocation Plans (See Agreements Section found elsewhere in this Scope of Work). After the review process is complete, the NCDOT Utilities Unit will submit an electronic copy of the authorization letter to the Design-Build Team. The NCDOT Utilities Unit will also submit an electronic copy of the approved Utility Relocation Plans, estimate and agreement to the Department's Resident Engineer. If the Utility Relocation Plans are approved subject to changes, it shall be the Design-Build Team's responsibility to coordinate these changes with the appropriate utility owner.

Prior Rights and Compensable Interest

The Design-Build Team shall verify / determine the prior rights and compensable interest for all utility relocations. Typically, affidavits, recorded easements or NCDOT agreements can serve as evidence of prior rights. The Design-Build Team shall provide documentation that verifies / determines the prior rights and / or compensable interest. If the verification process is not complete prior to right of way acquisition, the Design-Build Team shall provide documentation of all Permanent Utility Easement costs. A compensable interest shall be identified as follows:

(A) Existing or prior easement rights within the project limits, either by recorded right of way or adverse possession.

(B) Entities covered under *General Statute 136-27.1* and *136-27.2.* Statute requires the NCDOT to pay the non-betterment cost for certain water, sewer and gas relocations.

(C) Utilities that have a joint-use agreement that constitutes a compensable interest with entities that have existing or prior easements rights within the project limits.

Work Performed by Design-Build Team for Utility Owners

If the Design-Build Team elects to make arrangements with a utility owner for proposed utility construction not required herein, in which the utility owner shall be responsible for the costs of work to be performed by the Design-Build Team, the Design-Build Team shall be responsible for negotiating all costs associated with the proposed construction. Once the Design-Build Team and the utility owner agree on a plan and a lump sum estimated cost for the utility construction,

the Design-Build Team shall electronically submit one half-size set and one full size set of the utility construction drawings, in .pdf format, to the State Utilities Manager, via the Design-Build Unit, for further handling. Each set shall include a title sheet, plan sheets, profiles and special provisions, if required. Also, a letter from the utility owner agreeing to the plans and lump sum cost must accompany this package. The NCDOT will reimburse the Design-Build Team the estimated lump sum cost under a Supplemental Agreement. The necessary Utility Construction Agreement (UCA) to the utility owner for reimbursement shall be a two party agreement between the NCDOT and the utility owner; and will be developed and executed by the Department.

If the Design-Build Team is requested, in writing, by a utility owner to relocate facilities not impacted by the project's construction, upgrade existing facilities and / or incorporate new facilities as part of the highway construction, designs shall be coordinated with the utility owner and NCDOT Utilities Unit. The associated design and construction costs shall be negotiated and agreed upon between the Design-Build Team and the utility owner. The Design-Build Team shall develop designs; prepare all plans for needed agreements and permits; submit permits directly to the agencies and obtain approval from the agencies. The Design-Build Team shall be responsible for all permit fees.

Cable TV

The cost in relocating CATV due to highway construction shall be the responsibility of the CATV Company; however, 1) if the CATV Company can validate a recorded easement for facilities outside the maintained NCDOT right of way, the Department will bear the relocation expense; and 2) if the adjustment is needed on existing utility poles to accommodate a proposed NCDOT Traffic Management System Fiber Optic Communication Cable Project, the Design-Build Team shall be responsible for the relocation cost.

The NCDOT will not permit CATV to place poles within the highway right of way, but will allow down guys for their facilities within the highway right of way. Under most circumstances, the CATV Company will continue a joint-use attachment with the local power and telephone company. If the CATV proposed relocation places buried facilities within the highway right of way then plans and encroachment agreements shall be required by the NCDOT.

Communication Cables / Electrical Services for ITS

Prior to establishing the location for new meter poles, the Design-Build Team shall coordinate with the local power distribution company concerning accessibility of E/C service and safety in maintenance of the meter.

Prior to installation, the Design-Build Team shall provide plans for review and approval for all service taps that require a parallel installation within the control of access (C/A).

Parallel service installation within a C/A shall be buried and located as close to the right of way line as practical. Only due to unusual circumstances will parallel aerial service installations

within the C/A be allowed. The Design-Build Team shall justify the allowance of parallel aerial service installation and obtain NCDOT written approval prior to installation

The Design-Build Team shall be responsible for all coordination activities, including deposit fees, required for the utility company to provide service taps. Prior to the Design-Build Team developing the associated design and / or instructing the utility company to proceed with providing the service taps, the Design-Build Team shall obtain written approval of the service tap locations from the Resident Engineer.

The Design-Build Team shall be responsible for all costs associated with providing communication cables / electrical service from the service tap to the ITS devices.

Adjusting Existing Utilities due to Proposed Traffic Management Systems Fiber Optic Communications Cables

The Design-Build Team shall be responsible for all costs for coordinating and adjusting any utilities that are in conflict with any proposed communication cables.

Requirements for Attachments to Existing and / or Proposed Structures

The Design-Build Team shall avoid attachments to structures where feasible. Attachments shall only be considered when other alternatives are cost prohibitive and / or are not feasible due to environmental or geographical features. All utility related attachments must be evaluated and approved by the State Utilities Manager, including any existing attachments to any structure(s) that require modification or replacement. Attachments shall be prohibited under the following conditions:

(A) No attachments shall be allowed to a bridge located parallel within the C/A carrying the freeway over streams, other roadways or railroads. (No parallel utility installations within the C/A)

(B) No attachments shall be allowed to cored-slab bridges.

(C) No attachments shall be allowed to curved bridges.

Attachments to structures, if approved by the State Utilities Manager, shall meet the following criteria:

(A) No attachments shall be allowed below the bottom of the beams and / or girders.

(B) Drilling of, or attachments to, beams and / or girders shall not be allowed. Attachments shall only be allowed to the bottom of the bridge deck.

(C) For water and sewer force mains, only restrained joint ductile iron pipe shall be allowed.

(D) A minimum of 18" of clearance to beams and / or girders shall be maintained if possible.

Documentation of adverse conditions or cost estimates of all feasible alternatives shall be submitted to the NCDOT State Utilities Manager, via the Design-Build Unit, when seeking approval of a structure attachment. Cost estimates shall consider all costs involved with each alternative and impacts to the utility and the highway project as a whole.

General

The Design-Build Team shall not commence work at points where the highway construction operations are adjacent to utility facilities, until making arrangements with the utility owner to protect against damage that might result in expense, loss, disruption of service or other undue inconvenience to the public or utility owner. The Design-Build Team shall be responsible for damage to the existing or relocated utilities resulting from the Design-Build Team's operations. In the event of interruption of any utilities by the project construction, the Design-Build Team shall promptly notify the utility owner and cooperate with the utility owner in the prompt restoration of service.

The Design-Build Team shall accommodate utility adjustments, reconstruction, new installation and routine maintenance work that may be underway or take place during the progress of the contract.

If total property acquisition is unavoidable due to encroachment into wells and / or septic systems, the Design-Build Team shall investigate and determine if extending water and / or sewer lines to the affected property is cost effective. If the Department concurs with the determination that a utility extension is cost effective, the costs associated with the utility design and construction shall be addressed in accordance with Article 104-7 of the 2018 NCDOT *Standard Specifications for Roads and Structures*.

Unless noted otherwise elsewhere in this RFP, the Design-Build Team shall be required to use the guidelines as set forth in the following:

(A) *NCDOT Utility Manual - Policies & Procedures for Accommodating Utilities on Highway Rights of Way* and the NCDOT *Utilities Policy Manual*. If the two aforementioned manuals contradict each other, the *Utilities Policy Manual* shall govern. Reference the website noted below for the current version of the NCDOT utility manuals, and additional information on the transition to the new utility manuals that shall be adhered to:

https://connect.ncdot.gov/municipalities/Utilities/Pages/UtilitiesManuals.aspx

(B) *Federal Aid Policy Guide* - Subchapter G, Part 645, Subparts A & B

(C) *Federal Highway Administration's Program Guide, Utility Adjustments & Accommodations on Federal Aid Highway Projects*

(D) *NCDOT Construction Manual* Section 105-8

(E) *NCDOT Right of Way Manual* - Chapter 16 Utility Relocations

(F) *NCDEQ Public Water Supply* - Rules governing public water supply

(G) *NCDEQ Division of Water Resources* - Title 15A - Environment and Natural Resources

Agreements

If a utility company can provide evidence of prior rights of way or a compensable interest in their facilities, the Design-Build Team shall coordinate the non-betterment utility relocation costs with the utility company and develop the Utility Relocation Agreement, (URA).

The NCDOT State Utilities Manager must execute approved agreements on Design-Build projects. The URA's and Encroachment Agreements are available from the NCDOT Utilities Unit. Reference the *NCDOT Utility Manual Policies & Procedures for Accommodating Utilities on Highway Rights of Way* for the different types of Encroachment Agreements available for use.

The Design-Build Team shall develop a preliminary Utility Analysis and Routing Report (UARR (p)) to identify potential utility conflicts, determine preliminary alignments and schedules for the relocation of each utility, and identify any anticipated Permanent Utility Easements (PUE). The aforementioned UARR (p) shall be submitted to the NCDOT Utility Unit, via the Design-Build Unit, for review a minimum of ten days before the Right of Way Plans submittal.

The Design-Build Team shall submit all utility agreements, and all supporting documents to the NCDOT State Utilities Manager, via the Design-Build Unit, in electronic format. Prior to submittal, all agreements shall be signed electronically by an authorized representative of the utility owner. These electronic agreement packets will be reviewed, approved and signed electronically by the NCDOT Utilities Manager, or designated representative, before being distributed to the field.

The Design-Build Team shall utilize the NCDOT Standard Utility Encroachment Agreements, as necessary, in relocating utilities. The Encroachment Agreements shall be used under the following conditions:

(A) If a utility company is not occupying a valid right of way / compensable interest and the proposed relocation will place the relocated utilities within the existing or proposed highway right of way.

(B) For **all** new utility installations, not covered under a Utility Construction Agreement and within the existing or proposed highway right of way. This

includes all water, sewer and gas lines owned by entities covered under *General Statute 136-27.1* and *136-27.2.*

***** PROJECT SPECIAL PROVISION *****

(1/23/14) Z-1

PERMITS

The Design-Build Team's attention is directed to the following permits that have been issued to the Department of Transportation by the authority granting the permit.

PERMIT	AUTHORITY GRANTING THE PERMIT
Dredge and Fill and / or Work in Navigable Waters (404)	U. S. Army Corps of Engineers
Water Quality (401)	North Carolina Department of Environmental Quality Division of Water Resources

The Design-Build Team shall comply with all applicable permit conditions during construction of the project. Those conditions marked by * are the responsibility of the Department and the Design-Build Team has no responsibility in accomplishing those conditions.

Agents of the permitting authority will periodically inspect the project for adherence to the permits.

The Design-Build Team's attention is also directed to Articles 107-10 and 107-14 of the 2018 NCDOT *Standard Specifications for Roads and Structures* and the following:

Should the Design-Build Team propose to utilize construction methods (such as temporary structures or fill in waters and / or wetlands for haul roads, work platforms, cofferdams, etc.) not specifically identified in the permit (individual, general, or nationwide) authorizing the project it shall be the Design-Build Team's responsibility to coordinate with the Engineer to determine what, if any, additional permit action is required. The Design-Build Team shall also be responsible for initiating the request for the authorization of such construction method by the permitting agency. The request shall be submitted through the Engineer. The Design-Build Team shall not utilize the construction method until it is approved by the permitting agency. The request normally takes approximately 60 days to process; however, no extensions of time or additional compensation will be granted for delays resulting from the Design-Build Team's request for approval of construction methods not specifically identified in the permit.

Where construction moratoriums are contained in a permit condition which restricts the Design-Build Team's activities to certain times of the year, those moratoriums will apply only to the portions of the work taking place in the waters or wetlands provided that activities outside those areas is done in such a manner as to not affect the waters or wetlands.

DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS
69 DARLINGTON AVENUE
WILMINGTON, NORTH CAROLINA 28403-1343

July 9, 2019

Regulatory Division

Action ID: SAW-2018-02276

North Carolina Department of Transportation
Mr. James Rerko, PWS
Project Development and Environmental Analysis Engineer
1000 Transportation Drive
Fayetteville, North Carolina 28302

Dear Mr. Rerko:

In accordance with your written request of February 27, 2019, revised May 23, 2019 and the ensuing administrative record, enclosed are two copies of a permit to discharge dredged or fill material into waters of the U.S., associated with widening existing I-95 to an eight-lane median divided facility on existing location from Murphy Road (exit 55) north to Interstate 40 (exit 81) in Cumberland, Harnett, and Johnston Counties, North Carolina.

You should acknowledge that you accept the terms and conditions of the enclosed permit by signing and dating each copy in the spaces provided ("Permittee" on page 3). Your signature, as permittee, indicates that, as consideration for the issuance of this permit, you voluntarily accept and agree to comply with all of the terms and conditions of this permit. **All pages of both copies of the signed permit with drawings should then be returned to this office for final authorization.** A self-addressed envelope is enclosed for your convenience.

This correspondence contains a proffered permit for the above described site. If you object to this decision, you may request an administrative appeal under Corps regulations at 33 CFR part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and request for appeal (RFA) form. If you request to appeal this decision you must submit a completed RFA form to the following address:

District Engineer, Wilmington Regulatory Division
Attn: Ms. Liz Hair
69 Darlington Avenue
Wilmington, North Carolina 28403

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR part 331.5, and that it has been received by the Division Office within 60 days of the date of the NAP. Should you decide to submit an RFA form, it must be received at the above address by September 9, 2019.

It is not necessary to submit an RFA form to the Division Office if you do not object to the decision in contained in this correspondence.

After the permit is authorized in this office, the original copy will be returned to you; the duplicate copy will be permanently retained in this office. If you have questions, please contact Ms. Liz Hair at the Wilmington Regulatory Field Office, telephone 910-251-4049 or email sarah.e.hair@usace.army.mil.

Thank you in advance for completing our Customer Survey Form. This can be accomplished by visiting our web site at http://corpsmapu.usace.army.mil/cm_apex/f?p=136:4:0 and completing the survey on-line. We value your comments and appreciate you taking the time to complete a survey each time you interact with our office.

Sincerely,

Scott McLendon
Chief, Regulatory Division
Wilmington District

Enclosures

DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS
69 DARLINGTON AVENUE
WILMINGTON, NORTH CAROLINA 28403-1343

9 July 2019

Regulatory Division

Action ID: SAW-2018-02276

North Carolina Department of Transportation
Mr. James Rerko, PWS
Project Development and Environmental Analysis Engineer
1000 Transportation Drive
Fayetteville, North Carolina 28302

Dear Mr. Rerko:

In accordance with the written request of February 7, 2019 and subsequent revised request dated May 23, 2019, and the ensuing administrative record, enclosed is a permit to discharge dredged or fill material into waters of the U.S., associated with widening existing I-95 to an eight-lane median divided facility on existing location from Murphy Road (SR1832/exit 55) north to Interstate 40 (exit 81) in Cumberland, Harnett, and Johnston Counties, North Carolina

Any deviation in the authorized work will likely require modification of this permit. If any change in the authorized work is necessary, you should promptly submit revised plans to the Corps showing the proposed changes. You may not undertake the proposed changes until the Corps notified you that your permit has been modified.

Carefully read your permit. The general and special conditions are important. Your failure to comply with these conditions could result in a violation of Federal law. Certain significant general conditions require that:

a. You must complete construction before December 31, 2024.

b. You must notify this office in advance as to when you intend to commence and complete work.

c. You must allow representatives from this office to make periodic visits to your worksite as deemed necessary to assure compliance with permit plans and conditions.

You should address all questions regarding this authorization to Ms. Liz Hair at the Wilmington Regulatory Field Office, telephone number (910) 251-4049.

Thank you in advance for completing our Customer Survey Form. This can be accomplished by visiting our web-site at http://corpsmapu.usace.army.mil/cm_apex/f?p=136:4:0 and completing the survey on-line. We value your comments and appreciate your taking the time to complete a survey each time you interact with our office.

FOR THE COMMANDER

Robert J. Clark
Colonel, U.S. Army
District Commander

Enclosures

Copy Furnished (with enclosures):

Chief, Source Data Unit
NOAA/National Ocean Service
Attn: Sharon Tear N/CS261
1315 East-West Hwy., Rm 7316
Silver Spring, Maryland 20910-3282

Copies Furnished with special conditions and plans:

Mr. Kenneth Riley, Ph.D.
Habitat Conservation Division
National Marine Fisheries Service Southeast Region
101 Pivers Island Road
Beaufort, North Carolina 28516

Mr. Pete Benjamin
U.S. Fish and Wildlife Service
Raleigh Ecological Service Field Office
Post Office Box 33726
Raleigh, North Carolina 27636-3726

Mr. Todd Bowers
Wetlands and Streams Regulatory Section
U.S. Environmental Protection Agency – Region 4
Sam Nunn Atlanta Federal Center
61 Forsyth Street, SW
Atlanta, Georgia 30303-8931

Mr. Doug Huggett
Division Coastal Management
N.C. Department of Environment and Natural Resources
400Commerce Avenue
Morehead City, North Carolina 28557

Dr. Pace Wilber
Habitat Conservation Division – Atlantic Branch
NOAA Fisheries Service
219 Fort Johnston Road
Charleston, South Carolina 29412

DEPARTMENT OF THE ARMY PERMIT

Permittee: NORTH CAROLINA DEPARTMENT OF TRANSPORTATION – DIV. 4 (NCDOT)
ATTN: MR. JAMES RERKO, PWS

Permit No.: SAW-2018-02276

Issuing Office: CESAW-RG-L

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description: Widen an approximate 26-mile portion of existing Interstate 95 to an eight-lane median-divided facility on existing location through Cumberland, Harnett and Johnston Counties, North Carolina. This is a phased permit, therefore Special Conditions detail the requirements for construction authorization for any specific section.

Project Location: The project begins approximately a half-mile south of SR 1832/Murphy Road (Exit 55) where 4-lane I-95 would taper to 8-lanes at Murphy Road (Exit 55) near Fayetteville, in Cumberland County and extends north through Harnett County and into Johnston County to the Interstate 40 interchange (Exit 81), north of the City of Benson.

General Conditions:

1. The time limit for completing the work authorized ends on December 31, 2024. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit,

Special Conditions:

SEE ATTACHED SPECIAL CONDITIONS

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

( ) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).

(X) Section 404 of the Clean Water Act (33 U.S.C. 1344).

( ) Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

*U.S. GOVERNMENT PRINTING OFFICE: 1986 - 717-425

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions. General condition 1 establishes a time limit for the completion of the activity authorized by this permit, unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

James J Rerko, PWS — 07/09/19

(PERMITTEE) NC DEPARTMENT OF TRANSPORTATION
ATTN: MR. JAMES RERKO, PWS — *(DATE)*

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

Monte Matthews for — 09 July 2019

(DISTRICT COMMANDER) ROBERT J. CLARK, COLONEL — *(DATE)*

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

(TRANSFEREE) — *(DATE)*

*U.S. GOVERNMENT PRINTING OFFICE: 1986 - 717-425

SPECIAL CONDITIONS
ACTION ID. SAW-2018-02276
NC DEPARTMENT OF TRANSPORATION
PROPOSED IMPROVEMENTS TO WIDEN I-95 TO EIGHT LANES FROM
MURPHY ROAD (SR 1832/EXIT 55) TO I-40 (EXIT 81)
TIP NO. I-5986

1. WORK LIMITS: All work authorized by this permit shall be performed in strict compliance with the attached permit plans dated February 7, 2019 and revised May 23, 2019, which are a part of this permit. The Permittee shall ensure that the construction design plans for this project do not deviate from the permit plans attached to this authorization. Any modification to the attached permit plans must be approved by the U.S. Army Corps of Engineers (Corps) prior to any active construction in waters or wetlands.

2. UNAUTHORIZED DREDGE OR FILL: Except as authorized by this permit or any U.S. Army Corps of Engineers approved modification to this permit, no excavation, fill, or mechanized land-clearing activities shall take place at any time in the construction or maintenance of this project, within waters or wetlands, or shall any activities take place that cause the degradation of waters or wetlands. There shall be no excavation from, waste disposal into, or degradation of, jurisdictional wetlands or waters associated with this permit without appropriate modification of this permit, including appropriate compensatory mitigation. This prohibition applies to all borrow and waste activities connected with this project. In addition, except as specified in the plans attached to this permit, no excavation, fill or mechanized land-clearing activities shall take place at any time in the construction or maintenance of this project, in such a manner as to impair normal flows and circulation patterns within, into, or out of waters or wetlands or to reduce the reach of waters or wetlands.

3. PERMIT DISTRIBUTION: The Permittee shall require its contractors and/or agents to comply with the terms and conditions of this permit in the construction and maintenance of this project, and shall provide each of its contractors and/or agents associated with the construction or maintenance of this project with a copy of this permit. A copy of this permit, including all conditions and drawings shall be available at the project site during construction and maintenance of this project.

4. PRECONSTRUCTION MEETING: The Permittee shall conduct an onsite preconstruction meeting between its representatives, the contractor's representatives and the appropriate Corps of Engineers Project Manager prior to undertaking any work within jurisdictional waters and wetlands to ensure that there is a mutual understanding of all terms and conditions contained within the Department of the Army permit. The Permittee shall schedule the preconstruction meeting for a time frame when the Corps, and NCDWQ Project Managers can attend. The Permittee shall invite the Corps, and NCDWQ Project Managers a minimum of thirty (30) days in advance of the scheduled meeting in order to provide those individuals with ample opportunity to schedule and participate in the required meeting. The thirty (30) day requirement can be waived with the concurrence of the Corps.

5. NOTIFICATION OF CONSTRUCTION COMMENCEMENT AND COMPLETION: The Permittee shall notify the U.S. Army Corps of Engineers in writing prior to beginning the work authorized by this permit and again upon completion of the work authorized by this permit.

6. REPORTING ADDRESS: All reports, documentation and correspondence required by the conditions of this permit shall be submitted to the following address: U.S. Army Corps of Engineers, Regulatory Division, Wilmington Regulatory Field Office, Attn: Ms. Liz Hair, 69 Darlington Avenue,

Wilmington North Carolina, 28403, or sarah.e.hair@usace.army.mil. The Permittee shall reference the following permit number, SAW-2018-02276, on all submittals.

7. PERMIT REVOCATION: The Permittee, upon receipt of a notice of revocation of this permit or upon its expiration before completion of the work will, without expense to the United States and in such time and manner as the Secretary of the Army or his authorized representative may direct, restore the water or wetland to its pre-project condition.

8. REPORTING VIOLATIONS: Violation of these permit conditions or violation of Section 404 of the Clean Water Act or Section 10 of the Rivers and Harbors Act shall be reported to the Corps in writing and by telephone at: 910-251-4049 within 24 hours of the Permittee's discovery of the violation.

9. ENDANGERED SPECIES ACT: The U.S. Fish and Wildlife Service's (USFWS's) Programmatic Biological Opinion (BO) titled "Northern Long-eared Bat (NLEB) Programmatic Biological Opinion for North Carolina Department of Transportation (NCDOT) Activities in Eastern North Carolina (Divisions 1-8)," dated March 25, 2015, and adopted on April 10, 2015, contains mandatory terms and conditions to implement the reasonable and prudent measures that are associated with "incidental take" that are specified in the BO. Your authorization under this Department of the Army permit is conditional upon your compliance with all the mandatory terms and conditions associated with incidental take of the BO, which terms and conditions are incorporated by reference in this permit. Failure to comply with the terms and conditions associated with incidental take of the BO, where a take of the listed species occurs, would constitute an unauthorized take, and it would also constitute non-compliance with your Department of the Army permit. The USFWS is the appropriate authority to determine compliance with the terms and conditions of its BO, and with the ESA.

10. MAINTAIN CIRCULATION AND FLOW OF WATERS: Except as specified in the plans attached to this permit, no excavation, fill or mechanized land- clearing activities shall take place at any time in the construction or maintenance of this project, in such a manner as to impair normal flows and circulation patterns within waters or wetlands or to reduce the reach of waters or wetlands.

11. SEDIMENT EROSION CONTROL:

1. During the clearing phase of the project, heavy equipment shall not be operated in surface waters or stream channels. Temporary stream crossings will be used to access the opposite sides of stream channels. All temporary diversion channels and stream crossings will be constructed of non-

erodible materials. Grubbing of riparian vegetation will not occur until immediately before construction begins on a given segment of stream channel.

2. No fill or excavation impacts for the purposes of sedimentation and erosion control shall occur within jurisdictional waters, including wetlands, unless the impacts are included on the plan drawings and specifically authorized by this permit. This includes, but is not limited to, sediment control fences and other barriers intended to catch sediment losses.

3. The Permittee shall remove all sediment and erosion control measures placed in wetlands or waters, and shall restore natural grades on those areas, prior to project completion.

4. The Permittee shall use appropriate sediment and erosion control practices which equal or exceed those outlined in the most recent version of the "North Carolina Sediment and Erosion Control Planning and Design Manual" to ensure compliance with the appropriate turbidity water quality standard. Erosion and sediment control practices shall be in full compliance with all specifications governing the proper design, installation and operation and maintenance of such Best Management Practices in order to ensure compliance with the appropriate turbidity water quality standards. This shall include, but is not limited to, the immediate installation of silt fencing or similar appropriate devices around all areas subject to soil disturbance or the movement of earthen fill, and the immediate stabilization of all disturbed areas. Additionally, the project shall remain in full compliance with all aspects of the Sedimentation Pollution Control Act of 1973 (North Carolina General Statutes Chapter 113A Article 4). Adequate sedimentation and erosion control measures shall be implemented prior to any ground disturbing activities to minimize impacts to downstream aquatic resources. These measures shall be inspected and maintained regularly, especially following rainfall events. All fill material shall be adequately stabilized at the earliest practicable date to prevent sediment from entering into adjacent waters or wetlands.

12. CLEAN FILL: The Permittee shall use only clean fill material for this project. The fill material shall be free from items such as trash, construction debris, metal and plastic products, and concrete block with exposed reinforcement bars. Soils used for fill shall not be contaminated with any toxic substance in concentrations governed by Section 307 of the Clean Water Act. Unless otherwise authorized by this permit, all fill material placed in waters or wetlands shall be generated from an upland source.

13. WATER CONTAMINATION: All mechanized equipment shall be regularly inspected and maintained to prevent contamination of waters and wetlands from fuels, lubricants, hydraulic fluids,

or other toxic materials. In the event of a spill of petroleum products or any other hazardous waste, the Permittee shall immediately report it to the N.C. Division of Water Quality at (919) 733-3300 or (800) 858-0368 and provisions of the North Carolina Oil Pollution and Hazardous Substances Control Act shall be followed.

14. CULVERTS:

1. Unless otherwise requested in the application and depicted on the approved permit plans, culverts greater than 48 inches in diameter shall be buried at least one foot below the bed of the stream. Culverts 48 inches in diameter and less shall be buried or placed on the stream bed as practicable and appropriate to maintain aquatic passage, and every effort shall be made to maintain existing channel slope. The bottom of the culvert shall be placed at a depth below the natural stream bottom to provide for passage during drought or low flow conditions. Culverts shall be designed and constructed in a manner that minimizes destabilization and head cutting.

2. Measures shall be included in the construction/installation that will promote the safe passage of fish and other aquatic organisms. The dimension, pattern, and profile of the stream above and below a pipe or culvert shall not be modified by widening the stream channel or by reducing the depth of the stream in connection with the construction activity. The width, height, and gradient of a proposed opening shall be such as to pass the average historical low flow and spring flow without adversely altering flow velocity. Spring flow should be determined from gauge data, if available. In the absence of such data, bankfull flow can be used as a comparable level.

3. The Permittee shall implement all reasonable and practicable measures to ensure that equipment, structures, fill pads, work, and operations associated with this project do not adversely affect upstream and/or downstream reaches. Adverse effects include, but are not limited to, channel instability, flooding, and/or stream bank erosion. The Permittee shall routinely monitor for these effects, cease all work when detected, take initial corrective measures to correct actively eroding areas, and notify this office immediately. Permanent corrective measures may require additional authorization by the U.S. Army Corps of Engineers.

15. MITIGATION: In order to compensate for impacts associated with this permit, mitigation shall be provided in accordance with the provisions outlined on the most recent version of the attached Compensatory Mitigation Responsibility Transfer Form. The requirements of this form, including any special conditions listed on this form, are hereby incorporated as special conditions of this permit.

16. TEMPORARY IMPACTS RESTORATION MEASURES: Within 30 days of the date of completing the authorized work, the Permittee shall remove all temporary fills in waters of the United States and restore the affected areas to pre-construction contours and elevations. The affected areas shall be re- vegetated with native, non-invasive vegetation as necessary to minimize erosion and ensure site stability. In wetland areas where pipeline installation via trenching is authorized, wetland topsoil shall be segregated from the underlying subsoil, and the top 6 to 12 inches of the trench shall be backfilled with topsoil from the trench.

17. SILT FENCE: Prior to construction within any jurisdictional areas, the Permittee shall correctly install silt fencing (with or without safety fencing) parallel with the utility line corridor, on both sides of the jurisdictional crossing. This barrier is to serve both as an erosion control measure and a visual identifier of the limits of construction within any jurisdictional area. The Permittee shall maintain the fencing, at minimum, until the wetlands have re-vegetated and stabilized.

18. PHASED PERMITTING: This permit only authorizes work on I-5986 B Section 1 of TIP I-5986. Construction on Sections 2, 3, and 4 of TIP I-5986 B and I-5986 A shall not commence until all the following occur: (a) final design has been completed for those sections and submitted to the U.S. Army Corps of Engineers (Corps); (b) the Permittee has minimized impacts to waters and wetlands to the maximum extent practicable and the Corps concurs with this assessment; (c) any modification to the plans have been approved by the Corps in writing; and (d) a final compensatory mitigation plan has been submitted by the Permittee and approved by the Corps.

19. BORROW AND WASTE: To ensure that all borrow and waste activities occur on high ground and do not result in the degradation of adjacent waters and wetlands, except as authorized by this permit, the Permittee shall require its contractors and/or agents to identify all areas to be used as borrow and/or waste sites associated with this project. The Permittee shall provide the U.S. Army Corps of Engineers with appropriate maps indicating the locations of proposed borrow and/or waste sites as soon as such information is available. The Permittee shall submit to the Corps site-specific information needed to ensure that borrow and/or waste sites comply with all applicable Federal requirements, to include compliance with the Endangered Species Act and the National Historic Preservation Act, such as surveys or correspondence with agencies (e.g., the USFWS, the NC-HPO, etc.). The required information shall also include the location of all aquatic features, if any, out to a distance of 400 feet beyond the nearest boundary of the site. The Permittee shall not approve any borrow and/or waste sites before receiving written confirmation from the Corps that the

proposed site meets all Federal requirements, whether or not waters of the U.S., including wetlands, are located in the proposed borrow and/or waste site. All delineations of aquatic sites on borrow and/or waste sites shall be verified by the U.S. Army Corps of Engineers and shown on the approved reclamation plans. The Permittee shall ensure that all borrow and/or waste sites comply with Special Condition #2 of this permit. Additionally, the Permittee shall produce and maintain documentation of all borrow and waste sites associated with this project. This documentation will include data regarding soils, vegetation, hydrology, any delineation(s) of aquatic sites, and any jurisdictional determinations made by the Corps to clearly demonstrate compliance with Special Condition #2. All information will be available to the U.S. Army Corps of Engineers upon request. The Permittee shall require its contractors to complete and execute reclamation plans for each borrow and/or waste site and provide written documentation that the reclamation plans have been implemented and all work is completed. This documentation will be provided to the U.S. Army Corps of Engineers within 30 days of the completion of the reclamation work.

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: NORTH CAROLINA DEPARTMENT OF TRANSPORTATION – NCDOT ATTN: MR. JAMES RERKO, PWS	File Number: SAW-2018-02276	Date: July 9, 2019

Attached is:	See Section below
☒ **INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)**	**A**
☐ PROFFERED PERMIT (Standard Permit or Letter of permission)	B
☐ PERMIT DENIAL	C
☐ APPROVED JURISDICTIONAL DETERMINATION	D
☐ PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/Missions/CivilWorks/RegulatoryProgramandPermits.aspx or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact: **District Engineer, Wilmington Regulatory Division,** **Attn: Ms. Liz Hair** **69 Darlington Avenue** **Wilmington, NC 28403**	If you only have questions regarding the appeal process you may also contact: Mr. Jason Steele, Administrative Appeal Review Officer CESAD-PDO U.S. Army Corps of Engineers, South Atlantic Division 60 Forsyth Street, Room 10M15 Atlanta, Georgia 30303-8801 Phone: (404) 562-5137

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

_____ Signature of appellant or agent.	Date:	Telephone number:

For appeals on Initial Proffered Permits send this form to:

District Engineer, Wilmington Regulatory Division, Attn: Ms. Liz Hair, 69 Darlington Avenue, Wilmington, North Carolina 28403

For Permit denials, Proffered Permits and approved Jurisdictional Determinations send this form to:

Division Engineer, Commander, U.S. Army Engineer Division, South Atlantic, Attn: Mr. Jason Steele, Administrative Appeal Officer, CESAD-PDO, 60 Forsyth Street, Room 10M15, Atlanta, Georgia 30303-8801 Phone: (404) 562-5137

U.S. ARMY CORPS OF ENGINEERS
Wilmington District
Compensatory Mitigation Responsibility Transfer Form

Permittee: NC DOT, Division 6/Mr. Jim Rerko **Action ID:** SAW-2018-02276
Project Name: I-5986B Section 1 (I-5788)/ I-95 Widening **County:** Harnett

Instructions to Permittee: The Permittee must provide a copy of this form to the Mitigation Sponsor, either an approved Mitigation Bank or the North Carolina Division of Mitigation Services (NCDMS), who will then sign the form to verify the transfer of the mitigation responsibility. Once the Sponsor has signed this form, it is the Permittee's responsibility to ensure that to the U.S. Army Corps of Engineers (USACE) Project Manager identified on page two is in receipt of a signed copy of this form before conducting authorized impacts, unless otherwise specified below. If more than one mitigation Sponsor will be used to provide the mitigation associated with the permit, or if the impacts and/or the mitigation will occur in more than one 8-digit Hydrologic Unit Code (HUC), multiple forms will be attached to the permit, and the separate forms for each Sponsor and/or HUC must be provided to the appropriate mitigation Sponsors.

Instructions to Sponsor: The Sponsor must verify that the mitigation requirements (credits) shown below are available at the identified site. By signing below, the Sponsor is accepting full responsibility for the identified mitigation, regardless of whether or not they have received payment from the Permittee. Once the form is signed, the Sponsor must update the bank ledger and provide a copy of the signed form and the updated bank ledger to the Permittee, the USACE Project Manager, and the Wilmington District Mitigation Office (see contact information on page 2). The Sponsor must also comply with all reporting requirements established in their authorizing instrument.

Permitted Impacts and Compensatory Mitigation Requirements

Permitted Impacts Requiring Mitigation*: **8-digit HUC and Basin:** 03030006, Cape Fear River Basin

Stream Impacts (linear feet)			Wetland Impacts (acres)			
Warm	Cool	Cold	Riparian Riverine	Riparian Non-Riverine	Non-Riparian	Coastal
1,208			1.10		0.26	

*If more than one mitigation sponsor will be used for the permit, only include impacts to be mitigated by this sponsor.

Compensatory Mitigation Requirements: **8-digit HUC and Basin:** 03030006, Cape Fear River Basin

Stream Mitigation (credits)			Wetland Mitigation (credits)			
Warm	Cool	Cold	Riparian Riverine	Riparian Non-Riverine	Non-Riparian	Coastal
2,416			2.20		0.52	

Mitigation Site Debited: NC DMS
(List the name of the bank to be debited. For umbrella banks, also list the specific site. For NCDMS, list NCDMS. If the NCDMS acceptance letter identifies a specific site, also list the specific site to be debited).

Section to be completed by the Mitigation Sponsor

Statement of Mitigation Liability Acceptance: I, the undersigned, verify that I am authorized to approve mitigation transactions for the Mitigation Sponsor shown below, and I certify that the Sponsor agrees to accept full responsibility for providing the mitigation identified in this document (see the table above), associated with the USACE Permittee and Action ID number shown. I also verify that released credits (and/or advance credits for NCDMS), as approved by the USACE, are currently available at the mitigation site identified above. Further, I understand that if the Sponsor fails to provide the required compensatory mitigation, the USACE Wilmington District Engineer may pursue measures against the Sponsor to ensure compliance associated with the mitigation requirements.

Mitigation Sponsor Name:_____

Name of Sponsor's Authorized Representative:_____

_____ _____
Signature of Sponsor's Authorized Representative **Date of Signature**

USACE Wilmington District
Compensatory Mitigation Responsibility Transfer Form, Page 2

Conditions for Transfer of Compensatory Mitigation Credit:

- Once this document has been signed by the Mitigation Sponsor and the USACE is in receipt of the signed form, the Permittee is no longer responsible for providing the mitigation identified in this form, though the Permittee remains responsible for any other mitigation requirements stated in the permit conditions.
- Construction within jurisdictional areas authorized by the permit identified on page one of this form can begin only after the USACE is in receipt of a copy of this document signed by the Sponsor, confirming that the Sponsor has accepted responsibility for providing the mitigation requirements listed herein. For authorized impacts conducted by the North Carolina Department of Transportation (NCDOT), construction within jurisdictional areas may proceed upon permit issuance; however, a copy of this form signed by the Sponsor must be provided to the USACE within 30 days of permit issuance. NCDOT remains fully responsible for the mitigation until the USACE has received this form, confirming that the Sponsor has accepted responsibility for providing the mitigation requirements listed herein.
- Signed copies of this document must be retained by the Permittee, Mitigation Sponsor, and in the USACE administrative records for both the permit and the Bank/ILF Instrument. It is the Permittee's responsibility to ensure that the USACE Project Manager (address below) is provided with a signed copy of this form.
- If changes are proposed to the type, amount, or location of mitigation after this form has been signed and returned to the USACE, the Sponsor must obtain case-by-case approval from the USACE Project Manager and/or North Carolina Interagency Review Team (NCIRT). If approved, higher mitigation ratios may be applied, as per current District guidance and a new version of this form must be completed and included in the USACE administrative records for both the permit and the Bank/ILF Instrument.

Comments/Additional Conditions:

The I-5986 I-95 widening project is a phased project. This form only applies to section 1 of the project. The NC DMS has provided mitigation acceptance letters for I-5986 A, I-5986 B, I-5877, I-5878, and I-5883. As final design is completed for each section, permit modifications will be requested and updated Mitigation Responsibility Transfer Forms will be provided.

This form is not valid unless signed below by the USACE Project Manager and by the Mitigation Sponsor on Page 1. ***Once signed, the Sponsor should provide copies of this form along with an updated bank ledger to: 1) the Permittee, 2) the USACE Project Manager at the address below, and 3) the Wilmington District Mitigation Office, Attn: Todd Tugwell, 3331 Heritage Trade Drive, Suite 105, Wake Forest, NC 27587 (email: todd.tugwell@usace.army.mil).*** Questions regarding this form or any of the permit conditions may be directed to the USACE Project Manager below.

USACE Project Manager:	Liz Hair
USACE Field Office:	Wilmington Regulatory Field Office
	US Army Corps of Engineers
	69 Darlington Avenue
	Wilmington, NC 28403
Email:	sarah.e.hair@usace.army.mil

Liz Hair

USACE Project Manager Signature

July 8, 2019

Date of Signature

Current Wilmington District mitigation guidance, including information on mitigation ratios, functional assessments, and mitigation bank location and availability, and credit classifications (including stream temperature and wetland groupings) is available at http://ribits.usace.army.mil.

The Wilmington District is committed to providing the highest level of support to the public. To help us ensure we continue to do so, please complete the Customer Satisfaction Survey located at our website at http://regulatory.usacesurvey.com/ to complete the survey online.

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ROY COOPER
Governor
MICHAEL S. REGAN
Secretary
LINDA CULPEPPER
Director

NORTH CAROLINA
Environmental Quality

May 30, 2019

Jim Rerko, Project Development and Environmental Analysis Engineer
Division 6
1000 Transportation Drive
Fayetteville, NC 28302

Subject:401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water Act and Neuse Buffer Permit with ADDITIONAL CONDITIONS for Proposed improvements to widen I-95 to eight lanes from Murphy Road (SR 1832/Exit 55) to I-40 (Exit 81) in Cumberland, Harnett and Johnston Counties, State Project No. WBS 47532.1.2 and 47532.1.3, STIP No. I-5986.
NCDWR Project No. 20190214

Dear Mr. Rerko:

Attached hereto is a copy of Certification No. WQC004187 issued to The North Carolina Department of Transportation (NCDOT) dated May 30, 2019.

If we can be of further assistance, do not hesitate to contact us.

Sincerely,

DocuSigned by:
Amy Chapman
Linda Culpepper, Director
Division of Water Resources

Attachment

Electronic copy only distribution:
- Liz Hair, US Army Corps of Engineers, Wilmington Field Office
- Greg Price, Division 6 Environmental Officer
- Chris Rivenbark, NC Department of Transportation
- Chris Militscher, US Environmental Protection Agency
- Gary Jordan, US Fish and Wildlife Service
- Travis Wilson, NC Wildlife Resources Commission
- Beth Harmon, Division of Mitigation Services
- Joanne Steenhuis, NC Division of Water Resources Wilmington Regional Office
- File Copy

401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water Act and Neuse Buffer rules, with ADDITIONAL CONDITIONS

THIS CERTIFICATION is issued in conformity with the requirements of Section 401 Public Laws 92-500 and 95-217 of the United States and subject to the North Carolina Division of Water Resources (NCDWR) Regulations in 15 NCAC 2H .0500 and 15A NCAC 2B .0233. This certification authorizes the NCDOT to impact 16.590 acres of jurisdictional wetlands, 6,283 linear feet of jurisdictional streams in Cumberland, Harnett and Johnston Counties and 90,270 square feet of protected riparian buffers in Johnston County. The project shall be constructed pursuant to the application dated received February 19, 2019. The authorized impacts are as described below:

SECTION 1 (I-5877) **Stream Impacts in the Cape Fear River Basin**

Site	Station	NRTR Label	Permanent Fill in Intermittent Stream (linear ft)	Temporary Fill in Intermittent Stream (linear ft)	Permanent Fill in Perennial Stream (linear ft)	Temporary Fill in Perennial Stream (linear ft)	Total Stream Impact (linear ft)	Stream Impacts Requiring Mitigation (linear ft)
1	800+95 to 801+38-L-RT Drainage Ditch	SC				44	44	N/A
3	801+10 to 803+74-L 42" Pipe	SI			121	19	140	N/A
5	816+14 to 816+28-L-RT 54" Pipe	SA	8	10			18	N/A
	Outlet Channel	SA	23				23	N/A
5A	11+04 to 11+40 SR7-LT Roadway Fill	SA	24				24	N/A
6	18+84 to 18+94-Y22-RT Bank Stabilization	SC			10		10	N/A
7	20+15 to 20+39-Y22-RT Drainage Ditch	SB	18	18			36	N/A
7A	46+22 to 47+34-Y12 60" Pipe	SB	44				44	N/A
	Inlet Bank Stabilization	SB	20	10			30	N/A
	Outlet Channel	SB	36	17			53	N/A
7B	1+84 to 13+35-Y1RPD-RT Roadway Fill	SB	113	11			124	N/A
8	844+71 to 845+24-L-RT Pipe Removal	SD		33			33	N/A
8A	849+47 to 849+75-L-RT Pipe Removal/Ditch	SD		9			9	N/A
	Outlet Channel	SD	22				22	N/A
8B	38+92 to 39+04-SR7	SD	18	16			34	N/A

Site	Station	NRTR Label	Permanent Fill in Intermittent Stream (linear ft)	Temporary Fill in Intermittent Stream (linear ft)	Permanent Fill in Perennial Stream (linear ft)	Temporary Fill in Perennial Stream (linear ft)	Total Stream Impact (linear ft)	Stream Impacts Requiring Mitigation (linear ft)
	Pipe Removal/Ditch							
	Channel Realignment	SD	14				14	N/A
9	855+32 to 859+66-L 9' x 8' RCBC	SC			98	44	142	98
	Inlet Channel	SC			56	19	75	56
	Outlet Channel	SC			185	25	210	185
10	875+41 to 875+82-L 60" Pipe	SE			105	47	152	N/A
	Inlet Channel	SE			41		41	N/A
	Outlet Channel	SE			34	13	47	N/A
10A	4+58 to 15+95 Y13RPB-L 36" Pipe	SE			47		47	N/A
	Outlet Channel	SE			20	20	40	N/A
	Utility	SE				59	59	N/A
10B	21+71 to 22+25-DR5-RT Roadway Fill	SE				40	40	N/A
	Channel Realignment	SE			15		15	N/A
11	22+10 to 22+55 DR5 9' x 8' RCBC	SF			39		39	N/A
	Inlet Channel	SF			38	29	67	N/A
	Outlet Channel	SF			29	10	39	N/A
11A	19+83 to 21+03-Y13 8' x 7' RCBC	SF			8		8	N/A
	Inlet Channel	SF			40	12	52	N/A
	Outlet Channel	SF			42	10	52	N/A
	Utility	SF				22	22	N/A
11B	898+13 to 899+23-L 60" Pipe	SF			34		34	N/A
	Inlet Channel	SF			20	13	33	N/A
	Outlet Channel	SF			25	12	37	N/A

Site	Station	NRTR Label	Permanent Fill in Intermittent Stream (linear ft)	Temporary Fill in Intermittent Stream (linear ft)	Permanent Fill in Perennial Stream (linear ft)	Temporary Fill in Perennial Stream (linear ft)	Total Stream Impact (linear ft)	Stream Impacts Requiring Mitigation (linear ft)
20	14+00 to 14+95-SR9 72" Pipe	SH	72				72	N/A
	Inlet Channel	SH	21	11			32	N/A
	Outlet Channel	SH	25	13			38	N/A
Total			**458**	**148**	**1007**	**438**	**2051**	**339**

SECTION 1 Total Stream Impact for Project: 2051 linear feet

SECTION 1 (I-5877) Wetland Impacts in the Cape Fear River Basin

	Station	NRTR Label	Fill (Perm) (ac)	Fill (Temp) (ac)	Excav -ation (ac)	Mechanized Clearing (ac)	Hand Clearing (ac)	Area under Bridge (ac)	Total Wetland Impact (ac)
2	795+73 to 796+99- L-LT Roadway Fill	WD	0.111		0.051				0.162
4	811+37 to 814+11 -LT-RT Roadway Fill	WE	0.046			0.048			0.094
11	22+10 to 22+55-DR5 Inlet Channel	WF			0.001	0.012			0.013
12	22+75 to 30+68- DR5 Roadway Fill	WF	0.619		0.089	0.218			0.926
14	36+49 to 37+33- SR9-LT Roadway Fill	WB	0.004		0.005	0.019			0.028
	Utility						0.026		N/A
16	17+24 to 17+95- Y24-RT Roadway Fill	WC				0.008			0.008
	Utility						0.018		N/A
20	14+00 to 14+95- SR9 72" Pipe	WA	0.080		0.010	0.041			0.131
	Total		**0.860**		**0.156**	**0.346**	**0.044**		**1.362**

SECTION 1 Total Wetland Impact for Project: 1.362 acres.

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SECTION 1 (I-5877) **Open Water Impacts in the Cape Fear River Basin**

Site	Station	NRTR Label	Permanent Fill in Open Waters (ac)	Temporary Fill in Open Waters (ac)	Total Fill in Open Waters (ac)
5A	11+04 to 11+40 SR7-LT Pond	PA	0.182		0.182
10C	14+54 to 15+23-SR8-LT 30" Pipe	OWD		0.003	0.003
	48" Pipe	OWD	0.003		0.003
	Outlet Channel	OWD	0.001		0.001
15	16+32 to 16+62- Y24-RT Outlet channel	OWA	0.006	0.002	0.008
17	913+16 to 919+91 -L-RT Roadway fill	OWB	0.101		0.101
18	23+67 to 24+00 Y24-RT Roadway fill	OWB	0.003	0.001	0.004
	Utility	OWB		0.001	0.001
19	15+51 to 19+93 Y13-LT 66" Pipe	OWE	0.010	0.002	0.012
	Bank Stabilization	OWE	0.004		0.004
	Channel Realignment	OWE	0.051		0.051
Total			**0.361**	**0.009**	**0.370**

SECTION 1 **Total Open Water Impact for Project: 0.370 acres.**

SECTION 2 (I-5878) Stream Impacts in the Cape Fear River Basin

Site	NRTR Label	Station (Type impact)	Permanent Fill in Intermittent Stream (linear ft)	Temporary Fill in Intermittent Stream (linear ft)	Permanent Fill in Perennial Stream (linear ft)	Temporary Fill in Perennial Stream (linear ft)	Total Stream Impact (linear ft)	Stream Impacts Requiring Mitigation (linear ft)
1	SB	21+77 to 22+34-Y14RPB Roadway Fill			140		**140**	N/A
1A	SB	15+48-NBCD Roadway Fill			157		**157**	N/A
1B	SA	21+04 to 22+11-Y14RPB Roadway fill	35				**35**	N/A
2	SD	1035+24 to 1036+18-L-LT Roadway Fill			101		**101**	N/A
5	Stoney Run	1041+00 to 1043+91 -L			208		**208**	N/A
Total			**35**		**606**		**641**	

Total Stream Impact for Project: 641 linear feet

SECTION 2 (I-5878) Wetland Impacts in the Cape Fear River Basin

Site	NRTR Label	Station (Type Impact)	Fill (ac)	Fill (Temporary) (ac)	Excavation (ac)	Mechanized Clearing (ac)	Hand Clearing (ac)	Area under Bridge (ac)	Total Wetland Impact (ac)
3	WBH	1038+02 to 1045 - 46-L-RT Roadway Fill	0.564						0.564
4	WBG	1038+70 to 1045+26 -L-RT Roadway Fill	0.749						0.749
6	WB	17+58 to 19+60-SR9A Roadway Fill	0.498						0.498
Total			**1.811**						**1.811**

Total Wetland Impact for Project: 1.811 acres.

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SECTION 3 (I-5883) Stream Impacts in the Cape Fear River Basin

Site	NRTR Label	Station (Type Impact)	Permanent Fill in Intermittent Stream (linear ft)	Temporary Fill in Intermittent Stream (linear ft)	Permanent Fill in Perennial Stream (linear ft)	Temporary Fill in Perennial Stream (linear ft)	Total Stream Impact (linear ft)	Stream Impacts Requiring Mitigation (linear ft)
1	SB	1075+84 to 1077+41-L-LT Roadway Fill			65		65	N/A
2	SC	44+86 to 48+09-SR13 Roadway Fill	329				329	N/A
3	SA	22+04 to 27+47-Y16RPC Roadway Fill			582		582	582
5	SG	32+96 to 33+11-SR15-RT Roadway Fill			12		12	N/A
6	SG	34+52 to 35+60-SR15RT Roadway Fill			111		111	N/A
7	SH	37+43 to 37+61-SR15-RT Roadway Fill			29		29	N/A
8	SK	85+45 to 88+88-SR15-RT Roadway Fill			38		38	N/A
10	SI	69+06 to 69+34-SR16 Roadway Fill	106				106	N/A
12	SI	10+37 to 12+14-Y17RPA-RT Roadway Fill			100		100	N/A
13	SE	53+57 to 54+92-SR13 Roadway Fill	167				167	N/A
Total			**602**		**937**		**1539**	**582**

Total Stream Impact for Project: 1539 linear feet

SECTION 3 (I-5883) Wetland Impacts in the Cape Fear River Basin

Site	NRTR Label	Station (Type Impact)	Fill (ac)	Fill (temporary) (ac)	Excava -tion (ac)	Mechanized Clearing (ac)	Hand Clearing (ac)	Area under Bridge (ac)	Total Wetland Impact (ac)
1	WB	1075+84 to 1077+41-L-LT Roadway Fill	0.045						0.045
4	WA	24+21 to 24+83-Y16RPC-LT Roadway Fill	0.017						0.017
8	WK	85+45 to 88+88-SR15-RT Roadway Fill	0.223						0.223
9	WG	52+29 to 55+07-SR16-LT Roadway Fill	0.263						0.263
11	WE	17+23 to 19+17-Y17RPC-RT Roadway Fill	0.087						0.087
12	WI	10+37 to 12+14-Y17RPA-RT Roadway Fill	0.094						0.094
14	WJ	12+67 to 13+62-Y26-RT Roadway Fill	0.051						0.051
15	WK	12+67 to 13+62-Y26-LT Roadway Fill	0.126						0.126
16	WD	24+28 to 24+55-Y17RPB-LT Roadway Fill	0.009						0.009
Total			**0.915**						**0.915**

Total Wetland Impact for Project: 0.915 acres.

SECTION 4 (I-5986B) Stream Impacts in the Cape Fear and Neuse River Basins

Site	NRTR Label	Station (Type Impact)	Permanent Fill in Intermittent Stream (linear ft)	Temporary Fill in Intermittent Stream (linear ft)	Permanent Fill in Perennial Stream (linear ft)	Temporary Fill in Perennial Stream (linear ft)	Total Stream Impact (linear ft)	Stream Impacts Requiring Mitigation (linear ft)
2	Mingo Swamp	1252+25 to 1263+87-L-RT Roadway Fill			186		186	N/A
4	SM	1284+24 to 1285+34-L-RT Roadway Fill			48		48	N/A
5*	Hannah Creek	1316+85 to 1317+00-L-RT Roadway Fill	64				64	N/A
6*	SO	1344+69 to 1346+45-L-LT Roadway Fill			192		192	192
6A*	SO	1347+18 to 1349+60-L-RT Roadway Fill			174		174	174
6B*	SO	16+70 to 17+70-Y18RPD-LT Roadway Fill			28		28	28
8*	Driving Branch	1387+79 to 1391+45-L0LT Roadway Fill			69		69	N/A
11*	SQ	1387+71 to 1380+96-L-LT Roadway Fill			162		162	N/A
Total			**64**		**859**		**923**	**394**

SECTION 4 Total Stream Impact for Project: 923 linear feet (Cape Fear 234; Neuse 689)
***Indicates Neuse River Basin**

SECTION 4 (I-5986B) Wetland Impacts in the Cape Fear and Neuse River Basins

Site	NRTR Label	Station (Type Impact)	Fill (ac)	Fill (temporary) (ac)	Excava -tion (ac)	Mechanized Clearing (ac)	Hand Clearing (ac)	Area under Bridge (ac)	Total Wetland Impact (ac)
1	WBK	1252+48 to 1265+96-L-LT Roadway Fill	1.501						1.501
3	WBJ	1260+08 to 1260+65-L Roadway Fill	0.778						0.778
4	WBL	1284+24 to 1285+34-L-RT Roadway Fill	0.010						0.010
7*	WBP	1375+48 to 1376+00-L-RT Roadway Fill	0.003						0.003
9*	WBS	1387+79 to 1391+45-L0LT Roadway Fill	0.096						0.096
10*	WBR	1391+47 to 1392+78-L-RT Roadway Fill	0.056						0.056
Total			2.444						2.444

SECTION 4 Total Wetland Impact for Project: 2.444 acres. (Cape Fear 2.289; Neuse 0.155)

*Indicates Neuse River Basin

SECTION 4 (I-5986B) Neuse Riparian Buffer Impacts

Site	Station) (Type Impact)	Zone 1 Impact (sq ft)	*minus* Wetlands in Zone 1 (sq ft)	= Zone 1 Buffers (not wetlands) (sq ft)	Zone 1 Buffer Mitigation Required (using 3:1 ratio)		Zone 2 Impact (sq ft)	*minus* Wetlands in Zone 2 (sq ft)	= Zone 2 Buffers (not wetlands) (sq ft)	Zone 2 Buffer Mitigation Required (using 1.5:1 ratio)
5**	1316+27 to 1317+54-L Roadway Fill	4,419	N/A	4,419	N/A		5,255	N/A	5,255	*N/A
6	1344+24 to 1346+94-L-LT Roadway Fill	14,343	N/A	14,343	43,029		12,530	N/A	12,530	18,795
6A	1347+68 to 1350+09-L-RT Roadway Fill	13,546	N/A	13,546	40,638		10,120	N/A	10,120	15,180
6B	16+61 to 17+96-Y18RPD-LT Roadway Fill	3,684	1,638	2,046	6,138		2,921	899	2,022	3,033
7**	1375+82 to 1376+60-L-RT Roadway Fill	N/A			N/A		688	N/A	688	*N/A
8**	1389+73 to 1391+85-L Roadway Fill	6,599	4,428	2,171*	*N/A		3,531	1,302	2,229	*N/A
11**	1387+21 to 1389+73-L-LT Roadway Fill	8,639	77	8,562	*N/A		3,995	N/A	3,995	*N/A
Total		**51,230**			**89,805**		**39,040**			**37,008**

Total Buffer Impacts for Project: 90,270 square feet.

* n/a = Total for Site is less than 1/3 acre and 150 linear feet of impact, no mitigation required

** Allowable Buffer Impacts

(I-5986 A) Stream Impacts in the Cape Fear River Basin

Site	NRTR Label	Station (Type Impact)	Permanent Fill in Intermittent Stream (linear ft)	Temporary Fill in Intermittent Stream (linear ft)	Permanent Fill in Perennial Stream (linear ft)	Temporary Fill in Perennial Stream (linear ft)	Total Stream Impact (linear ft)	Stream Impacts Requiring Mitigation (linear ft)
3	SB	94+37 to 100+20-L-RT Roadway Fill	38				38	N/A
10	Baker Swamp	198+56 to 203+79-L-RT Roadway Fill			70		70	N/A
11	Baker Swamp	11+89 to 23+93-Y5RPC-RT Roadway Fill			63		63	N/A
13	SC	251+91 to 253+32-L Roadway Fill			116		116	N/A
15	SD	301+32 to 304+90-L Roadway Fill			138		138	N/A
18	SE	354+73 to 354+90-L Roadway Fill	130				130	N/A
23	SF	423+14 to 423+31-L-LT Roadway Fill			40		40	N/A
27	SG	539+19 to 540+76-L Roadway Fill			114		114	N/A
29	SH	574+35 to 574+56-L Roadway Fill			106		106	N/A
33	SI	625+60 to 626+52-L Roadway Fill			101		101	N/A
36	SJ	642+58 to 643+31-L Roadway Fill	67				67	N/A
38	Black River	665+70 to 684+31-L Roadway Fill			60		60	N/A
42	SK	761+05-L Roadway Fill	86				86	N/A
Total			**321**		**808**		**1129**	

Total Stream Impact for Project: 1129 linear feet

(I-5986 A) Wetland Impacts in the Cape Fear River Basin

Site	NRTR Label	Station (Type Impact)	Fill (ac)	Fill (temporary) (ac)	Excava-tion (ac)	Mechanized Clearing (ac)	Hand Clearing (ac)	Area under Bridge (ac)	Total Wetland Impact (ac)
1	WE	90+87 to 92+10-L-RT Roadway Fill	0.024						0.024
2	WH	91+98 to 110+06-L-LT Roadway Fill	0.233						0.233
3	WF	94+37 to 100+20-L-RT Roadway Fill	0.156						0.156
4	WI	108+26 to 114+34-L-LT Roadway Fill	0.076						0.076
5	WJ	118+98 to 133+53-L-LT Roadway Fill	0.536						0.536
6	WK	122+19 to 124+94-L-LT Roadway Fill	0.073						0.073
7	WL	121+32 to 127+68-L-RT Roadway Fill	0.648						0.648
8	WR	186+19 to 193+09-L-LT Roadway Fill	0.170				0.165		0.170
9	WQ	199+16 to 202+54-L-LT Roadway Fill	0.183						0.183
10	WP	198+56 to 203+79-L-RT Roadway Fill	0.371						0.371
11	WO	11+89 to 23+93-Y5RPC-RT Roadway Fill	1.352						1.352
12	WX	213+68 to 222+17-L-RT Roadway Fill	1.659						1.659
14	WZ	300+64 to 306+99-L-LT Roadway Fill	0.133						0.133
16	WY	302+03 to 307+02-L-RT Roadway Fill	0.178						0.178
17	WAA	351+49 to 351+95-L-RT Roadway Fill	0.005						0.005
19	WAB	354+90 to 357+78-L-RT Roadway Fill	0.024						0.024
20	WAF	384+05 to 292+99-L-LT Roadway Fill	0.284						0.284

Site	NRTR Label	Station (Type Impact)	Fill (ac)	Fill (temporary) (ac)	Excava-tion (ac)	Mechanized Clearing (ac)	Hand Clearing (ac)	Area under Bridge (ac)	Total Wetland Impact (ac)
21	WAH	405+58 to 405+78-L-LT Roadway Fill	0.005						0.005
22	WAK	422+17 to 437+17-L-LT Roadway Fill	0.672						0.672
24	WAI	418+39 to 437+17-L-RT Roadway Fill	0.761						0.761
25	WAM	508+34 to 509+39-L-LT Roadway Fill	0.087						0.087
26	WAN	522+79 to 528+98-L-LT Roadway Fill	0.364						0.364
28	WAS	573+52 to 575+47-L Roadway Fill	0.035						0.035
30	WAT	600+13 to 606+75-L-LT Roadway Fill	0.305						0.305
31	WAU	618+08 to 618+41-L-RT Roadway Fill	0.004						0.004
32	WAW	622+48 to 626+94-L-LT Roadway Fill	0.480						0.480
34	WAV	625+67 to 627+43-L-RT Roadway Fill	0.139						0.139
35	WAX	640+37 to 642+41-L-RT Roadway Fill	0.021						0.021
37	WAY	660+09 to 660+50-L-RT Roadway Fill	0.003						0.003
38	WAZ	665+70 to 684+31-L Roadway Fill	0.516						0.516
	WAZ	Bridge					0.080		N/A
38A	WAZ	690+67 to 694+59-L Roadway Fill	0.129						0.129
39	WBA	725+12 to 725+92-L-LT Roadway Fill	0.012						0.012
40	WBB	729+82 to 731+51-L-LT Roadway Fill	0.054						0.054
41	WBC	735+67 to 739+95-L-LT Roadway Fill	0.194						0.194

Site	NRTR Label	Station (Type Impact)	Fill (ac)	Fill (temporary) (ac)	Excava-tion (ac)	Mechanized Clearing (ac)	Hand Clearing (ac)	Area under Bridge (ac)	Total Wetland Impact (ac)
43	WU	30+59 to 33+43-Y5LPDA-RT Roadway Fill	0.172						0.172
Total			**10.058**				**0.245**		**10.058**

Total Wetland Impact for Project: 10.058 acres.

The application provides adequate assurance that the discharge of fill material into the waters of the Cape Fear and Neuse River Basins in conjunction with the proposed development will not result in a violation of applicable Water Quality Standards and discharge guidelines. Therefore, the State of North Carolina certifies that this activity will not violate the applicable portions of Sections 301, 302, 303, 306, 307 of PL 92-500 and PL 95-217 if conducted in accordance with the application and conditions hereinafter set forth.

This approval is only valid for the purpose and design that you submitted in your application dated received February 19, 2019 and subsequent information received on May 3rd and 23rd, 2019. Should your project change, you are required to notify the NCDWR and submit a new application. If the property is sold, the new owner must be given a copy of this Certification and approval letter and is thereby responsible for complying with all the conditions. If any additional wetland impacts, or stream impacts, for this project (now or in the future) exceed one acre or 150 linear feet, respectively, additional compensatory mitigation may be required as described in 15A NCAC 2H .0506 (h) (6) and (7). Additional buffer impacts may require compensatory mitigation as described in 15A NCAC 2B .0233. For this approval to remain valid, you are required to comply with all the conditions listed below. In addition, you should obtain all other federal, state or local permits before proceeding with your project including (but not limited to) Sediment and Erosion control, Coastal Stormwater, Non-discharge and Water Supply watershed regulations. This Certification shall expire on the same day as the expiration date of the corresponding Corps of Engineers Permit.

Condition(s) of Certification:

Project Specific Conditions

1. The NCDOT Division Environmental Officer or Environmental Assistant will conduct a pre-construction meeting with all appropriate staff to ensure that the project supervisor and essential staff understand the potential issues with wetlands, streams and pipe alignments for the permitted sites. NCDWR staff shall be invited to the pre-construction meeting. [15A NCAC 02H.0506(b)(2) and (b)(3)

2. At locations where ponds will be drained, proper measures will be taken to drain the pond with limited impact to upstream and downstream channel stability as well as to native aquatic species. Proper measures will be taken to avoid sediment release and/or sediment accumulation downstream as a result of pond draining. If typical pond draining techniques will create significant disturbance to native aquatic species, additional measures such as collection and relocation may be necessary to prevent a significant fish kill. NCDOT shall consult with NC Wildlife Resources staff to determine if there are any sensitive species, and the most appropriate measures to limit impacts to these species. The permittee shall observe any natural channel re-establishment, or utilize natural channel construction techniques, to ensure that the jurisdictional stream channel above and below the drained pond remain stable, and that no additional impacts occur within the natural stream channel as a result of draining the pond. [15A NCAC 2H.0506(b)(3)

3. As a condition of this 401 Water Quality Certification, any bridge demolition and construction must be accomplished in strict compliance with the most recent version of NCDOT's Best Management Practices

for Construction and Maintenance Activities. [15A NCAC 02H .0507(d)(2) and 15A NCAC 02H .0506(b)(5)]

4. Bridge deck drains shall not discharge directly into the stream. Stormwater shall be directed across the bridge and pre-treated through site-appropriate means (grassed swales, pre-formed scour holes, vegetated buffers, etc.) before entering the stream. To meet the requirements of NCDOT's NPDES permit NCS0000250, please refer to the most recent version of the *North Carolina Department of Transportation Stormwater Best Management Practices Toolbox* manual for approved measures. [15A NCAC 02H .0507(d)(2) and 15A NCAC 02H .0506(b)(5)]

5. Bridge piles and bents shall be constructed using driven piles (hammer or vibratory) or drilled shaft construction methods. More specifically, jetting or other methods of pile driving are prohibited without prior written approval from the NCDWR first. [15A NCAC 02H.0506(b)(2)]

6. No drill slurry or water that has been in contact with uncured concrete shall be allowed to enter surface waters. This water shall be captured, treated, and disposed of properly. [15A NCAC 02H .0506(b)(3)

7. A turbidity curtain will be installed in any stream if driving or drilling activities occur within the stream channel, on the stream bank, or within 5 feet of the top of bank. This condition can be waived with prior approval from the NCDWR. [15A NCAC 02H .0506(b)(3)

8. All bridge construction shall be performed from the existing bridge, temporary work bridges, temporary causeways, or floating or sunken barges. If work conditions require barges, they shall be floated into position and then sunk. The barges shall not be sunk and then dragged into position. Under no circumstances should barges be dragged along the bottom of the surface water. [15A NCAC 02H

9. If multiple pipes or barrels are required, they shall be designed to mimic natural stream cross section as closely as possible including pipes or barrels at flood plain elevation and/or sills where appropriate. Widening the stream channel should be avoided. Stream channel widening at the inlet or outlet end of structures typically decreases water velocity causing sediment deposition that requires increased maintenance and disrupts aquatic life passage. [15A NCAC 02H.0506(b)(2)]

10. Riprap shall not be placed in the active thalweg channel or placed in the streambed in a manner that precludes aquatic life passage. Bioengineering boulders or structures should be properly designed, sized and installed. [15A NCAC 02H.0506(b)(2)]

11. Pipes and culverts used exclusively to maintain equilibrium in wetlands, where aquatic life passage is not a concern, shall not be buried. These pipes shall be installed at natural ground elevation. [15A NCAC 02H.0506(b)(2) and (b)(3)]
12. Turbidity curtains shall be used to isolate all work areas from streams, including pile or casement installation, placement of riprap, excavation or filling. Strict adherence to the Construction and Maintenance Best Management Practices will be required. [15A NCAC 02H .0506 (b)(3) and (c)(3)]

13. Erosion control matting in riparian areas shall not contain a nylon mesh grid which can impinge and entrap small animals. Matting should be secured in place by staples, stakes, or wherever possible live stakes of native trees. Riparian areas are defined as a distance 25 feet from top of stream bank. [15A NCAC 02B.0224, .0225]

14. NCDOT shall be in compliance with the NCS00250 issued to the NCDOT, including the applicable requirements of the NCG01000.

General Conditions

15. Unless otherwise approved in this certification, placement of culverts and other structures in open waters and streams shall be placed below the elevation of the streambed by one foot for all culverts with a diameter

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greater than 48 inches, and 20 percent of the culvert diameter for culverts having a diameter less than 48 inches, to allow low flow passage of water and aquatic life. Design and placement of culverts and other structures including temporary erosion control measures shall not be conducted in a manner that may result in dis-equilibrium of wetlands or streambeds or banks, adjacent to or upstream and downstream of the above structures. The applicant is required to provide evidence that the equilibrium is being maintained if requested in writing by NCDWR. If this condition is unable to be met due to bedrock or other limiting features encountered during construction, please contact NCDWR for guidance on how to proceed and to determine whether or not a permit modification will be required. [15A NCAC 02H.0506(b)(2)]

16. If concrete is used during construction, a dry work area shall be maintained to prevent direct contact between curing concrete and stream water. Water that inadvertently contacts uncured concrete shall not be discharged to surface waters due to the potential for elevated pH and possible aquatic life and fish kills. [15A NCAC 02B.0200]

17. During the construction of the project, no staging of equipment of any kind is permitted in waters of the U.S. or protected riparian buffers. [15A NCAC 02H.0506(b)(2)]

18. The dimension, pattern and profile of the stream above and below the crossings shall not be modified. Disturbed floodplains and streams shall be restored to natural geomorphic conditions. [15A NCAC 02H.0506(b)(2)]

19. The use of rip-rap above the Normal High Water Mark shall be minimized. Any rip-rap placed for stream stabilization shall be placed in stream channels in such a manner that it does not impede aquatic life passage. [15A NCAC 02H.0506(b)(2)]

20. The Permittee shall ensure that the final design drawings adhere to the permit and to the permit drawings submitted for approval. [15A NCAC 02H .0507 (c) and 15A NCAC 02H .0506 (b)(2) and (c)(2)]

21. All work in or adjacent to stream waters shall be conducted in a dry work area. Approved BMP measures from the most current version of NCDOT Construction and Maintenance Activities manual such as sandbags, rock berms, cofferdams and other diversion structures shall be used to prevent excavation in flowing water. [15A NCAC 02H.0506(b)(3) and (c)(3)]

22. Heavy equipment shall be operated from the banks rather than in the stream channel in order to minimize sedimentation and reduce the introduction of other pollutants into the stream. [15A NCAC 02H.0506(b)(3)]

23. All mechanized equipment operated near surface waters must be regularly inspected and maintained to prevent contamination of stream waters from fuels, lubricants, hydraulic fluids, or other toxic materials. [15A NCAC 02H.0506(b)(3)]

24. No rock, sand or other materials shall be dredged from the stream channel except where authorized by this certification. [15A NCAC 02H.0506(b)(3)]

25. Discharging hydroseed mixtures and washing out hydroseeders and other equipment in or adjacent to surface waters is prohibited. [15A NCAC 02H.0506(b)(3)]

26. When applicable, all construction activities shall be performed and maintained in full compliance with G.S. Chapter 113A Article 4 (Sediment and Pollution Control Act of 1973). Regardless of applicability of the Sediment and Pollution Control Act, all projects shall incorporate appropriate Best Management Practices for the control of sediment and erosion so that no violations of state water quality standards, statutes, or rules occur. [15A NCAC 02H .0506(b)(3) and (c)(3) and 15A NCAC 02B .0200]

27. Design, installation, operation, and maintenance of all sediment and erosion control measures shall be equal to or exceed the requirements specified in the most recent version of the *North Carolina Sediment*

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and Erosion Control Manual, or for linear transportation projects, the *NCDOT Sediment and Erosion Control Manual.*

28. All devices shall be maintained on all construction sites, borrow sites, and waste pile (spoil) sites, including contractor-owned or leased borrow pits associated with the project. Sufficient materials required for stabilization and/or repair of erosion control measures and stormwater routing and treatment shall be on site at all times.

29. For borrow pit sites, the erosion and sediment control measures shall be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Surface Mining Manual.* Reclamation measures and implementation shall comply with the reclamation in accordance with the requirements of the Sedimentation Pollution Control Act and the Mining Act of 1971.

30. If the project occurs in waters or watersheds classified as Primary Nursery Areas (PNAs), SA, WS-1, WS-11, High Quality Waters (HQW), or Outstanding Resource Waters (ORW), then the sedimentation and erosion control designs shall comply with the requirements set forth in 15A NCAC 04B .0124, *Design Standards in Sensitive Watershed.* [15A NCAC 02H.0506(b)(3) and (c)(3); GC 4135]

31. All sediment and erosion control devices shall be removed and the natural grade restored within two (2) months of the date that the NC DOT Roadside, Division of Energy, Mining and Land Resources (DEMLR) or locally delegated program has released the specific area within the project. [15A NCAC 02H.0506(b)(3) and (c)(3)]

32. The permittee and its authorized agents shall conduct its activities in a manner consistent with State water quality standards (including any requirements resulting from compliance with §303(d) of the Clean Water Act) and any other appropriate requirements of State and Federal law. If the NCDWR determines that such standards or laws are not being met (including the failure to sustain a designated or achieved use) or that State or federal law is being violated, or that further conditions are necessary to assure compliance, the NCDWR may reevaluate and modify this certification. [15A NCAC 02B.0200]

33. All fill slopes located in jurisdictional wetlands shall be placed at slopes no flatter than 3:1, unless otherwise authorized by this certification. [15A NCAC 02H.0506(b)(2)]

34. A copy of this Water Quality Certification shall be maintained on the construction site at all times. In addition, the Water Quality Certification and all subsequent modifications, if any, shall be maintained with the Division Engineer and the on-site project manager. [15A NCAC 02H .0507(c) and 15A NCAC 02H .0506 (b)(2) and (c)(2)]

35. The outside buffer, wetland or water boundary located within the construction corridor approved by this authorization, including all non-commercial borrow and waste sites associated with the project, shall be clearly marked by highly visible fencing prior to any land disturbing activities. Impacts to areas within the fencing are prohibited unless otherwise authorized by this certification. [15A NCAC 02H.0501 and .0502]

36. The issuance of this certification does not exempt the Permittee from complying with any and all statutes, rules, regulations, or ordinances that may be imposed by other government agencies (i.e. local, state, and federal) having jurisdiction, including but not limited to applicable buffer rules, stormwater management rules, soil erosion and sedimentation control requirements, etc.

37. The Permittee shall report any violations of this certification to the Division of Water Resources within 24 hours of discovery. [15A NCAC 02B.0506(b)(2)]

38. Upon completion of the project (including any impacts at associated borrow or waste sites), the NCDOT Division Engineer shall complete and return the enclosed "Certification of Completion Form" (or electronic form) to notify the NCDWR when all work included in the 401 Certification has been completed. [15A NCAC 02H.0502(f)]

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39. Native riparian vegetation must be reestablished in the riparian areas within the construction limits of the project by the end of the growing season following completion of construction. [15A NCAC 02B.0506(b)(2)]

40. There shall be no excavation from, or waste disposal into, jurisdictional wetlands or waters associated with this permit without appropriate modification. Should waste or borrow sites, or access roads to waste or borrow sites, be located in wetlands or streams, compensatory mitigation will be required since that is a direct impact from road construction activities. [15A NCAC 02H.0506(b)(3) and (c)(3)

41. Erosion and sediment control practices must be in full compliance with all specifications governing the proper design, installation and operation and maintenance of such Best Management Practices in order to protect surface waters standards [15A NCAC 02H.0506(b)(3) and (c)(3):

    a. The erosion and sediment control measures for the project must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Sediment and Erosion Control Planning and Design Manual*.
    b. The design, installation, operation, and maintenance of the sediment and erosion control measures must be such that they equal, or exceed, the requirements specified in the most recent version of the *North Carolina Sediment and Erosion Control Manual*. The devices shall be maintained on all construction sites, borrow sites, and waste pile (spoil) projects, including contractor-owned or leased borrow pits associated with the project.
    c. For borrow pit sites, the erosion and sediment control measures must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Surface Mining Manual*.
    d. The reclamation measures and implementation must comply with the reclamation in accordance with the requirements of the Sedimentation Pollution Control Act.

42. Sediment and erosion control measures shall not be placed in wetlands or surface waters, or within 5 feet of the top of bank, without prior approval from DWR. [15A NCAC 02H.0506(b)(3) and (c)(3)]

43. Pursuant to 15A NCAC 2B .0233(6), sediment and erosion control devices shall not be placed in Zone 1 of any Neuse Buffer without prior approval by the NCDWR. At this time, the NCDWR has approved no sediment and erosion control devices in Zone 1, outside of the approved project impacts, anywhere on this project. Moreover, sediment and erosion control devices shall be allowed in Zone 2 of the buffers provided that Zone 1 is not compromised and that discharge is released as diffuse flow.

44. All stormwater runoff shall be directed as sheetflow through stream buffers at non-erosive velocities, unless otherwise approved by this certification. [15ANCAC 02B.0233(5)(a)]

45. Due to the possibility that compaction and/or other site alterations might prevent the temporary wetland impact areas from re-attaining jurisdictional wetland status; the permittee shall provide an updates on the wetland areas temporarily impacted as the impacts are removed. This update shall be conducted through two growing seasons after completion of the work at the sites and shall consist of photographs and a brief report on the progress of the areas in re-attaining wetland jurisdictional status. Upon submission of these updates to the NCDWR, the permittee shall schedule an agency field meeting with the NCDWR to determine if the wetland areas temporarily impacted by this project have re-attained jurisdictional wetland status. If the wetland areas temporarily impacted by this project have not re-attained jurisdictional wetland status, the NCDWR shall determine if compensatory wetland mitigation is be required.

Violations of any condition herein set forth may result in revocation of this Certification and may result in criminal and/or civil penalties. This Certification shall become null and void unless the above conditions are made conditions of the Federal 404 and/or Coastal Area Management Act Permit. This Certification shall expire upon the expiration of the 404 or CAMA permit.

If you wish to contest any statement in the attached Certification you must file a petition for an administrative hearing. You may obtain the petition form from the office of Administrative hearings. You must file the petition with the office of Administrative Hearings within sixty (60) days of receipt of this notice. A petition is considered

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filed when it is received in the office of Administrative Hearings during normal office hours. The Office of Administrative Hearings accepts filings Monday through Friday between the hours of 8:00am and 5:00pm, except for official state holidays. The original and one (1) copy of the petition must be filed with the Office of Administrative Hearings.

The petition may be faxed, provided the original and one copy of the document is received by the Office of Administrative Hearings within five (5) business days following the faxed transmission.
The mailing address for the Office of Administrative Hearings is:

Office of Administrative Hearings
6714 Mail Service Center
Raleigh, NC 27699-6714
Telephone: (919) 431-3000, Facsimile: (919) 431-3100

A copy of the petition must also be served on DEQ as follows:

Mr. Bill F. Lane, General Counsel
Department of Environmental Quality
1601 Mail Service Center
Raleigh, NC 27699

This the 30th day of May 2019

DIVISION OF WATER RESOURCES

DocuSigned by:
Amy Chapman
9C9886312DCD474...
Linda Culpepper, Director

WQC No. 004187

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NCDWR Project No.: _____ **County:** _____
Applicant: _____

Project Name: _____
Date of Issuance of 401 Water Quality Certification: _____

Certificate of Completion

Upon completion of all work approved within the 401 Water Quality Certification or applicable Buffer Rules, and any subsequent modifications, the applicant is required to return this certificate to the 401 Transportation Permitting Unit, North Carolina Division of Water Resources, 1617 Mail Service Center, Raleigh, NC, 27699-1617. This form may be returned to NCDWR by the applicant, the applicant's authorized agent, **or** the project engineer. It is not necessary to send certificates from all of these.

Applicant's Certification

I, _____, hereby state that, to the best of my abilities, due care and diligence was used in the observation of the construction such that the construction was observed to be built within substantial compliance and intent of the 401 Water Quality Certification and Buffer Rules, the approved plans and specifications, and other supporting materials.

Signature: _____ Date: _____

Agent's Certification

I, _____, hereby state that, to the best of my abilities, due care and diligence was used in the observation of the construction such that the construction was observed to be built within substantial compliance and intent of the 401 Water Quality Certification and Buffer Rules, the approved plans and specifications, and other supporting materials.

Signature: _____ Date: _____

Engineer's Certification

_____ Partial_____ Final

I, _____, as a duly registered Professional Engineer in the State of North Carolina, having been authorized to observe (periodically, weekly, full time) the construction of the project for the Permittee hereby state that, to the best of my abilities, due care and diligence was used in the observation of the construction such that the construction was observed to be built within substantial compliance and intent of the 401 Water Quality Certification and Buffer Rules, the approved plans and specifications, and other supporting materials.

Signature _____ Registration No. _____

Date _____

TIP PROJECT: I-5986A

CONTRACT:

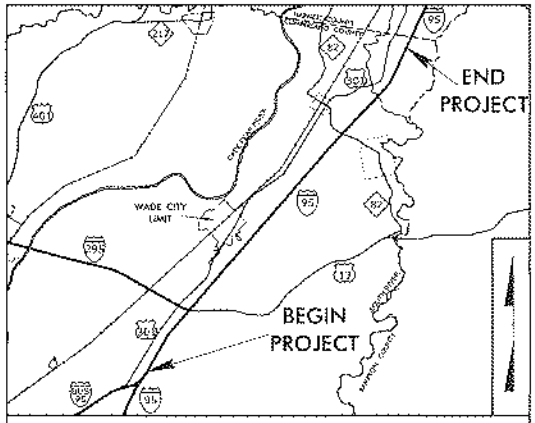
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CUMBERLAND COUNTY

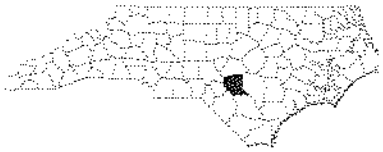
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5986A	1	

LOCATION: I-95 FROM I-95 BUS TO SR 1811 (BUD HAWKINS RD) (EXIT 70). WIDEN TO EIGHT LANES.

TYPE OF WORK: GRADING, PAVING, DRAINAGE, SIGNALS, CULVERTS, AND STRUCTURES

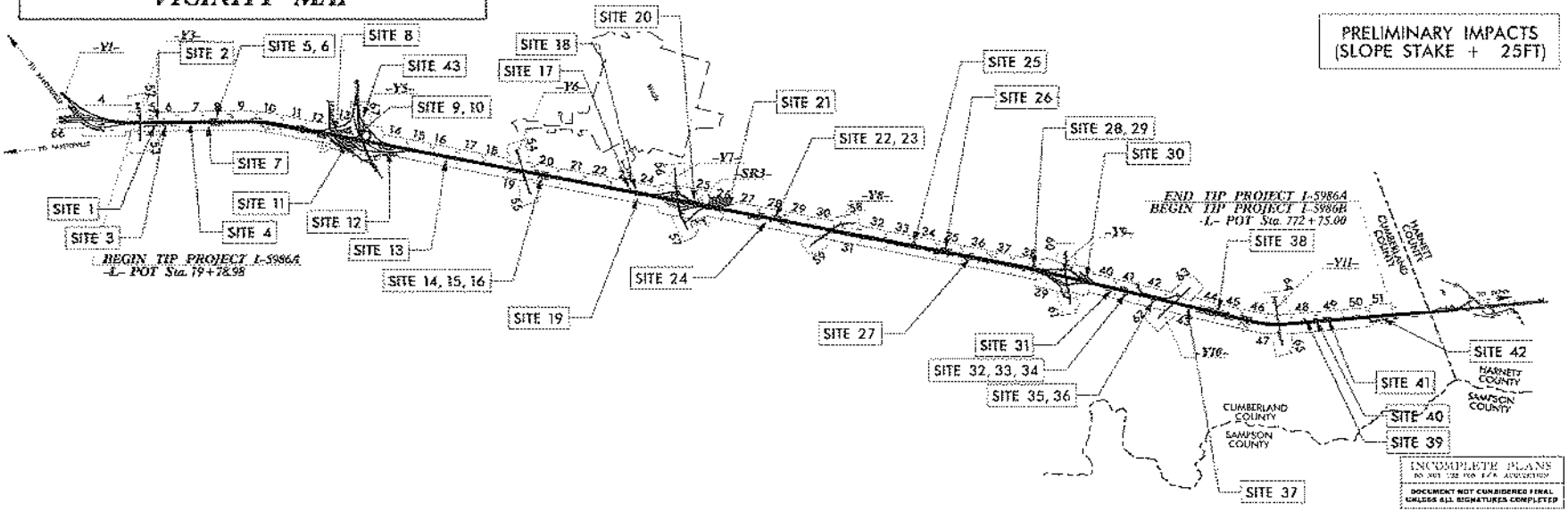


VICINITY MAP



WETLAND AND SURFACE WATER IMPACTS PERMIT
SECTION A

PRELIMINARY IMPACTS
(SLOPE STAKE + 25FT)



INCOMPLETE PLANS
DO NOT USE FOR F.A. AUCTION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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PLANS
0
PROFILE (HORIZONTAL)
0
PROFILE (VERTICAL)

DESIGN DATA
ADT =
ADT =
K = %
D = %
T = % *
V = MPH
* TTST = DUAL
FUNC CLASS =
STATEWIDE TIER

PROJECT LENGTH

Prepared in the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610

BSS STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:

LETTING DATE:

PROJECT ENGINEER

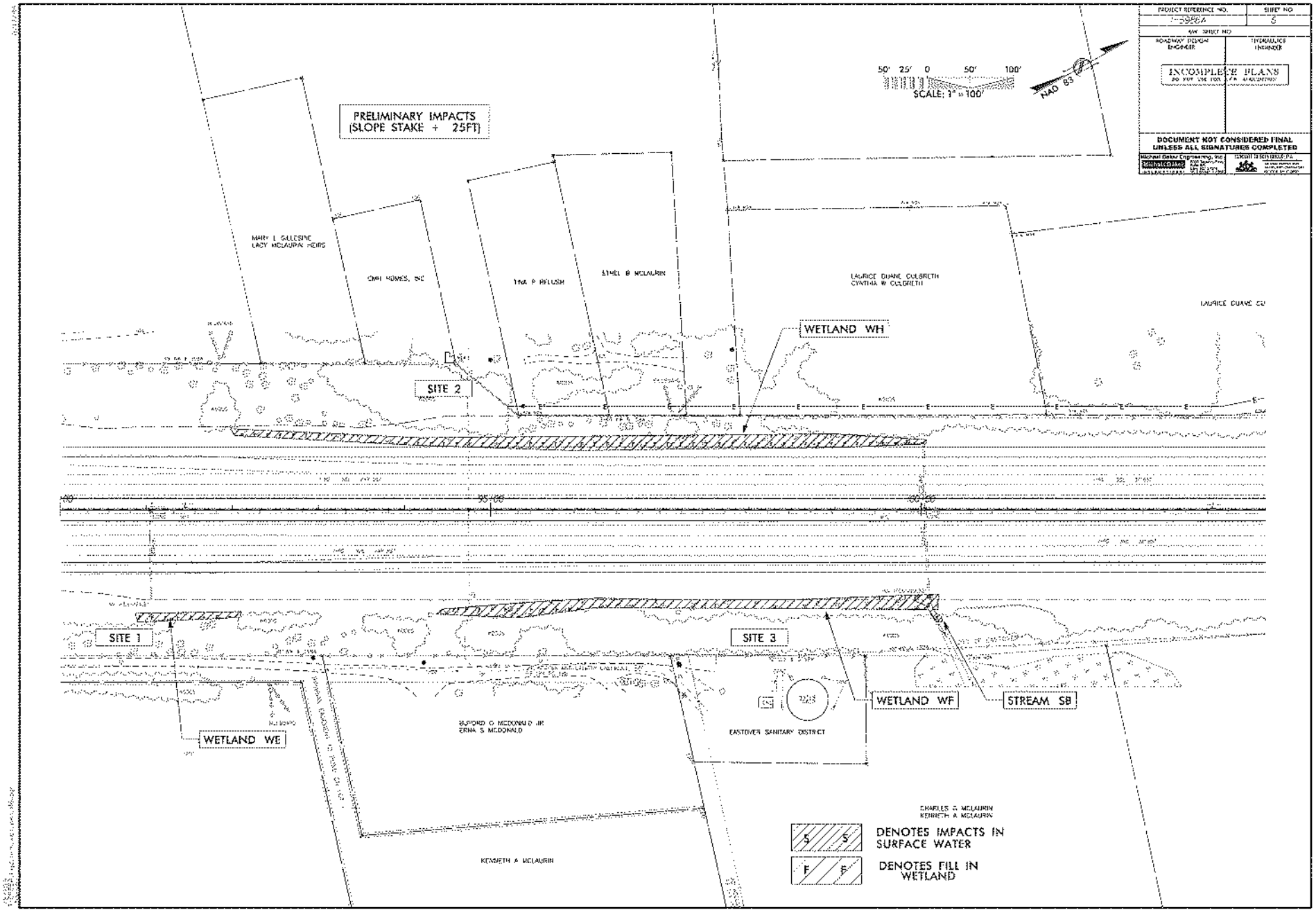
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.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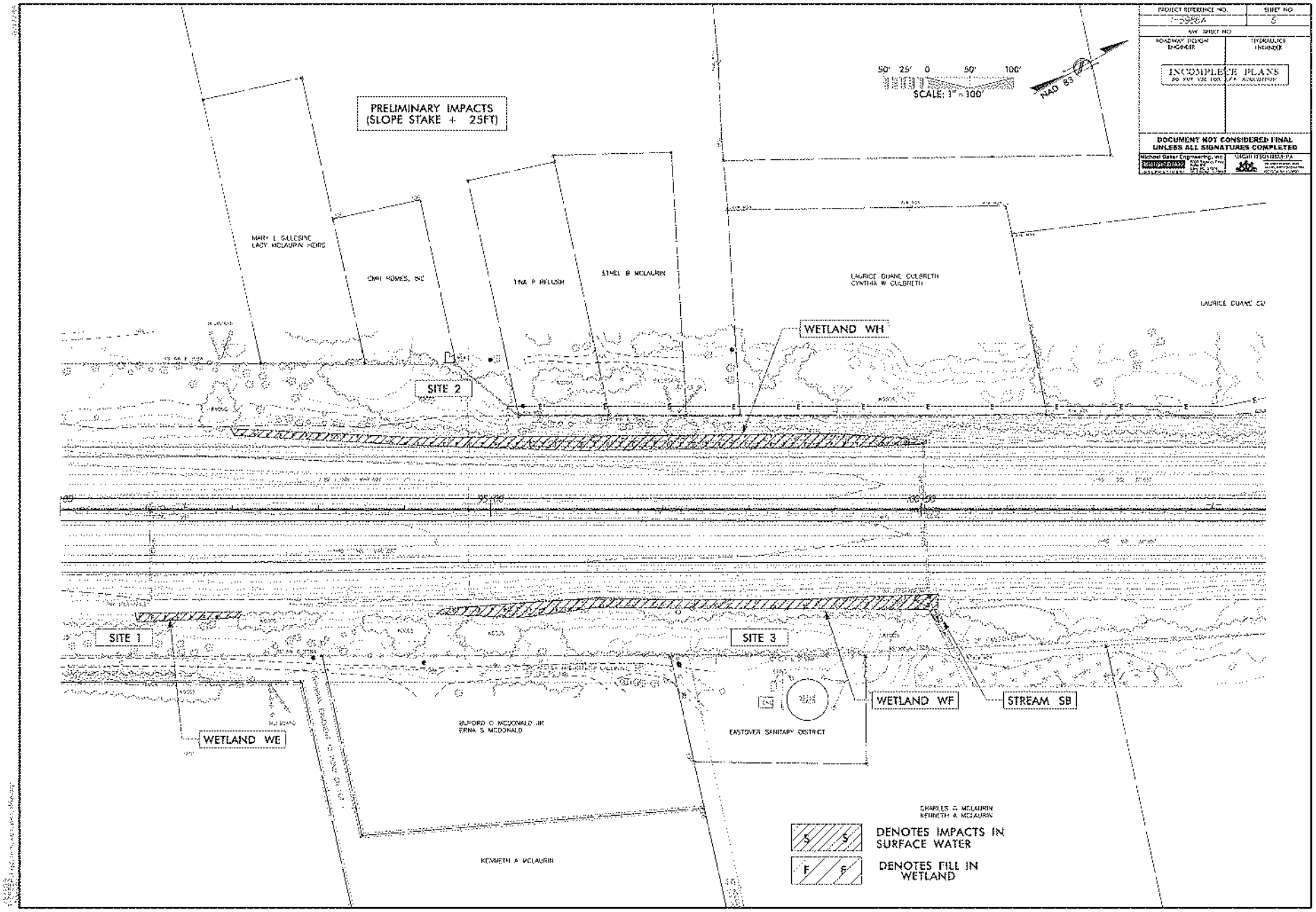
SHEET NO.
5
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
Raleigh, NC
Harrisburg, PA
50' 25' 0 50' 100'
SCALE: 1" = 100'
NAD 83
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
MARY L GILLESPIE
LACY MCLAURIN HEIRS
CMH HOMES, INC
TINA P PELUSH
ETHEL B MCLAURIN
LAURICE DUANE COLGRETH
CYNTHIA W COLGRETH
WETLAND WH
SITE 2
SITE 1
SITE 3
WETLAND WE
WETLAND WF
STREAM SB
RUFORD G MCDONALD JR
ERNA S MCDONALD
EASTOVER SANITARY DISTRICT
CHARLES G MCLAURIN
KENNETH A MCLAURIN
KENNETH A MCLAURIN
DENOTES IMPACTS IN SURFACE WATER
DENOTES FILL IN WETLAND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SHEET NO.
5
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
SCALE: 1" = 100'
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LAURICE DUANE CULBRETH
CYNTHIA W CULBRETH
WETLAND WH
SITE 2
SITE 1
SITE 3
WETLAND WF
STREAM SB
WETLAND WE
RUFORD C MCDONALD JR
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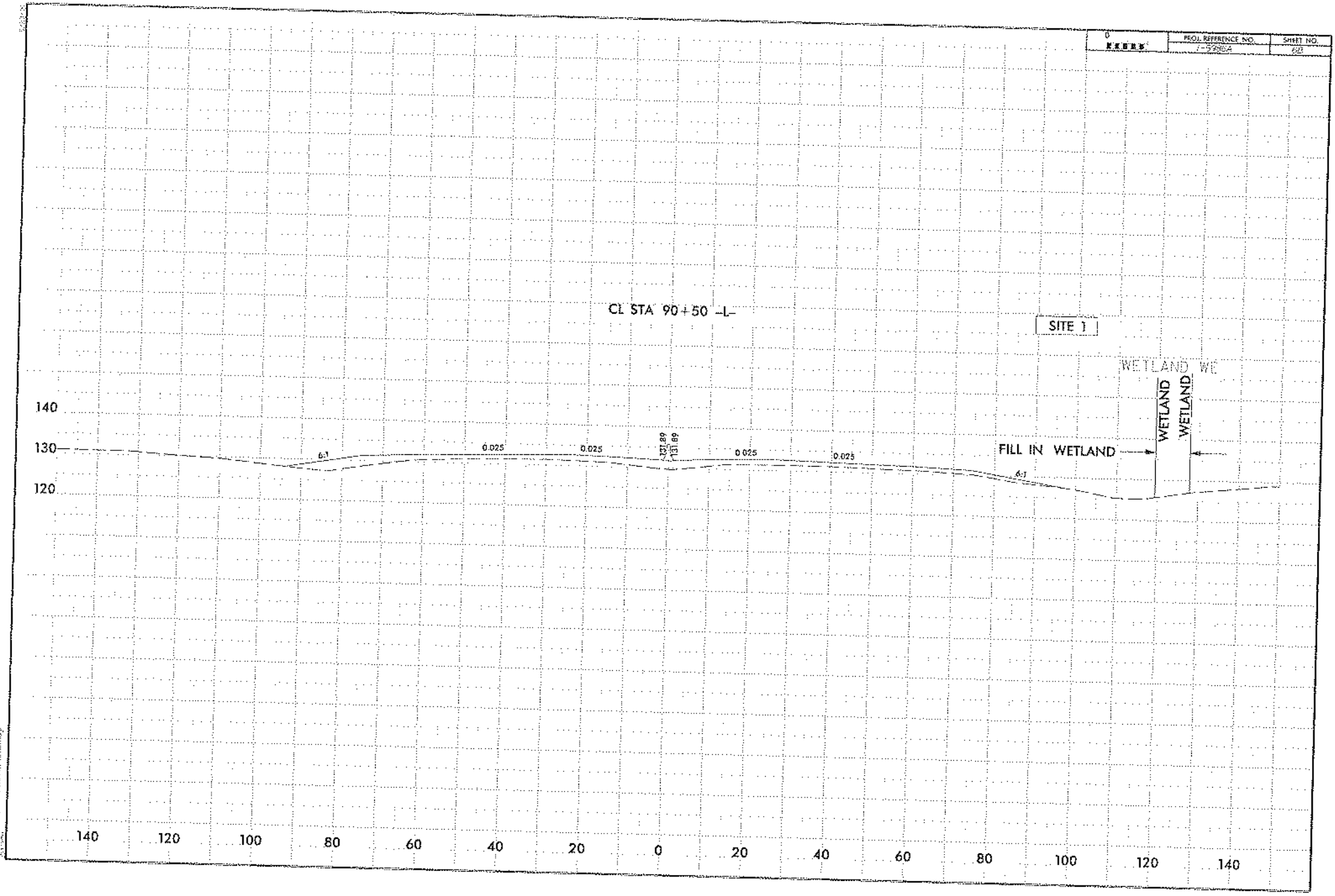
EASTOVER SANITARY DISTRICT
CHARLES G MCLAURIN
KENNETH A MCLAURIN
KENNETH A MCLAURIN
DENOTES IMPACTS IN SURFACE WATER
DENOTES FILL IN WETLAND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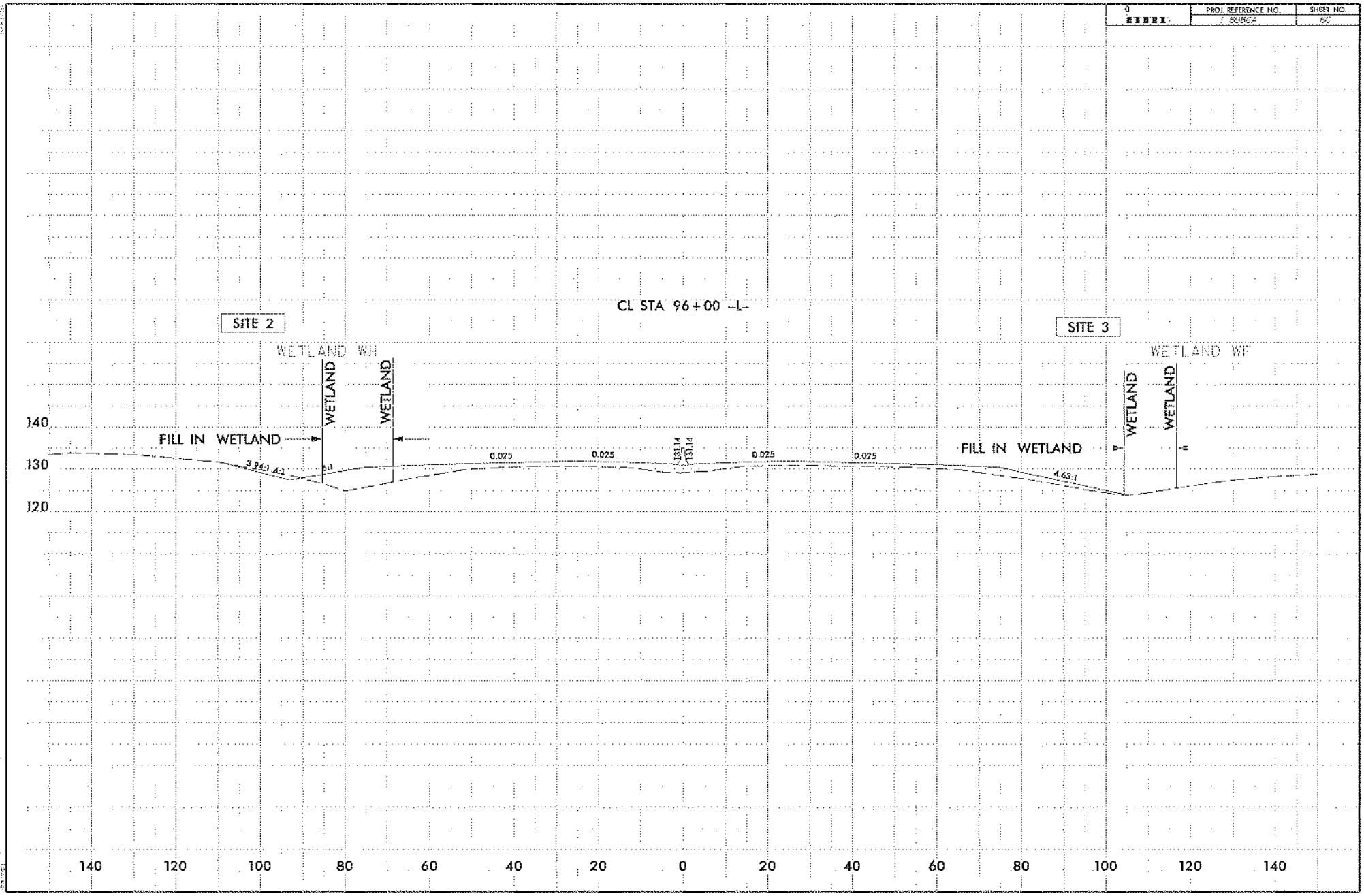
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CL STA 96+00 -L-
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SITE 3
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WETLAND WF
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WETLAND
WETLAND
WETLAND
FILL IN WETLAND
FILL IN WETLAND
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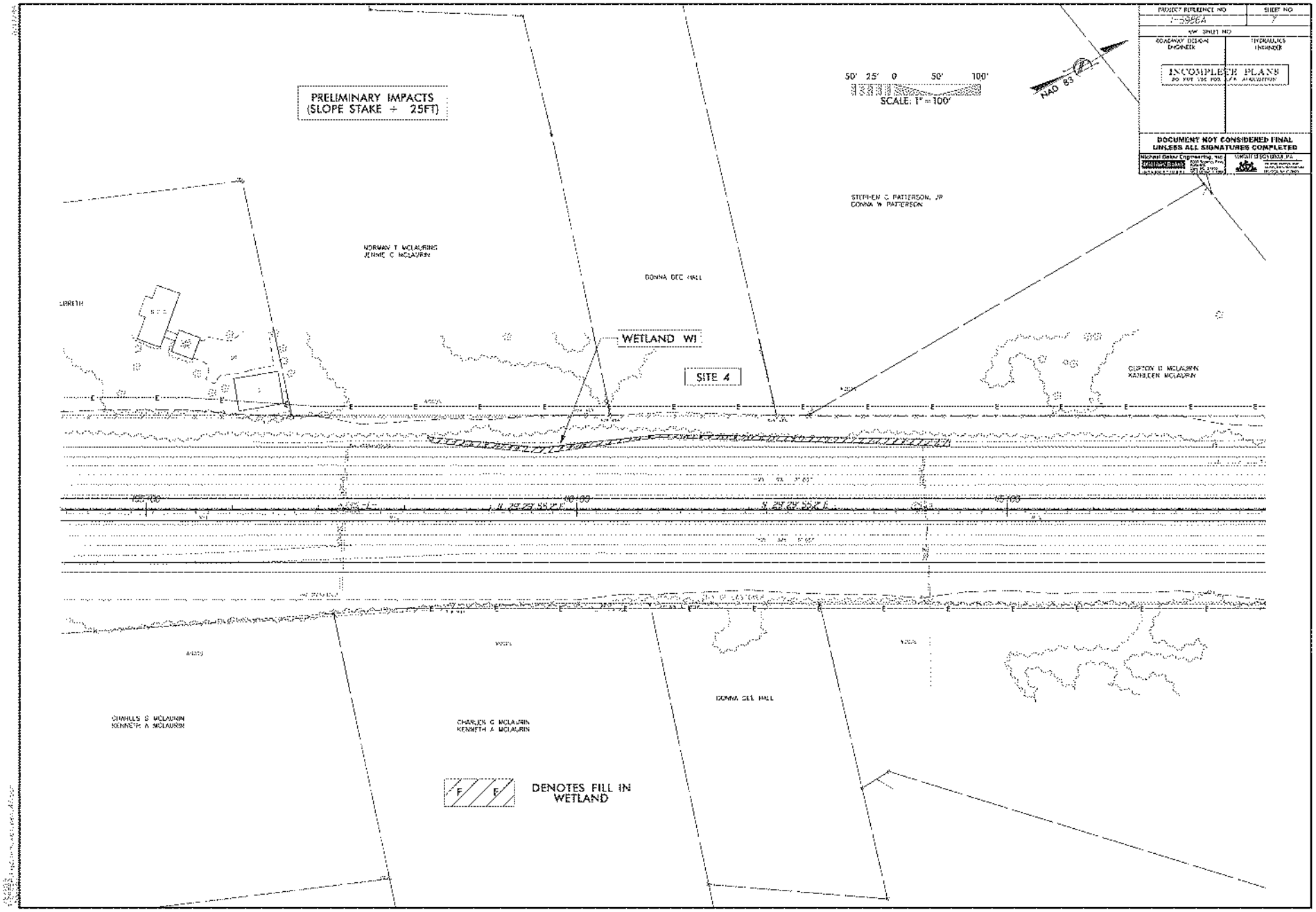
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SCALE: 1" = 100'
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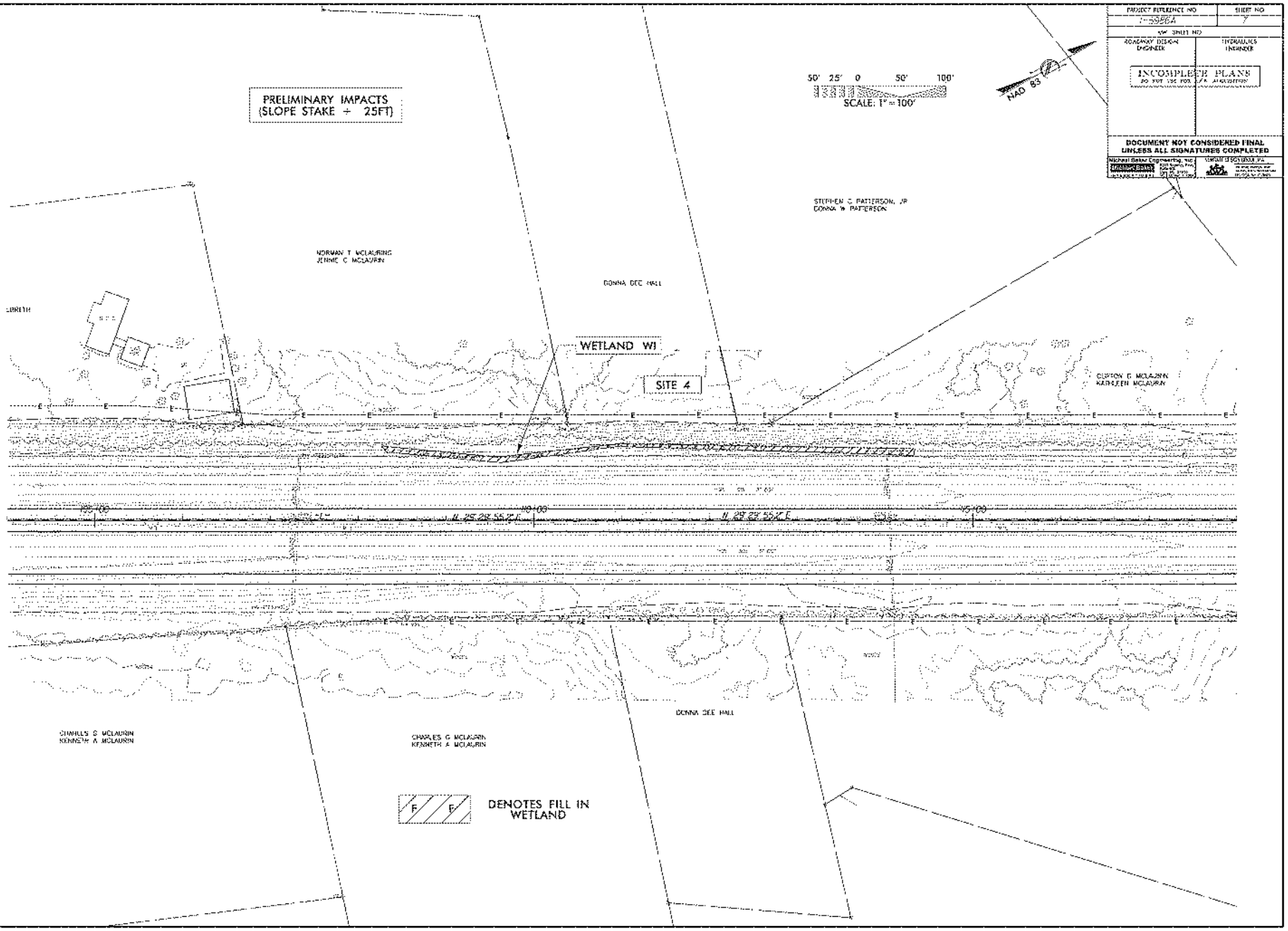
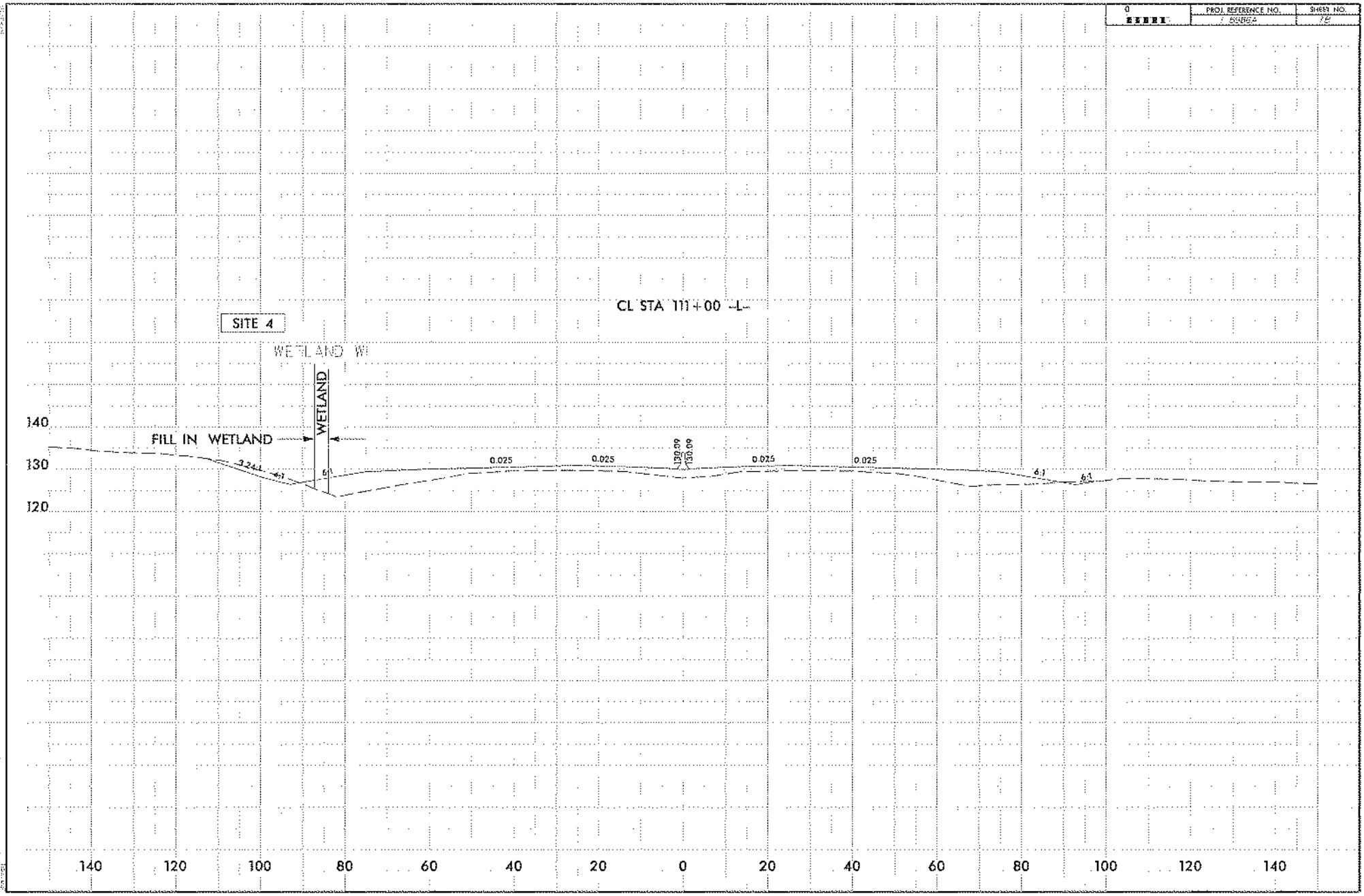
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
STEPHEN C. PATTERSON, JR
DONNA W. PATTERSON
NORMAN T. MCLAURIN
JENNIE C. MCLAURIN
DONNA DEE HALL
LEGETH
WETLAND W1
SITE 4
CLIFTON G. MCLAURIN
KATHLEEN MCLAURIN
CHARLES G. MCLAURIN
KENNETH A. MCLAURIN
DONNA DEE HALL
CHARLES G. MCLAURIN
KENNETH A. MCLAURIN
F
F
DENOTES FILL IN WETLAND


PRELIMINARY IMPACTS
(SLOPE STAKE + 25FT)
50' 25' 0 50' 100'
SCALE: 1" = 100'
NAD 83
PROJECT REFERENCE NO.
SHEET NO.
7
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
STEPHEN C. PATTERSON, JR
DONNA W. PATTERSON
NORMAN T. MCLAURIN
JENNIE C. MCLAURIN
DONNA DEE HALL
WETLAND W1
SITE 4
CLIFTON G. MCLAURIN
KATHLEEN MCLAURIN
N 25 22 55.2" E
DONNA DEE HALL
CHARLES G. MCLAURIN
KENNETH A. MCLAURIN
CHARLES G. MCLAURIN
KENNETH A. MCLAURIN
DENOTES FILL IN WETLAND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PROJ. REFERENCE NO.
SHEET NO.
SITE 4
WETLAND W
WETLAND
CL STA 111+00 -L-
FILL IN WETLAND
140
130
120
3.2:1
4:1
6:1
0.025
0.025
130.99
130.09
0.025
0.025
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6:1
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120
100
80
60
40
20
0
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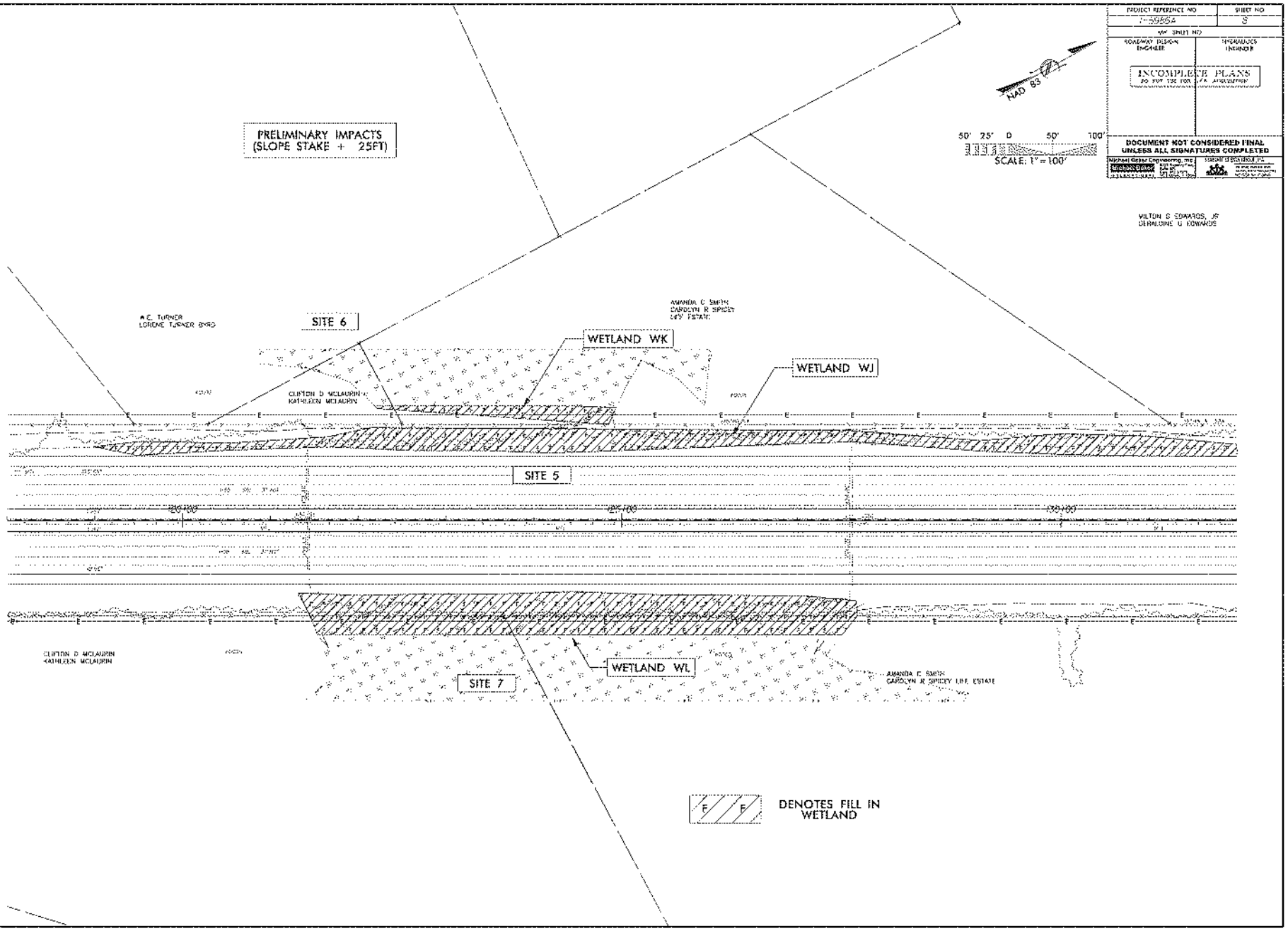
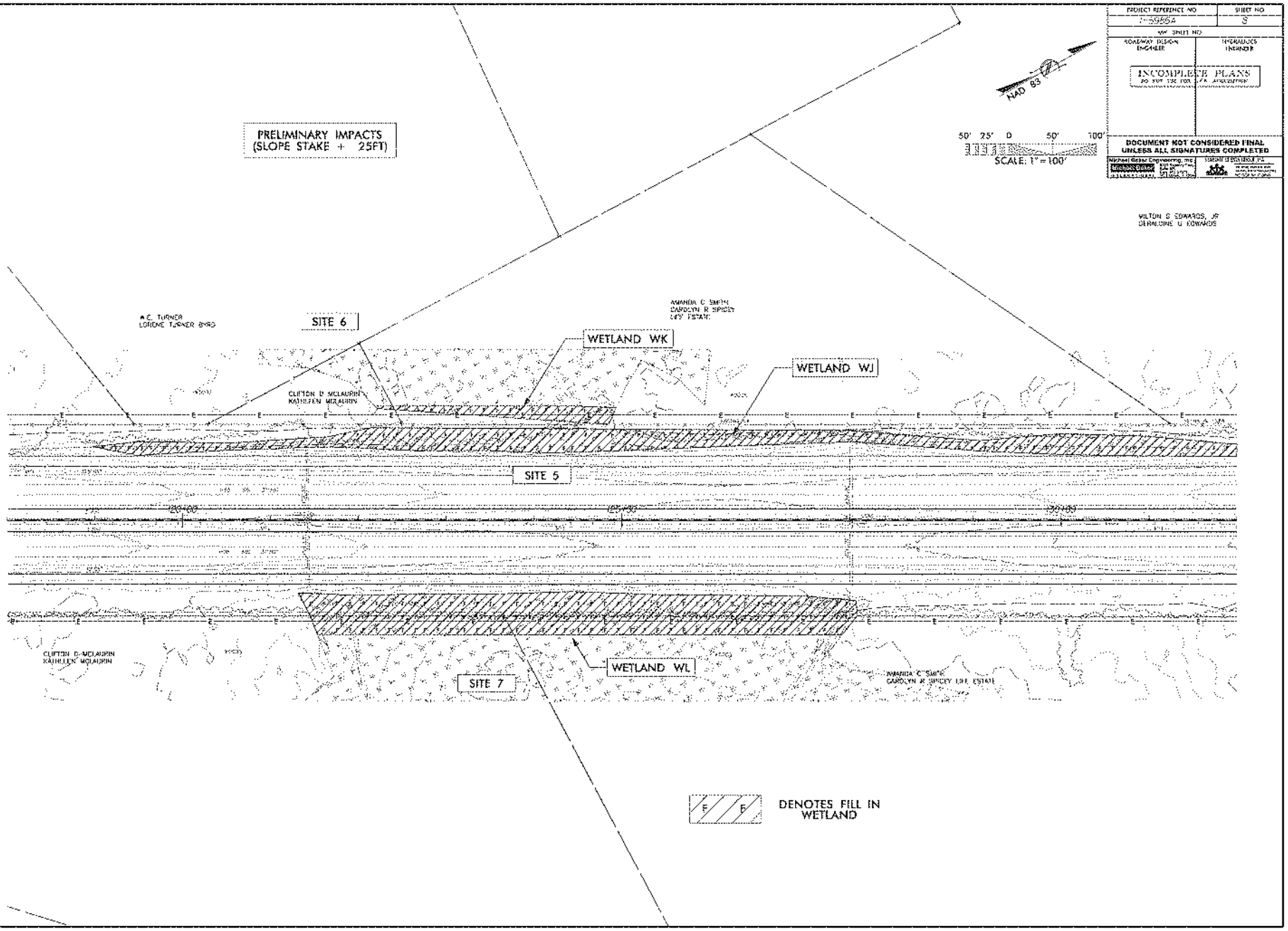
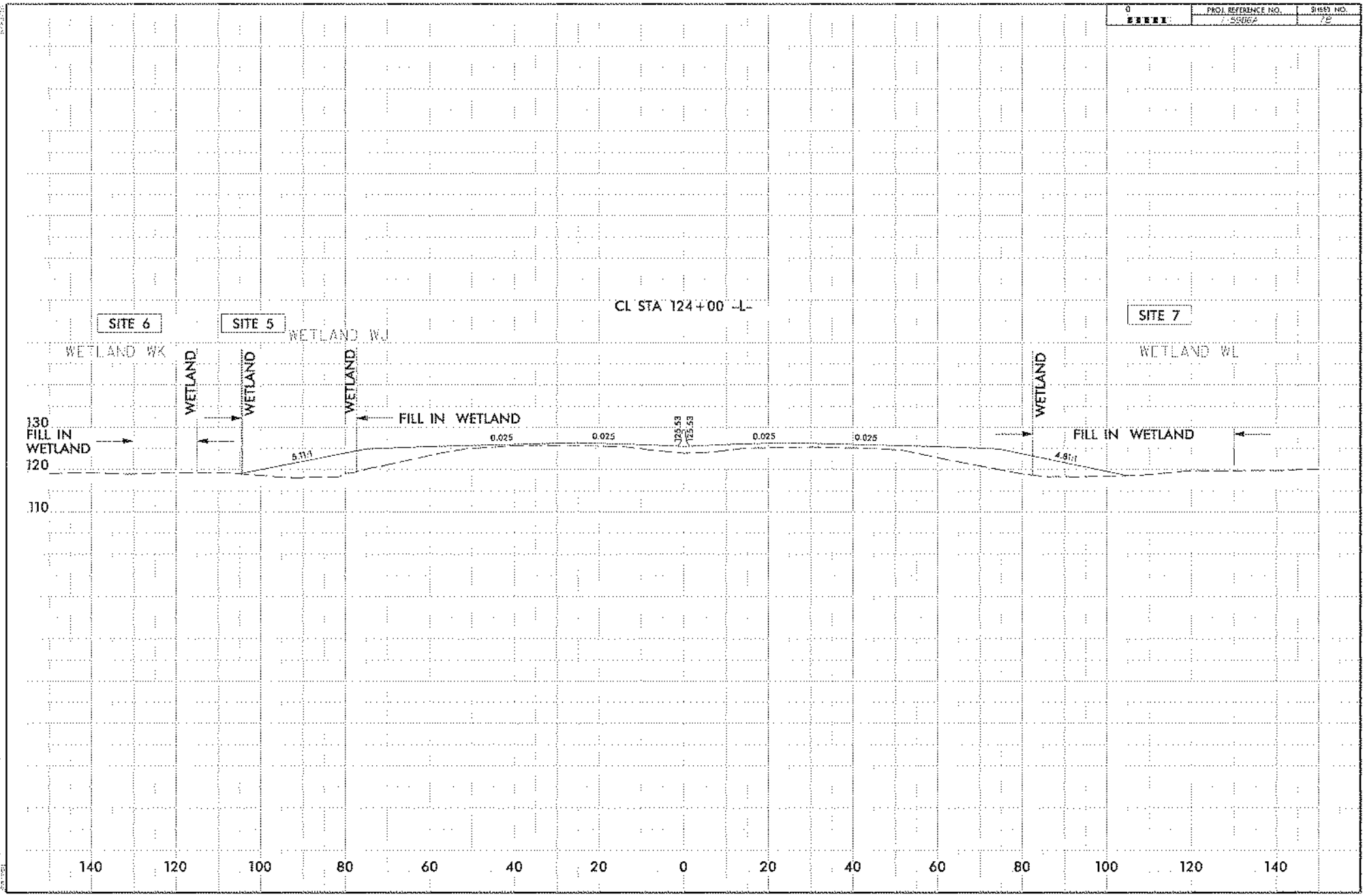
120
140


PRELIMINARY IMPACTS
(SLOPE STAKE + 25FT)
SITE 6
SITE 5
SITE 7
WETLAND WK
WETLAND WJ
WETLAND WL
A.C. TURNER
LORONE TURNER BYRD
CLIFTON D MCLAURIN
KATHLEEN MCLAURIN
AMANDA C SMITH
CAROLYN R SPICEY
LIFE ESTATE
WILTON C EDWARDS, JR
GERALDINE G EDWARDS
NAD 83
50' 25' 0 50' 100'
SCALE: 1" = 100'
PROJECT REFERENCE NO
SHEET NO
5
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED
DENOTES FILL IN WETLAND


PRELIMINARY IMPACTS
(SLOPE STAKE + 25FT)
SITE 6
SITE 5
SITE 7
WETLAND WK
WETLAND WJ
WETLAND WL
A.C. TURNER
LORONE TURNER BYRD
CLIFTON D MCLAURIN
KATHLEEN MCLAURIN
AMANDA C SMITH
CAROLYN R SPICEY
LIFE ESTATE
WILTON C EDWARDS, JR
GERALDINE G EDWARDS
NAD 83
50' 25' 0 50' 100'
SCALE: 1" = 100'
PROJECT REFERENCE NO
SHEET NO
5
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED
F F
DENOTES FILL IN
WETLAND


PROJ. REFERENCE NO.
SHEET NO.
SITE 6
SITE 5
SITE 7
WETLAND WK
WETLAND WJ
WETLAND WL
WETLAND
WETLAND
WETLAND
WETLAND
CL STA 124+00 -L-
FILL IN WETLAND
FILL IN WETLAND
FILL IN WETLAND
130
120
110
0.025
0.025
0.025
0.025
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4:1
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80
100
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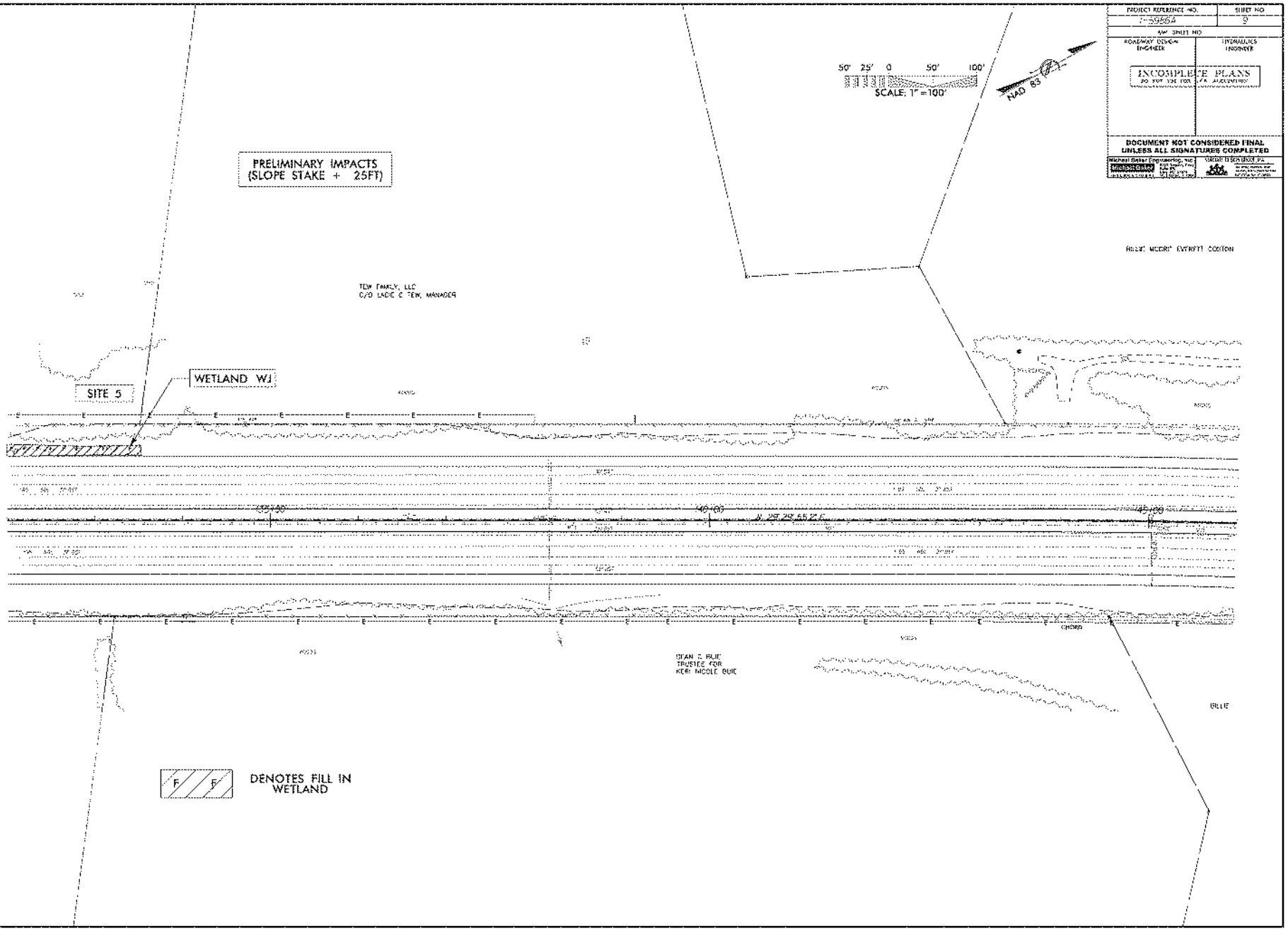
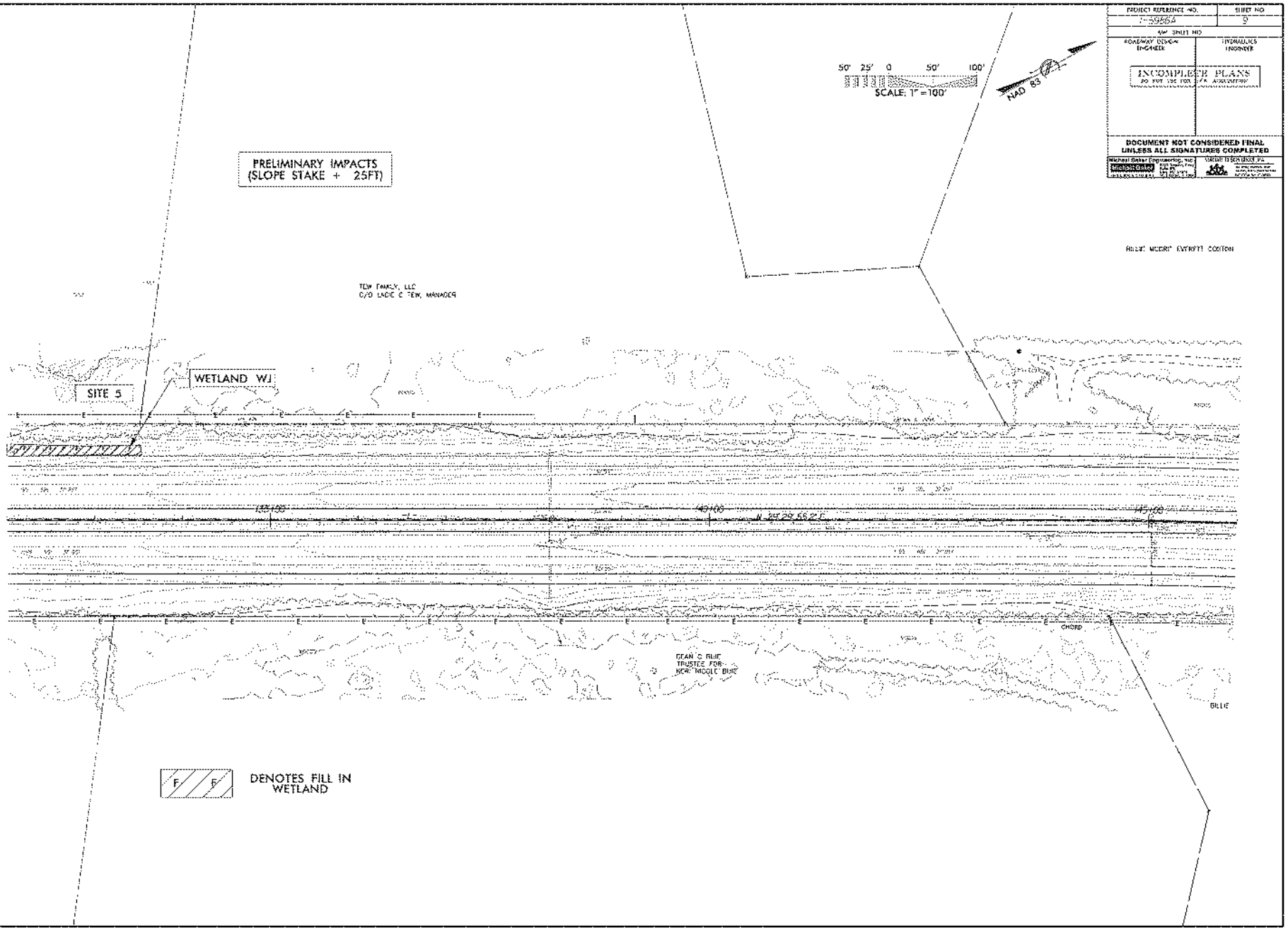
140


PROJECT REFERENCE NO.
SHEET NO.
9
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
Michael Baker
VALID IF SEALED
50' 25' 0 50' 100'
SCALE: 1" = 100'
NAD 83
PRELIMINARY IMPACTS
(SLOPE STAKE + 25FT)
TDW FAMILY, LLC
C/O LADE C TEW, MANAGER
SITE 5
WETLAND W1
40+00
N 28°29'55.22"E
DEAN C BUIE
TRUSTEE FOR
KERI NICOLE BUIE
CHORD
BUIE
DENOTES FILL IN
WETLAND


PROJECT REFERENCE NO.
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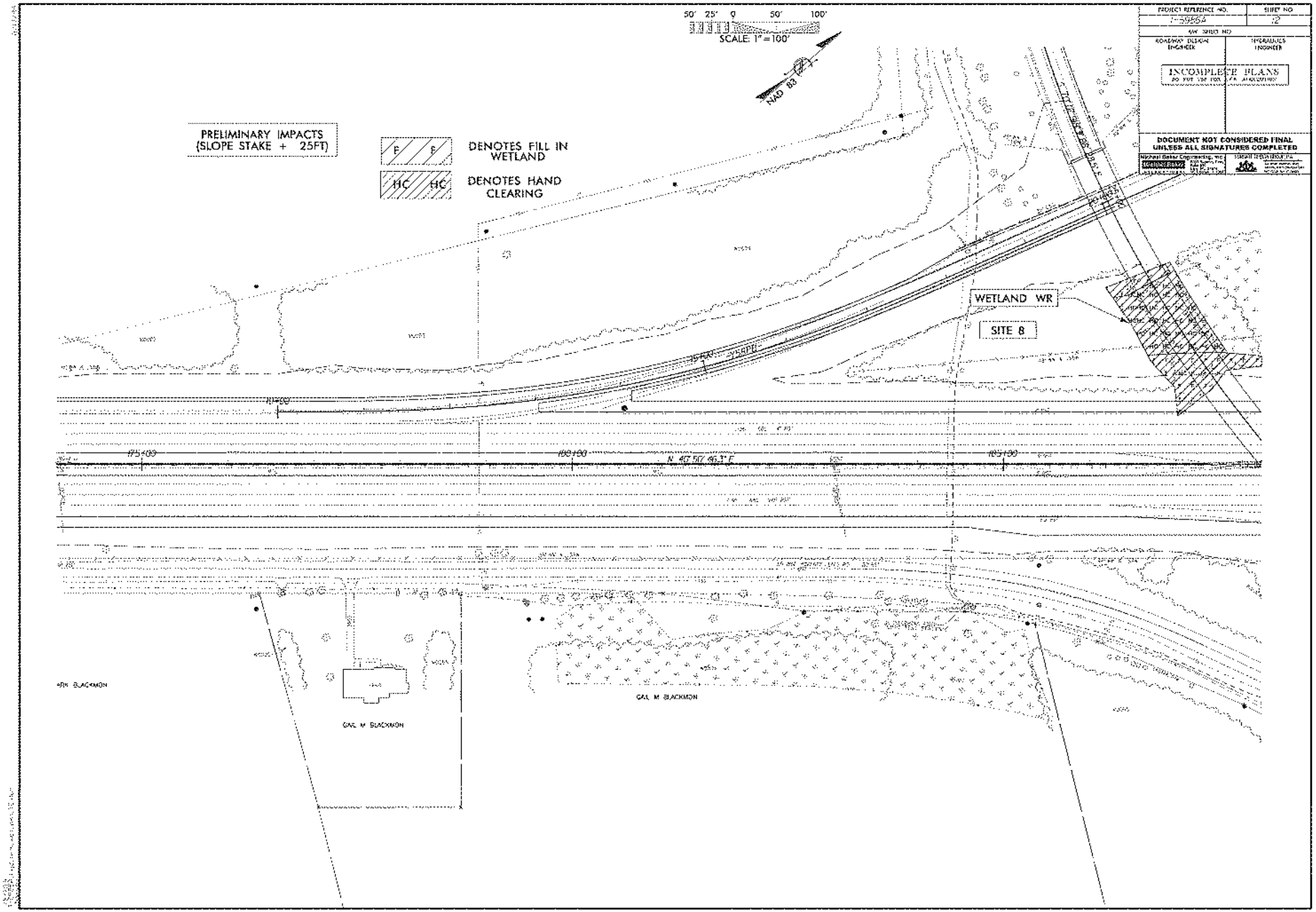
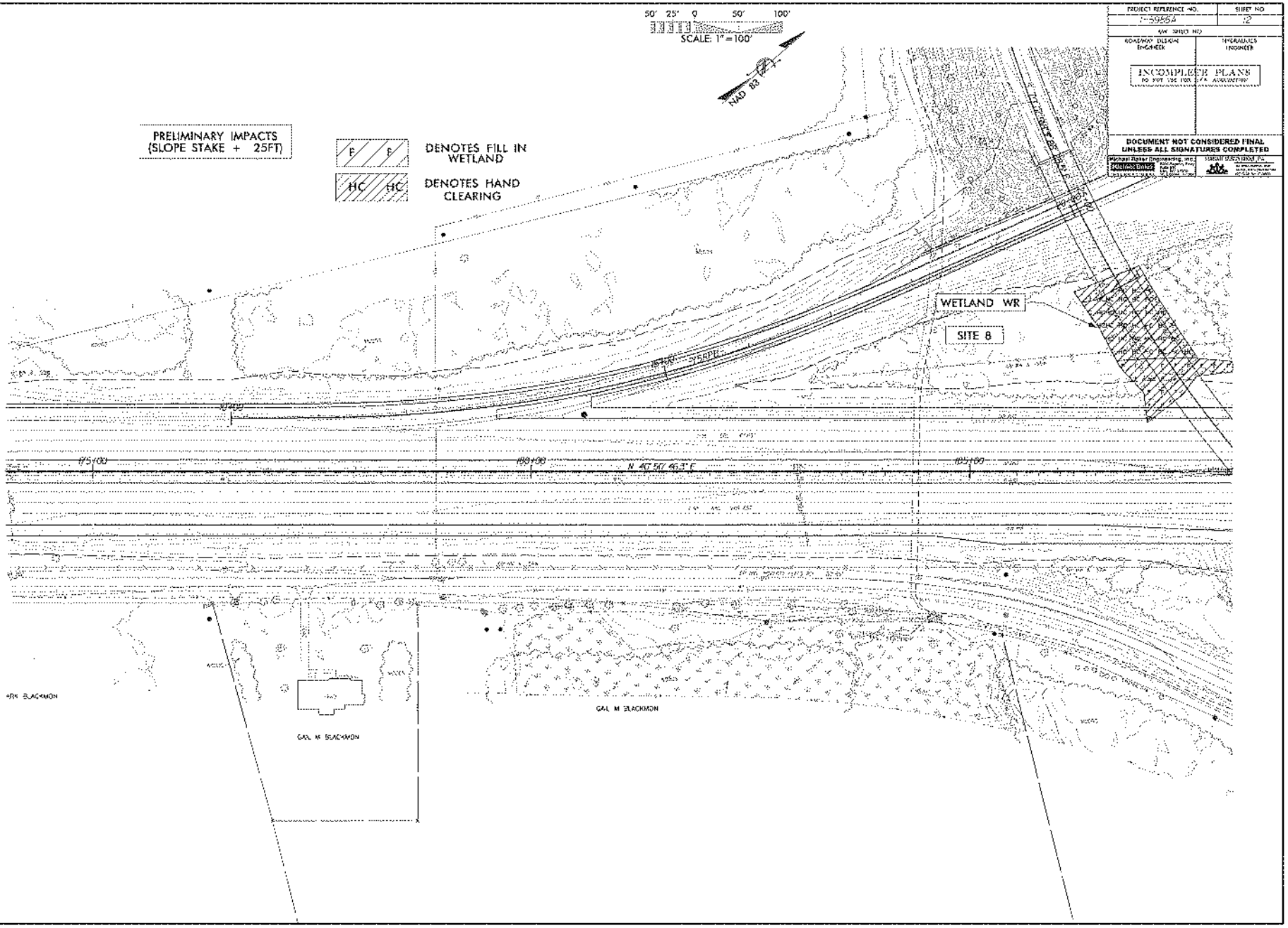
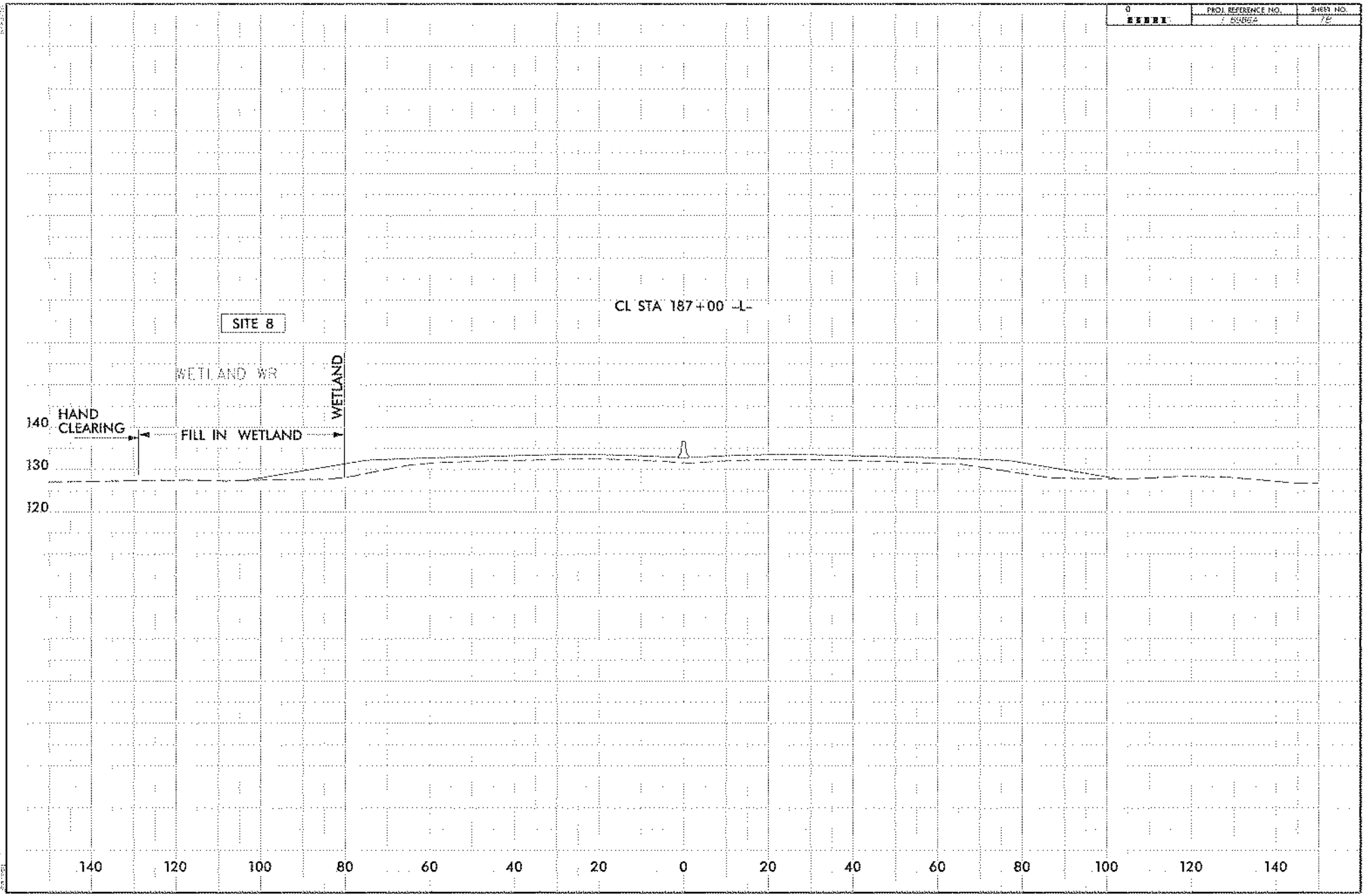
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
Michael Baker
VACANT TO SCHEDULE
50' 25' 0 50' 100'
SCALE: 1" = 100'
NAD 83
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
TDW FAMILY, LLC
C/O LADE C TEW, MANAGER
SITE 5
WETLAND WJ
CHORD
DENOTES FILL IN WETLAND


50' 25' 0 50' 100'
SCALE: 1" = 100'
NAD 83
PRELIMINARY IMPACTS
(SLOPE STAKE + 25FT)
F F
DENOTES FILL IN WETLAND
HC HC
DENOTES HAND CLEARING
WETLAND WR
SITE 8
175+00
180+00
N 40° 50' 46.3" E
185+00
GAIL M BLACKMON
GAIL M BLACKMON
PROJECT REFERENCE NO.
SHEET NO.
12
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.


50' 25' 0 50' 100'
SCALE: 1" = 100'
NAD 83
PRELIMINARY IMPACTS
(SLOPE STAKE + 25FT)
F F
DENOTES FILL IN WETLAND
HC HC
DENOTES HAND CLEARING
WETLAND WR
SITE 8
N 46° 50' 46.3" E
175+00
180+00
185+00
GAIL M BLACKMON
GAIL M BLACKMON
PROJECT REFERENCE NO.
SHEET NO.
12
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR RIGHT OF WAY ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
Matthew Smith
Hardesty & Hanover, LLP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PROJ. REFERENCE NO.
SHEET NO.
SITE 8
WETLAND WR
WETLAND
HAND CLEARING
FILL IN WETLAND
CL STA 187+00 -L-
140
130
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140
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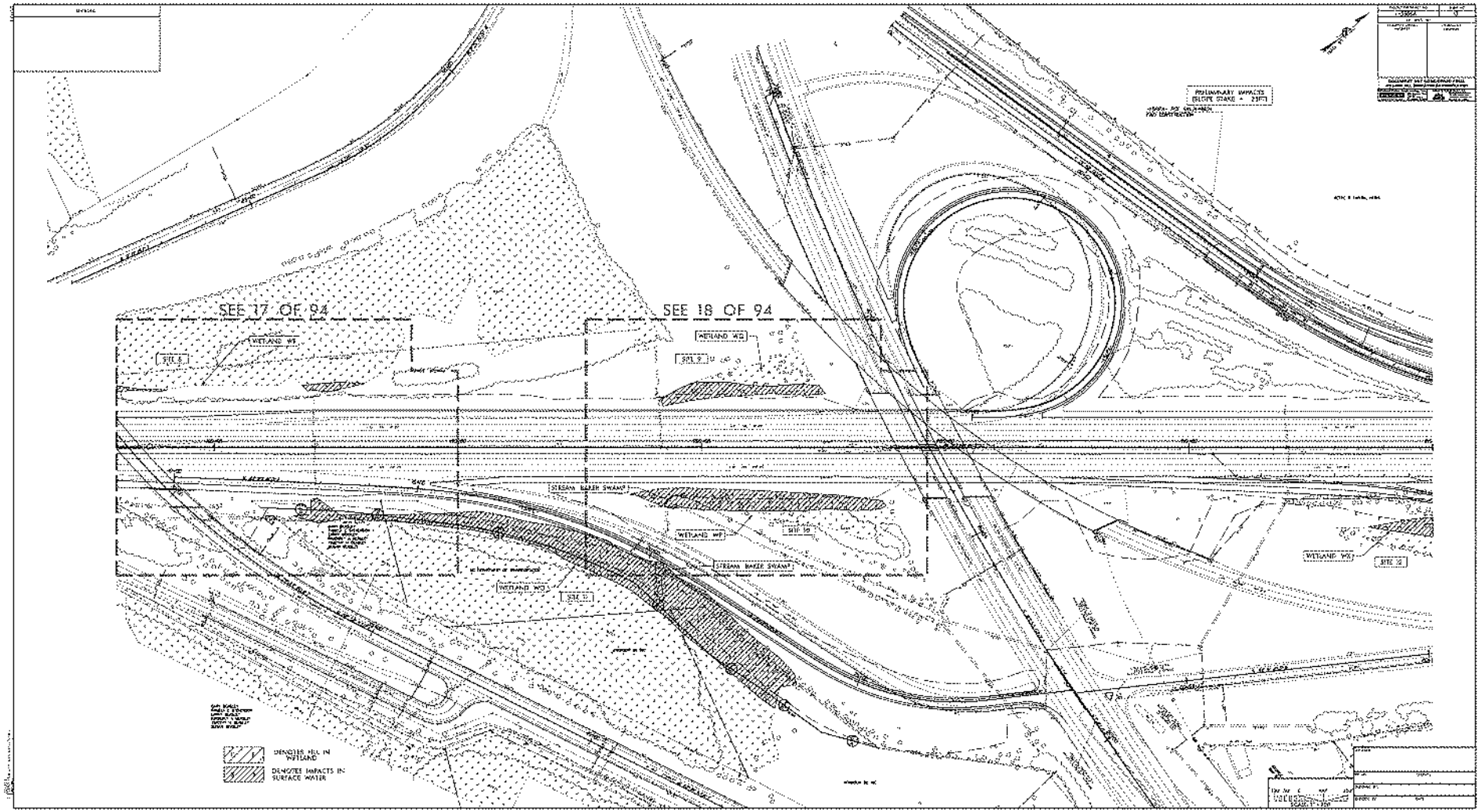
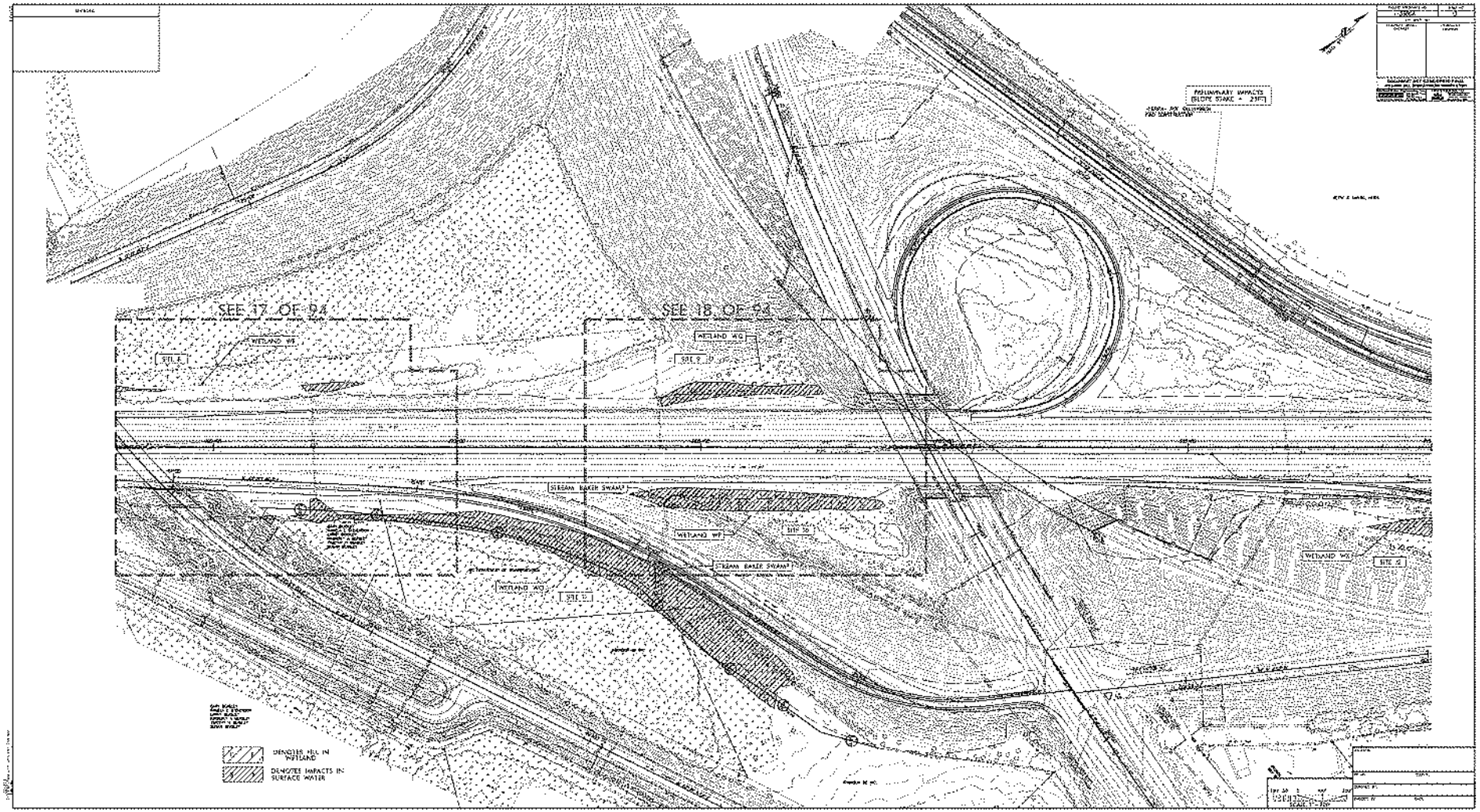
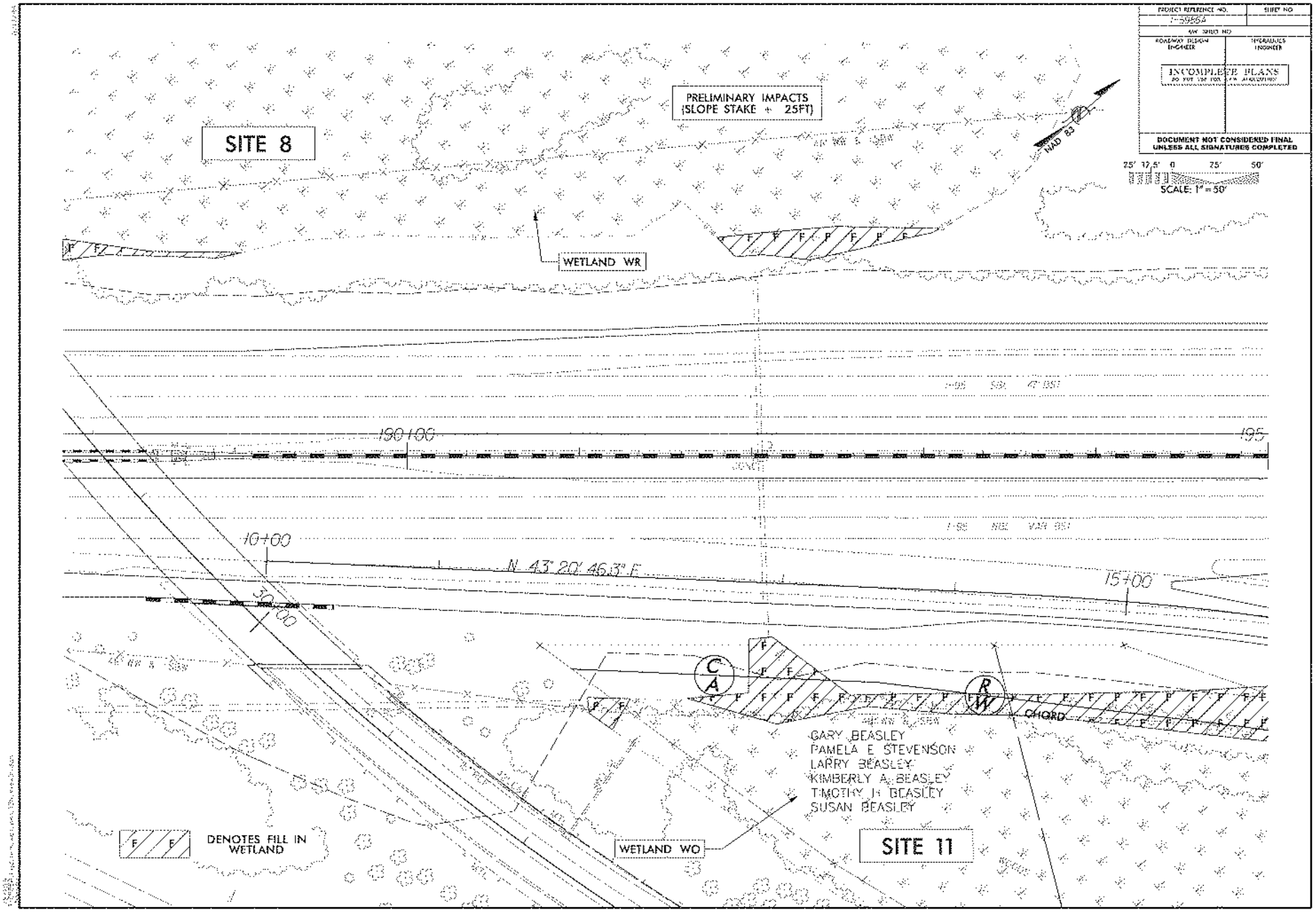
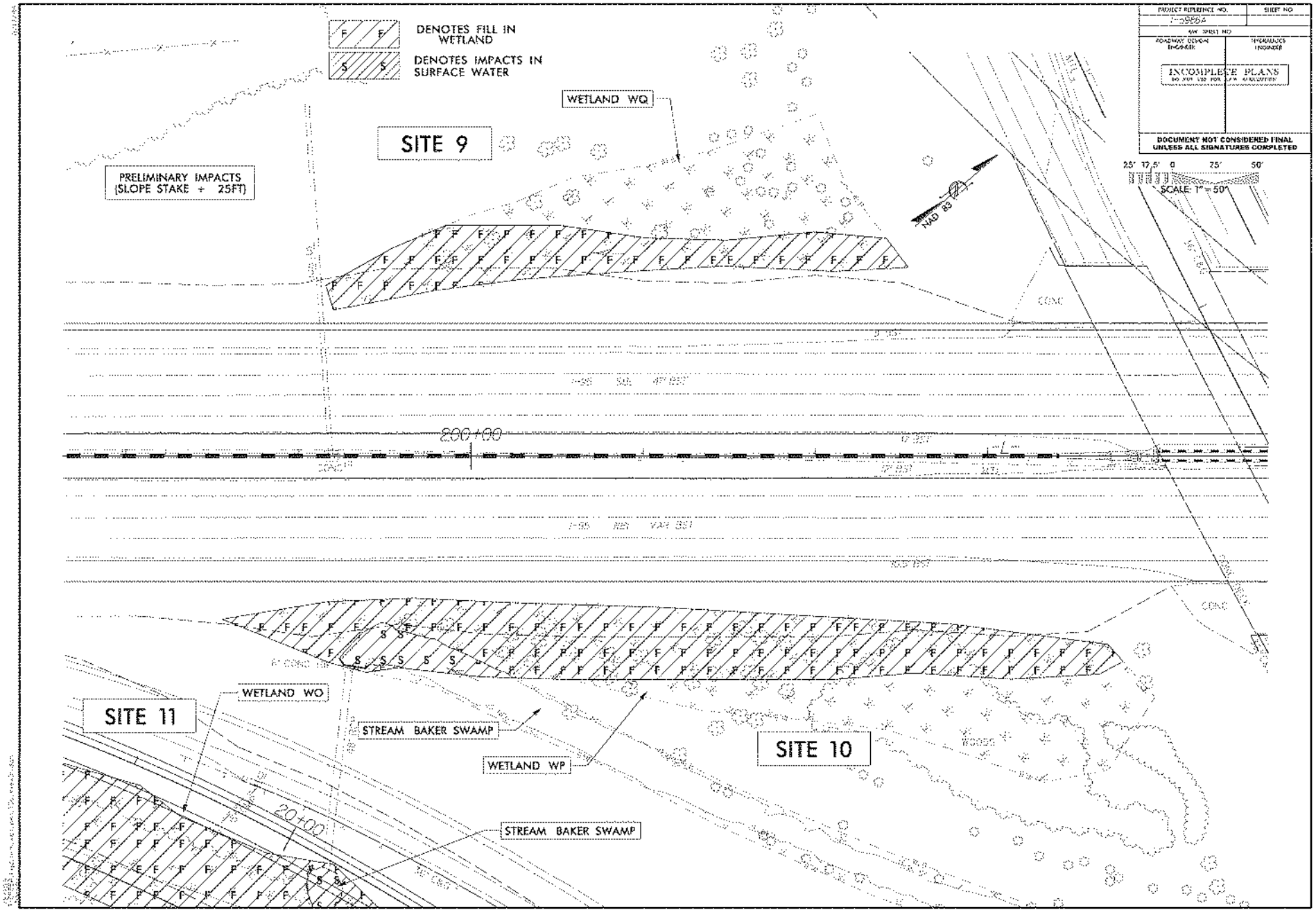
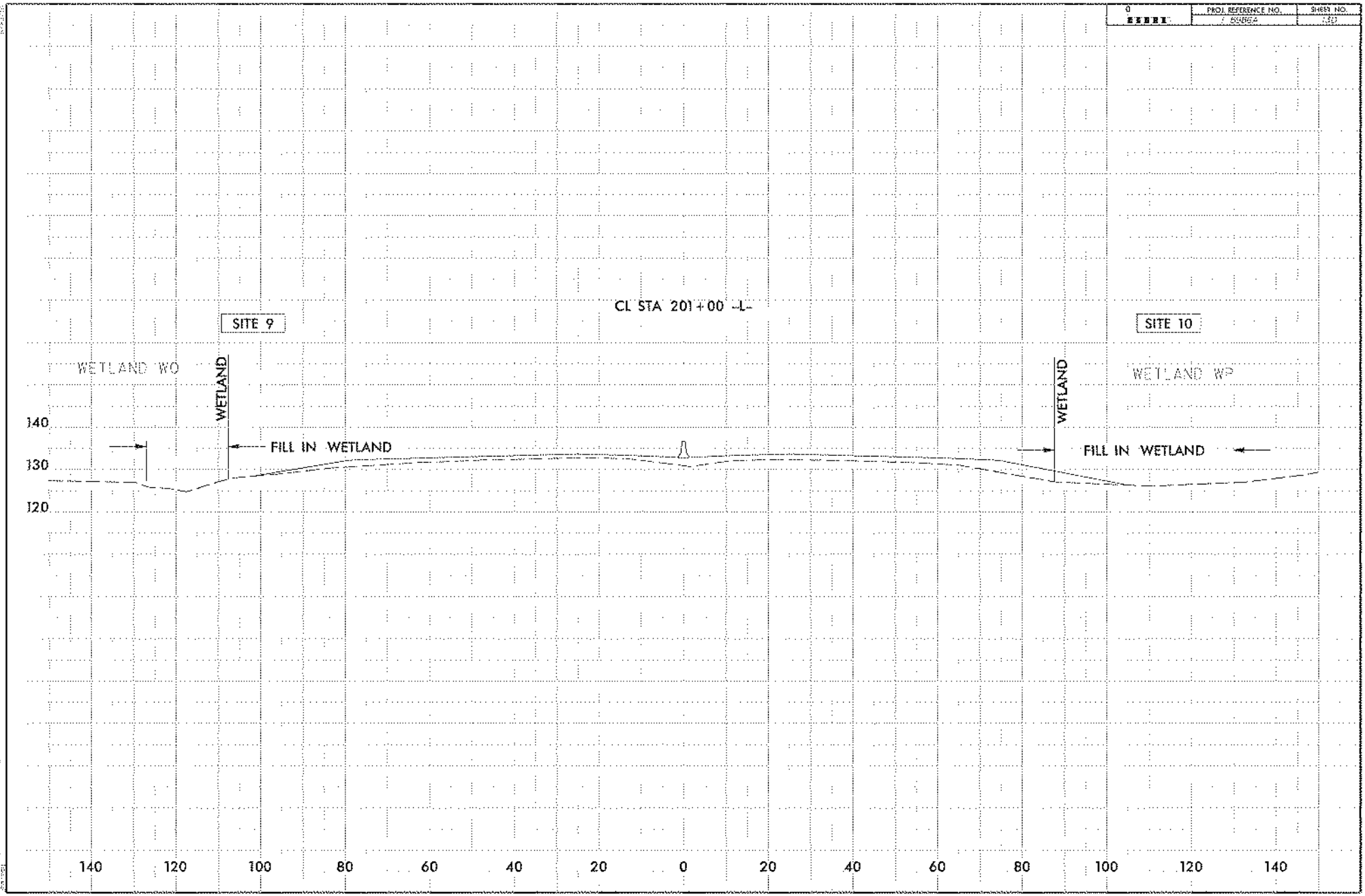

SEE 17 OF 94
SEE 18 OF 94
WETLAND W1
SITE 8
WETLAND W2
SITE 9
STREAM BAKER SWAMP
WETLAND W3
SITE 10
STREAM BAKER SWAMP
WETLAND W4
SITE 11
WETLAND W5
SITE 12
PRELIMINARY IMPACTS
(SLOPE STAKE + 25FT)
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER


SEE 17 OF 94
SEE 18 OF 94
WETLAND W8
SITE 8
WETLAND W10
SITE 9
STREAM BAKER SWAMP
WETLAND W7
SITE 10
STREAM BAKER SWAMP
WETLAND W6
SITE 11
WETLAND W5
SITE 12
PRELIMINARY IMPACTS
(SLOPE STAKE + 25FT)
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER


PROJECT REFERENCE NO.
SHEET NO.
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
SCALE: 1" = 50'
SITE 8
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
NAD 83
WETLAND WR
190+00
195
10+00
N. 43° 20' 46.3" E.
15+00
CHORD
GARY BEASLEY
PAMELA E STEVENSON
LARRY BEASLEY
KIMBERLY A. BEASLEY
TIMOTHY H. BEASLEY
SUSAN BEASLEY
WETLAND WO
SITE 11
DENOTES FILL IN WETLAND


DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
WETLAND WQ
SITE 9
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
NAD 83
SCALE: 1" = 50'
INCOMPLETE PLANS
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
200+00
WETLAND WO
SITE 11
STREAM BAKER SWAMP
WETLAND WP
SITE 10
20+00
STREAM BAKER SWAMP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PROJ. REFERENCE NO.
SHEET NO.
CL STA 201+00 -L-
SITE 9
SITE 10
WETLAND WO
WETLAND WP
WETLAND
WETLAND
FILL IN WETLAND
FILL IN WETLAND
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120
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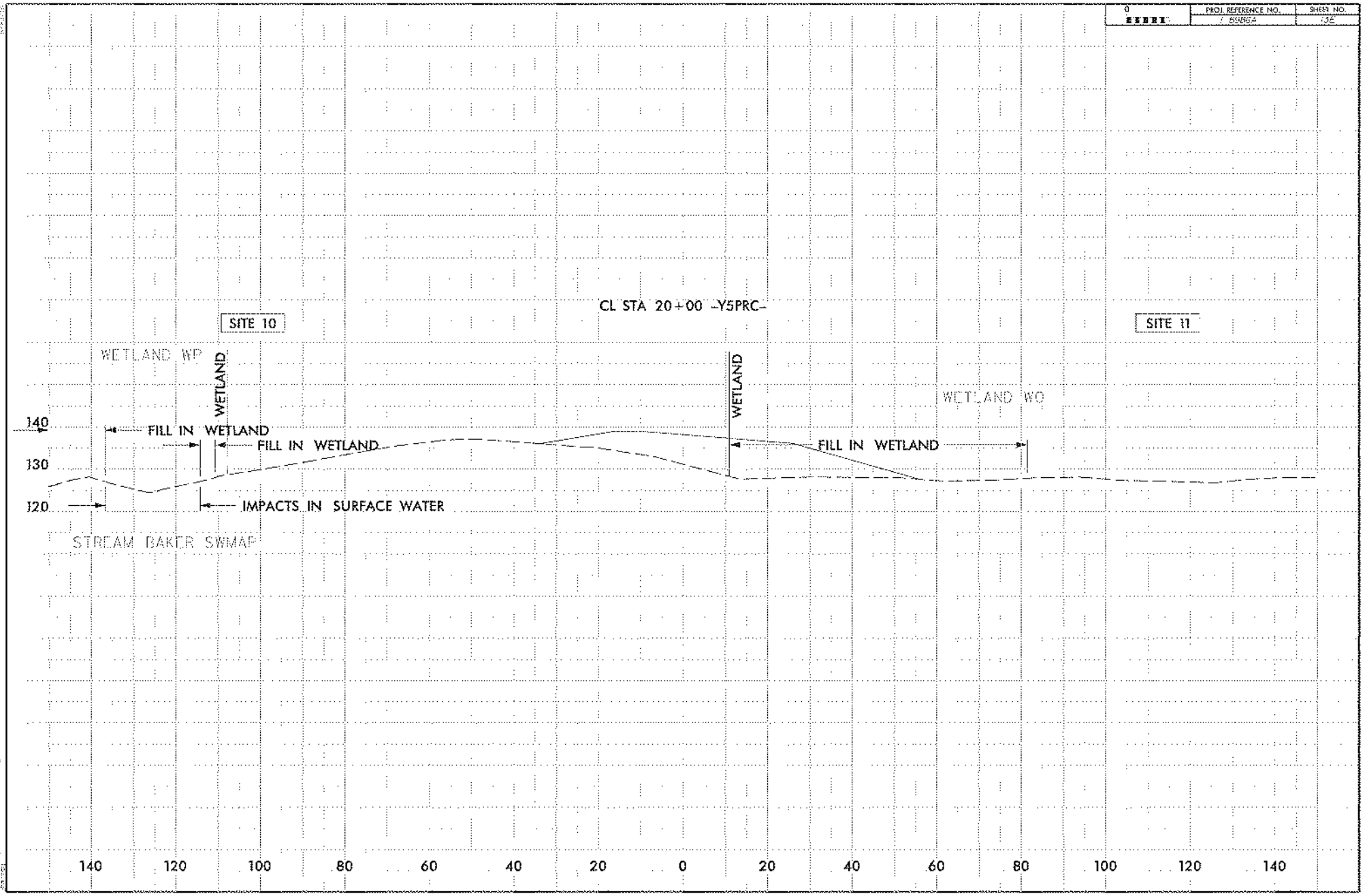
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PROJ. REFERENCE NO.
SHEET NO.
SITE 10
SITE 11
CL STA 20+00 -Y5PRC-
WETLAND WP
WETLAND
WETLAND
WETLAND WO
140
130
120
FILL IN WETLAND
FILL IN WETLAND
FILL IN WETLAND
IMPACTS IN SURFACE WATER
STREAM BAKER SWMP
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120
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60
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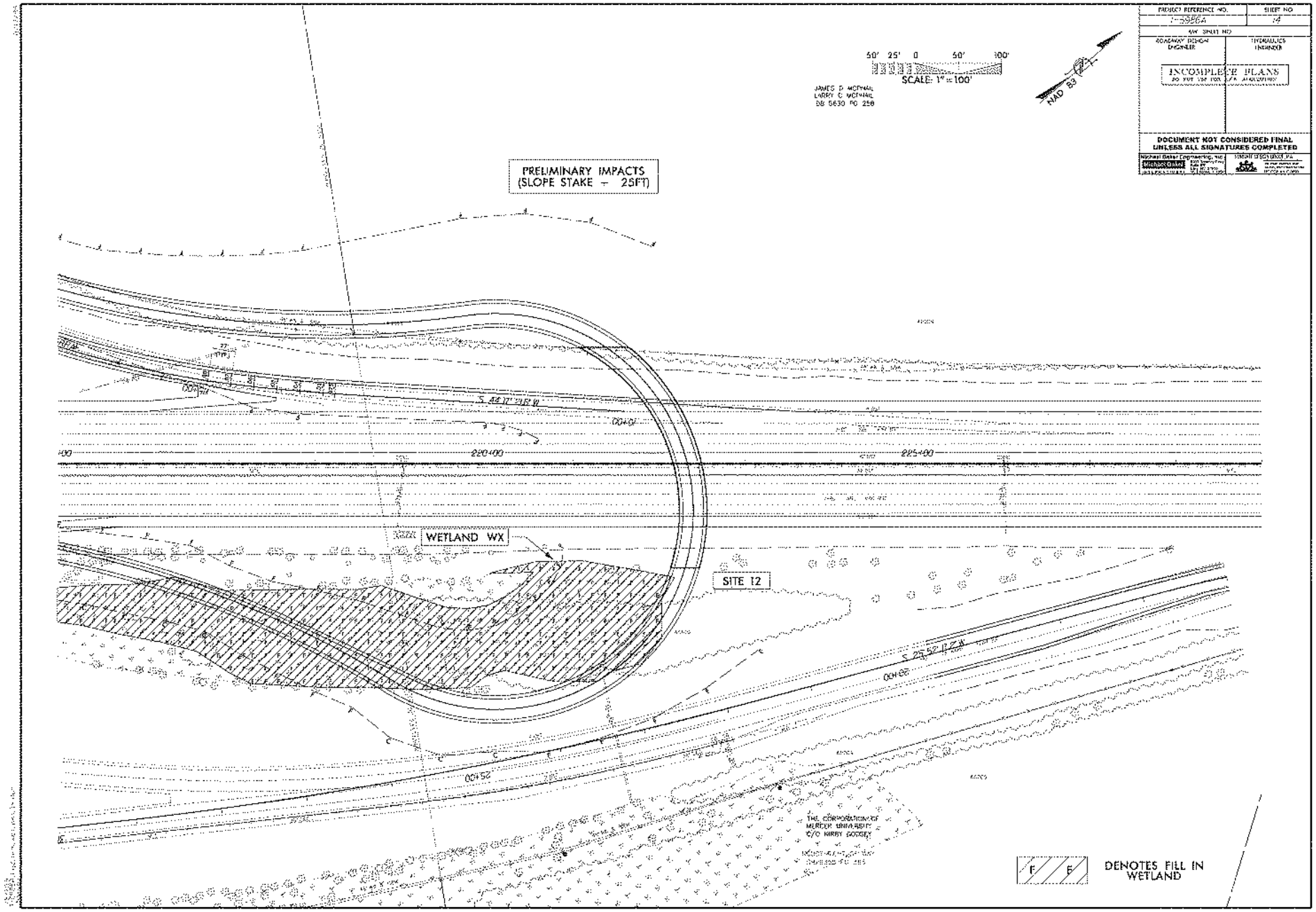
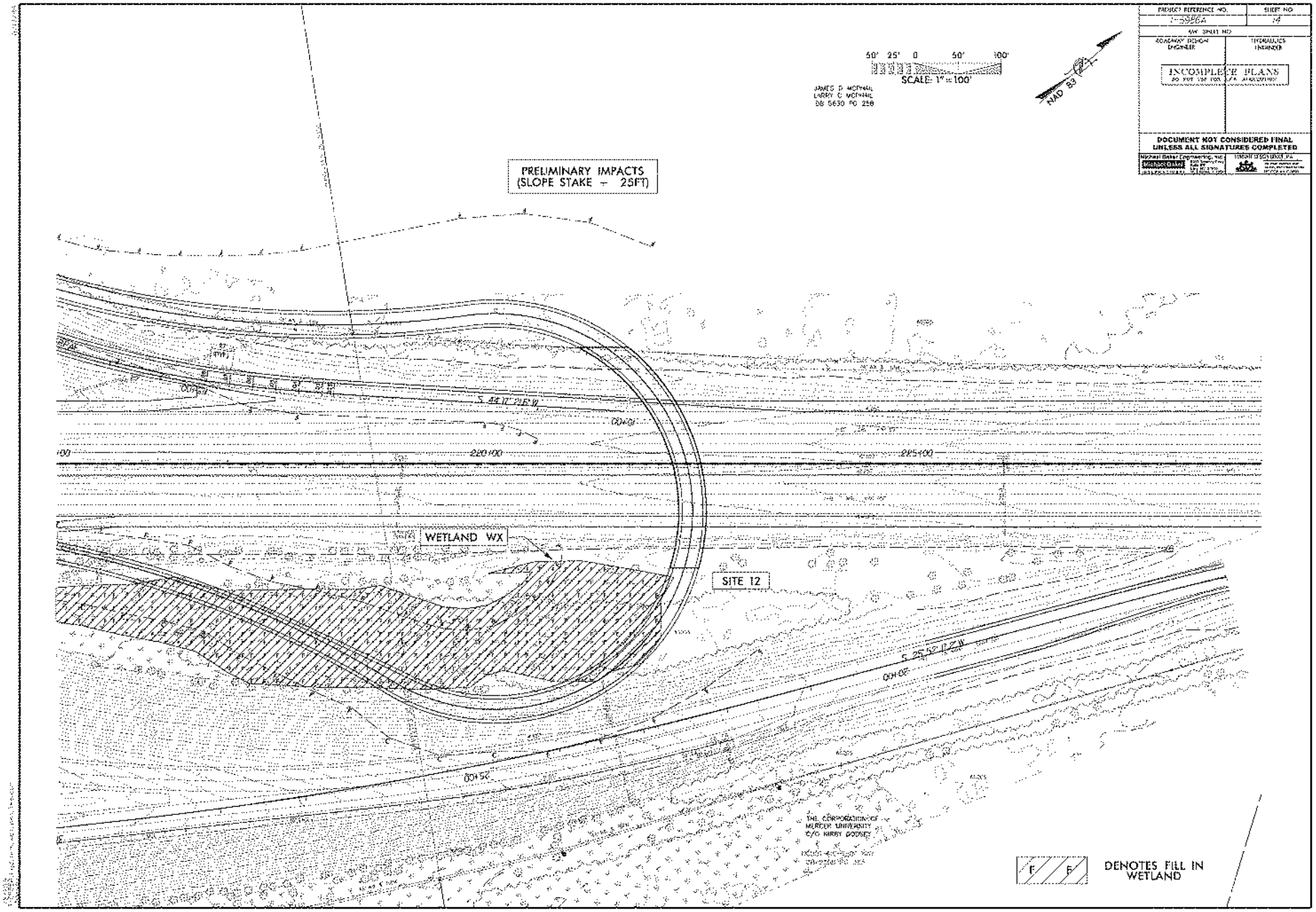
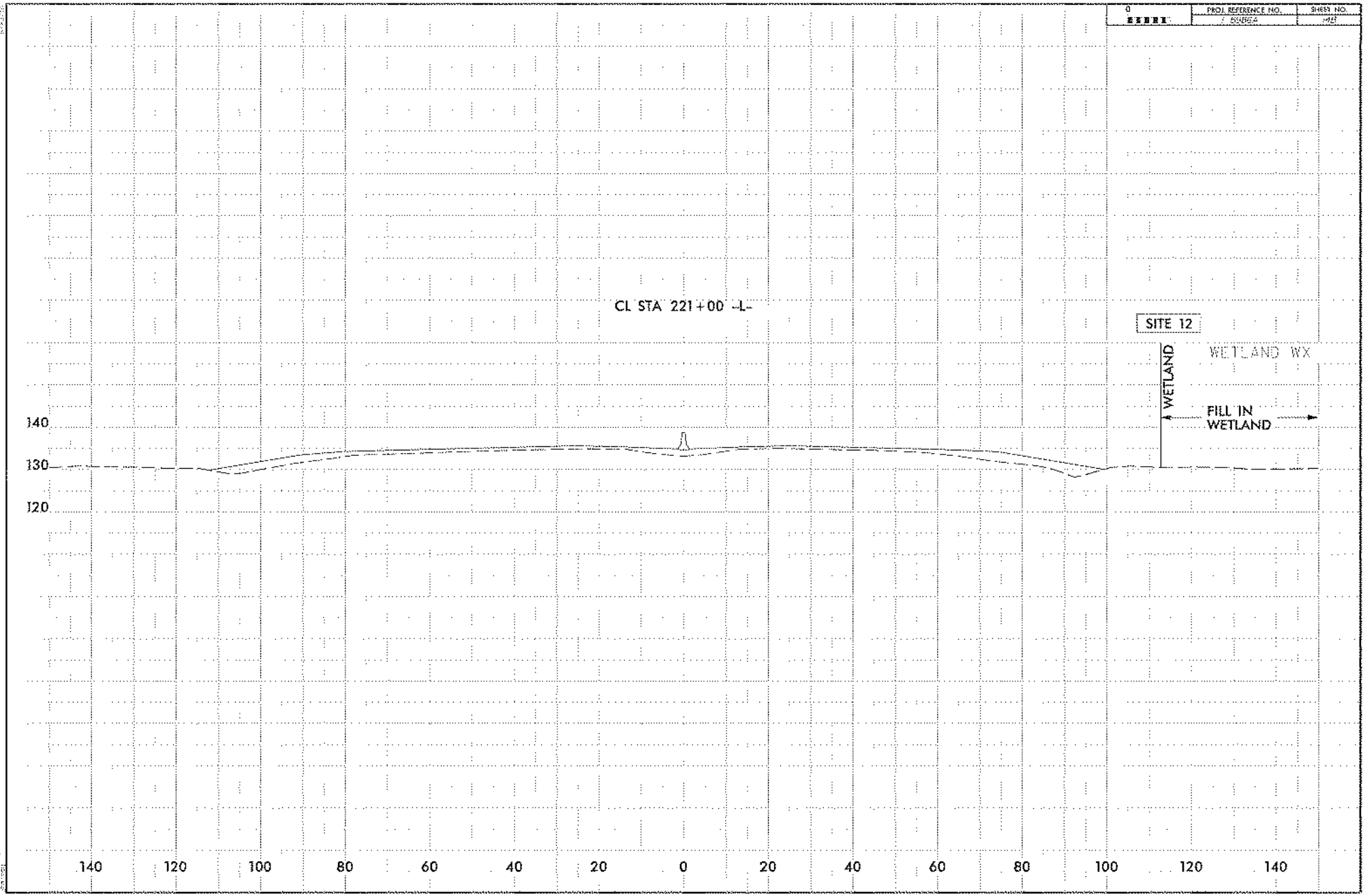
60
80
100
120
140


PROJECT REFERENCE NO.
SHEET NO.
14
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
50' 25' 0 50' 100'
SCALE: 1" = 100'
NAD 83
JAMES P. MCDANIEL
LARRY C. MCDANIEL
DB 5630 PG 258
PRELIMINARY IMPACTS
(SLOPE STAKE + 25FT)
WETLAND WX
SITE 12
220+00
225+00
THE CORPORATION OF
MERCER UNIVERSITY
C/O KIRBY DODSEY
DENOTES FILL IN WETLAND


PROJECT REFERENCE NO.
SHEET NO.
14
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
50' 25' 0 50' 100'
SCALE: 1" = 100'
NAD 83
JAMES P. MCDANIEL
LARRY C. MCDANIEL
DB 5630 PG 258
PRELIMINARY IMPACTS
(SLOPE STAKE - 25FT)
WETLAND WX
SITE 12
220+00
225+00
00+50
THE CORPORATION OF MERCER UNIVERSITY
C/O KIRBY DODSEY
DENOTES FILL IN WETLAND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PROJ. REFERENCE NO.
SHEET NO.
CL STA 221+00 -L-
SITE 12
WETLAND WX
WETLAND
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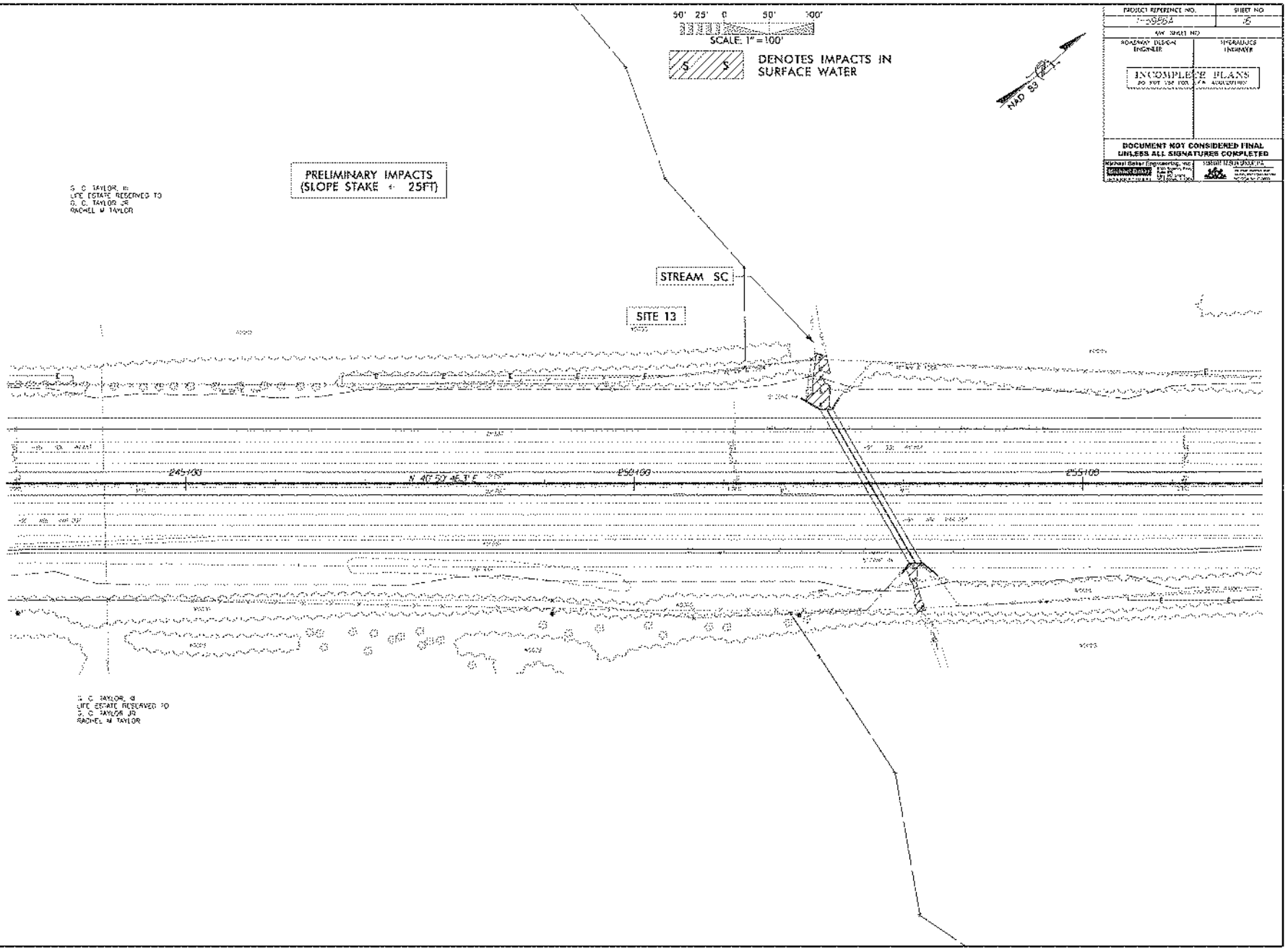
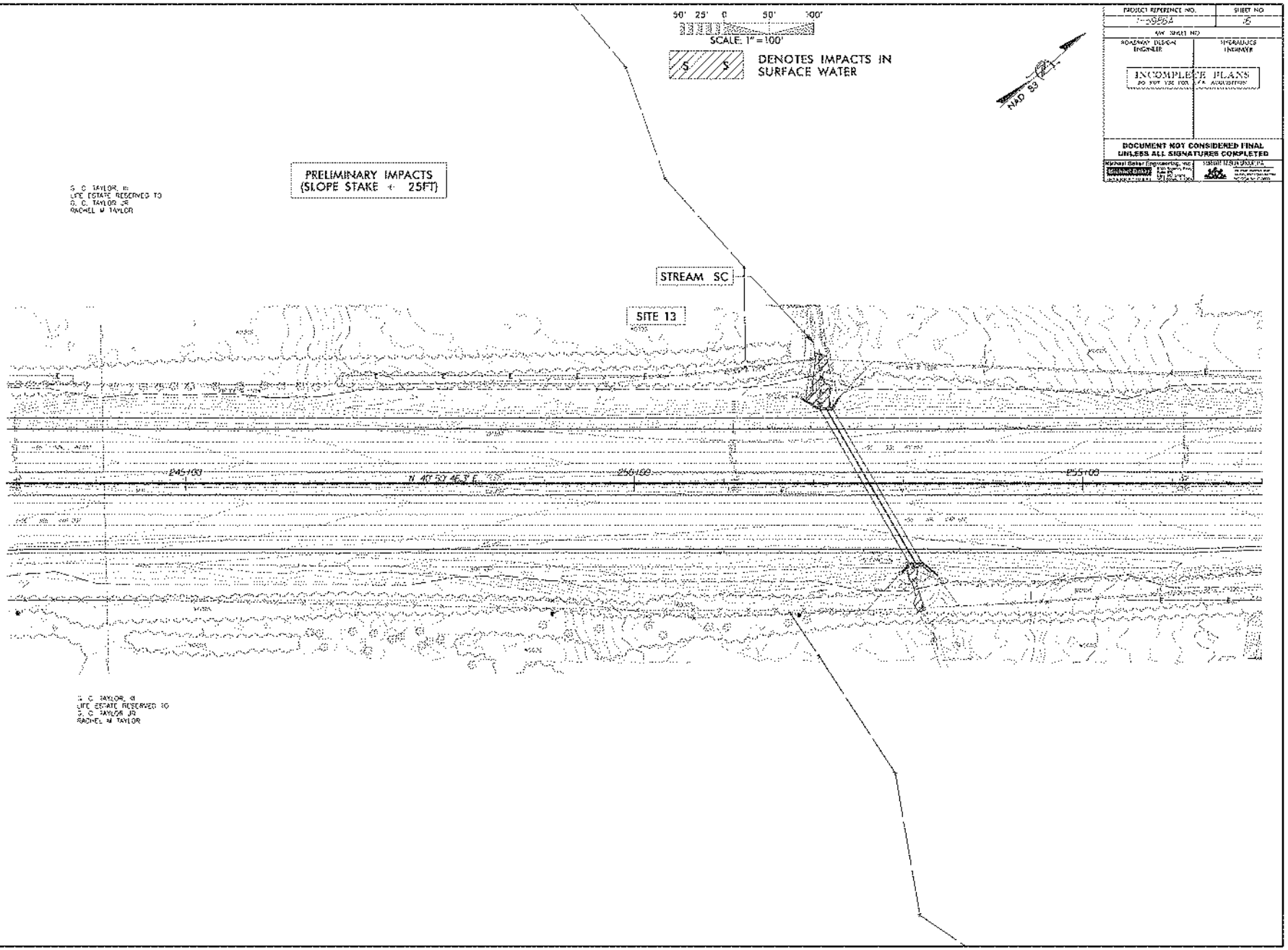
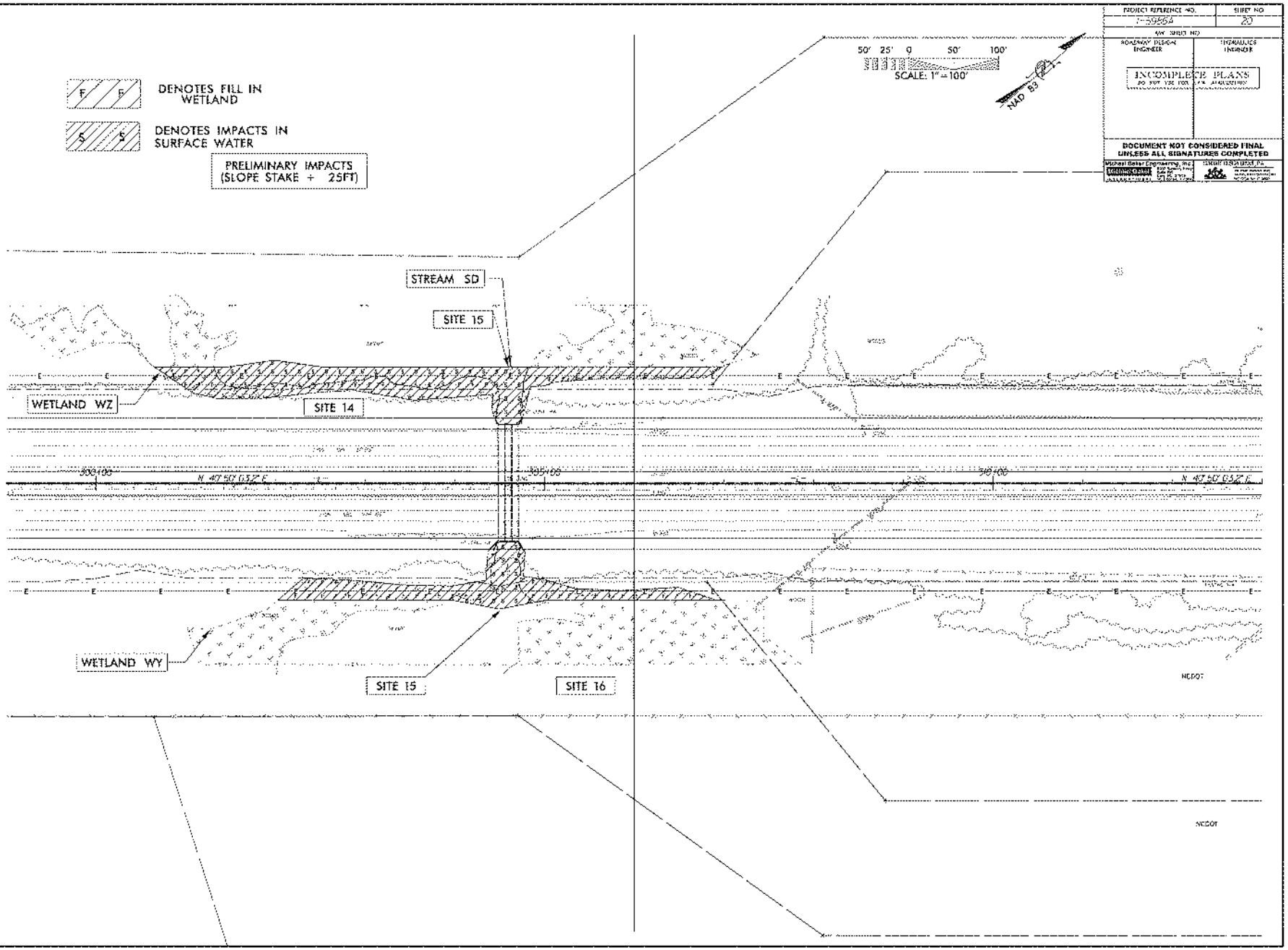
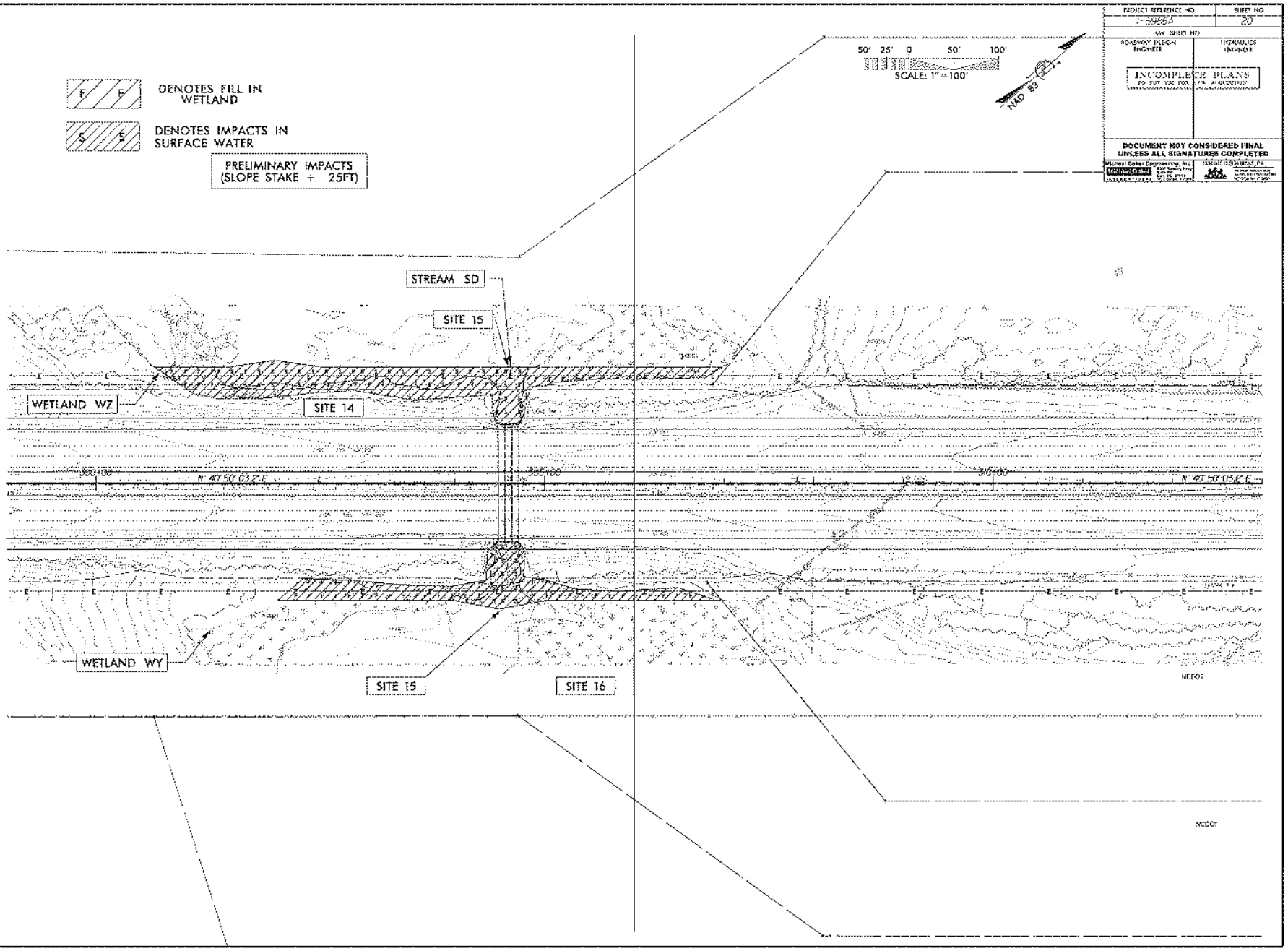
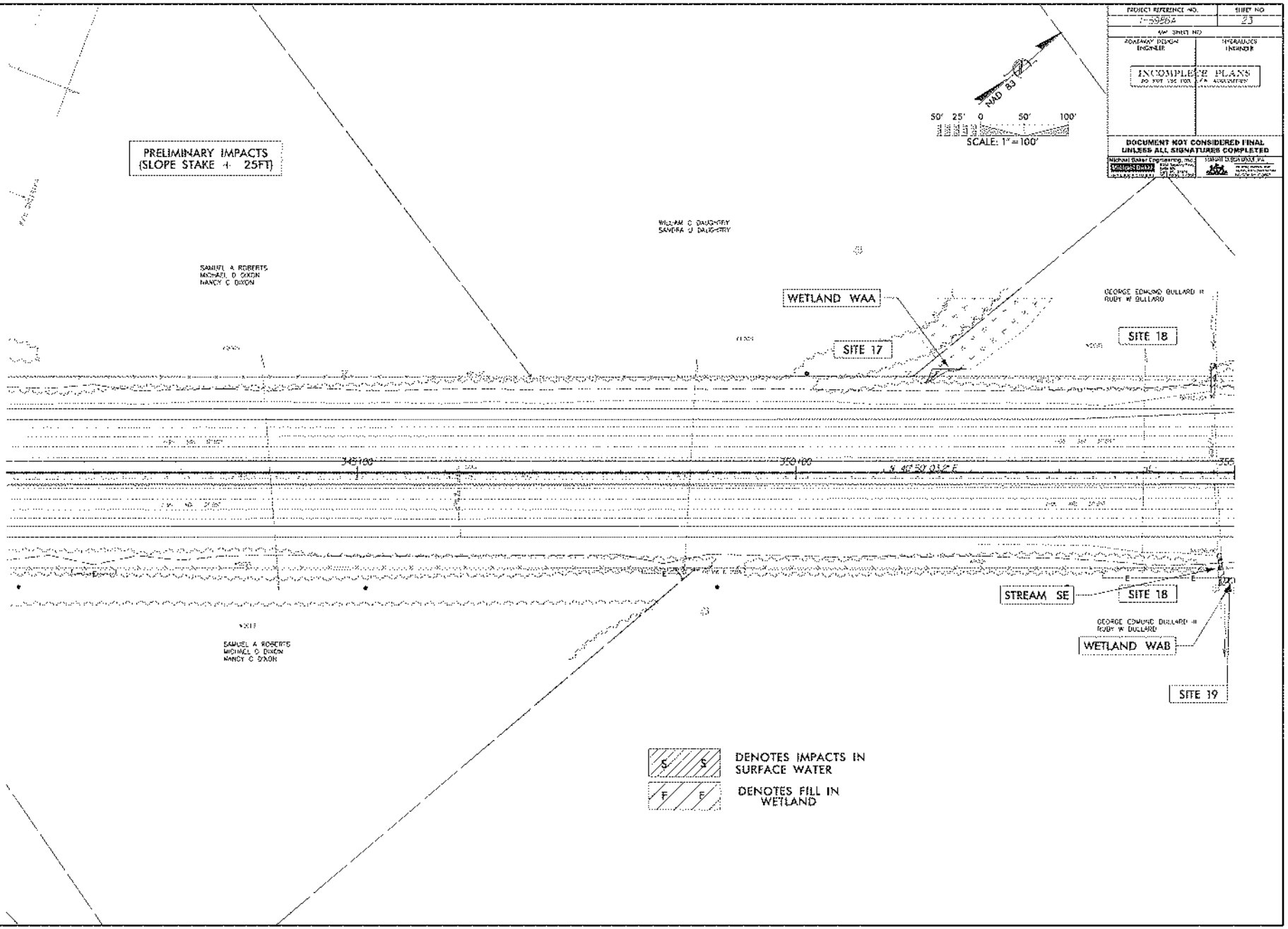
100
120
140

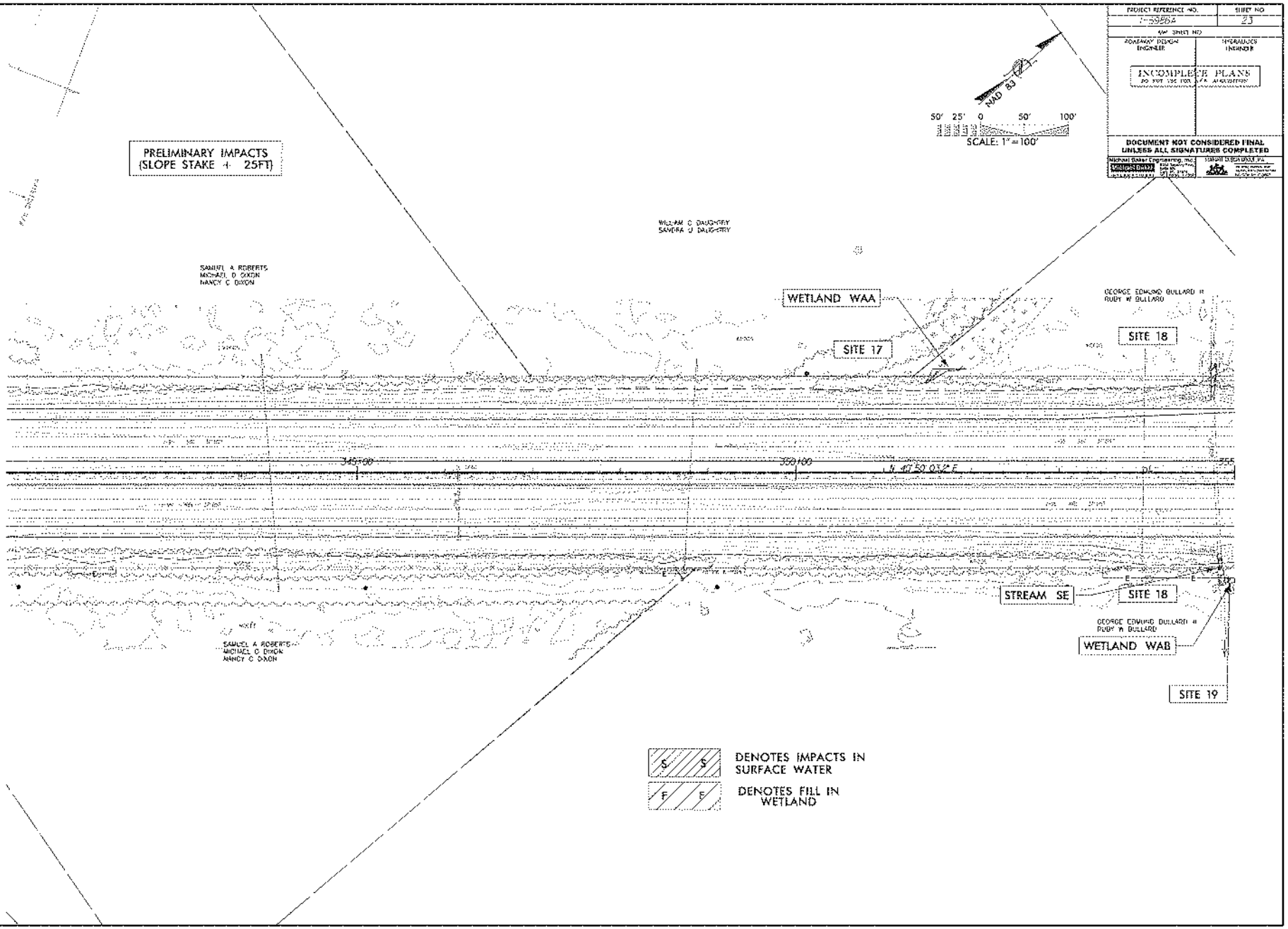

50' 25' 0 50' 100'
SCALE: 1" = 100'
DENOTES IMPACTS IN SURFACE WATER
NAD 83
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
STREAM SC
SITE 13
245+00
250+00
255+00
N 40°50'46.31"E
PROJECT REFERENCE NO.
SHEET NO.
5
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION OR ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.

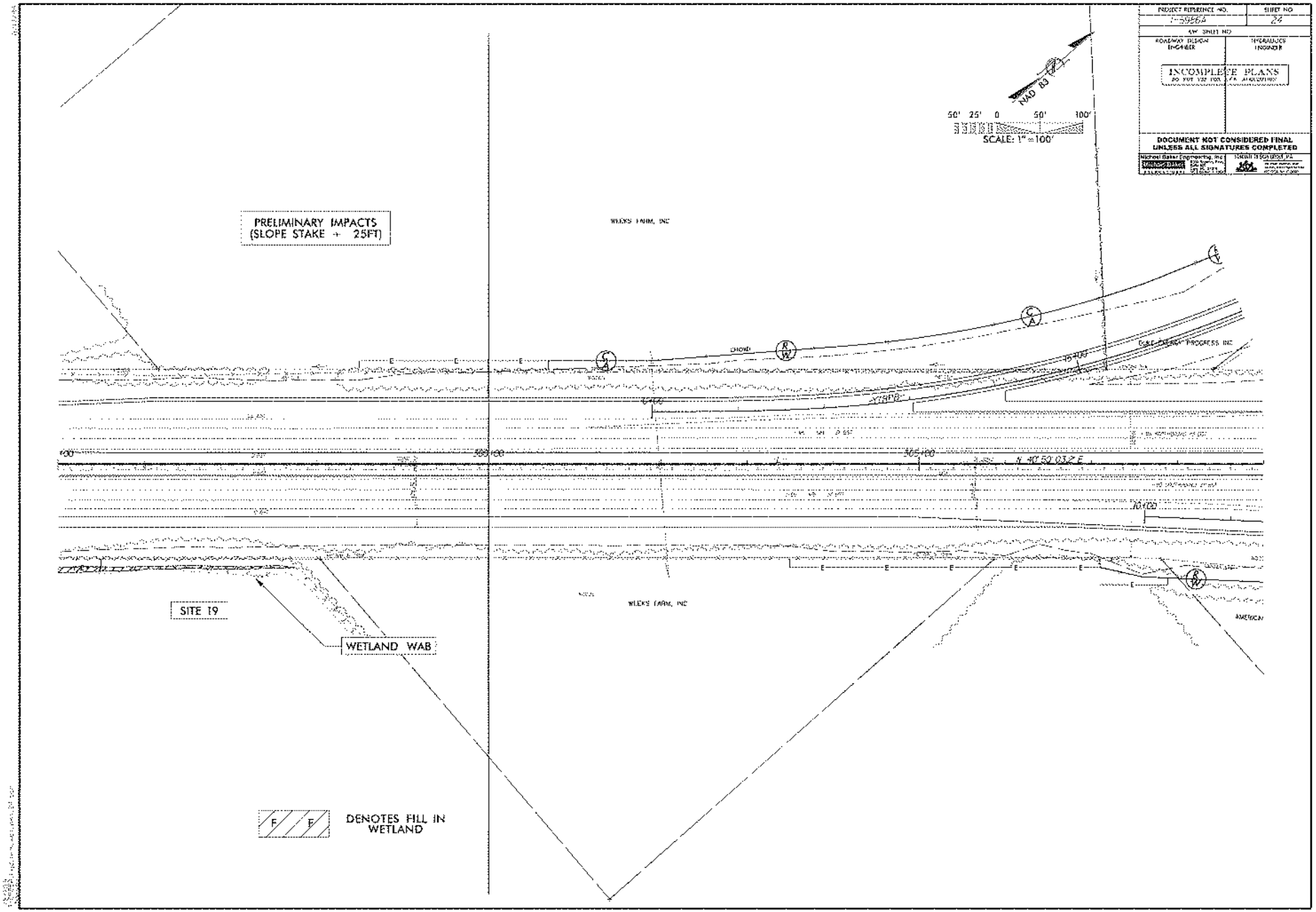

50' 25' 0 50' 100'
SCALE: 1" = 100'
DENOTES IMPACTS IN SURFACE WATER
NAD 83
PROJECT REFERENCE NO.
SHEET NO.
5
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
G. C. TAYLOR, III
LIFE ESTATE RESERVED TO
G. C. TAYLOR JR
RACHEL M TAYLOR
STREAM SC
SITE 13
245+00
N 40°30'45"E
256+00
255+00
G. C. TAYLOR, III
LIFE ESTATE RESERVED TO
G. C. TAYLOR JR
RACHEL M TAYLOR

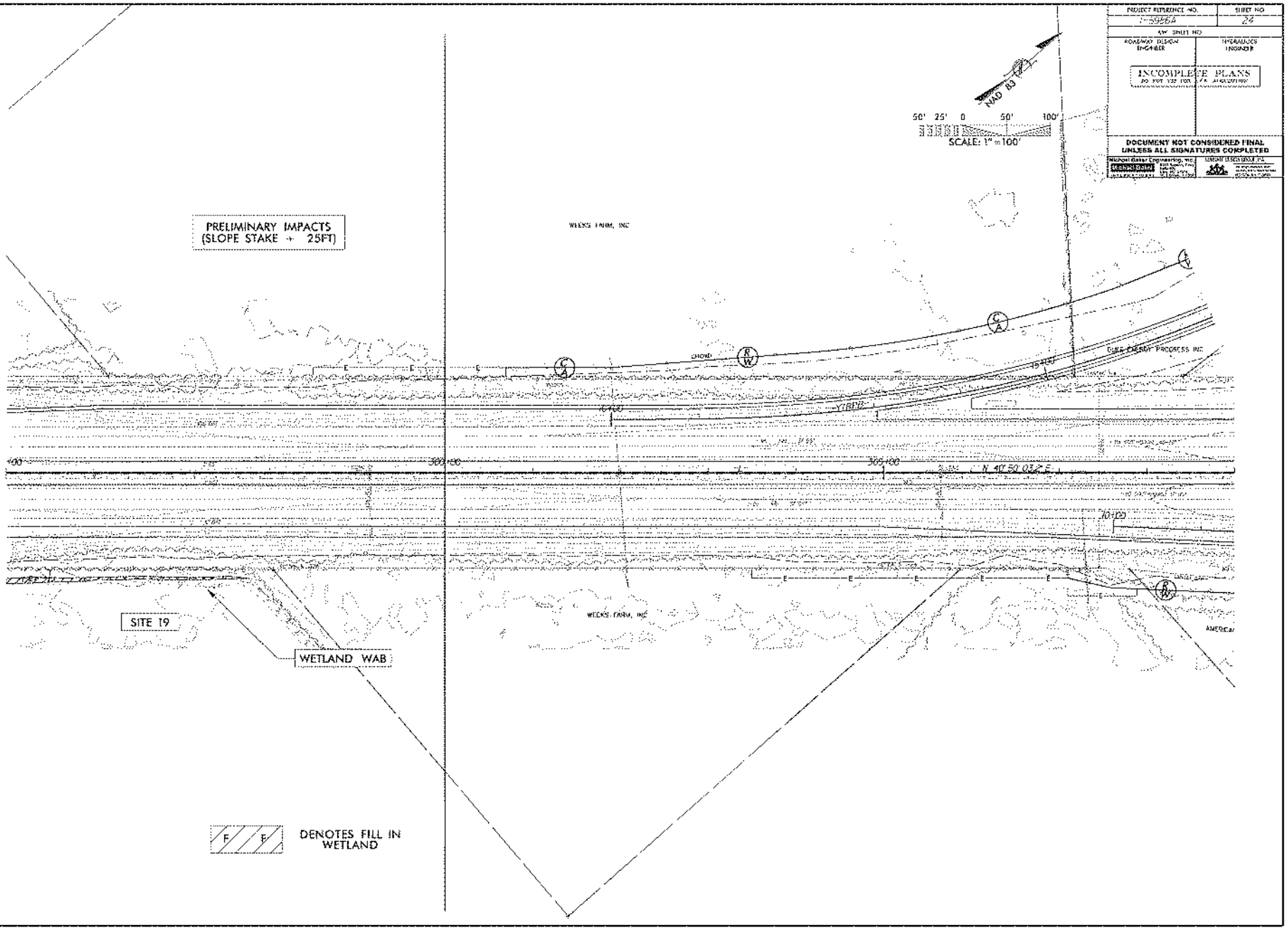

DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
50' 25' 0 50' 100'
SCALE: 1"=100'
NAD 83
PROJECT REFERENCE NO.
SHEET NO.
20
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
STREAM SD
SITE 15
WETLAND WZ
SITE 14
N 47 50' 03.2" E
WETLAND WY
SITE 15
SITE 16
NCDOT

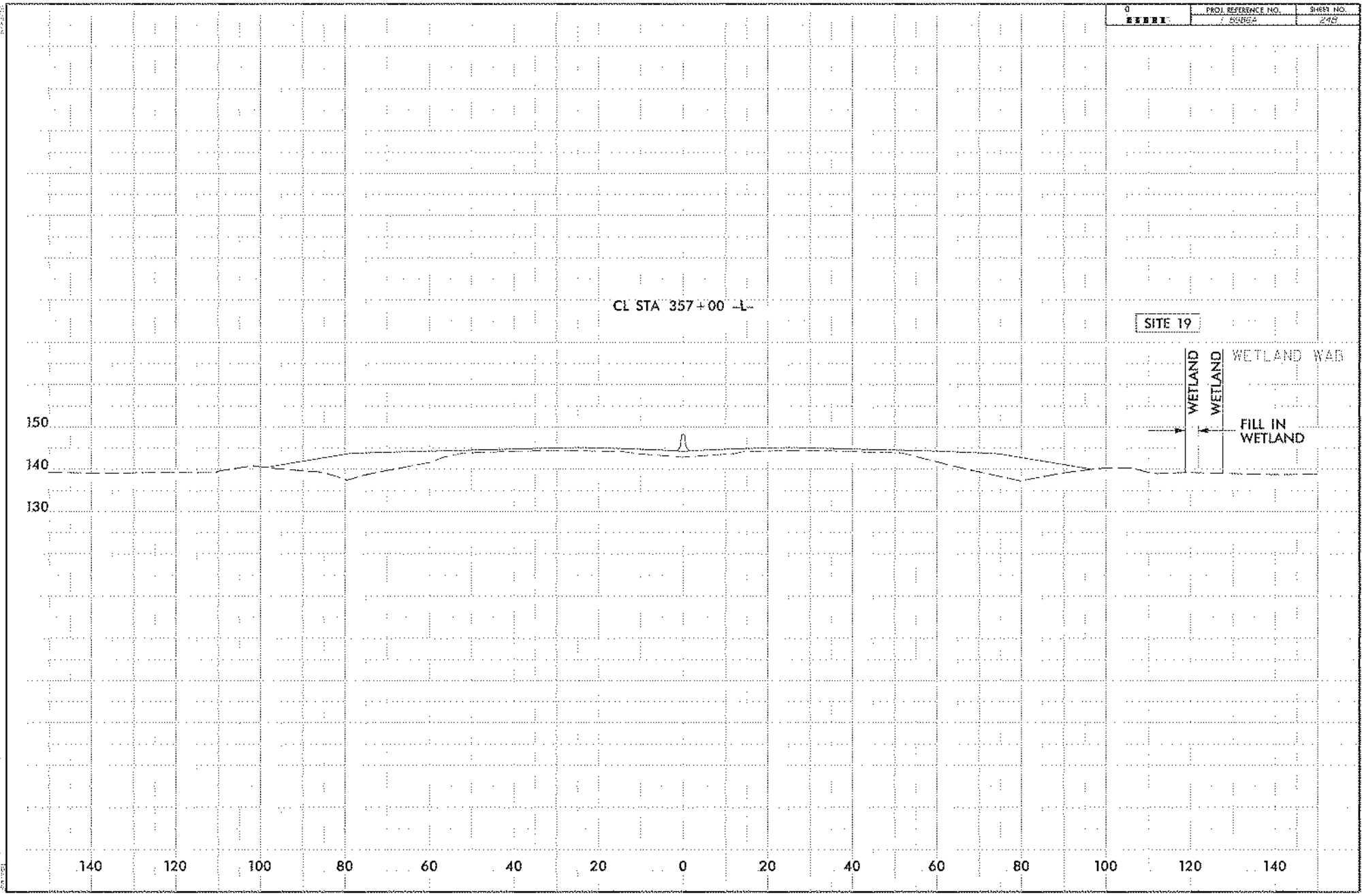

DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
50' 25' 0 50' 100'
SCALE: 1"=100'
NAD 83
PROJECT REFERENCE NO.
SHEET NO.
20
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
STREAM SD
SITE 15
WETLAND WZ
SITE 14
N 40°50'03"E
WETLAND WY
SITE 15
SITE 16
NCDOT


PROJECT REFERENCE NO.
SHEET NO.
23
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
Stantec Consulting Services Inc.
SEAL
NAD 83
50' 25' 0 50' 100'
SCALE: 1" = 100'
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
WILLIAM C DAUGHTRY
SANDRA J DAUGHTRY
SAMUEL A ROBERTS
MICHAEL D DIXON
NANCY C DIXON
WETLAND WAA
SITE 17
GEORGE EDMUND BULLARD II
RUBY W BULLARD
SITE 18
345+00
350+00
N 48°50'03"E
STREAM SE
SITE 18
GEORGE EDMUND BULLARD II
RUBY W BULLARD
WETLAND WAB
SITE 19
DENOTES IMPACTS IN SURFACE WATER
DENOTES FILL IN WETLAND


PROJECT REFERENCE NO.
SHEET NO.
23
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
Stantec Consulting Services Inc.
NAD 83
50' 25' 0 50' 100'
SCALE: 1" = 100'
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
WILLIAM C DAUGHTRY
SANDRA J DAUGHTRY
SAMUEL A ROBERTS
MICHAEL D DIXON
NANCY C DIXON
WETLAND WAA
SITE 17
GEORGE EDWARD BULLARD II
RUBY W BULLARD
SITE 18
345+00
355+00
N 47°50'03"E
STREAM SE
SITE 18
GEORGE EDWARD BULLARD II
RUBY W BULLARD
WETLAND WAB
SITE 19
DENOTES IMPACTS IN SURFACE WATER
DENOTES FILL IN WETLAND


PRELIMINARY IMPACTS
(SLOPE STAKE + 25FT)
WILKS FARM, INC
SITE 19
WETLAND WAB
WILKS FARM, INC
DENOTES FILL IN WETLAND
NAD 83
50' 25' 0 50' 100'
SCALE: 1" = 100'
CHORD
DUKE ENERGY PROGRESS INC
AMERICAN
N 40°52'03.2" E
PROJECT REFERENCE NO.
SHEET NO.
24
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.


PRELIMINARY IMPACTS
(SLOPE STAKE + 25FT)
WEEKS FARM, INC
SITE 19
WETLAND WAB
WEEKS FARM, INC
DUKE ENERGY PROGRESS INC
AMERICA
NAD 83
50' 25' 0 50' 100'
SCALE: 1" = 100'
PROJECT REFERENCE NO.
SHEET NO.
24
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
DENOTES FILL IN WETLAND


PROJ. REFERENCE NO.
SHEET NO.
CL STA 357+00 -L-
SITE 19
WETLAND
WETLAND
WETLAND WAD
FILL IN WETLAND
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140
130
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120
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0
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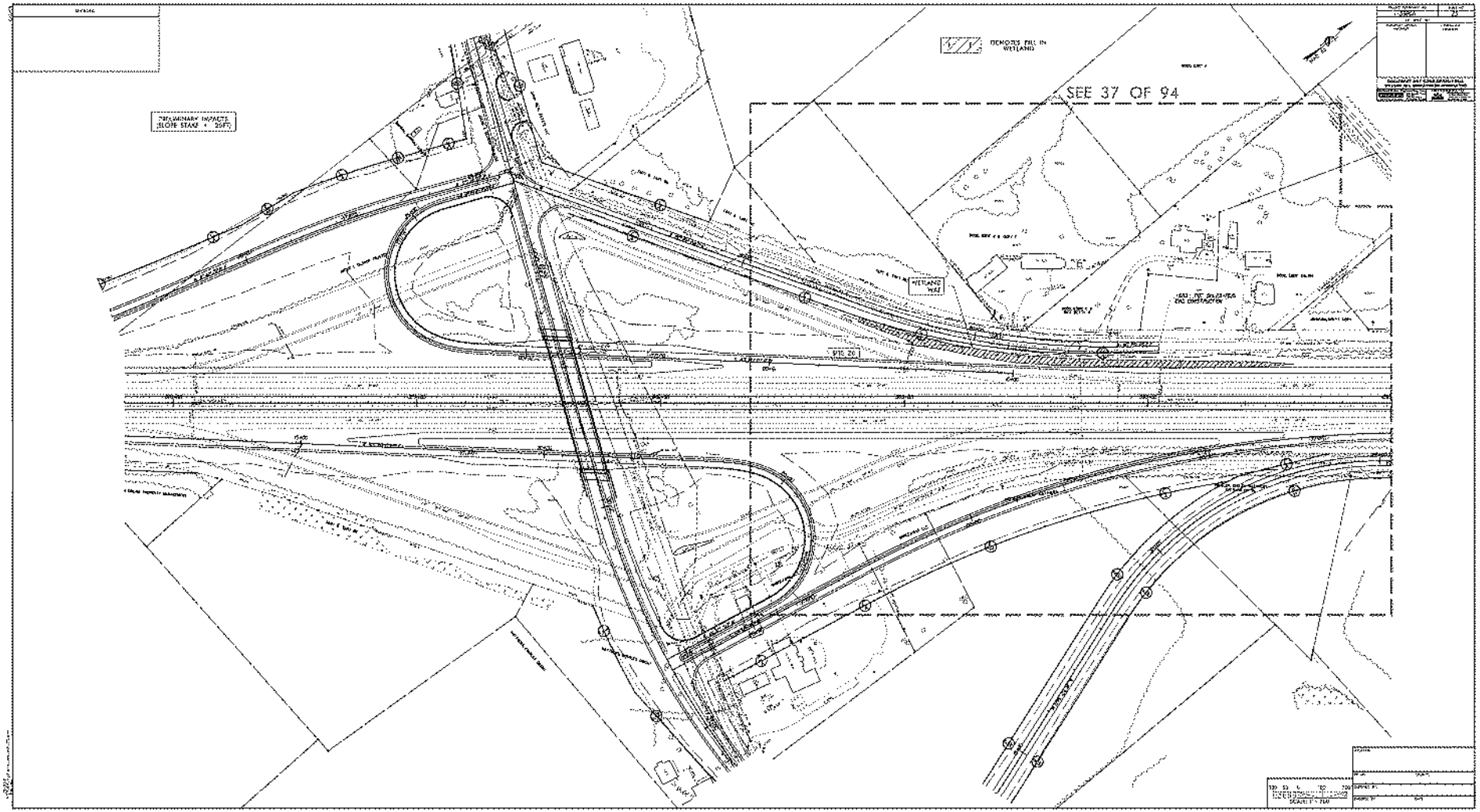
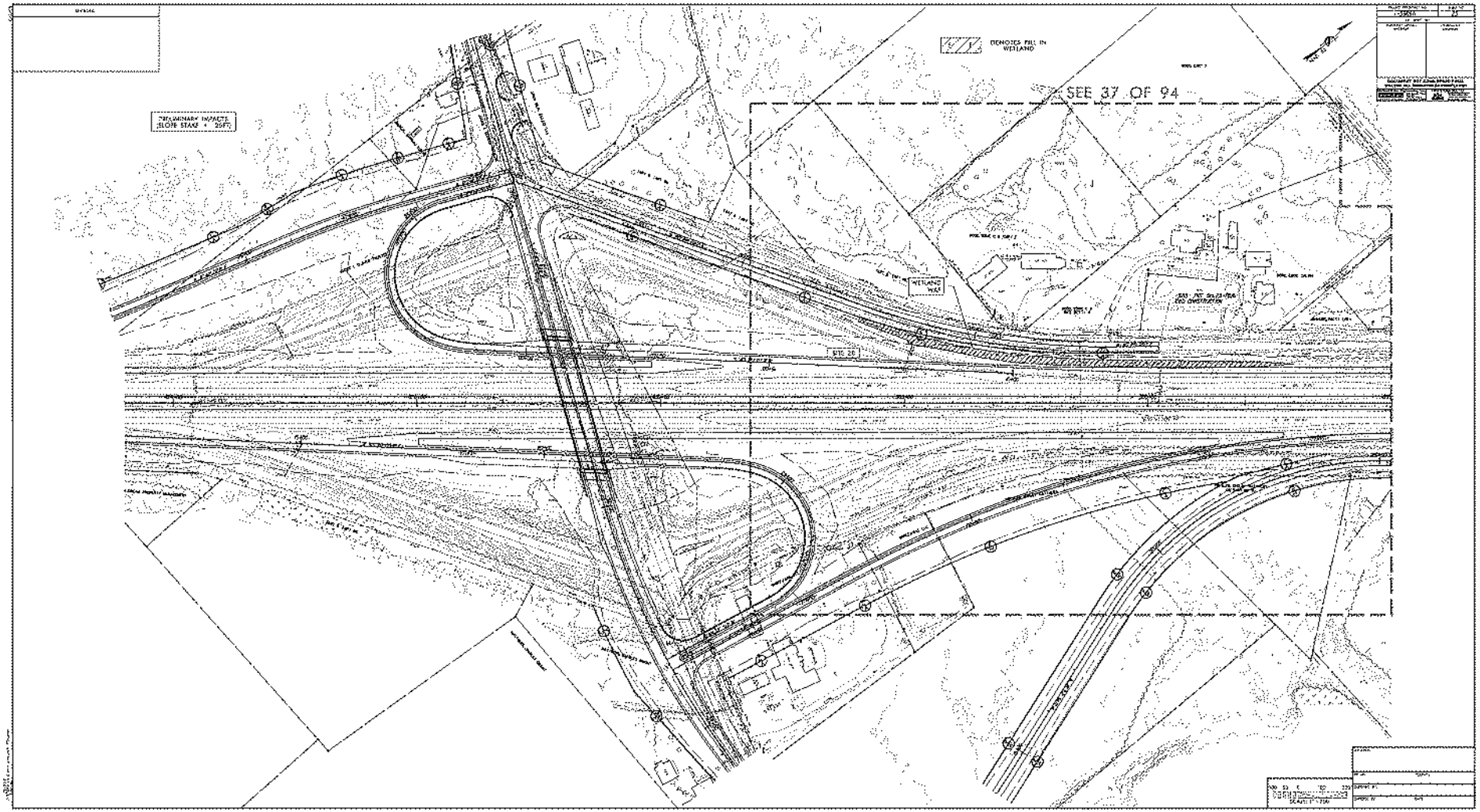
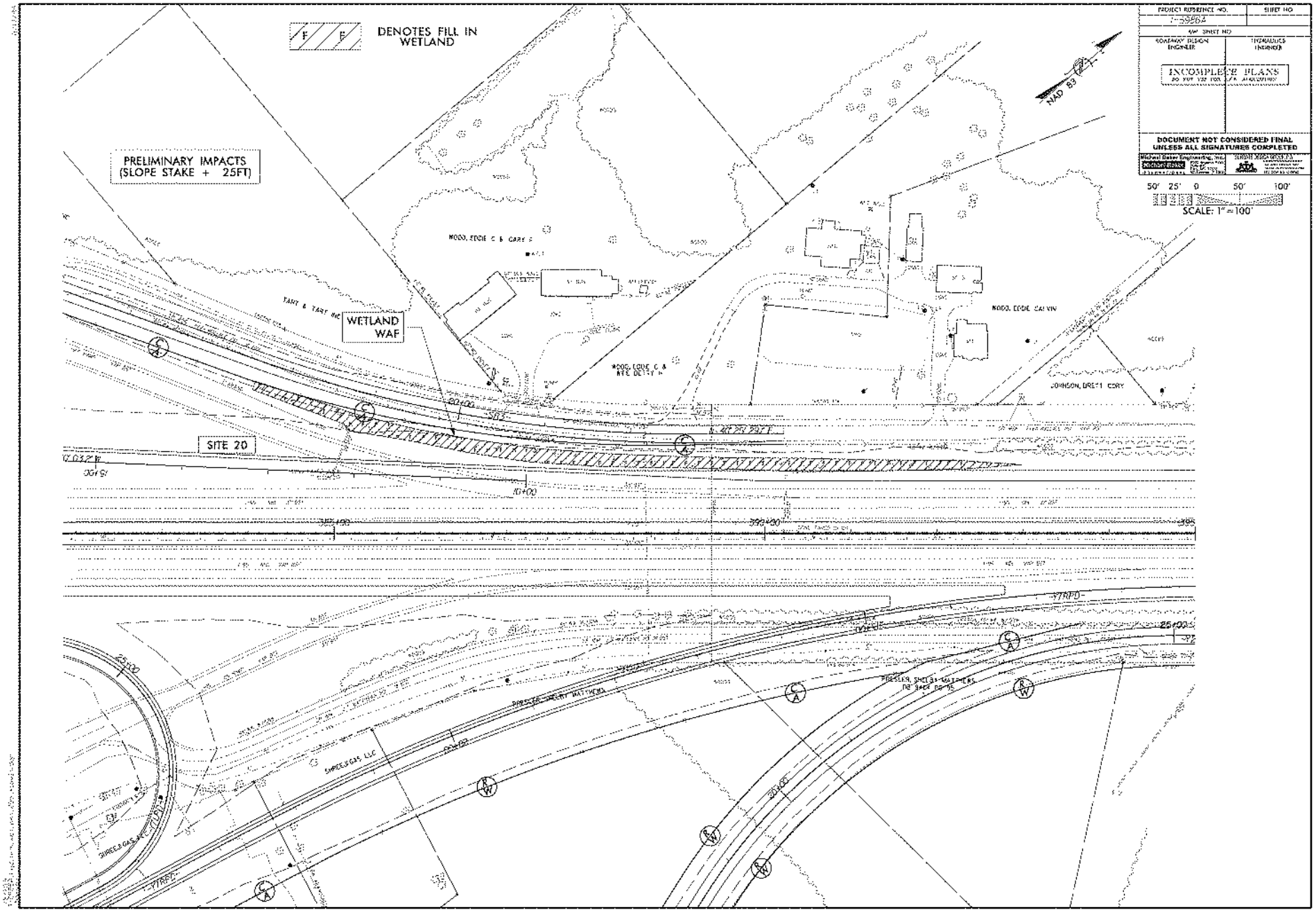
60
80
100
120
140


PRELIMINARY IMPACTS
(BLOPE STAKE + 25FT)
DENOTES FILL IN WETLAND
SEE 37 OF 94
WETLAND W42
RTE. 26


DENOTES FILL IN WETLAND
SEE 37 OF 94
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
WETLAND 1W8
RTE 28


DENOTES FILL IN WETLAND
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
WETLAND WAF
SITE 20
NAD 83
PROJECT REFERENCE NO.
SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
50' 25' 0 50' 100'
SCALE: 1" = 100'
WOOD, EDDIE C. & GARY S.
WOOD, EDDIE CALVIN
JOHNSON, DREW CORY
SIMPLEGAS LLC
PRESSLER, SHELBY MATTHEW
10+00
15+00
20+00
25+00
30+00
35+00
40+00
45+00
50+00
55+00
60+00
65+00
70+00
75+00
80+00
85+00
90+00
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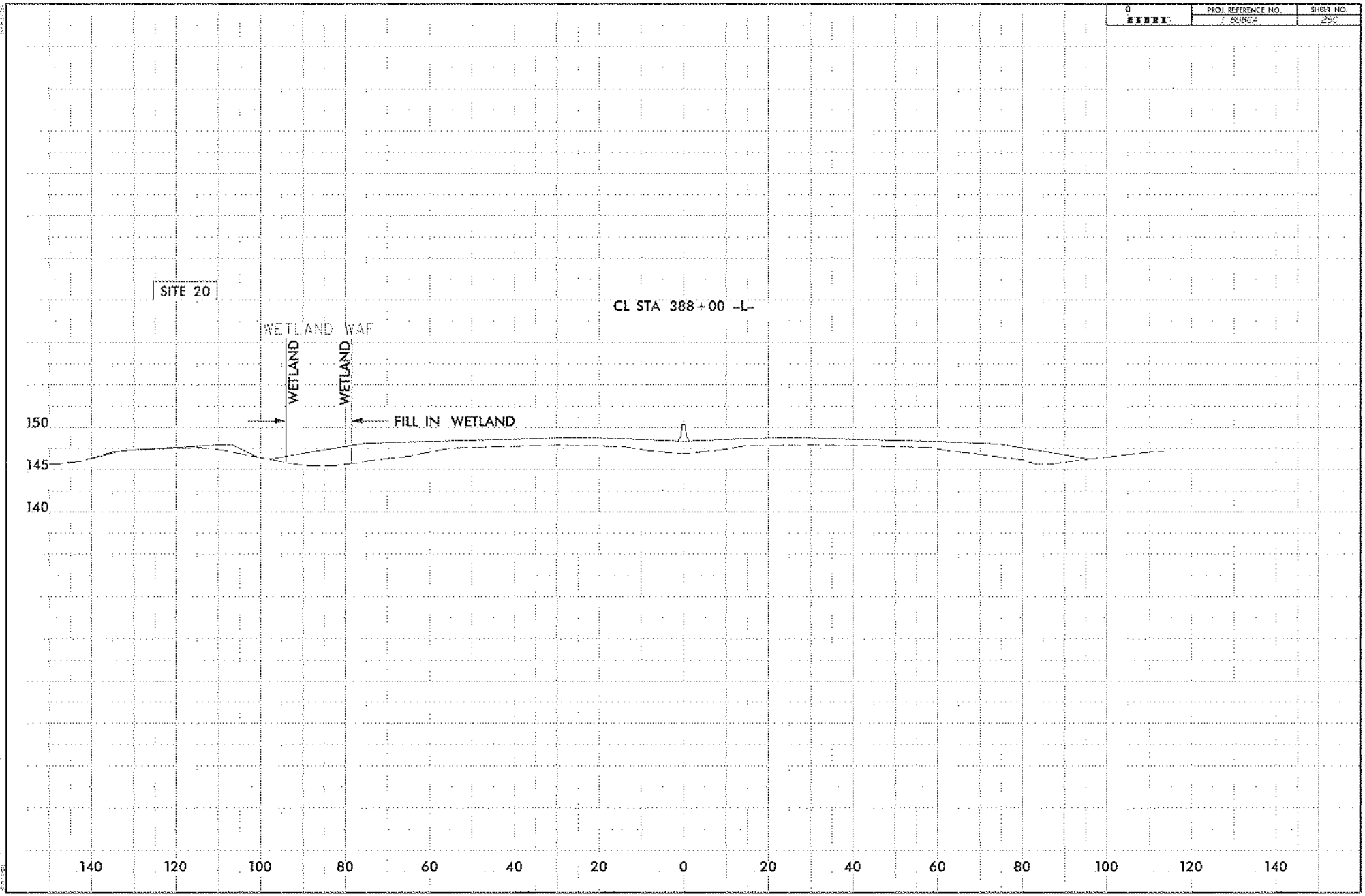
990+00
995+00
1000+00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PROJ. REFERENCE NO.
SHEET NO.
SITE 20
WETLAND WAF
WETLAND
WETLAND
CL STA 388+00 -L-
FILL IN WETLAND
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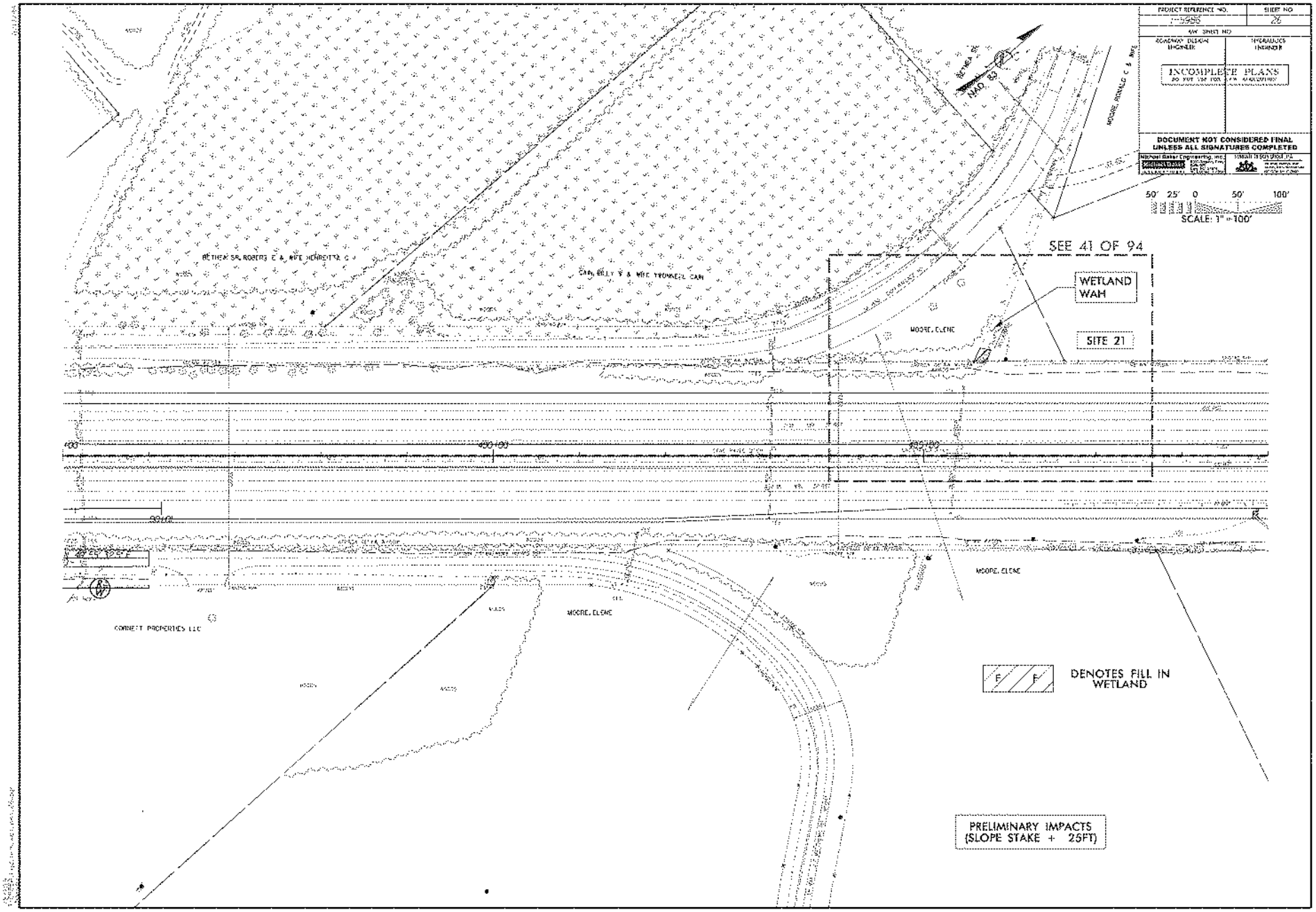
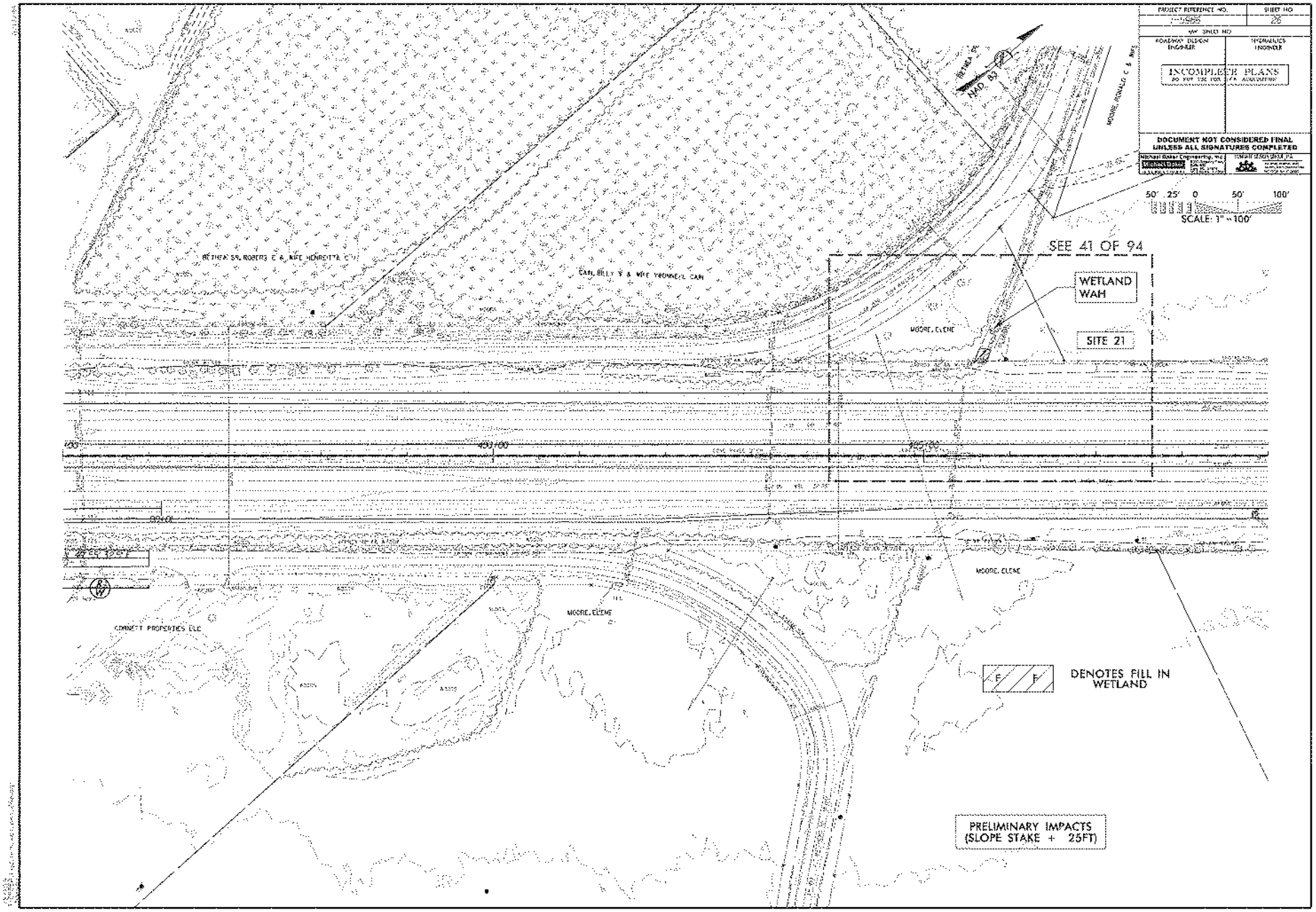
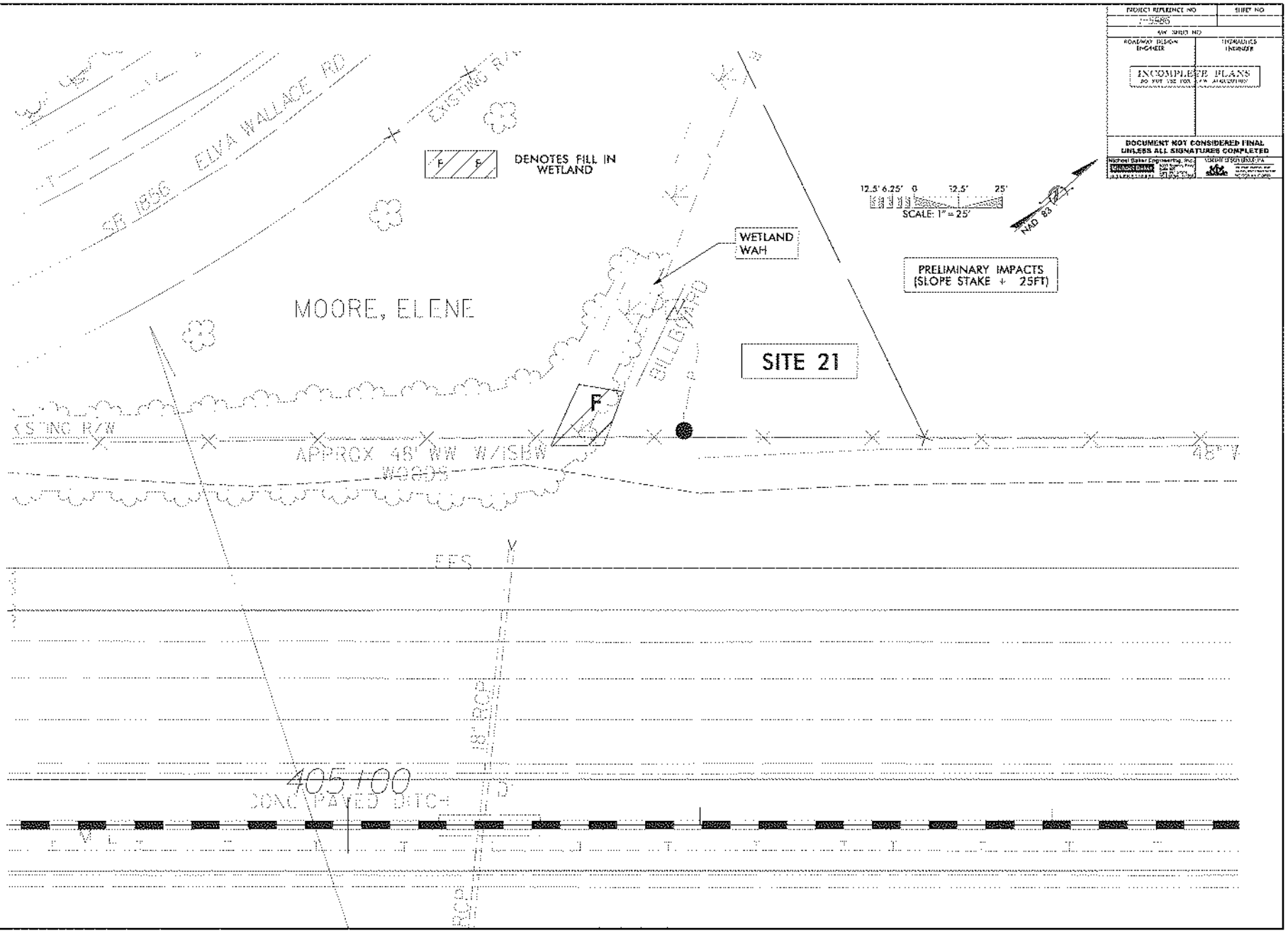
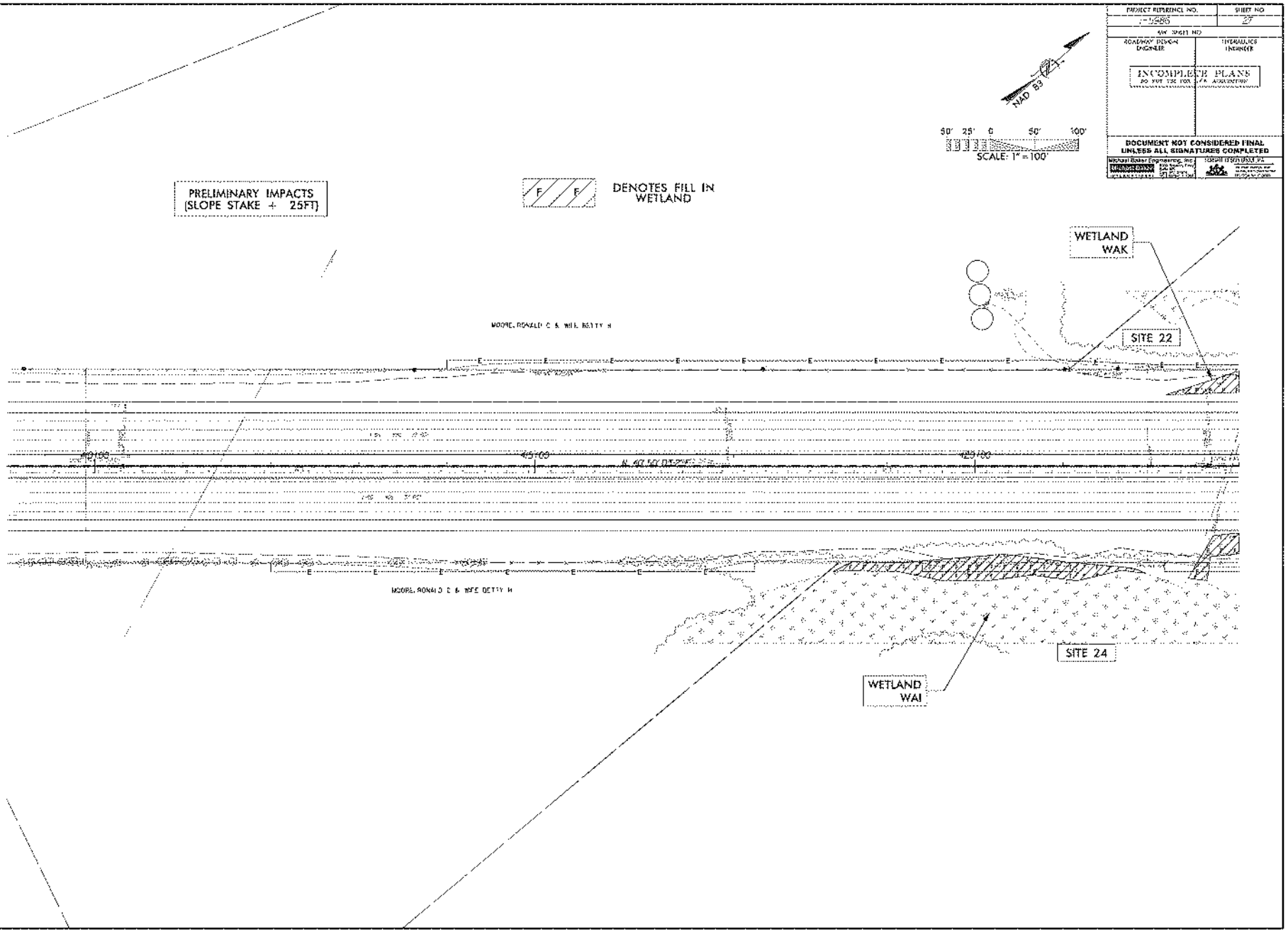
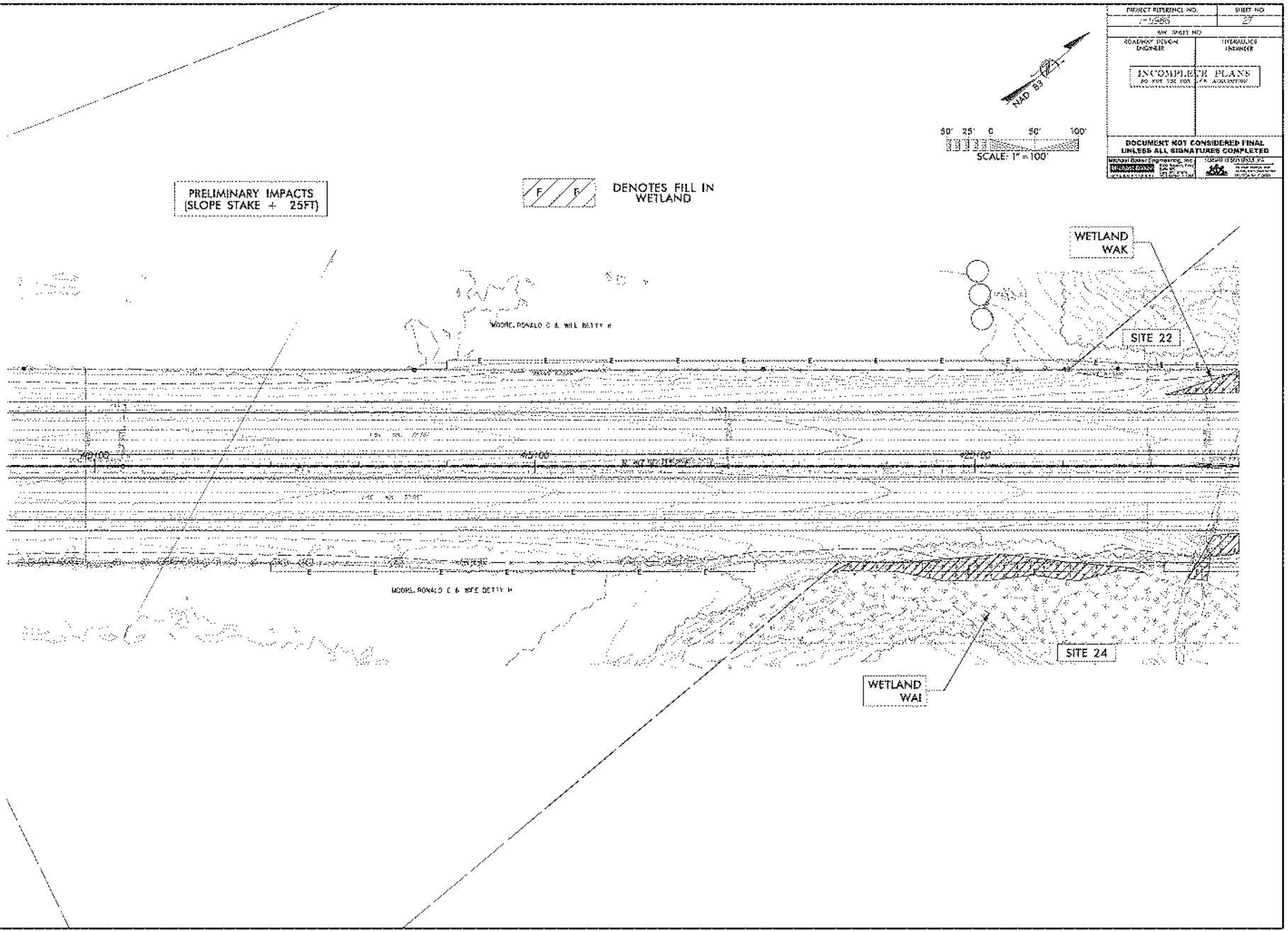
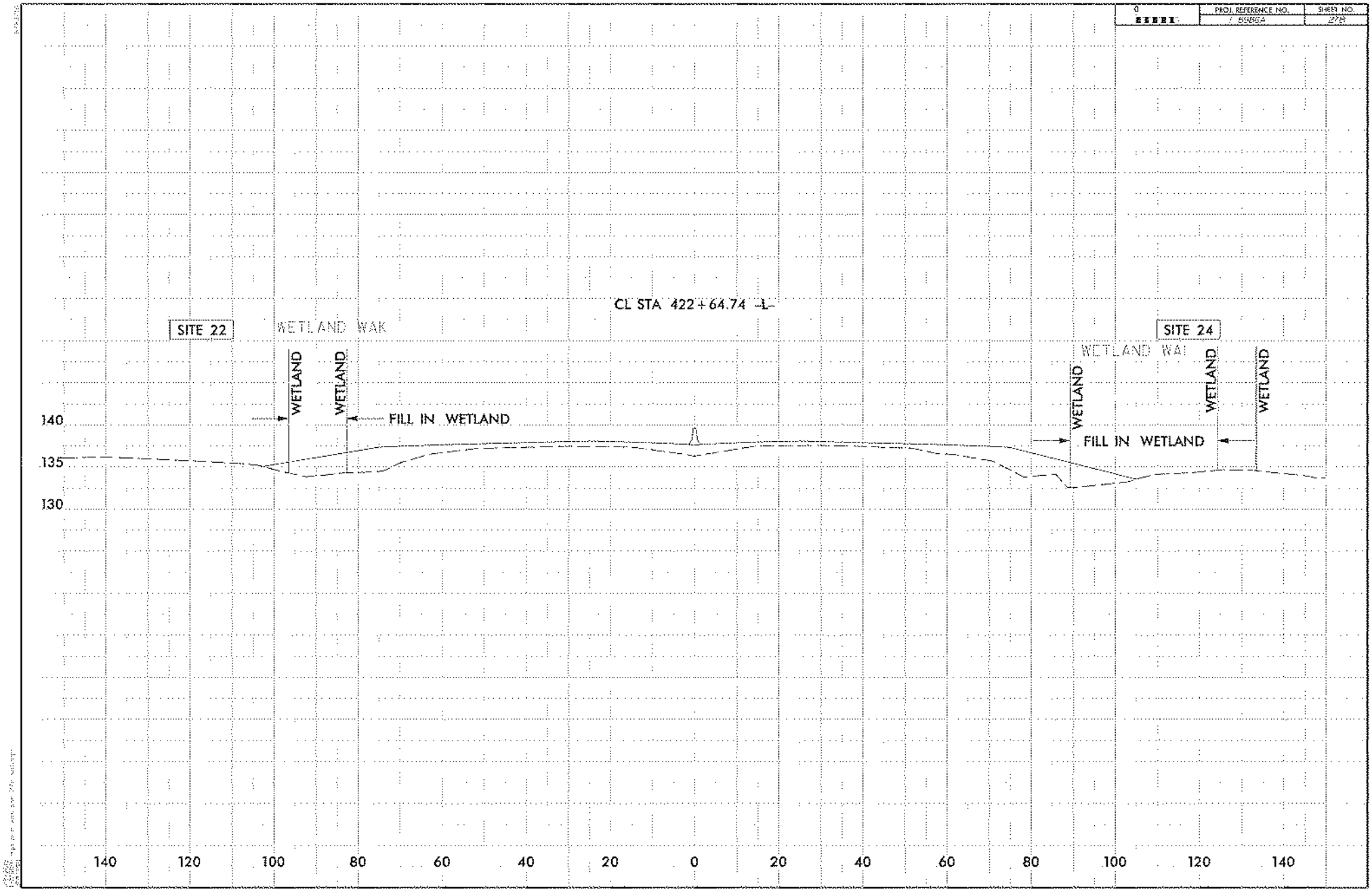

PROJECT REFERENCE NO.
SHEET NO.
26
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
NAD 83
50' 25' 0 50' 100'
SCALE: 1" = 100'
SEE 41 OF 94
WETLAND WAM
SITE 21
MOORE, CLENE
MOORE, RONALD C & WIFE
BETHEA SR, ROBERT E & WIFE HENRIETTA C
CARR, BILLY R & WIFE TRONNELL CARR
CORNETT PROPERTIES LLC
DENOTES FILL IN WETLAND
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)


PROJECT REFERENCE NO.
SHEET NO.
26
W/ SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
NAD 83
MOORE, RONALD C & WIFE
50' 25' 0 50' 100'
SCALE: 1" = 100'
SEE 41 OF 94
WETLAND WAH
SITE 21
MOORE, ELENE
BETHEA SR, ROBERT C & WIFE HENRIETTA C
CARL, BILLY V & WIFE VERNNEIL CARL
CORNETT PROPERTIES LLC
DENOTES FILL IN WETLAND
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)


PROJECT REFERENCE NO.
SHEET NO.
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
DENOTES FILL IN WETLAND
12.5' 6.25' 0 12.5' 25'
SCALE: 1" = 25'
NAD 83
WETLAND WAH
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
MOORE, ELENE
SITE 21
SR 1856 ELVA WALLACE RD
EXISTING R/W
APPROX 48" NW W/ISBW
WOODS
EES
405+00
CONC PAVED DITCH


PRELIMINARY IMPACTS
(SLOPE STAKE + 25FT)
DENOTES FILL IN WETLAND
NAD 83
50' 25' 0 50' 100'
SCALE: 1" = 100'
PROJECT REFERENCE NO.
SHEET NO.
27
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
WETLAND WAK
SITE 22
MOORE, RONALD C & WIFE BETTY H
40+00
45+00
50+00
SITE 24
WETLAND WAI


PRELIMINARY IMPACTS
(SLOPE STAKE + 25FT)
DENOTES FILL IN WETLAND
NAD 83
50' 25' 0 50' 100'
SCALE: 1" = 100'
PROJECT REFERENCE NO.
SHEET NO.
27
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
WETLAND WAK
SITE 22
SITE 24
WETLAND WAI
MOORE, RONALD C & WIFE BETTY H
MOORE, RONALD C & WIFE BETTY H
40+00
45+00
50+00


PROJ. REFERENCE NO.
SHEET NO.
SITE 22
WETLAND WAK
WETLAND
WETLAND
FILL IN WETLAND
CL STA 422+64.74 -L-
SITE 24
WETLAND WAI
WETLAND
WETLAND
WETLAND
FILL IN WETLAND
140
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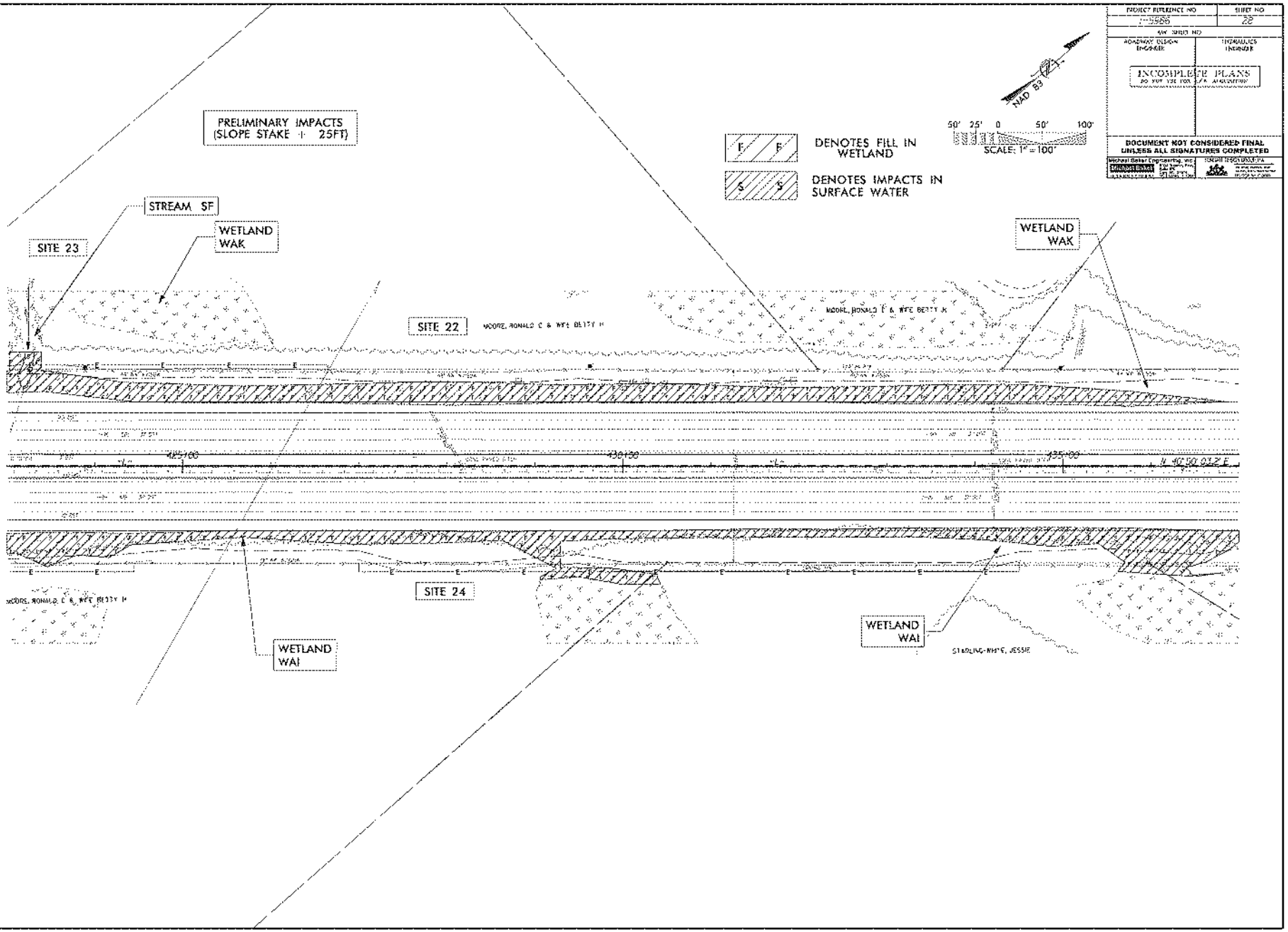
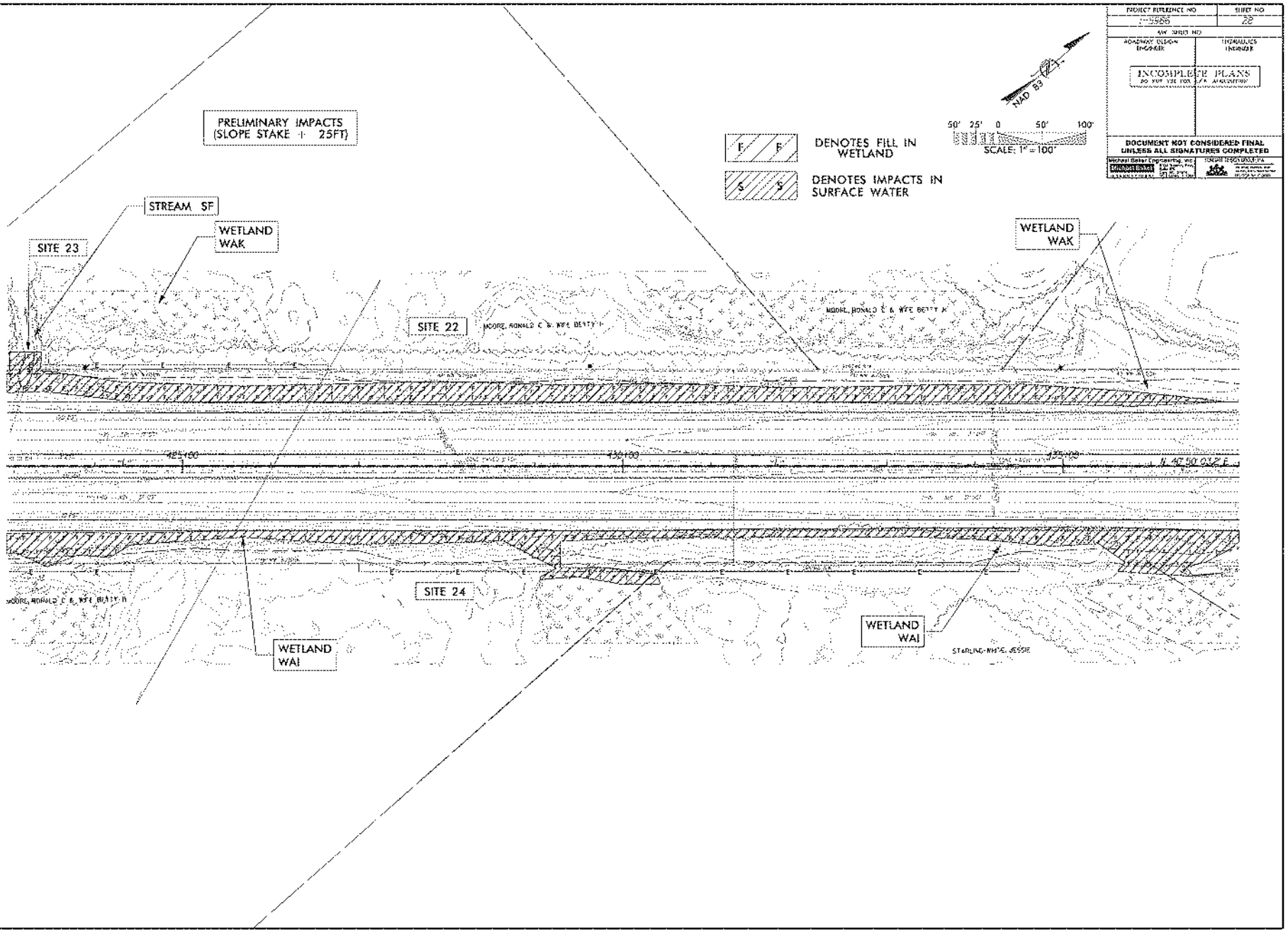
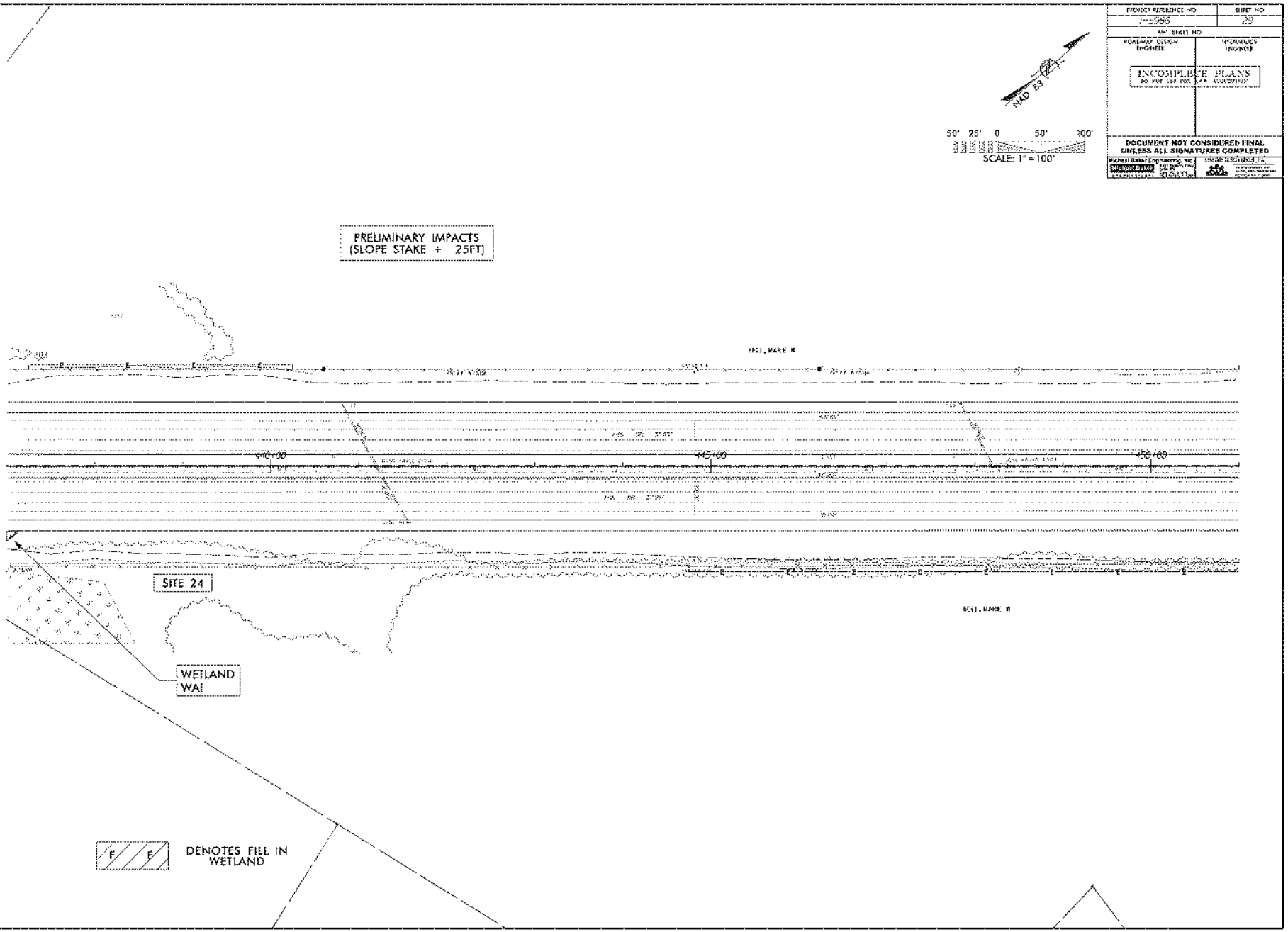
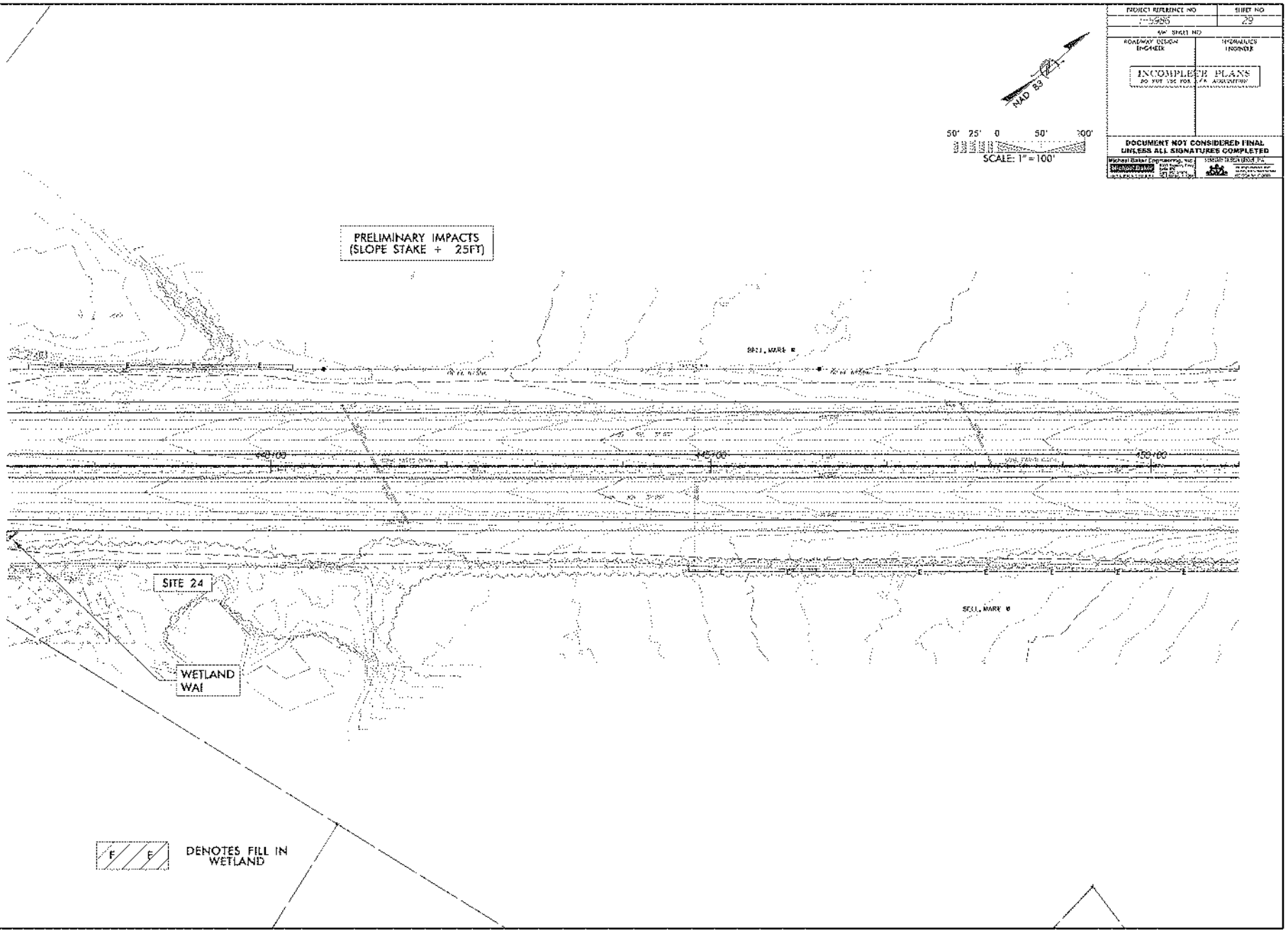
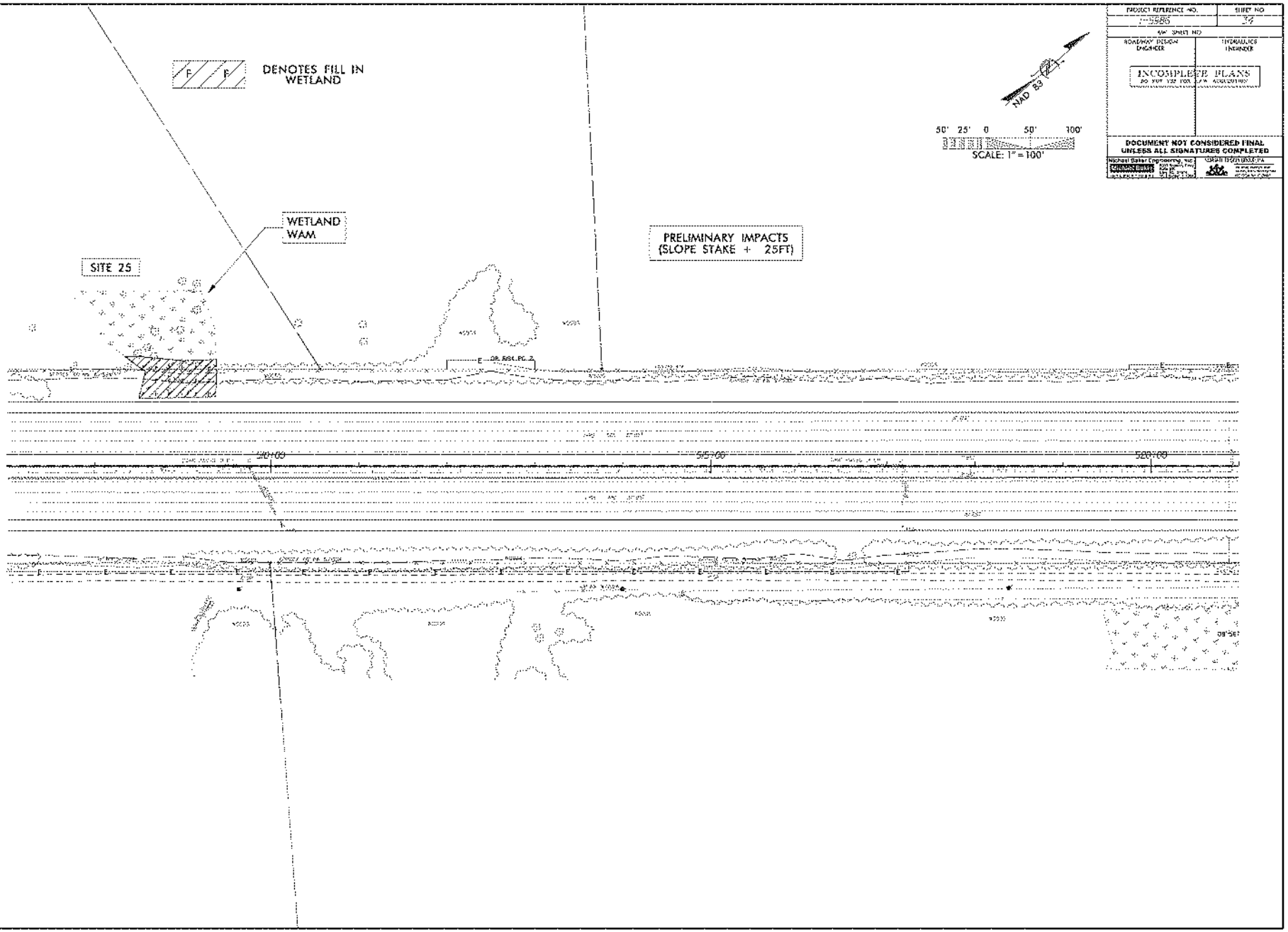
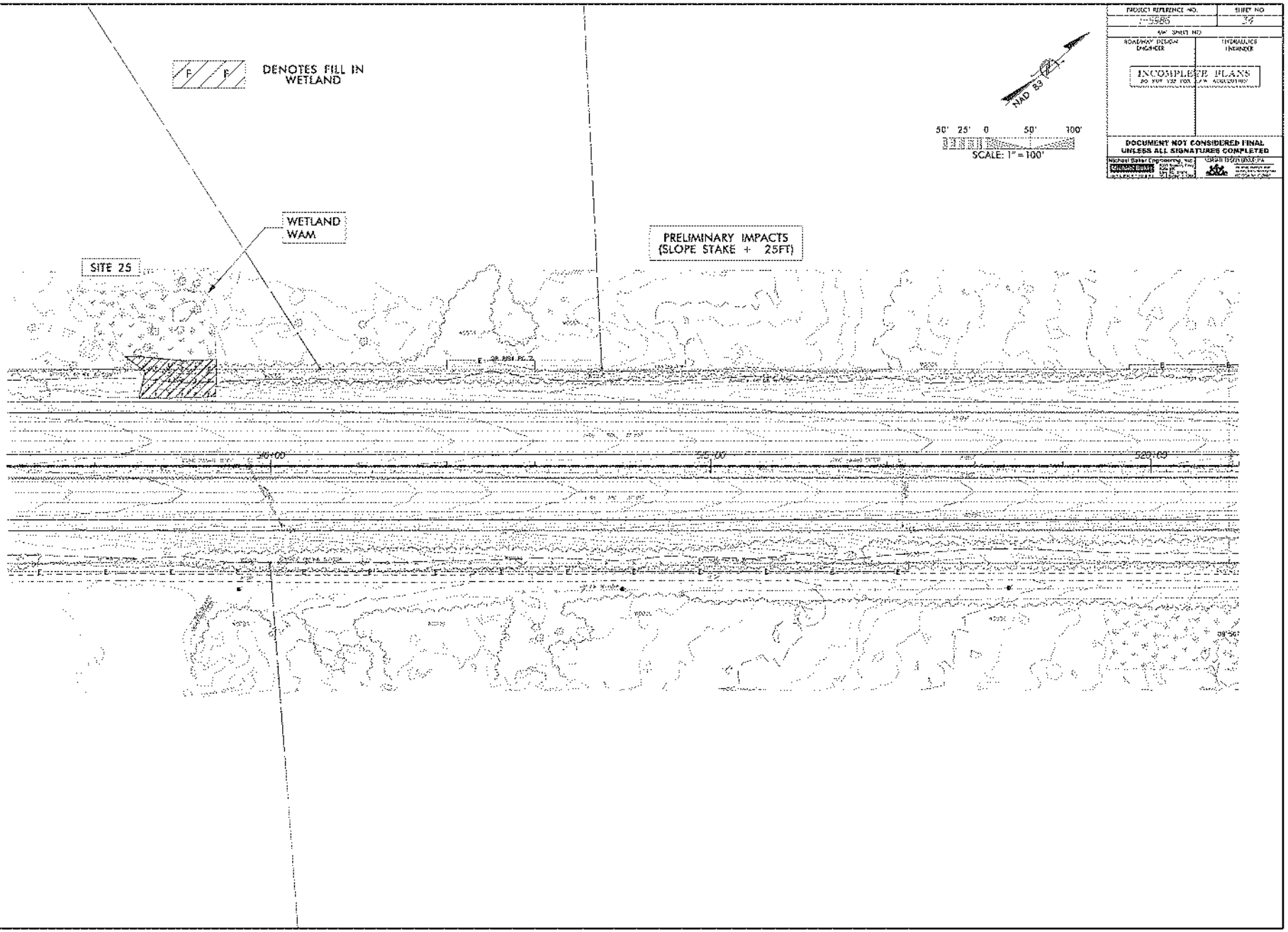

PRELIMINARY IMPACTS
(SLOPE STAKE + 25FT)
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
NAD 83
50' 25' 0 50' 100'
SCALE: 1" = 100'
PROJECT REFERENCE NO
SHEET NO
28
INCOMPLETE PLANS
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED
STREAM SF
WETLAND WAK
SITE 23
SITE 22
MOORE, RONALD C & WFE BETTY H
WETLAND WAK
SITE 24
WETLAND WAI
WETLAND WAI
STARLING-WHITE, JESSIE

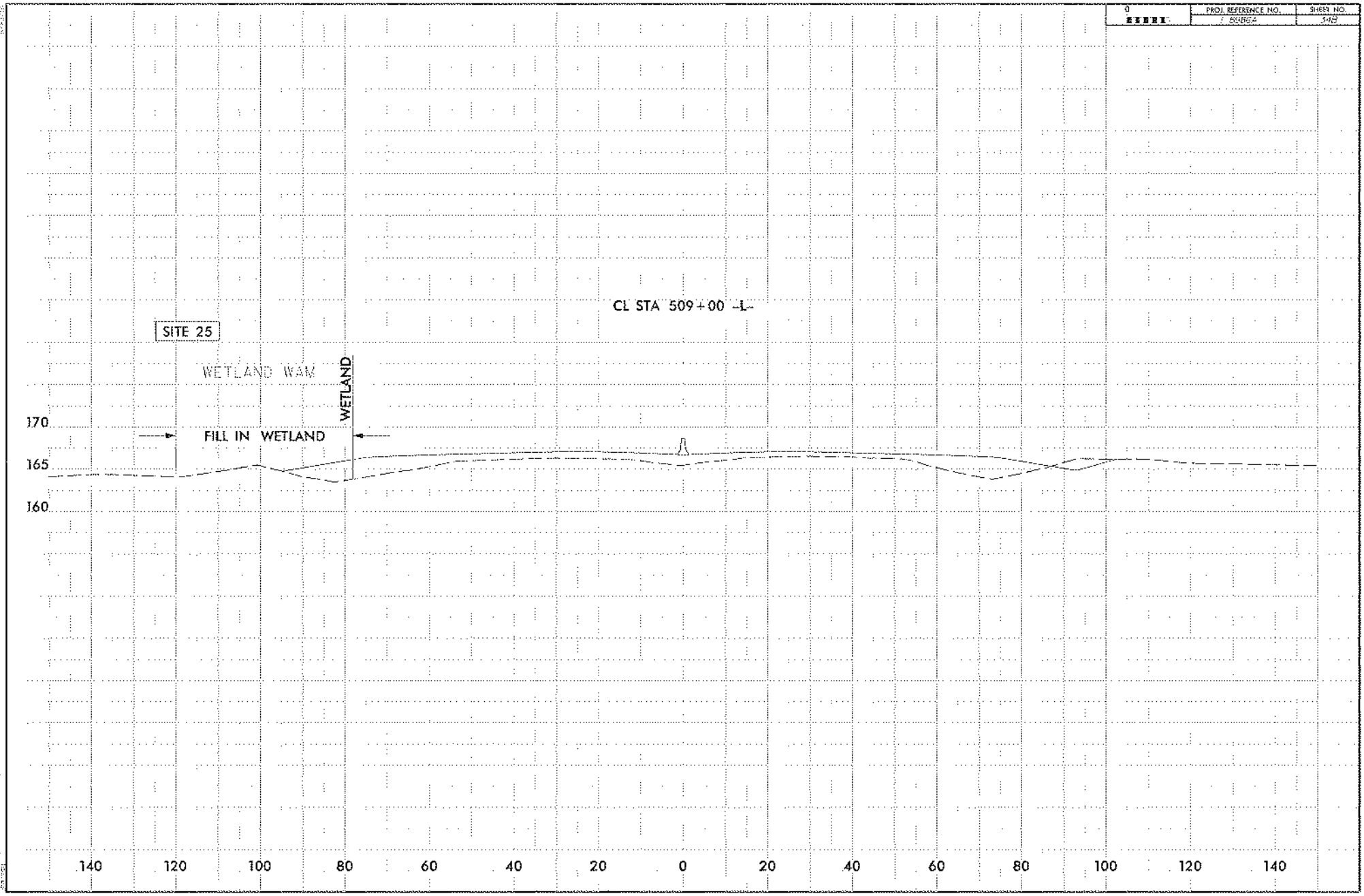

PRELIMINARY IMPACTS
(SLOPE STAKE + 25FT)
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
NAD 83
50' 25' 0 50' 100'
SCALE: 1" = 100'
PROJECT REFERENCE NO
SHEET NO
28
R/W SHEET NO
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
STREAM SF
WETLAND WAK
SITE 23
SITE 22
MOORE, RONALD C & WFE BETTY H
WETLAND WAK
MOORE, RONALD C & WFE BETTY H
425+00
430+00
435+00
N 40°50'03"E
SITE 24
MOORE, RONALD C & WFE BETTY H
WETLAND WAI
WETLAND WAI
STARLING-WHITE, JESSIE


PRELIMINARY IMPACTS
(SLOPE STAKE + 25FT)
SITE 24
WETLAND
WA1
DENOTES FILL IN
WETLAND
F
F
NAD 83
50' 25' 0 50' 100'
SCALE: 1" = 100'
PROJECT REFERENCE NO.
SHEET NO.
29
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION OR RIGHT OF WAY ACQUISITION
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
STRAUSS-SEBESTA (PA) LLC


PRELIMINARY IMPACTS
(SLOPE STAKE + 25FT)
SITE 24
WETLAND
WA1
DENOTES FILL IN
WETLAND
NAD 83
50' 25' 0 50' 100'
SCALE: 1" = 100'
PROJECT REFERENCE NO.
SHEET NO.
29
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
STEWART-TRESCA-DUDA, P.A.


DENOTES FILL IN WETLAND
WETLAND WAM
SITE 25
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
NAD 83
50' 25' 0 50' 100'
SCALE: 1" = 100'
510+00
515+00
520+00
PROJECT REFERENCE NO.
SHEET NO.
34
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
DETAIL ROADWAY UNIT


DENOTES FILL IN WETLAND
WETLAND WAM
SITE 25
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
NAD 83
50' 25' 0 50' 100'
SCALE: 1" = 100'
PROJECT REFERENCE NO.
SHEET NO.
34
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
DETAIL DESIGN UNIT
510+00
515+00
520+00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PROJ. REFERENCE NO.
SHEET NO.
CL STA 509+00 -L-
SITE 25
WETLAND WAW
WETLAND
FILL IN WETLAND
170
165
160
140
120
100
80
60
40
20
0
20
40
60
80
100
120
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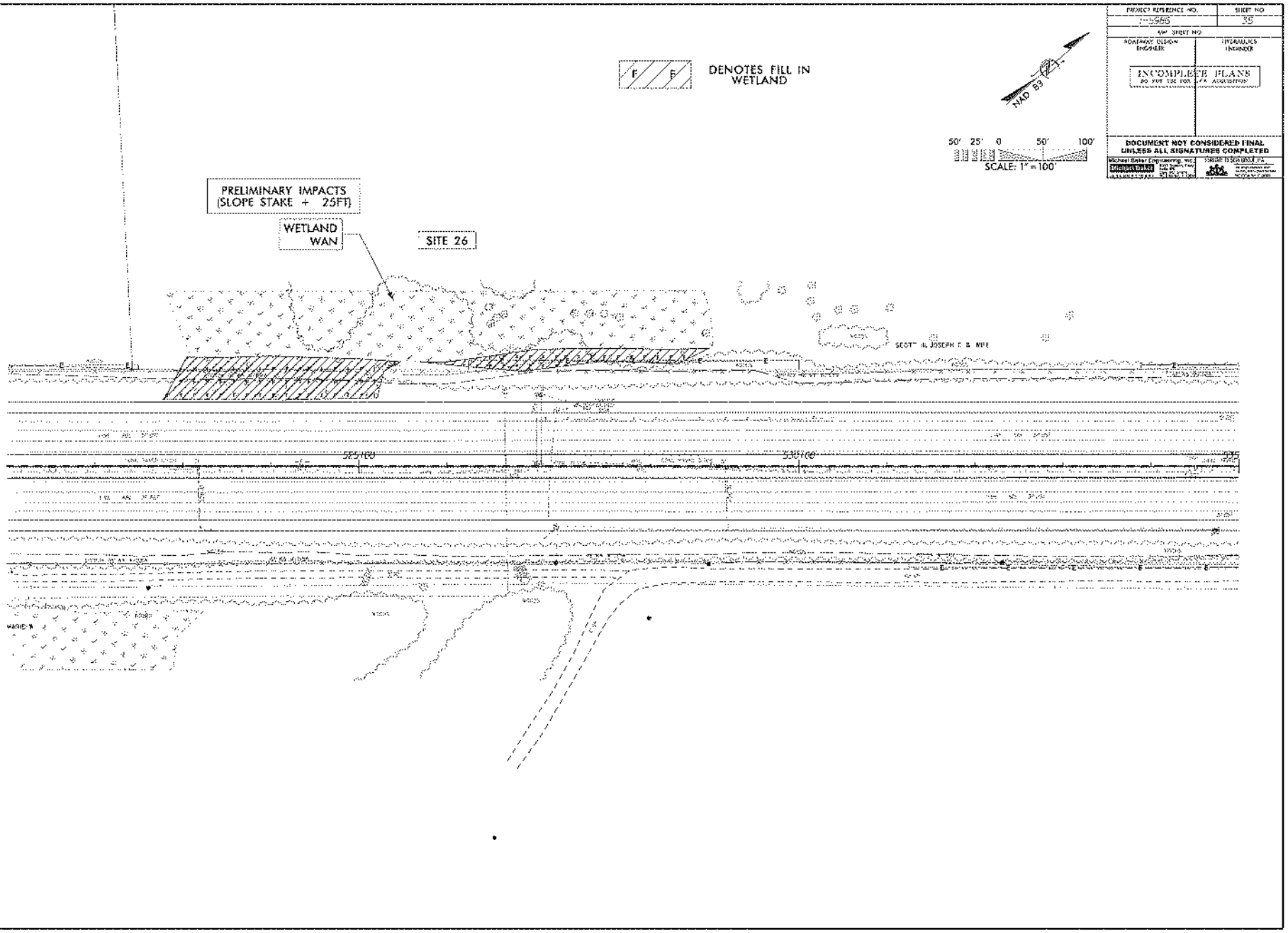
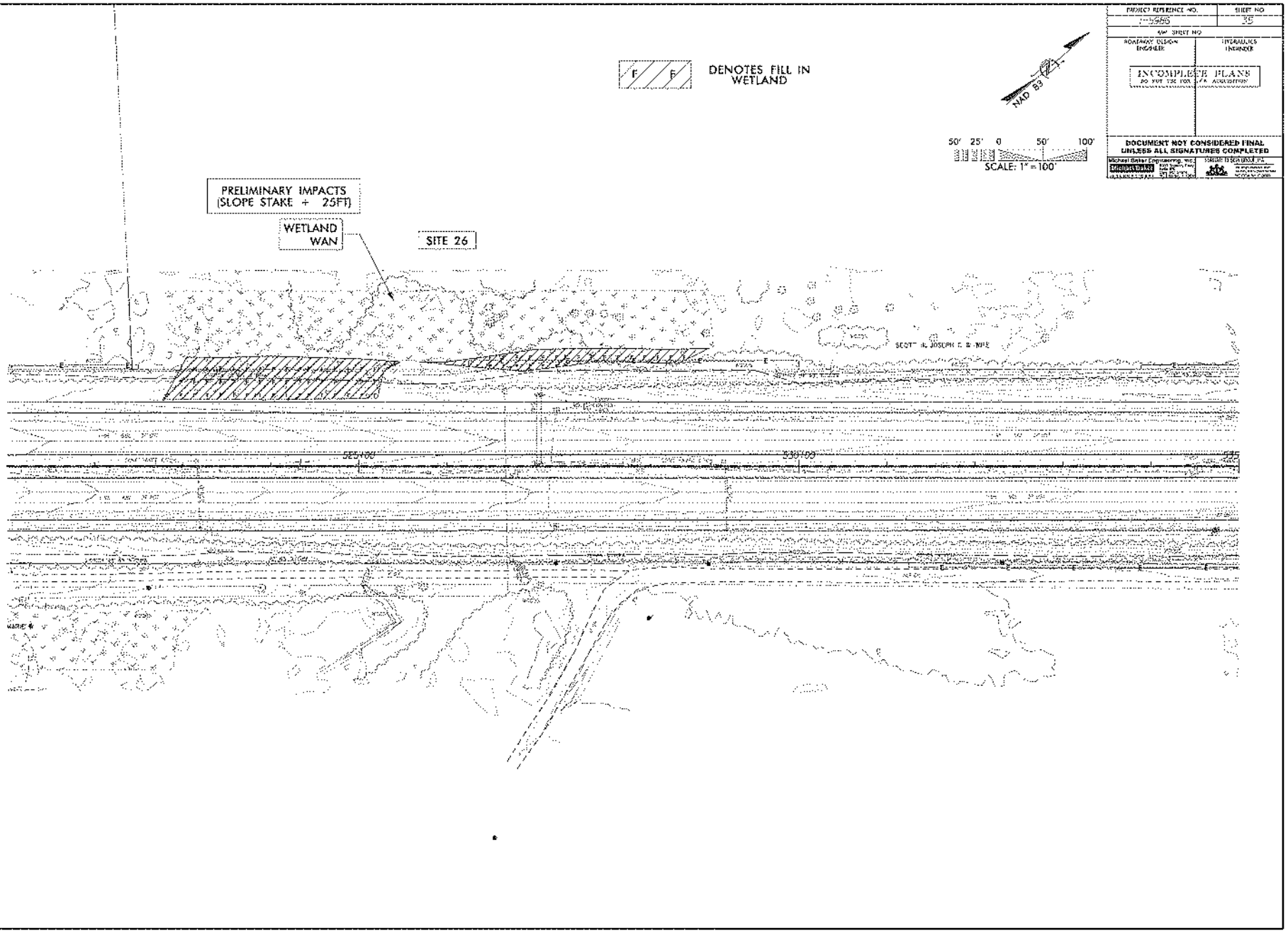
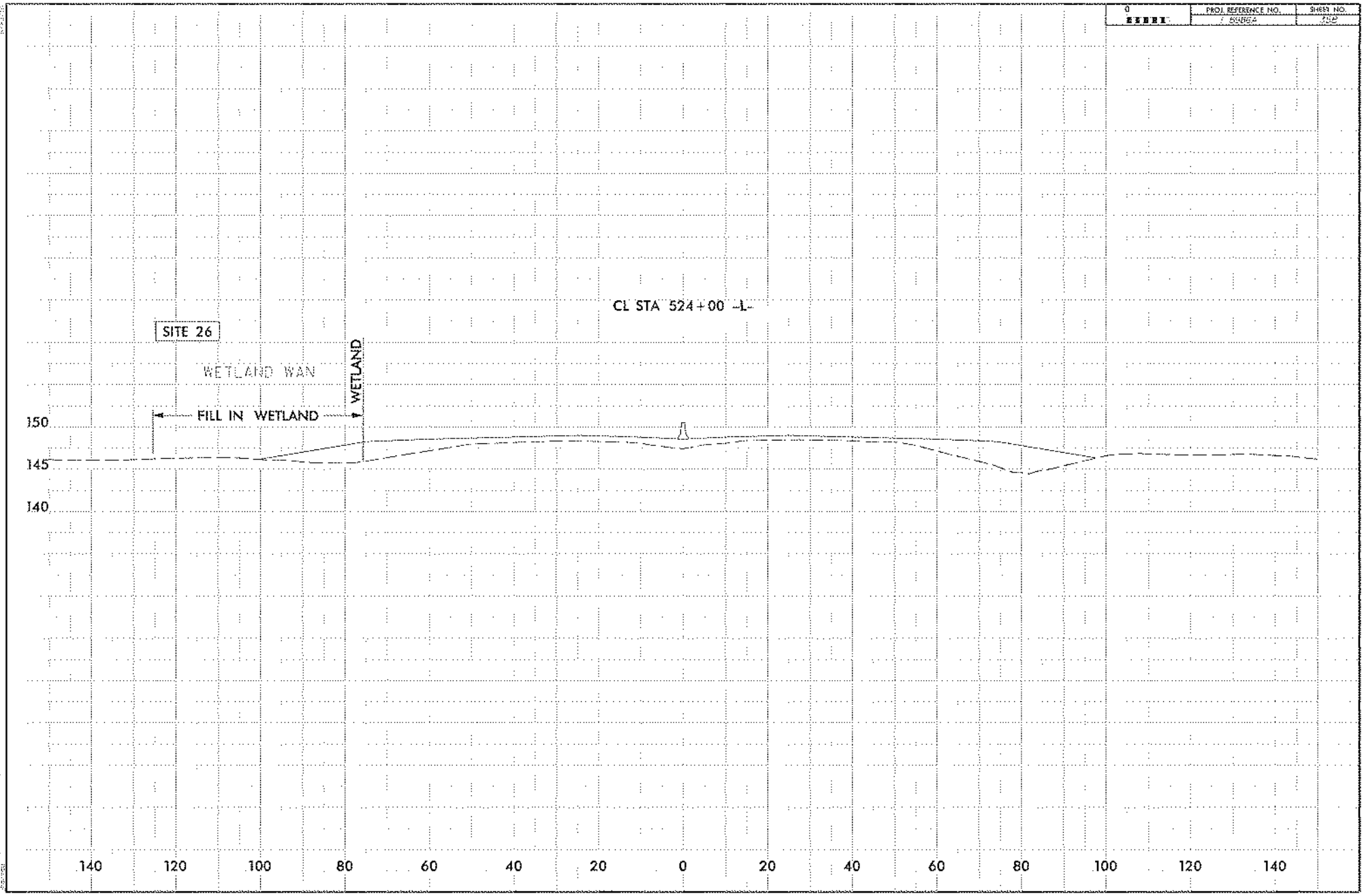

DENOTES FILL IN WETLAND
NAD 83
50' 25' 0 50' 100'
SCALE: 1" = 100'
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
WETLAND WAN
SITE 26
SCOTT & JOSEPH E & WIFE
565+00
530+00
PROJECT REFERENCE NO.
SHEET NO.
35
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
SEALED TO SCALE ONLY


DENOTES FILL IN WETLAND
NAD 83
50' 25' 0 50' 100'
SCALE: 1" = 100'
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
WETLAND WAN
SITE 26
525+00
530+00
PROJECT REFERENCE NO.
SHEET NO.
35
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR RIGHT OF WAY ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
SEAL OF THE SEA GRANT, LTD.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SHEET NO.
CL STA 524+00 -L-
SITE 26
WETLAND WAN
WETLAND
FILL IN WETLAND
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140
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120
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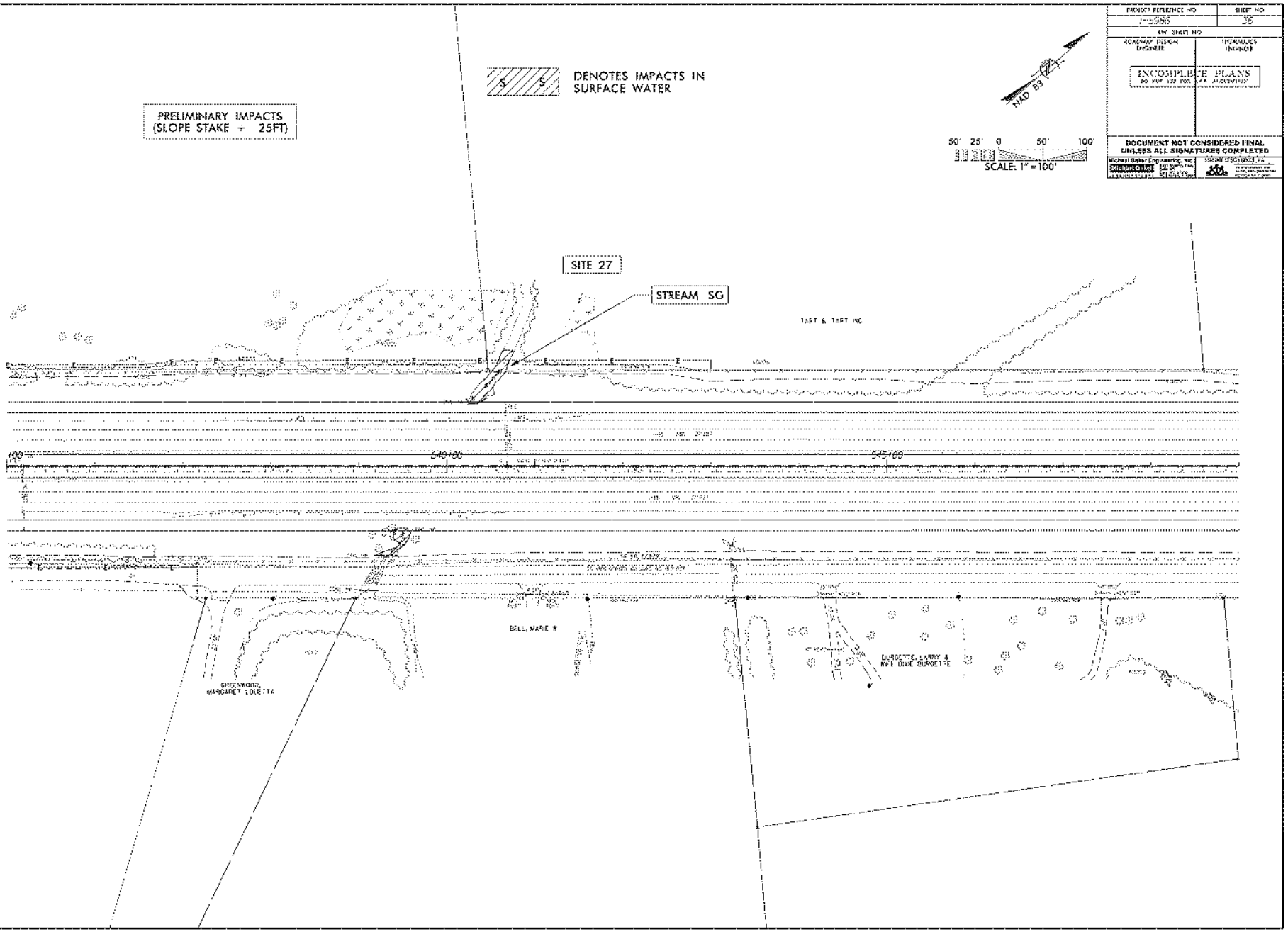
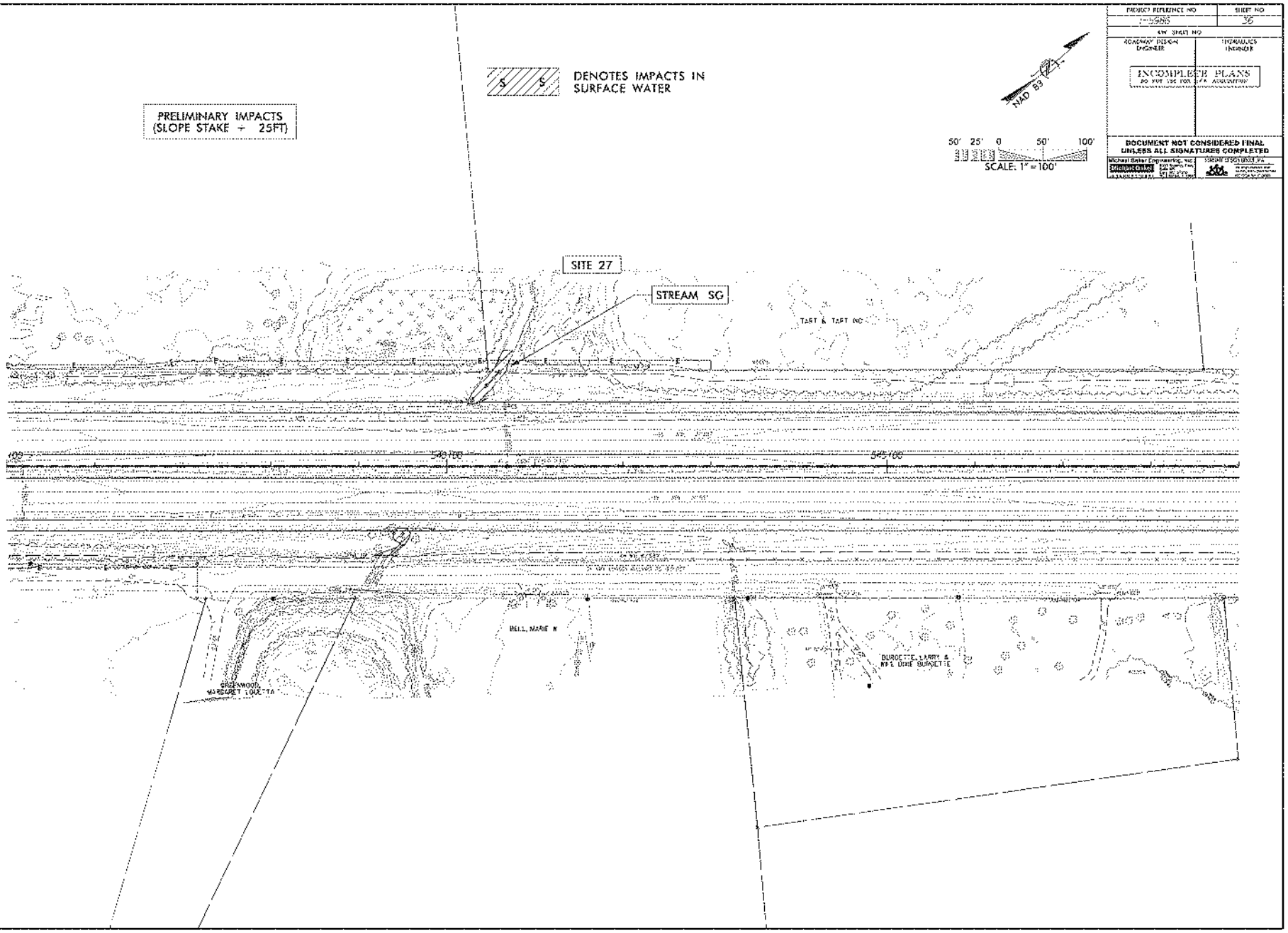
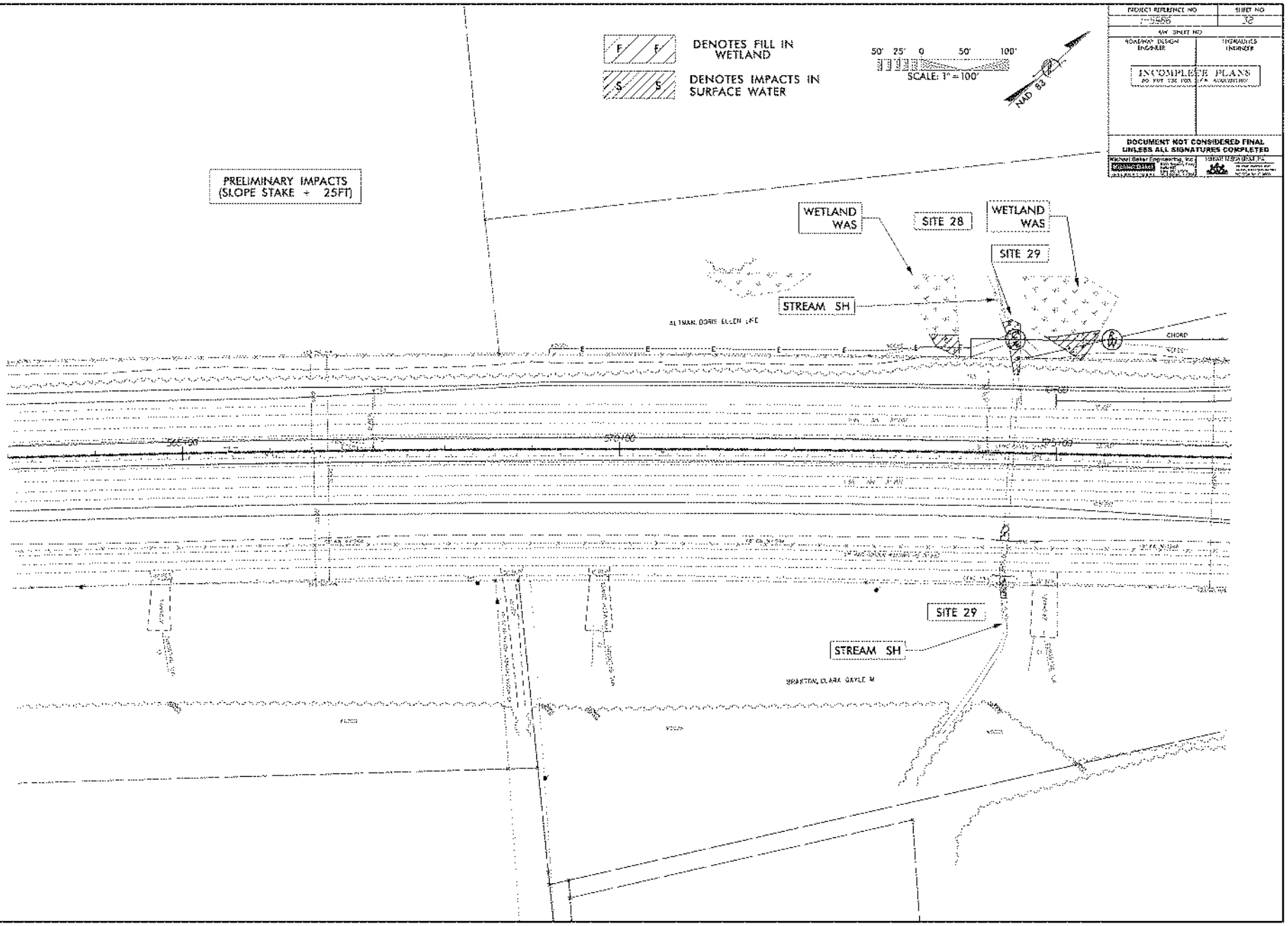
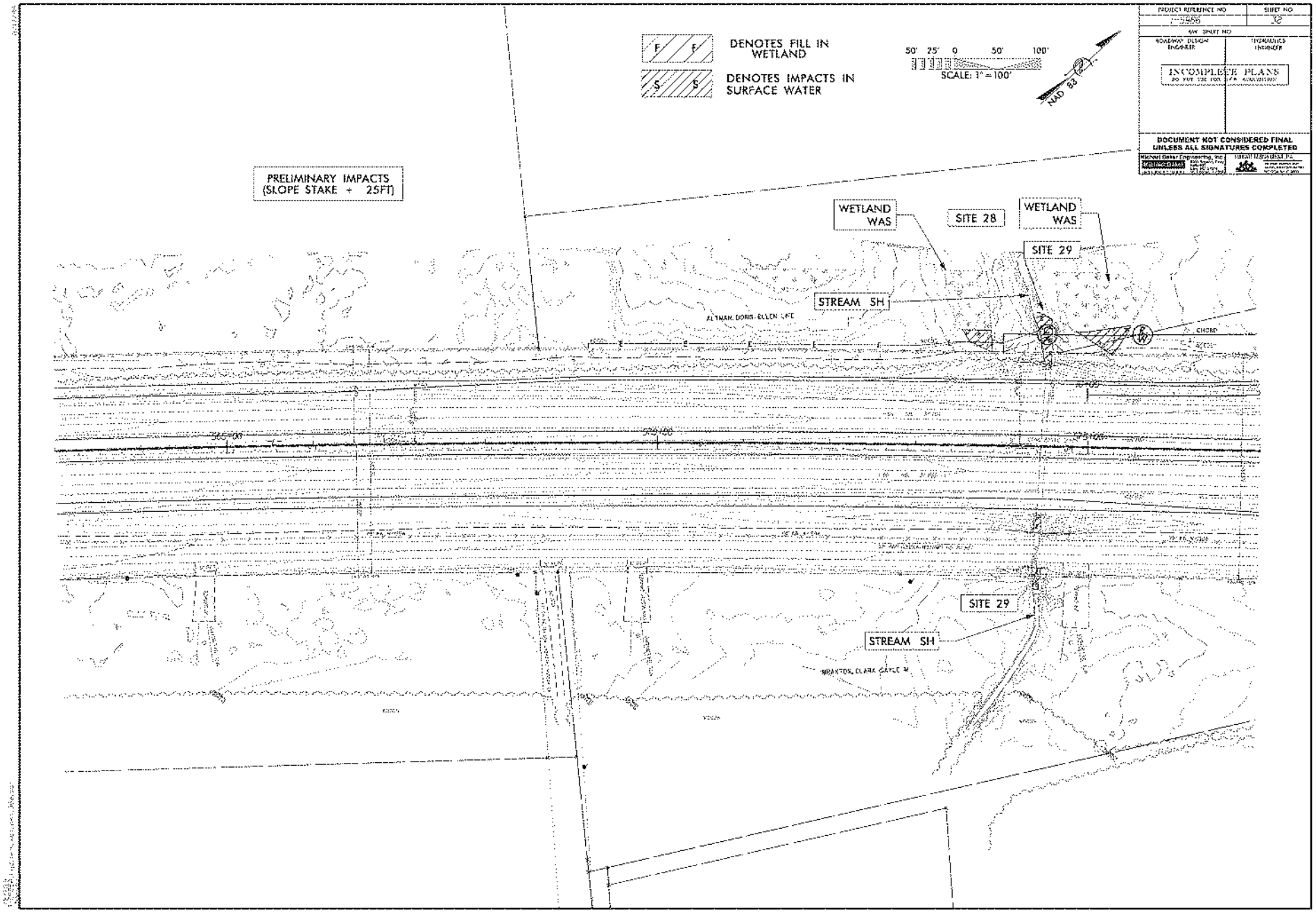
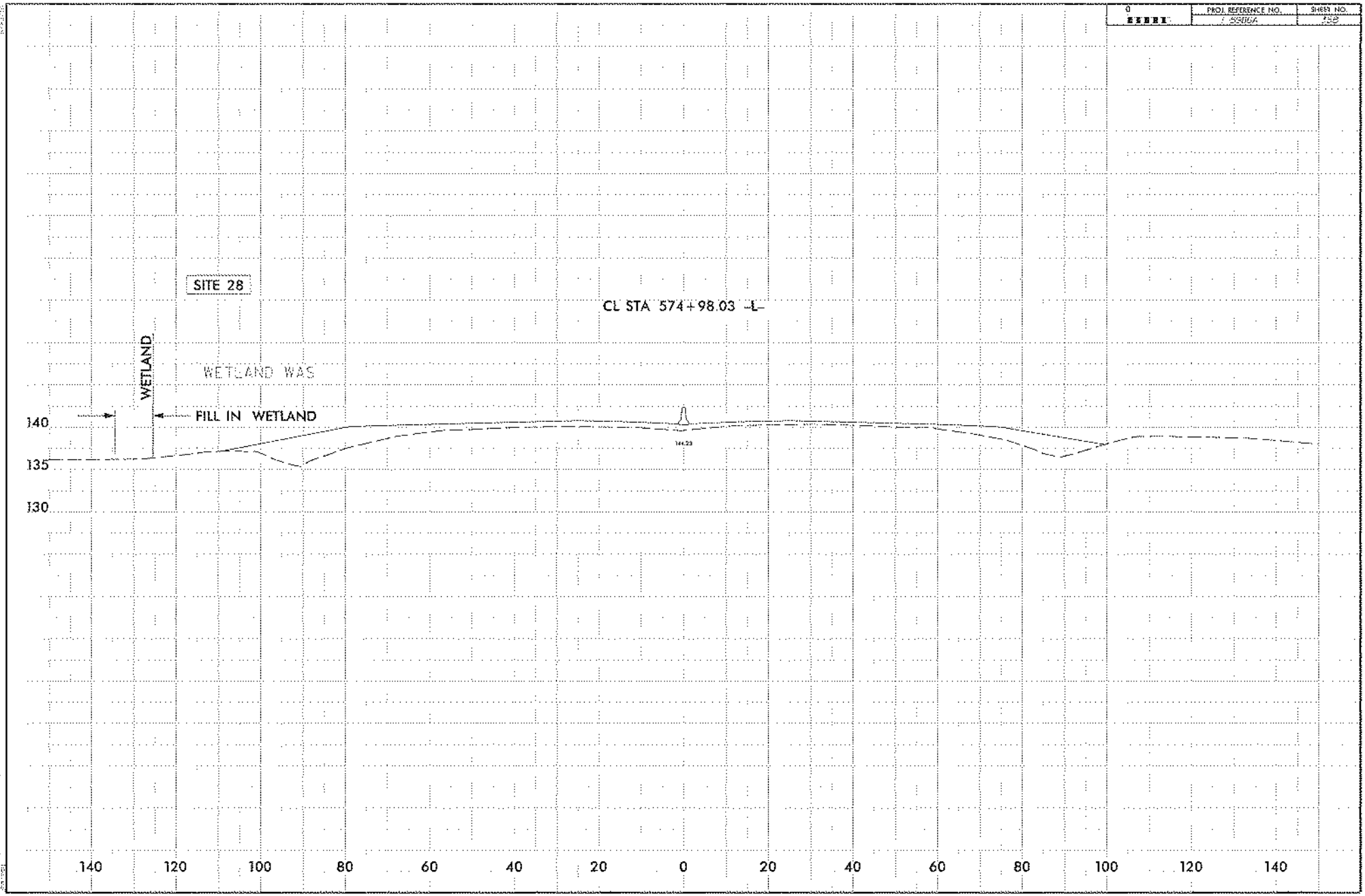

PRELIMINARY IMPACTS
(SLOPE STAKE + 25FT)
DENOTES IMPACTS IN
SURFACE WATER
NAD 83
50' 25' 0 50' 100'
SCALE: 1" = 100'
PROJECT REFERENCE NO.
SHEET NO.
36
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
Draft Date
SITE 27
STREAM SG
TEST S. TEST INC
540+00
545+00
BELL, MARIE W
GREENWOOD,
MARGARET LOUISTA
DUROCHE, LARRY A
AND DIRK DUROCHE


PRELIMINARY IMPACTS
(SLOPE STAKE + 25FT)
DENOTES IMPACTS IN
SURFACE WATER
NAD 83
50' 25' 0 50' 100'
SCALE: 1" = 100'
PROJECT REFERENCE NO
SHEET NO
36
RW SHEET NO
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR RW ACQUISITION
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
Digitally Signed
SITE 27
STREAM SG
TAFT & TAFT INC
540+00
545+00
BELL, MARIE K
BURDETTE, LARRY &
WIFE DIXIE BURDETTE
GREENWOOD,
MARGARET LOUETTA


DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
50' 25' 0 50' 100'
SCALE: 1" = 100'
NAD 83
PROJECT REFERENCE NO.
SHEET NO.
32
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION OR RIGHT OF WAY ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
SIGNATURE DATE
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
WETLAND WAS
SITE 28
WETLAND WAS
SITE 29
STREAM SH
ALTMAN, DORIS ELLEN LIFE
CHORD
576+00
SITE 29
STREAM SH
BRANTON, CLARK GAYLE M


DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
50' 25' 0 50' 100'
SCALE: 1" = 100'
NAD 83
PROJECT REFERENCE NO.
SHEET NO.
32
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
WETLAND WAS
SITE 28
WETLAND WAS
SITE 29
STREAM SH
ALTMAN, DORIS-ELLEN LIFE
CHORD
SITE 29
STREAM SH
BRANTON, CLARK CAYLE M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PROJ. REFERENCE NO.
SHEET NO.
SITE 28
CL STA 574+98.03 -L-
WETLAND
WETLAND WAS
FILL IN WETLAND
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135
130
140
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80
100
120
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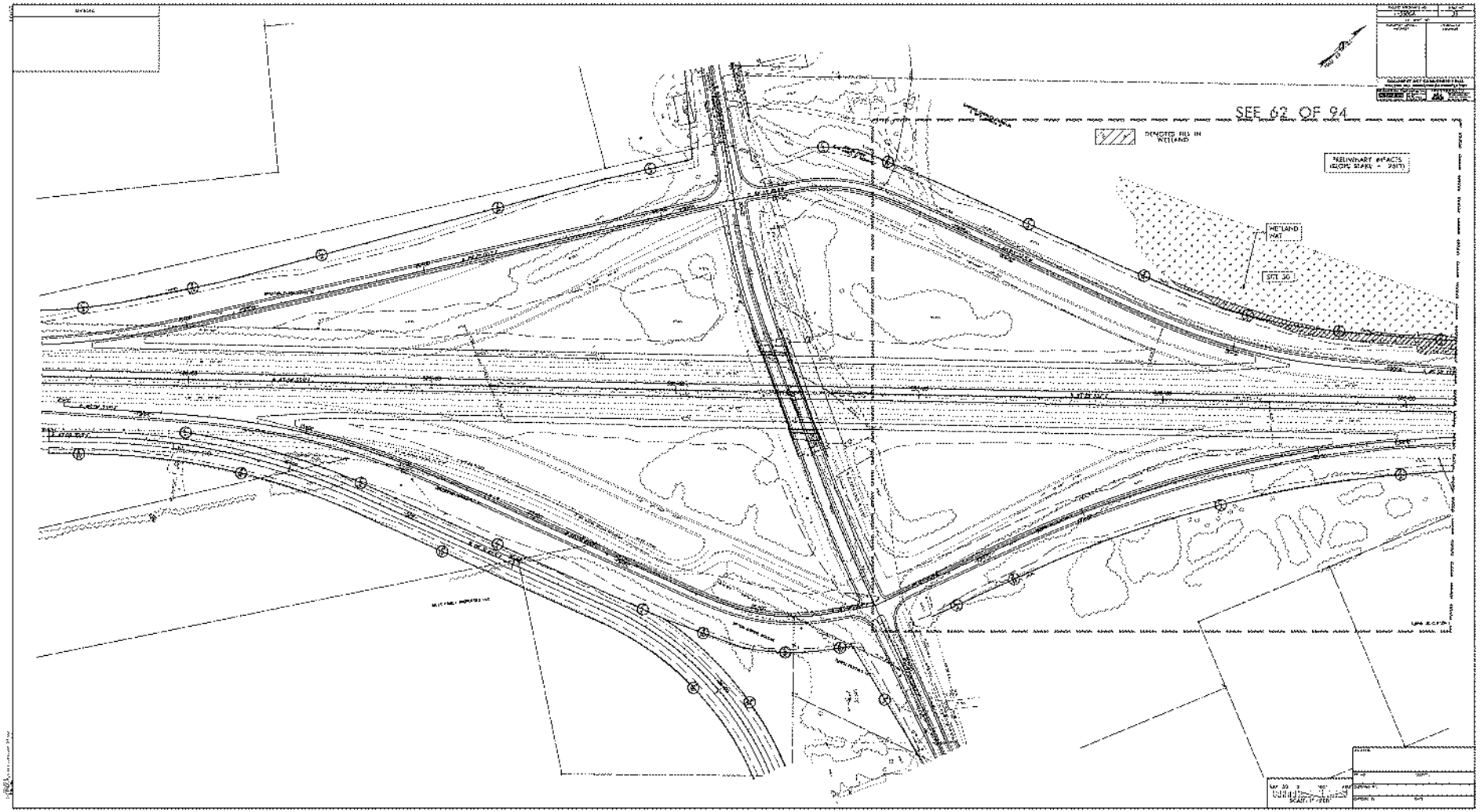
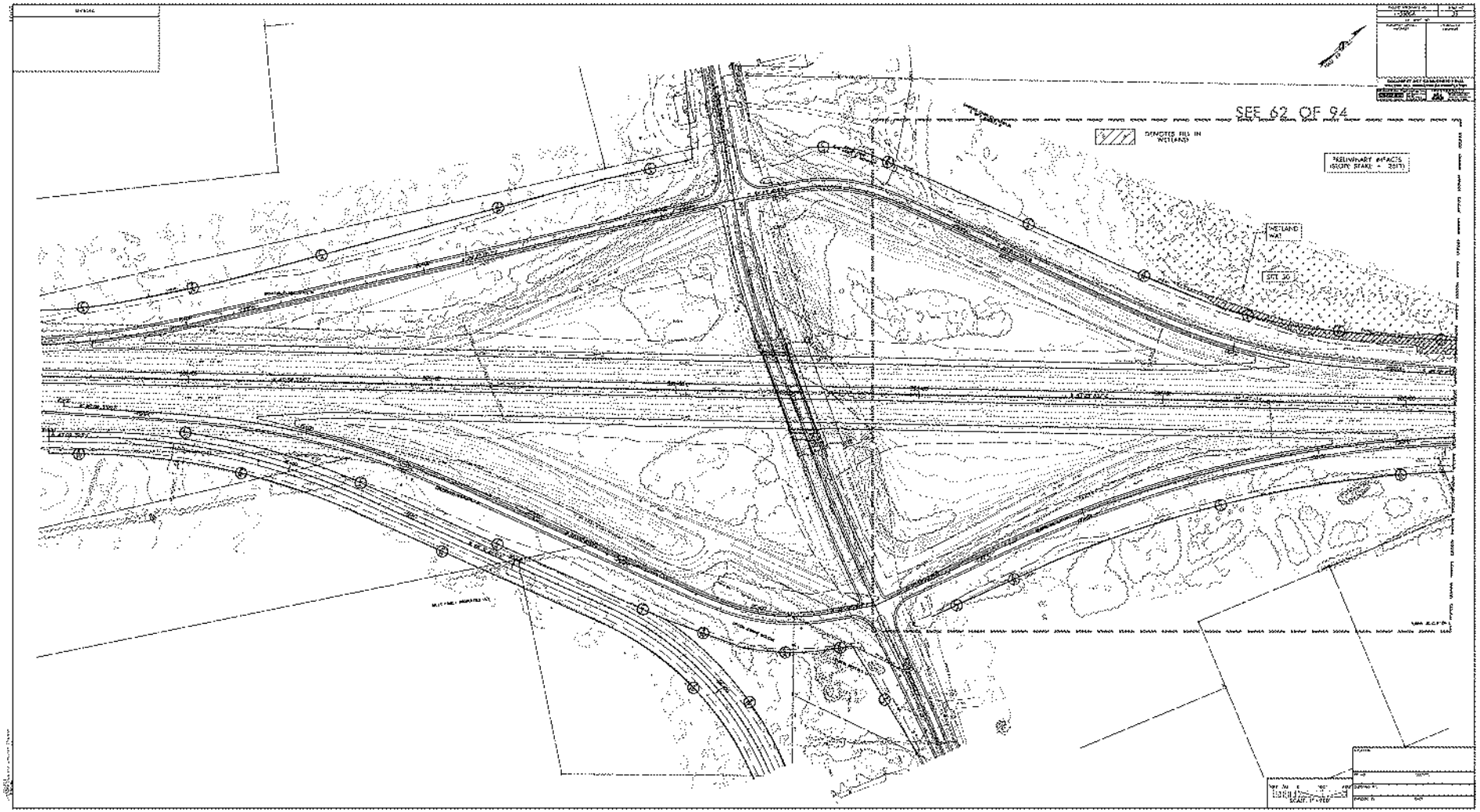
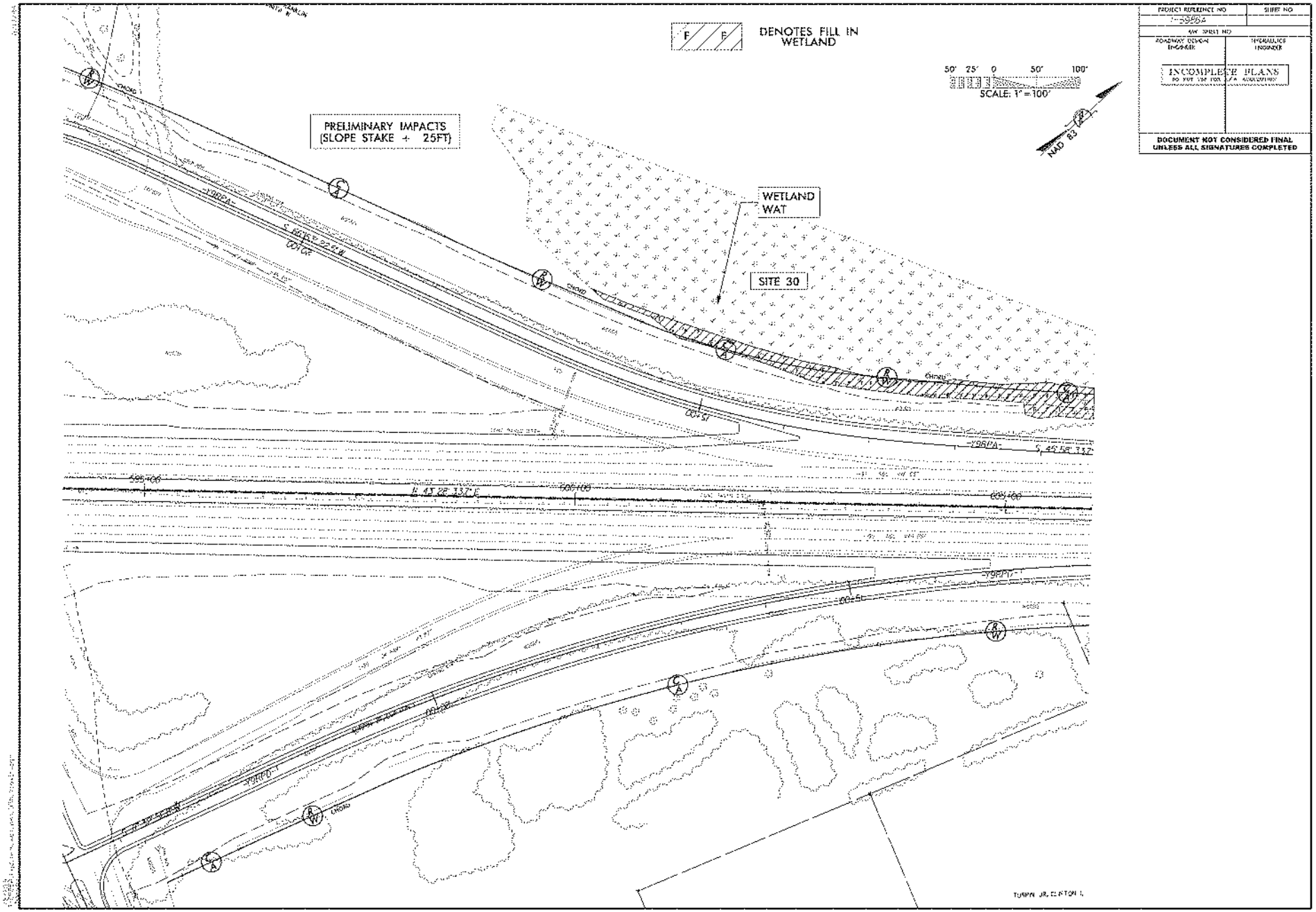
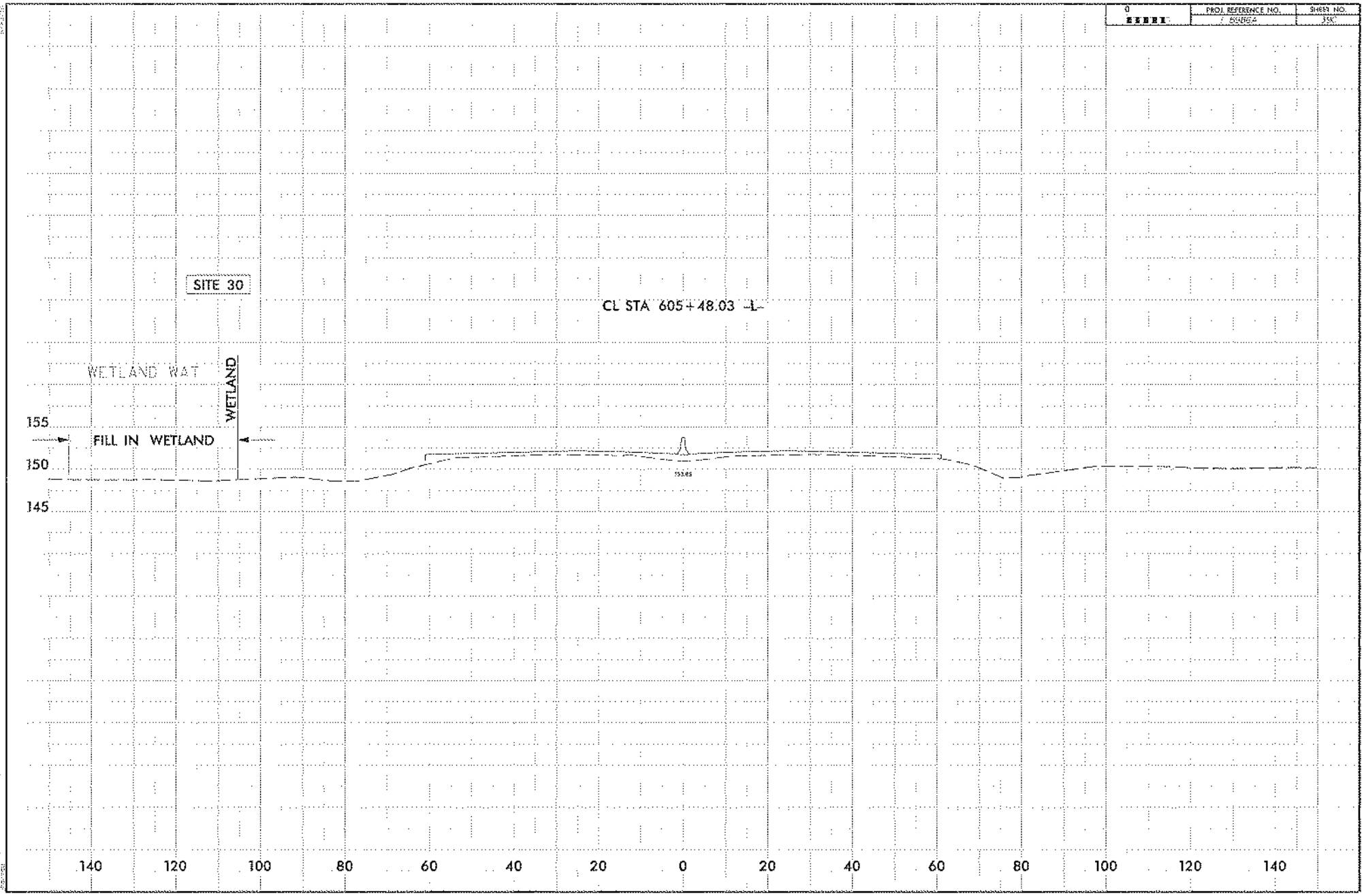

SEE 62 OF 94
DENOTES FILL IN WETLAND
PRELIMINARY IMPACTS (SCOPE STAGE - 2017)
WETLAND MAT
SFT. 30


SEE 62 OF 94
DENOTES FILL IN WETLAND
PRELIMINARY IMPACTS (SLOPE STAKE + 2017)
WETLAND MAT
STA 30


DENOTES FILL IN WETLAND
50' 25' 0 50' 100'
SCALE: 1" = 100'
NAD 83
PROJECT REFERENCE NO.
SHEET NO.
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
WETLAND WAT
SITE 30
CHORD
S 40°58' 22.5" W
60.00'
60.57'
S 45°58' 33.2"
595+00
L 43°22' 33.7" E
600+00
605+00
60.56'
TURPIN JR. CLINTON L.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PROJ. REFERENCE NO.
SHEET NO.
SITE 30
CL STA 605+48.03 -L-
WETLAND WAT
WETLAND
FILL IN WETLAND
155
150
145
140
120
100
80
60
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20
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60
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100
120
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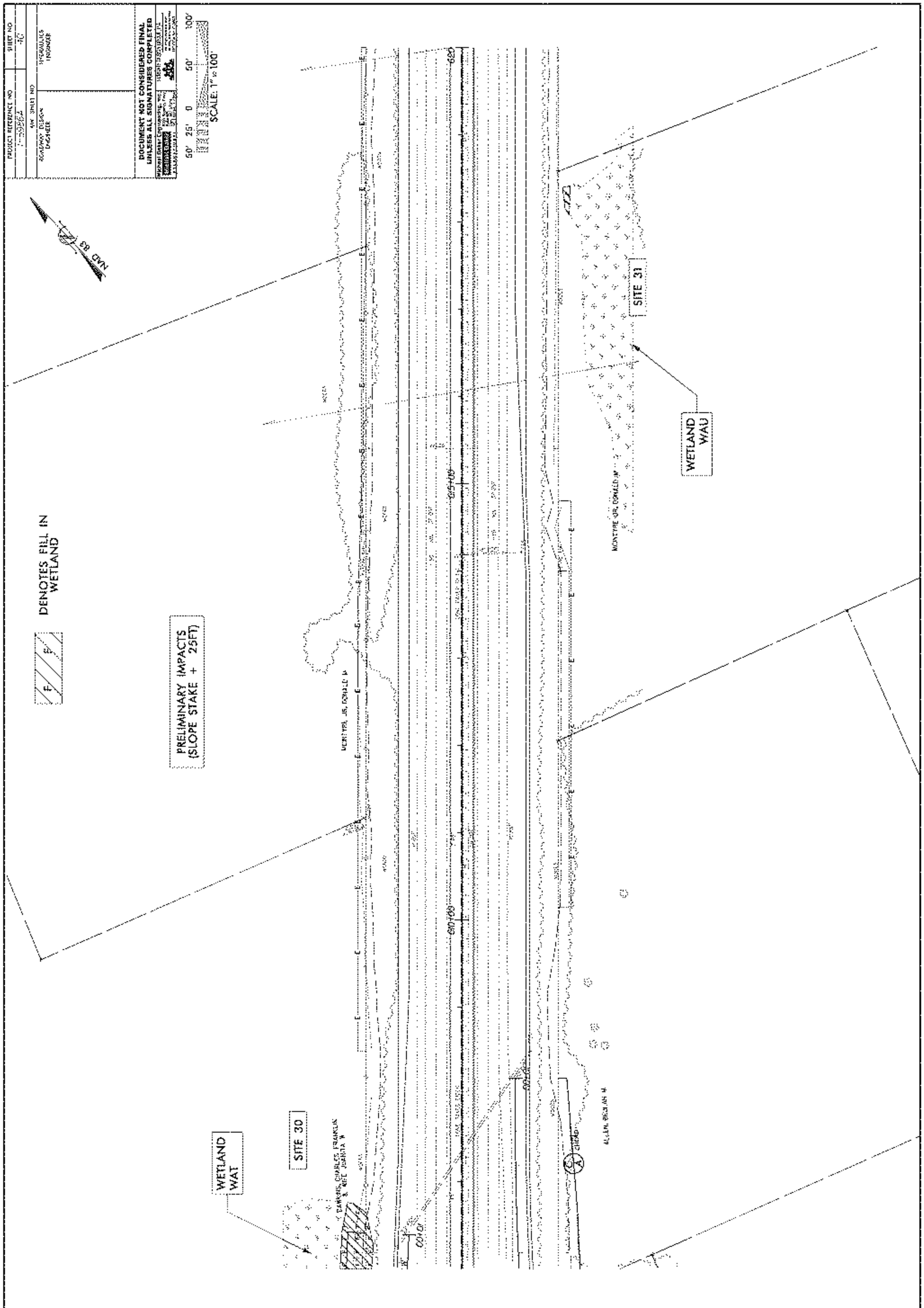
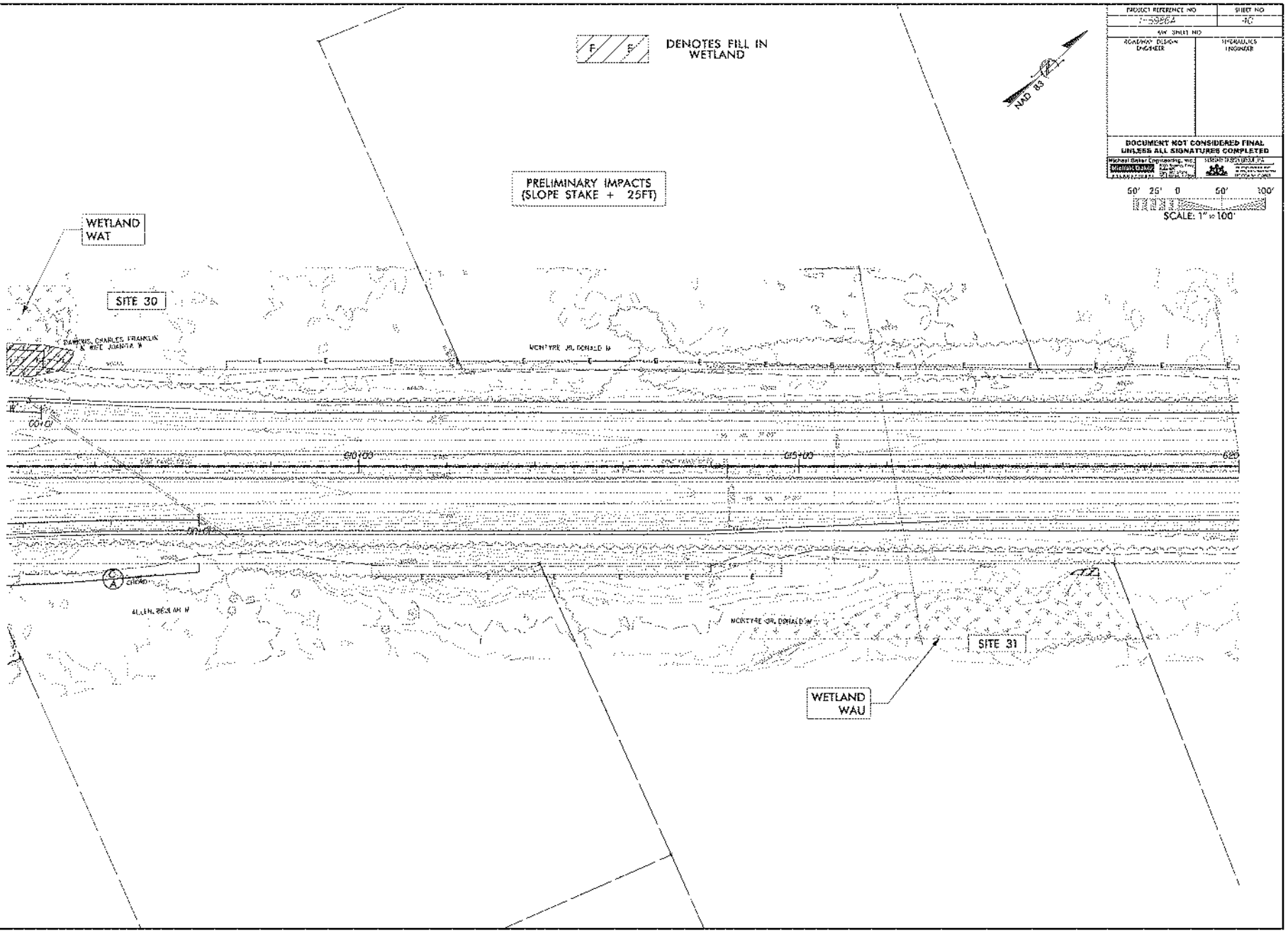
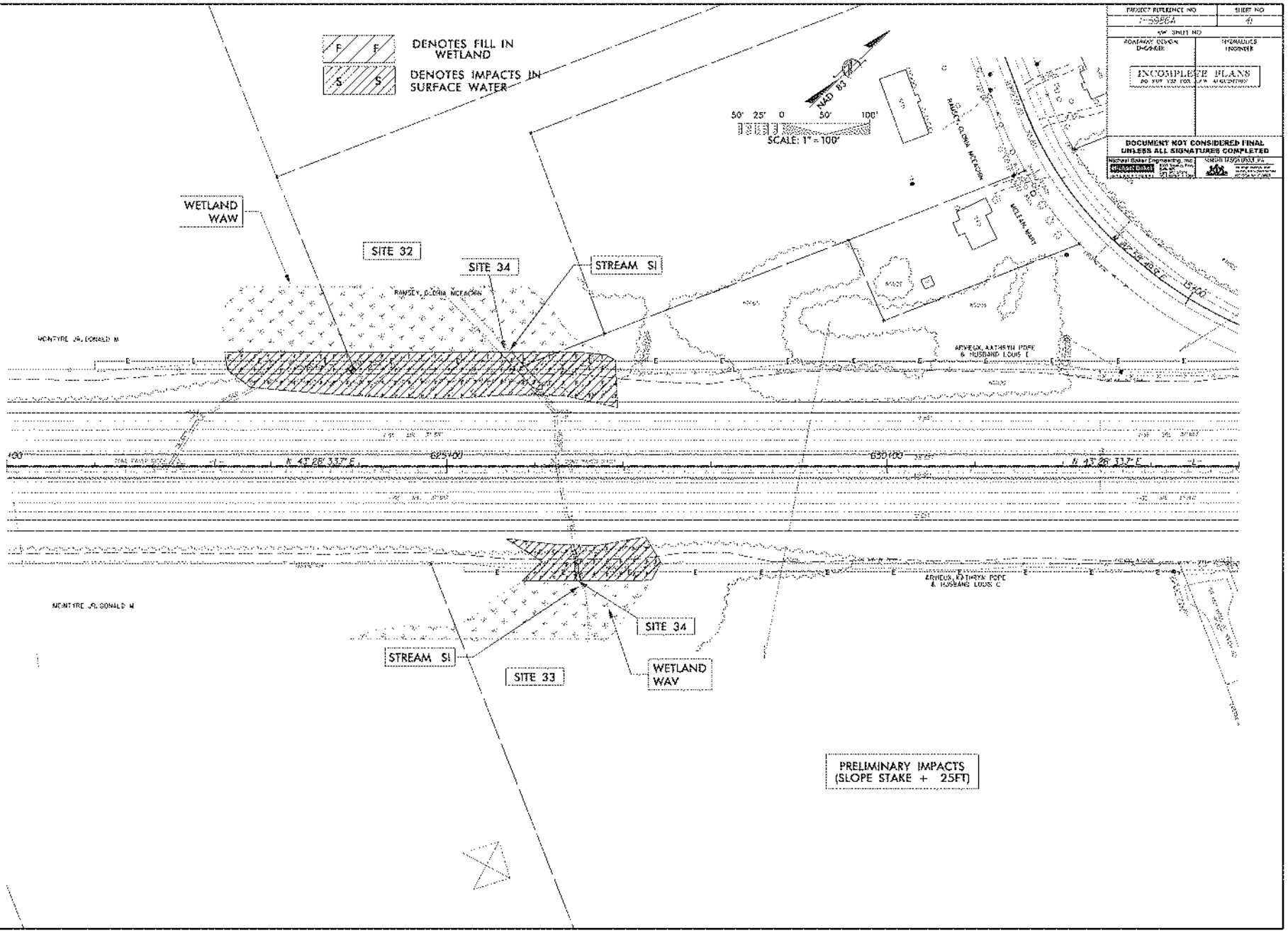
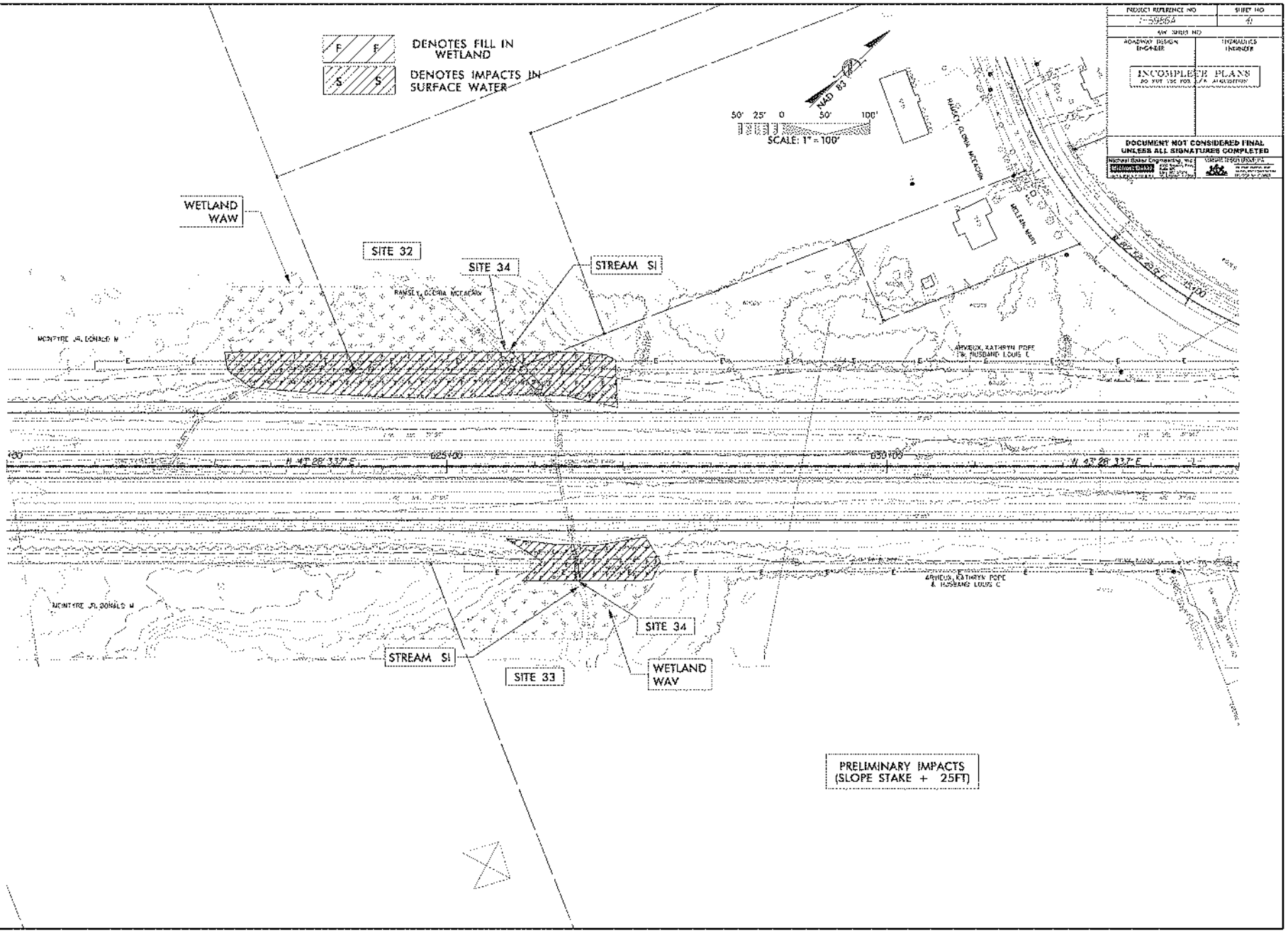
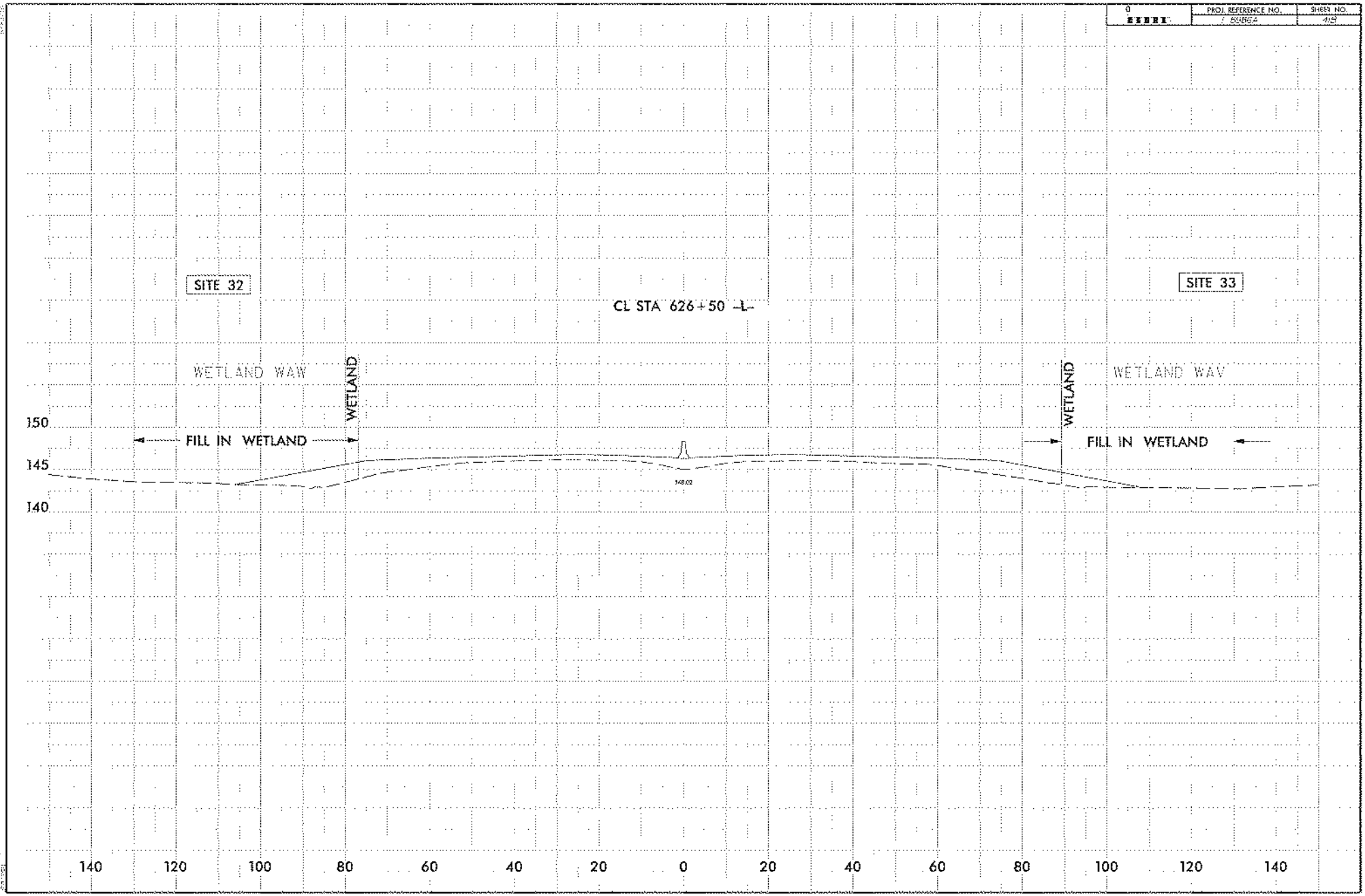

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
SCALE: 1" = 100'
50' 25' 0 50' 100'
NAD 83
DENOTES FILL IN WETLAND
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
SITE 31
WETLAND WAU
SITE 30
WETLAND WAT
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER


DENOTES FILL IN WETLAND
NAD 83
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
WETLAND WAT
SITE 30
DAWKINS, CHARLES FRANKLIN & WIFE JUANITA H
MCINTYRE JR, DONALD H
00+00
610+00
615+00
620
CHEAD
ALLEN, REUBEN H
MCINTYRE JR, DONALD H
SITE 31
WETLAND WAU
PROJECT REFERENCE NO.
SHEET NO.
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
50' 25' 0 50' 100'
SCALE: 1" = 100'


DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
NAD 83
50' 25' 0 50' 100'
SCALE: 1" = 100'
WETLAND WAW
SITE 32
SITE 34
STREAM S1
RAMSEY, GLORIA MCEACHIN
MCINTYRE JR, DONALD M
ARVIEUX, KATHRYN POPE & HUSBAND LOUIS E
N 43°26'33"E
625+00
630+00
SITE 34
STREAM S1
SITE 33
WETLAND WAV
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
INCOMPLETE PLANS
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED


DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
NAD 83
50' 25' 0 50' 100'
SCALE: 1" = 100'
PROJECT REFERENCE NO.
SHEET NO.
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR RIGHT OF WAY ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
WETLAND WAW
SITE 32
SITE 34
STREAM S1
RANSEY, GLORIA MCEACHIN
MCINTYRE JR, DONALD M
ARVIEUX, KATHRYN POPE & HUSBAND LOUIS C
N 47° 28' 33.7" E
625+00
630+00
SITE 34
STREAM S1
SITE 33
WETLAND WAV
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)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SHEET NO.
SITE 32
SITE 33
CL STA 626+50 -L-
WETLAND WAW
WETLAND WAV
WETLAND
WETLAND
FILL IN WETLAND
FILL IN WETLAND
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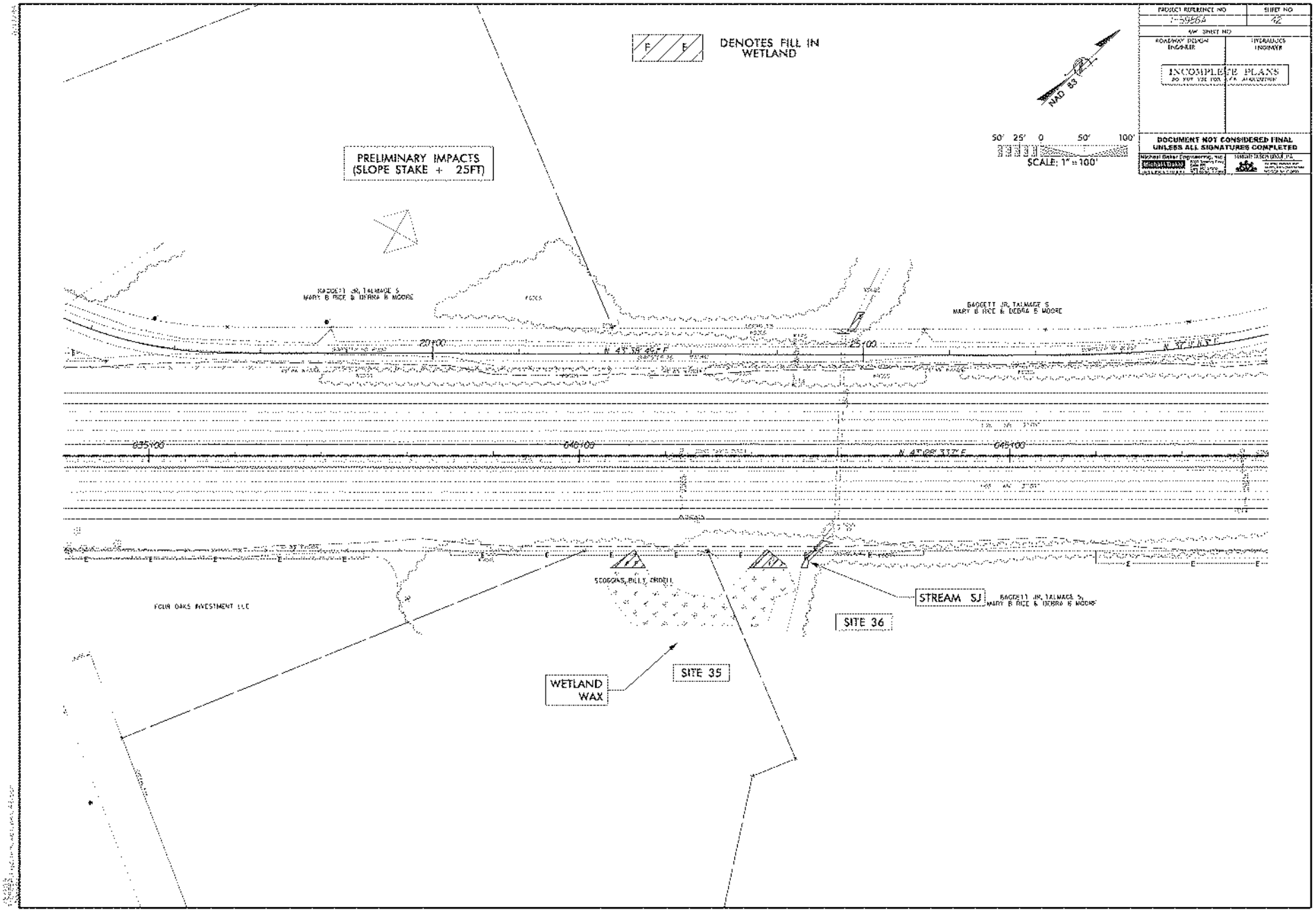
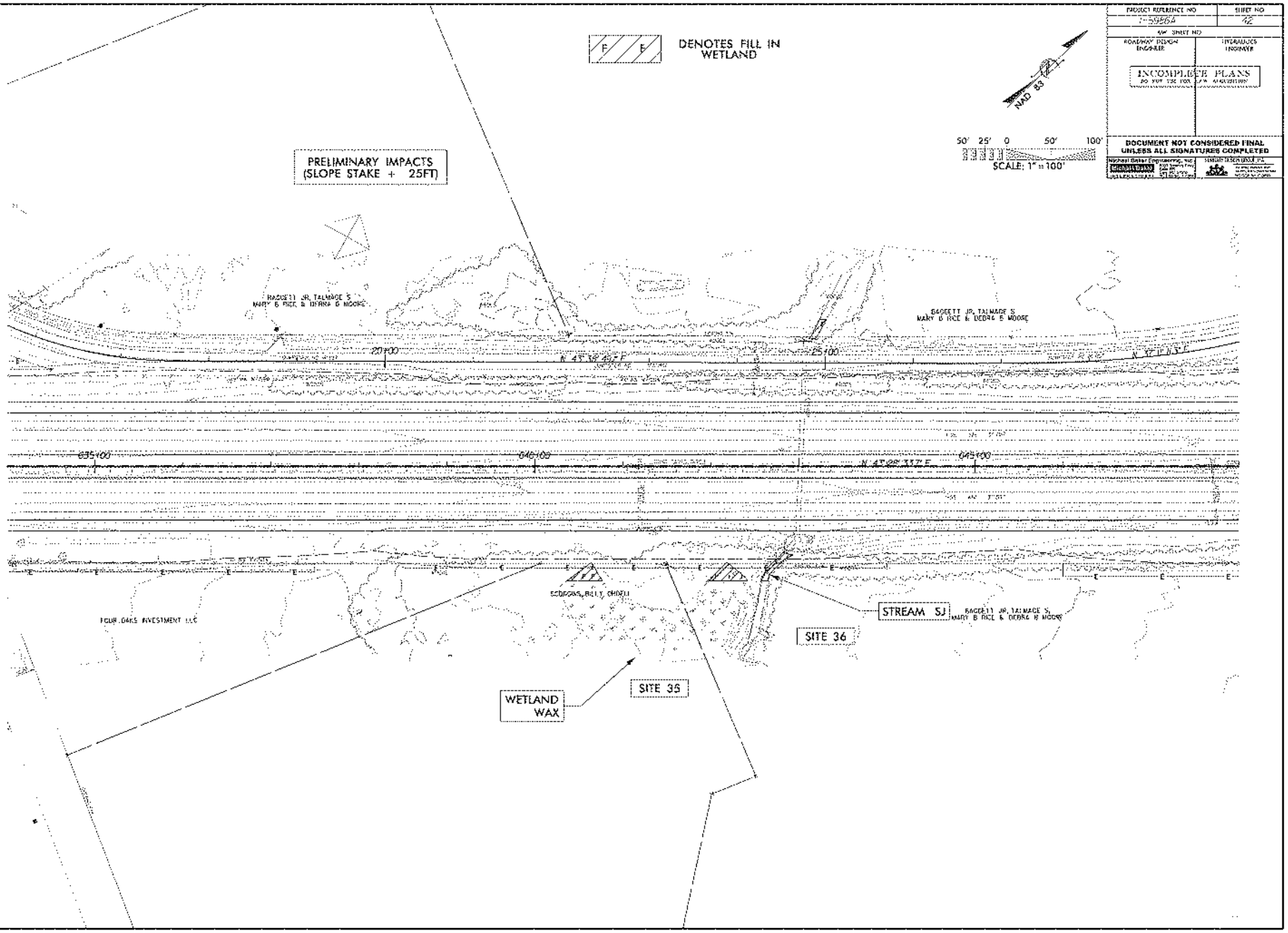
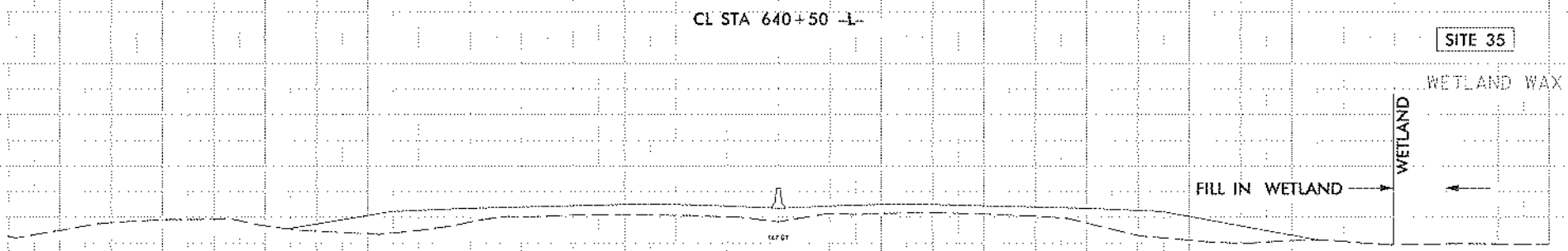

DENOTES FILL IN WETLAND
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
NAD 83
50' 25' 0 50' 100'
SCALE: 1" = 100'
PROJECT REFERENCE NO.
SHEET NO.
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
BAGGETT JR, TALMADGE S
MARY B RICE & DEBRA B MOORE
FOUR OAKS INVESTMENT LLC
SCOGGAS, BILLY, ARDELL
STREAM SJ
SITE 36
SITE 35
WETLAND WAX


DENOTES FILL IN WETLAND
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
NAD 83
50' 25' 0 50' 100'
SCALE: 1" = 100'
PROJECT REFERENCE NO.
SHEET NO.
42
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION OR ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
STEWART-TASCH GROUP, P.A.
BAGDETT JR, TALMADE S
MARY B RICE & DEBRA B MOORE
20+00
25+00
35+00
40+00
45+00
N 43°38'45" E
N 43°08'33" E
FOUR OAKS INVESTMENT LLC
EDDIGINS, BILLY, OHDELL
STREAM SJ
SITE 36
SITE 35
WETLAND WAX

0	PROJ. REFERENCE NO.	SHEET NO.
	1 5408A	428



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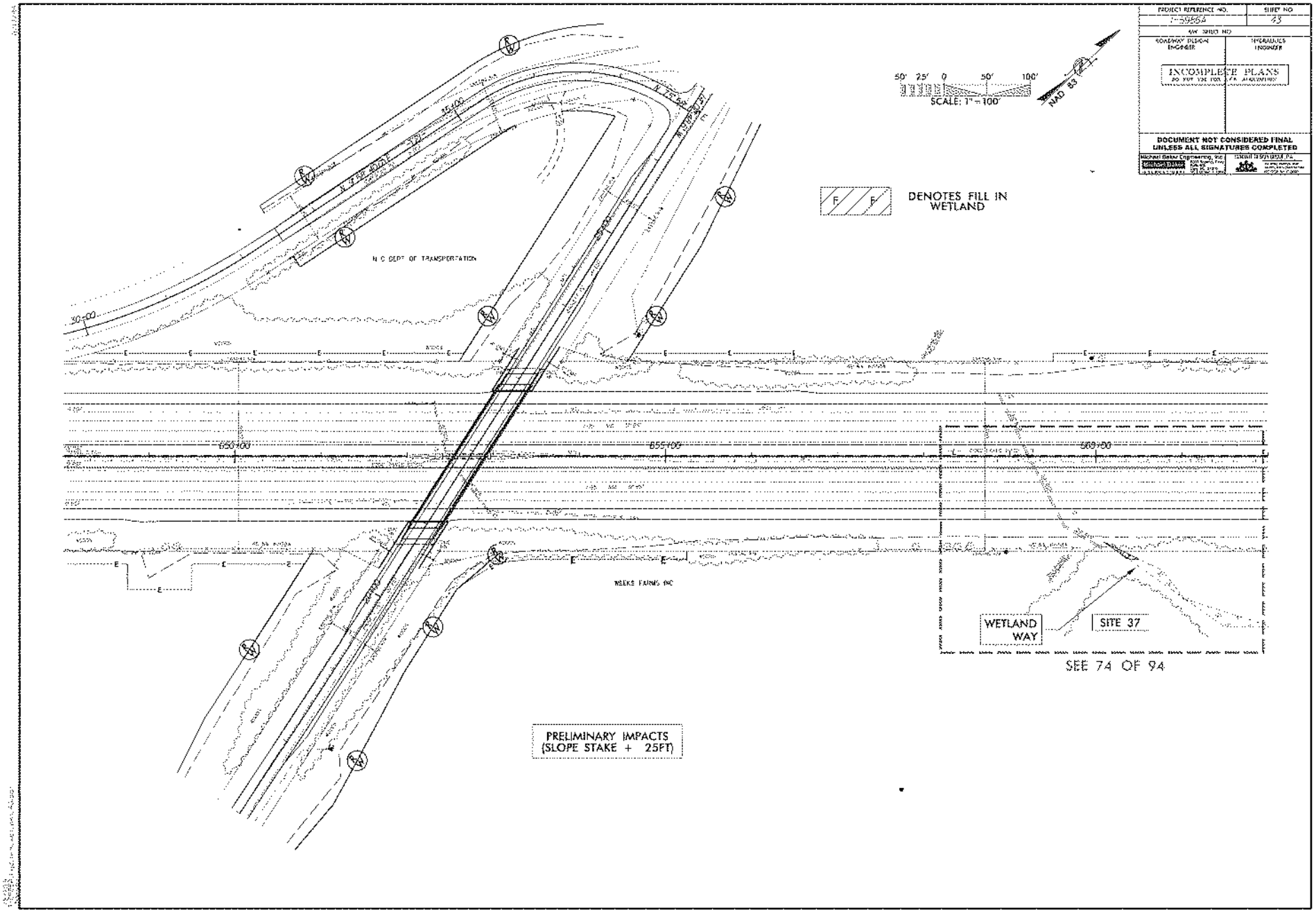
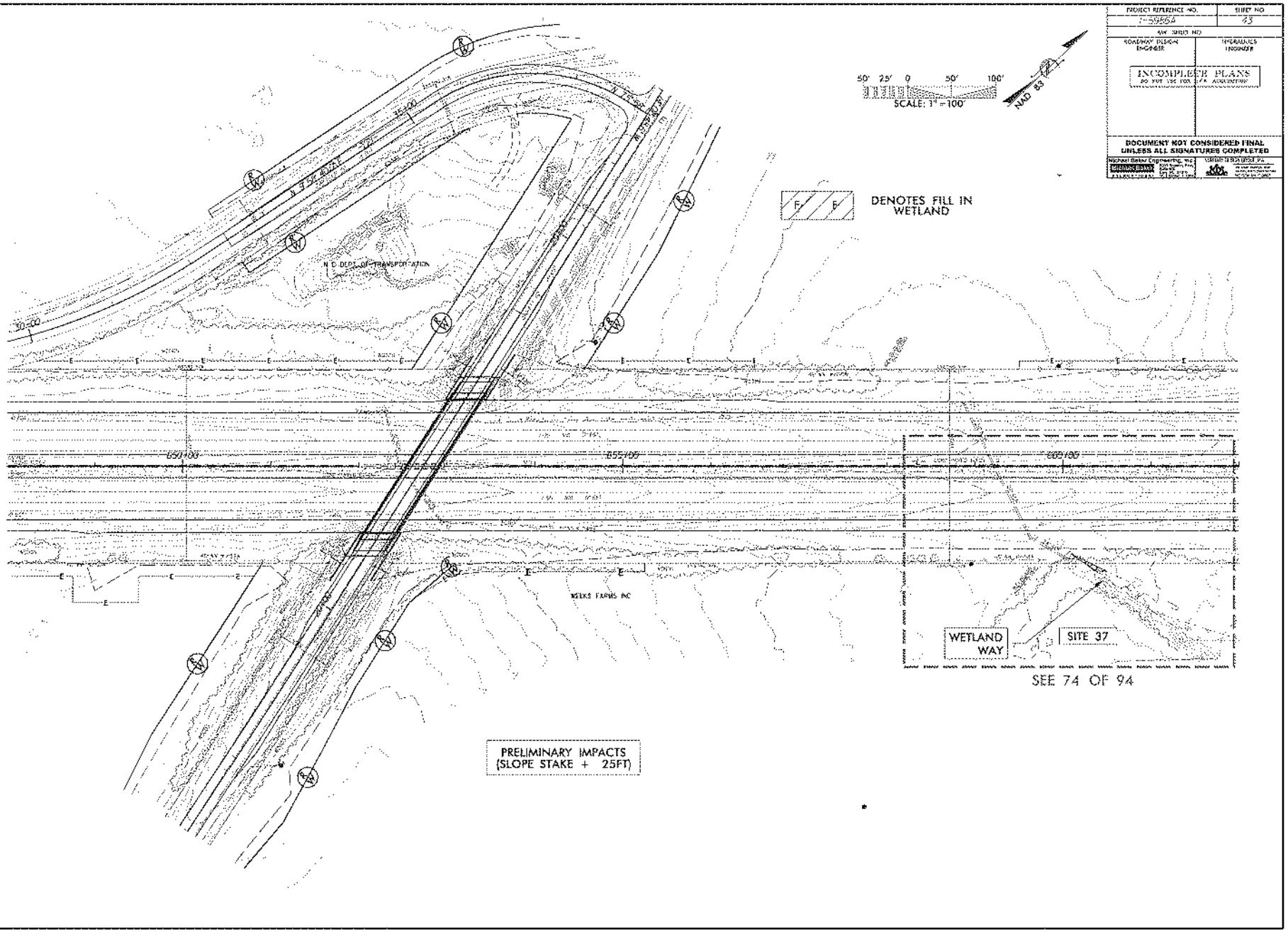

PROJECT REFERENCE NO.
SHEET NO.
43
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
50' 25' 0 50' 100'
SCALE: 1" = 100'
NAD 83
DENOTES FILL IN WETLAND
N C DEPT OF TRANSPORTATION
WEEKS FARMS INC
650+00
655+00
660+00
WETLAND WAY
SITE 37
SEE 74 OF 94
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)


PROJECT REFERENCE NO.
SHEET NO.
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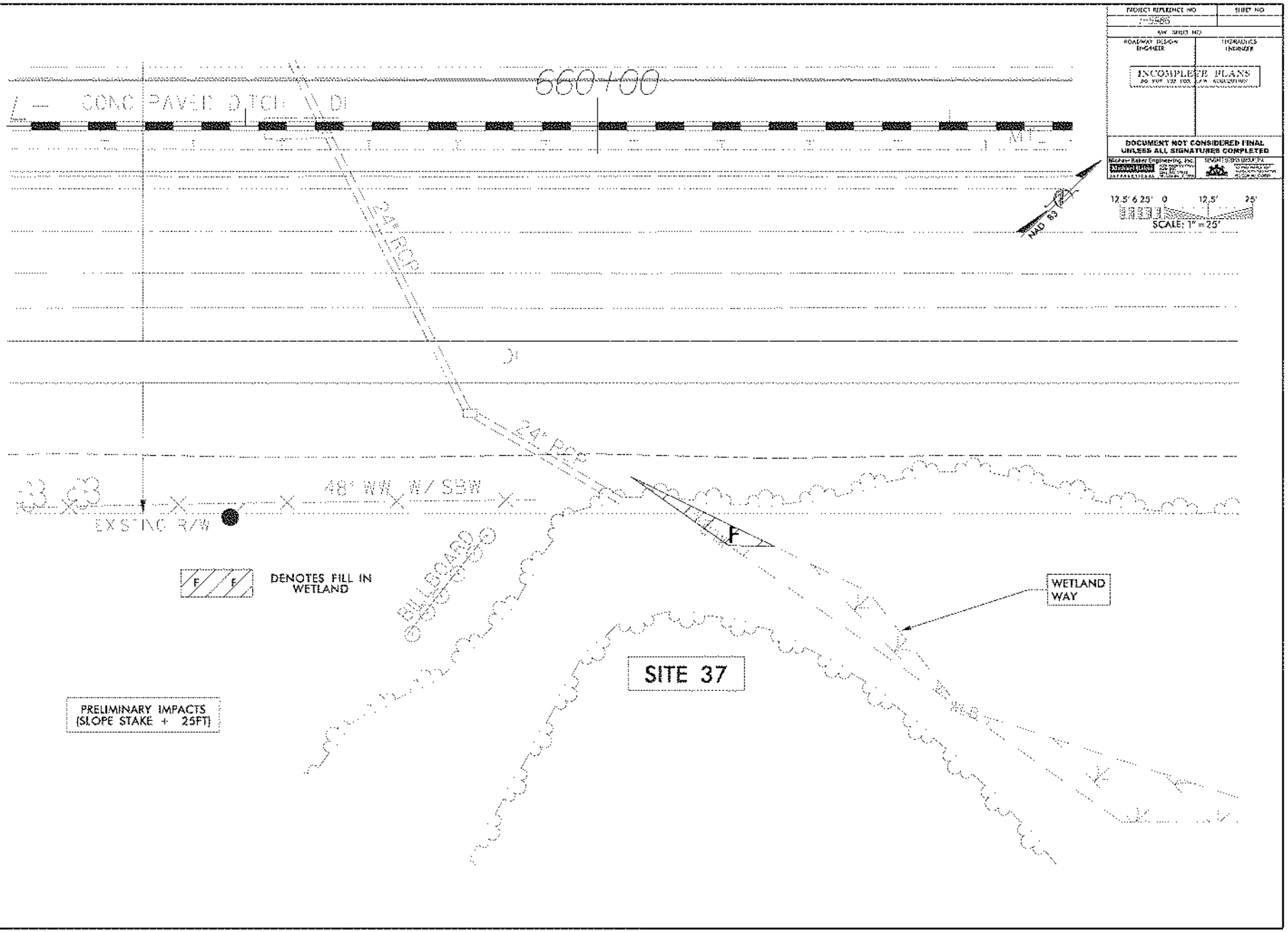
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
50' 25' 0 50' 100'
SCALE: 1" = 100'
NAD 83
DENOTES FILL IN WETLAND
N.C. DEPT. OF TRANSPORTATION
WEEKS FARMS INC
WETLAND WAY
SITE 37
SEE 74 OF 94
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)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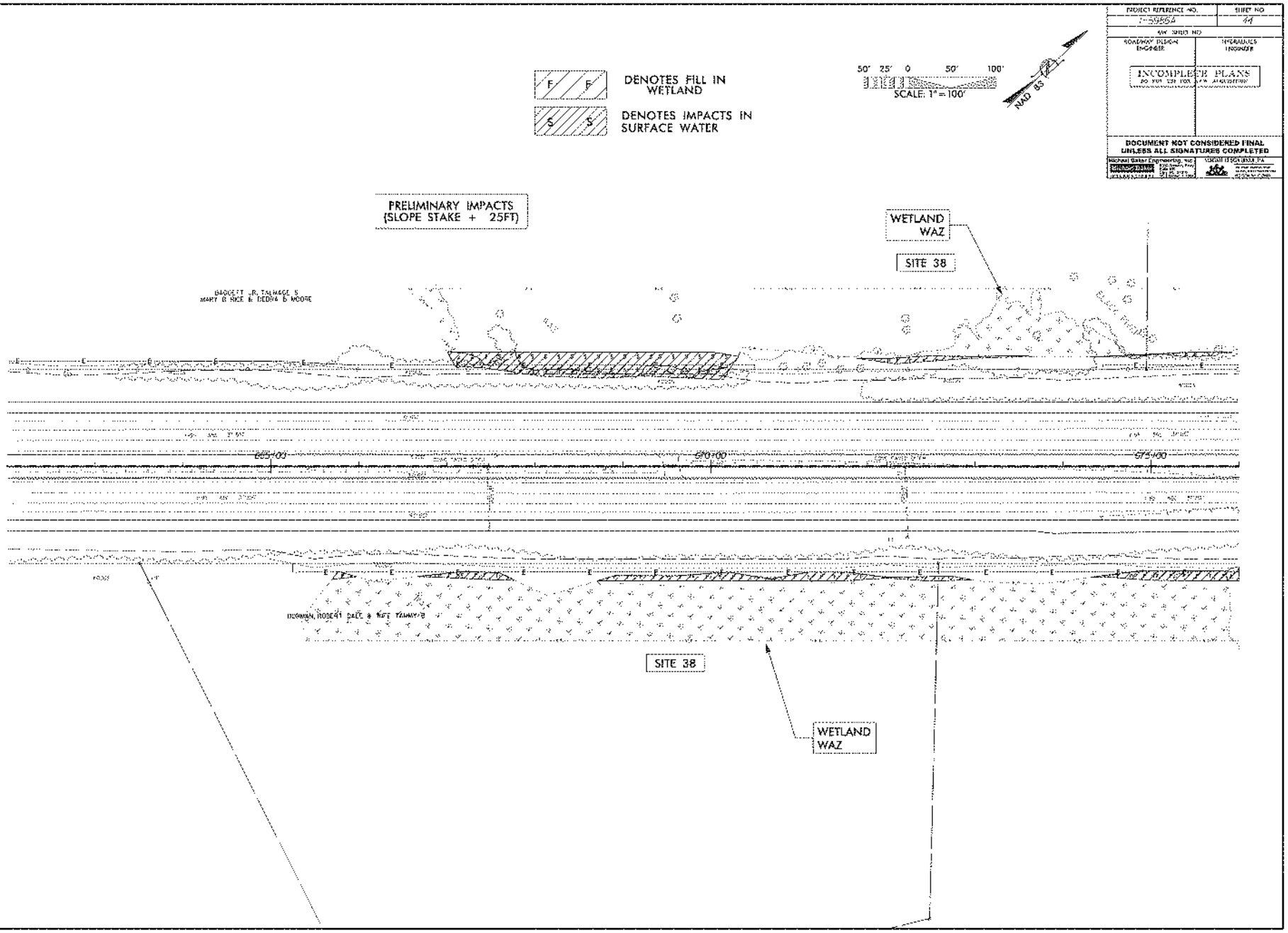
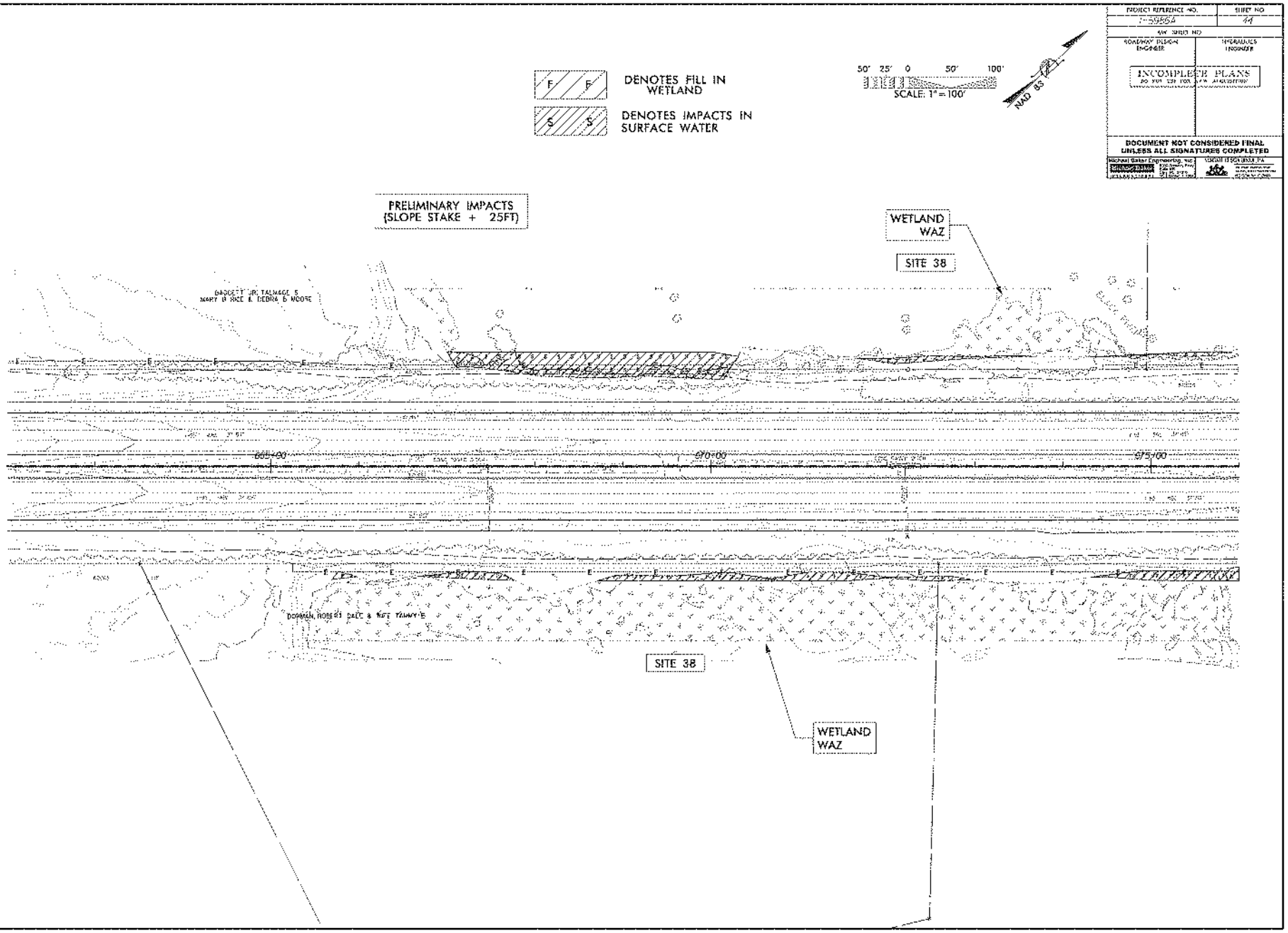
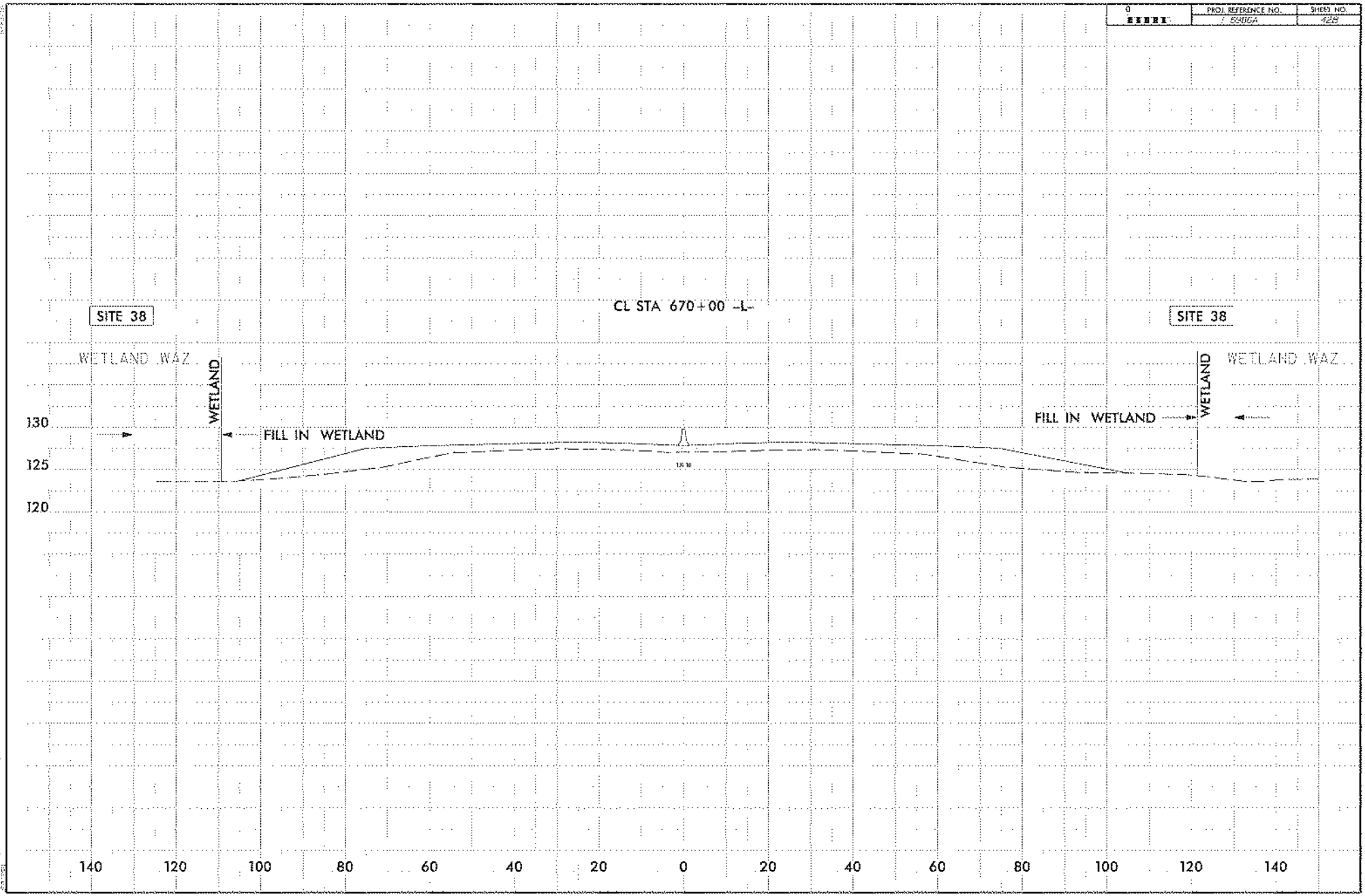
SHEET NO.
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
McGinnis-Baker Engineering, Inc.
Michael Baker
INFRASTRUCTURE
RAMPTI SURVEY GROUP, PA.
12.5' 6.25' 0 12.5' 25'
SCALE: 1" = 25'
NAD 83
660+00
CONC PAVED DITCH
24" RCP
24" RCP
48" WW W/ SEW
EXISTING R/W
BILLBOARD
F
DENOTES FILL IN WETLAND
WETLAND WAY
SITE 37
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)


PROJECT REFERENCE NO.
SHEET NO.
44
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION OR RIGHT-OF-WAY ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
50' 25' 0 50' 100'
SCALE: 1" = 100'
NAD 83
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
WETLAND WAZ
SITE 38
BADGETT JR. TALMAGE S
MARY B RICE & THEDRA B MOORE
665+00
670+00
675+00
SITE 38
WETLAND WAZ


DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
50' 25' 0 50' 100'
SCALE: 1" = 100'
NAD 83
PROJECT REFERENCE NO.
SHEET NO.
44
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
WETLAND WAZ
SITE 38
SITE 38
WETLAND WAZ
665+00
670+00
675+00


PROJ. REFERENCE NO.
SHEET NO.
SITE 38
CL STA 670+00 -L-
SITE 38
WETLAND WAZ
WETLAND
WETLAND WAZ
WETLAND
FILL IN WETLAND
FILL IN WETLAND
130
125
120
140
120
100
80
60
40
20
0
20
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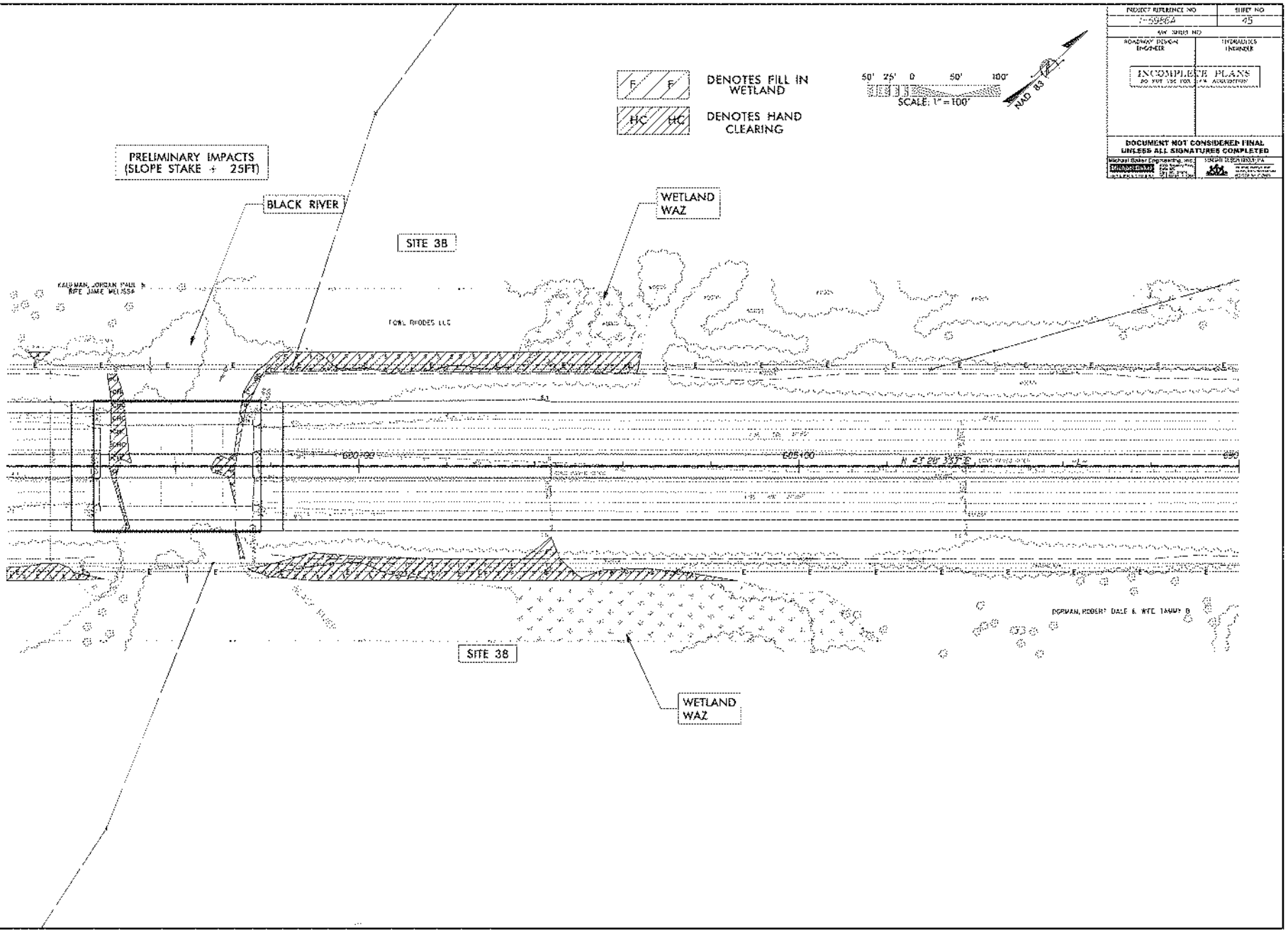
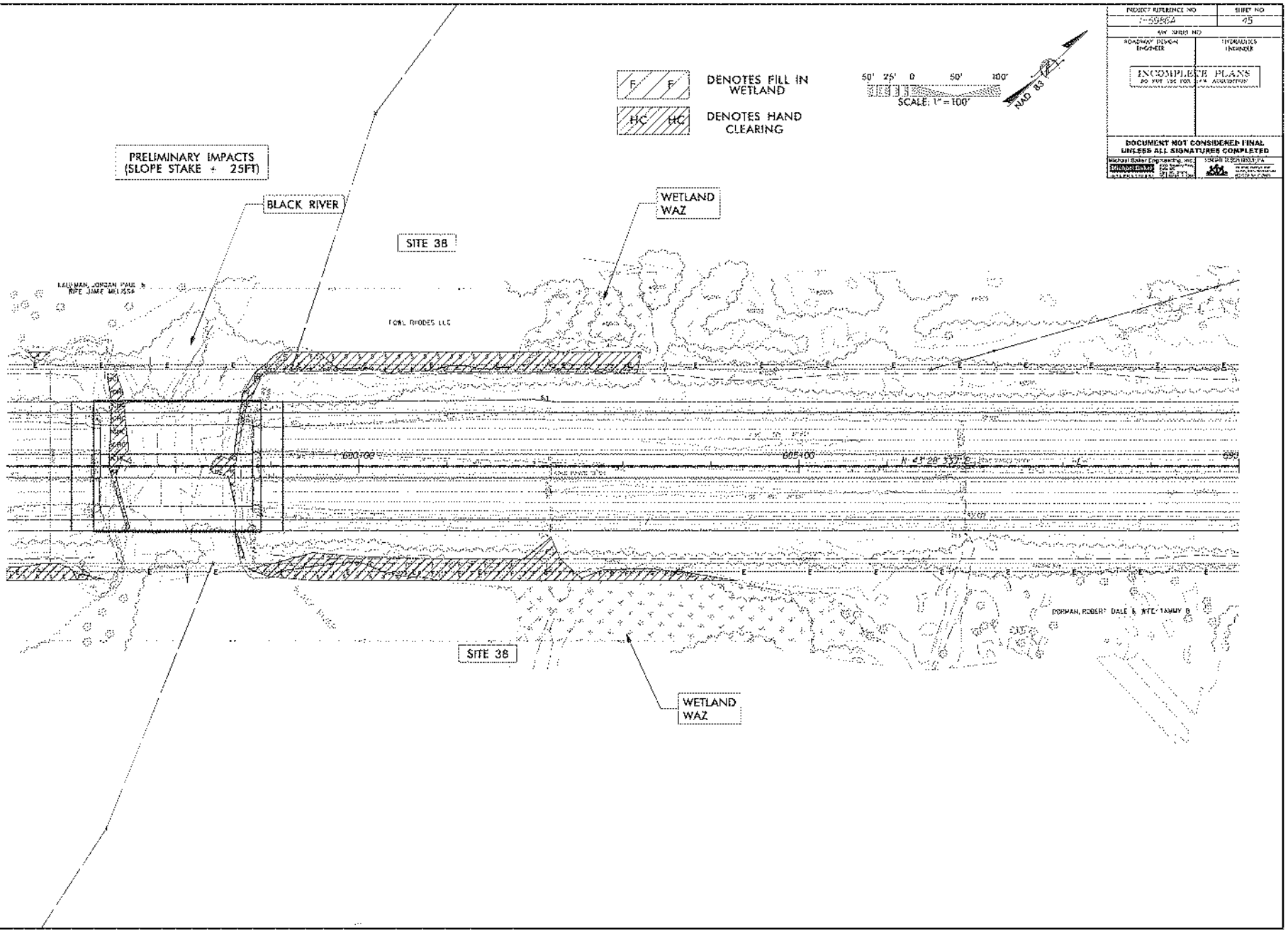
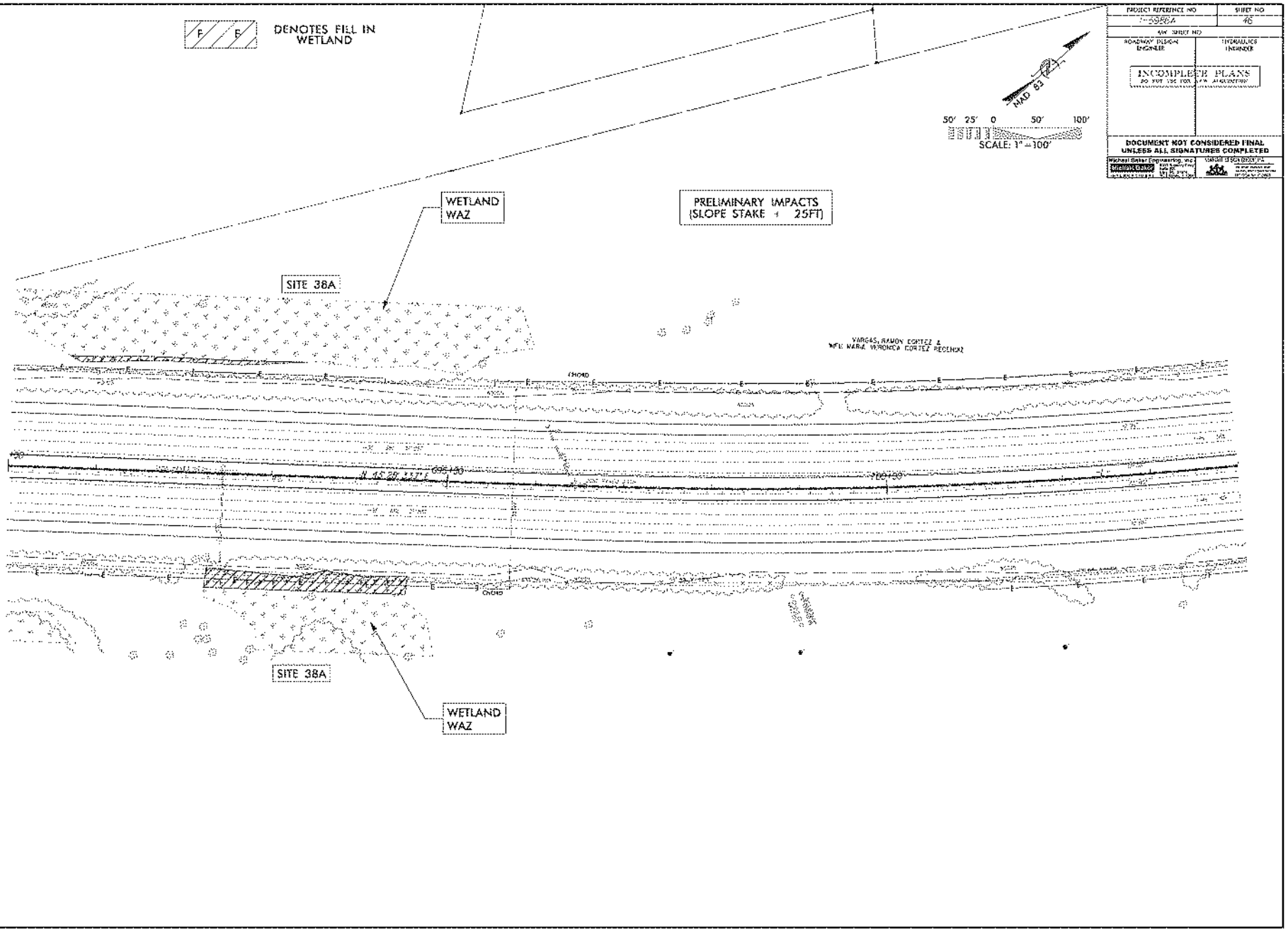
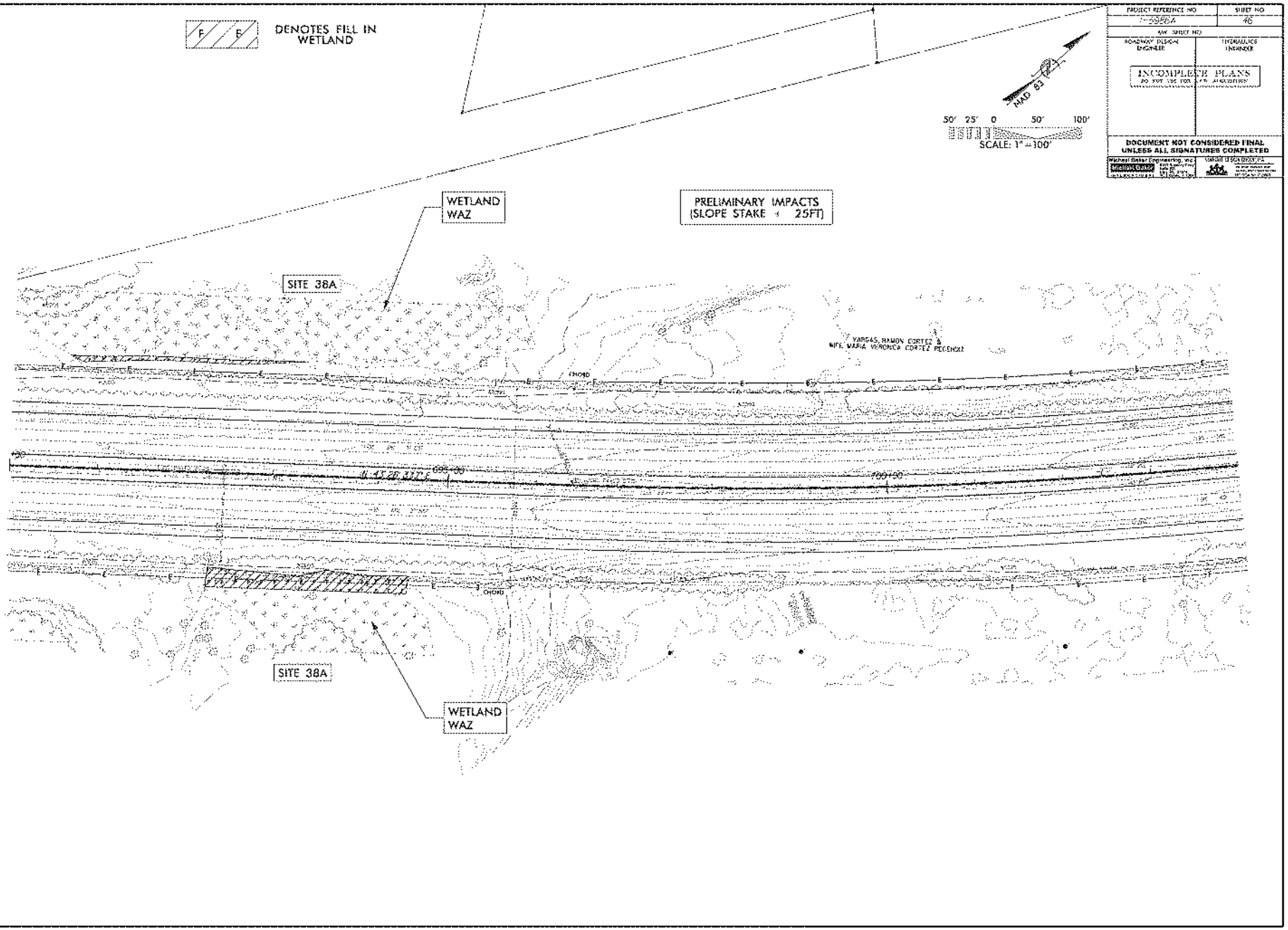
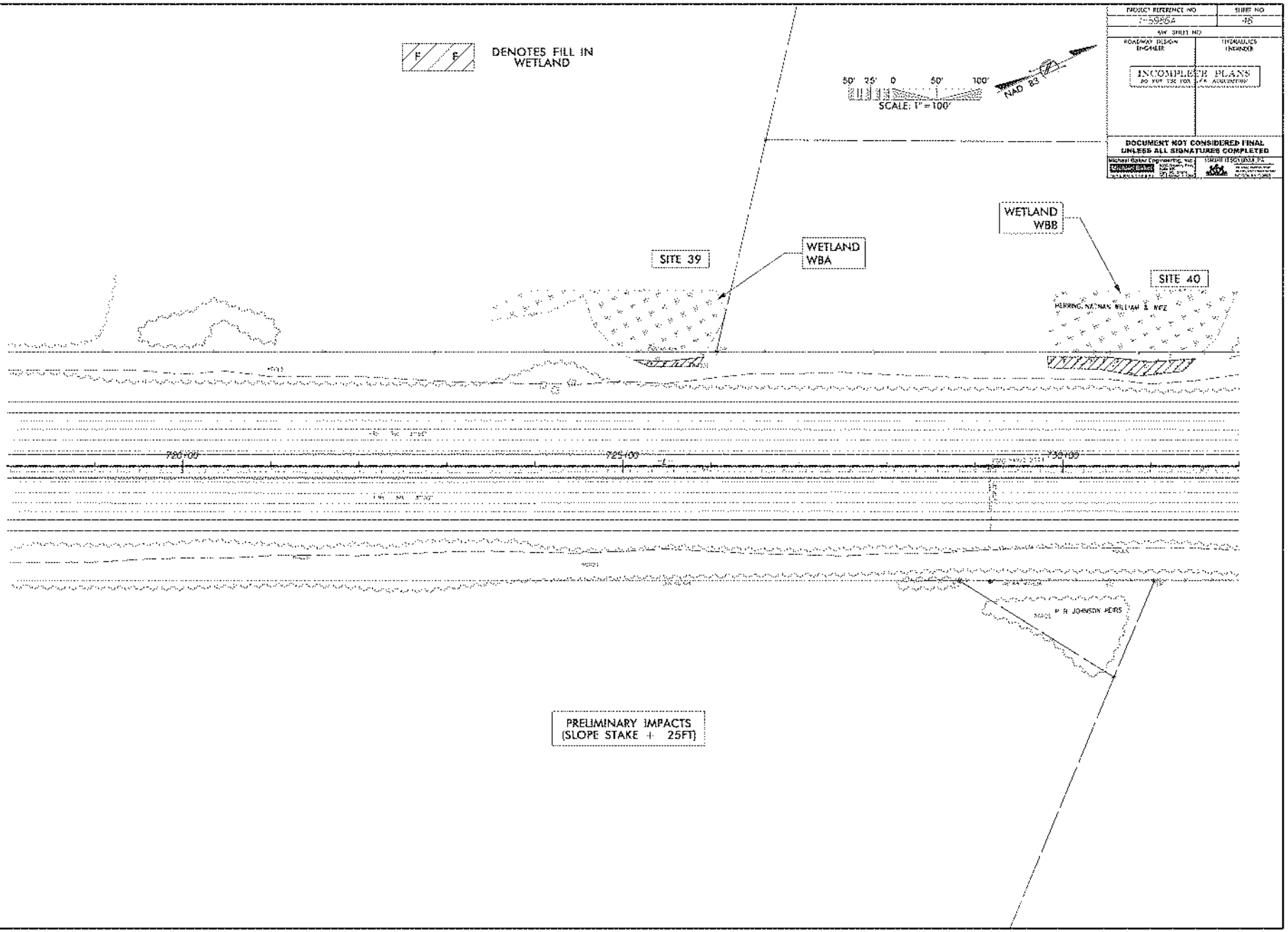
60
80
100
120
140

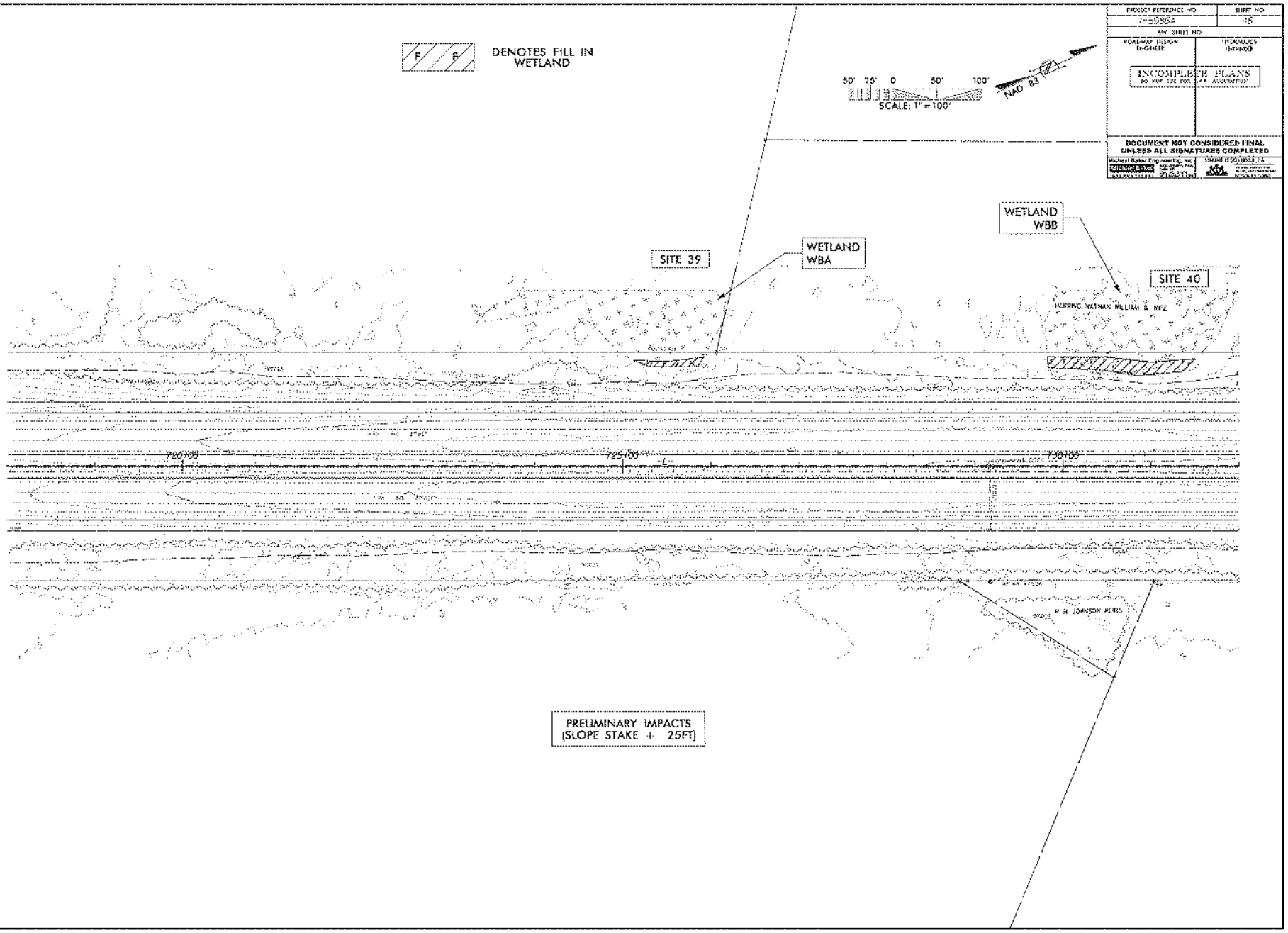

PRELIMINARY IMPACTS
(SLOPE STAKE + 25FT)
BLACK RIVER
SITE 38
WETLAND
WAZ
KAUFMAN, JORDAN PAUL &
WFE JAMIE MELISSA
FOWL RHODES LLC
DENOTES FILL IN
WETLAND
DENOTES HAND
CLEARING
50' 25' 0 50' 100'
SCALE: 1" = 100'
NAD 83
PROJECT REFERENCE NO
SHEET NO
45
R/W SHEET NO
ROADWAY DESIGN
ENGINEER
HYDRAULICS
ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
STATE OF PENNSYLVANIA
SITE 38
DORMAN, ROBERT DALE & WFE TAMMY B

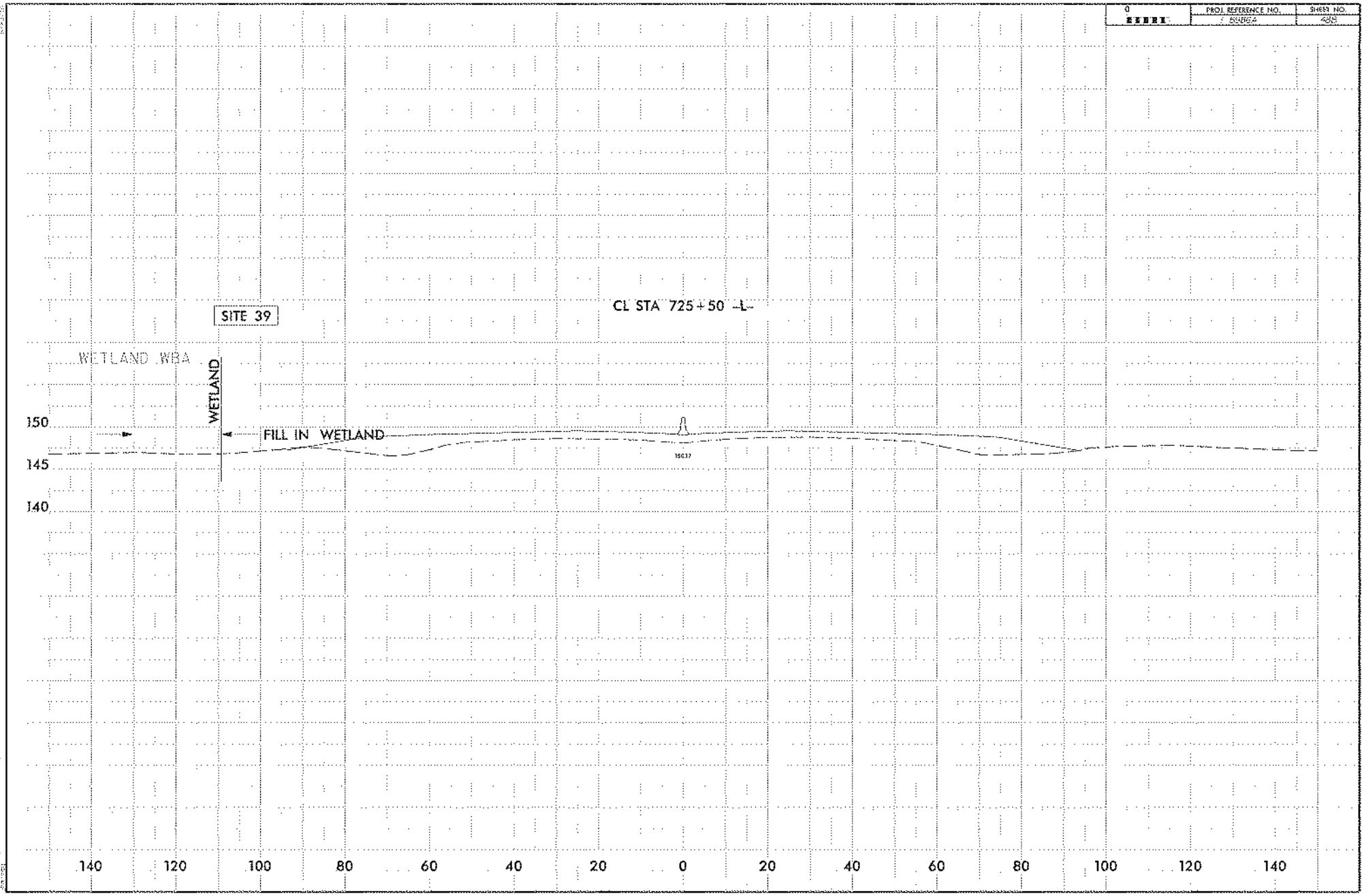

PRELIMINARY IMPACTS
(SLOPE STAKE + 25FT)
BLACK RIVER
SITE 38
WETLAND
WAZ
DENOTES FILL IN WETLAND
DENOTES HAND CLEARING
SCALE: 1" = 100'
NAD 83
INCOMPLETE PLANS
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED
SITE 38
WETLAND
WAZ


DENOTES FILL IN WETLAND
F
E
PROJECT REFERENCE NO
SHEET NO
46
R/W SHEET NO
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
Michael Baker
Vanasse Hangen Brustlin, Inc.
MAD 83
50' 25' 0 50' 100'
SCALE: 1" = 100'
WETLAND WAZ
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
SITE 38A
VARGAS, RAMON CORTEZ & WIFE MARIA VERONICA CORTEZ RECENDIZ
CHORD
SITE 38A
WETLAND WAZ


DENOTES FILL IN WETLAND
F
E
PROJECT REFERENCE NO.
SHEET NO.
46
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION OR RIGHT OF WAY ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
Michael Baker
Vaughn & Melton Consulting, Inc.
NAD 83
50' 25' 0 50' 100'
SCALE: 1" = 100'
WETLAND WAZ
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
SITE 38A
YARGAS, RAMON CORTEZ & WIFE MARIA VERONICA CORTEZ RECENDEZ
CHORD
695+00
700+00
SITE 38A
WETLAND WAZ


DENOTES FILL IN WETLAND
50' 25' 0 50' 100'
SCALE: 1" = 100'
NAD 83
PROJECT REFERENCE NO.
SHEET NO.
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
WETLAND WBB
WETLAND WBA
SITE 39
SITE 40
HERRING, NATHAN, WILLIAM & WIFE
P. H. JOHNSON HEIRS
720+00
725+00
730+00
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)


DENOTES FILL IN WETLAND
50' 25' 0 50' 100'
SCALE: 1" = 100'
NAD 83
PROJECT REFERENCE NO.
SHEET NO.
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
WETLAND WBB
WETLAND WBA
SITE 39
SITE 40
HERRING, NATHAN, WILLIAM & WFE
P. H. JOHNSON HEIRS
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)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PROJ. REFERENCE NO.
SHEET NO.
SITE 39
CL STA 725+50 -L-
WETLAND WBA
WETLAND
FILL IN WETLAND
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140
140
120
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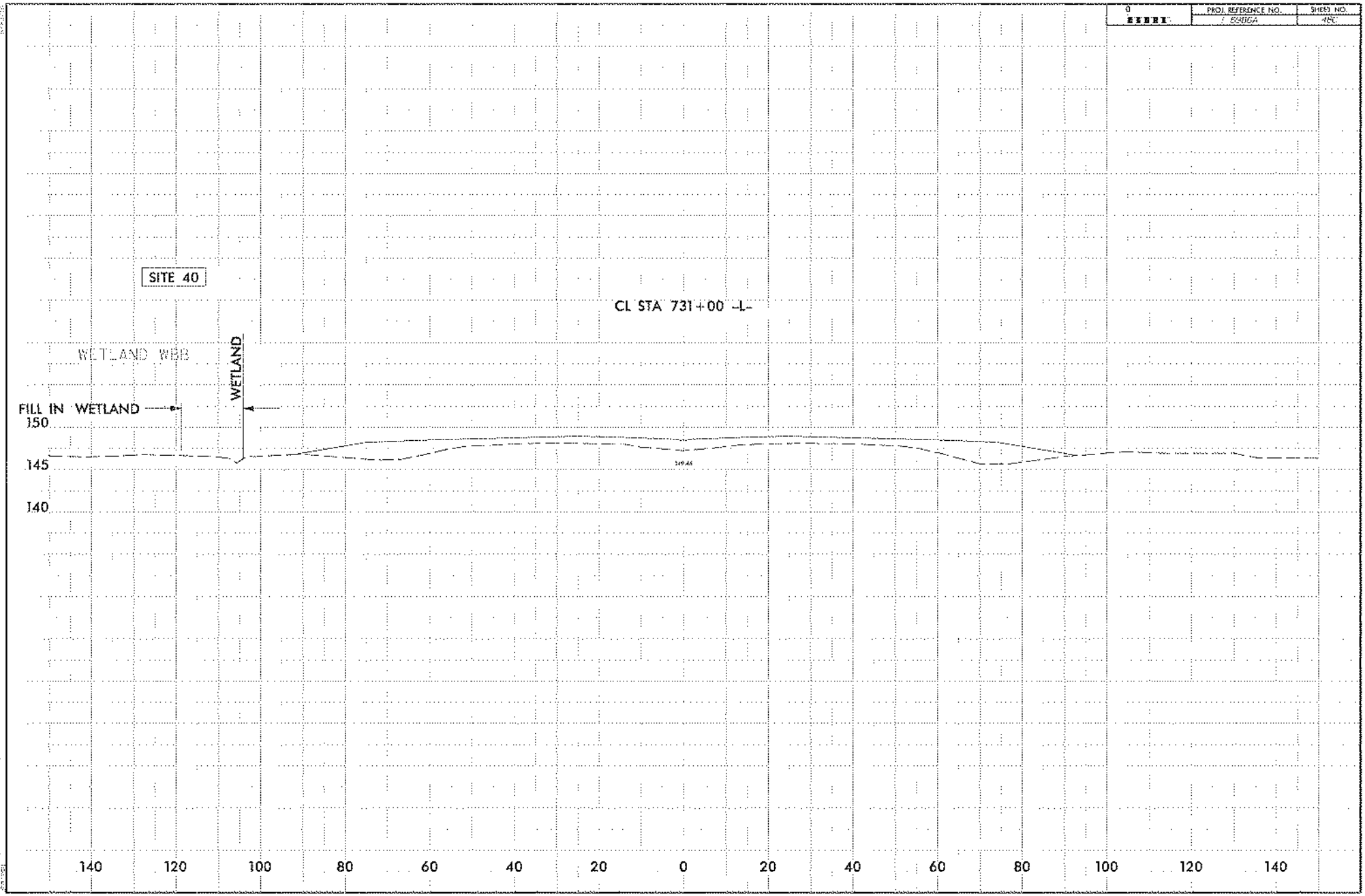
80
100
120
140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PROJ. REFERENCE NO.
SHEET NO.
SITE 40
CL STA 731+00 -L-
WETLAND WEB
WETLAND
FILL IN WETLAND
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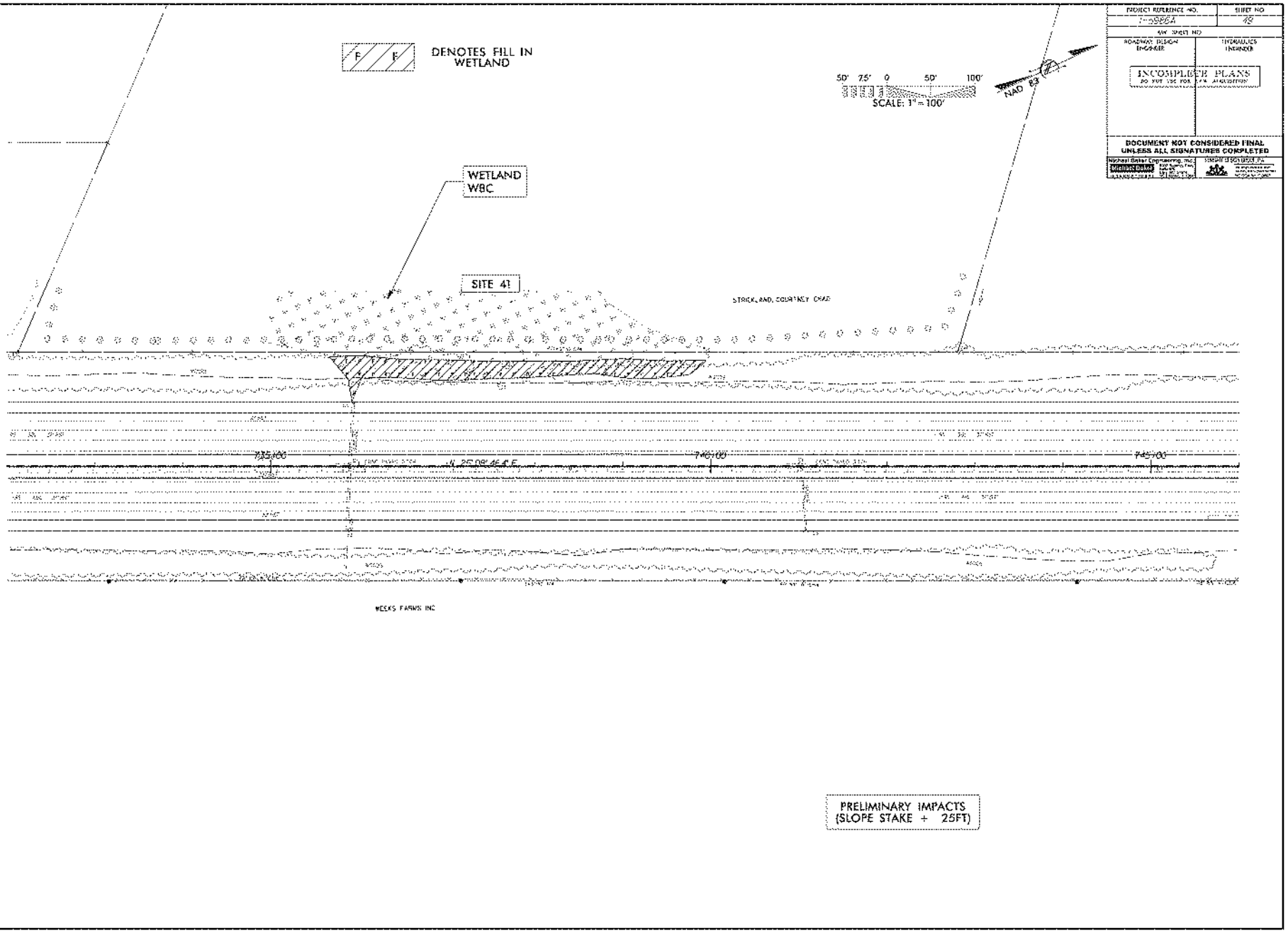
60
80
100
120
140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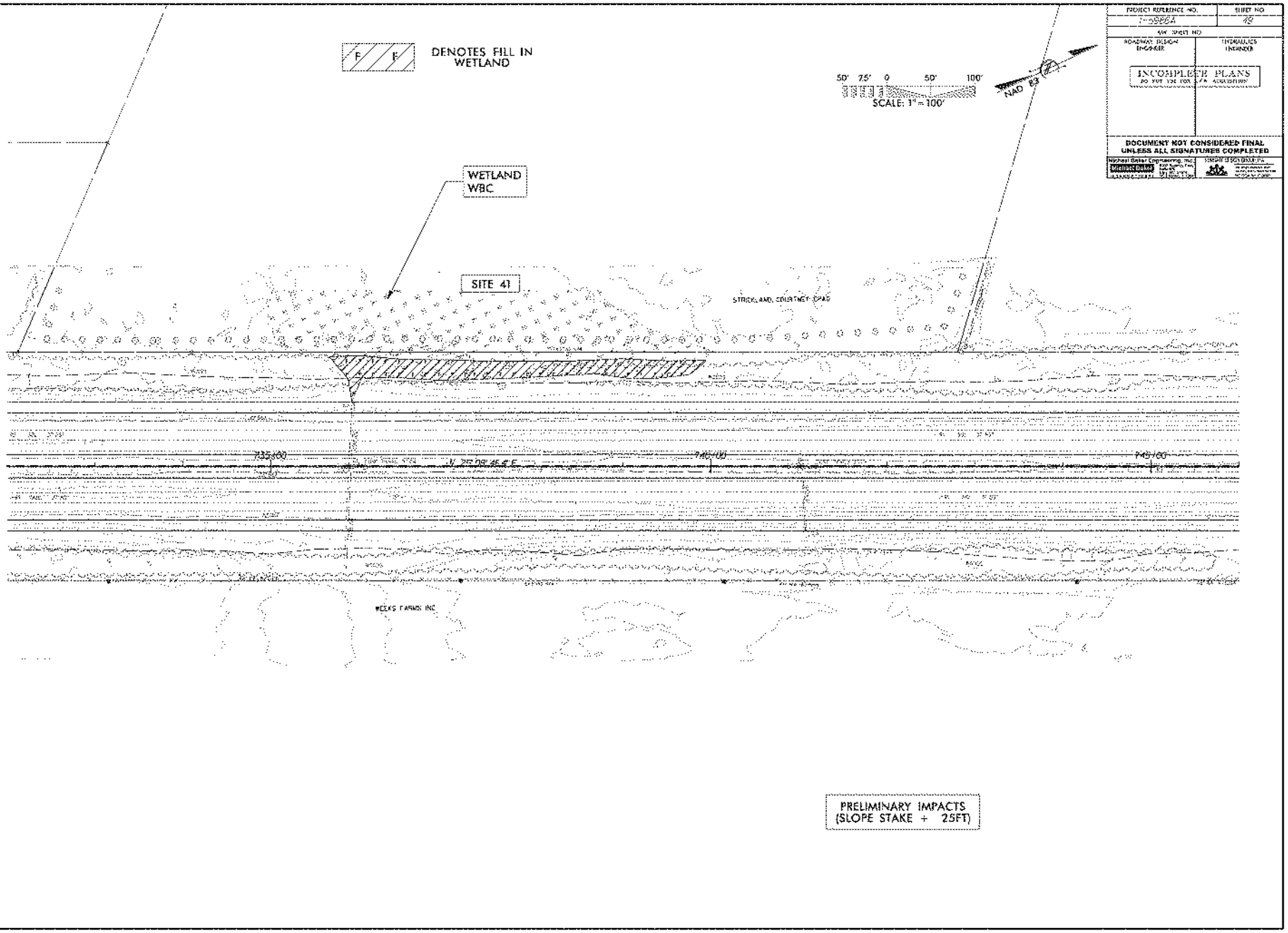
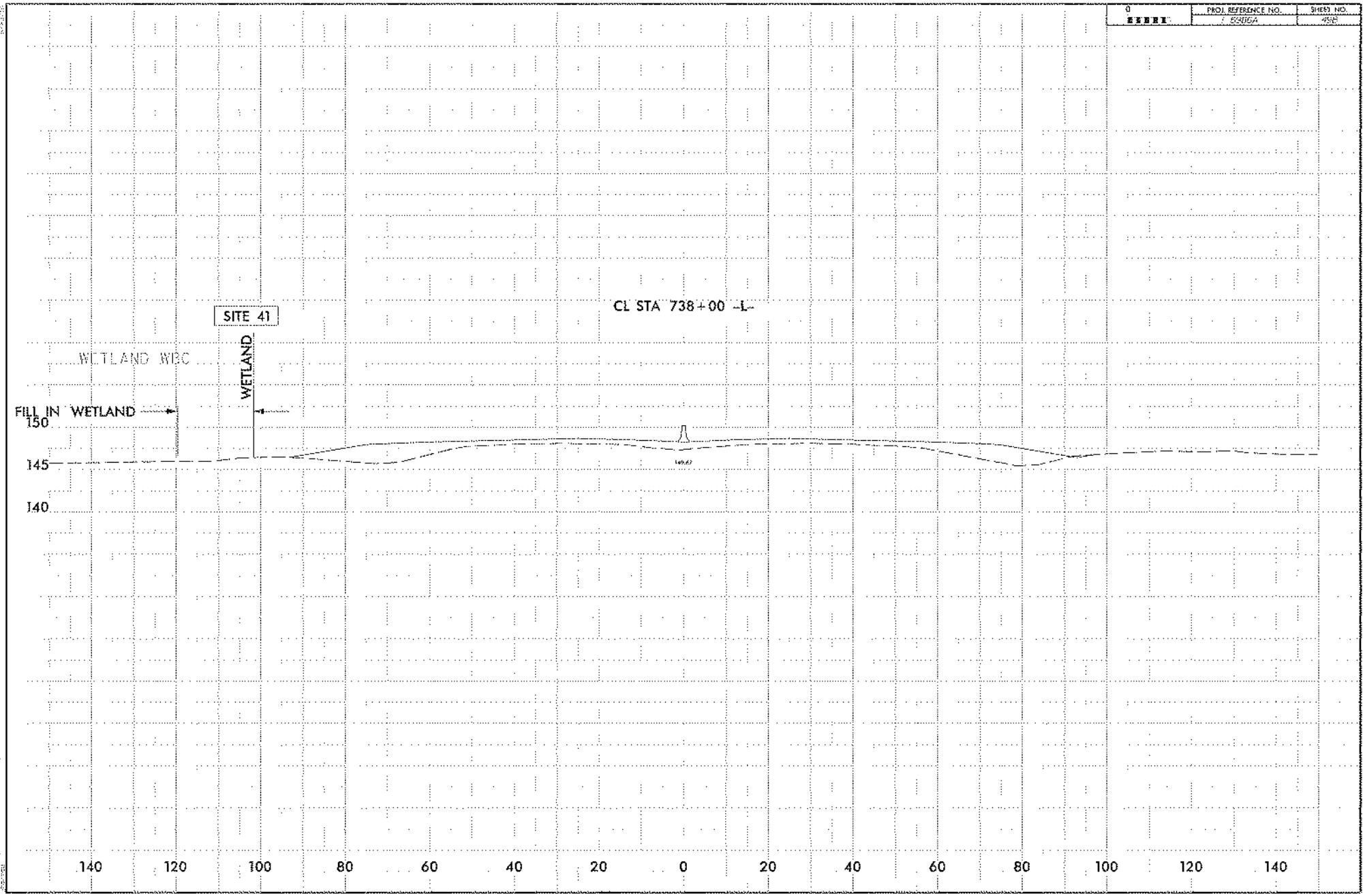
SCALE: 1" = 100'
NAD 83
PROJECT REFERENCE NO.
SHEET NO.
12
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
WETLAND W8C
SITE 41
STRICKLAND COURTNEY CHAD
745+00
746+00
747+00
WEEKS FARMS INC
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)


DENOTES FILL IN WETLAND
50' 75' 0 50' 100'
SCALE: 1" = 100'
NAD 83
PROJECT REFERENCE NO.
SHEET NO.
12
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION OR ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
WETLAND WBC
SITE 41
STRICKLAND, COURTNEY - CPAD
735+00
740+00
745+00
WEEKS FARMS INC
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)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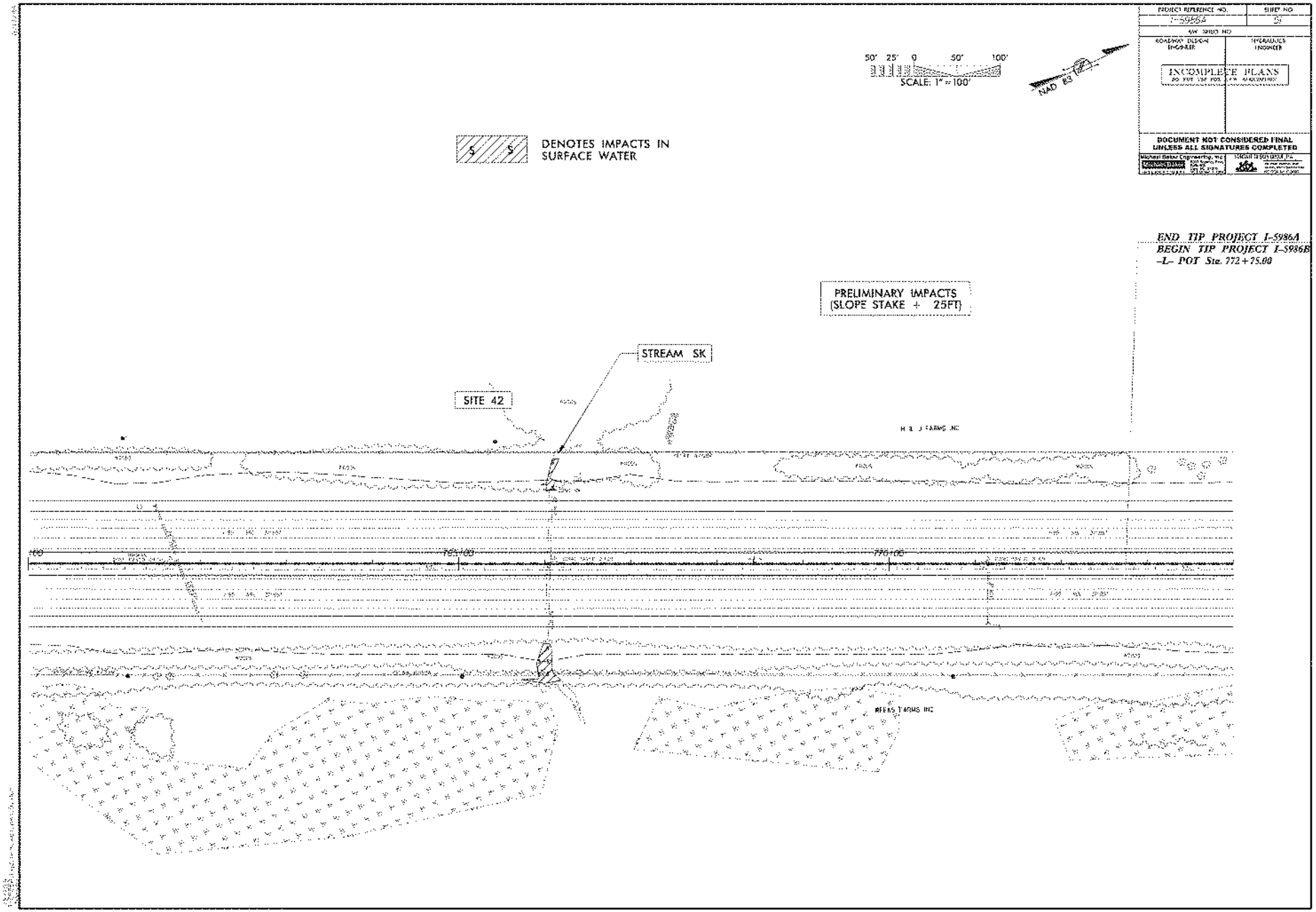
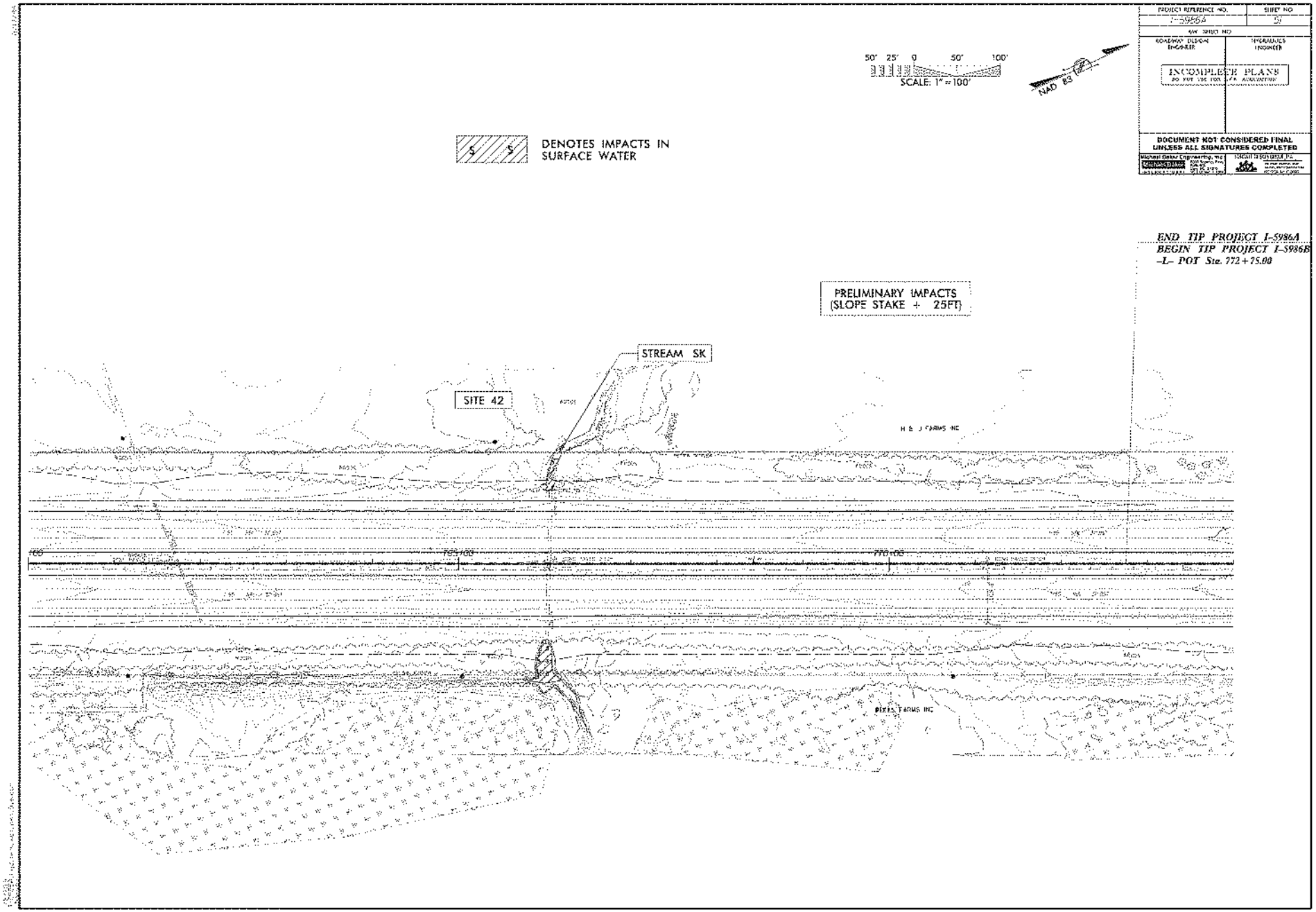
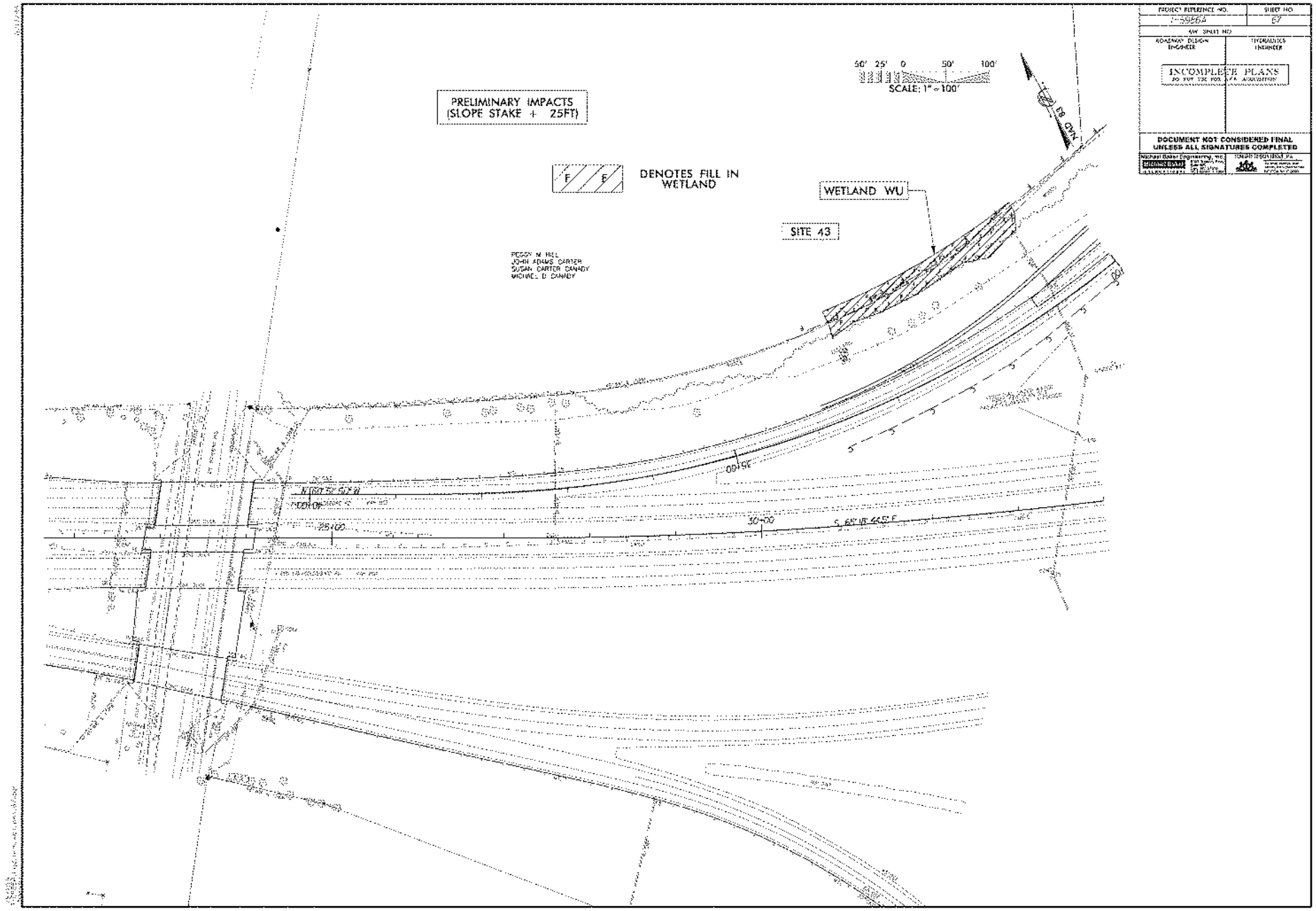
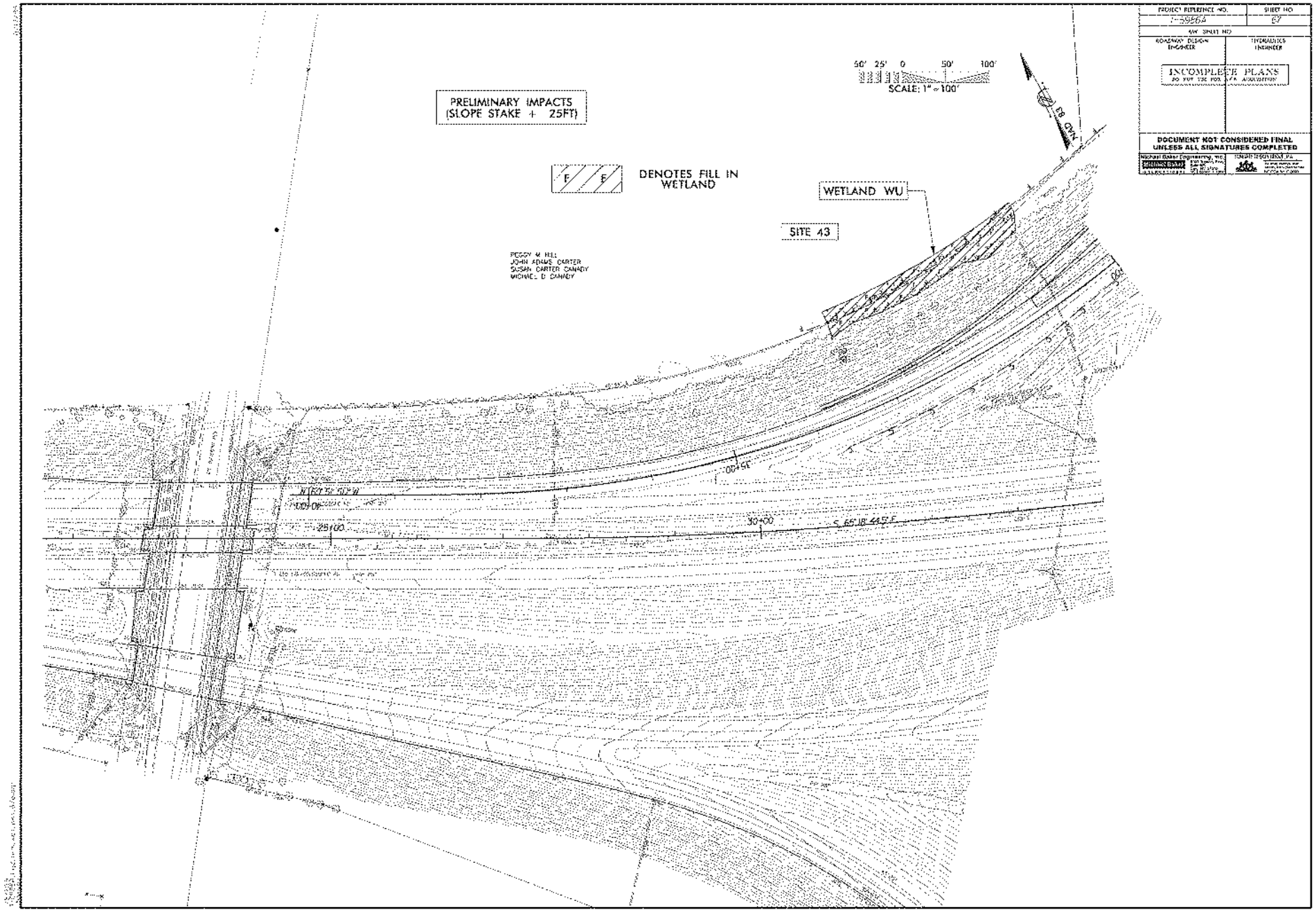
PROJ. REFERENCE NO.
SHEET NO.
SITE 41
WETLAND
WETLAND WBC
FILL IN WETLAND
CL STA 738+00 -L-
150
145
140
140
120
100
80
60
40
20
0
20
40
60
80
100
120
140


PROJECT REFERENCE NO.
I-5986A
SHEET NO.
5
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
STRAUB TRUCKING & DEVELOPING, INC.
50' 25' 0 50' 100'
SCALE: 1" = 100'
NAD 83
DENOTES IMPACTS IN SURFACE WATER
END TIP PROJECT I-5986A
BEGIN TIP PROJECT I-5986B
-L- POT Sta. 772+75.00
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
STREAM SK
SITE 42
H & J FARMS INC
REEKS FARMS INC
100
765+00
770+00


PROJECT REFERENCE NO.
I-5986A
SHEET NO.
5
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION OR RIGHT OF WAY ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
SCALE: 1" = 100'
50' 25' 0 50' 100'
NAD 83
DENOTES IMPACTS IN SURFACE WATER
END TIP PROJECT I-5986A
BEGIN TIP PROJECT I-5986B
-L- POT Sta. 772+75.00
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
STREAM SK
SITE 42
H & J FARMS INC
BEEFS FARMS INC


PRELIMINARY IMPACTS
(SLOPE STAKE + 25FT)
DENOTES FILL IN WETLAND
WETLAND WU
SITE 43
PEGGY M HILL
JOHN ADAMS CARTER
SUSAN CARTER CANADY
MICHAEL D CANADY
50' 25' 0 50' 100'
SCALE: 1" = 100'
N 60° 56' 52" W
S 65° 18' 44.5" E
25+00
30+00
PROJECT REFERENCE NO.
SHEET NO.
67
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.


PRELIMINARY IMPACTS
(SLOPE STAKE + 25FT)
F
F
DENOTES FILL IN WETLAND
WETLAND WU
SITE 43
PEGGY M HILL
JOHN ADAMS CARTER
SUSAN CARTER CANADY
MICHAEL D CANADY
50' 25' 0 50' 100'
SCALE: 1" = 100'
N 63° 51' 50" W
25+00
30+00
S 65° 18' 44.5" E
PROJECT REFERENCE NO.
SHEET NO.
67
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.

WETLAND AND SURACE WATER IMPACTS SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	90+87 to 92+10-L-RT	ROADWAY FILL	0.02									
2	91+98 to 100+06-L-LT	ROADWAY FILL	0.23									
3	94+37 to 100+20-L-RT	ROADWAY FILL	0.16					< 0.01		38		
4	108+26 to 114+34-L-LT	ROADWAY FILL	0.08									
5	118+98 to 133+53L-L-LT	ROADWAY FILL	0.54									
6	122+19 to 124+94-L-LT	ROADWAY FILL	0.07									
7	121+32 to 127+68-L-RT	ROADWAY FILL	0.65									
8	186+19 to 193+09-L-LT	ROADWAY FILL	0.17				0.17					
9	199+16 to 202+54-L-LT	ROADWAY FILL	0.18									
10	198+56 to 203+79-L-RT	ROADWAY FILL	0.37					0.04		70		
11	11+89 to 23+93-Y5RPC-RT	ROADWAY FILL	1.35					0.02		63		
12	213+68 to 222+17-L-RT	ROADWAY FILL	1.66									
13	251+91 to 253+32-L-	ROADWAY FILL						0.03		116		
14	300+64 to 306+99-L-LT	ROADWAY FILL	0.13									
15	301+32 to 304+90-L-	ROADWAY FILL						0.25		138		
16	302+03 to 307+02-L-RT	ROADWAY FILL	0.18									
17	351+049 to 351+85-L-RT	ROADWAY FILL	< 0.01									
18	354+73 to 354+90-L-	ROADWAY FILL						< 0.01		130		
19	354+90 to 357+78-L-RT	ROADWAY FILL	0.02									
20	384+05 to 292+99-L-LT	ROADWAY FILL	0.28									
21	405+58 to 405+78-L-LT	ROADWAY FILL	< 0.01									
22	422+17 to 437+17-L-LT	ROADWAY FILL	0.67									
23	423+14 to 423+31-L-LT	ROADWAY FILL						0.01		40		
TOTALS*:			6.76				0.17	0.36		595	0	0

*Rounded totals are sum of actual impacts

NOTES:
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
1-8-2019
CUMBERLAND COUNTY
I-5986A
47532.1.3
SHEET 33 OF 94

Revised 2018 Feb

WETLAND AND SURACE WATER IMPACTS SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No. #REF!	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
24	418+39 to 437+17-L-RT	ROADWAY FILL	0.76									
25	508+34 to 509+39-L-LT	ROADWAY FILL	0.09									
26	522+79 to 528+98-L-LT	ROADWAY FILL	0.36									
27	539+19 to 540+76-L-	ROADWAY FILL						0.03		114		
28	573+52 to 575+47-L-	ROADWAY FILL	0.04									
29	574+35 to 574+56-L-	ROADWAY FILL						0.02		106		
30	600+13 to 606+75-L-LT	ROADWAY FILL	0.31									
31	618+08 to 618+41-L-RT	ROADWAY FILL	< 0.01									
32	622+48 to 626+94-L-LT	ROADWAY FILL	0.48									
33	625+60 to 626+52-L-	ROADWAY FILL						0.02		101		
34	625+67 to 627+43-L-RT	ROADWAY FILL	0.14									
35	640+37 to 642+41-L-RT	ROADWAY FILL	0.02									
36	642+58 to 643+31-L-	ROADWAY FILL						0.01		67		
37	660+09 to 660+50-L-RT	ROADWAY FILL	< 0.01									
38	665+70 to 684+31-L-	ROADWAY FILL	0.52					0.32		60		
		BRIDGE					0.08					
38A	690+67 to 694+59-L-	ROADWAY FILL	0.13									
39	725+12 to 725+92-L-LT	ROADWAY FILL	0.01									
40	729+82 to 731+51-L-LT	ROADWAY FILL	0.05									
41	735+67 to 739+95-L-LT	ROADWAY FILL	0.19									
42	761+05-L-	ROADWAY FILL						0.02		66		
43	30+59 to 33+43-Y5LPDA-RT	ROADWAY FILL	0.17									
	PAGE TOTAL FROM SHEET 93		**6.78**				0.17	**0.36**		**595**		
TOTALS*:			10.06				0.25	0.78		1129		

*Rounded totals are sum of actual impacts

NOTES:
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
1-8-2019
CUMBERLAND COUNTY
I-5986A
47532.1.3

Revised 2018 Feb

SHEET 94 OF 94

TIP PROJECT: I-5986B

CONTRACT:

PERMIT DRAWING
SHEET 1 OF 70

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5986B	1	

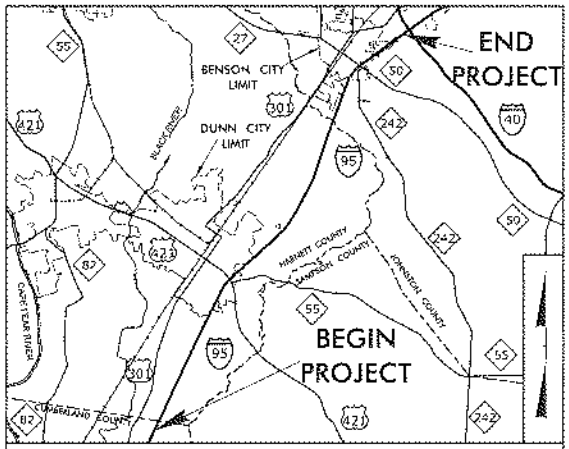
REVISIONS		
47532.1.3		PE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CUMBERLAND, HARNETT, AND JOHNSTON COUNTIES

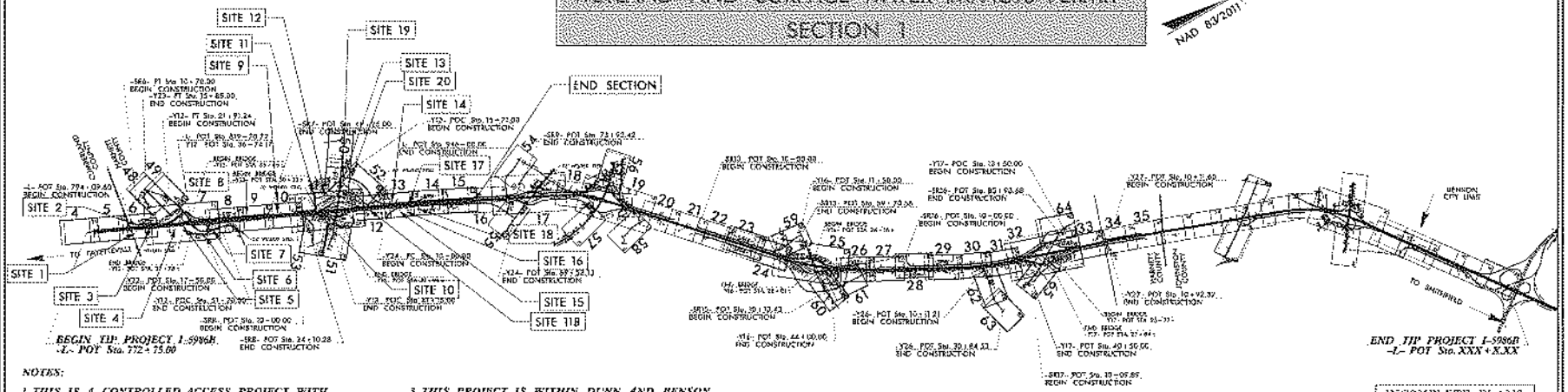
LOCATION: I-95 FROM SR 1811 (BUD HAWKINS ROAD) (EXIT 70) TO I-40 (EXIT 81). WIDEN TO EIGHT LANES.

TYPE OF WORK: GRADING, PAVING, DRAINAGE, SIGNALS, CULVERTS, AND STRUCTURES



VICINITY MAP

WETLAND AND SURFACE WATER IMPACTS PERMIT
SECTION 1



NAD 83/2011

NOTES:

1. THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.

2. CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD ___.

3. THIS PROJECT IS WITHIN DUNN AND BENSON MUNICIPAL BOUNDARIES.

4. DESIGN EXCEPTION REQUIRED FOR HORIZONTAL ALIGNMENT AND HORIZONTAL STOPPING SIGHT DISTANCE ON SR 1811 (BUD HAWKINS ROAD) AND SR 1785 (ELM ST. EXT.). (SEE PLAN SHEETS 7, 12 & 13)

INCOMPLETE PLANS
THIS DRAFT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2020 = 58,900
ADT 2040 = 75,700
K = 7 %
D = 55 %
T = 24 % *
V = 70 MPH
* (17% TTST + 7% DUALS)
FUNC CLASS = INTERSTATE
STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT I-5986B	=	11.865 MILES
LENGTH STRUCTURE TIP PROJECT I-5986B	=	0.020 MILES
TOTAL LENGTH TIP PROJECT I-5986B	=	11.885 MILES

Prepared in the Office of:
Michael Baker INTERNATIONAL
Michael Baker Engineering, Inc.
8000 Regency Parkway, Suite 600
Cary, NC 27518
Professional Corporation License Number C-1056
FOR DIVISION OF HIGHWAYS

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MAY 1, 2019

LETTING DATE:
JULY 21, 2020

SUSAN C. LANCASTER, P.E.
PROJECT ENGINEER

CURTIS TILLMAN, P.E.
PROJECT DESIGN ENGINEER

STEVE D. KENDALL, P.E.
HEADQUARTERS

HYDRAULICS ENGINEER

SIGNATURE ..... P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE ..... P.E.

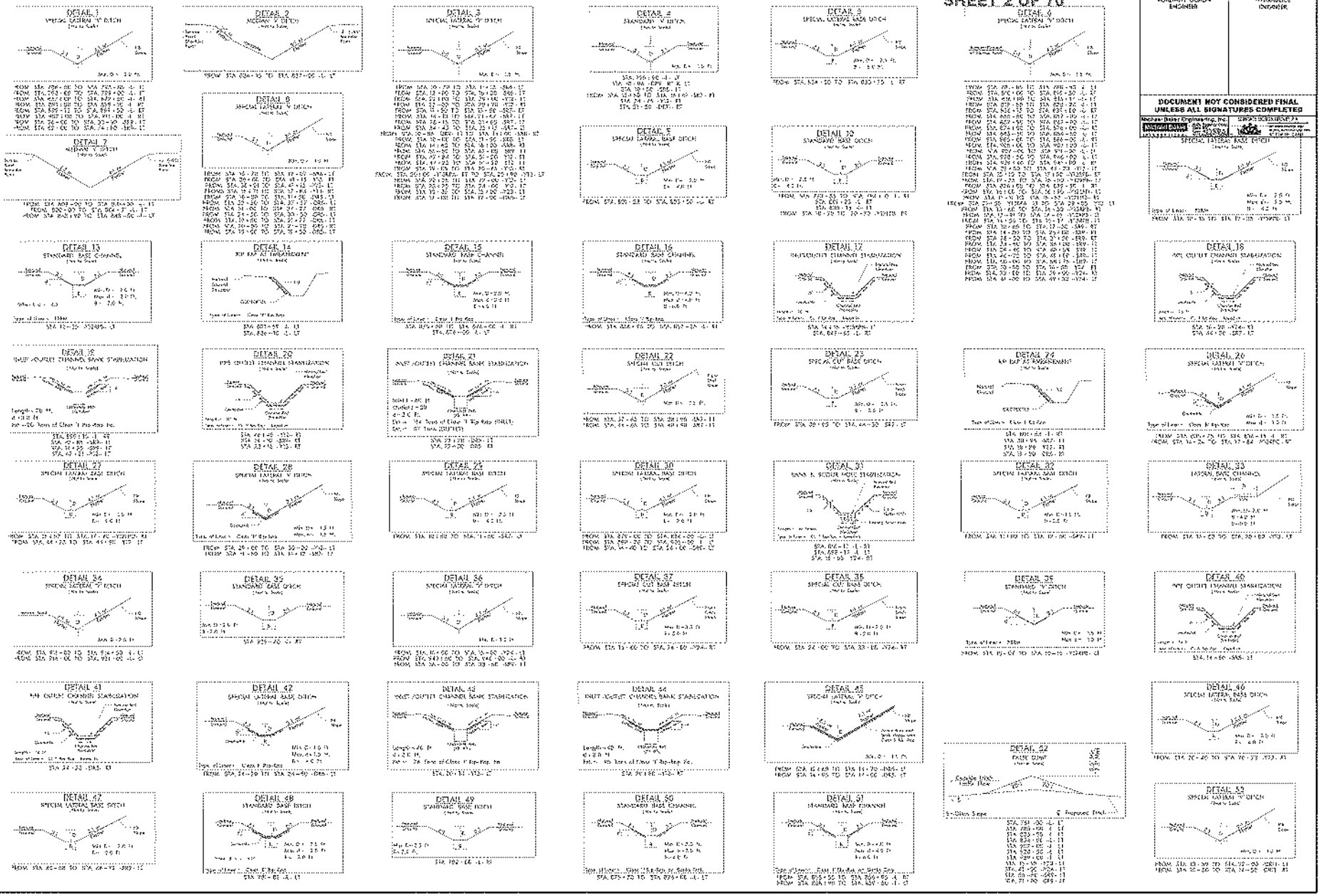
DETAILS

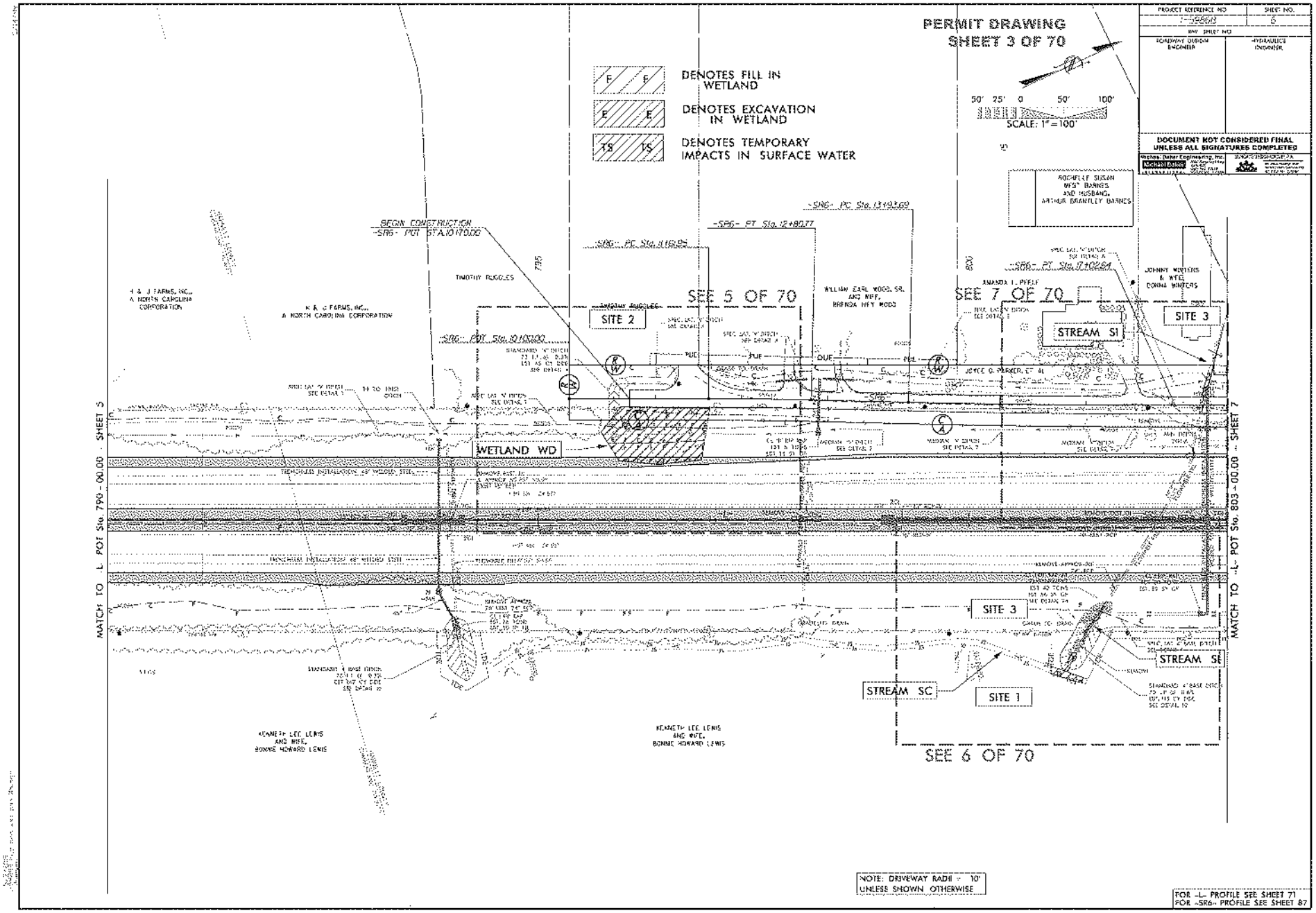
PERMIT DRAWING
SHEET 2 OF 70

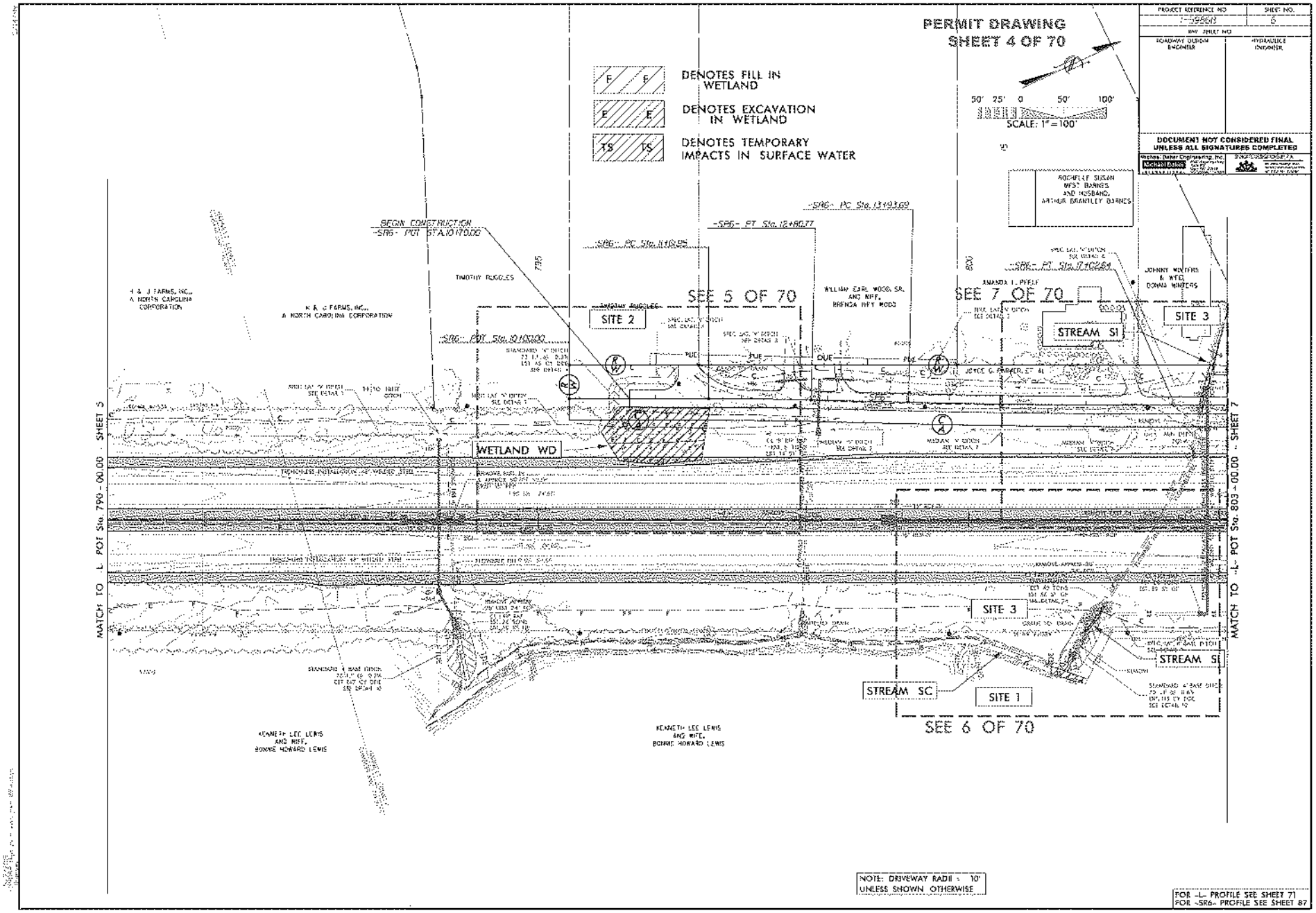
PROJECT REFERENCE NO.	SHEET NO.
7-5956P	02
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULIC ENGINEER

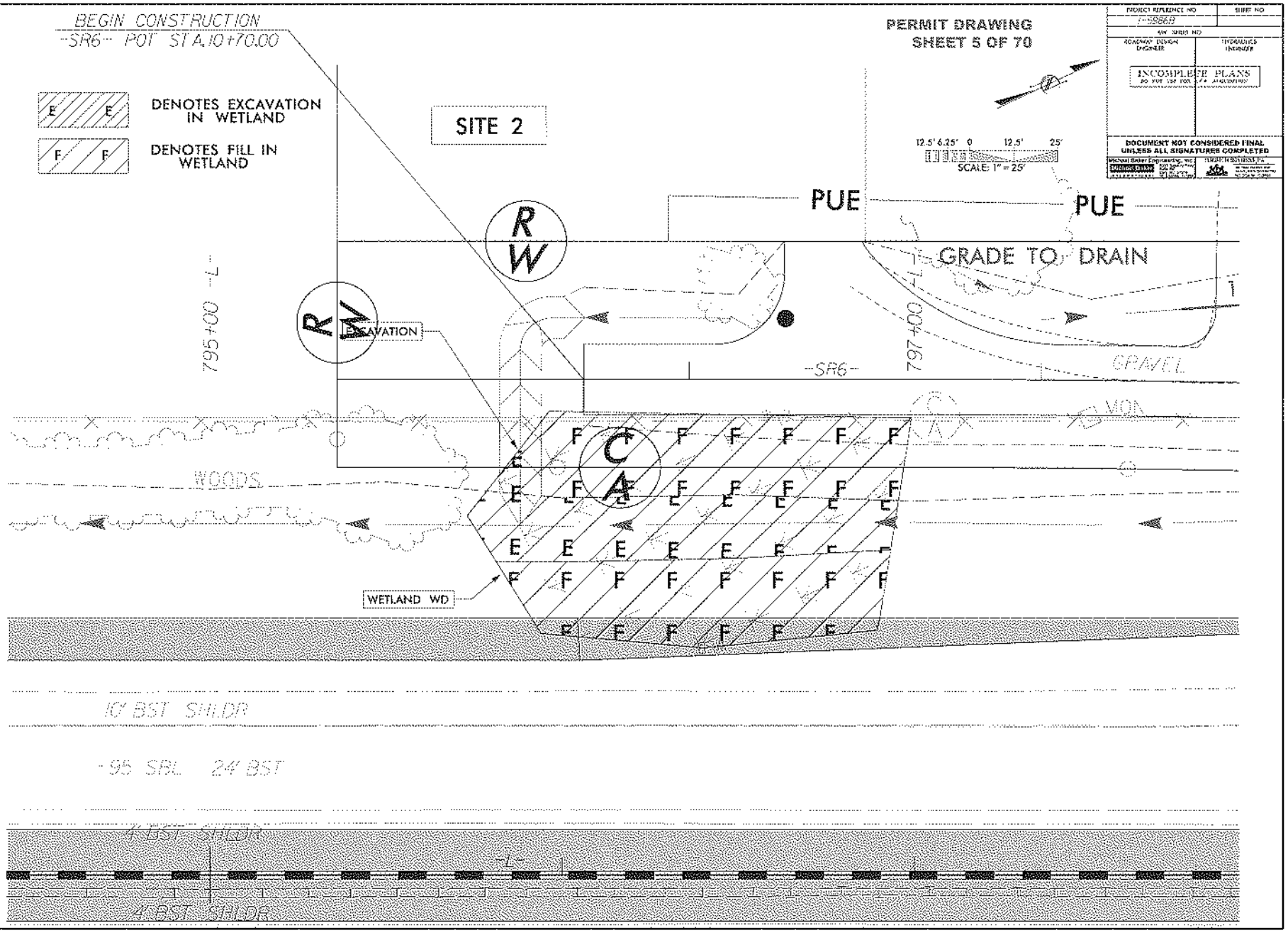
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

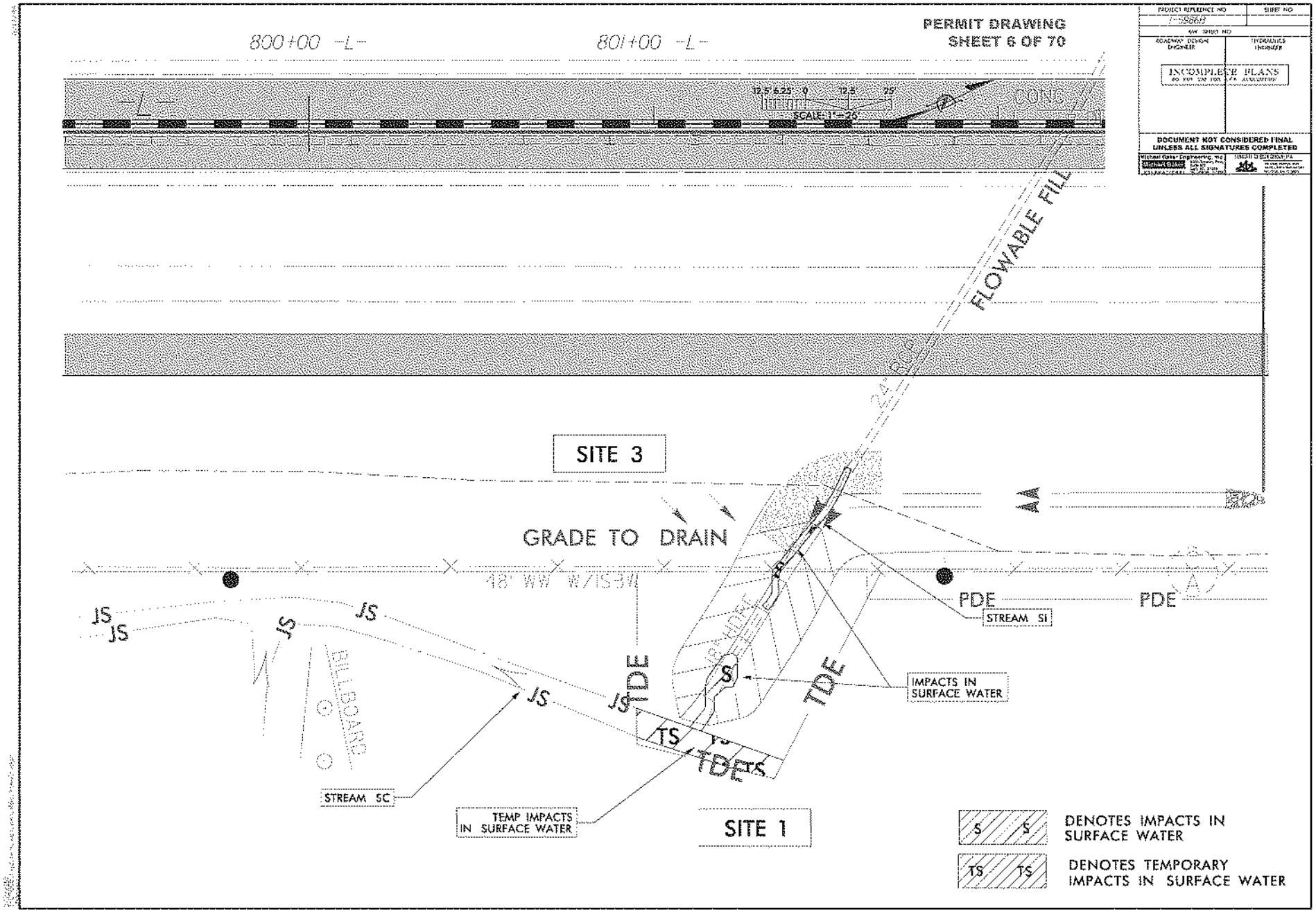
Michael Baker Engineering, Inc.

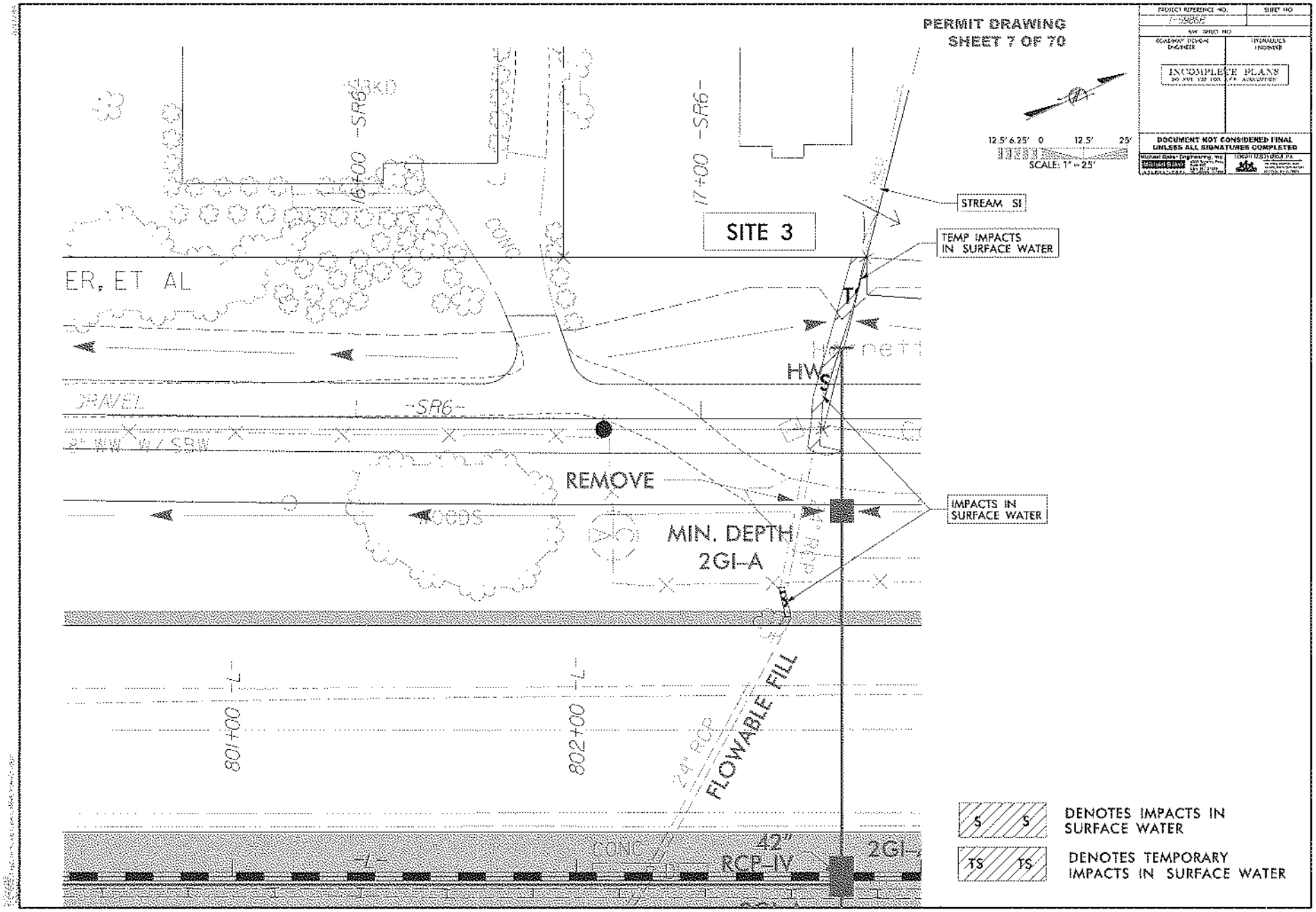


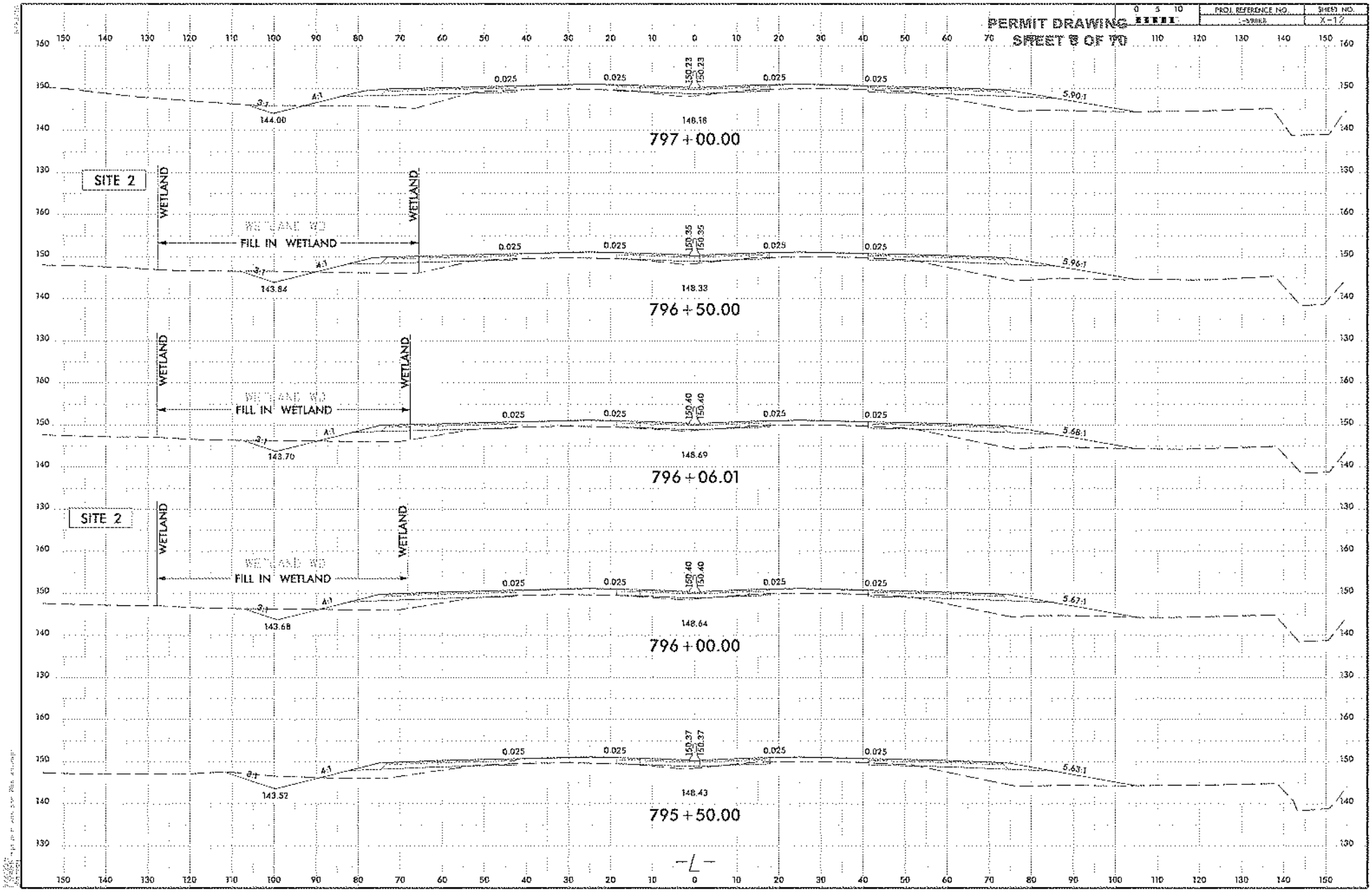

PERMIT DRAWING
SHEET 3 OF 70
DENOTES FILL IN WETLAND
DENOTES EXCAVATION IN WETLAND
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
SCALE: 1" = 100'
PROJECT REFERENCE NO.
SHEET NO.
R-5868
6
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
BEGIN CONSTRUCTION
-SR6- PCI STA.10+70.00
-SR6- PC Sta. 11+16.95
-SR6- PT Sta. 12+80.77
-SR6- PC Sta. 13+93.69
-SR6- PT Sta. 17+02.84
-SR6- PCI Sta. 10+00.00
SEE 5 OF 70
SEE 7 OF 70
SEE 6 OF 70
SITE 1
SITE 2
SITE 3
STREAM SC
STREAM SI
STREAM SE
WETLAND WD
H & J FARMS, INC., A NORTH CAROLINA CORPORATION
K & C FARMS, INC., A NORTH CAROLINA CORPORATION
TIMOTHY RUDDLES
WILLIAM EARL WOOD, SR. AND WIFE, BRENDA WIFY WOOD
AMANDA L. PFEFF
JOHNNY WINTERS & WIFE, DONNA WINTERS
JOYCE G. PARKER, ET AL
ROCHELLE SUSAN WIFE BARNES AND HUSBAND, ARTHUR BRANTLEY BARNES
KENNETH LEE LEWIS AND WIFE, BONNIE HOWARD LEWIS
MATCH TO -L- POT Sta. 799+00.00 - SHEET 5
MATCH TO -L- POT Sta. 803+00.00 - SHEET 7
NOTE: DRIVEWAY RADII = 10' UNLESS SHOWN OTHERWISE
FOR -L- PROFILE SEE SHEET 71
FOR -SR6- PROFILE SEE SHEET 87


PERMIT DRAWING
SHEET 4 OF 70
DENOTES FILL IN WETLAND
DENOTES EXCAVATION IN WETLAND
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
SCALE: 1" = 100'
PROJECT REFERENCE NO.
SHEET NO.
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
ROCHELLE SUSAN WEST BARNES AND HUSBAND, ARTHUR BRANTLEY BARNES
-SR6- PC Sta. 13+93.69
-SR6- PT Sta. 12+80.77
BEGIN CONSTRUCTION -SR6- POT STA. 10+70.00
-SR6- PC Sta. 11+16.95
-SR6- PT Sta. 10+62.84
-SR6- POT Sta. 10+00.00
TIMOTHY RUDDLES
H & J FARMS, INC., A NORTH CAROLINA CORPORATION
K & C FARMS, INC., A NORTH CAROLINA CORPORATION
WILLIAM EARL WOOD, SR. AND WIFE, BRENDA IVEY WOOD
AMANDA L. PIFELF
JOHNNY WINTERS & WIFE, DONNA WINTERS
JOYCE G. PARKER, ET AL
SEE 5 OF 70
SEE 7 OF 70
SEE 6 OF 70
SITE 1
SITE 2
SITE 3
STREAM SC
STREAM SI
WETLAND WD
KENNETH LEE LEWIS AND WIFE, BONNIE HOWARD LEWIS
MATCH TO -L- POT Sta. 799+00.00 - SHEET 5
MATCH TO -L- POT Sta. 803+00.00 - SHEET 7
NOTE: DRIVEWAY RADII = 10' UNLESS SHOWN OTHERWISE
FOR -L- PROFILE SEE SHEET 71
FOR -SR6- PROFILE SEE SHEET 87

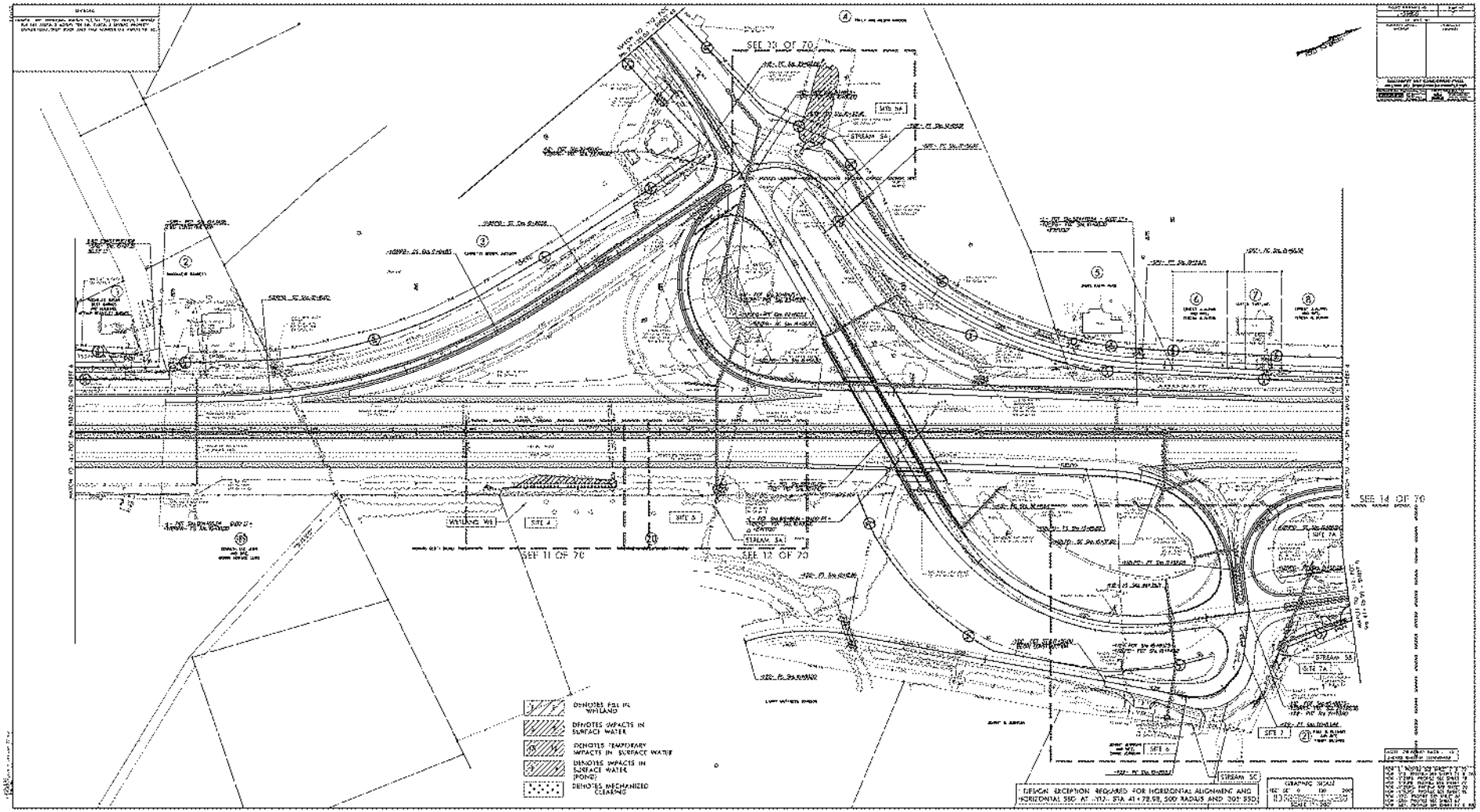

BEGIN CONSTRUCTION
-SR6- POT STA.10+70.00
DENOTES EXCAVATION IN WETLAND
DENOTES FILL IN WETLAND
SITE 2
PERMIT DRAWING
SHEET 5 OF 70
SCALE: 1" = 25'
PUE
PUE
GRADE TO DRAIN
RW
RW
EXCAVATION
795+00 -L-
797+00 -L-
-SR6-
GRAVEL
WOODS
WOODS
CA
WETLAND WD
10' BST SHLDR
-95 SBL 24' BST
4' BST SHLDR
4' BST SHLDR
-L-
INCOMPLETE PLANS
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED


PERMIT DRAWING
SHEET 6 OF 70
PROJECT REFERENCE NO.
SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
800+00 -L-
801+00 -L-
-L-
SCALE: 1"=25'
CONC
FLOWABLE FILL
24" RCP
SITE 3
GRADE TO DRAIN
18" WW W/IS-3W
JS
PDE
STREAM SI
IMPACTS IN SURFACE WATER
TDE
TS
BILLBOARD
STREAM SC
TEMP IMPACTS IN SURFACE WATER
SITE 1
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER

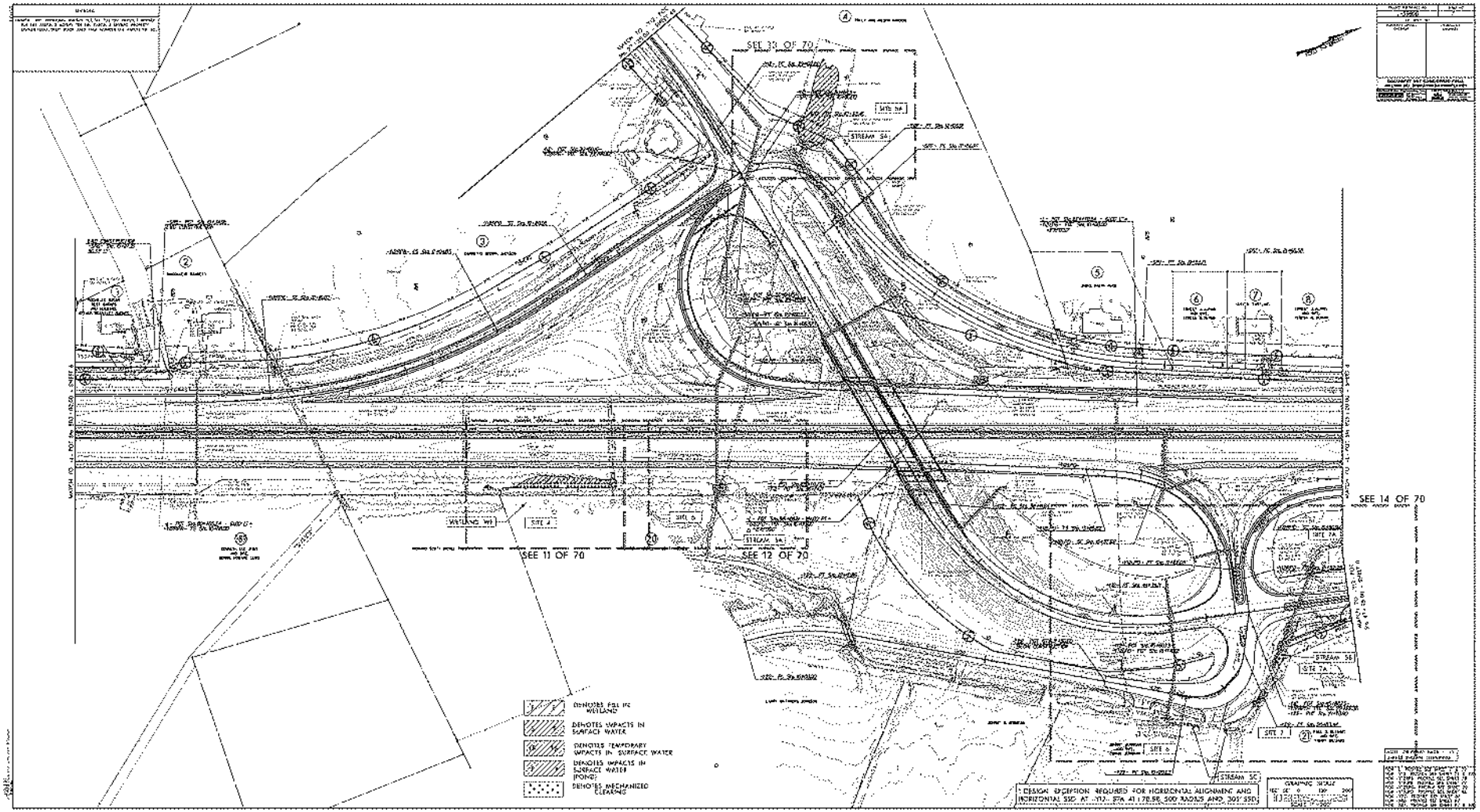

PERMIT DRAWING
SHEET 7 OF 70
PROJECT REFERENCE NO.
SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR RIGHT OF WAY ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
12.5' 6.25' 0 12.5' 25'
SCALE: 1" = 25'
STREAM S1
TEMP IMPACTS IN SURFACE WATER
SITE 3
ER, ET AL
HWS
-SR6-
REMOVE
IMPACTS IN SURFACE WATER
MIN. DEPTH
2GI-A
801+00
802+00
24" RCP
FLOWABLE FILL
CONC
42"
RCP-IV
2GI-
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER

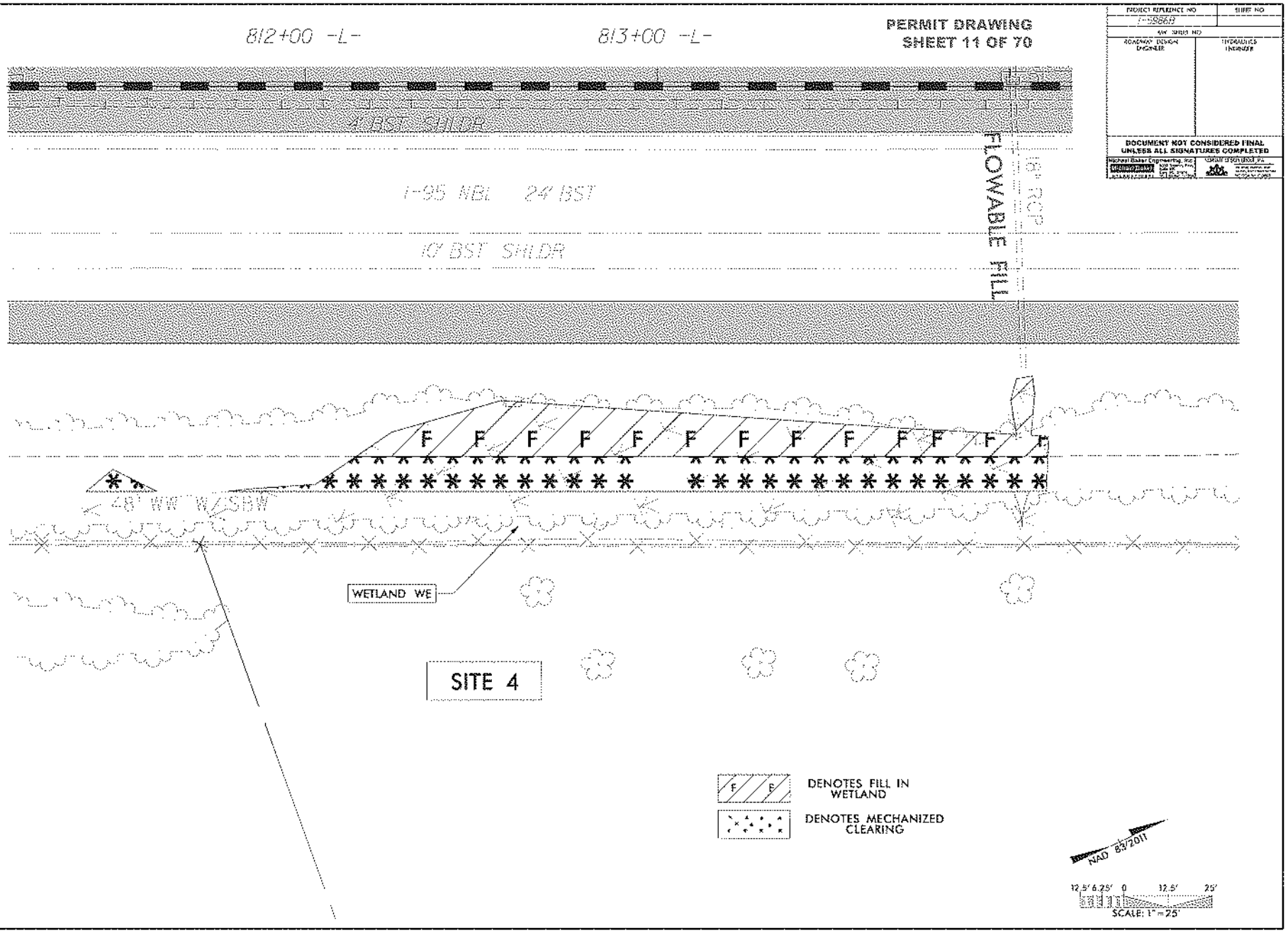

PERMIT DRAWING
SHEET 8 OF 70
PROJ. REFERENCE NO.
SHEET NO.
X-12
797+00.00
SITE 2
WETLAND
FILL IN WETLAND
144.00
148.16
796+50.00
143.84
148.33
796+06.01
143.70
148.69
796+00.00
143.68
148.64
795+50.00
143.52
148.43
0.025
150.23
150.35
150.40
150.37
5.90:1
5.96:1
5.68:1
5.67:1
5.63:1
-L-

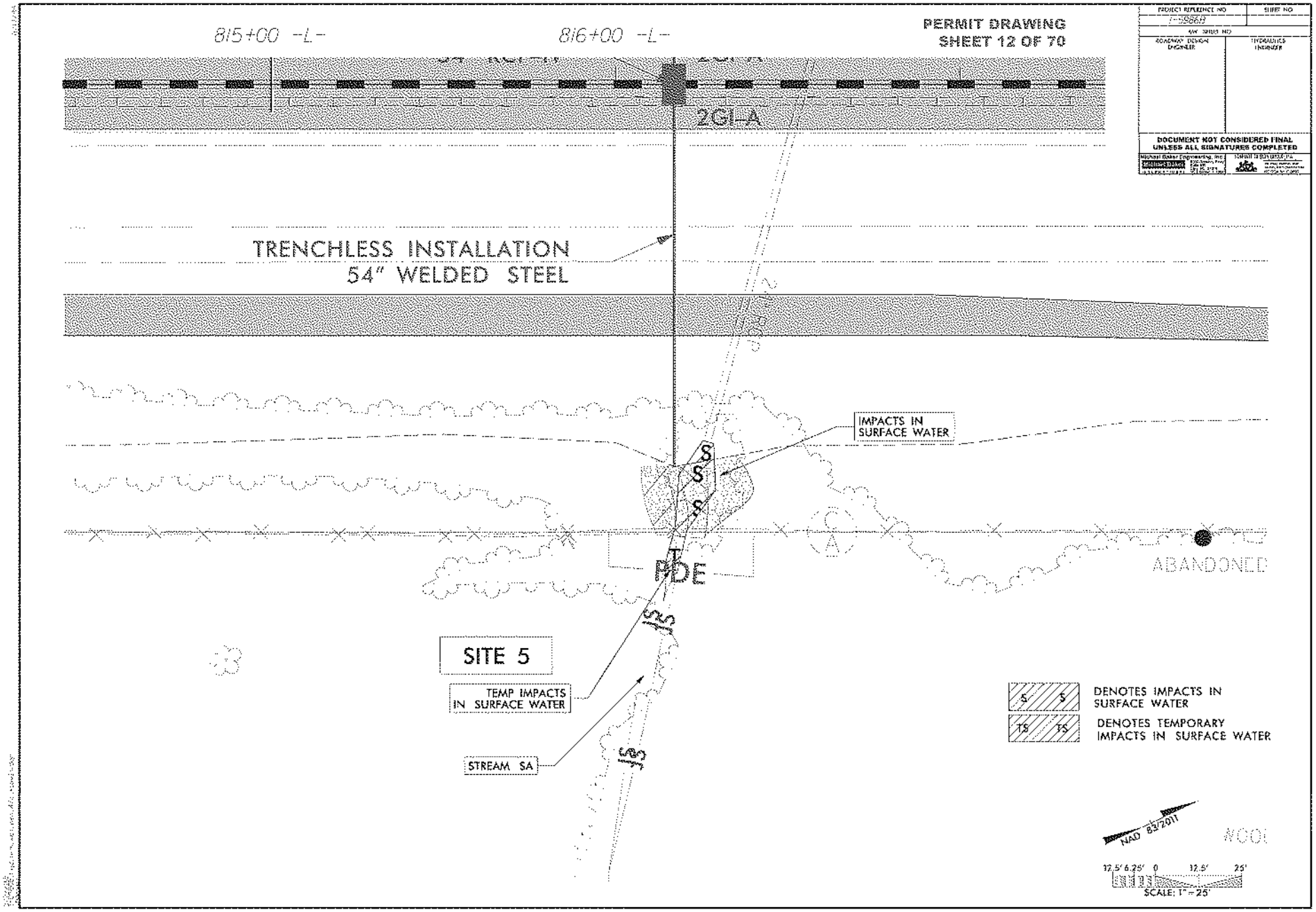
PERMIT DRAWING
SHEET 9 OF 70

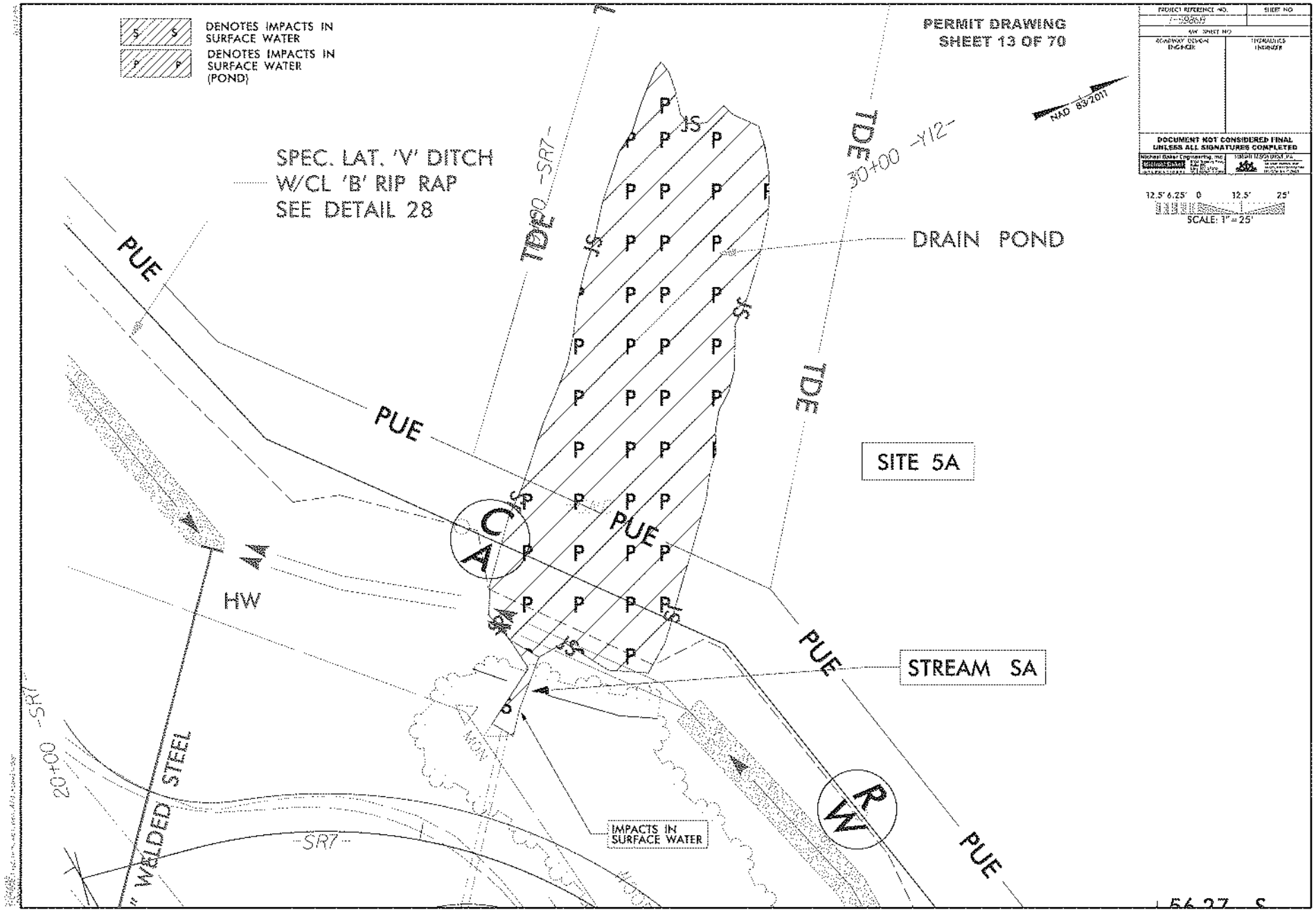


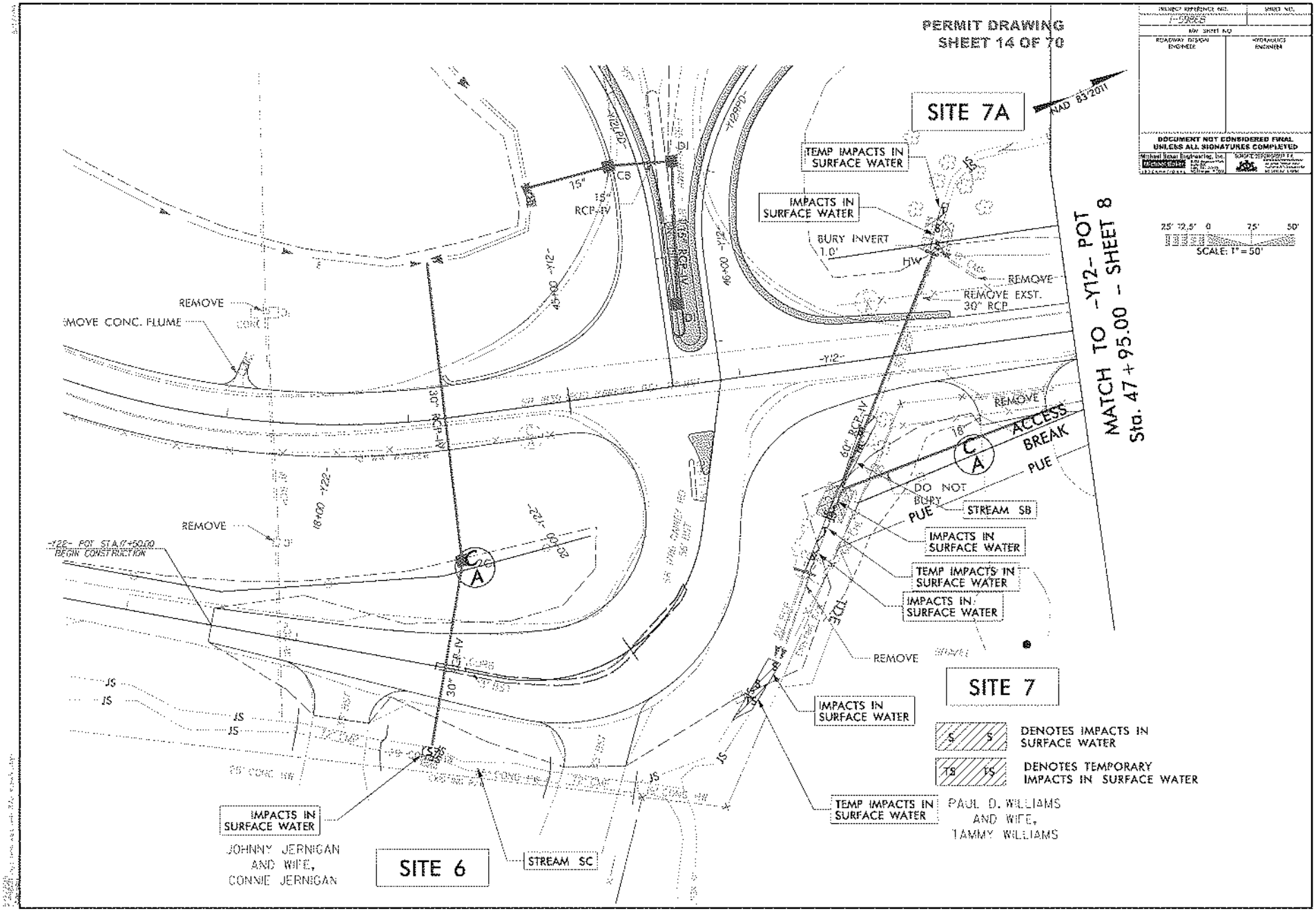
PERMIT DRAWING
SHEET 10 OF 70

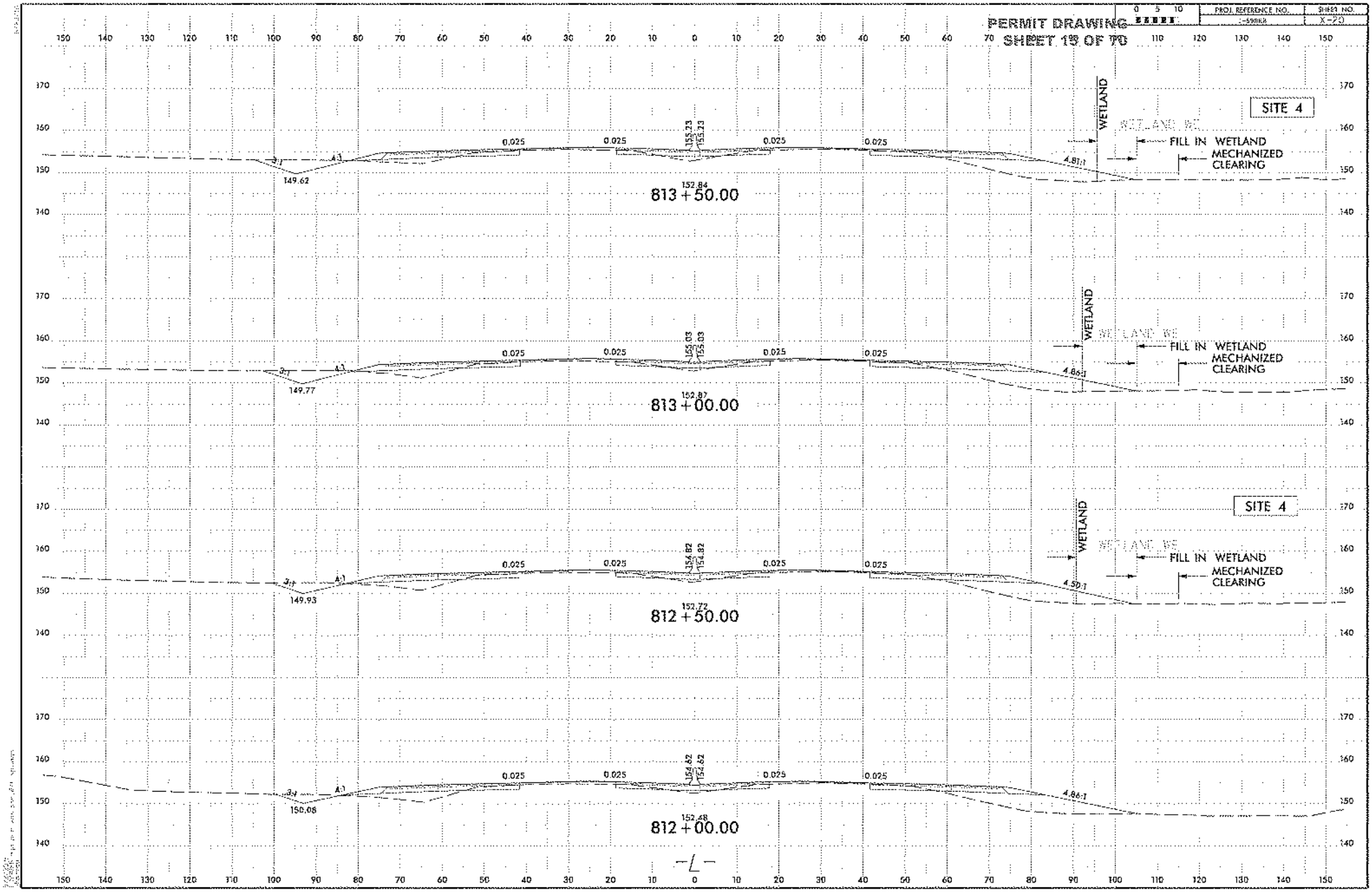


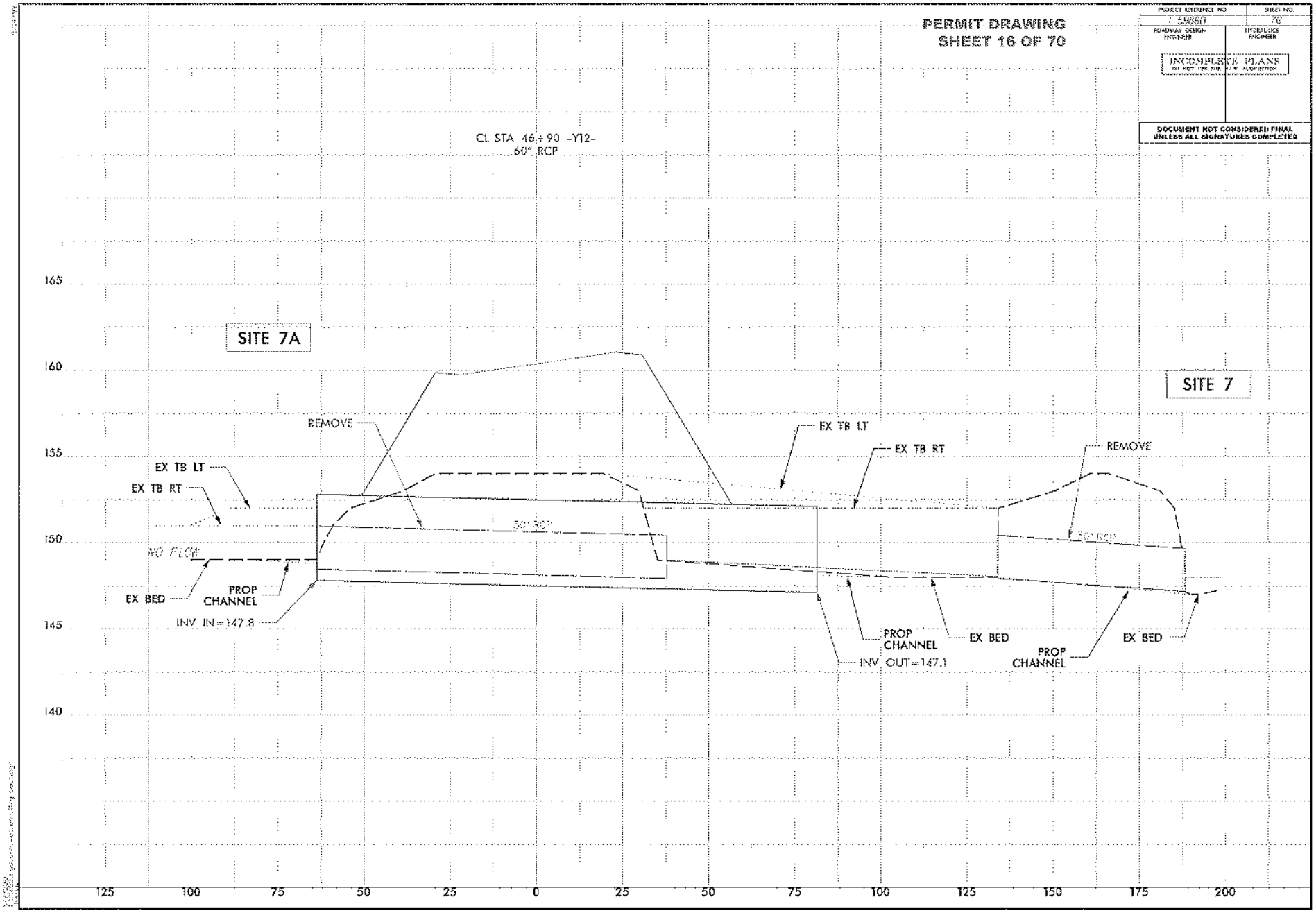

PERMIT DRAWING
SHEET 11 OF 70
PROJECT REFERENCE NO.
I-5986B
SHEET NO.
AW JOB NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
812+00 -L-
813+00 -L-
2' BST SHLDR
I-95 NBL 24' BST
10' BST SHLDR
FLOWABLE FILL
18" RCP
48" WW W/SBW
WETLAND WE
SITE 4
DENOTES FILL IN WETLAND
DENOTES MECHANIZED CLEARING
NAD 83/2011
12.5' 6.25' 0 12.5' 25'
SCALE: 1" = 25'

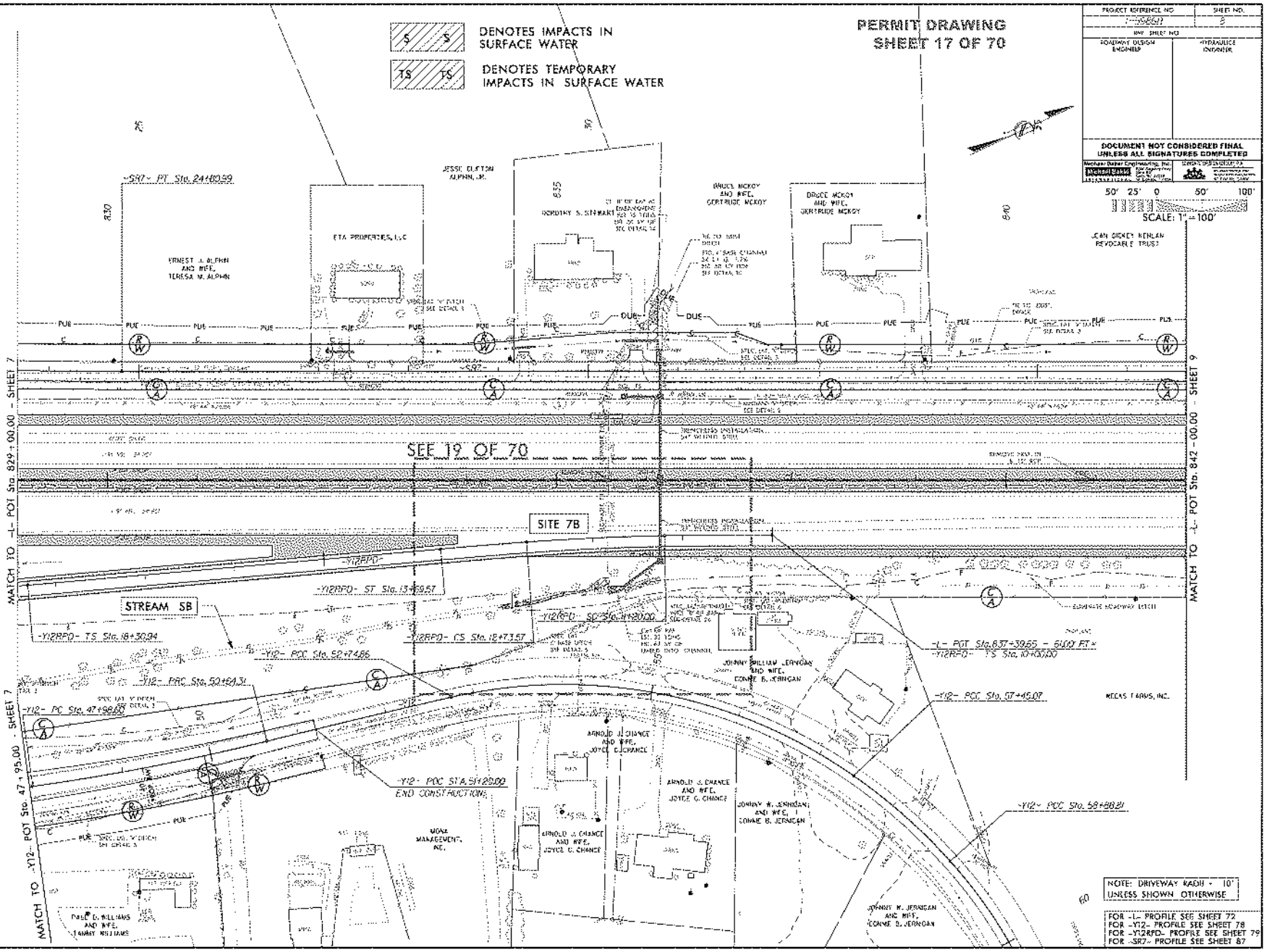

PERMIT DRAWING
SHEET 12 OF 70
815+00 -L-
816+00 -L-
2GI-A
TRENCHLESS INSTALLATION
54" WELDED STEEL
IMPACTS IN SURFACE WATER
S
S
S
TS
TS
TS
TS
TDE
ABANDONED
SITE 5
TEMP IMPACTS IN SURFACE WATER
STREAM SA
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
NAD 83/2011
NCDOT
12.5' 6.25' 0 12.5' 25'
SCALE: 1" = 25'
PROJECT REFERENCE NO.
SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

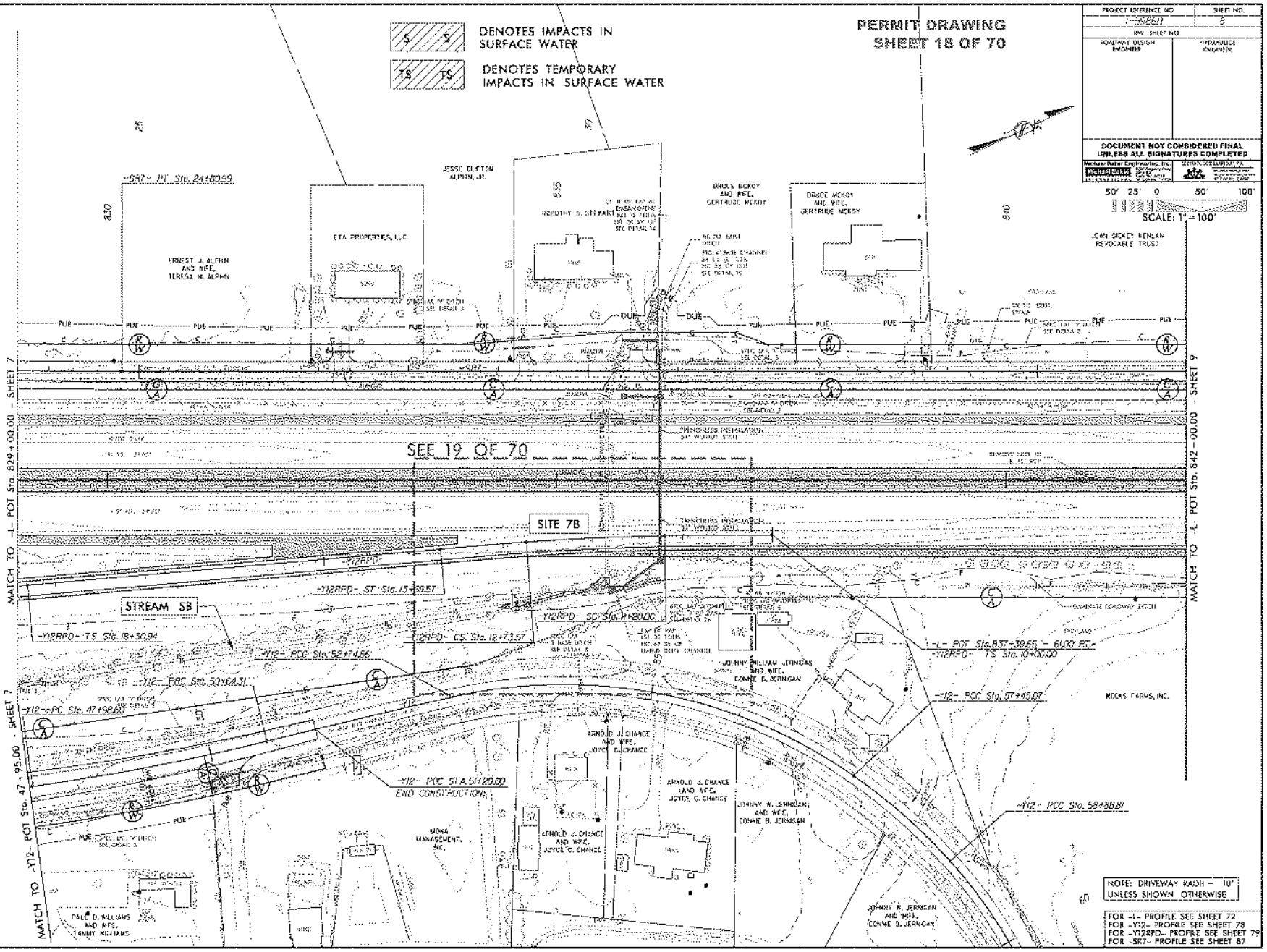

DENOTES IMPACTS IN SURFACE WATER
DENOTES IMPACTS IN SURFACE WATER (POND)
PERMIT DRAWING
SHEET 13 OF 70
NAD 83/2011
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
SCALE: 1" = 25'
SPEC. LAT. 'V' DITCH
W/CL 'B' RIP RAP
SEE DETAIL 28
DRAIN POND
SITE 5A
STREAM SA
IMPACTS IN SURFACE WATER
PUE
TDE
HW
WELDED STEEL
-SR7-
-Y12-
20+00
30+00
JS
MON

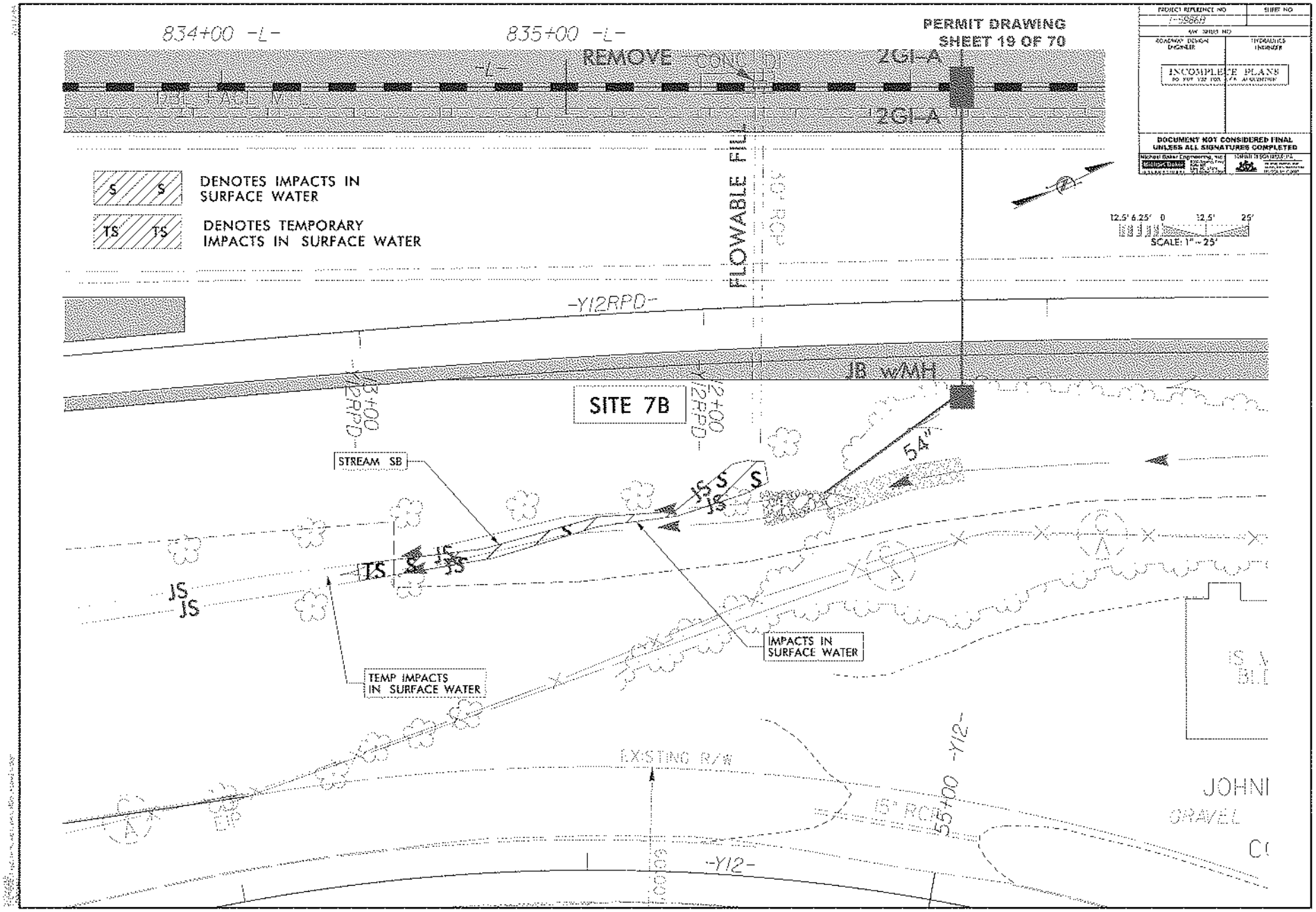

PERMIT DRAWING
SHEET 14 OF 70
SITE 7A
NAD 83/2011
TEMP IMPACTS IN SURFACE WATER
IMPACTS IN SURFACE WATER
BURY INVERT 1.0'
HW
REMOVE
REMOVE EXST. 30" RCP
REMOVE
REMOVE CONC. FLUME
-Y12-
MATCH TO -Y12- POT
Sta. 47+95.00 - SHEET 8
ACCESS BREAK
PUE
DO NOT BURY
STREAM SB
IMPACTS IN SURFACE WATER
TEMP IMPACTS IN SURFACE WATER
IMPACTS IN SURFACE WATER
REMOVE
SITE 7
IMPACTS IN SURFACE WATER
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
TEMP IMPACTS IN SURFACE WATER
PAUL D. WILLIAMS AND WIFE, TAMMY WILLIAMS
REMOVE
-Y22- POT STA.17+50.00 BEGIN CONSTRUCTION
-Y22-
IMPACTS IN SURFACE WATER
JOHNNY JERNIGAN AND WIFE, CONNIE JERNIGAN
SITE 6
STREAM SC
SCALE: 1" = 50'
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

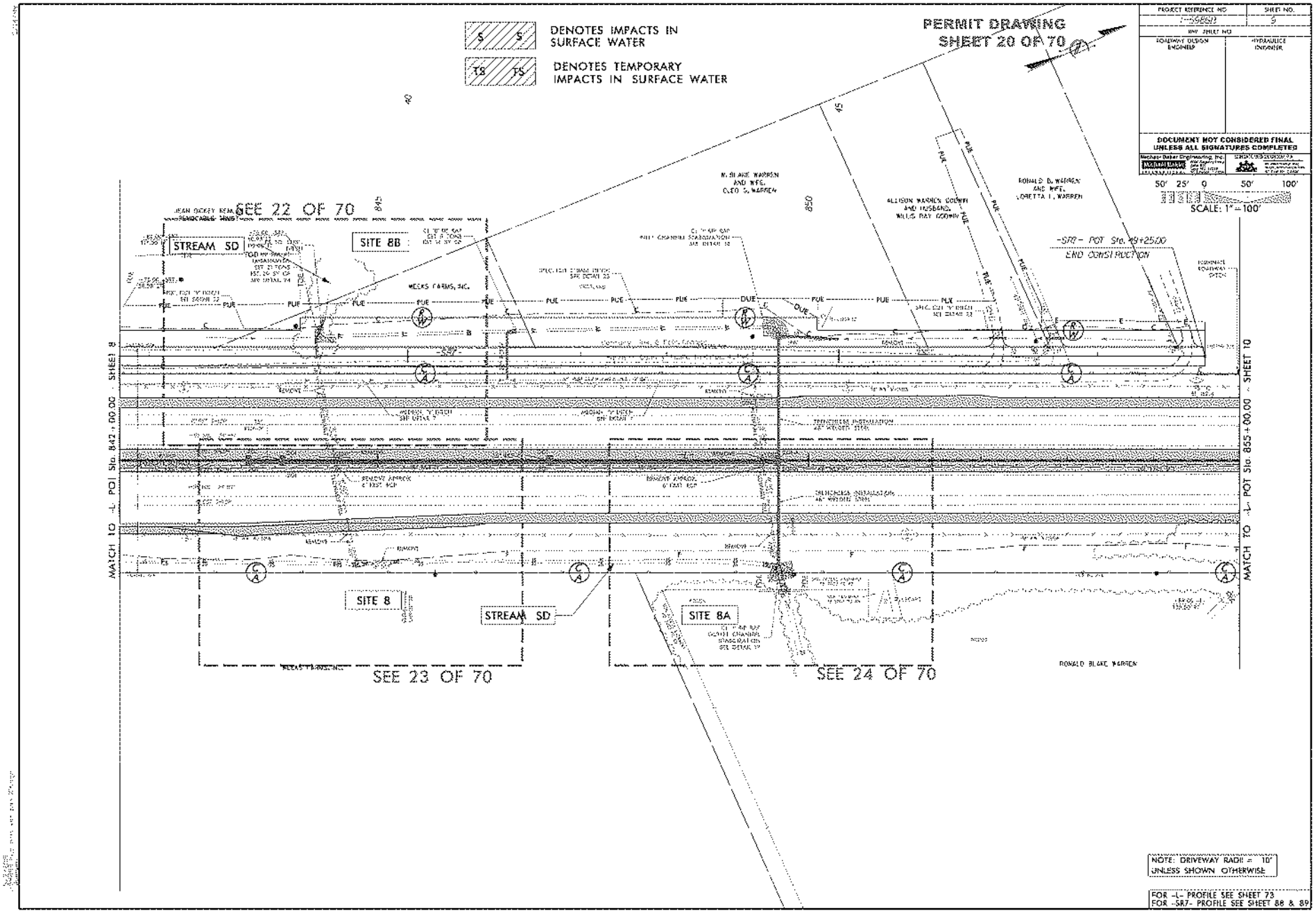

PERMIT DRAWING
SHEET 13 OF 70
PROJ. REFERENCE NO.
SHEET NO.
X-20
SITE 4
WETLAND
FILL IN WETLAND
MECHANIZED CLEARING
0.025
155.23
155.23
149.62
152.84
813+50.00
155.03
155.03
149.77
152.87
813+00.00
154.82
154.82
149.93
152.72
812+50.00
154.82
154.82
150.08
152.48
812+00.00
4.81:1
4.86:1
4.50:1
4.86:1
3:1
4:1
-L-

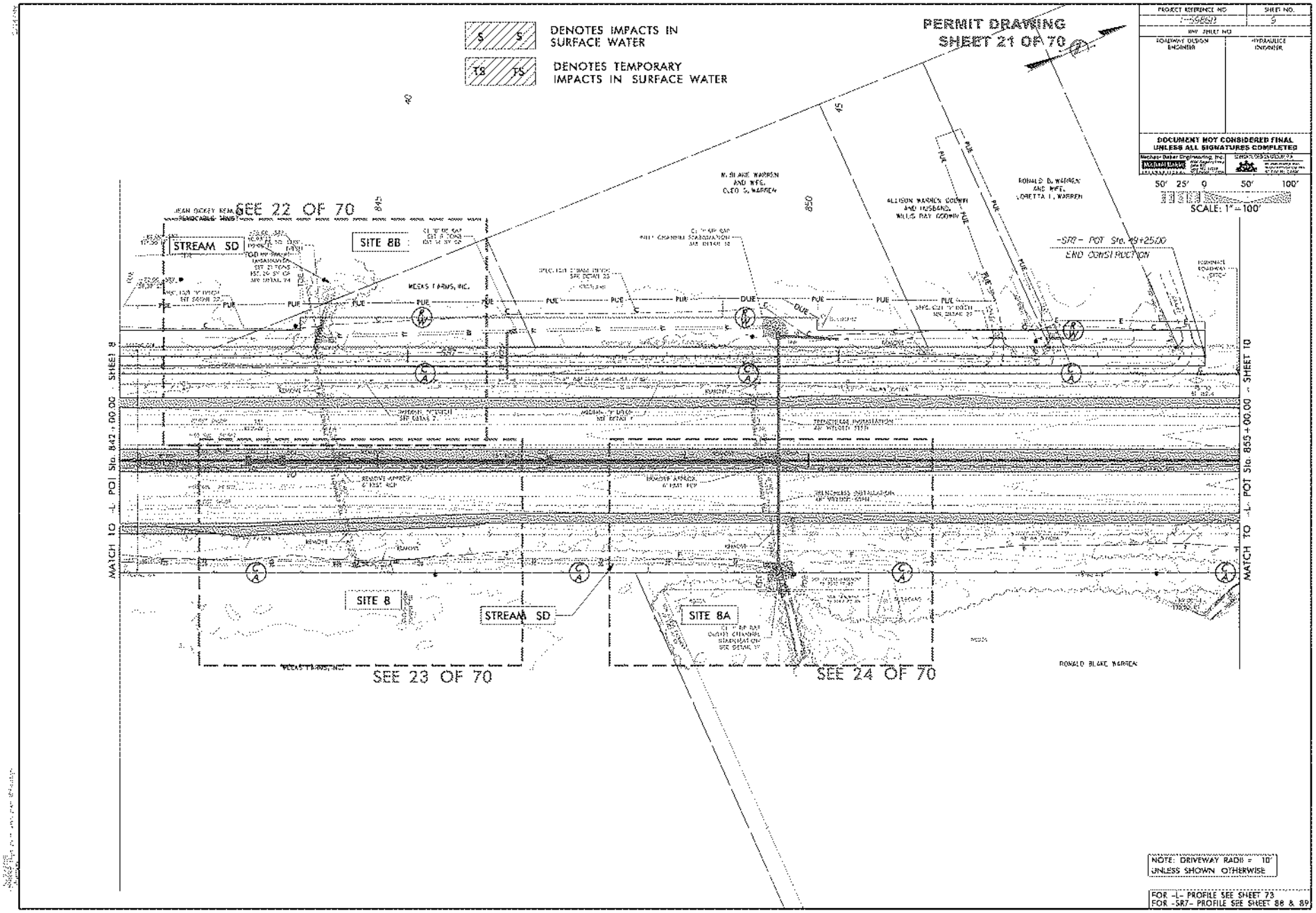

PERMIT DRAWING
SHEET 16 OF 70
PROJECT REFERENCE NO.
SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
CL STA 46+90 -Y12-
60" RCP
SITE 7A
SITE 7
REMOVE
EX TB LT
EX TB RT
NO FLOW
EX BED
PROP CHANNEL
INV IN=147.8
INV OUT=147.3
165
160
155
150
145
140
125
100
75
50
25
0
25
50
75
100
125
150
175
200

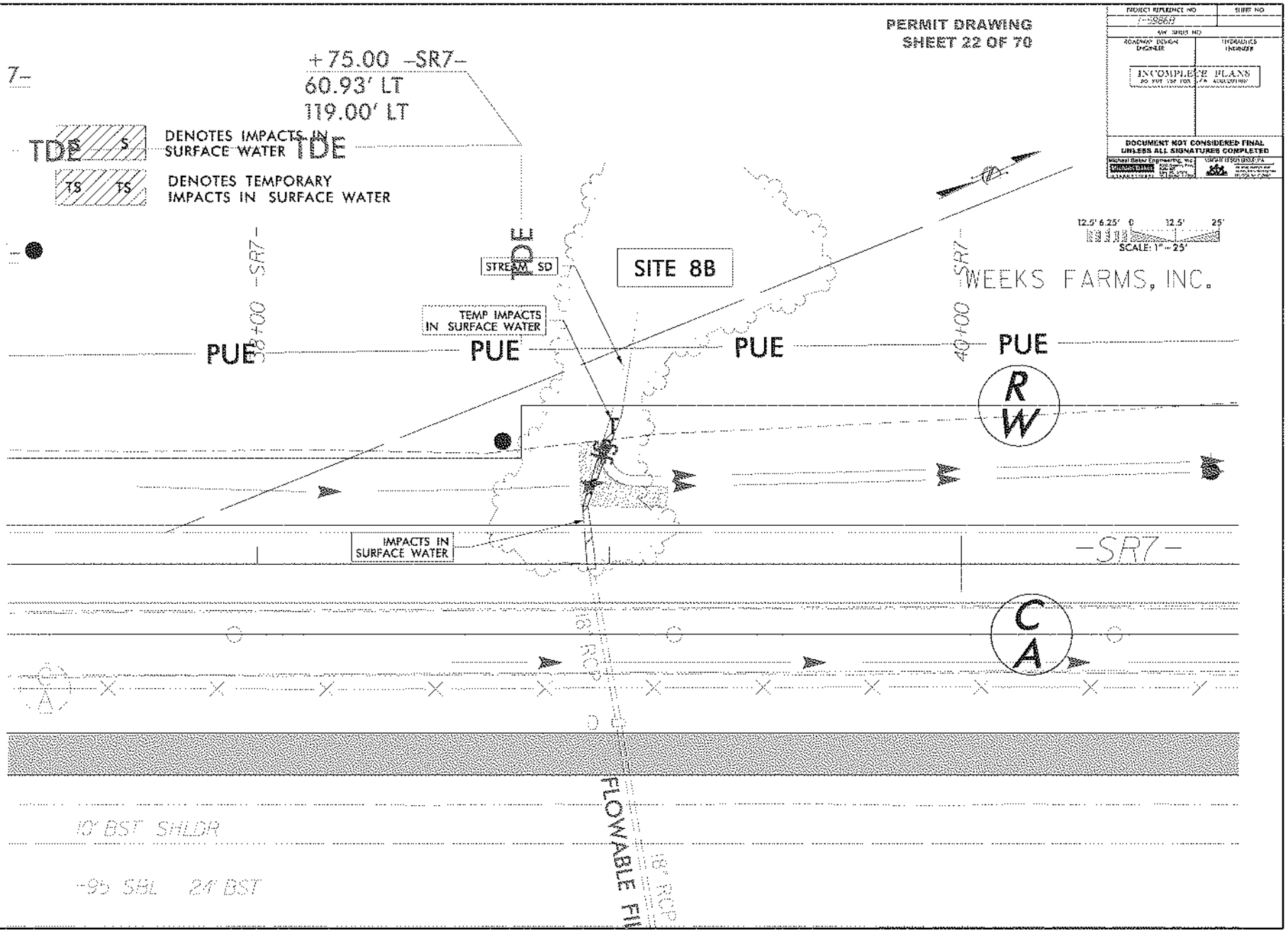

PERMIT DRAWING
SHEET 17 OF 70
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
PROJECT REFERENCE NO.
SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
SCALE: 1" = 100'
ERNEST J. ALPHIN AND WIFE, TERESA M. ALPHIN
ETA PROPERTIES, LLC
JESSE DUTTON ALPHIN, JR.
BRUCE MCKOY AND WIFE, GERTRUDE MCKOY
JEAN DIGNEY KENLAN REVOCABLE TRUST
SEE 19 OF 70
SITE 7B
STREAM 5B
-Y12RPD- ST Sta. 13+59.57
-Y12RPD- TS Sta. 18+30.94
-Y12RPD- CS Sta. 18+73.57
-Y12- POC Sta. 52+74.86
-Y12- PRC Sta. 50+64.31
-Y12- POC Sta. 47+96.00
-Y12- POC STA. 54+25.00
END CONSTRUCTION
-L- POT Sta. 837+39.65 - 6400 FT =
-Y12RPD- TS Sta. 10+00.00
-Y12- POC Sta. 57+45.07
-Y12- POC Sta. 58+88.21
JOHNNY WILLIAM JERNIGAN AND WIFE, CONNIE B. JERNIGAN
ARNOLD J. CHANCE AND WIFE, JOYCE G. CHANCE
WEEKS FARMS, INC.
MOAB MANAGEMENT, INC.
PAUL D. WILLIAMS AND WIFE, TAMMY WILLIAMS
MATCH TO -L- POT Sta. 829+00.00 - SHEET 7
MATCH TO -L- POT Sta. 842+00.00 - SHEET 9
MATCH TO -Y12- POT Sta. 47+95.00 - SHEET 7
NOTE: DRIVEWAY RADII = 10' UNLESS SHOWN OTHERWISE
FOR -L- PROFILE SEE SHEET 72
FOR -Y12- PROFILE SEE SHEET 78
FOR -Y12RPD- PROFILE SEE SHEET 79
FOR -SR7- PROFILE SEE SHEET 87

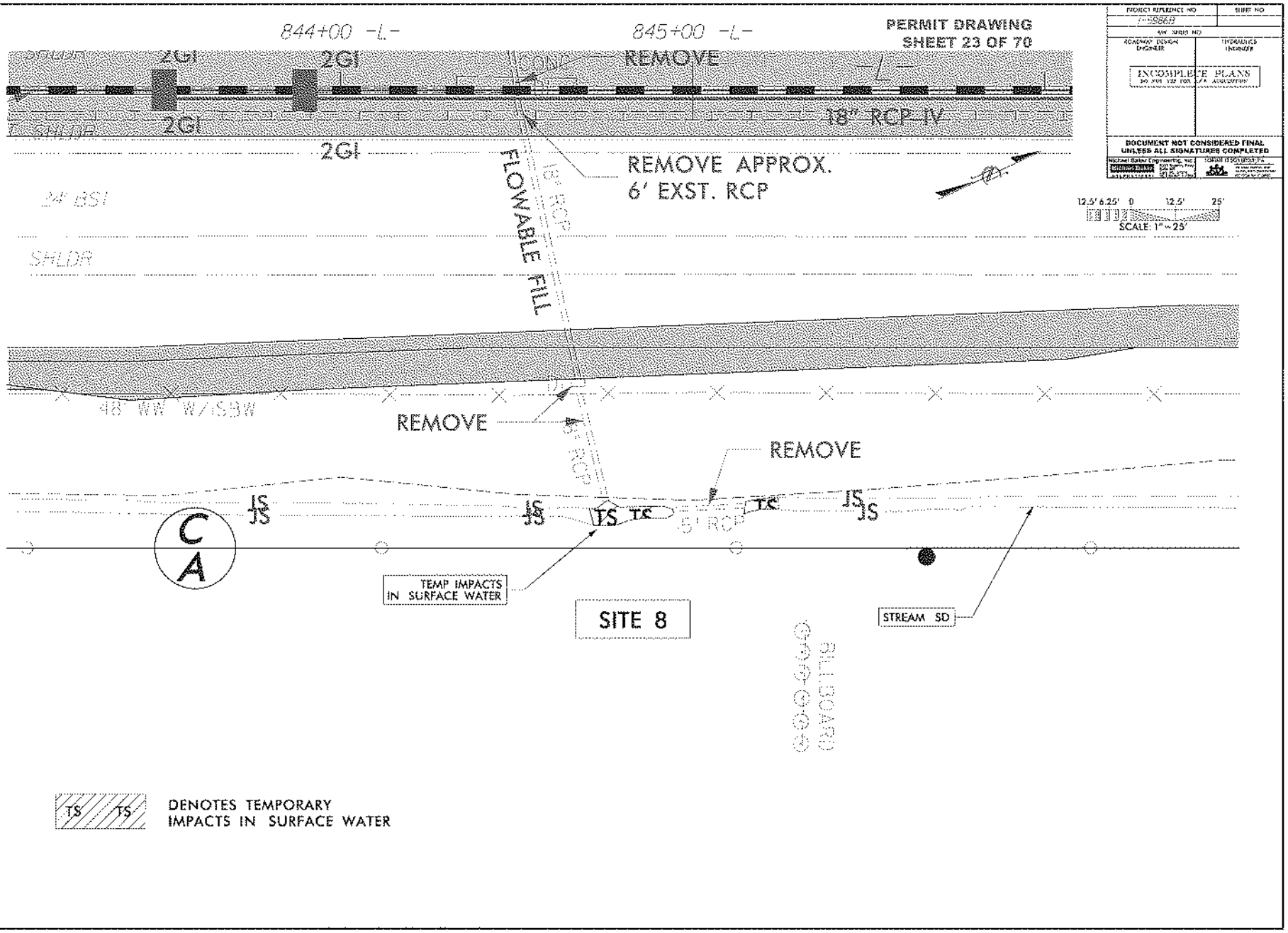

PERMIT DRAWING
SHEET 18 OF 70
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
PROJECT REFERENCE NO.
SHEET NO.
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
SCALE: 1" = 100'
SEE 19 OF 70
SITE 7B
STREAM SB
MATCH TO -L- POT Sta. 829+00.00 - SHEET 7
MATCH TO -L- POT Sta. 842+00.00 - SHEET 9
MATCH TO -Y12- POT Sta. 47+95.00 - SHEET 7
-SR7- PT Sta. 24+80.59
-Y12RPD- TS Sta. 18+30.94
-Y12RPD- ST Sta. 13+69.57
-Y12RPD- SC Sta. 11+20.00
-Y12RPD- CS Sta. 12+73.57
-Y12- POC Sta. 52+74.86
-Y12- PRC Sta. 50+64.31
-Y12- POC Sta. 47+96.82
-Y12- POC Sta. 54+20.00
END CONSTRUCTION
-L- POT Sta. 837+39.65 - 600' RT.
-Y12RPD- TS Sta. 10+00.00
-Y12- POC Sta. 57+45.07
-Y12- POC Sta. 58+36.81
ERNEST J. ALPHIN AND WIFE, TERESA M. ALPHIN
ETA PROPERTIES, LLC
JESSE DUTTON ALPHIN, JR.
BRUCE MCKOY AND WIFE, GERTRUDE MCKOY
JEAN DIDNEY KENLAN REVOCABLE TRUST
JOHNNY WILLIAM JERNIGAN AND WIFE, CONNIE B. JERNIGAN
ARNOLD J. CHANCE AND WIFE, JOYCE G. CHANCE
MONA MANAGEMENT, INC.
MEEKS FARMS, INC.
PAUL D. WILLIAMS AND WIFE, TAMMY WILLIAMS
NOTE: DRIVEWAY RADII - 10' UNLESS SHOWN OTHERWISE
FOR -L- PROFILE SEE SHEET 72
FOR -Y12- PROFILE SEE SHEET 78
FOR -Y12RPD- PROFILE SEE SHEET 79
FOR -SR7- PROFILE SEE SHEET 87

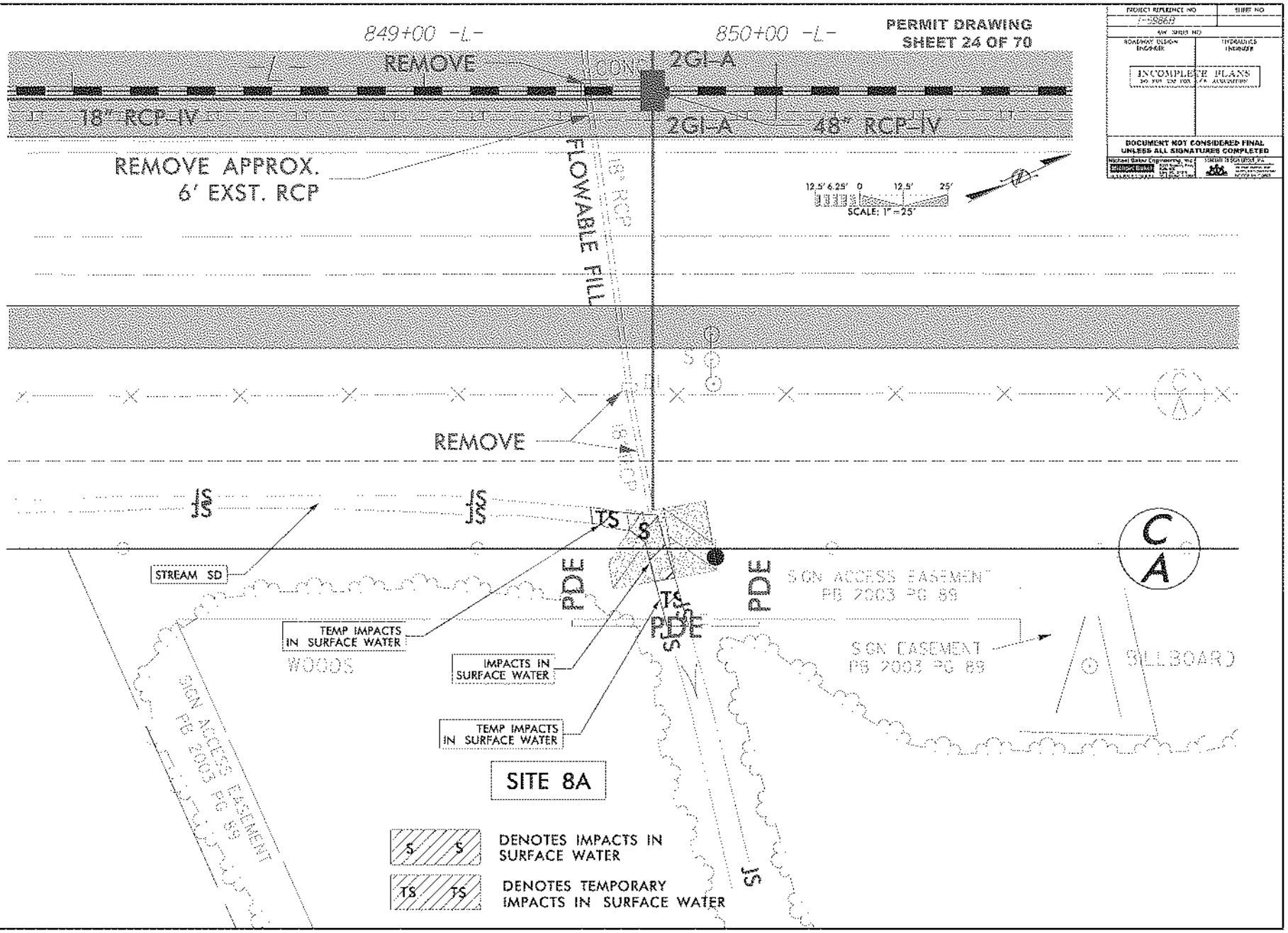

PERMIT DRAWING
SHEET 19 OF 70
834+00 -L-
835+00 -L-
REMOVE CONC
2GI-A
2GI-A
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
FLOWABLE FILL
-Y12RPD-
JB w/MH
SITE 7B
STREAM SB
54"
IMPACTS IN SURFACE WATER
TEMP IMPACTS IN SURFACE WATER
EXISTING R/W
-Y12-
JOHNI
GRAVEL
INCOMPLETE PLANS
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
SCALE: 1" = 25'

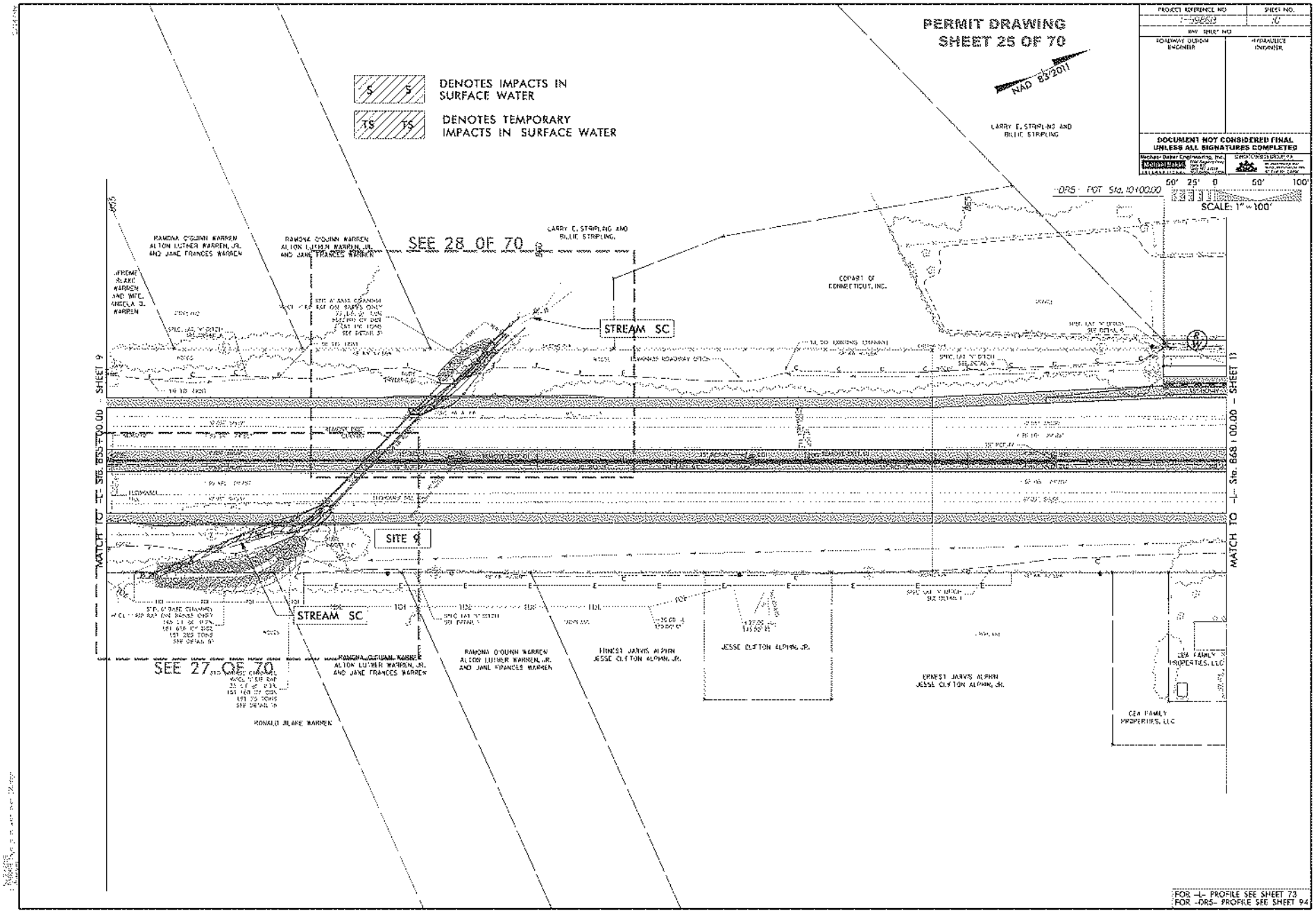

PERMIT DRAWING
SHEET 20 OF 70
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
PROJECT REFERENCE NO.
SHEET NO.
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
50' 25' 0 50' 100'
SCALE: 1" = 100'
SEE 22 OF 70
STREAM SD
SITE 8B
WEEKS FARMS, INC.
N. BLAKE WARREN AND WIFE, CLEO G. WARREN
ALLISON WARREN GOWIN AND HUSBAND, WILLIS RAY GOWIN
RONALD D. WARREN AND WIFE, LORETTA T. WARREN
-SR7- POT Sta. 19+25.00
END CONSTRUCTION
MATCH TO -L- POT Sta. 842+00.00 - SHEET 9
MATCH TO -L- POT Sta. 855+00.00 - SHEET 10
SITE 8
STREAM SD
SITE 8A
SEE 23 OF 70
SEE 24 OF 70
RONALD BLAKE WARREN
NOTE: DRIVEWAY RADII = 10' UNLESS SHOWN OTHERWISE
FOR -L- PROFILE SEE SHEET 73
FOR -SR7- PROFILE SEE SHEET 88 & 89

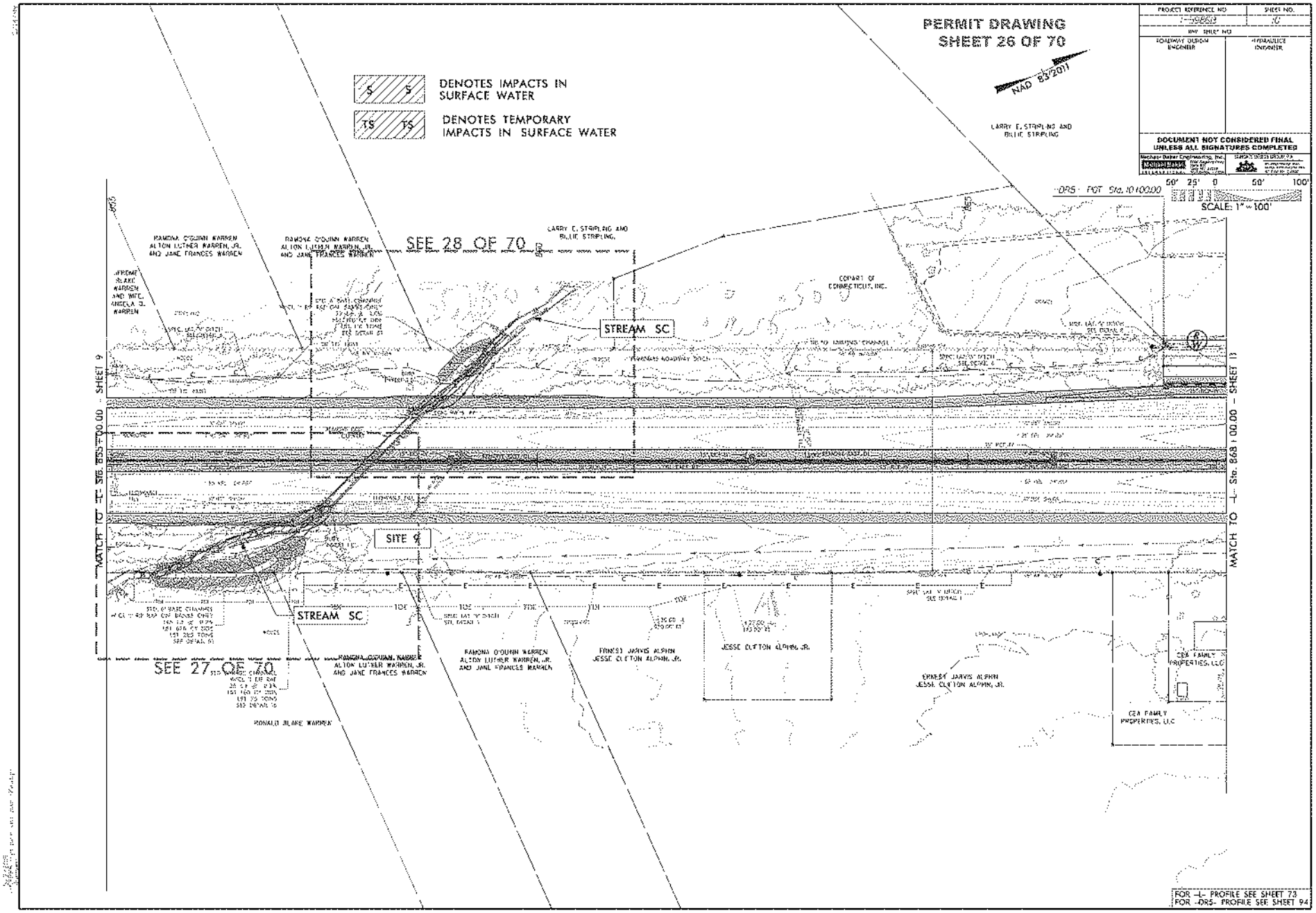

DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
PERMIT DRAWING
SHEET 21 OF 70
PROJECT REFERENCE NO.
SHEET NO.
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
50' 25' 0 50' 100'
SCALE: 1" = 100'
SEE 22 OF 70
STREAM SD
SITE 8B
WEEKS FARMS, INC.
N. BLAKE WARREN AND WIFE, CLEO G. WARREN
ALLISON WARREN GOWIN AND HUSBAND, WILLIS RAY GOWIN
RONALD D. WARREN AND WIFE, LORETTA T. WARREN
-SR7- POT Sta. 19+25.00
END CONSTRUCTION
MATCH TO -L- POT Sta. 842+00.00 - SHEET 9
MATCH TO -L- POT Sta. 865+00.00 - SHEET 10
SITE 8
STREAM SD
SITE 8A
SEE 23 OF 70
SEE 24 OF 70
RONALD BLAKE WARREN
NOTE: DRIVEWAY RADII = 10' UNLESS SHOWN OTHERWISE
FOR -L- PROFILE SEE SHEET 73
FOR -SR7- PROFILE SEE SHEET 88 & 89

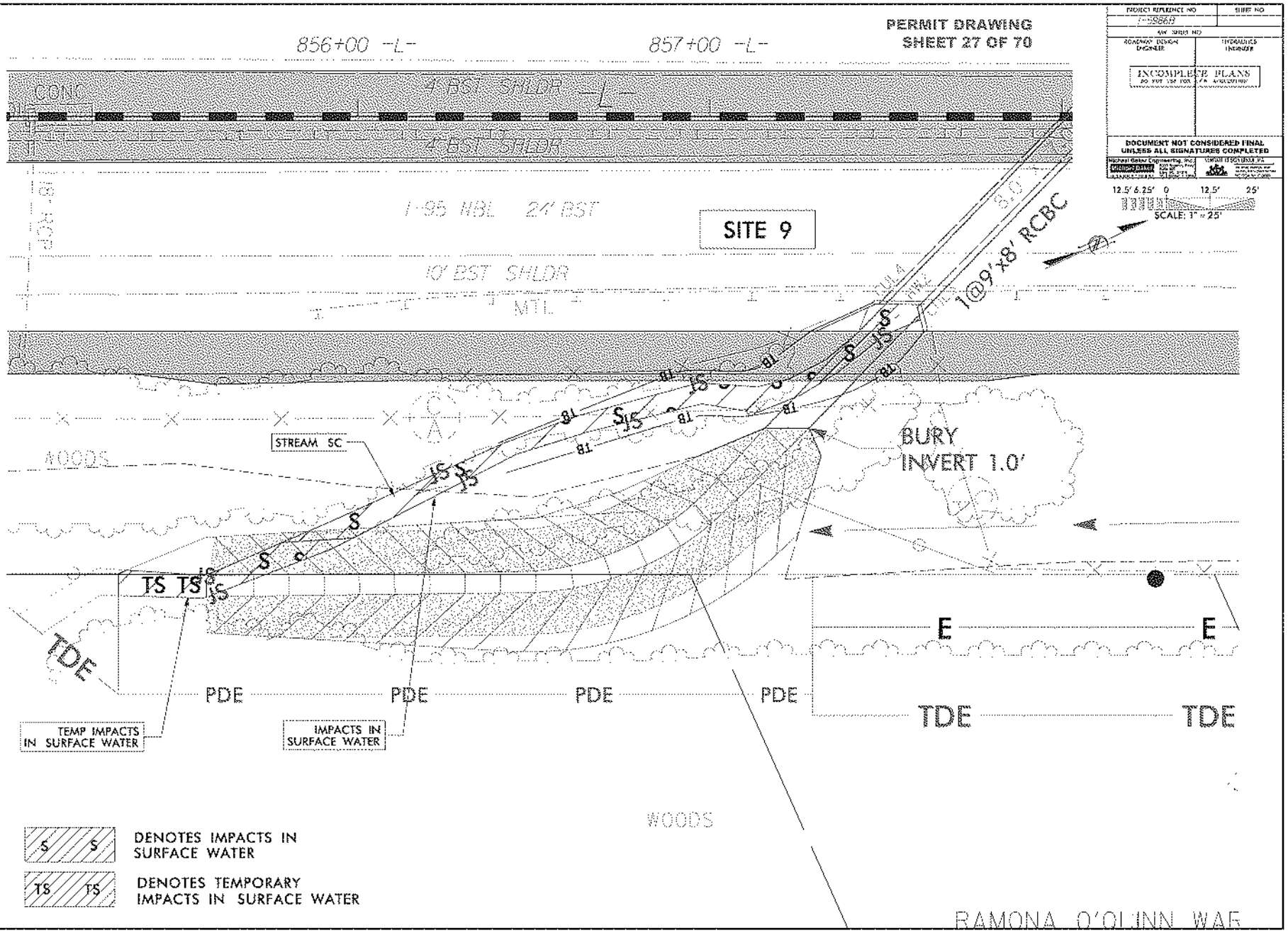

PERMIT DRAWING
SHEET 22 OF 70
PROJECT REFERENCE NO.
SHEET NO.
R/W CONTROL NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
Michael Baker
7-
+75.00 -SR7-
60.93' LT
119.00' LT
TDE
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
TS
STREAM SD
SITE 8B
TEMP IMPACTS IN SURFACE WATER
IMPACTS IN SURFACE WATER
PUE
-SR7-
38+00
40+00
WEEKS FARMS, INC.
R/W
C/A
SCALE: 1" = 25'
10' BST SHLDR
-9b SHL 24' BST
FLOWABLE FI
16' RCP

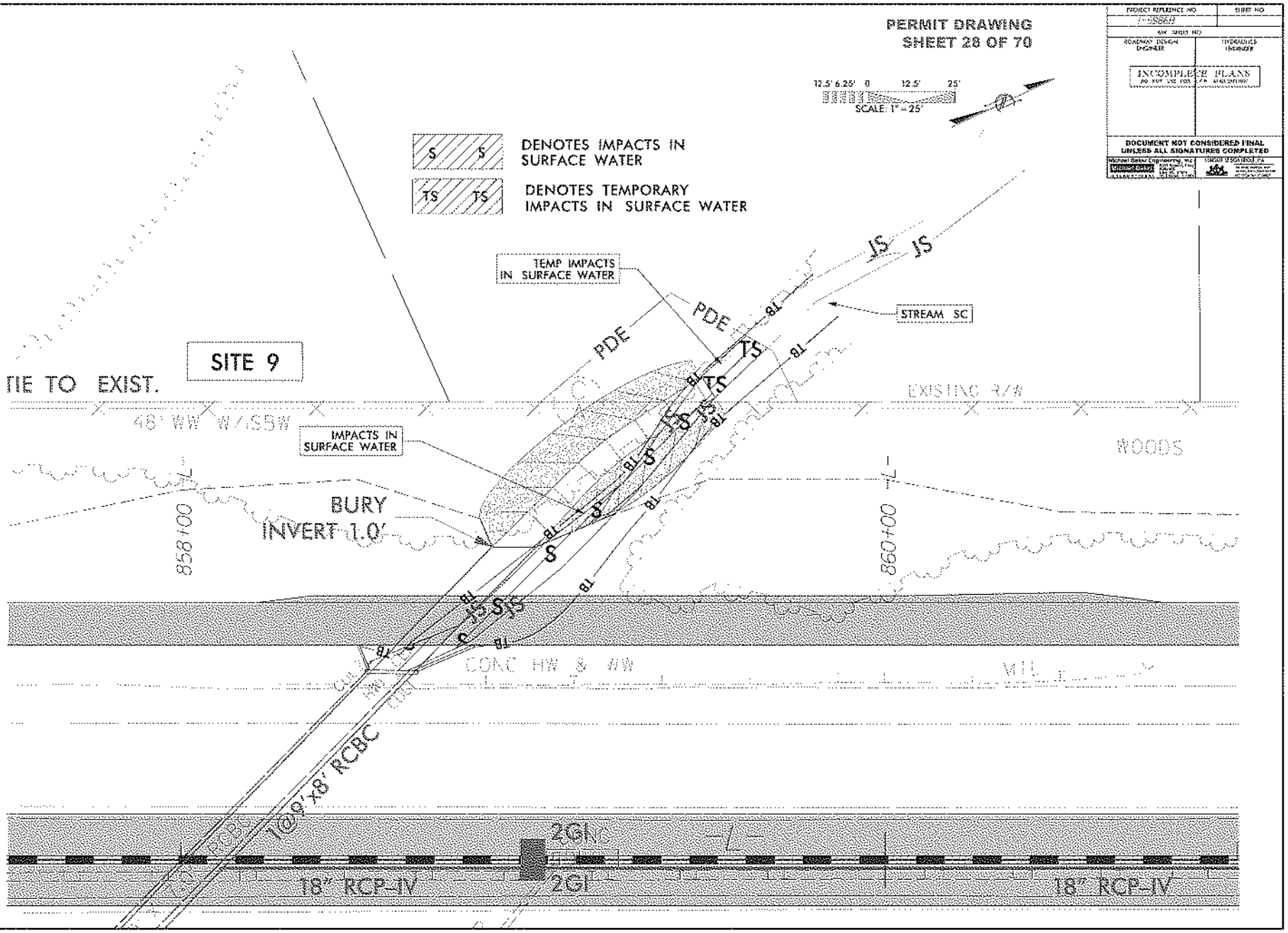

PERMIT DRAWING
SHEET 23 OF 70
844+00 -L-
845+00 -L-
REMOVE
2GI
2GI
2GI
2GI
18" RCP IV
REMOVE APPROX.
6' EXST. RCP
FLOWABLE FILL
18" RCP
24" BSI
SHLDR
48" WW W/SSW
REMOVE
REMOVE
5' RCP
TS
TS
TS
TS
TS
TS
C
A
TEMP IMPACTS
IN SURFACE WATER
SITE 8
STREAM SD
BILLBOARD
TS TS
DENOTES TEMPORARY
IMPACTS IN SURFACE WATER
12.5' 6.25' 0 12.5' 25'
SCALE: 1" = 25'
PROJECT REFERENCE NO.
SHEET NO.
R-5868
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.


849+00 -L-
850+00 -L-
PERMIT DRAWING
SHEET 24 OF 70
REMOVE
2GI-A
18" RCP-IV
48" RCP-IV
REMOVE APPROX.
6' EXST. RCP
FLOWABLE FILL
18" RCP
REMOVE
SCALE: 1" = 25'
STREAM SD
TEMP IMPACTS
IN SURFACE WATER
WOODS
IMPACTS IN
SURFACE WATER
TEMP IMPACTS
IN SURFACE WATER
SIGN ACCESS EASEMENT
PB 2003 PG 89
SIGN EASEMENT
PB 2003 PG 89
SILLBOARD
SITE 8A
DENOTES IMPACTS IN
SURFACE WATER
DENOTES TEMPORARY
IMPACTS IN SURFACE WATER
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED
INCOMPLETE PLANS


PERMIT DRAWING
SHEET 25 OF 70
NAD 83/2011
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
PROJECT REFERENCE NO.
SHEET NO.
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
SCALE: 1" = 100'
SEE 28 OF 70
SEE 27 OF 70
STREAM SC
SITE 9
MATCH TO -L- Sta. 855+00.00 - SHEET 9
MATCH TO -L- Sta. 868+00.00 - SHEET 13
RAMONA O'QUINN WARREN
ALTON LUTHER WARREN, JR.
AND JANE FRANCES WARREN
LARRY E. STRIPLING AND
BILLIE STRIPLING
COMPART OF CONNECTICUT, INC.
ERNEST JARVIS ALPHIN
JESSE CLIFTON ALPHIN, JR.
CEA FAMILY PROPERTIES, LLC
RONALD BLAKE WARREN
FOR -L- PROFILE SEE SHEET 73
FOR -DR5- PROFILE SEE SHEET 94


PERMIT DRAWING
SHEET 26 OF 70
NAD 83/2011
PROJECT REFERENCE NO.
SHEET NO.
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
SCALE: 1" = 100'
SEE 28 OF 70
SEE 27 OF 70
STREAM SC
SITE 9
MATCH TO -L- Sta. 855+00.00 - SHEET 9
MATCH TO -L- Sta. 868+00.00 - SHEET 13
RAMONA O'QUINN WARREN
ALTON LUTHER WARREN, JR.
AND JANE FRANCES WARREN
LARRY E. STRIPLING AND
BILLIE STRIPLING
COMPART OF CONNECTICUT, INC.
RONALD BLAKE WARREN
ERNEST JARVIS ALPHIN
JESSE CLETON ALPHIN, JR.
CEA FAMILY PROPERTIES, LLC
FOR -L- PROFILE SEE SHEET 73
FOR -DR5- PROFILE SEE SHEET 94


PERMIT DRAWING
SHEET 27 OF 70
856+00 -L-
857+00 -L-
CONC
4' BST SHLDR -L-
4' BST SHLDR
I-95 NBL 24' BST
10' BST SHLDR
MTL
SITE 9
1@9'x8' RCBC
BURY
INVERT 1.0'
STREAM SC
WOODS
TS TS
TDE
PDE
PDE
PDE
PDE
E
E
TDE
TDE
TEMP IMPACTS
IN SURFACE WATER
IMPACTS IN
SURFACE WATER
WOODS
DENOTES IMPACTS IN
SURFACE WATER
DENOTES TEMPORARY
IMPACTS IN SURFACE WATER
RAMONA O'QUINN WAR
INCOMPLETE PLANS
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED
SCALE: 1" = 25'


PERMIT DRAWING
SHEET 28 OF 70
12.5' 6.25' 0 12.5' 25'
SCALE: 1" = 25'
PROJECT REFERENCE NO.
SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION OR ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
S S DENOTES IMPACTS IN SURFACE WATER
TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER
TEMP IMPACTS IN SURFACE WATER
STREAM SC
SITE 9
TIE TO EXIST.
48" WW W/SSW
EXISTING R/W
WOODS
IMPACTS IN SURFACE WATER
BURY INVERT 1.0'
858+00
860+00
PDE
TS
S
TB
CONC HW & WW
1@9'x8' RCBC
2GI
18" RCP-IV

PIPE HYDRAULIC DATA
48" WSP Sta. 845+65 -L-
DRAINAGE AREA = 42 AC
DESIGN FREQUENCY = 50 YRS
DESIGN DISCHARGE = 95 CFS
DESIGN HW ELEVATION = 158.6 FT
100 YEAR DISCHARGE = 100 CFS
100 YEAR HW ELEVATION = 158.8 FT
OVERTOPPING FREQUENCY = 500 + YRS
OVERTOPPING DISCHARGE = 140 CFS
OVERTOPPING ELEVATION = 160.5 FT
PERMIT DRAWING
SHEET 29 OF 70
PROJECT REFERENCE NO. 59660
SHEET NO. 57
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PI = 844+00.00
EL = 161.09'
VC = 210'
K = 301
DS >= 70 mph
PROPOSED GRADE
PI STA=846+50 -L- LT
ELEV=156.30
PI STA=848+50 -L- LT
ELEV=158.65
(-)0.3162
(+)0.3802
(-)0.3152
(+)1.7250%
PI STA=843+90 -L- LT
ELEV=157.11
EXIST. GROUND
FOR -L- ALIGNMENT, SEE SHEET 9
CULVERT HYDRAULIC DATA
DESIGN DISCHARGE = 480 CFS
DESIGN FREQUENCY = 50 YRS
DESIGN HW ELEVATION = 161.9 FT
BASE DISCHARGE = 520 CFS
BASE FREQUENCY = 100 YRS
BASE HW ELEVATION = 162.4 FT
OVERTOPPING DISCHARGE = 495 CFS
OVERTOPPING FREQUENCY = 500 YRS
OVERTOPPING ELEVATION = 162.1 FT
PI = 861+20.00
EL = 167.66'
VC = 210'
K = 2667
DS >= 70 mph
PI = 864+00.00
EL = 168.95'
VC = 210'
K = 2333
DS >= 70 mph
PROPOSED GRADE
PI STA=857+00 -L- LT
ELEV=159.50
C-80" X 70' RCPC
-L- STA. 858+06.09
(-)1.2133%
(+)0.3660%
(+)0.4667%
(+)0.3707%
(+)0.3360%
(+)0.3610%
EXIST. GROUND
PI STA=855+50 -L- LT
ELEV=161.32
PI STA=857+00 -L- RT
ELEV=159.00
PI STA=862+00 -L- LT
ELEV=165.50
PI STA=867+00 -L- LT
ELEV=165.00
FOR -L- ALIGNMENT, SEE SHEET 10

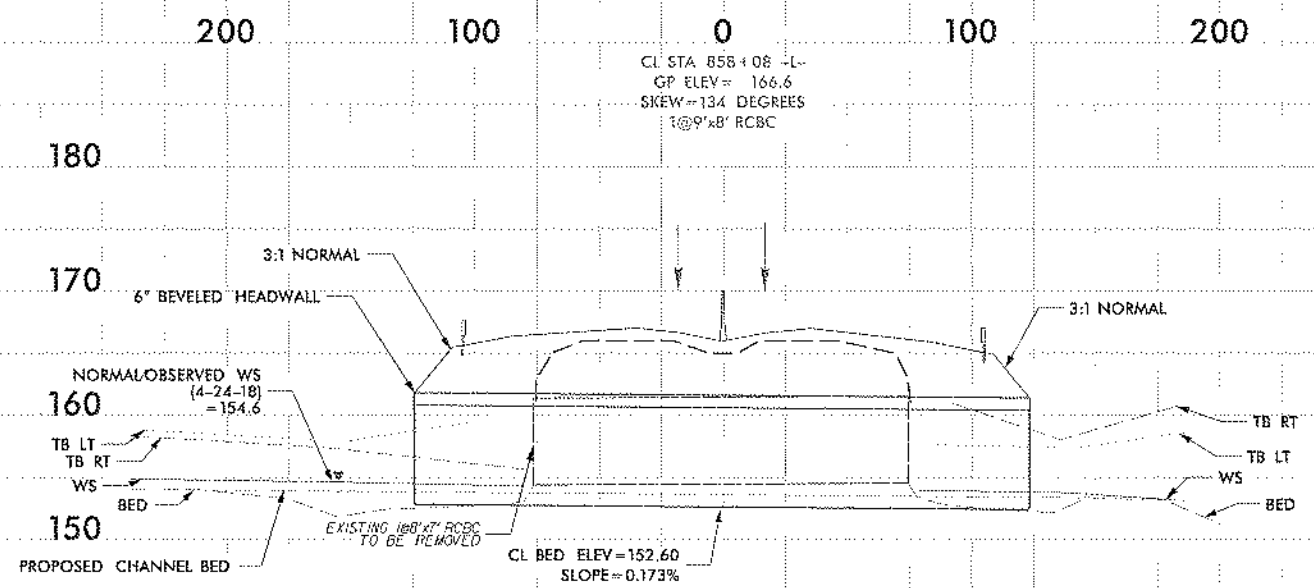
PERMIT DRAWING
SHEET 30 OF 70

PROJECT REFERENCE NO.	SHEET NO.
7.59260	65
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

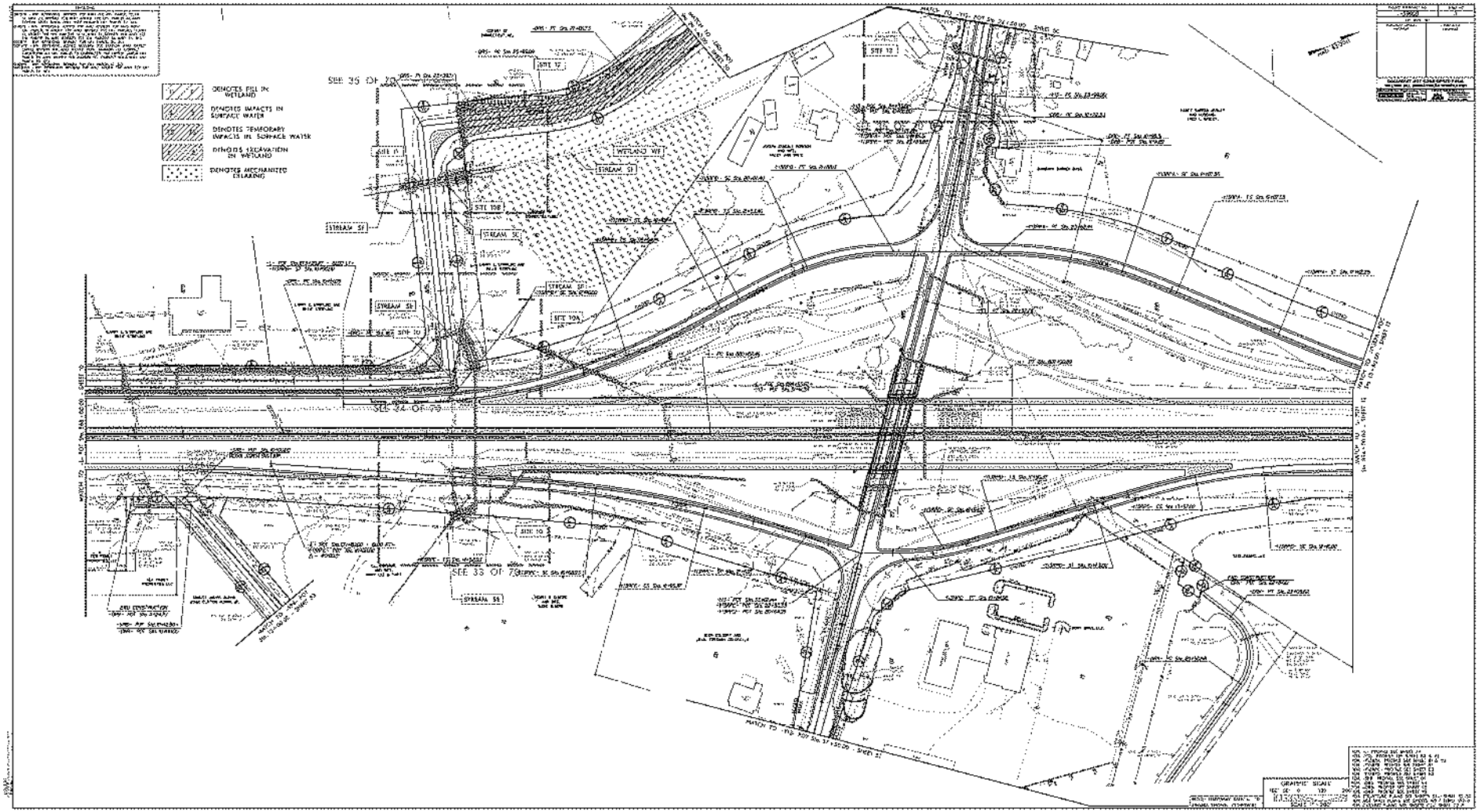
INCOMPLETE PLANS
DO NOT USE FOR RIGHT-OF-WAY ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

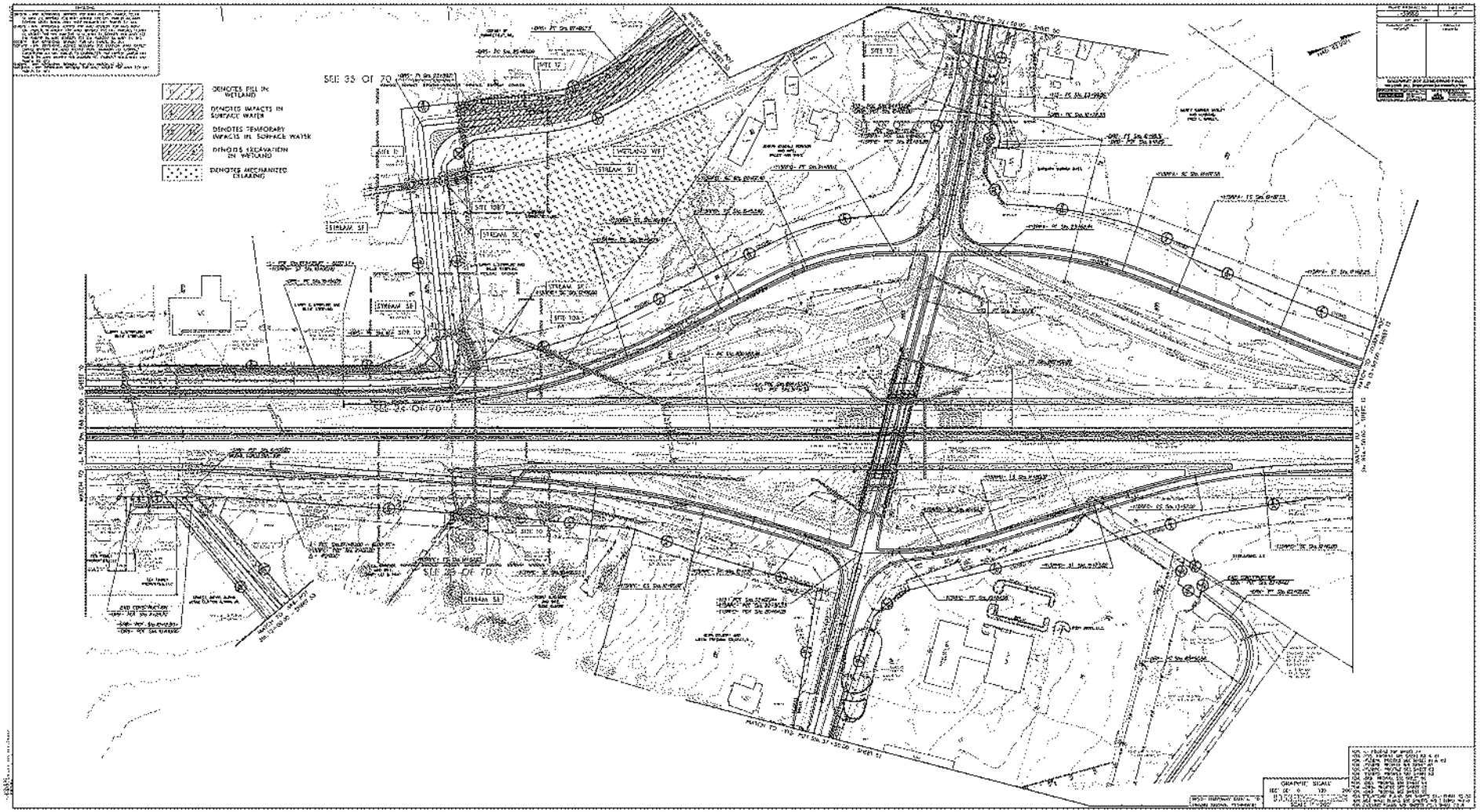
SITE 9

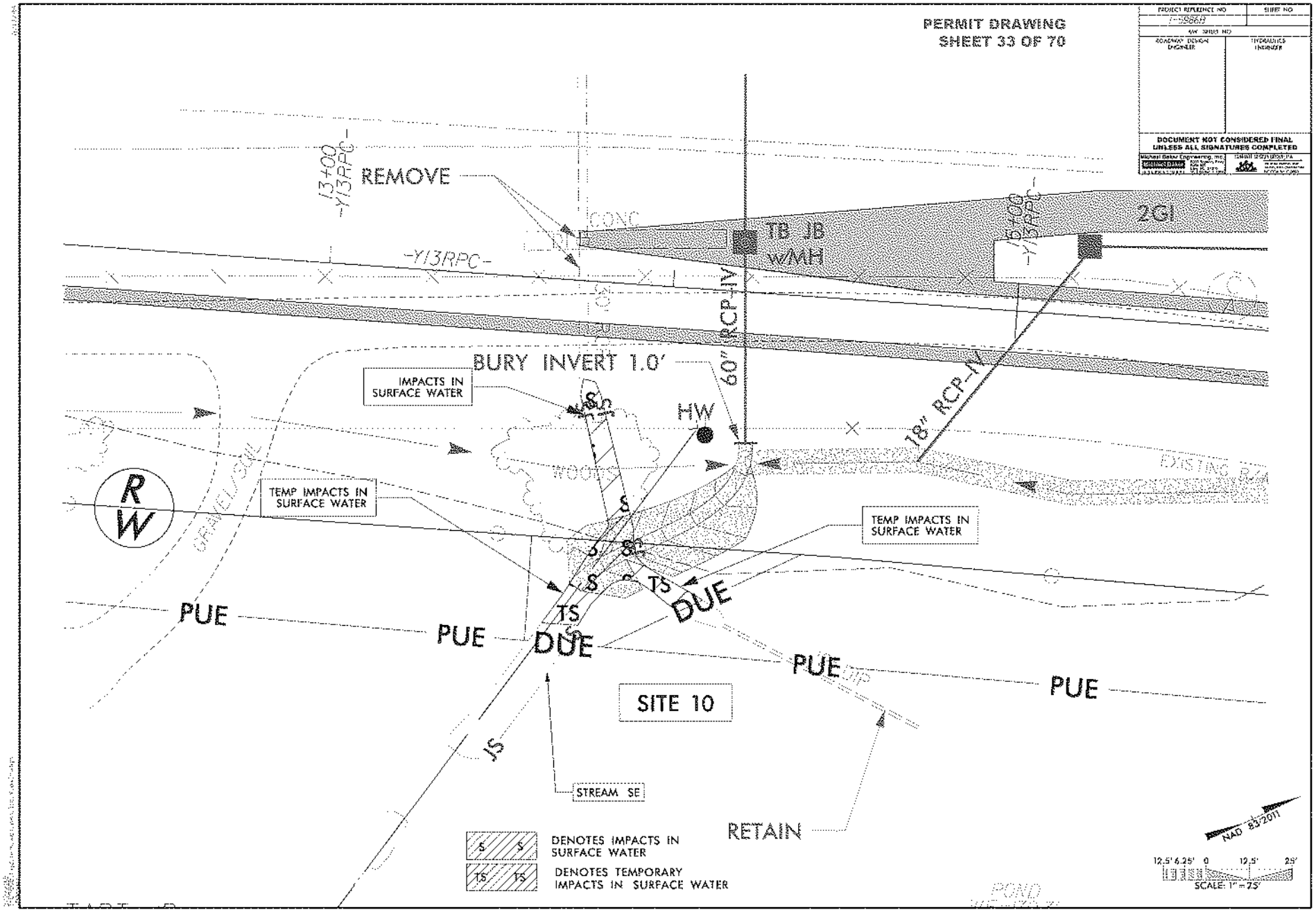


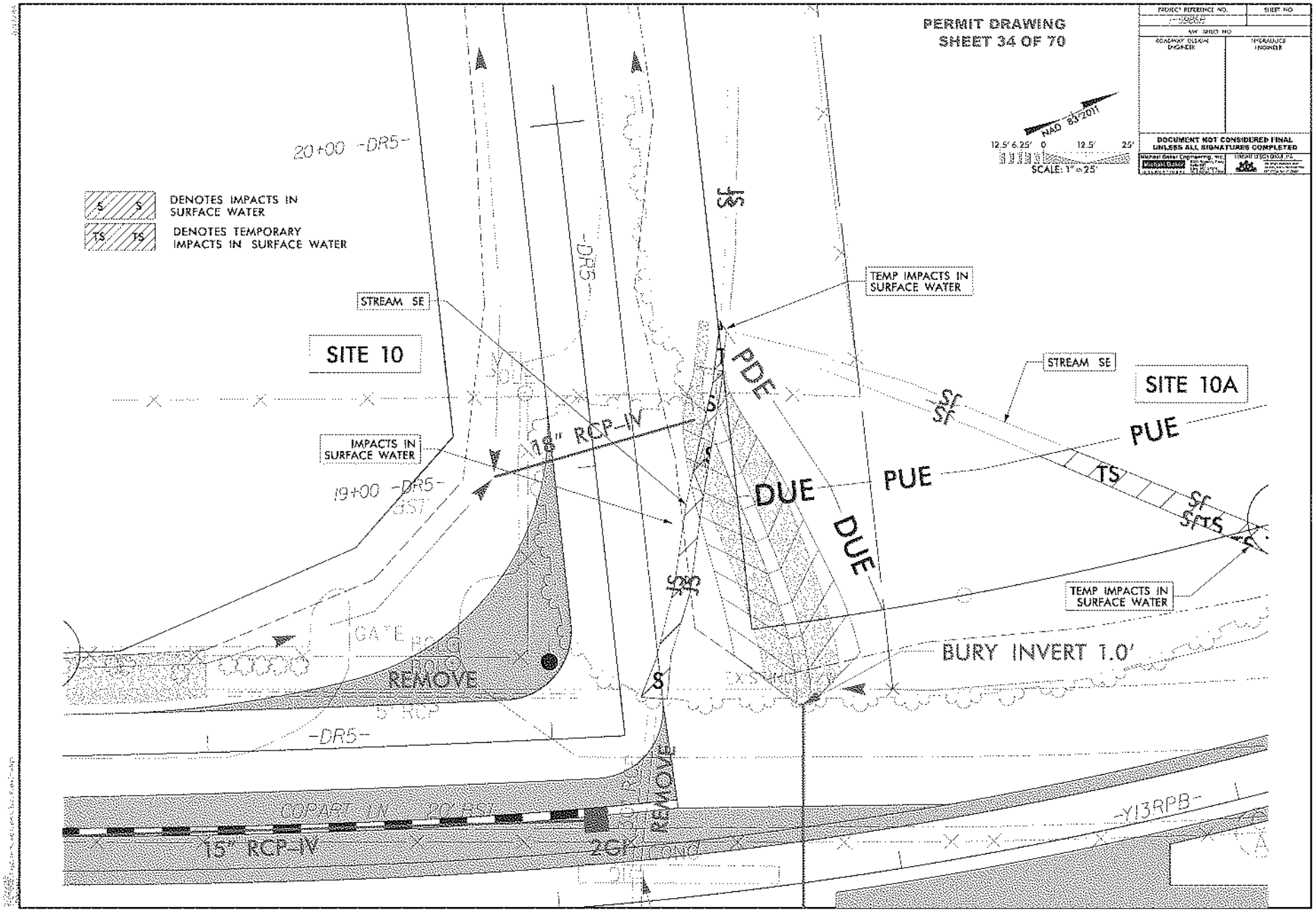
PERMIT DRAWING
SHEET 31 OF 70

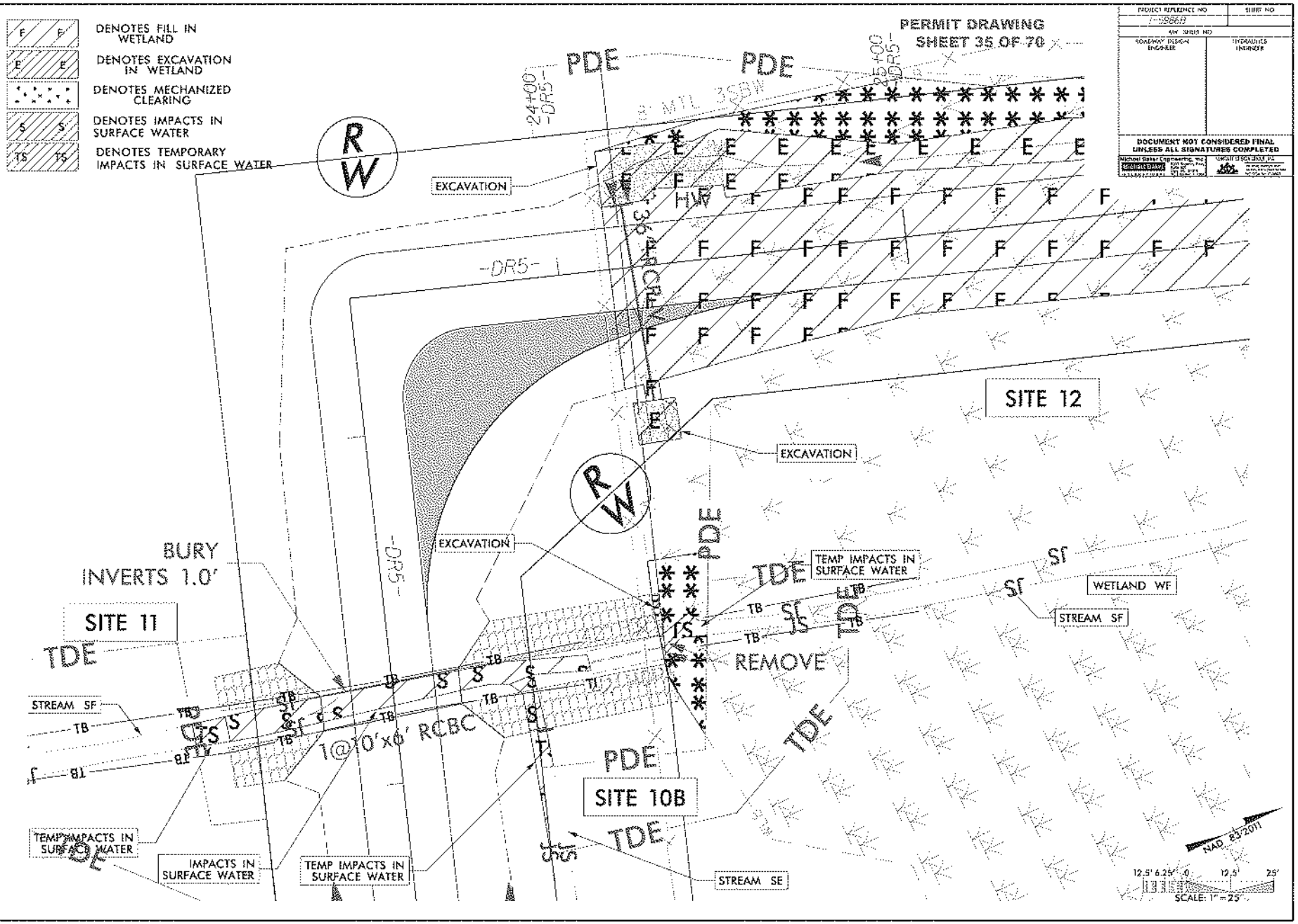


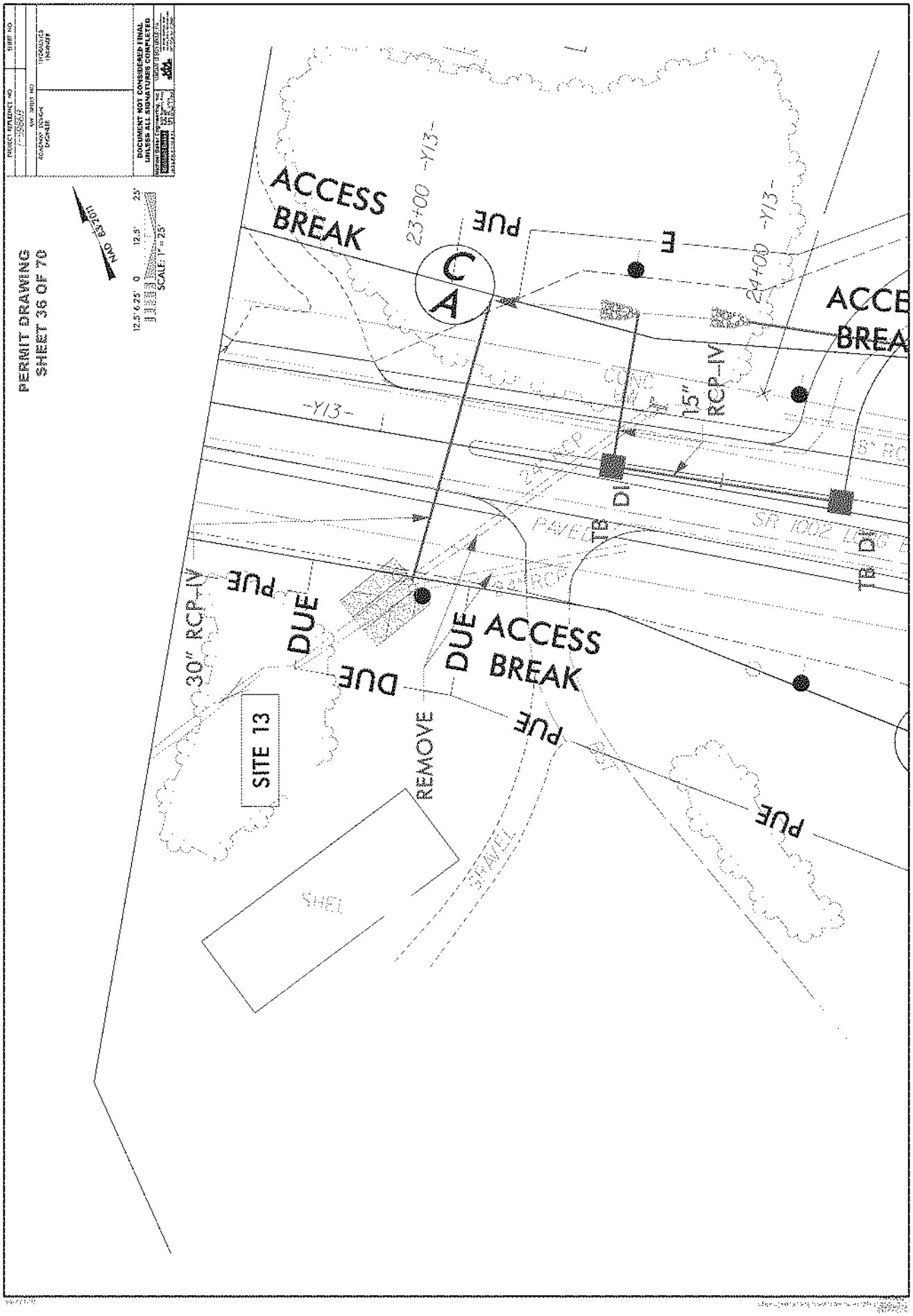
PERMIT DRAWING
SHEET 32 OF 70




PERMIT DRAWING
SHEET 33 OF 70
PROJECT REFERENCE NO.
SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
13+00 -Y13RPC-
REMOVE
CONC
TB JB w/MH
2GI
-Y13RPC-
60" RCP-IV
BURY INVERT 1.0'
IMPACTS IN SURFACE WATER
HW
18" RCP-IV
EXISTING R/W
WOODS
TEMP IMPACTS IN SURFACE WATER
TEMP IMPACTS IN SURFACE WATER
R/W
GRAVEL DRIVE
PUE
PUE
DUE
DUE
PUE
PUE
SITE 10
STREAM SE
RETAIN
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
NAD 83/2011
SCALE: 1" = 25'
POND


PERMIT DRAWING
SHEET 34 OF 70
PROJECT REFERENCE NO.
SHEET NO.
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
NAD 83/2011
SCALE: 1" = 25'
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
20+00 -DR5-
19+00 -DR5-
STREAM SE
SITE 10
SITE 10A
TEMP IMPACTS IN SURFACE WATER
IMPACTS IN SURFACE WATER
18" RCP-IV
PDE
DUE
PUE
TS
BURY INVERT 1.0'
REMOVE
-DR5-
15" RCP-IV
-Y13RPB-


DENOTES FILL IN WETLAND
DENOTES EXCAVATION IN WETLAND
DENOTES MECHANIZED CLEARING
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
PERMIT DRAWING
SHEET 35 OF 70
PROJECT REFERENCE NO.
SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PDE
24+00 -DR5-
25+00 -DR5-
EXCAVATION
SITE 12
EXCAVATION
EXCAVATION
BURY INVERTS 1.0'
SITE 11
TDE
TEMP IMPACTS IN SURFACE WATER
WETLAND WF
STREAM SF
REMOVE
STREAM SF
1@10'x6' RCBC
PDE
SITE 10B
TDE
TEMP IMPACTS IN SURFACE WATER
IMPACTS IN SURFACE WATER
TEMP IMPACTS IN SURFACE WATER
STREAM SE
NAD 83/2011
SCALE: 1" = 25'


PERMIT DRAWING
SHEET 36 OF 70
NAD 83/2011
SCALE: 1" = 25'
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED
ACCESS
BREAK
23+00 -Y13-
24+00 -Y13-
PUE
E
C
A
ACCE
BREA
-Y13-
15" RCP-IV
TB DI
PAVED
SR 1002
30" RCP-IV
DUE
ACCESS
BREAK
SITE 13
REMOVE
SHED
GRAVEL

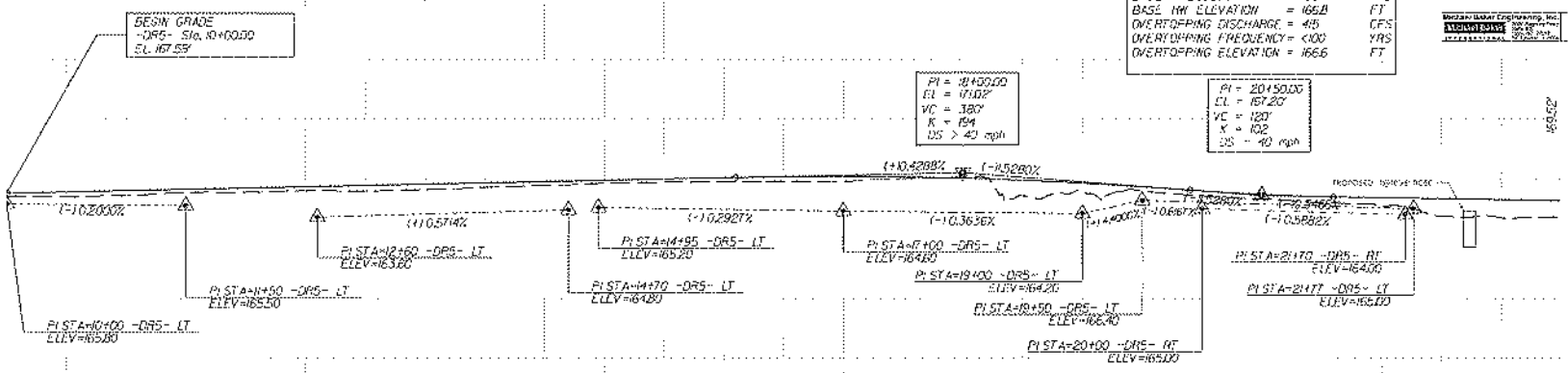
PERMIT DRAWING
SHEET 37 OF 70

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

Michael Baker Engineering, Inc.
Michael Baker

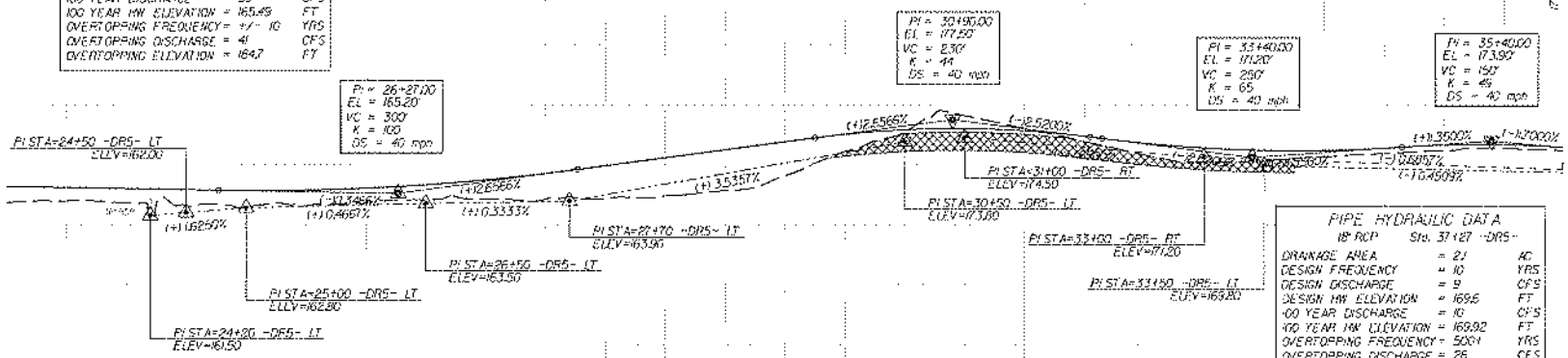
-DR5-

CULVERT HYDRAULIC DATA		
DESIGN DISCHARGE	= 380	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 166.3	FT
BASE DISCHARGE	= 440	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 166.8	FT
OVERTOPPING DISCHARGE	= 415	CFS
OVERTOPPING FREQUENCY	= <100	YRS
OVERTOPPING ELEVATION	= 166.6	FT

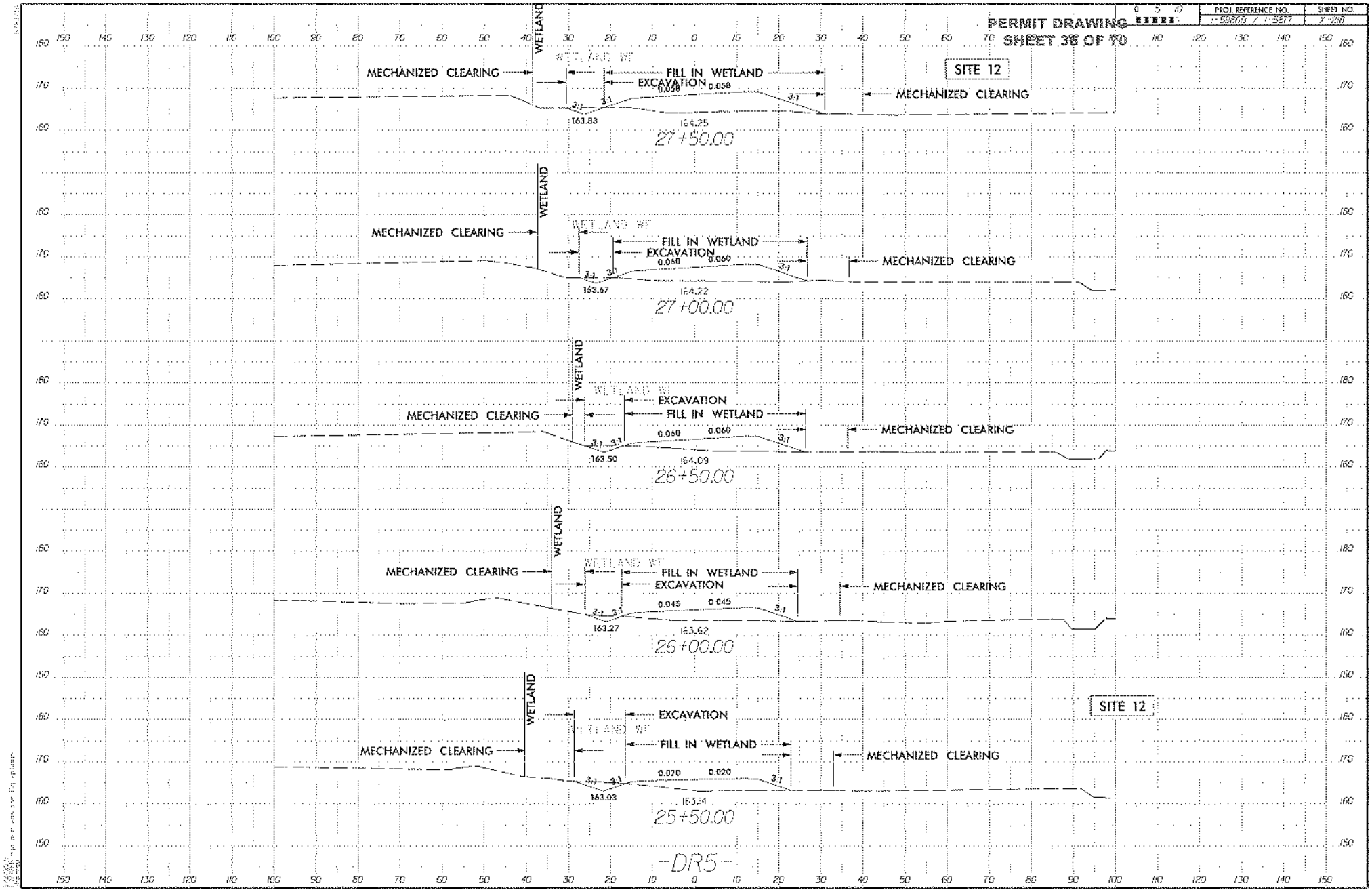


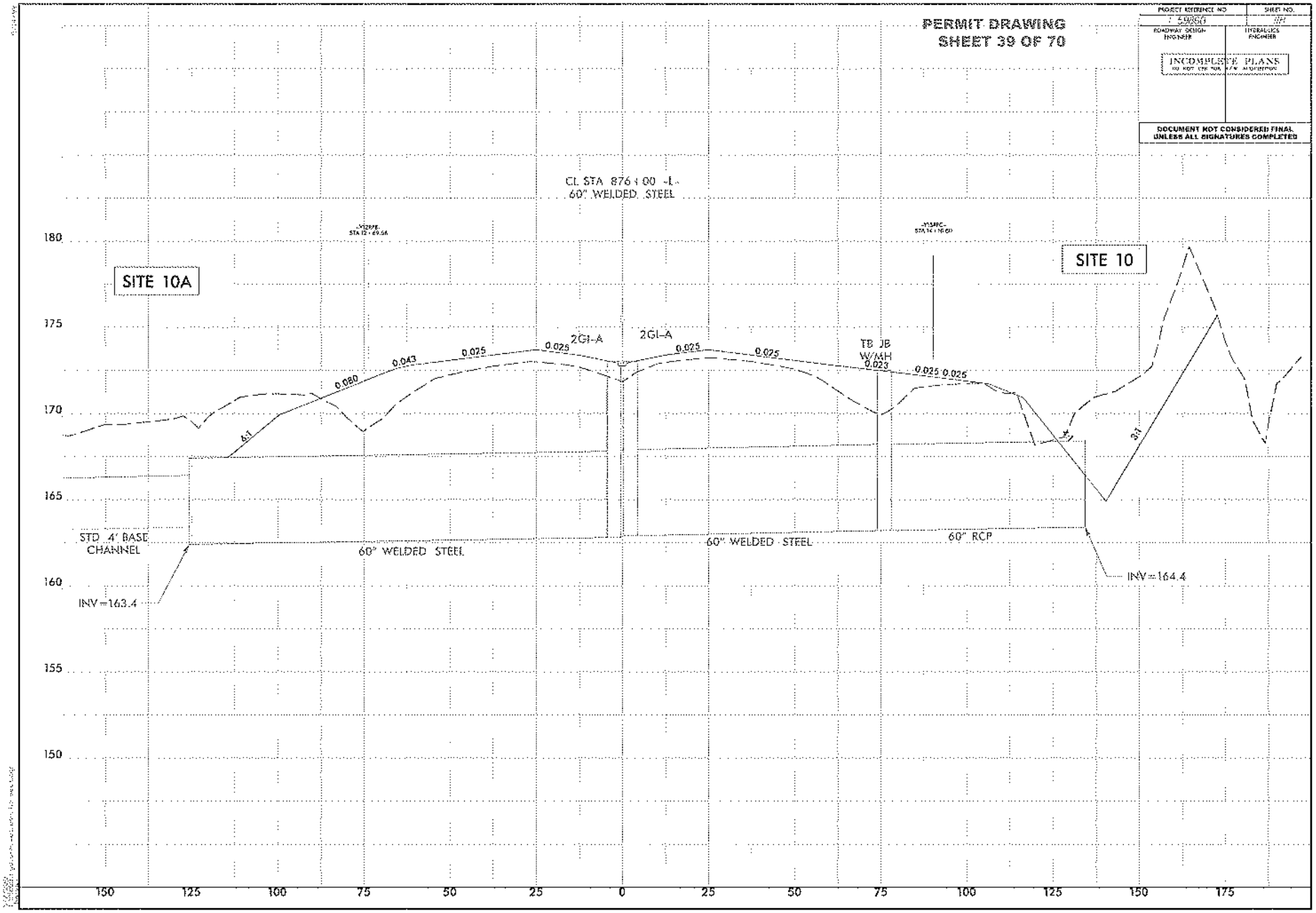
-DR5-

PIPE HYDRAULIC DATA 36" RCP Sta. 24+20 -DR5-		
DRAINAGE AREA	= 15.1	AC
DESIGN FREQUENCY	= 10	YRS
DESIGN DISCHARGE	= 43	CFS
DESIGN HW ELEVATION	= 164.8	FT
100 YEAR DISCHARGE	= 55	CFS
100 YEAR HW ELEVATION	= 165.49	FT
OVERTOPPING FREQUENCY	= +/- 10	YRS
OVERTOPPING DISCHARGE	= 41	CFS
OVERTOPPING ELEVATION	= 164.7	FT



PIPE HYDRAULIC DATA 18" RCP Sta. 37+27 -DR5-		
DRAINAGE AREA	= 2.1	AC
DESIGN FREQUENCY	= 10	YRS
DESIGN DISCHARGE	= 9	CFS
DESIGN HW ELEVATION	= 169.6	FT
100 YEAR DISCHARGE	= 10	CFS
100 YEAR HW ELEVATION	= 169.92	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 26	CFS
OVERTOPPING ELEVATION	= 171.5	FT


PERMIT DRAWING
SHEET 38 OF 70
PROJ. REFERENCE NO.
SHEET NO.
SITE 12
WETLAND
WETLAND WF
MECHANIZED CLEARING
FILL IN WETLAND
EXCAVATION
0.058
163.83
164.25
27+50.00
0.060
163.67
164.22
27+00.00
163.50
164.09
26+50.00
0.045
163.27
163.62
26+00.00
0.020
163.03
163.34
25+50.00
-DR5-


PERMIT DRAWING
SHEET 39 OF 70
PROJECT REFERENCE NO.
SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
CL STA 876+00 -L-
60" WELDED STEEL
SITE 10A
SITE 10
2GI-A
2GI-A
TB JB W/MH
0.080
0.043
0.025
0.025
0.025
0.025
0.023
0.025
0.026
6:1
3:1
STD .4' BASE CHANNEL
60" WELDED STEEL
60" WELDED STEEL
60" RCP
INV=163.4
INV=164.4
180
175
170
165
160
155
150
150
125
100
75
50
25
0
25
50
75
100
125
150
175

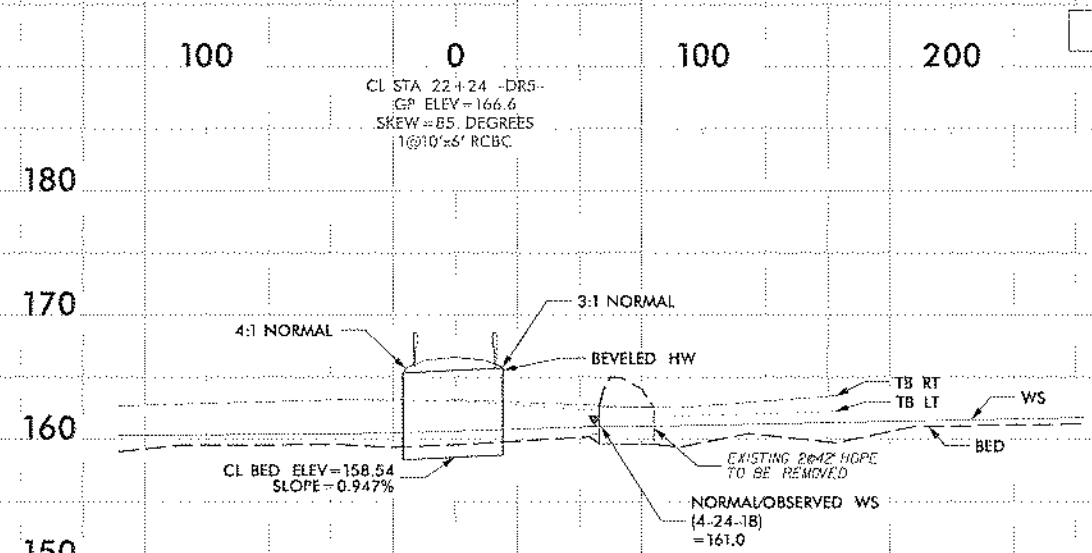
PERMIT DRAWING
SHEET 40 OF 70

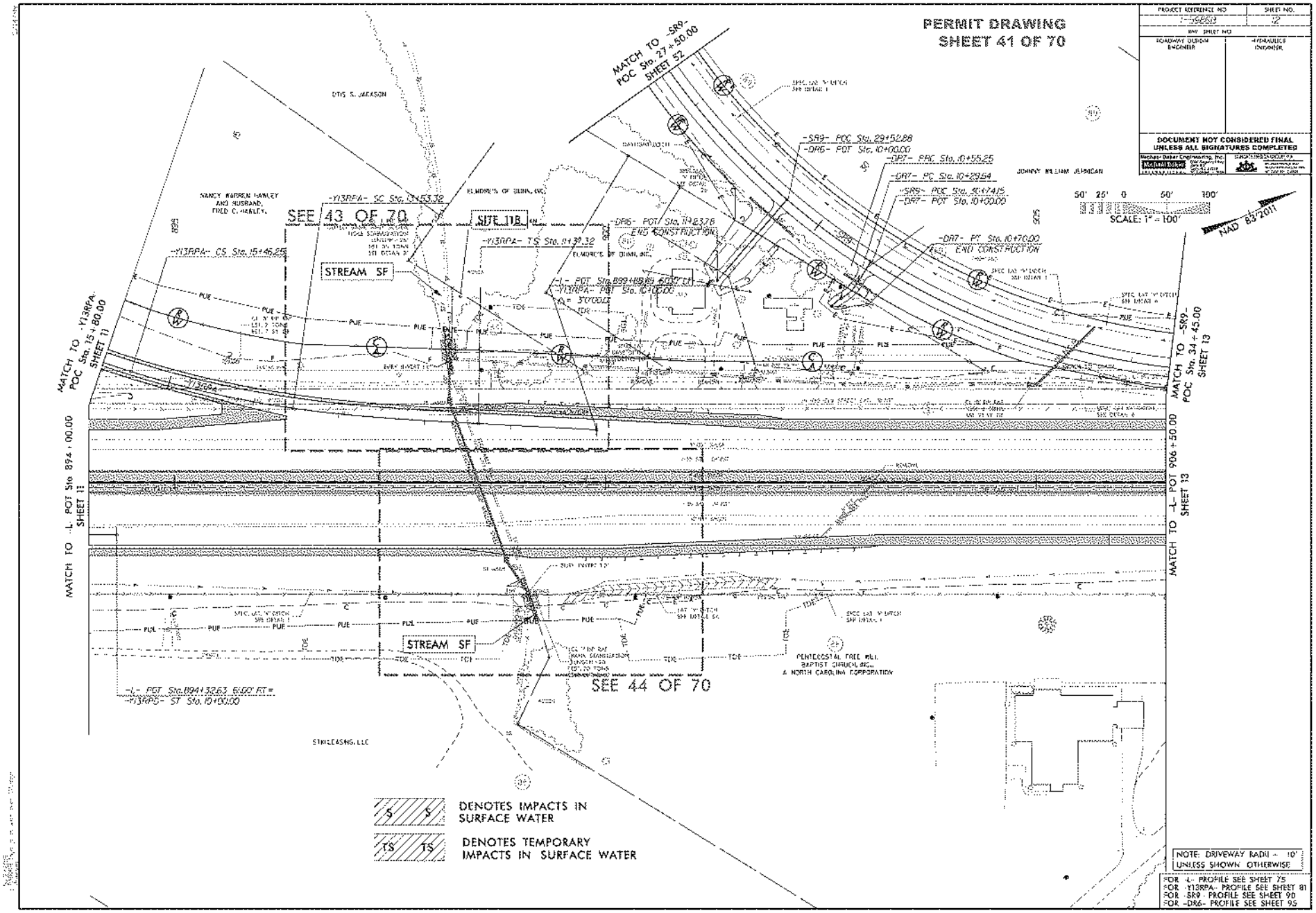
PROJECT REFERENCE NO.	SHEET NO.
7 59869	40
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

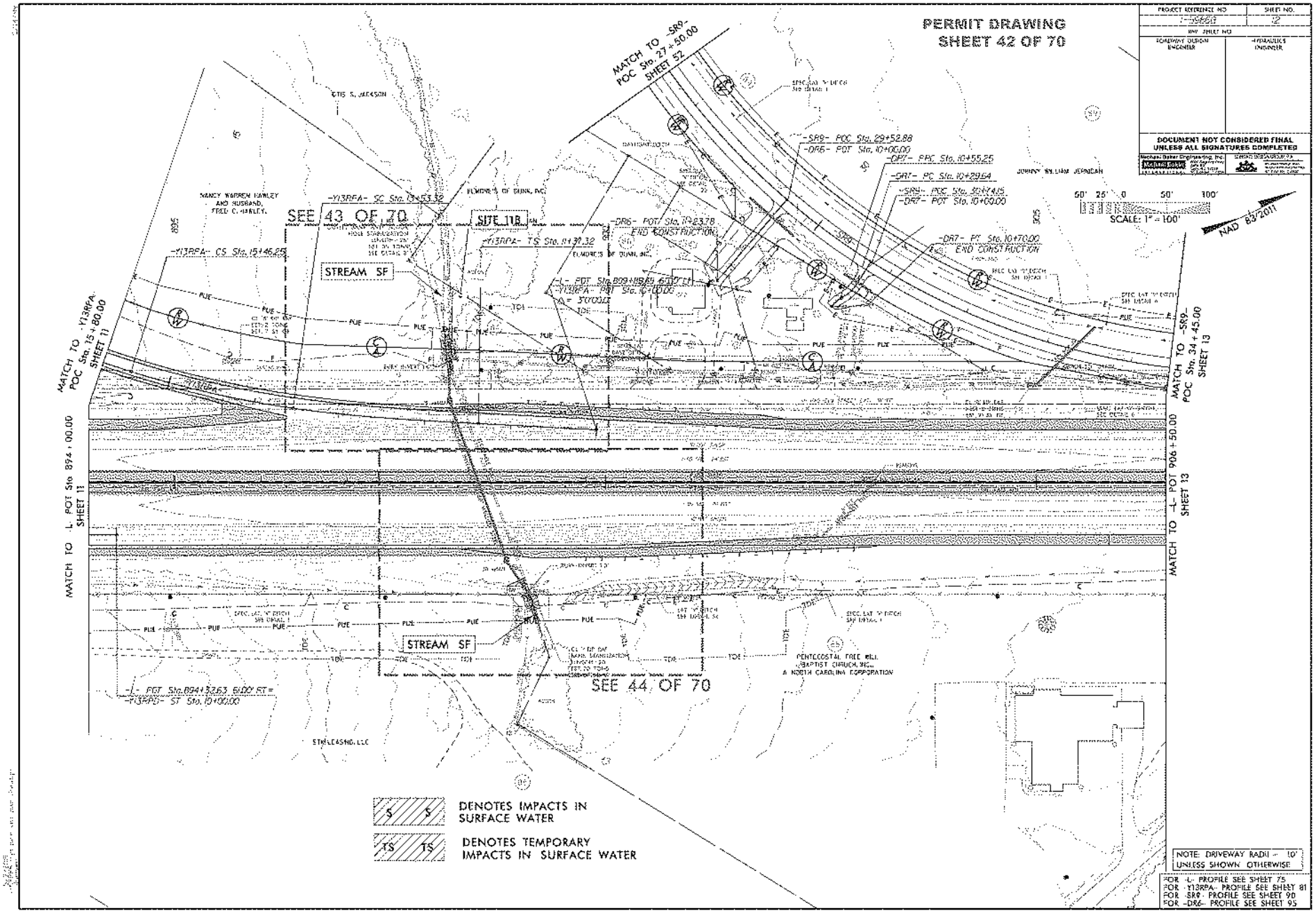
INCOMPLETE PLANS
DO NOT USE FOR NEW ACQUISITION

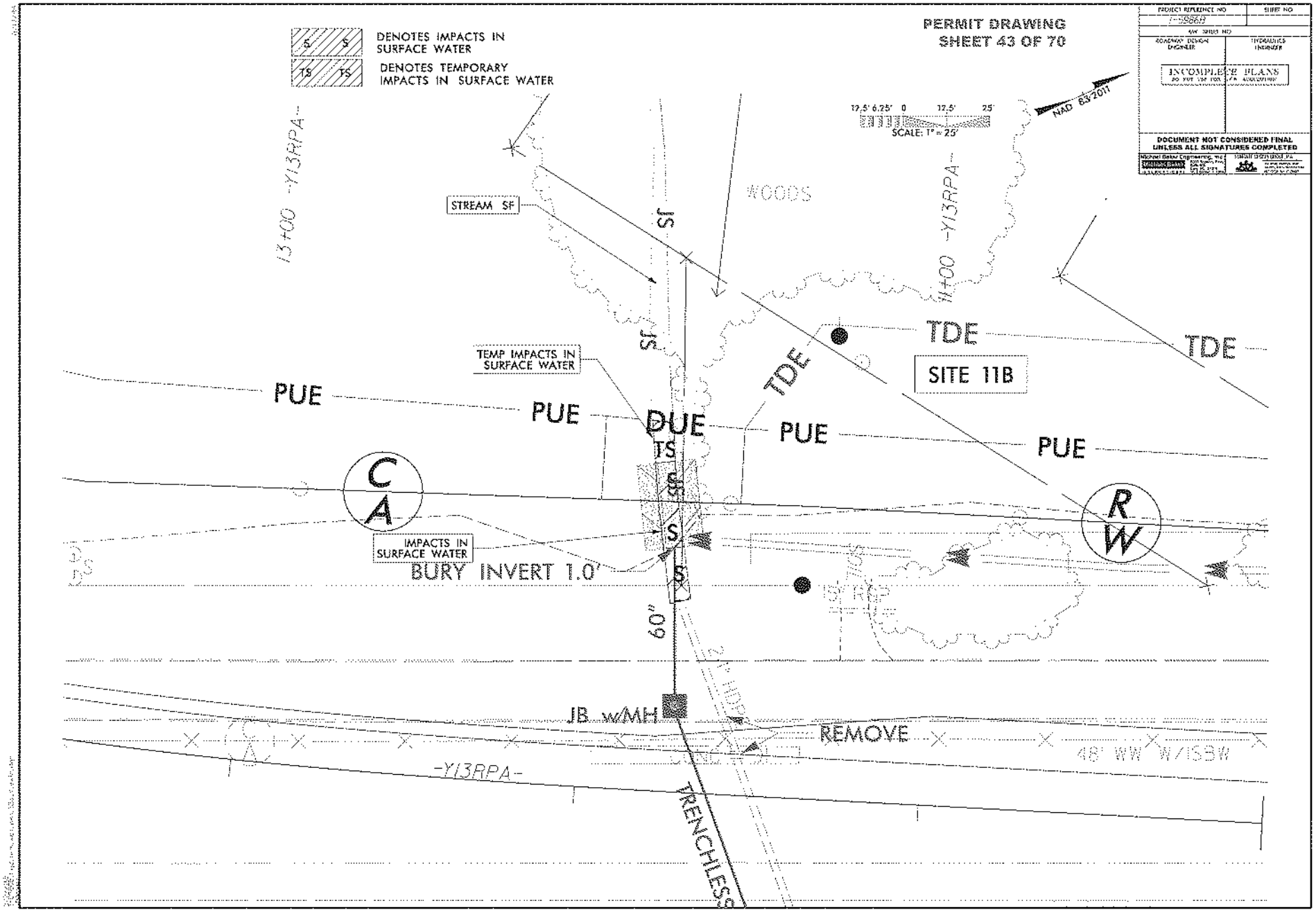
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

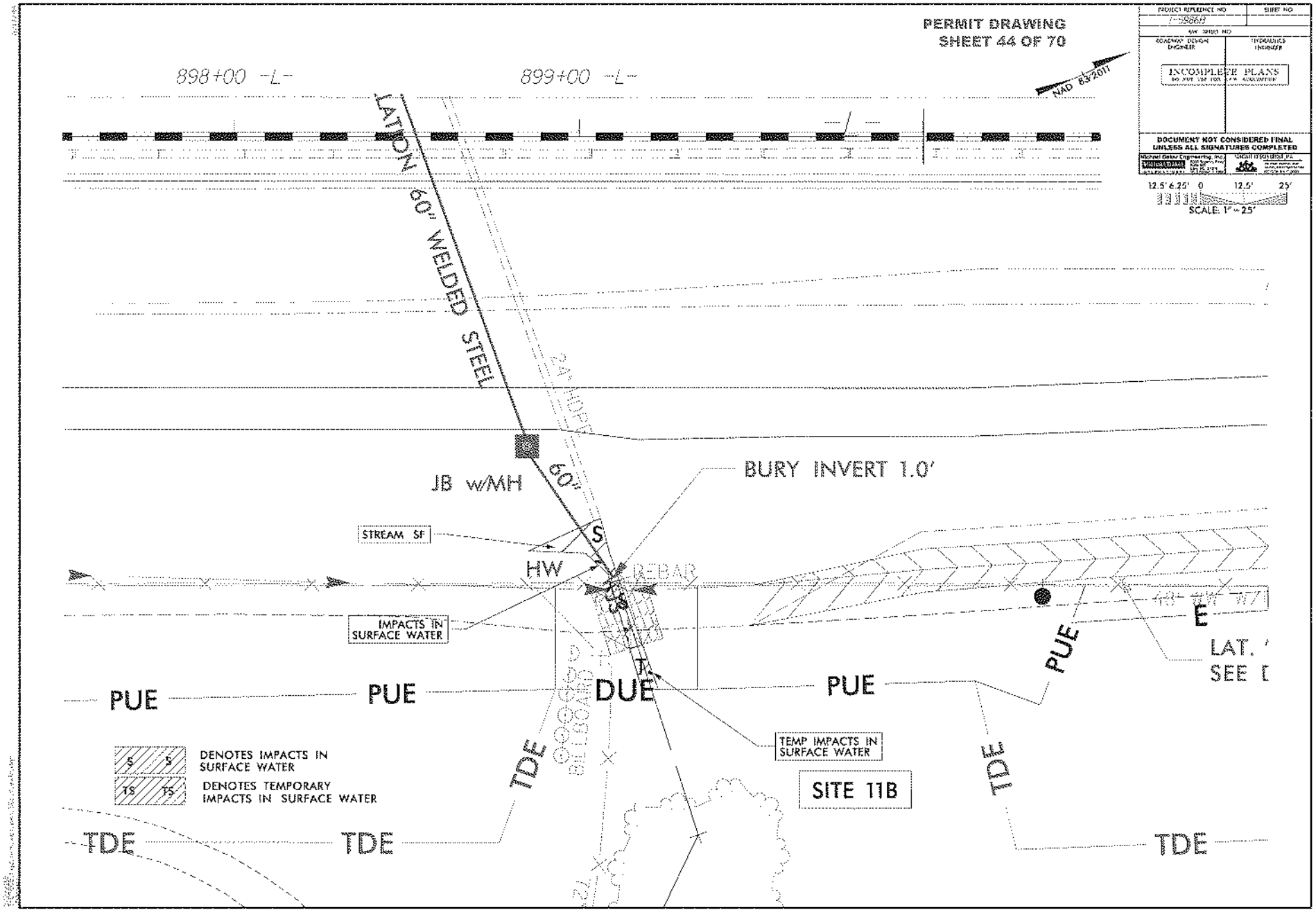
SITE 11

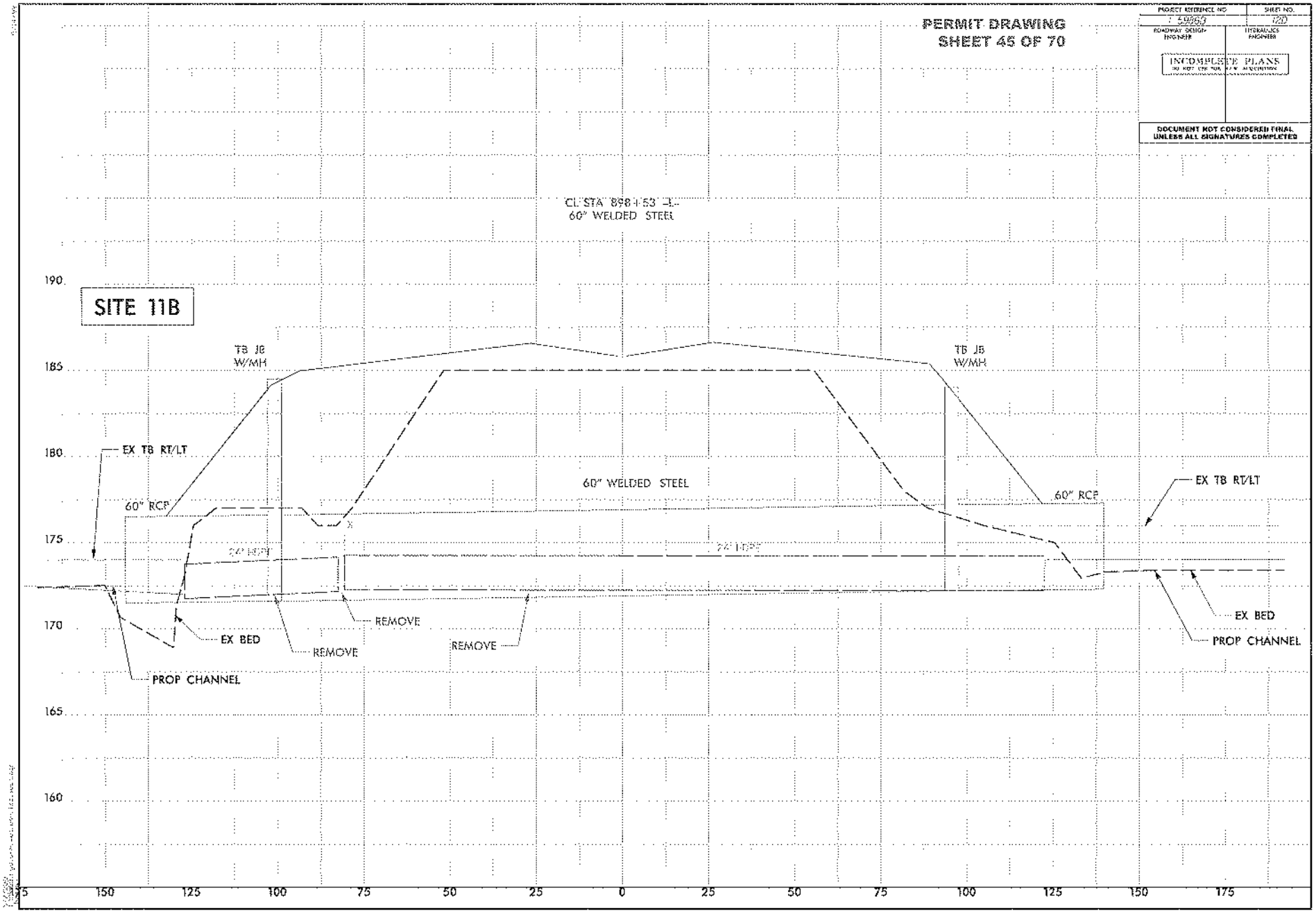


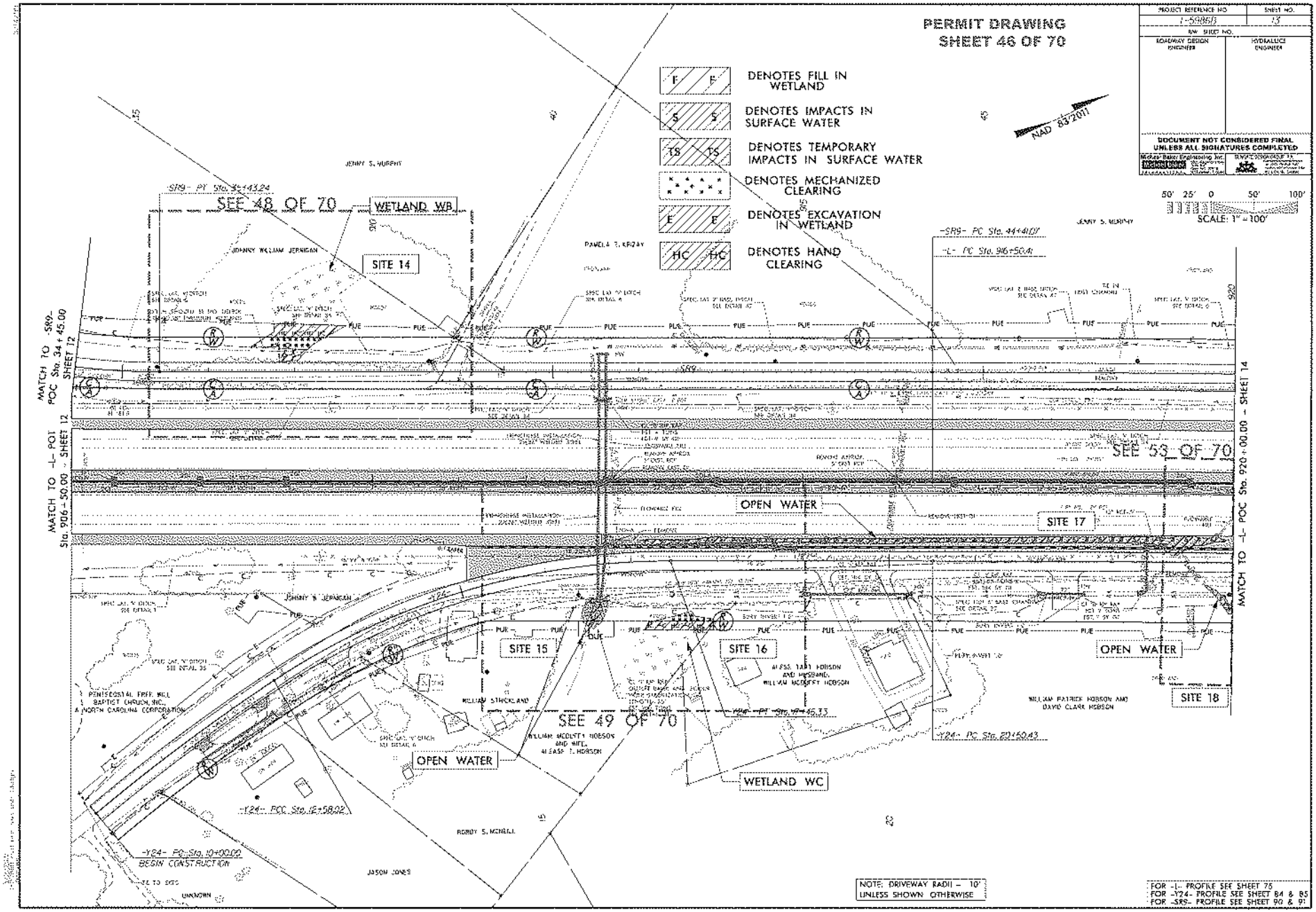

PERMIT DRAWING
SHEET 41 OF 70
PROJECT REFERENCE NO.
SHEET NO.
R-5869
12
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Mecham Baker Engineering, Inc.
DOT
SCALE: 1" = 100'
NAD 83/2011
MATCH TO -SR9- POC Sta. 27+50.00 SHEET 52
MATCH TO -Y13RPA- POC Sta. 15+80.00 SHEET 11
MATCH TO -L- POT Sta. 894+00.00 SHEET 11
MATCH TO -SR9- POC Sta. 34+45.00 SHEET 13
MATCH TO -L- POT 906+50.00 SHEET 13
SEE 43 OF 70
SEE 44 OF 70
SITE 118
STREAM SF
-SR9- POC Sta. 29+52.88
-DR6- POT Sta. 10+00.00
-DR7- POC Sta. 10+55.25
-DR7- PC Sta. 10+29.64
-SR9- POC Sta. 50+74.15
-DR7- POT Sta. 10+00.00
-DR7- PT Sta. 10+70.00
END CONSTRUCTION
-Y13RPA- SC Sta. 14+53.32
-Y13RPA- CS Sta. 15+46.25
-Y13RPA- TS Sta. 11+39.32
-Y13RPA- POT Sta. 10+00.00
-L- POT Sta. 899+89.61 6000' FT =
-Y13RPA- ST Sta. 10+00.00
-L- POT Sta. 894+32.63 6000' FT =
-Y13RPA- ST Sta. 10+00.00
ELMORE'S OF BUNN, INC.
OTIS S. JACKSON
NANCY WARREN HANLEY AND HUSBAND, FRED C. HANLEY
JOHNNY WILLIAM JERNIGAN
PENTECOSTAL FREE WILL BAPTIST CHURCH, INC., A NORTH CAROLINA CORPORATION
STINCEASING, LLC
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
NOTE: DRIVEWAY RADII = 10' UNLESS SHOWN OTHERWISE
FOR -L- PROFILE SEE SHEET 75
FOR -Y13RPA- PROFILE SEE SHEET 81
FOR -SR9- PROFILE SEE SHEET 90
FOR -DR6- PROFILE SEE SHEET 95

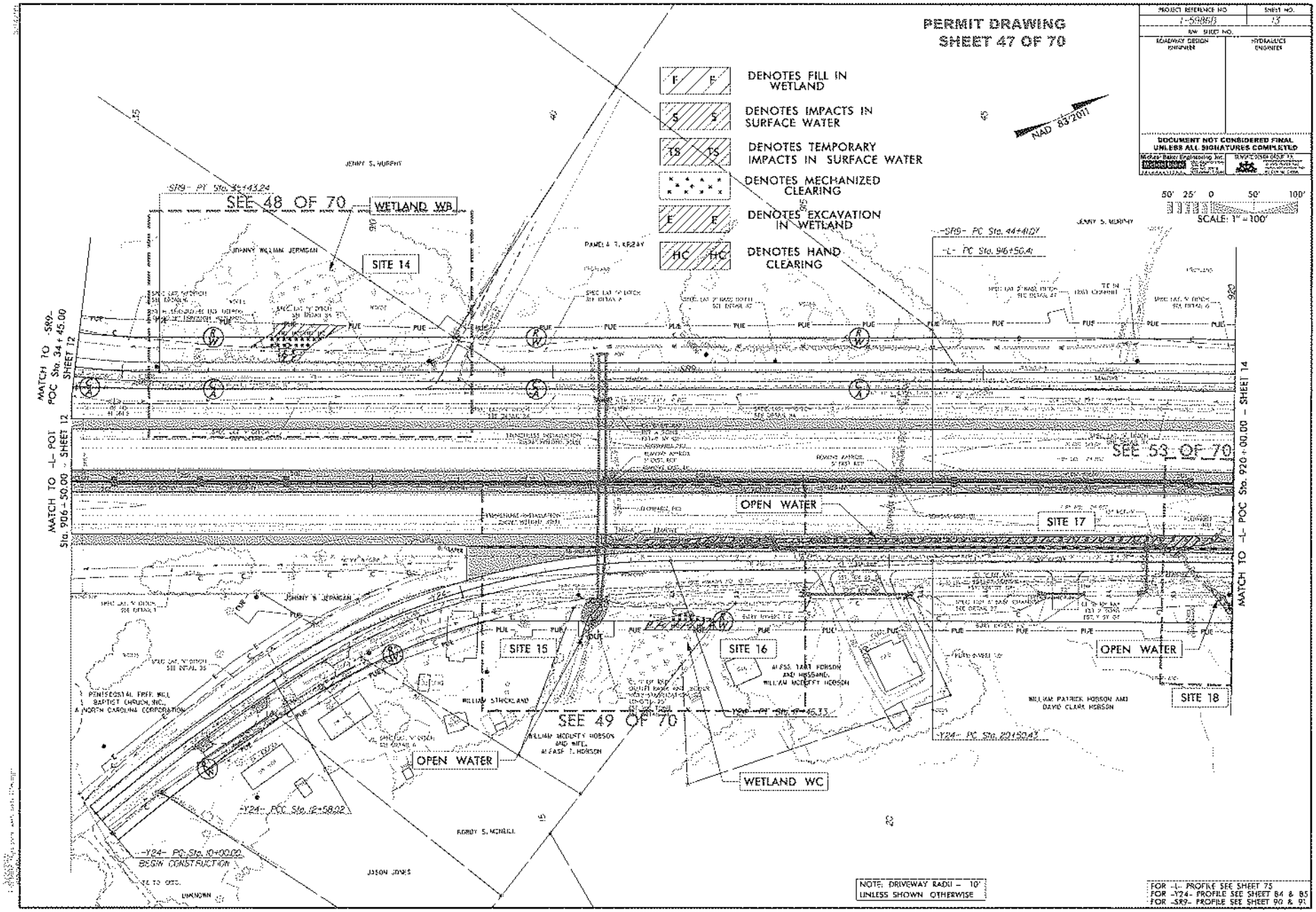

PERMIT DRAWING
SHEET 42 OF 70
PROJECT REFERENCE NO.
SHEET NO.
12
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
SCALE: 1" = 100'
NAD 83/2011
MATCH TO -SR9- POC Sta. 27+50.00 SHEET 52
MATCH TO -Y13RPA- POC Sta. 15+80.00 SHEET 11
MATCH TO -L- POT Sta. 894+00.00 SHEET 11
MATCH TO -SR9- POC Sta. 34+45.00 SHEET 13
MATCH TO -L- POT 906+50.00 SHEET 13
SEE 43 OF 70
SEE 44 OF 70
SITE 11B
STREAM SF
-SR9- POC Sta. 29+52.88
-DR6- POT Sta. 10+00.00
-DR7- PPC Sta. 10+55.25
-DR7- PC Sta. 10+29.64
-SR9- POC Sta. 30+74.15
-DR7- POT Sta. 10+00.00
-DR7- PT Sta. 10+70.00
END CONSTRUCTION
-DR6- POT Sta. 19+23.78
END CONSTRUCTION
-Y13RPA- SC Sta. 13+53.32
-Y13RPA- TS Sta. 11+31.32
-Y13RPA- CS Sta. 15+46.65
-L- POT Sta. 894+32.63 BLDG FFT =
-Y13RPB- ST Sta. 10+00.00
NANCY WARREN HAWLEY AND HUSBAND, FRED C. HAWLEY
ELMORE'S OF DUNN, INC.
JOHNNY WILLIAM JERNIGAN
PENTECOSTAL FREE WILL BAPTIST CHURCH, INC., A NORTH CAROLINA CORPORATION
STHLEASHO, LLC
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
NOTE: DRIVEWAY RADII = 10' UNLESS SHOWN OTHERWISE
FOR -L- PROFILE SEE SHEET 75
FOR -Y13RPA- PROFILE SEE SHEET 81
FOR -SR9- PROFILE SEE SHEET 90
FOR -DR6- PROFILE SEE SHEET 95

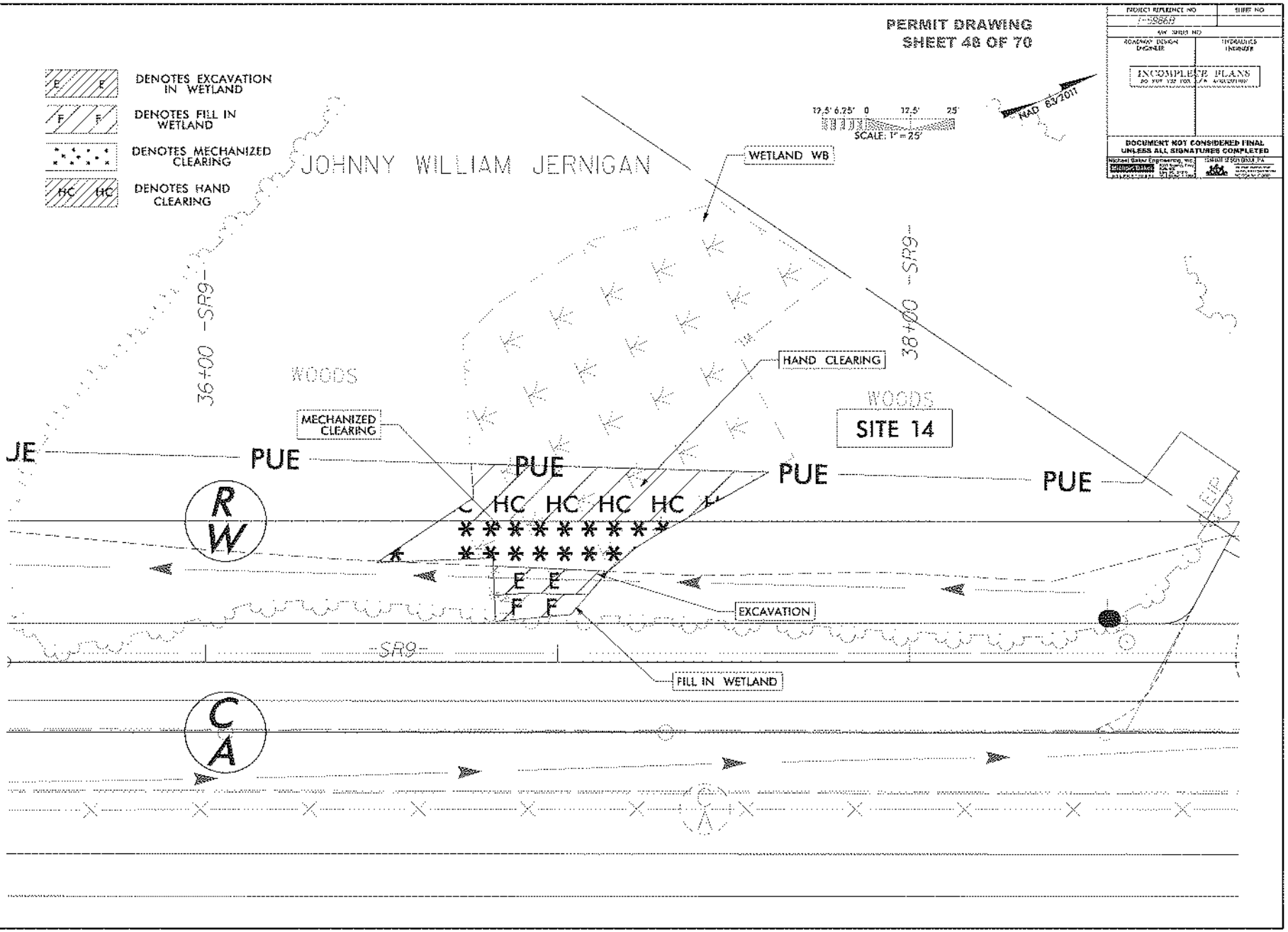

PERMIT DRAWING
SHEET 43 OF 70
PROJECT REFERENCE NO.
SHEET NO.
R-5986B
RW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
Stephen Bailey
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
SCALE: 1" = 25'
NAD 83/2011
STREAM SF
WOODS
13+00 -Y13RPA-
11+00 -Y13RPA-
TEMP IMPACTS IN SURFACE WATER
IMPACTS IN SURFACE WATER
TDE
SITE 11B
PUE
C
A
R
W
BURY INVERT 1.0'
60"
JB w/MH
REMOVE
48" WW W/13W
-Y13RPA-
TRENCHLESS

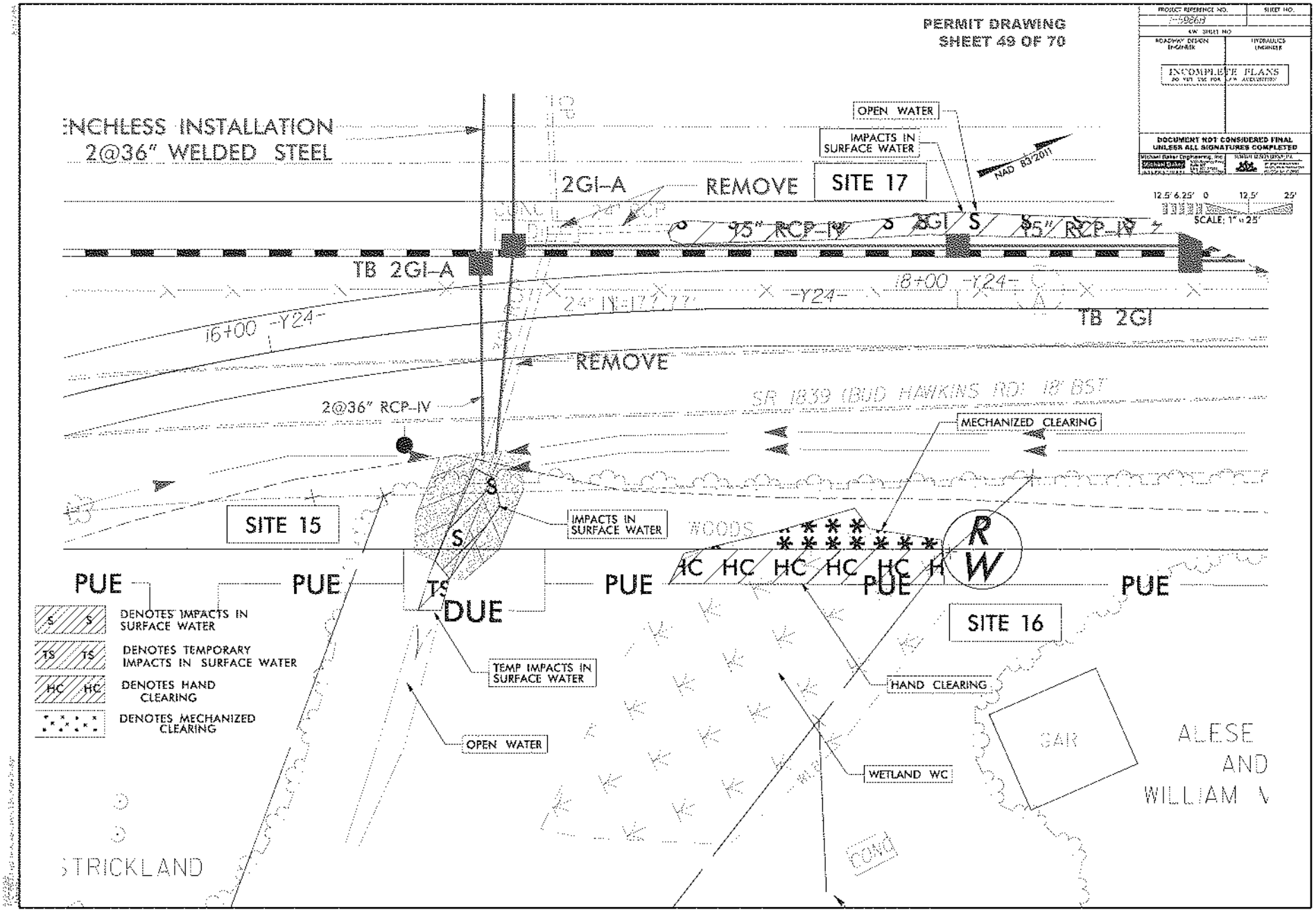

PERMIT DRAWING
SHEET 44 OF 70
PROJECT REFERENCE NO.
SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
Stantec Consulting Services Inc.
NAD 83/2011
12.5' 6.25' 0 12.5' 25'
SCALE: 1" = 25'
898+00 -L-
899+00 -L-
LATION
60" WELDED STEEL
24" HDPE
60"
JB w/MH
BURY INVERT 1.0'
STREAM SF
S
HW
REBAR
IMPACTS IN SURFACE WATER
E
LAT.
SEE
PUE
PUE
DUE
PUE
PUE
TEMP IMPACTS IN SURFACE WATER
SITE 11B
TDE
TDE
TDE
TDE
TDE
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER


PERMIT DRAWING
SHEET 45 OF 70
PROJECT REFERENCE NO.
SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
SITE 11B
CL STA 898+53 -L-
60" WELDED STEEL
TB JB W/MH
TB JB W/MH
EX TB RT/LT
60" RCP
60" WELDED STEEL
60" RCP
EX TB RT/LT
24" HDPE
24" HDPE
EX BED
REMOVE
REMOVE
REMOVE
EX BED
PROP CHANNEL
PROP CHANNEL
190
185
180
175
170
165
160
150
125
100
75
50
25
0
25
50
75
100
125
150
175

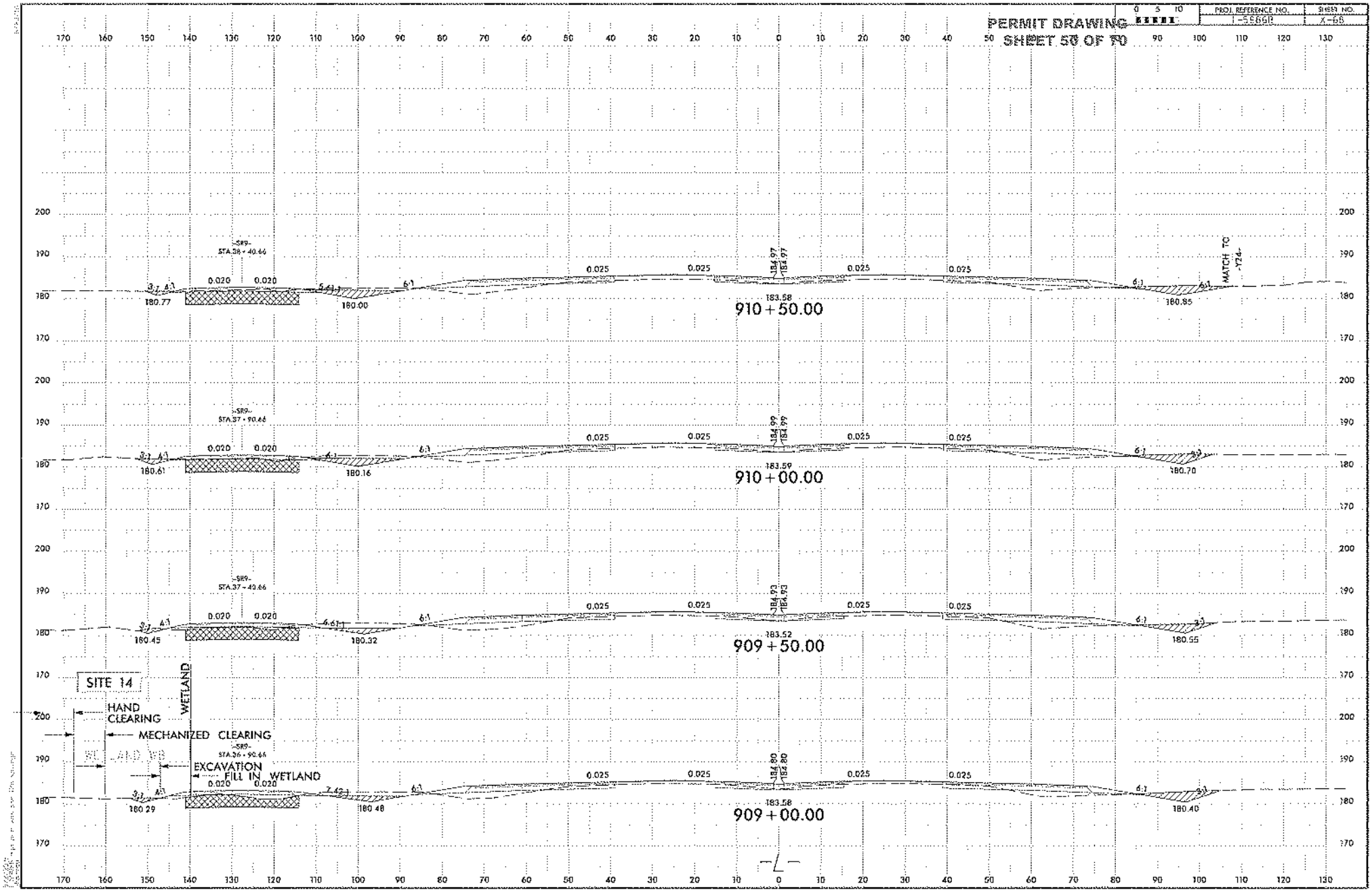

PERMIT DRAWING
SHEET 46 OF 70
PROJECT REFERENCE NO.
SHEET NO.
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
DENOTES MECHANIZED CLEARING
DENOTES EXCAVATION IN WETLAND
DENOTES HAND CLEARING
NAD 83/2011
SCALE: 1" = 100'
SEE 48 OF 70
WETLAND WB
SITE 14
SITE 15
SITE 16
SITE 17
SITE 18
OPEN WATER
WETLAND WC
SEE 49 OF 70
SEE 53 OF 70
MATCH TO -SR9- POC Sta. 34+45.00 SHEET 12
MATCH TO -L- POT Sta. 906+50.00 SHEET 12
MATCH TO -L- POC Sta. 920+00.00 SHEET 14
-Y24- PC Sta. 10+00.00 BEGIN CONSTRUCTION
NOTE: DRIVEWAY RADII - 10' UNLESS SHOWN OTHERWISE
FOR -L- PROFILE SEE SHEET 75
FOR -Y24- PROFILE SEE SHEET 84 & 85
FOR -SR9- PROFILE SEE SHEET 90 & 91

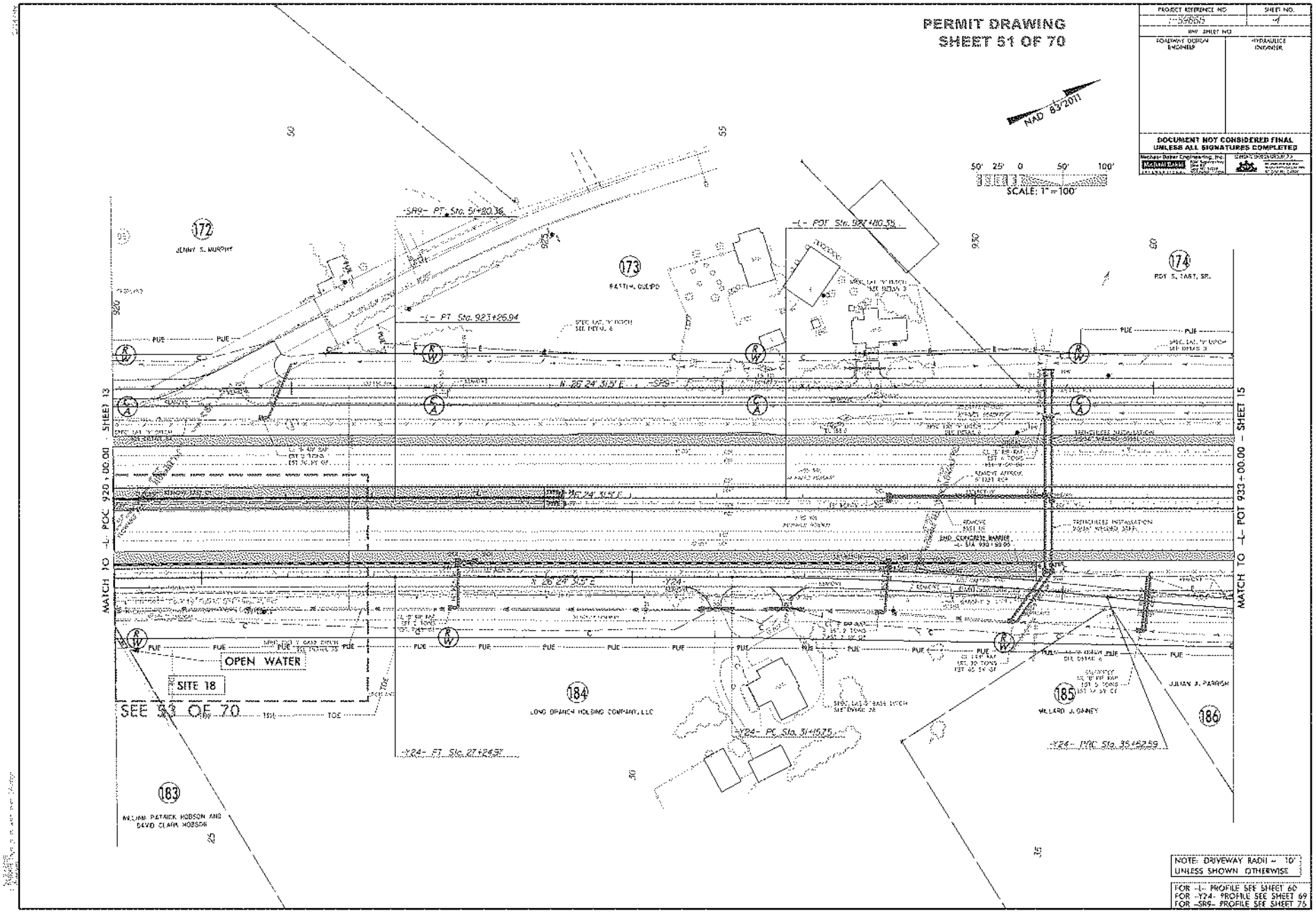

PERMIT DRAWING
SHEET 47 OF 70
PROJECT REFERENCE NO.
I-5986B
SHEET NO.
13
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
DENOTES MECHANIZED CLEARING
DENOTES EXCAVATION IN WETLAND
DENOTES HAND CLEARING
NAD 83/2011
SCALE: 1" = 100'
SEE 48 OF 70
WETLAND WB
SITE 14
SITE 15
SITE 16
SITE 17
SITE 18
OPEN WATER
WETLAND WC
SEE 49 OF 70
SEE 53 OF 70
MATCH TO -SR9- POC Sta. 34+45.00 SHEET 12
MATCH TO -L- POC Sta. 906+50.00 SHEET 12
MATCH TO -L- POC Sta. 920+00.00 SHEET 14
-SR9- PT Sta. 35+43.24
-SR9- PC Sta. 44+41.07
-L- PC Sta. 916+50.41
-Y24- PC Sta. 12+58.02
-Y24- PC Sta. 10+00.00
BEGIN CONSTRUCTION
-Y24- PC Sta. 20+50.43
JENNY S. MURPHY
JOHNNY WILLIAM JERNIGAN
PAMELA T. KIRBY
WILLIAM STRICKLAND
WILLIAM MOLLETT HOBSON AND WIFE, ALFASE T. HOBSON
WILLIAM PATRICK HOBSON AND DAVID CLARK HOBSON
PENTECOSTAL FREE WILL BAPTIST CHURCH, INC. A NORTH CAROLINA CORPORATION
BOBBY S. MCNEILL
JASON JONES
UNKNOWN
NOTE: DRIVEWAY RADII = 10' UNLESS SHOWN OTHERWISE
FOR -L- PROFILE SEE SHEET 75
FOR -Y24- PROFILE SEE SHEET 84 & 85
FOR -SR9- PROFILE SEE SHEET 90 & 91

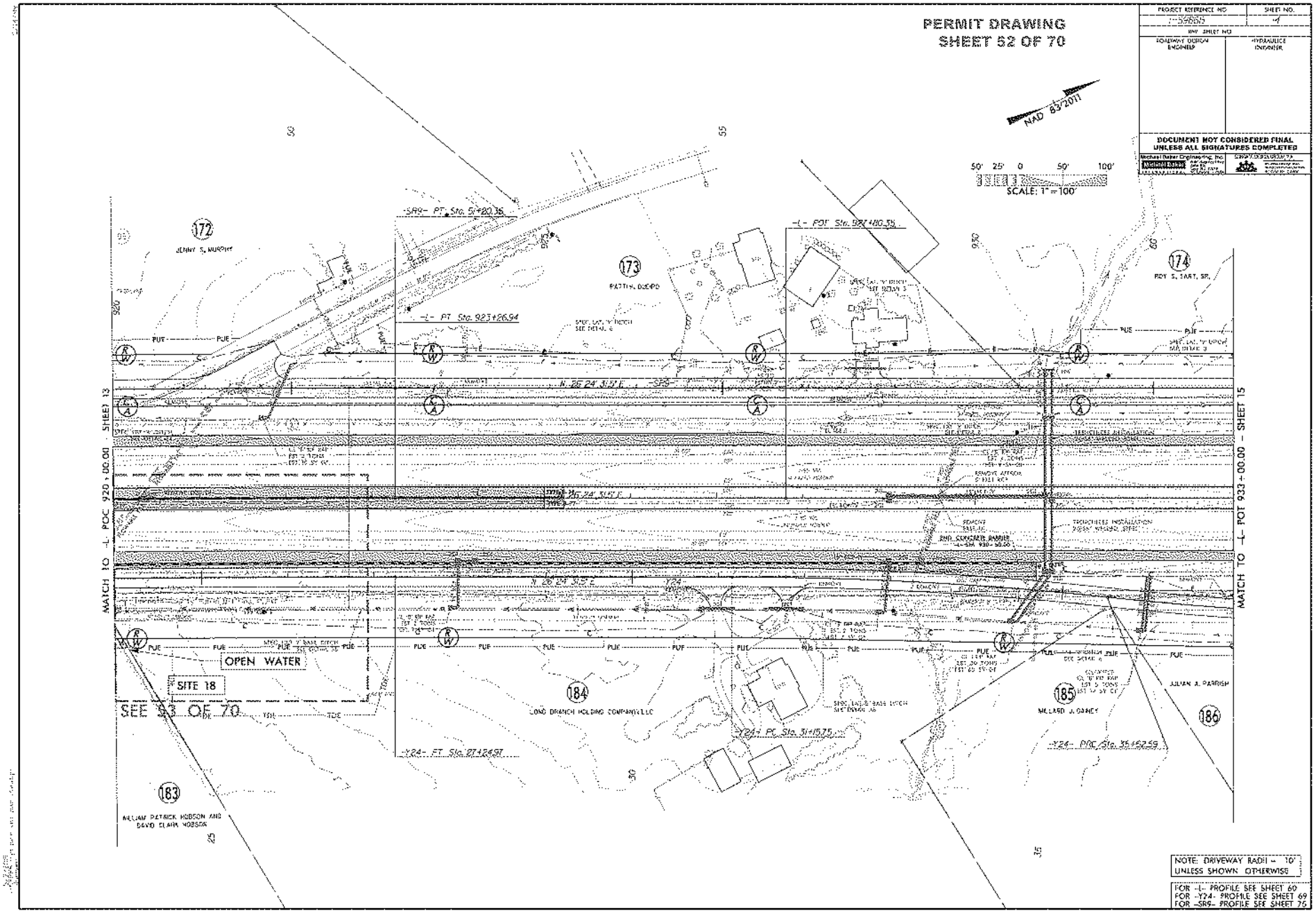

PERMIT DRAWING
SHEET 48 OF 70
PROJECT REFERENCE NO.
SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
DENOTES EXCAVATION IN WETLAND
DENOTES FILL IN WETLAND
DENOTES MECHANIZED CLEARING
DENOTES HAND CLEARING
JOHNNY WILLIAM JERNIGAN
WETLAND WB
SCALE: 1" = 25'
NAD 83/2011
36+00 -SR9-
38+00 -SR9-
WOODS
WOODS
HAND CLEARING
MECHANIZED CLEARING
SITE 14
JE
PUE
PUE
PUE
PUE
PUE
HC HC HC HC
EXCAVATION
FILL IN WETLAND
-SR9-
RW
CA

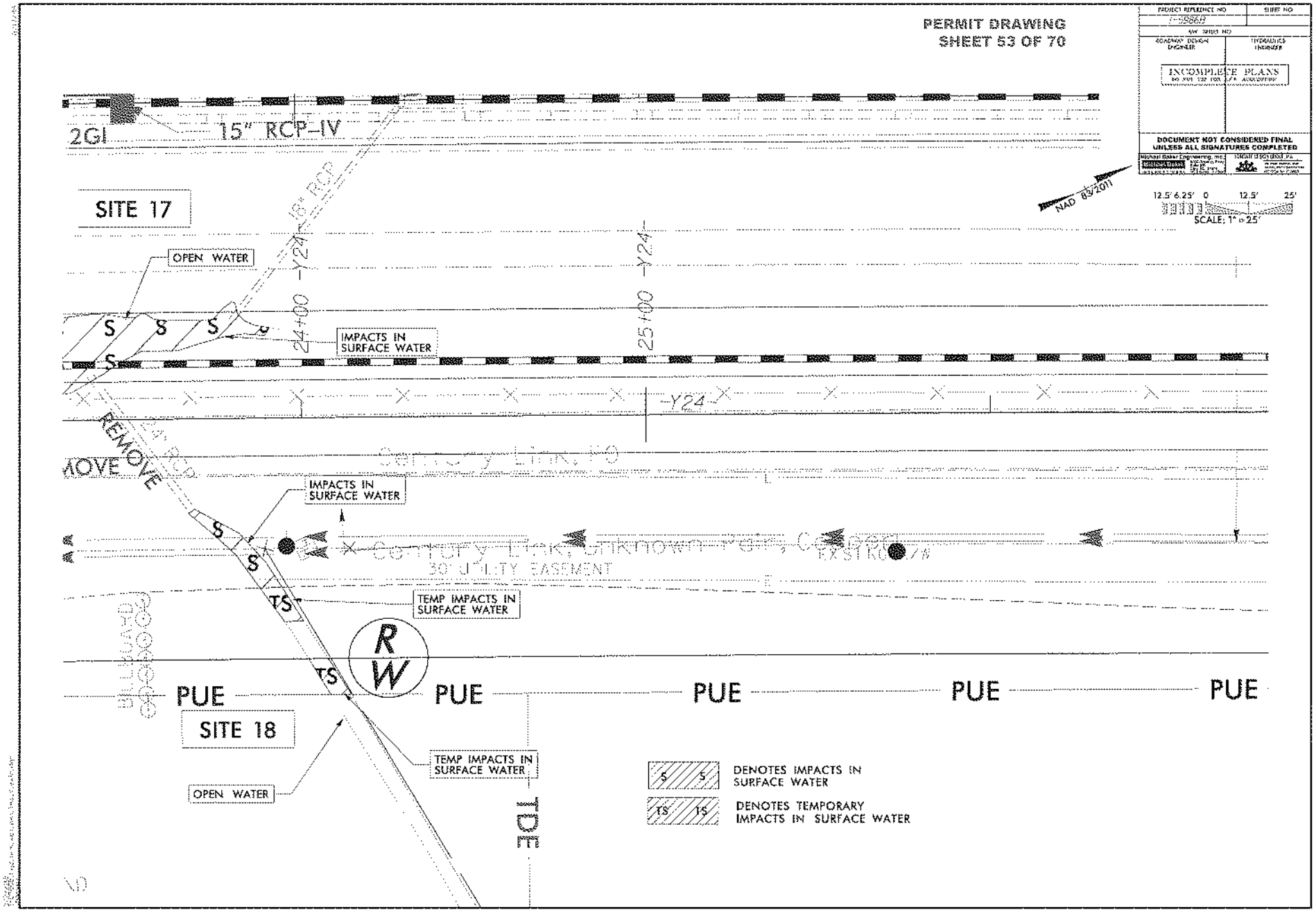

PERMIT DRAWING
SHEET 49 OF 70
PROJECT REFERENCE NO.
SHEET NO.
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W AUCTION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
Stephen Dalton
NAD 83/2011
SCALE: 1" = 25'
ENCHLESS INSTALLATION
2@36" WELDED STEEL
2GI-A
REMOVE
SITE 17
OPEN WATER
IMPACTS IN SURFACE WATER
TB 2GI-A
TB 2GI
16+00
18+00
REMOVE
2@36" RCP-IV
SR 1839 (BUD HAWKINS RD) 18' BST
MECHANIZED CLEARING
SITE 15
IMPACTS IN SURFACE WATER
WOODS
PUE
DUE
TS
HC
R/W
SITE 16
HAND CLEARING
TEMP IMPACTS IN SURFACE WATER
OPEN WATER
WETLAND WC
BAR
ALESE
AND
WILLIAM
STRICKLAND
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
DENOTES HAND CLEARING
DENOTES MECHANIZED CLEARING

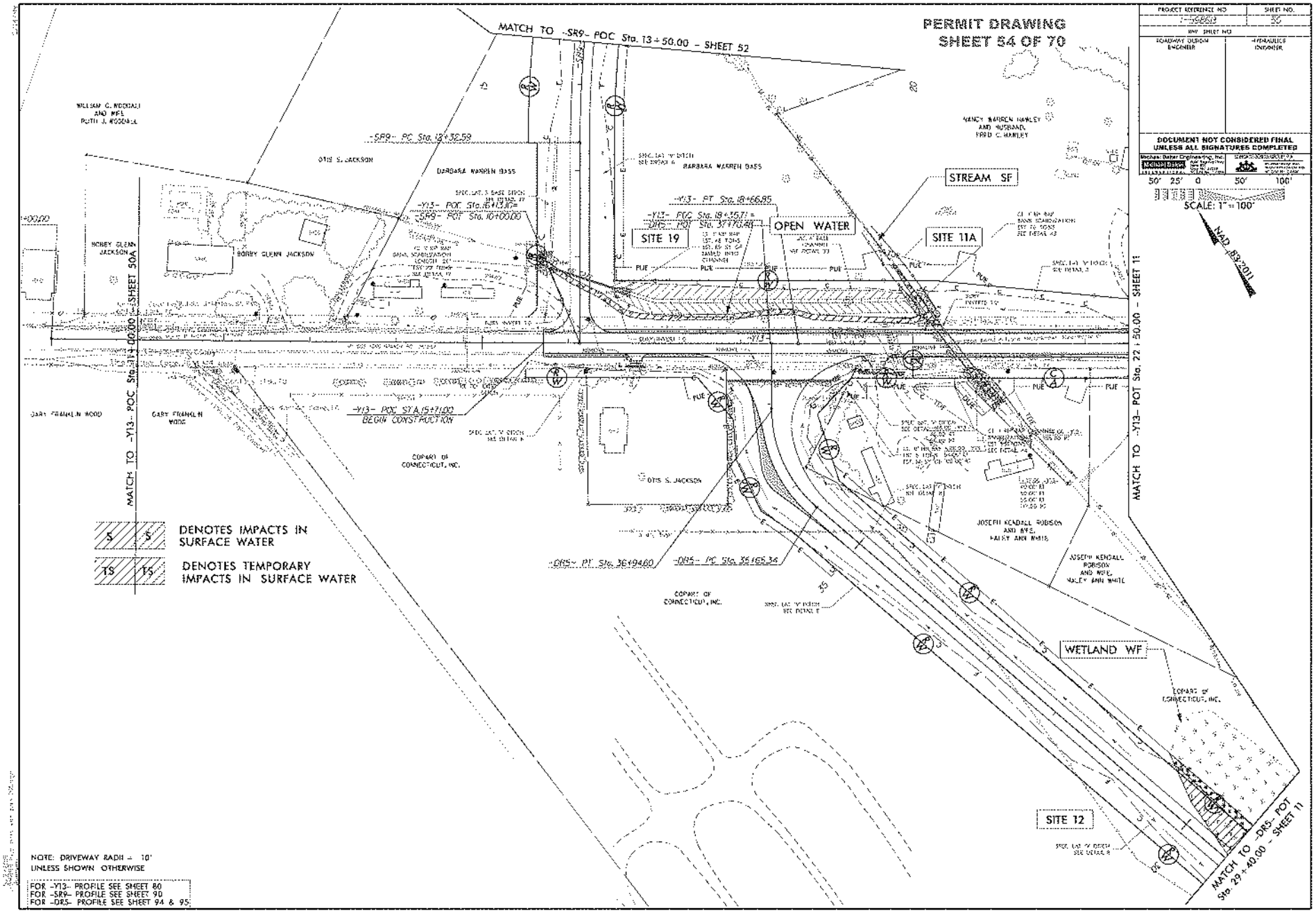
PROJ. REFERENCE NO.	SHEET NO.
I-5866B	X-6B

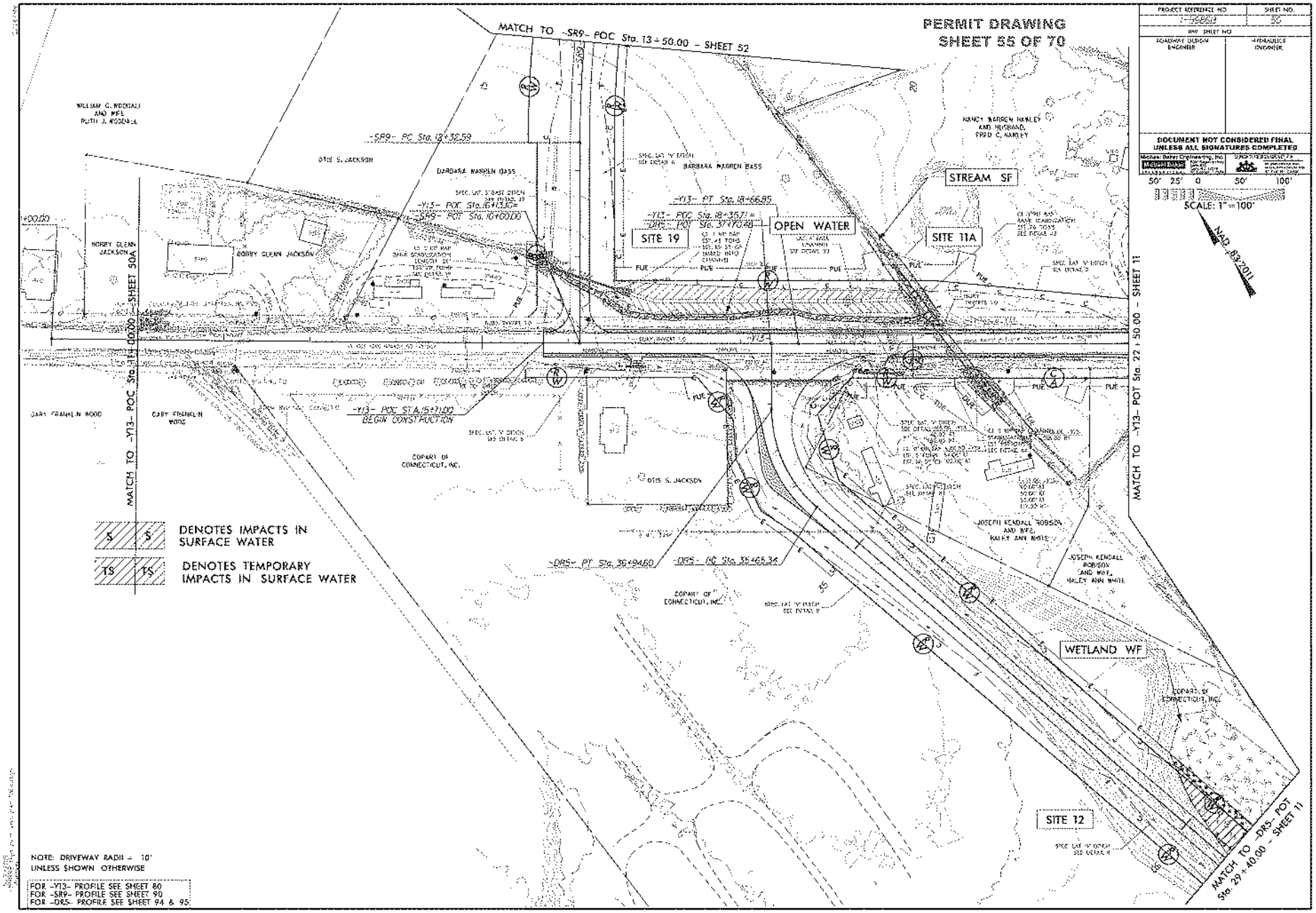


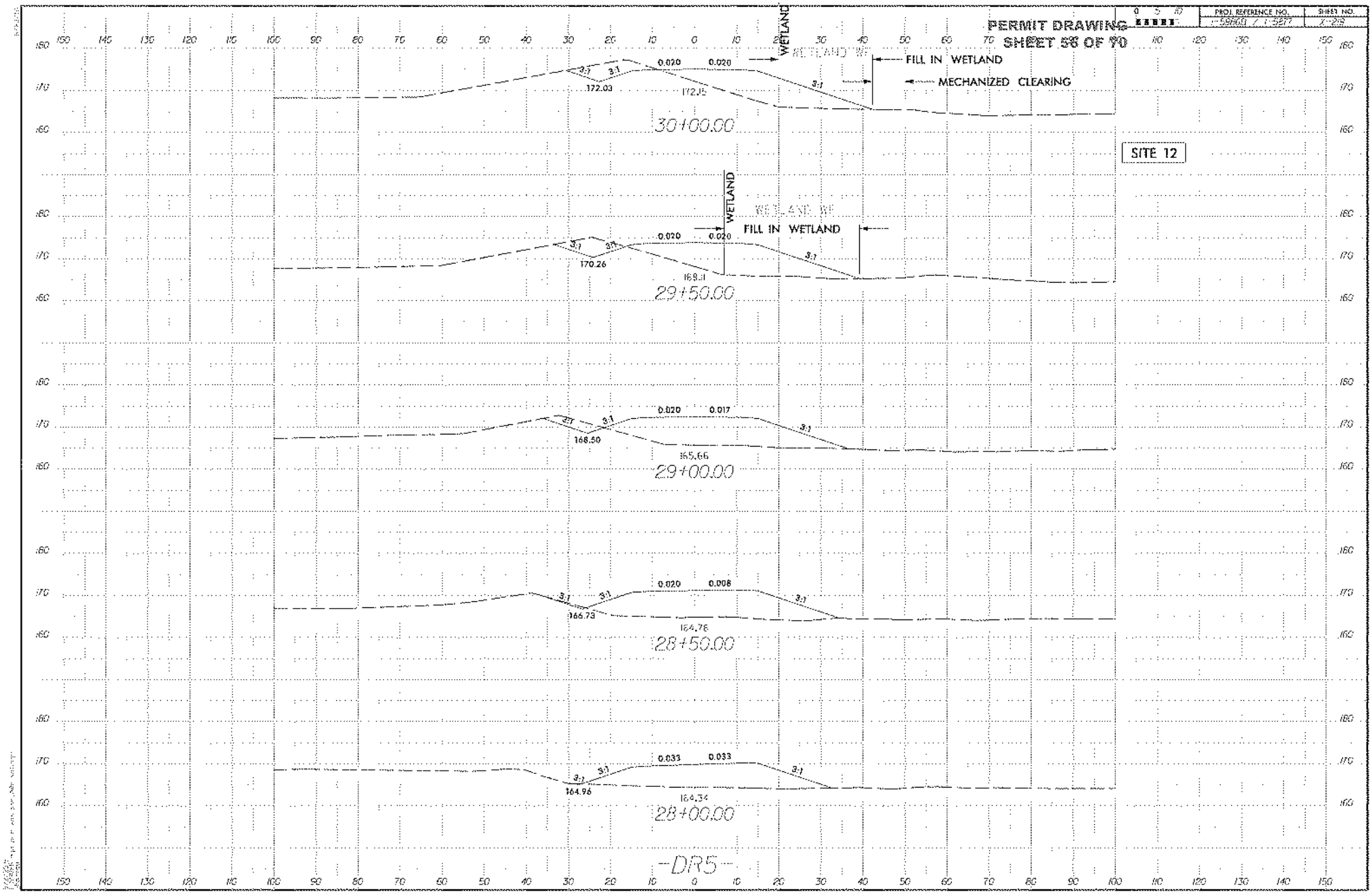

PERMIT DRAWING
SHEET 51 OF 70
PROJECT REFERENCE NO.
SHEET NO.
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
NAD 83/2011
SCALE: 1" = 100'
MATCH TO -L- POC 920+00.00 SHEET 13
MATCH TO -L- POT 933+00.00 SHEET 15
JENNY S. MURPHY
PATTIE GOLPO
ROY S. TART, SR.
OPEN WATER
SITE 18
SEE 53 OF 70
LONG BRANCH HOLDING COMPANY, LLC
WILLARD J. GANEY
JULIAN J. PARRISH
WILLIAM PATRICK HOBSON AND DAVID CLARK HOBSON
NOTE: DRIVEWAY RADII = 10' UNLESS SHOWN OTHERWISE
FOR -L- PROFILE SEE SHEET 60
FOR -Y24- PROFILE SEE SHEET 69
FOR -SR9- PROFILE SEE SHEET 75


PERMIT DRAWING
SHEET 52 OF 70
PROJECT REFERENCE NO.
SHEET NO.
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
NAD 83/2011
SCALE: 1" = 100'
MATCH TO -L- POC 920+00.00 SHEET 13
MATCH TO -L- POT 933+00.00 - SHEET 15
JENNY S. MURPHY
PATTIE, DORPO
ROY S. SART, SR.
OPEN WATER
SITE 18
SEE 53 OF 70
LONG BRANCH HOLDING COMPANY, LLC
MILLARD J. GANEY
JULIAN A. PARRISH
WILLIAM PATRICK HOBSON AND DAVID CLARK HOBSON
NOTE: DRIVEWAY RADII - 10' UNLESS SHOWN OTHERWISE
FOR -L- PROFILE SEE SHEET 60
FOR -Y24- PROFILE SEE SHEET 69
FOR -SR9- PROFILE SEE SHEET 75


PERMIT DRAWING
SHEET 53 OF 70
PROJECT REFERENCE NO.
SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
NAD 83/2011
SCALE: 1" = 25'
2GI
15" RCP-IV
SITE 17
OPEN WATER
IMPACTS IN SURFACE WATER
24+00
25+00
-Y24-
REMOVE
IMPACTS IN SURFACE WATER
TEMP IMPACTS IN SURFACE WATER
30' UTILITY EASEMENT
PUE
SITE 18
TEMP IMPACTS IN SURFACE WATER
OPEN WATER
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER


PERMIT DRAWING
SHEET 54 OF 70
PROJECT REFERENCE NO.
SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
SCALE: 1" = 100'
NAD 83/2011
MATCH TO -SR9- POC Sta. 13+50.00 - SHEET 52
MATCH TO -Y13- POT Sta. 22+50.00 - SHEET 11
MATCH TO -DR5- POT Sta. 29+40.00 - SHEET 11
MATCH TO -Y13- POC Sta. 31+00.00 - SHEET 50A
-SR9- PC Sta. 13+32.59
-Y13- PT Sta. 18+66.85
-Y13- POC Sta. 16+13.16
-SR9- POT Sta. 16+00.00
-Y13- POC Sta. 37+15.19
-Y13- BEGIN CONSTRUCTION
-DR5- PT Sta. 36+94.60
-DR5- PC Sta. 35+65.34
STREAM SF
OPEN WATER
SITE 19
SITE 11A
SITE 12
WETLAND WF
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
NOTE: DRIVEWAY RADII = 10' UNLESS SHOWN OTHERWISE
FOR -Y13- PROFILE SEE SHEET 80
FOR -SR9- PROFILE SEE SHEET 90
FOR -DR5- PROFILE SEE SHEET 94 & 95


PERMIT DRAWING
SHEET 55 OF 70
PROJECT REFERENCE NO.
SHEET NO.
55
RW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
50' 25' 0 50' 100'
SCALE: 1" = 100'
NAD 83/2011
MATCH TO -SR9- POC Sta. 13+50.00 - SHEET 52
MATCH TO -Y13- POT Sta. 22+50.00 - SHEET 11
MATCH TO -Y13- POC Sta. 11+00.00 - SHEET 50A
MATCH TO -DR5- POT Sta. 29+40.00 - SHEET 11
-SR9- PC Sta. 13+32.59
-Y13- POC Sta. 16+13.10
-SR9- POT Sta. 16+00.00
-Y13- PT Sta. 18+66.85
-Y13- PCC Sta. 18+35.71
-DR5- PCI Sta. 37+70.48
-Y13- POC Sta. 15+71.00
BEGIN CONSTRUCTION
-DR5- PT Sta. 36+94.60
-DR5- PC Sta. 35+68.34
SITE 19
OPEN WATER
STREAM SF
SITE 11A
WETLAND WF
SITE 12
BOBBY GLENN JACKSON
BARBARA WARREN BASS
GARY FRANKLIN WOOD
COPART OF CONNECTICUT, INC.
JOSEPH KENDALL ROBISON AND WIFE, HALEY ANN WHITE
NANCY WARREN HANLEY AND HUSBAND, FRED C. HANLEY
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
NOTE: DRIVEWAY RADII = 10' UNLESS SHOWN OTHERWISE
FOR -Y13- PROFILE SEE SHEET 80
FOR -SR9- PROFILE SEE SHEET 90
FOR -DR5- PROFILE SEE SHEET 94 & 95


PERMIT DRAWING
SHEET 58 OF 70
PROJ. REFERENCE NO.
SHEET NO.
WETLAND
WETLAND WF
FILL IN WETLAND
MECHANIZED CLEARING
SITE 12
30+00.00
29+50.00
29+00.00
28+50.00
28+00.00
0.020
0.017
0.008
0.033
3:1
172.03
172.15
170.26
169.31
168.50
165.66
166.73
164.76
164.96
164.34
-DR5-

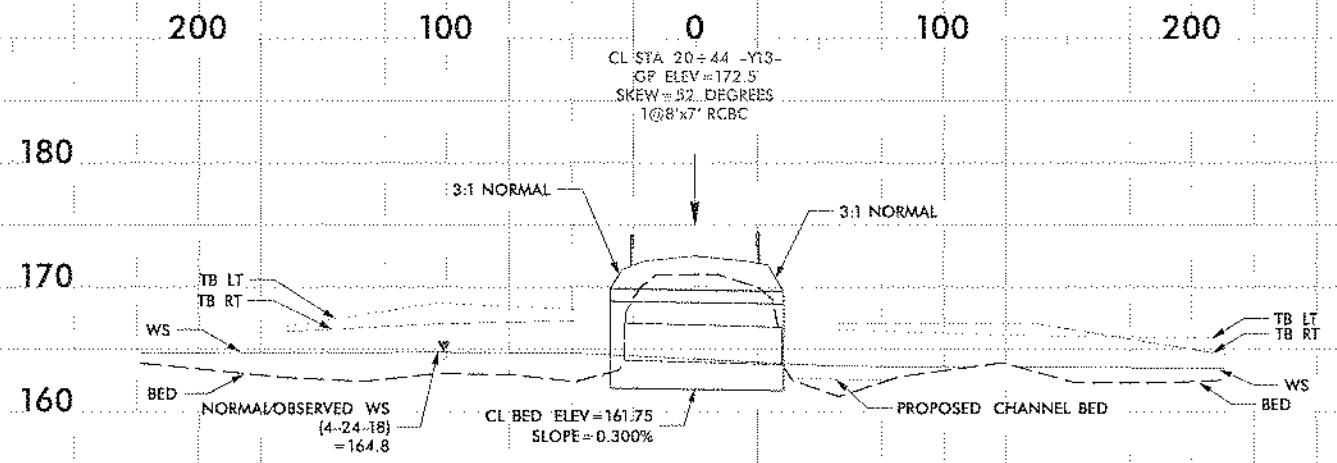
PERMIT DRAWING
SHEET 57 OF 70

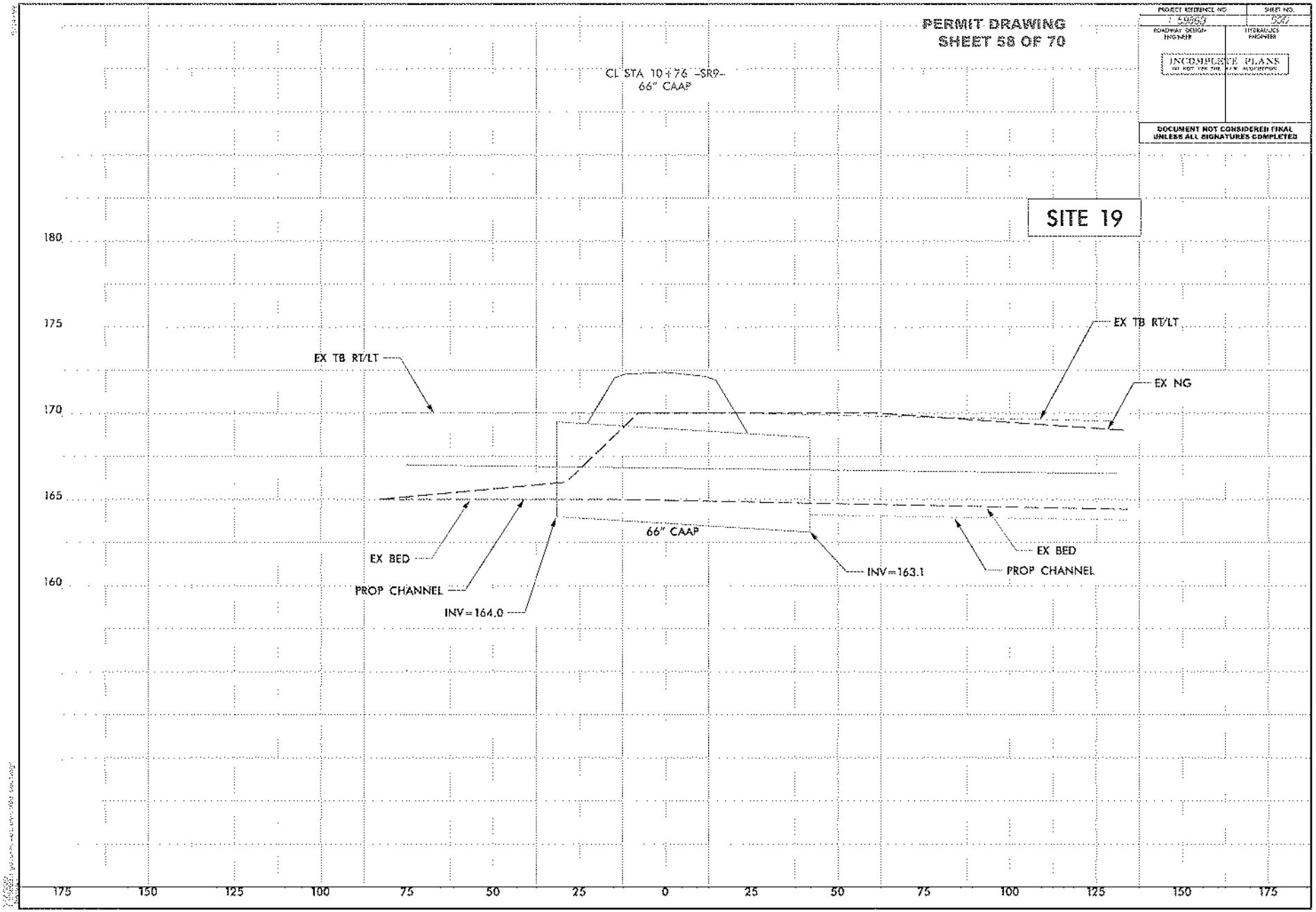
PROJECT REFERENCE NO.	SHEET NO.
7 59860	500
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

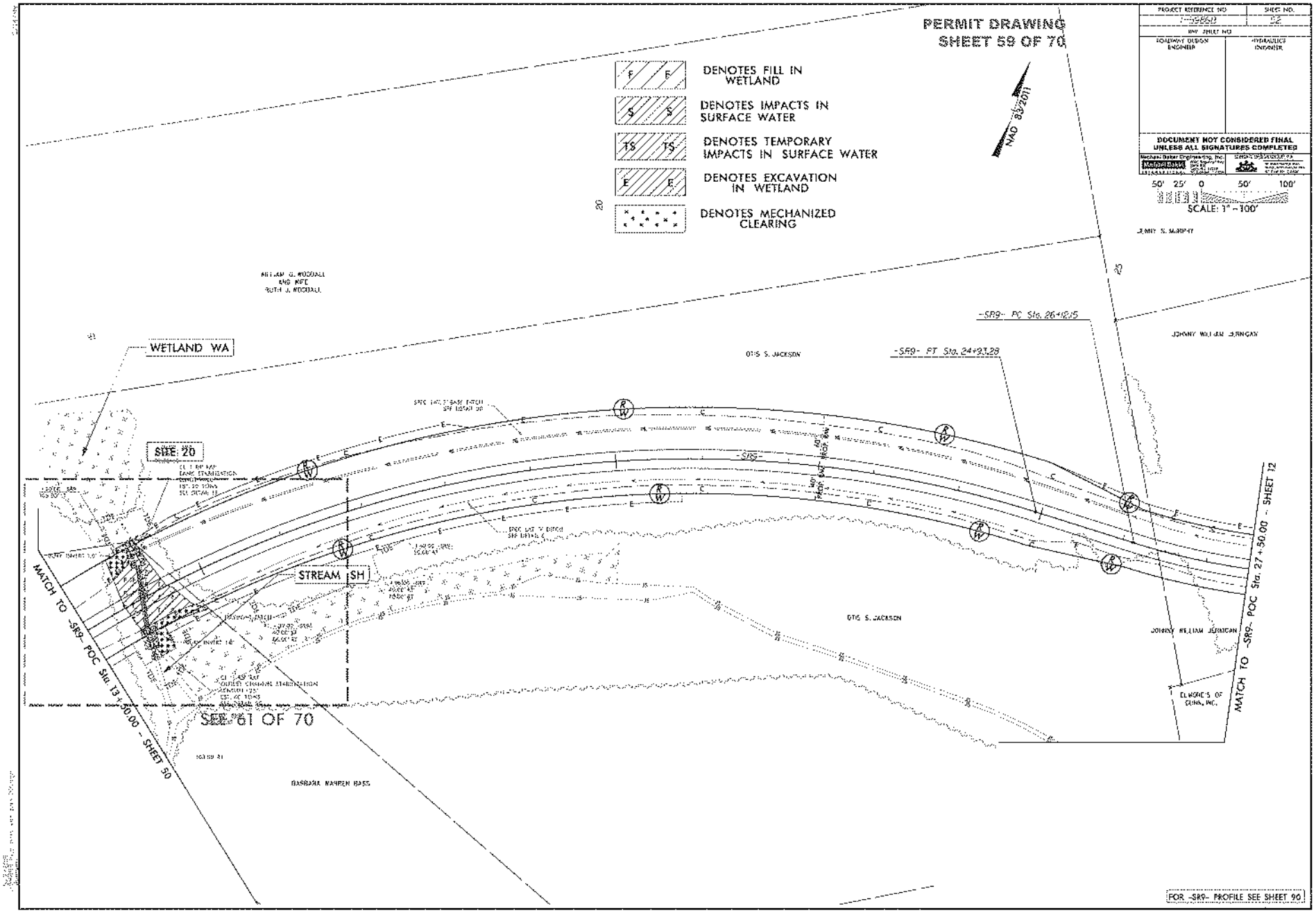
INCOMPLETE PLANS
DO NOT USE FOR THE ACTUAL ACQUISITION

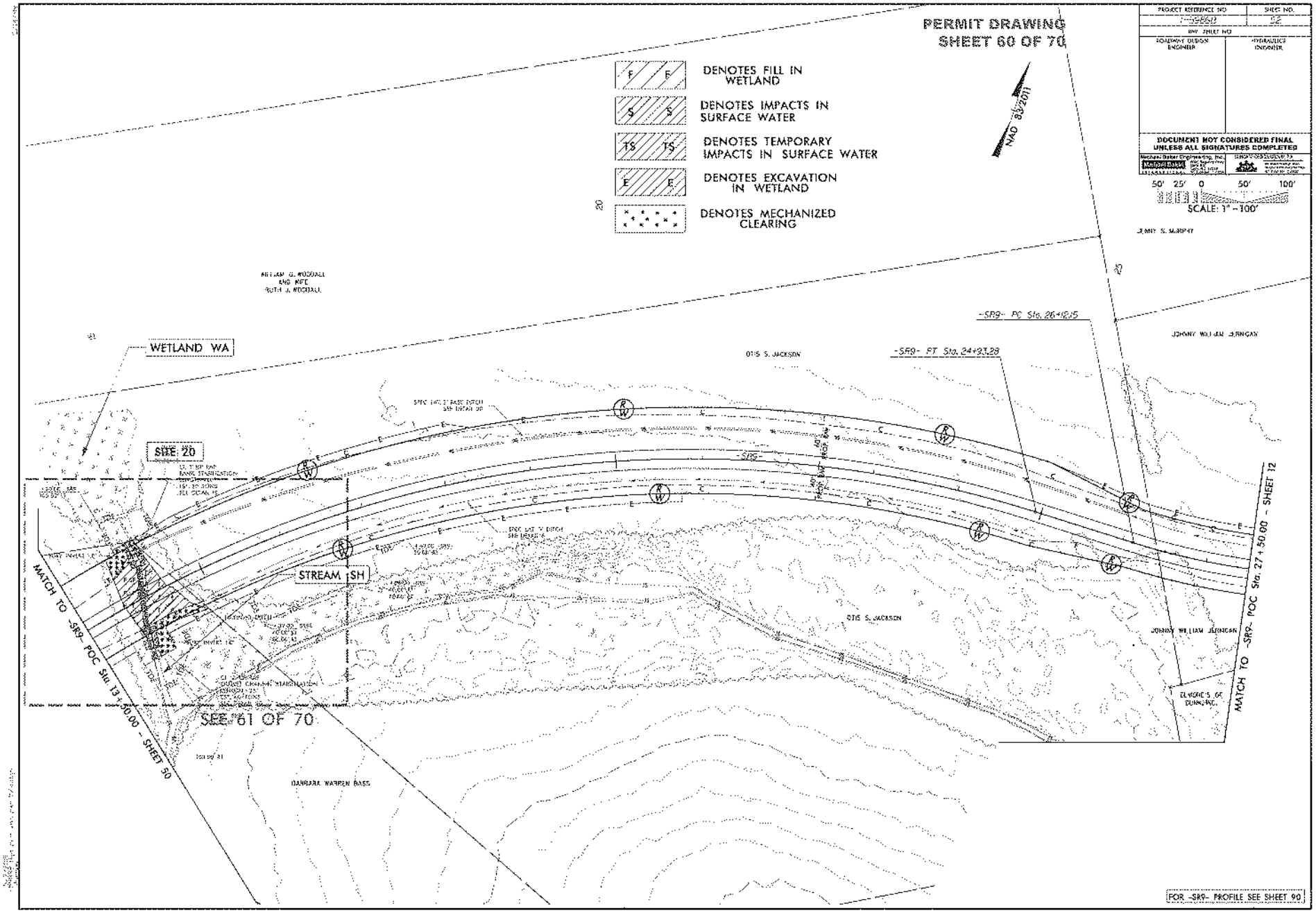
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

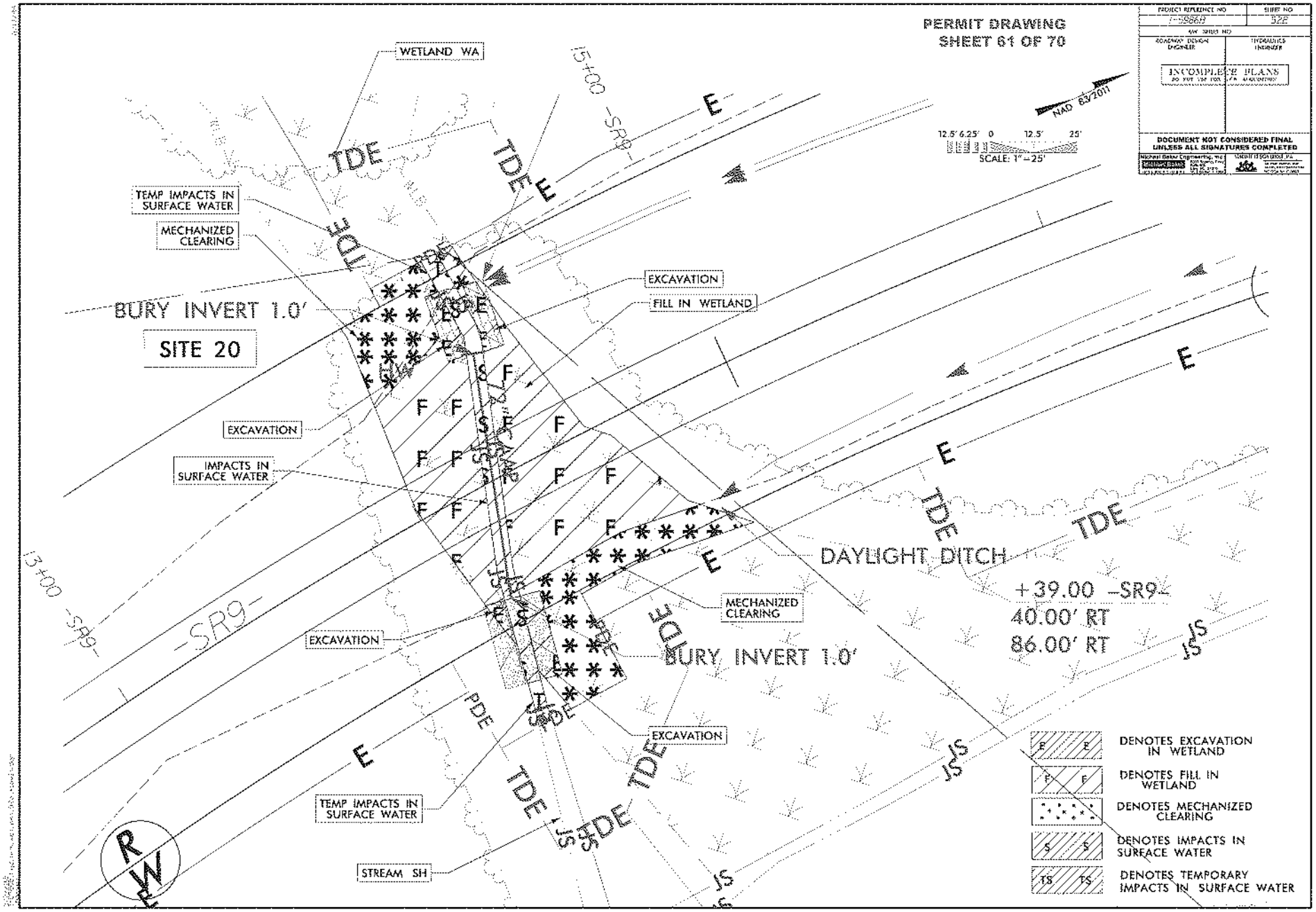
SITE 11A

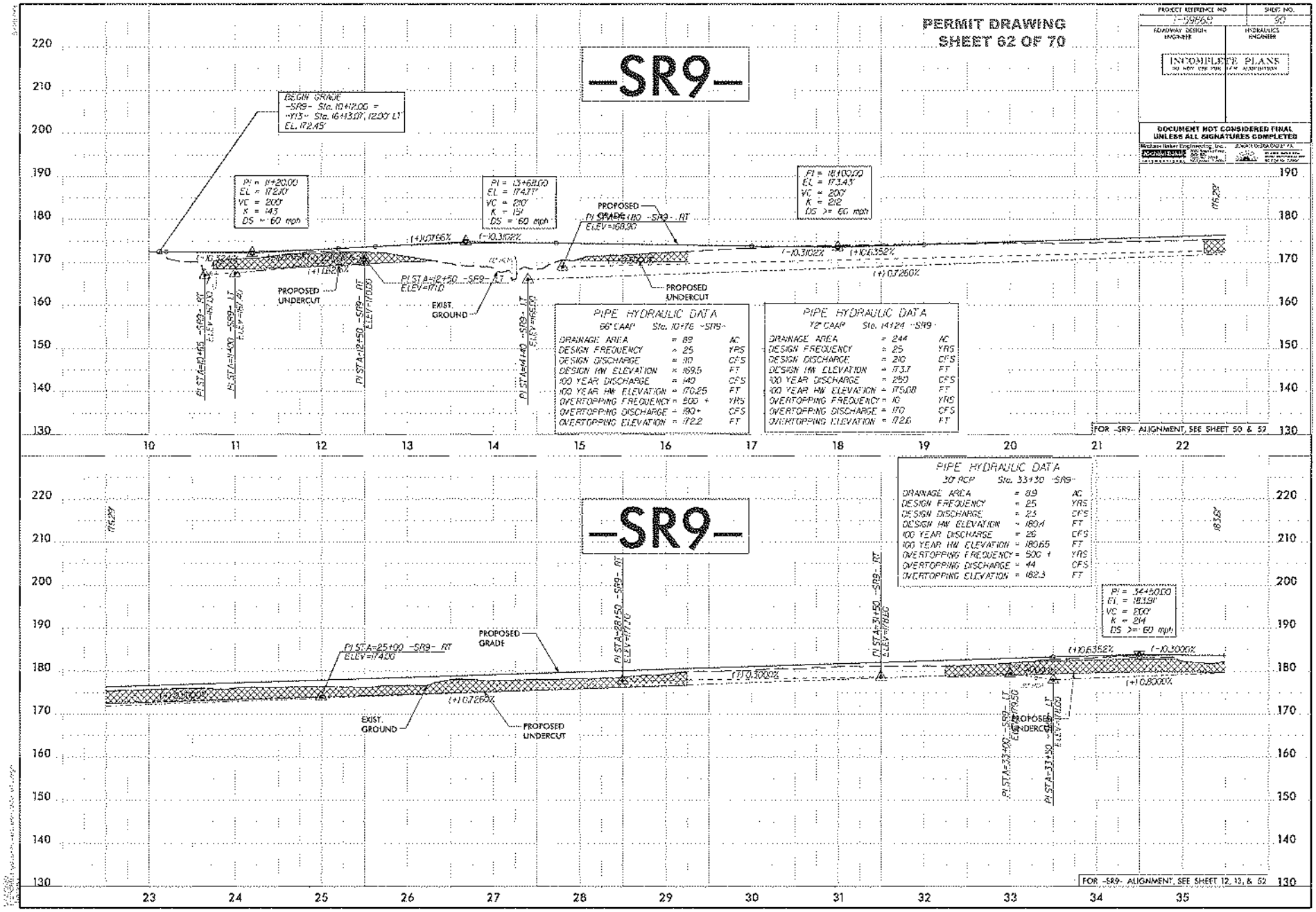



PERMIT DRAWING
SHEET 58 OF 70
PROJECT REFERENCE NO.
SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
SITE 19
CL STA 10+76 -SR9-
66" CAAP
EX TB RT/LT
EX TB RT/LT
EX NG
EX BED
PROP CHANNEL
INV=164.0
66" CAAP
INV=163.1
EX BED
PROP CHANNEL
180
175
170
165
160
175
150
125
100
75
50
25
0
25
50
75
100
125
150
175

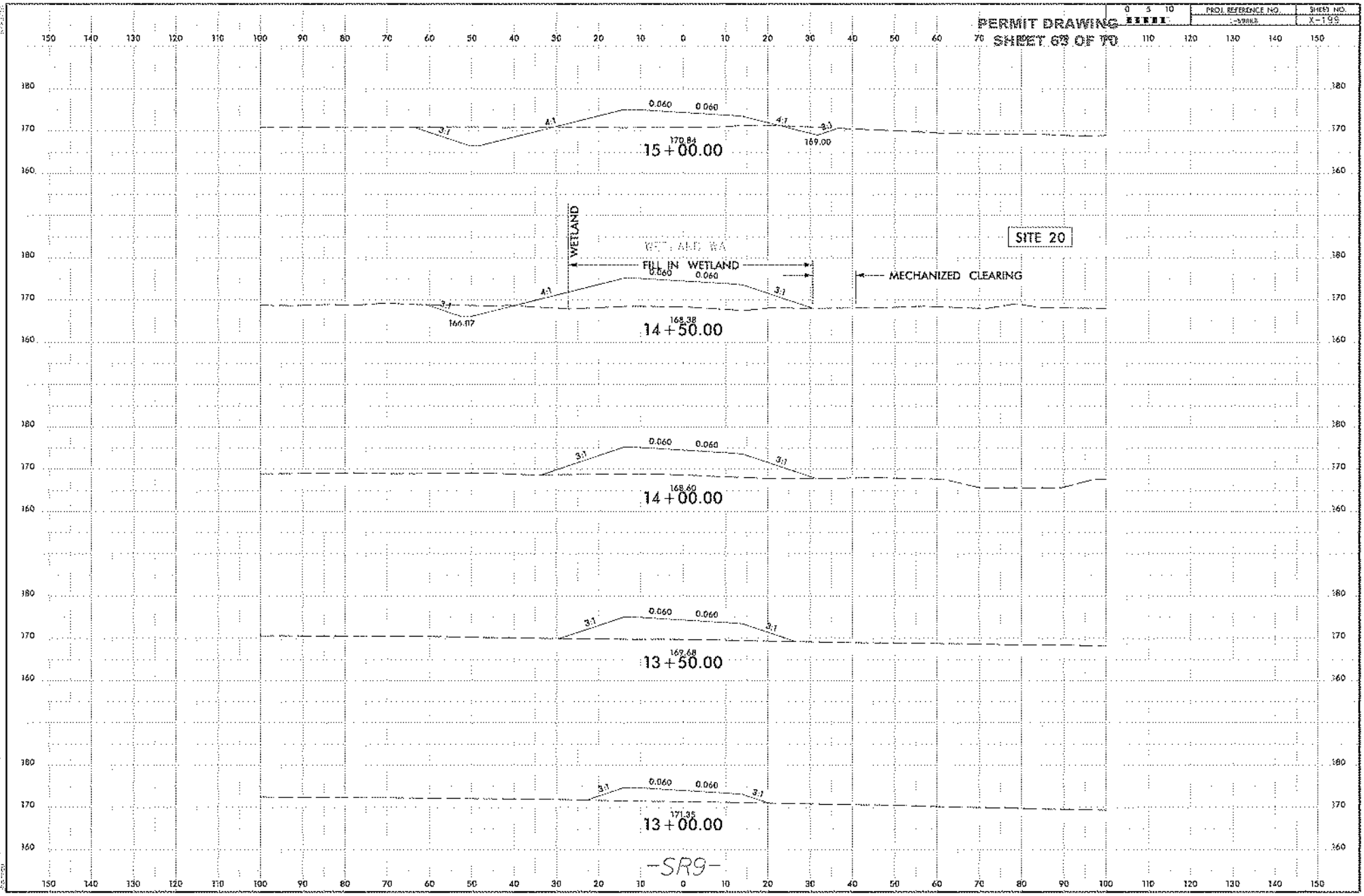

PERMIT DRAWING
SHEET 59 OF 70
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
DENOTES EXCAVATION IN WETLAND
DENOTES MECHANIZED CLEARING
NAD 83/2011
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
SCALE: 1" = 100'
WETLAND WA
SITE 20
STREAM SH
-SR9- PC Sta. 26+12.15
-SR9- PT Sta. 24+93.28
OTIS S. JACKSON
JOHNNY WILLIAM JERNIGAN
JERRY S. MURPHY
WILLIAM G. WOODALL AND WIFE RUTH J. WOODALL
BARBARA WARREN BASS
ELMORE'S OF DUNN, INC.
MATCH TO -SR9- POC Sta. 13+50.00 - SHEET 50
MATCH TO -SR9- POC Sta. 27+50.00 - SHEET 12
SEE 61 OF 70
FOR -SR9- PROFILE SEE SHEET 90


PERMIT DRAWING
SHEET 60 OF 70
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
DENOTES EXCAVATION IN WETLAND
DENOTES MECHANIZED CLEARING
NAD 83/2011
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
SCALE: 1" = 100'
WETLAND WA
SEE 20
STREAM SH
-SR9- PC Sta. 26+12.15
-SR9- PT Sta. 24+93.28
OTIS S. JACKSON
JOHNNY WILLIAM JENNGAN
JENNY S. MURPHY
MATCH TO -SR9- POC Sta. 13+50.00 - SHEET 50
MATCH TO -SR9- POC Sta. 27+50.00 - SHEET 12
SEE 61 OF 70
DANGARA WARREN BASS
FOR -SR9- PROFILE SEE SHEET 90


PERMIT DRAWING
SHEET 61 OF 70
PROJECT REFERENCE NO.
I-5986B
SHEET NO.
522
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION OR RIGHT OF WAY ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
Moon Township, PA
Mott MacDonald
Harrisburg, PA
NAD 83/2011
12.5' 6.25' 0 12.5' 25'
SCALE: 1" = 25'
WETLAND WA
15+00 -SR9-
TEMP IMPACTS IN SURFACE WATER
MECHANIZED CLEARING
BURY INVERT 1.0'
SITE 20
EXCAVATION
FILL IN WETLAND
EXCAVATION
IMPACTS IN SURFACE WATER
DAYLIGHT DITCH
+39.00 -SR9-
40.00' RT
86.00' RT
MECHANIZED CLEARING
EXCAVATION
BURY INVERT 1.0'
EXCAVATION
13+00 -SR9-
-SR9-
TEMP IMPACTS IN SURFACE WATER
STREAM SH
R/W
TDE
PDE
E
F
S
JS
DENOTES EXCAVATION IN WETLAND
DENOTES FILL IN WETLAND
DENOTES MECHANIZED CLEARING
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER


PERMIT DRAWING
SHEET 62 OF 70
PROJECT REFERENCE NO.
SHEET NO.
90
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR RW ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
-SR9-
BEGIN GRADE
-SR9- Sta. 10+12.00 =
-Y13- Sta. 16+13.07, 12.00' LT
EL. 172.45'
PI = 11+20.00
EL = 172.30'
VC = 200'
K = 143
DS = 60 mph
PI = 13+68.00
EL = 174.77'
VC = 210'
K = 151
DS = 60 mph
PI = 18+00.00
EL = 173.43'
VC = 200'
K = 212
DS >= 60 mph
PROPOSED GRADE
PI STA=16+80 -SR9- RT
ELEV=168.30
(+)0.7165%
(-)0.3602%
(-)0.3102%
(+)0.6352%
(+)0.7260%
(+)0.2%
PROPOSED UNDERCUT
EXIST. GROUND
PI STA=12+50 -SR9- RT
ELEV=171.0
PI STA=10.465 -SR9- RT
ELEV=167.30
PI STA=11+00 -SR9- LT
ELEV=167.40
PI STA=12+50 -SR9- RT
ELEV=170.00
PI STA=14+40 -SR9- LT
ELEV=165.00
PIPE HYDRAULIC DATA
66" CAAP Sta. 10+76 -SR9-
DRAINAGE AREA = 89 AC
DESIGN FREQUENCY = 25 YRS
DESIGN DISCHARGE = 110 CFS
DESIGN HW ELEVATION = 169.5 FT
100 YEAR DISCHARGE = 140 CFS
100 YEAR HW ELEVATION = 170.25 FT
OVERTOPPING FREQUENCY = 500 + YRS
OVERTOPPING DISCHARGE = 190+ CFS
OVERTOPPING ELEVATION = 172.2 FT
PIPE HYDRAULIC DATA
72" CAAP Sta. 14+24 -SR9-
DRAINAGE AREA = 244 AC
DESIGN FREQUENCY = 25 YRS
DESIGN DISCHARGE = 210 CFS
DESIGN HW ELEVATION = 173.7 FT
100 YEAR DISCHARGE = 250 CFS
100 YEAR HW ELEVATION = 175.08 FT
OVERTOPPING FREQUENCY = 10 YRS
OVERTOPPING DISCHARGE = 170 CFS
OVERTOPPING ELEVATION = 172.6 FT
FOR -SR9- ALIGNMENT, SEE SHEET 50 & 52
-SR9-
PIPE HYDRAULIC DATA
30" RCP Sta. 33+30 -SR9-
DRAINAGE AREA = 8.9 AC
DESIGN FREQUENCY = 25 YRS
DESIGN DISCHARGE = 23 CFS
DESIGN HW ELEVATION = 180.4 FT
100 YEAR DISCHARGE = 26 CFS
100 YEAR HW ELEVATION = 180.65 FT
OVERTOPPING FREQUENCY = 500 + YRS
OVERTOPPING DISCHARGE = 44 CFS
OVERTOPPING ELEVATION = 182.3 FT
PI = 34+50.00
EL = 183.91'
VC = 200'
K = 214
DS >= 60 mph
PI STA=25+00 -SR9- RT
ELEV=174.30
PROPOSED GRADE
PI STA=28+50 -SR9- RT
ELEV=177.0
PI STA=31+50 -SR9- RT
ELEV=179.00
(-)0.3000%
(+)0.6352%
(-)0.3000%
(+)0.8000%
(+)0.7260%
EXIST. GROUND
PROPOSED UNDERCUT
PI STA=33+00 -SR9- LT
ELEV=179.50
PI STA=33+50 -SR9- LT
ELEV=179.00
FOR -SR9- ALIGNMENT, SEE SHEET 12, 13, & 52

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
		X-199

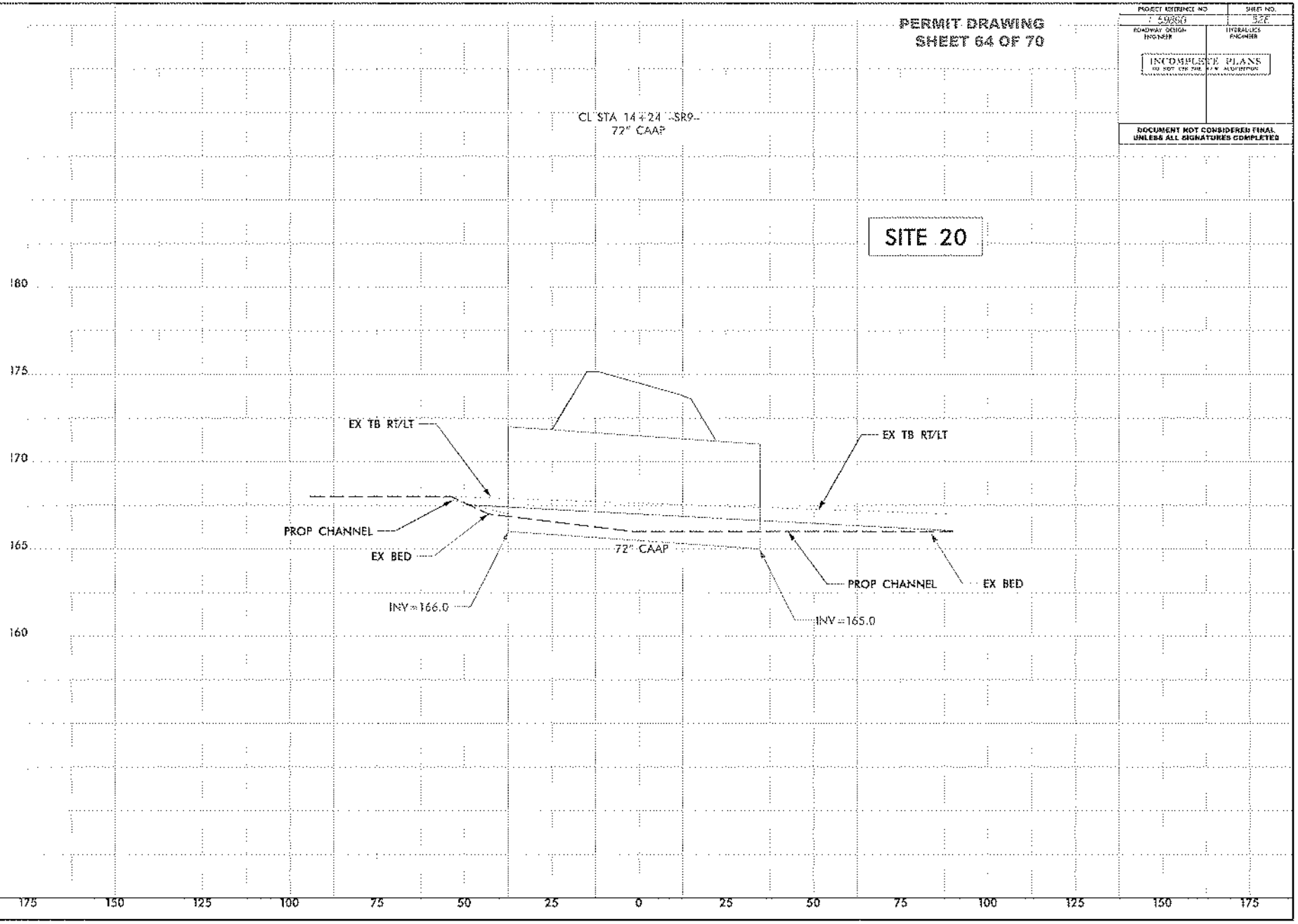


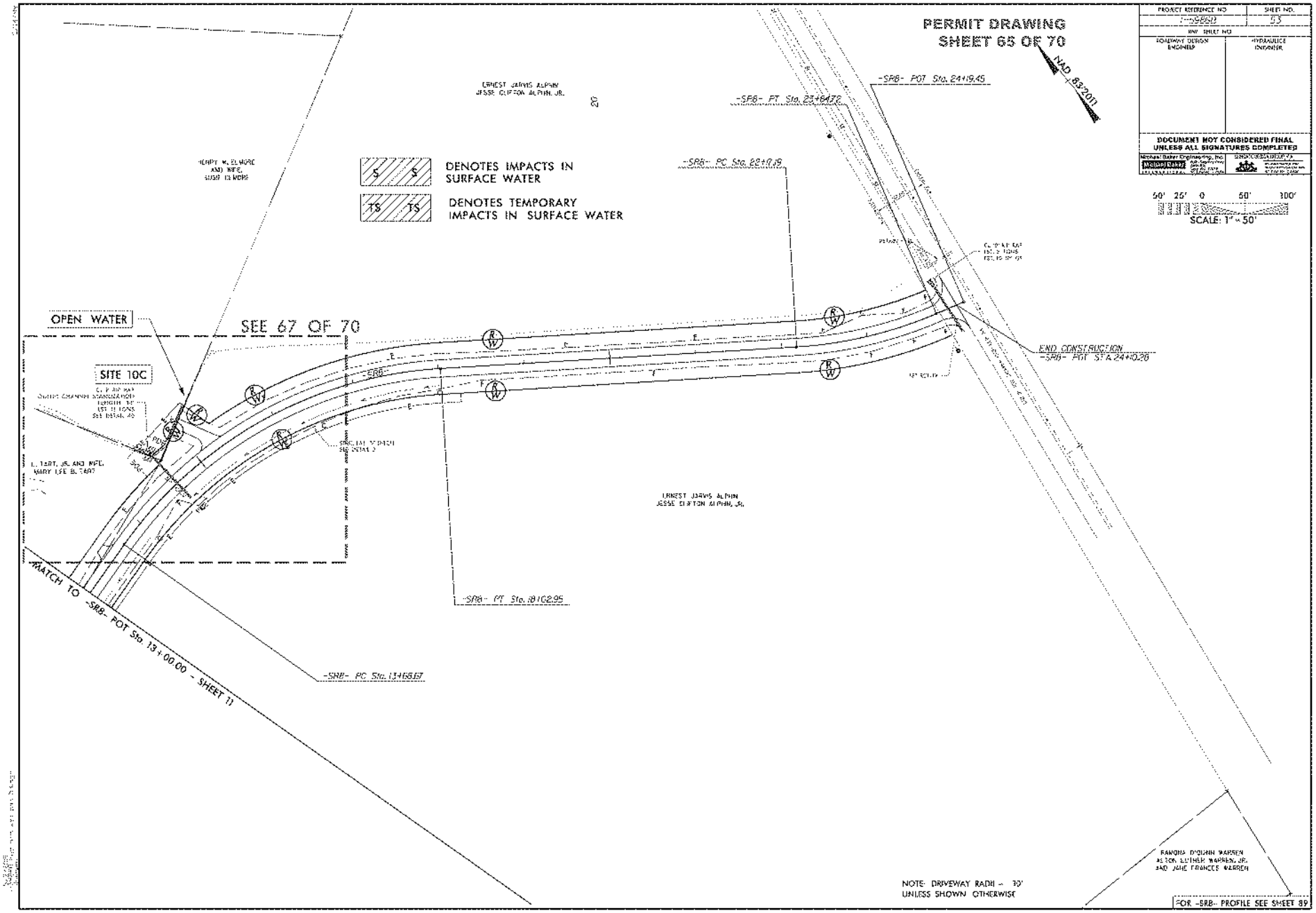
PERMIT DRAWING
SHEET 64 OF 70

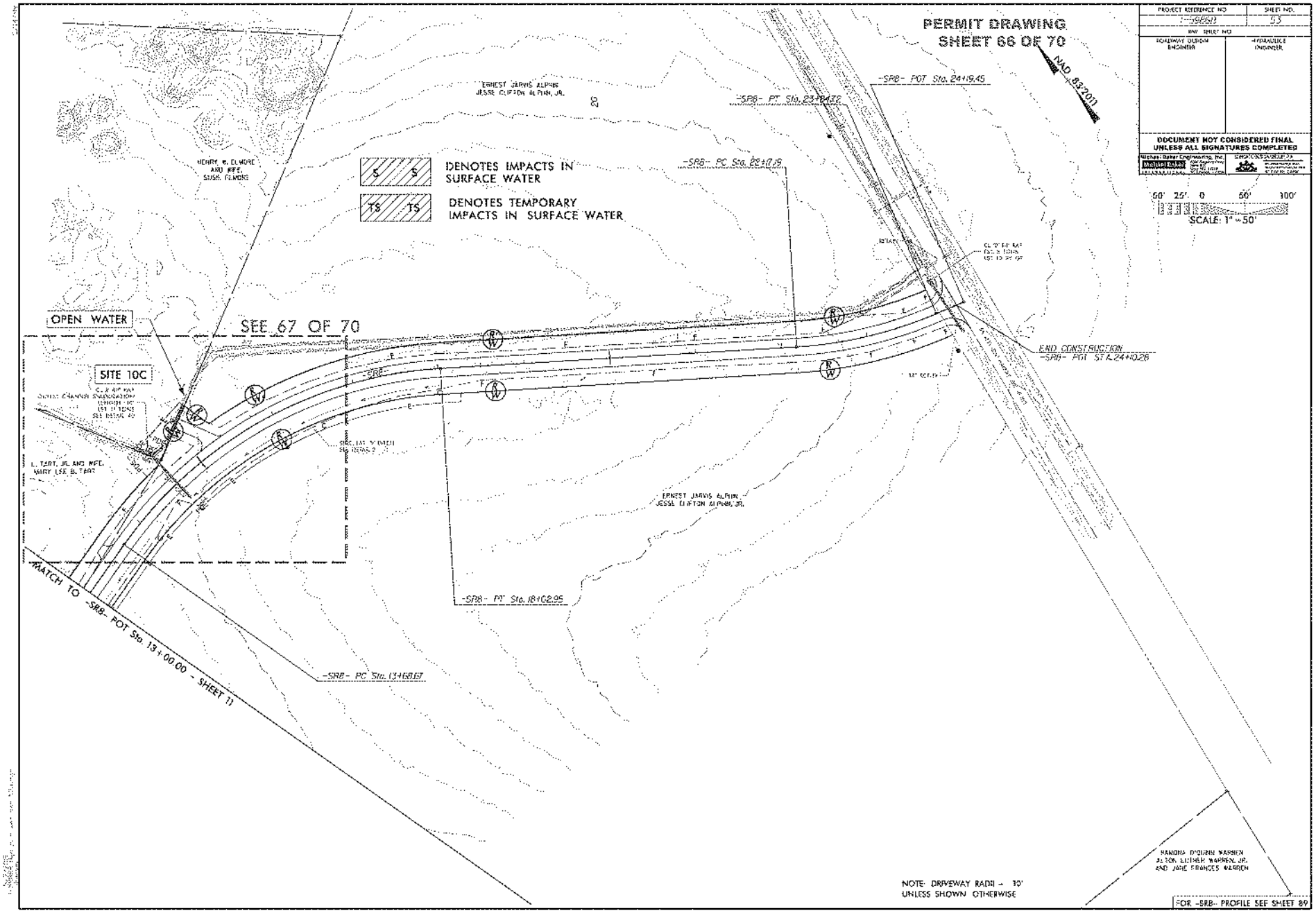
PROJECT REFERENCE NO.	SHEET NO.
7.59260	32E
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR NEW ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED




PERMIT DRAWING
SHEET 65 OF 70
NAD 83/2011
PROJECT REFERENCE NO.
SHEET NO.
65
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
50' 25' 0 50' 100'
SCALE: 1" = 50'
ERNEST JARVIS ALPHIN
JESSE CLIFTON ALPHIN, JR.
HENRY M. ELMORE AND WIFE, SUSIE H. MORE
-SRB- POT Sta. 24+19.45
-SRB- PT Sta. 23+64.72
-SRB- PC Sta. 22+17.19
OPEN WATER
SEE 67 OF 70
SITE 10C
-SRB-
END CONSTRUCTION
-SRB- POT STA 24+10.28
L. TART, JR. AND WIFE, MARY LEE B. TART
-SRB- PT Sta. 18+62.95
MATCH TO -SRB- POT Sta. 13+00.00 - SHEET 11
-SRB- PC Sta. 13+66.67
RAMONA D'QUINN WARREN
ALSO ESTHER WARREN, JR.
AND JANE FRANCES WARREN
NOTE: DRIVEWAY RADII = 30' UNLESS SHOWN OTHERWISE
FOR -SRB- PROFILE SEE SHEET 89


PERMIT DRAWING
SHEET 66 OF 70
NAD 83/2011
PROJECT REFERENCE NO.
SHEET NO.
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
50' 25' 0 50' 100'
SCALE: 1" = 50'
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
ERNEST JARVIS ALPHIN
JESSE CLIFTON ALPHIN, JR.
HENRY W. ELMORE AND WIFE, SUSIE ELMORE
-SRB- POT Sta. 24+19.45
-SRB- PT Sta. 23+84.32
-SRB- PC Sta. 22+07.19
OPEN WATER
SEE 67 OF 70
SITE 10C
END CONSTRUCTION
-SRB- POT STA. 24+10.28
L. TART, JR. AND WIFE, MARY LEE B. TART
-SRB- PT Sta. 18+02.95
-SRB- PC Sta. 13+68.67
MATCH TO -SRB- POT Sta. 13+00.00 - SHEET 11
NOTE: DRIVEWAY RADII = 30' UNLESS SHOWN OTHERWISE
RAMONA D'QUINN WARREN
ALTON LUTHER WARREN, JR.
AND JANE FRANCES WARREN
FOR -SRB- PROFILE SEE SHEET 89

PERMIT DRAWING
SHEET 67 OF 70

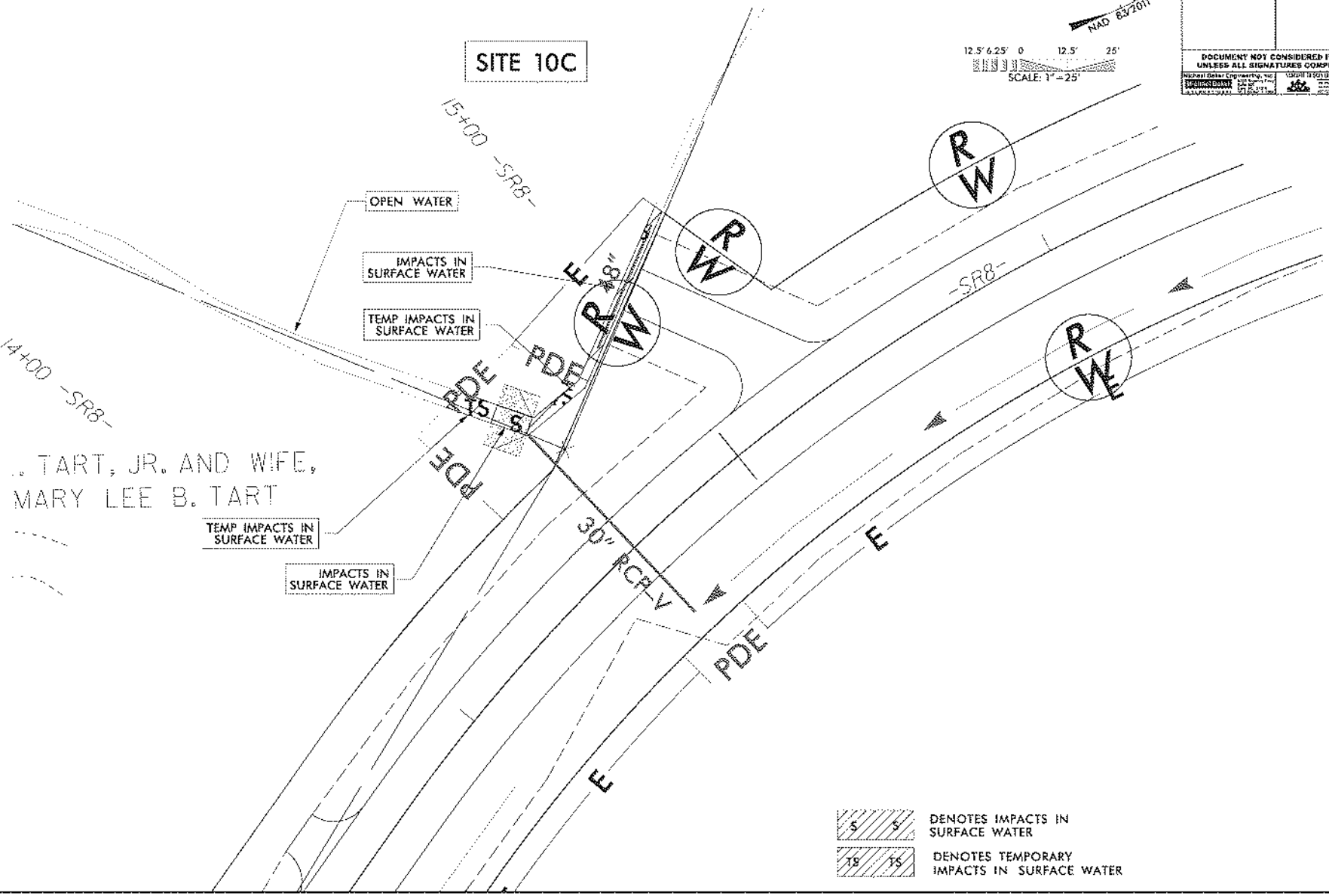
PROJECT REFERENCE NO.	SHEET NO.
I-5986B	
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Michael Baker Engineering, Inc.
PRELIMINARY
NOT FOR CONSTRUCTION
07/15/2011

DRAWN IN SOUTH DAKOTA STATE PLANE COORDINATES
NAD 83/2011
SCALE: 1" = 25'



WETLAND AND SURACE WATER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	800+95 to 801+38-L-RT	DRAINAGE DITCH							0.007		44	
2	795+73 to 796+99-L-LT	ROADWAY FILL	0.111		0.051							
3	801+10 to 803+74-L-	42" PIPE						0.008	0.002	121	19	
4	811+37 to 814+11-L-RT	ROADWAY FILL	0.046			0.048						
5	816+14 to 816+28-L-RT	54" PIPE						0.001	0.001	8	10	
		OUTLET CHANNEL						0.004		23		
5A	11+04 to 11+40-SR7-LT	ROADWAY FILL						0.002		24		
		POND						0.182				
6	18+84 to 18+94 -Y22-RT	BANK STABILIZATION						0.001		10		
7	20+15 to 20+39-Y22-RT	DRAINAGE DITCH						0.003	0.003	18	18	
7A	46+22 to 47+34-Y12-	60" PIPE						0.005		44		
		INLET BANK STABILIZATION						0.002	0.001	20	10	
		OUTLET CHANNEL						0.002	0.001	36	17	
7B	1+84 to 13+35-Y12RPD-R	ROADWAY FILL						0.010	0.001	113	11	
8	844+71 to 845+24-L-RT	PIPE REMOVAL							0.003		33	
8A	849+47 to 849+75-L-RT	PIPE REMOVAL/DITCH							0.001		9	
		OUTLET CHANNEL						0.003		22		
8B	38+92 to 39+04-SR7-	PIPE REMOVAL/DITCH						0.001	0.001	18	16	
		CHANNEL REALIGNMENT						0.001		14		
9	855+32 to 859+66-L-	1 at 9'x8' RCBC						0.016	0.007	98	44	
		INLET CHANNEL						0.007	0.003	56	19	
		OUTLET CHANNEL						0.003	0.004	185	25	
TOTALS*:			**0.16**	**0.00**	**0.05**	**0.05**	**0.00**	**0.25**	**0.04**	**810**	**275**	**0**

*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
4-30-2019
HARNETT COUNTY
I-5986B-SECTION 1
47532.1.3
SHEET 68 OF 70

Revised 2016 Feb

558A

WETLAND AND SURACE WATER IMPACTS SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
10	875+41 to 875+82-L-	60" PIPE						0.013	0.006	105	47	
		INLET CHANNEL						0.006		41		
		OUTLET CHANNEL						0.003	0.010	34	13	
10A	4+58 to 15+95-Y13RPB-L	36" PIPE						0.006		47		
		OUTLET CHANNEL						0.003	0.003	20	20	
		UTILITY							0.008		59	
10B	21+71 to 22+25-DR5-RT	ROADWAY FILL							0.002		40	
		CHANNEL REALIGNMENT						0.002		15		
10C	14+54 to 15+23-SR8-LT	30" PIPE							0.003			
		48" PIPE						0.003				
		OUTLET CHANNEL						0.001				
11	22+10 to 22+55-DR5-	1 at 9'x8' RCBC						0.006		39		
		INLET CHANNEL			0.001	0.012		0.004	0.017	38	29	
		OUTLET CHANNEL						0.005	0.002	29	10	
11A	19+83 to 21+03-Y13-	1 AT 8'x7' RCBC						0.001		8		
		INLET CHANNEL						0.005	0.002	40	12	
		OUTLET CHANNEL						0.009	0.002	42	10	
		UTILITY							0.002		22	
11B	898+13 to 899+23-L-	60" PIPE						0.013		34		
		INLET CHANNEL						0.002	0.001	20	13	
		OUTLET CHANNEL						0.003	0.002	25	12	
12	22+75 to 30+68-DR5-	ROADWAY FILL	0.619		0.089	0.218						
TOTALS*:			**0.62**	**0.00**	**0.09**	**0.23**	**0.00**	**0.09**	**0.06**	**537**	**287**	**0**

*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
4-30-2019
HARNETT COUNTY
I-5986B-SECTION 1
47532.1.3

SHEET 69 OF 70

Revised 2016 Feb

558B

WETLAND AND SURACE WATER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
13	**REMOVED**											
14	36+49 to 37+35-SR9-LT	ROADWAY FILL	0.004		0.005	0.019						
		UTILITY					0.026					
15	16+32 to 16+62-Y24-RT	OUTLET CHANNEL						0.006	0.002			
16	17+24 to 17+95-Y24-RT	ROADWAY FILL				0.008						
		UTILITY					0.018					
17	913+16 to 919+91-L-RT	ROADWAY FILL						0.101				
18	23+67 to 24+00-Y24-RT	ROADWAY FILL						0.003	0.001			
		UTILITY							0.001			
19	15+51 to 19+93-Y13-LT	66" PIPE						0.010	0.002			
		BANK STABILIZATION						0.004				
		CHANNEL REALIGNMENT						0.051				
20	14+00 to 14+95-SR9-	72" PIPE	0.080		0.010	0.041		0.008		72		
		INLET CHANNEL						0.002	0.001	21	11	
		OUTLET CHANNEL						0.003	0.001	25	13	
	SHEET TOTALS		**0.084**		**0.015**	**0.068**	**0.044**	**0.188**	**0.008**	**118**	**24**	**0**
	PAGE 68 TOTALS:		**0.16**	**0.00**	**0.05**	**0.05**	**0.00**	**0.25**	**0.04**	**810**	**275**	**0**
	PAGE 69 TOTALS:		**0.62**	**0.00**	**0.09**	**0.23**	**0.00**	**0.09**	**0.06**	**537**	**287**	**0**
TOTALS*:			**0.86**	**0.00**	**0.16**	**0.35**	**0.04**	**0.52**	**0.10**	**1465**	**586**	**0**

*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
4-30-2019
HARNETT COUNTY
I-5986B-SECTION 1
47532.1.3
SHEET 70 OF 70

Revised 2016 Feb

558C

PERMIT DRAWING
SHEET 1 OF 12

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5986B	1	

P.E. PROJ. REFERENCE NO.	PARCEL NO.	R/W SHEET NO.	DESCRIPTION
I-5986B	47532.1.3		PE
I-5986B	47532.2.3		RW

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

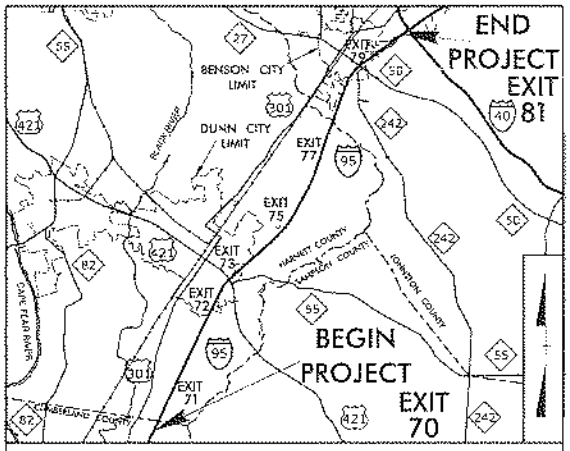
CUMBERLAND, HARNETT, AND JOHNSTON COUNTIES

LOCATION: I-95 FROM SR 1811 (BUD HAWKINS ROAD) (EXIT 70) TO I-40 (EXIT 81). WIDEN TO EIGHT LANES.

TYPE OF WORK: GRADING, PAVING, DRAINAGE, SIGNALS, CULVERTS, AND STRUCTURES

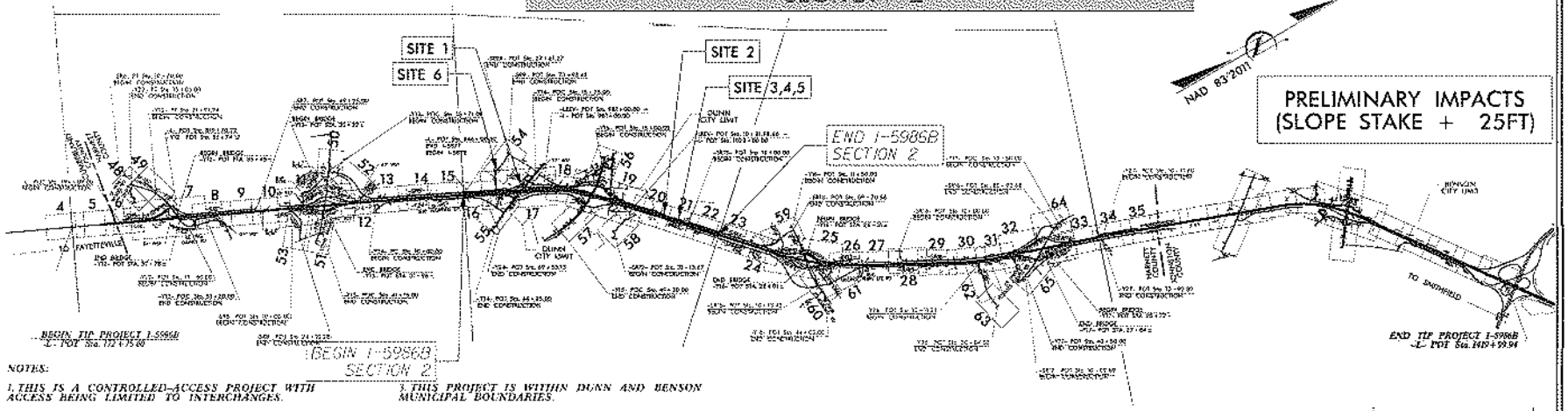
TIP PROJECT: I-5986B

CONTRACT:



VICINITY MAP
(Not to Scale)

WETLAND AND SURFACE WATER IMPACTS PERMIT
SECTION 2



NOTES:

1. THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.
2. CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.
3. THIS PROJECT IS WITHIN DUNN AND BENSON MUNICIPAL BOUNDARIES.
4. DESIGN EXCEPTION REQUIRED FOR HORIZONTAL ALIGNMENT AND HORIZONTAL STOPPING SIGHT DISTANCE ON SR 1811 (BUD HAWKINS ROAD) AND NC 1785 (BLM ST. EXT.). (SEE PLAN SHEETS 7, 12 & 15)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

50 25 0 50 100 — PLANS
50 25 0 50 100 — PROFILE (HORIZONTAL)
10 5 0 10 20 — PROFILE (VERTICAL)

DESIGN DATA

ADT 2020 = 58,900
ADT 2040 = 75,700
K = 7 %
D = 55 %
T = 24 % *
V = 70 MPH
* (17% TTST + 7% DUALS)
FUNC CLASS = INTERSTATE
STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT I-5986B	=	11.865 MILES
LENGTH STRUCTURE TIP PROJECT I-5986B	=	0.020 MILES
TOTAL LENGTH TIP PROJECT I-5986B	=	11.885 MILES

Prepared in the Office of:
Michael Baker INTERNATIONAL
Michael Baker Engineering, Inc.
8000 Regency Parkway, Suite 600
Cary, NC 27518
Professional Corporation License Number: F-1084

FOR DIVISION OF HIGHWAYS

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MAY 3, 2019

LETTING DATE:
JULY 21, 2020

SUSAN C. LANCASTER, P.E.
Project Engineer

CURTIS TILLMAN, P.E.
Project Design Engineer

STEVE D. KENDALL, P.E.
Agency Contact

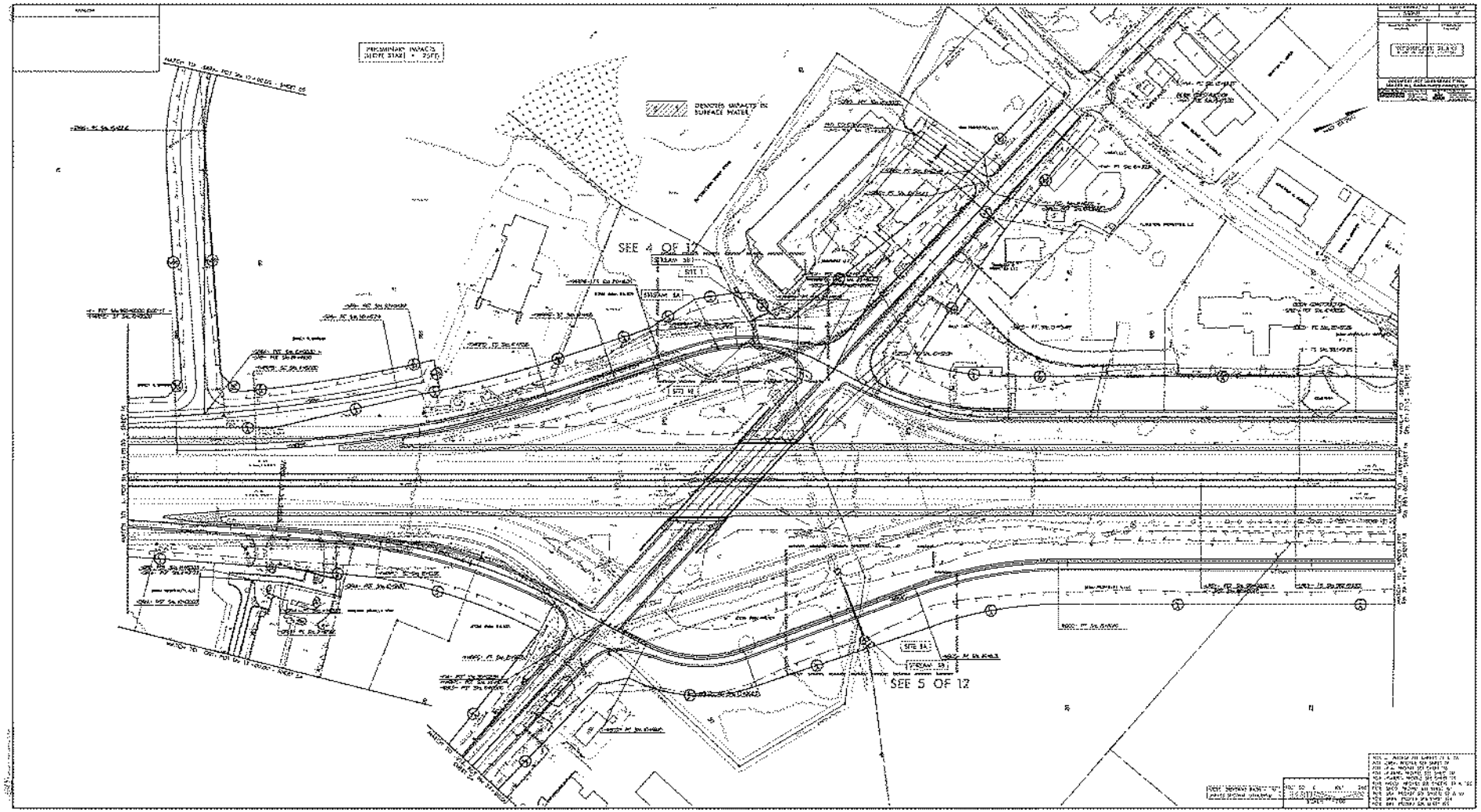
HYDRAULICS ENGINEER

SIGNATURE: ..... P.E.

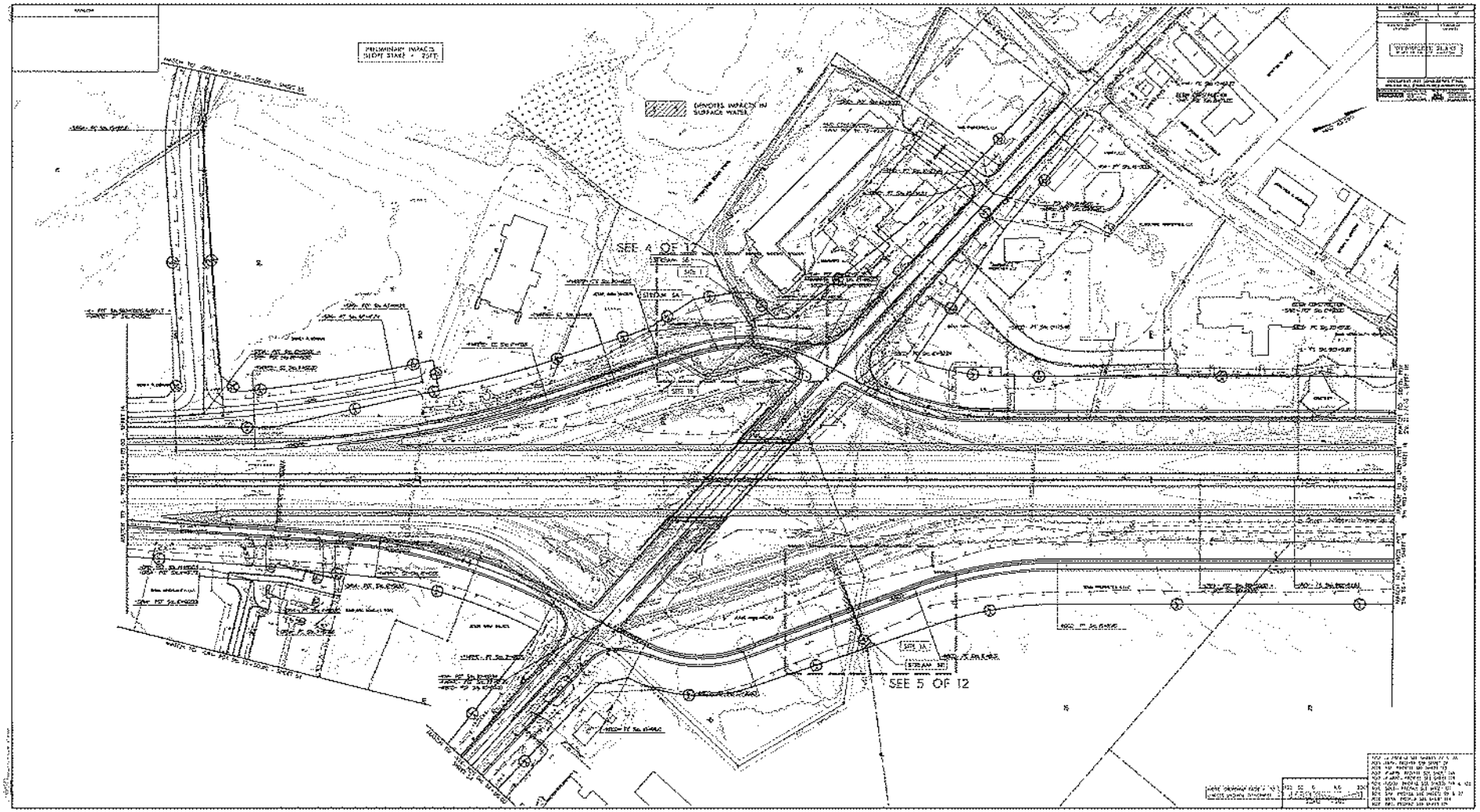
ROADWAY DESIGN ENGINEER

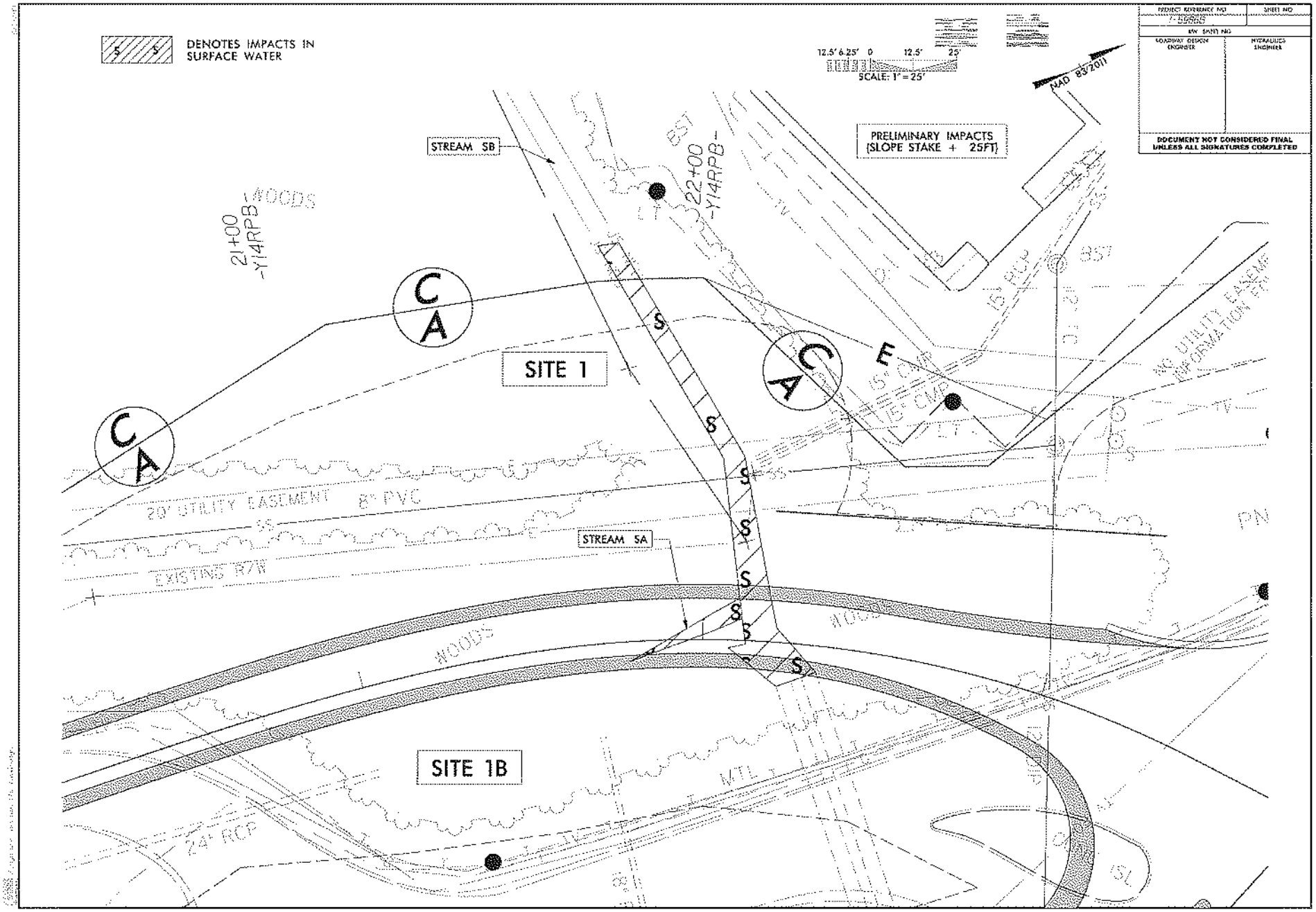
SIGNATURE: ..... P.E.

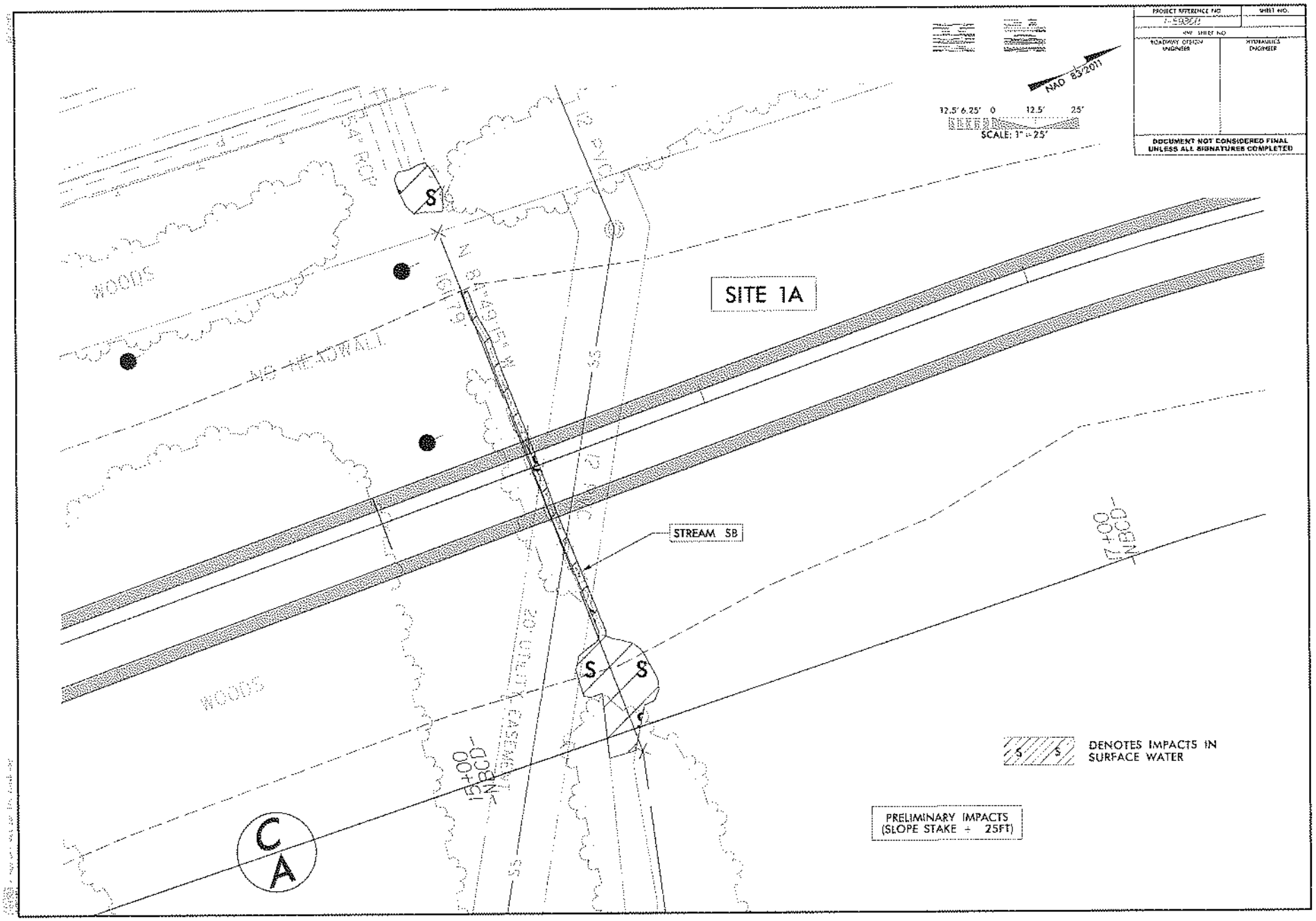
PERMIT DRAWING
SHEET 2 OF 12

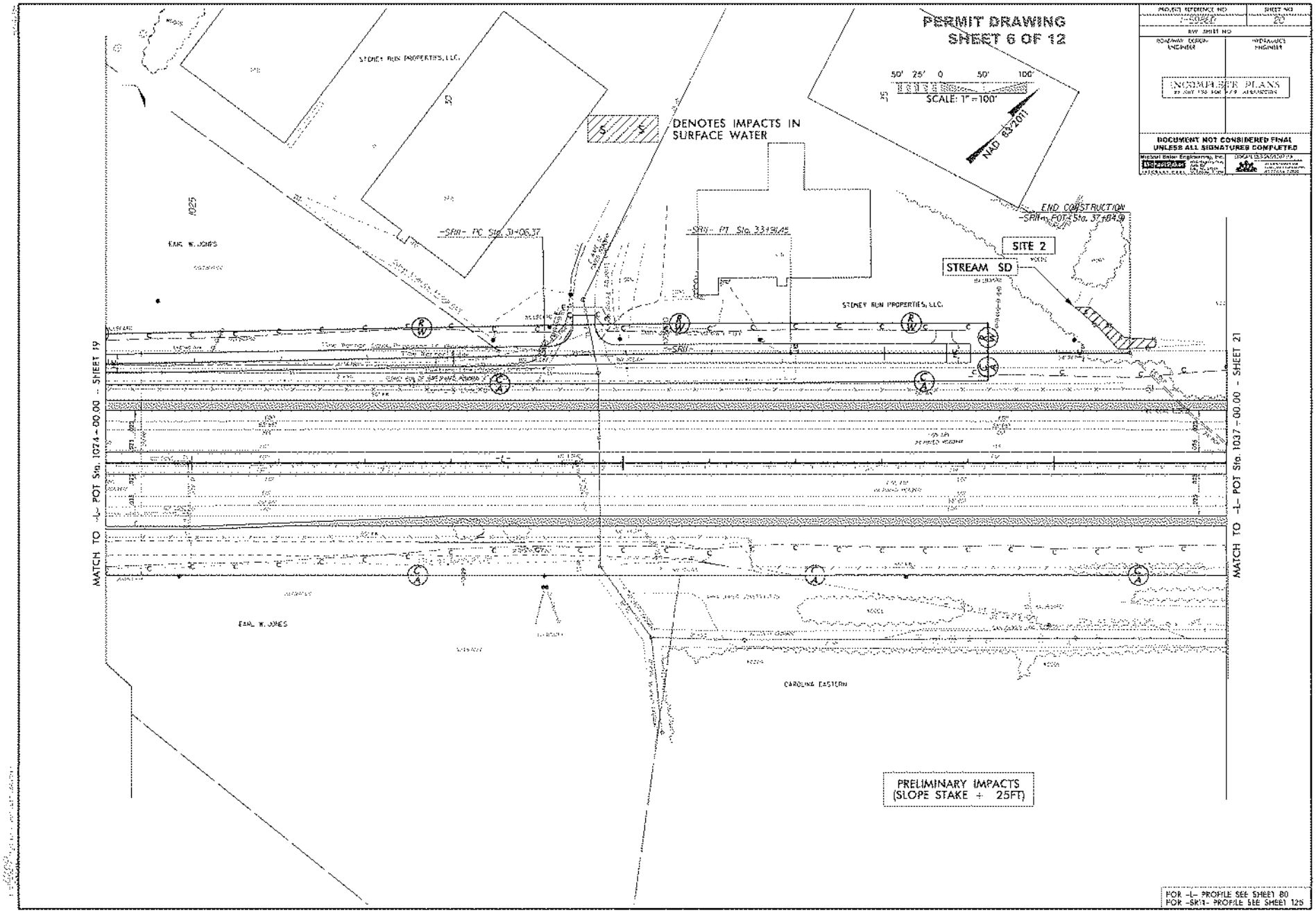


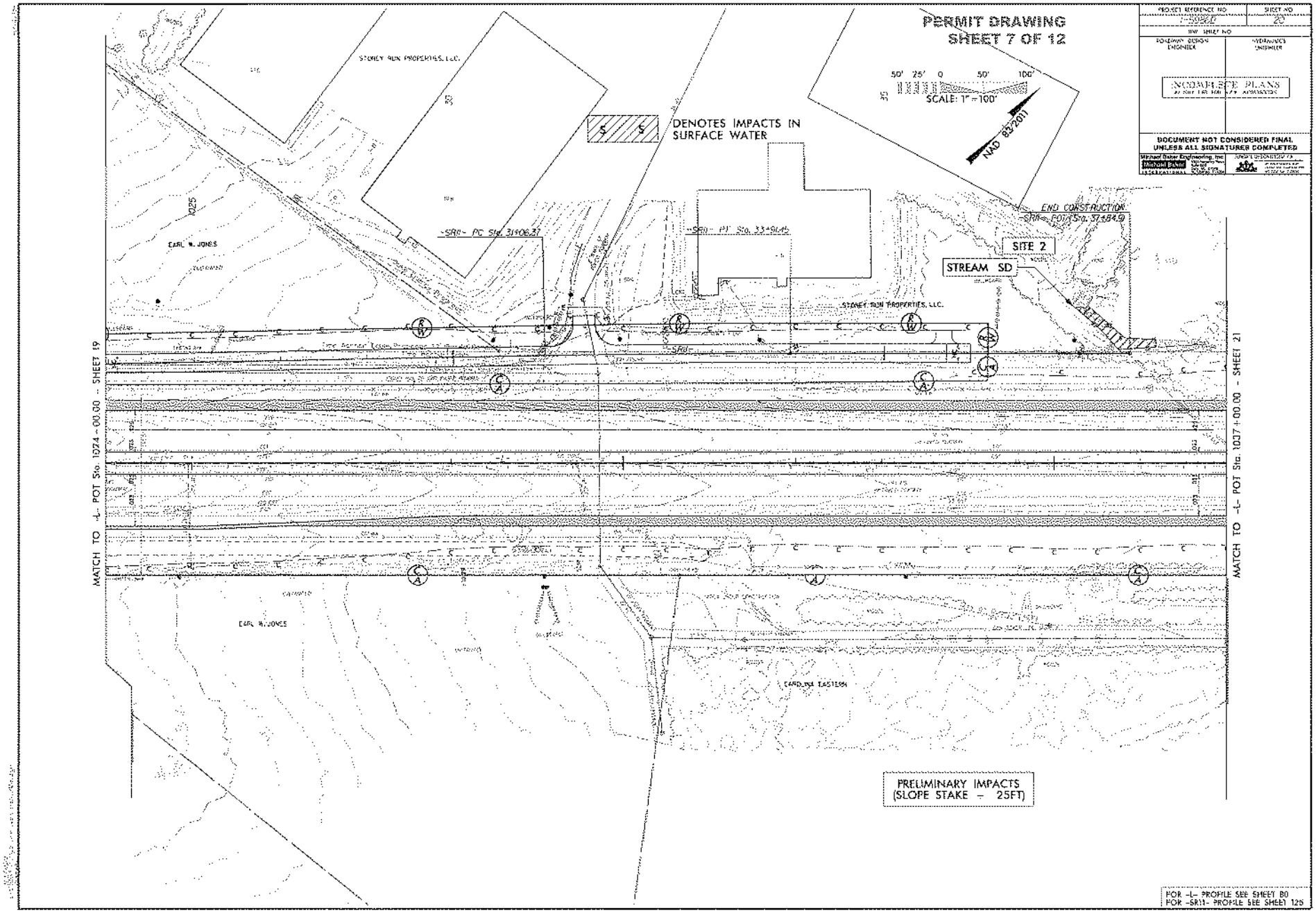
PERMIT DRAWING
SHEET 3 OF 12

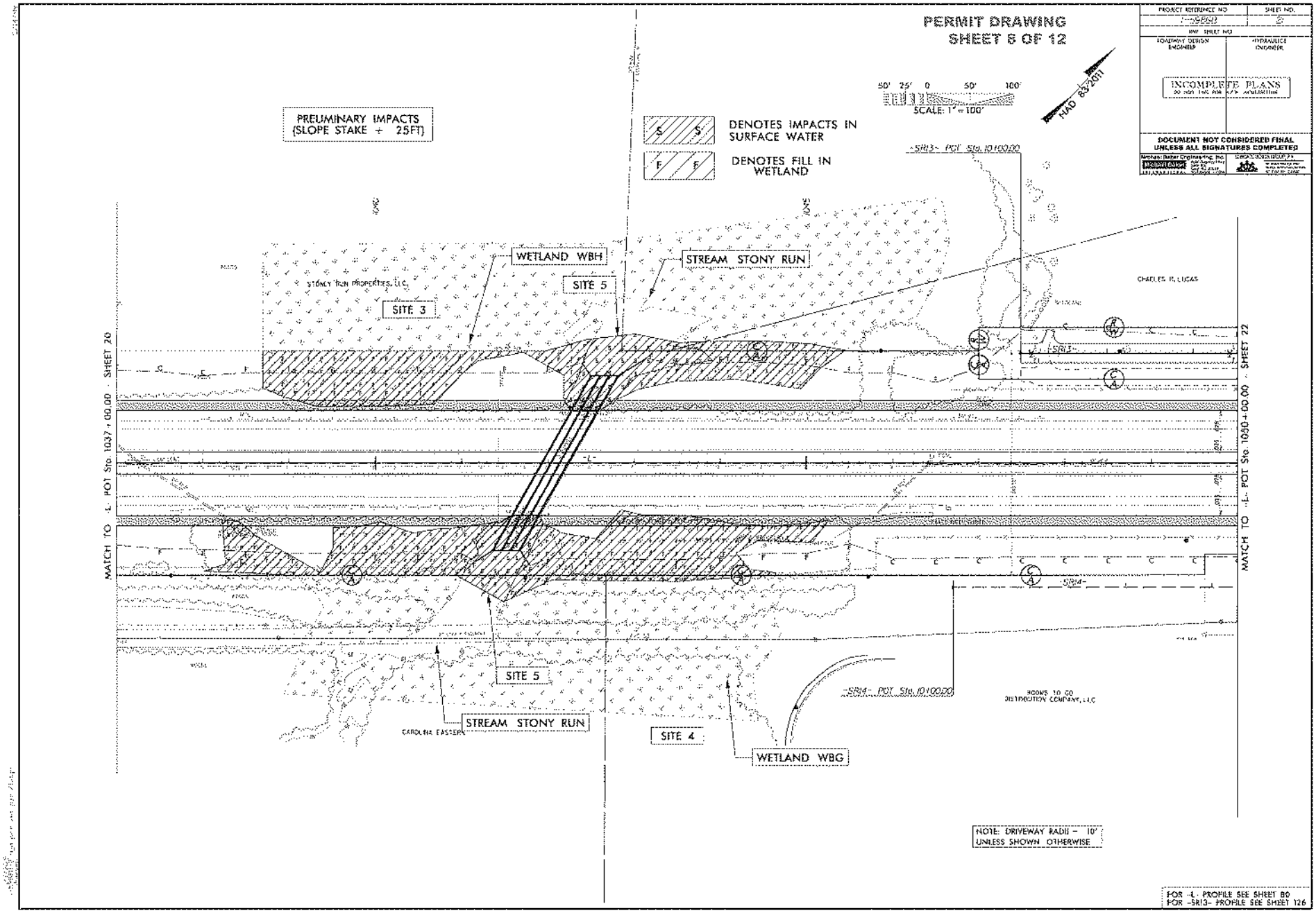


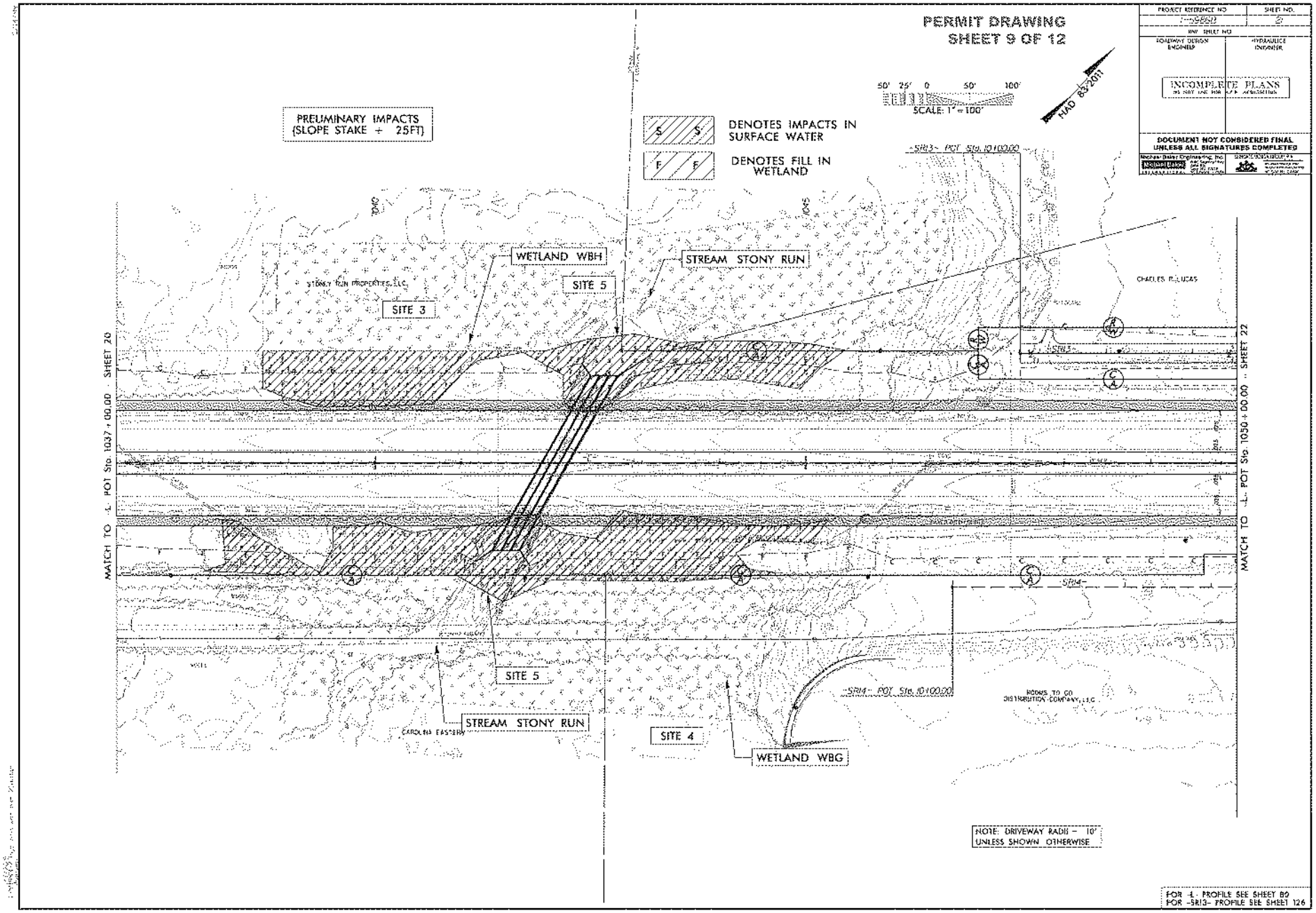

DENOTES IMPACTS IN SURFACE WATER
SCALE: 1" = 25'
NAD 83/2011
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
STREAM SB
STREAM SA
SITE 1
SITE 1B
21+00 -Y14RPB-
22+00 -Y14RPB-
WOODS
20' UTILITY EASEMENT
8" PVC
EXISTING R/W
24" RCP
15" RCP
MTL

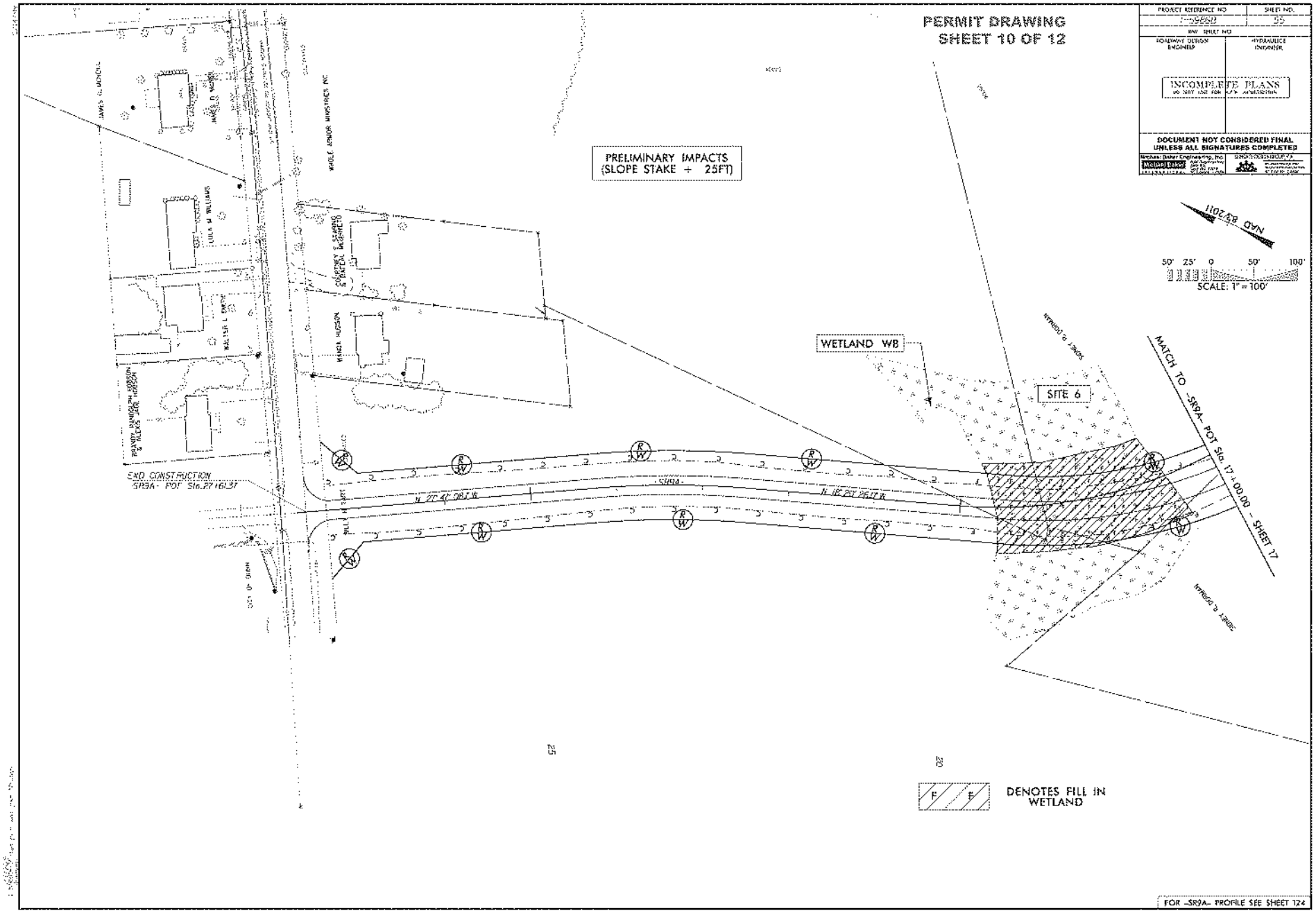

PROJECT REFERENCE NO.
SHEET NO.
R-5960
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
NAD 83/2011
12.5' 6.25' 0 12.5' 25'
SCALE: 1" = 25'
SITE 1A
WOODS
WOODS
NB HEADWALL
STREAM SB
DENOTES IMPACTS IN SURFACE WATER
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
C
A

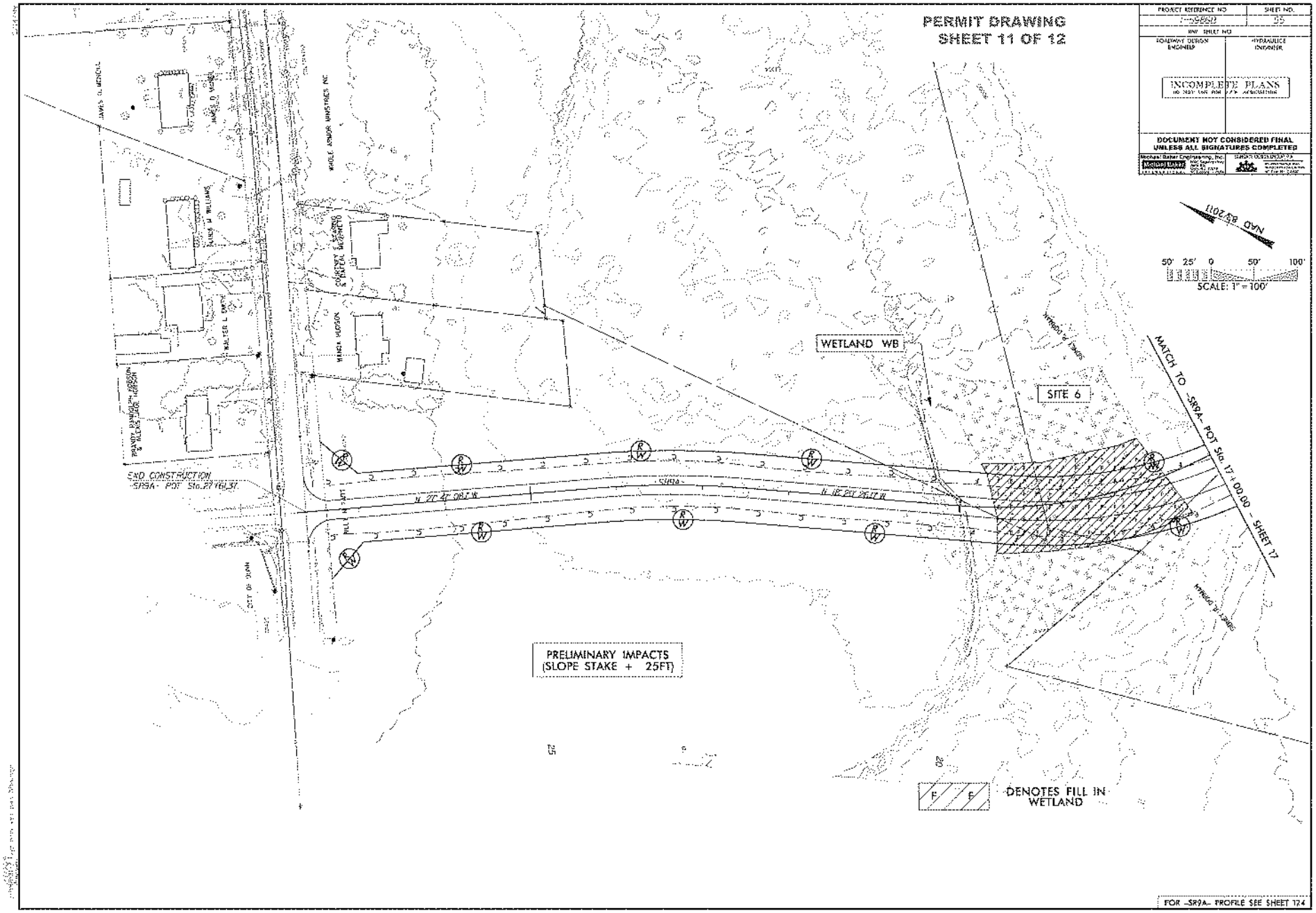

PERMIT DRAWING
SHEET 6 OF 12
50' 25' 0 50' 100'
SCALE: 1" = 100'
NAD 83/2011
PROJECT REFERENCE NO.
SHEET NO.
20
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULIC ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
DENOTES IMPACTS IN SURFACE WATER
SIDNEY RUN PROPERTIES, LLC.
EARL W. JONES
-SR11- PC Sta. 31+06.37
-SR11- PT Sta. 33+19.45
END CONSTRUCTION
-SR11- POT-2 Sta. 37+84.9
SITE 2
STREAM SD
CAROLINA EASTERN
MATCH TO -L- POT Sta. 1074+00.00 - SHEET 19
MATCH TO -L- POT Sta. 1037+00.00 - SHEET 21
PRELIMINARY IMPACTS
(SLOPE STAKE + 25FT)
FOR -L- PROFILE SEE SHEET 80
FOR -SR11- PROFILE SEE SHEET 125


PERMIT DRAWING
SHEET 7 OF 12
SCALE: 1" = 100'
NAD 83/2011
DENOTES IMPACTS IN SURFACE WATER
STONEY RUN PROPERTIES, LLC.
EARL W. JONES
-SR11- PC Sta. 31+06.27
-SR11- PT Sta. 33+91.45
END CONSTRUCTION
-SR11- POT Sta. 37+84.9
SITE 2
STREAM SD
MATCH TO -L- POT Sta. 1024+00.00 - SHEET 19
MATCH TO -L- POT Sta. 1037+00.00 - SHEET 21
PRELIMINARY IMPACTS
(SLOPE STAKE - 25FT)
INCOMPLETE PLANS
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
FOR -L- PROFILE SEE SHEET 80
FOR -SR11- PROFILE SEE SHEET 126


PERMIT DRAWING
SHEET 6 OF 12
PROJECT REFERENCE NO.
SHEET NO.
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
50' 25' 0 50' 100'
SCALE: 1" = 100'
NAD 83/2011
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
DENOTES IMPACTS IN SURFACE WATER
DENOTES FILL IN WETLAND
-SR13- POT Sta. 10100.00
WETLAND WBH
STREAM STONY RUN
SITE 5
SITE 3
STONEY RUN PROPERTIES, LLC
CHARLES R. LUCAS
MATCH TO -L- POT Sta. 1037+00.00 - SHEET 20
MATCH TO -L- POT Sta. 1050+00.00 - SHEET 22
-L-
-SR14-
SITE 5
STREAM STONY RUN
CAROLINA EASTERN
SITE 4
WETLAND WBG
-SR14- POT Sta. 10100.00
HOOKS TO GO DISTRIBUTION COMPANY, LLC
NOTE: DRIVEWAY RADII = 10' UNLESS SHOWN OTHERWISE
FOR -L- PROFILE SEE SHEET 80
FOR -SR13- PROFILE SEE SHEET 126


PERMIT DRAWING
SHEET 9 OF 12
PROJECT REFERENCE NO.
SHEET NO.
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
50' 25' 0 50' 100'
SCALE: 1" = 100'
NAD 83/2011
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
DENOTES IMPACTS IN SURFACE WATER
DENOTES FILL IN WETLAND
-SR13- POT Sta. 10100.00
WETLAND WBH
STREAM STONY RUN
SITE 5
SITE 3
STONEY RUN PROPERTIES, LLC
CHARLES R. LUCAS
MATCH TO -L- POT Sta. 1037 + 00.00 - SHEET 20
MATCH TO -L- POT Sta. 1050 + 00.00 - SHEET 22
SITE 5
STREAM STONY RUN
CAROLINA EASTERN
SITE 4
WETLAND WBG
-SR14- POT Sta. 10100.00
ROOMS TO GO DISTRIBUTION COMPANY, LLC
NOTE: DRIVEWAY RADII = 10' UNLESS SHOWN OTHERWISE
FOR -L- PROFILE SEE SHEET 82
FOR -SR13- PROFILE SEE SHEET 126


PERMIT DRAWING
SHEET 10 OF 12
PROJECT REFERENCE NO.
SHEET NO.
55
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
NAD 83/2011
50' 25' 0 50' 100'
SCALE: 1" = 100'
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
WETLAND WB
SITE 6
MATCH TO -SR9A- POT Sta. 17+00.00 - SHEET 17
END CONSTRUCTION
SR9A - POT Sta.27+61.37
-SR9A-
N 27° 41' 08.1" W
N 18° 21' 26.7" W
JAMES D. MOORE
JAMES D. MOORE
LULA M. WILLIAMS
KAI-LEE L. BARTON
WANDA HUDSON
COURTNEY S. SANDERS & RACHEL SANDERS
WADLE MINOR MINISTRIES INC.
RANDOLPH HUDSON & WANDA HUDSON
PULL HERE FIRST
SOUTH OF SIGN
SOUTH OF DOMAIN
NORTH OF DOMAIN
DENOTES FILL IN WETLAND
FOR -SR9A- PROFILE SEE SHEET 124


PERMIT DRAWING
SHEET 11 OF 12
PROJECT REFERENCE NO.
SHEET NO.
55
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
NAD 83/2011
50' 25' 0 50' 100'
SCALE: 1" = 100'
WETLAND WB
SITE 6
MATCH TO -SR9A- POT Sta. 17+00.00 - SHEET 17
END CONSTRUCTION -SR9A- POT Sta. 27+61.37
-SR9A-
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
DENOTES FILL IN WETLAND
FOR -SR9A- PROFILE SEE SHEET 17A

WETLAND AND SURACE WATER IMPACTS SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	21+77 to 22+34-Y14RPB-	ROADWAY FILL						0.02		140		
1A	15+48-NBCD-	ROADWAY FILL						0.02		157		
1B	21+04 to 22+11-Y14RPB-	ROADWAY FILL						< 0.01		35		
2	1035+24 to 1036+18-L-LT	ROADWAY FILL						0.03		101		
3	1038+02 to 1045+46-L-LT	ROADWAY FILL	0.56									
4	1038+70 to 1045+26-L-RT	ROADWAY FILL	0.75									
5	1041+00 to 1043+91 -L-	ROADWAY FILL						0.29		208		
6	17+58 to 19+60-SR9A-	ROADWAY FILL	0.50									
TOTALS*:			1.81					0.36		641	0	0

*Rounded totals are sum of actual impacts

NOTES:
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
1-8-2019
CUMBERLAND COUNTY
I-5986B-2
47532.1.3
SHEET 12 OF 12

Revised 2018 Feb

PERMIT DRAWING
SHEET 1 OF 31

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5986B	1	

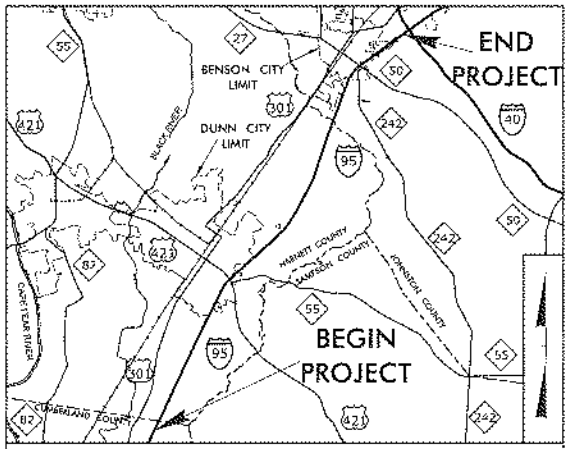
WBS ELEMENT	FEDERAL AID NO.	DESIGNATION
47532.1.9		PE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CUMBERLAND, HARNETT, AND JOHNSTON COUNTIES

LOCATION: I-95 FROM SR 1811 (BUD HAWKINS ROAD) (EXIT 70) TO I-40 (EXIT 81). WIDEN TO EIGHT LANES.

TYPE OF WORK: GRADING, PAVING, DRAINAGE, SIGNALS, CULVERTS, AND STRUCTURES

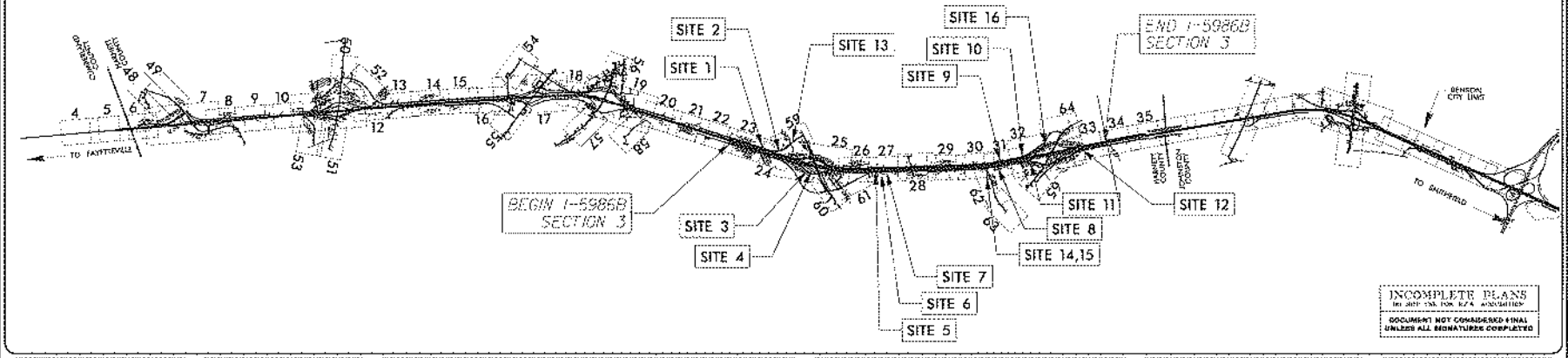


VICINITY MAP

WETLAND AND SURFACE WATER IMPACTS PERMIT
SECTION 3

NAD 83/2011

PRELIMINARY IMPACTS
(SLOPE STAKE + 25FT)



INCOMPLETE PLANS
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TIP PROJECT: I-5986B

CONTRACT:

GRAPHIC SCALES

50 25 0 50 100 — PLANS
50 25 0 50 100 — PROFILE (HORIZONTAL)
10 5 0 10 20 — PROFILE (VERTICAL)

DESIGN DATA

ADT 2020 = 58,900
ADT 2040 = 75,700
K = 7 %
D = 55 %
T = 24 % *
V = 70 MPH
* (17% TTST + 7% DUALS)
FUNC CLASS = INTERSTATE
STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT I-5986B	=	11.865 MILES
LENGTH STRUCTURE TIP PROJECT I-5986B	=	0.020 MILES
TOTAL LENGTH TIP PROJECT I-5986B	=	11.885 MILES

Prepared in the Office of:
Michael Baker INTERNATIONAL
Michael Baker Engineering, Inc.
8000 Regency Parkway, Suite 600
Cary, NC 27518
Professional Corporation License Number F-1056
FOR DIVISION OF HIGHWAYS

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MAY 1, 2019

LETTING DATE:
JULY 21, 2020

SUSAN C. LANCASTER, P.E.
PROJECT ENGINEER

CURTIS TILLMAN, P.E.
PROJECT DESIGN ENGINEER

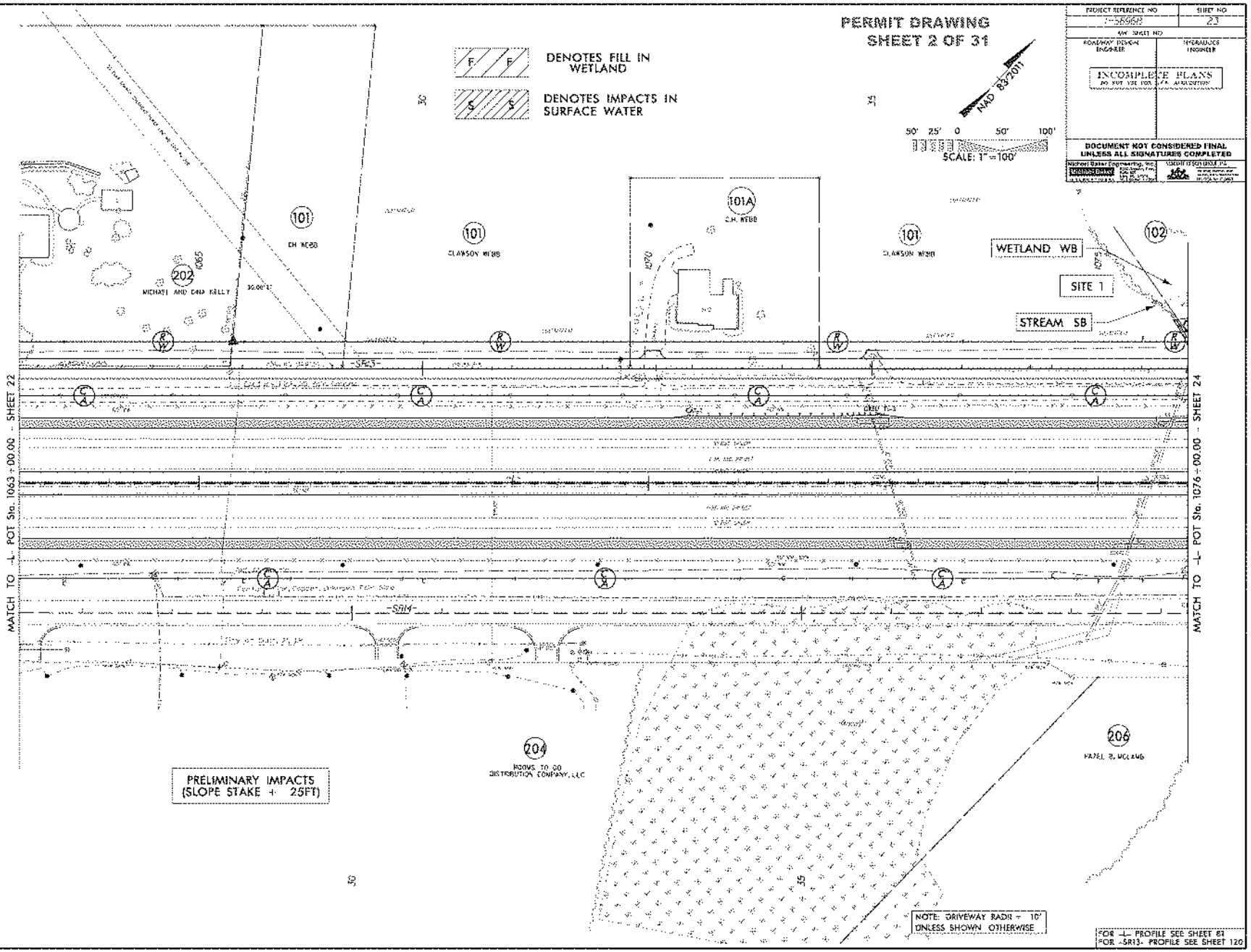
STEVE D. KENDALL, P.E.
REGION CONTACT

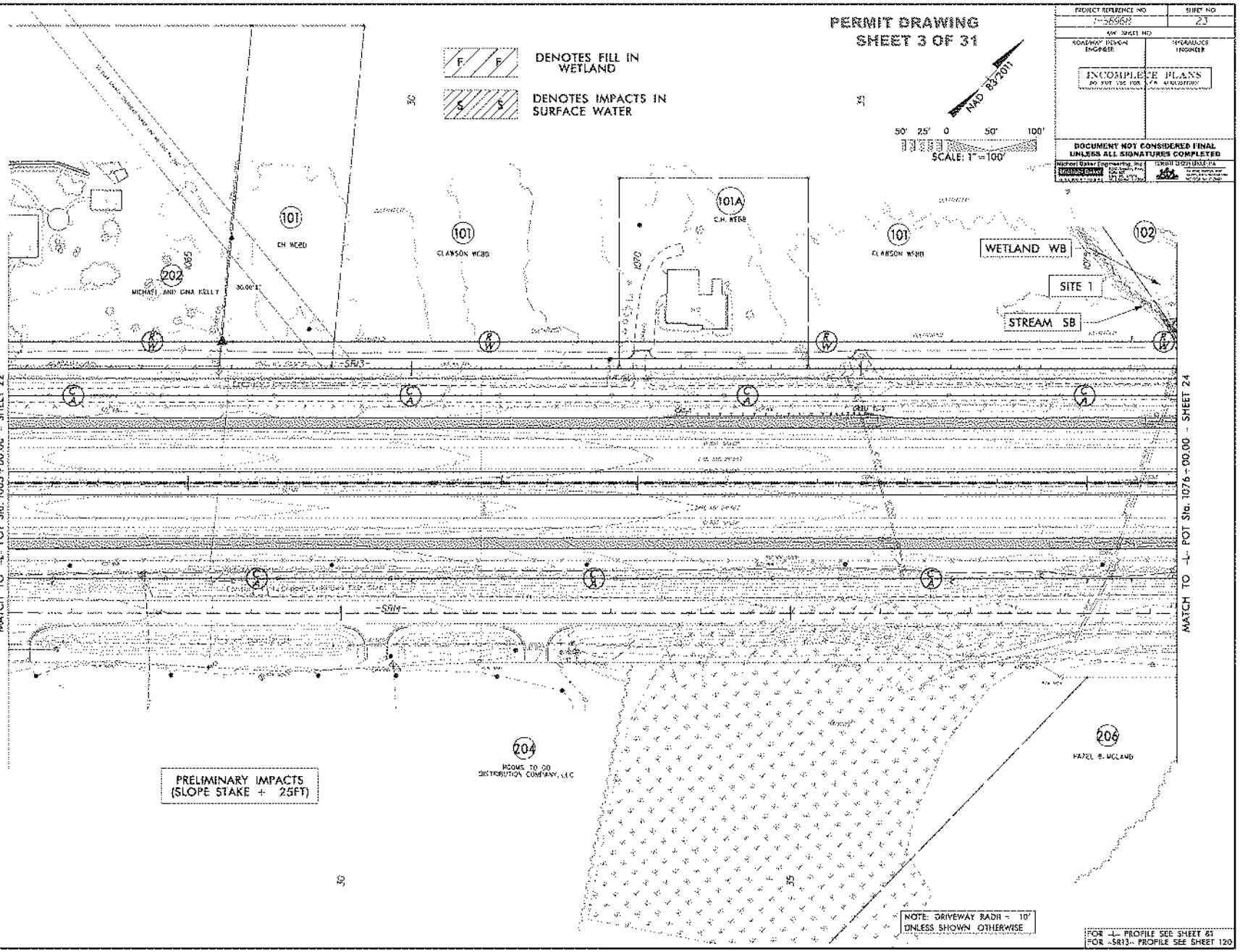
HYDRAULICS ENGINEER

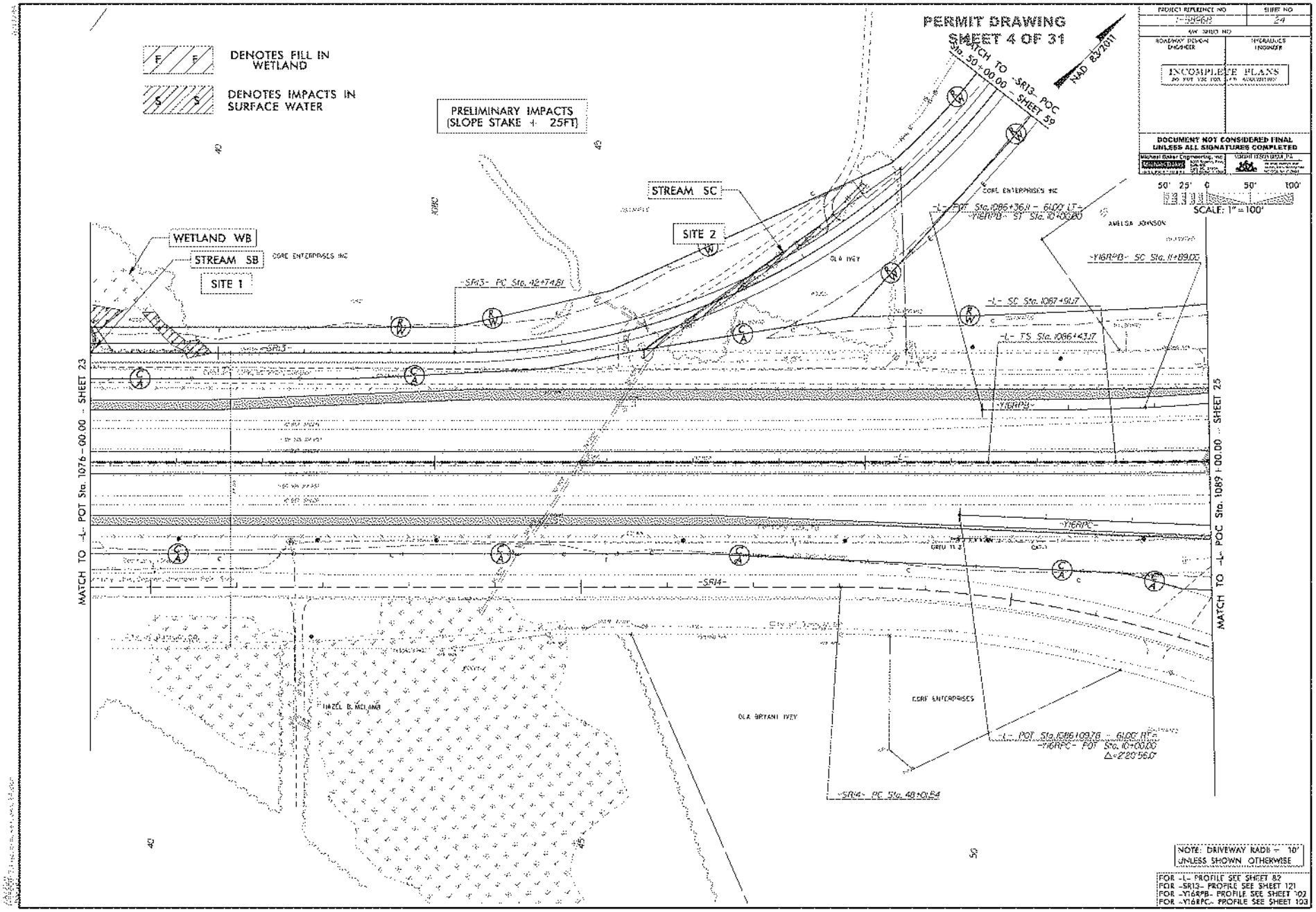
SIGNATURE ..... P.E.

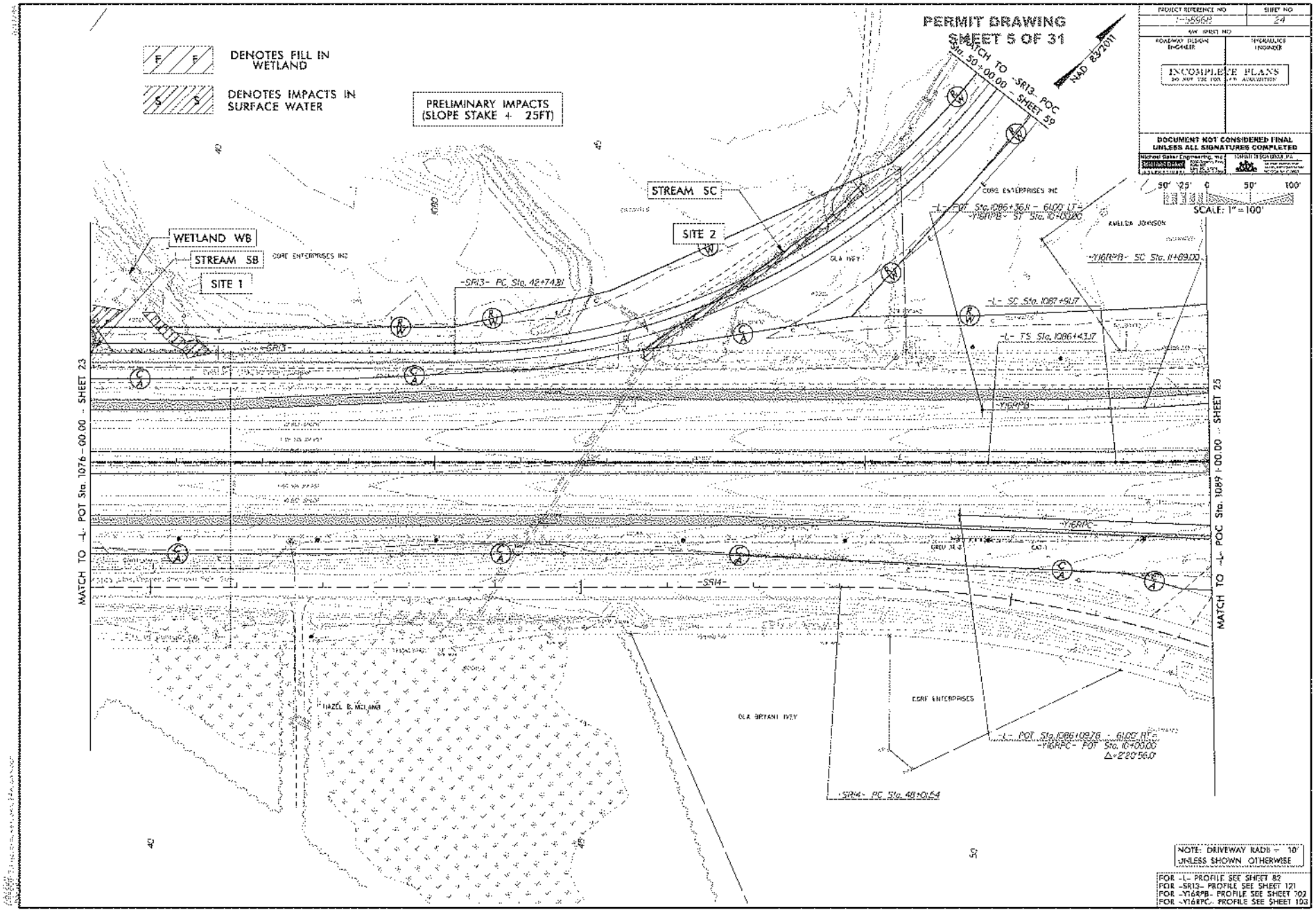
ROADWAY DESIGN ENGINEER

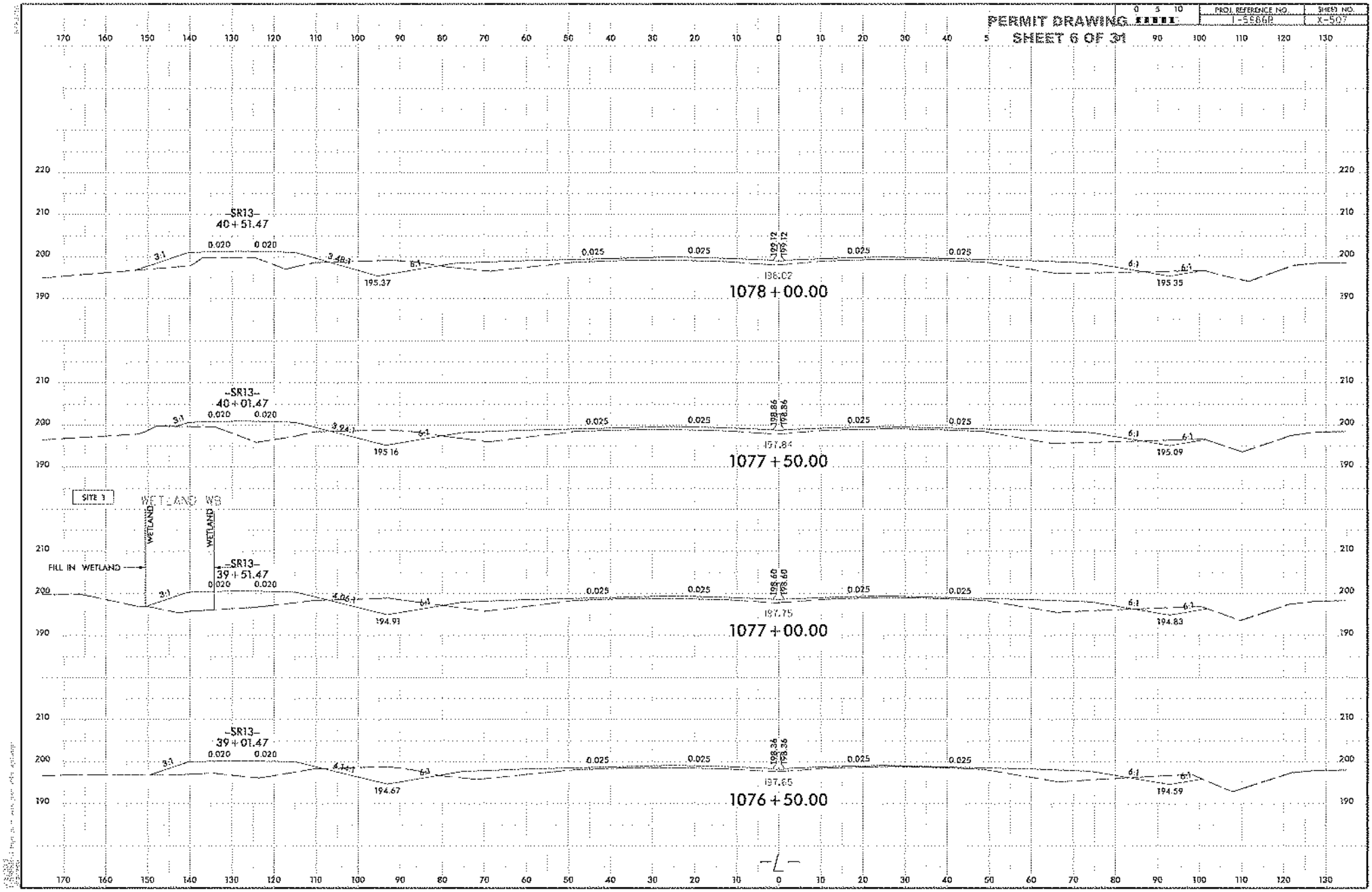
SIGNATURE ..... P.E.


PERMIT DRAWING
SHEET 2 OF 31
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
NAD 83/2011
50' 25' 0 50' 100'
SCALE: 1" = 100'
PROJECT REFERENCE NO.
SHEET NO.
23
INCOMPLETE PLANS
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
101
CH WEBB
101
CLAWSON WEBB
101A
C.H. WEBB
101
CLAWSON WEBB
102
202
MICHAEL AND DINA KELLY
WETLAND WB
SITE 1
STREAM SB
MATCH TO -L- POT Sta. 1063+00.00 - SHEET 22
MATCH TO -L- POT Sta. 1076+00.00 - SHEET 24
204
RIDGE TO GO DISTRIBUTION COMPANY, LLC
206
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
NOTE: DRIVEWAY RADII = 10' UNLESS SHOWN OTHERWISE
FOR -L- PROFILE SEE SHEET 81
FOR -SR13- PROFILE SEE SHEET 120

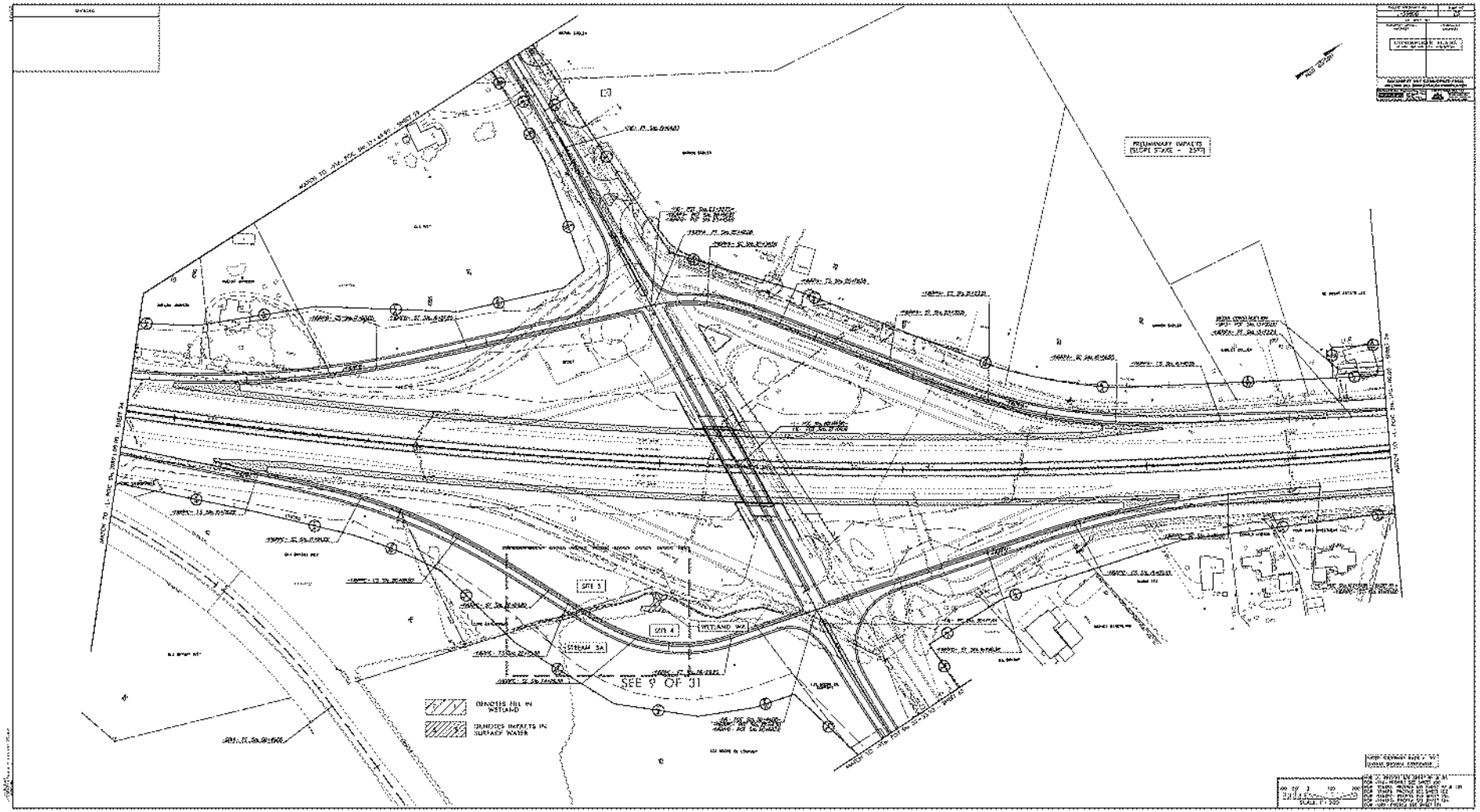

PERMIT DRAWING
SHEET 3 OF 31
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
NAD 83/2011
50' 25' 0 50' 100'
SCALE: 1" = 100'
PROJECT REFERENCE NO.
SHEET NO.
23
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
Michael Baker
101
CH WEB
CLAWSON WEB
101A
C.H. WEB
CLAWSON WEB
202
MICHAEL AND DINA KELLY
WETLAND WB
SITE 1
STREAM SB
102
MATCH TO -L- POT Sta. 1063+00.00 - SHEET 22
MATCH TO -L- POT Sta. 1076+00.00 - SHEET 24
204
PROMS TO GO DISTRIBUTION COMPANY, LLC
206
HAZEL B. MCLAND
PRELIMINARY IMPACTS
(SLOPE STAKE + 25FT)
NOTE: DRIVEWAY RADII = 10' UNLESS SHOWN OTHERWISE
FOR -L- PROFILE SEE SHEET 61
FOR -SR13- PROFILE SEE SHEET 120


PERMIT DRAWING
SHEET 4 OF 31
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
WETLAND WB
STREAM SB
SITE 1
SITE 2
STREAM SC
CORE ENTERPRISES INC
OLA IVEY
AMELIA JOHNSON
HAZEL B. MCLANE
OLA BRYANT IVEY
CORE ENTERPRISES
MATCH TO -L- POT Sta. 1076+00.00 - SHEET 23
MATCH TO -L- POC Sta. 1089+00.00 - SHEET 25
MATCH TO -SR13- POC Sta. 50+00.00 - SHEET 59
NAD 83/2011
-SR13- PC Sta. 42+74.81
-L- SC Sta. 1067+91.7
-L- TS Sta. 1096+43.7
-Y16RPB- SC Sta. 11+09.00
-L- POT Sta. 1086+36.11 - 61.00' LT =
-Y16RPB- ST Sta. 10+00.00
-L- POT Sta. 1086+09.76 - 61.00' RT =
-Y16RPC- POT Sta. 10+00.00
Δ=2°20'56.0"
-SR14- PC Sta. 48+01.84
-SR14-
-Y16RPB-
-Y16RPC-
SCALE: 1" = 100'
50' 25' 0 50' 100'
PROJECT REFERENCE NO.
SHEET NO.
R-5968B
54
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
NOT SUBMITTED
NOT SUBMITTED
NOT SUBMITTED
NOT SUBMITTED
DRAFT 11/30/2018 PA
NOTE: DRIVEWAY RADII = 10' UNLESS SHOWN OTHERWISE
FOR -L- PROFILE SEE SHEET 82
FOR -SR13- PROFILE SEE SHEET 121
FOR -Y16RPB- PROFILE SEE SHEET 102
FOR -Y16RPC- PROFILE SEE SHEET 103

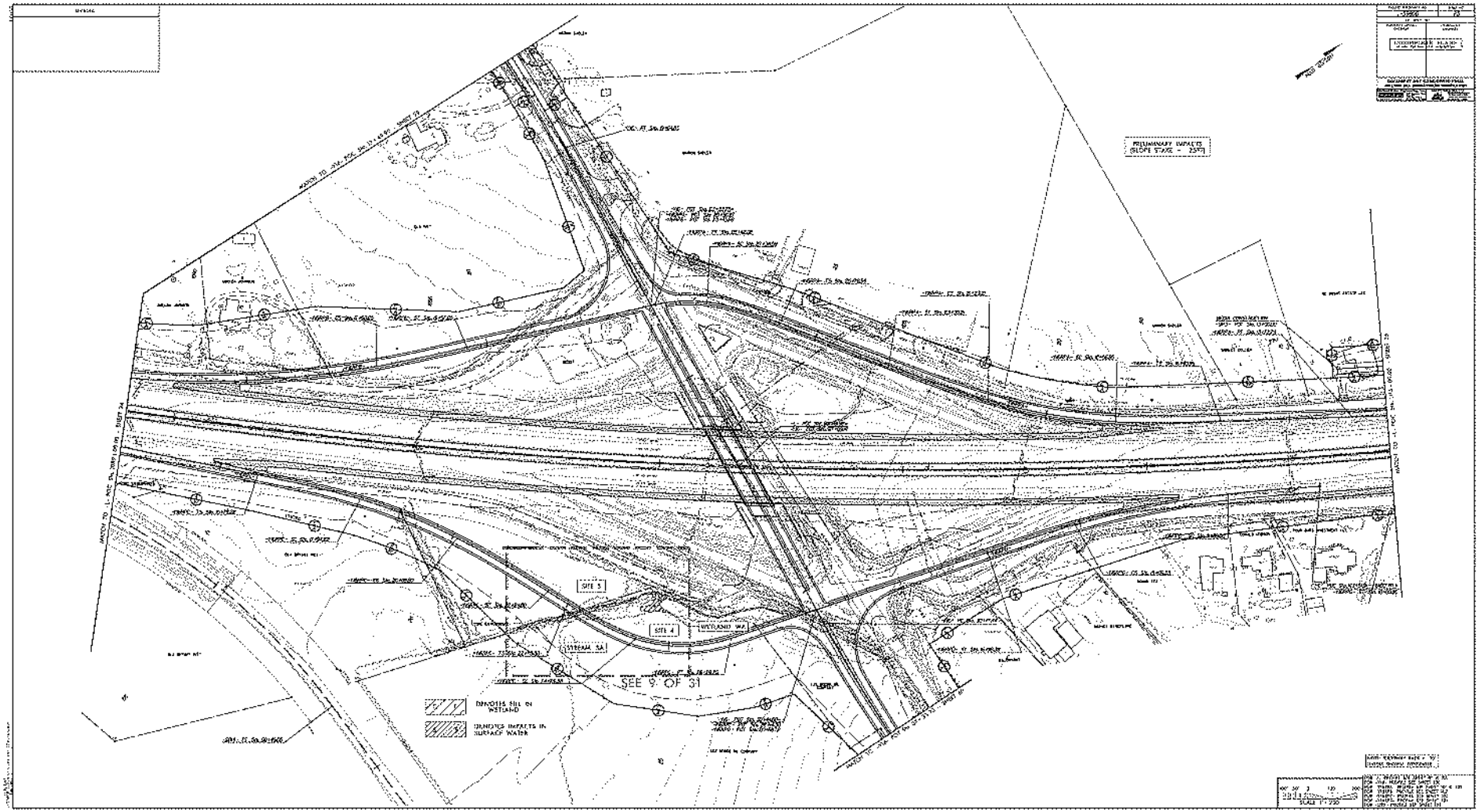

PERMIT DRAWING
SHEET 5 OF 31
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
WETLAND WB
STREAM SB
SITE 1
SITE 2
STREAM SC
CORE ENTERPRISES INC
MATCH TO -L- POT Sta. 1076+00.00 - SHEET 23
MATCH TO -L- POC Sta. 1089+00.00 - SHEET 25
MATCH TO -SR13- POC Sta. 50+00.00 - SHEET 59
NAD 83/2011
-SR13- PC Sta. 42+74.31
-L- SC Sta. 1087+91.17
-L- TS Sta. 1086+43.17
-Y16RPB- SC Sta. 11+09.00
-L- POT Sta. 1086+36.11 - 61.00' LT =
-Y16RPB- ST Sta. 10+00.00
-L- POT Sta. 1086+09.76 - 61.00' RT =
-Y16RPC- POT Sta. 10+00.00
Δ=2°20'56.0"
-SR14- PC Sta. 48+01.54
HAZEL B. MCLAMB
OLA BRYANT IVEY
AMELIA JOHNSON
SCALE: 1" = 100'
NOTE: DRIVEWAY RADII = 10' UNLESS SHOWN OTHERWISE
FOR -L- PROFILE SEE SHEET 82
FOR -SR13- PROFILE SEE SHEET 121
FOR -Y16RPB- PROFILE SEE SHEET 102
FOR -Y16RPC- PROFILE SEE SHEET 103
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
INCOMPLETE PLANS
DO NOT USE FOR RW ACQUISITION

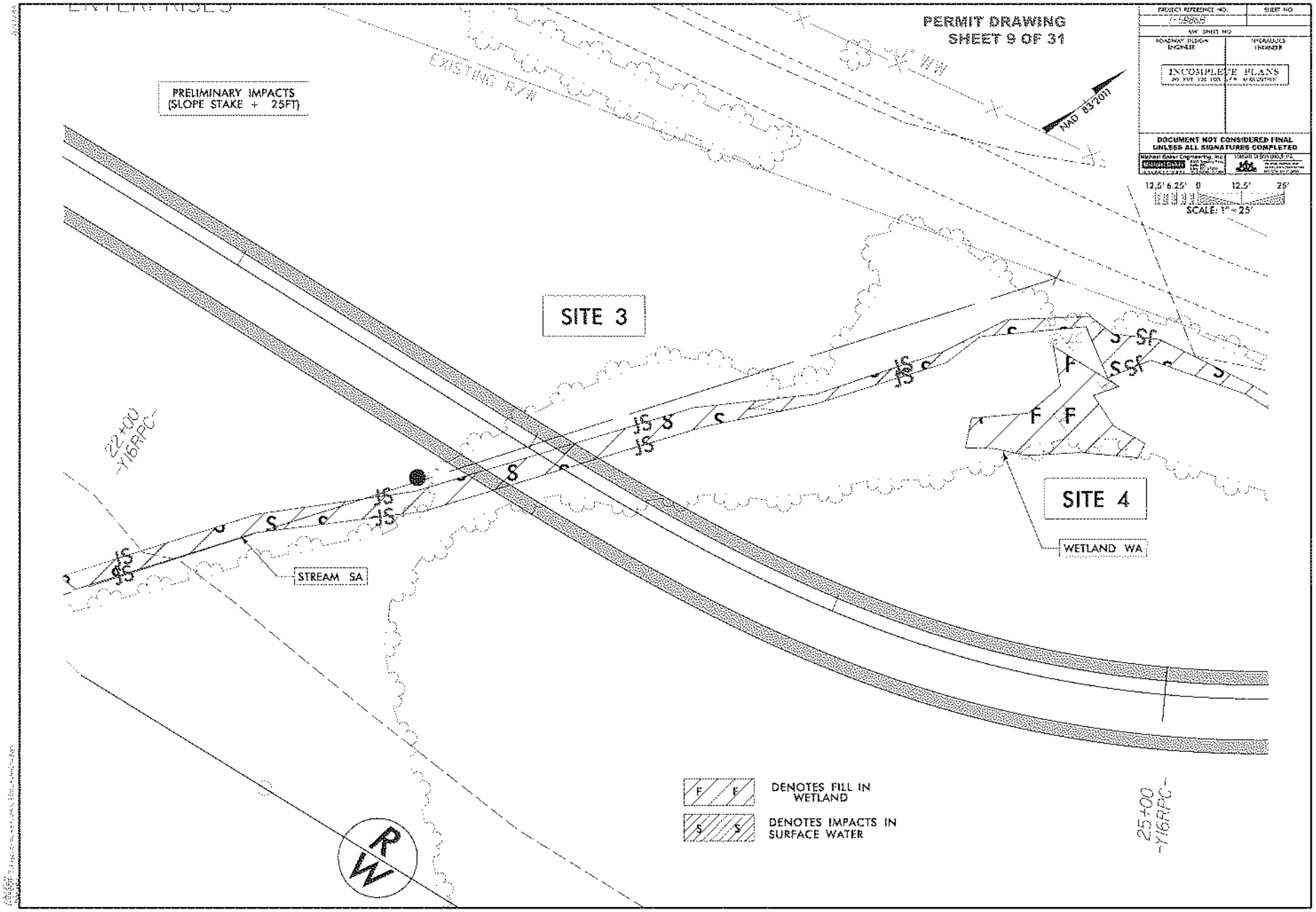

PERMIT DRAWING
SHEET 6 OF 31
PROJ. REFERENCE NO.
1-5866B
SHEET NO.
X-507
-SR13-
40+51.47
1078+00.00
-SR13-
40+01.47
1077+50.00
SITE 3
WETLAND WB
WETLAND
WETLAND
FILL IN WETLAND
-SR13-
39+51.47
1077+00.00
-SR13-
39+01.47
1076+50.00
-L-

PERMIT DRAWING
SHEET 7 OF 31

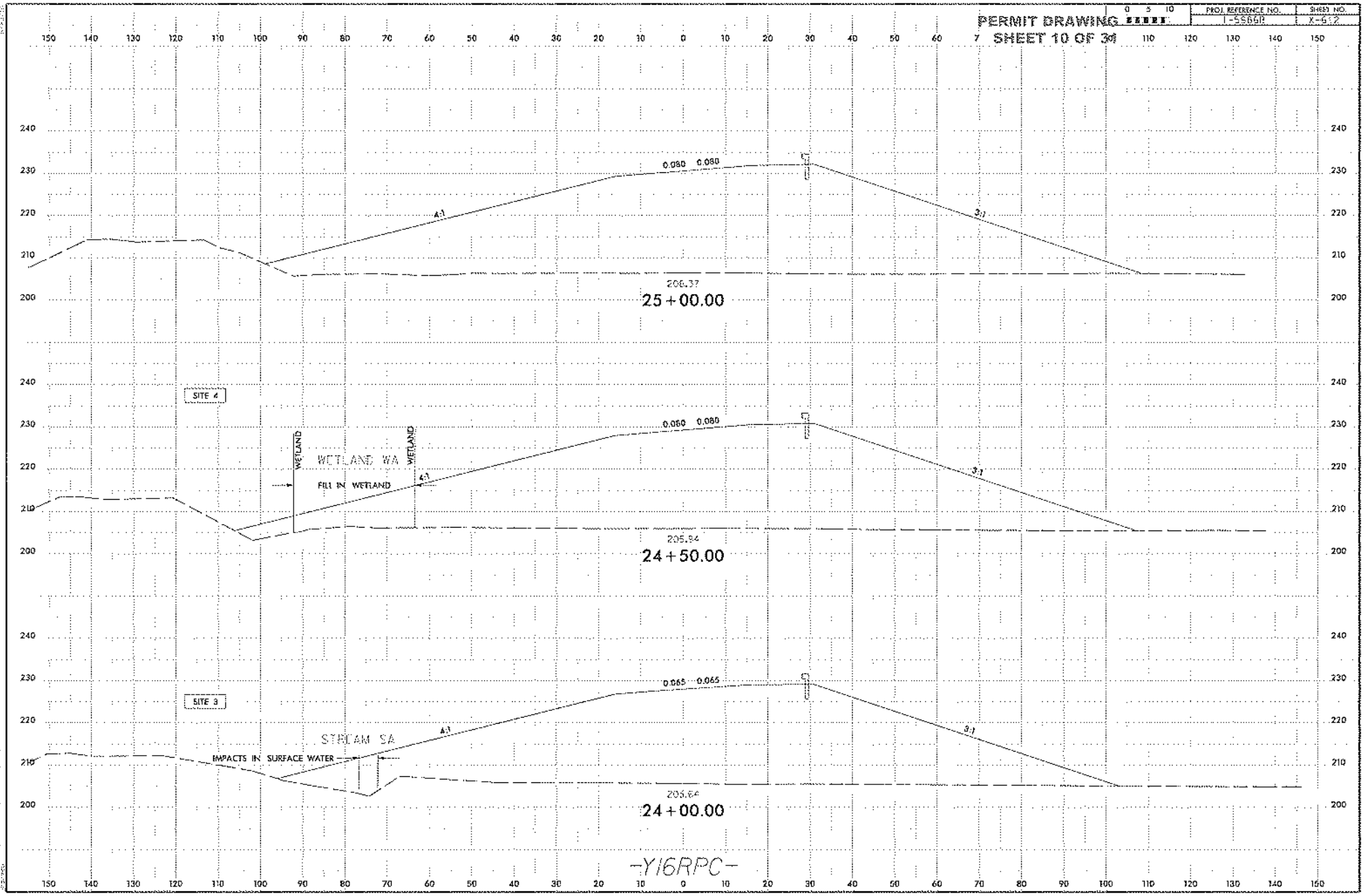


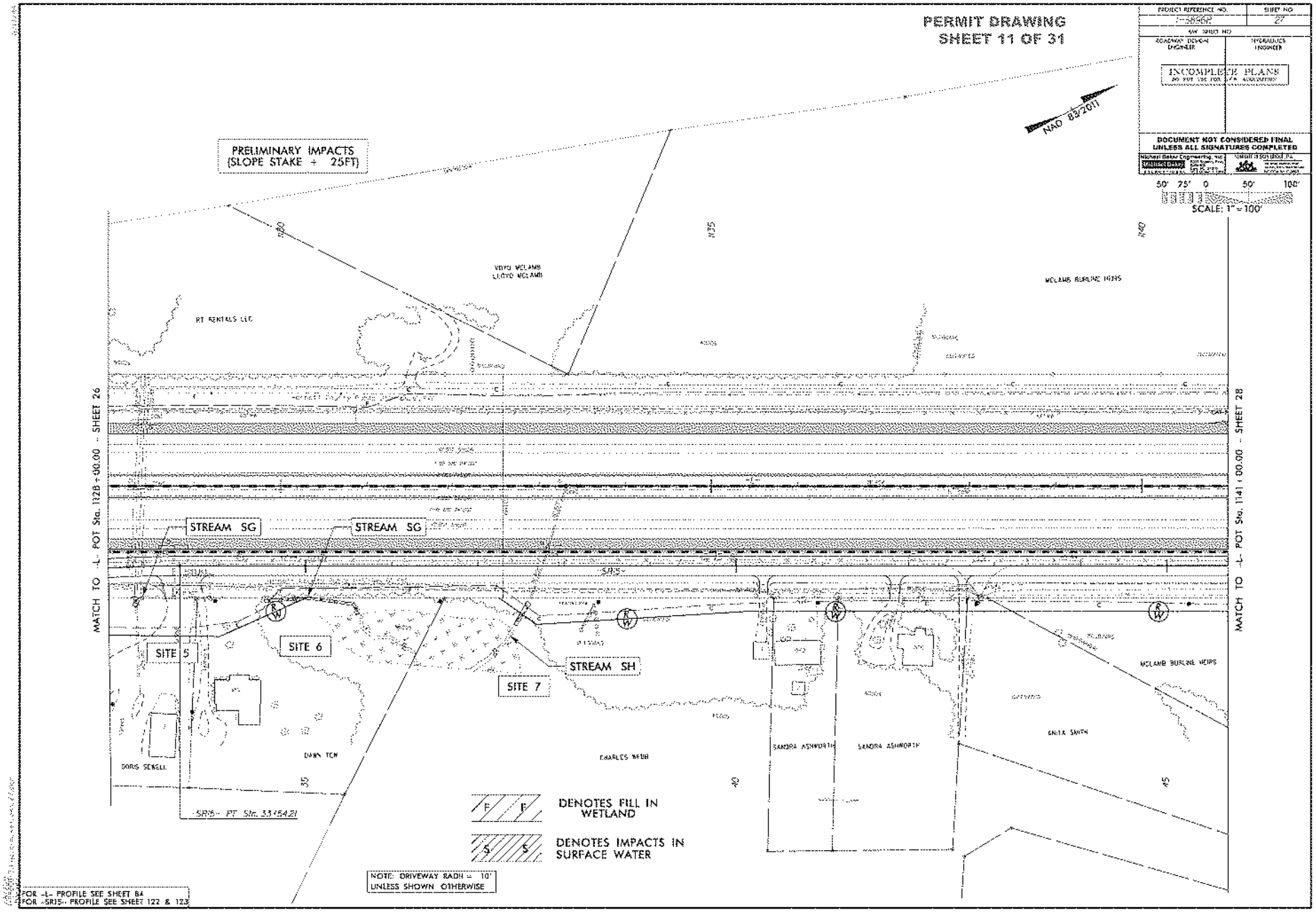
PERMIT DRAWING
SHEET 8 OF 31

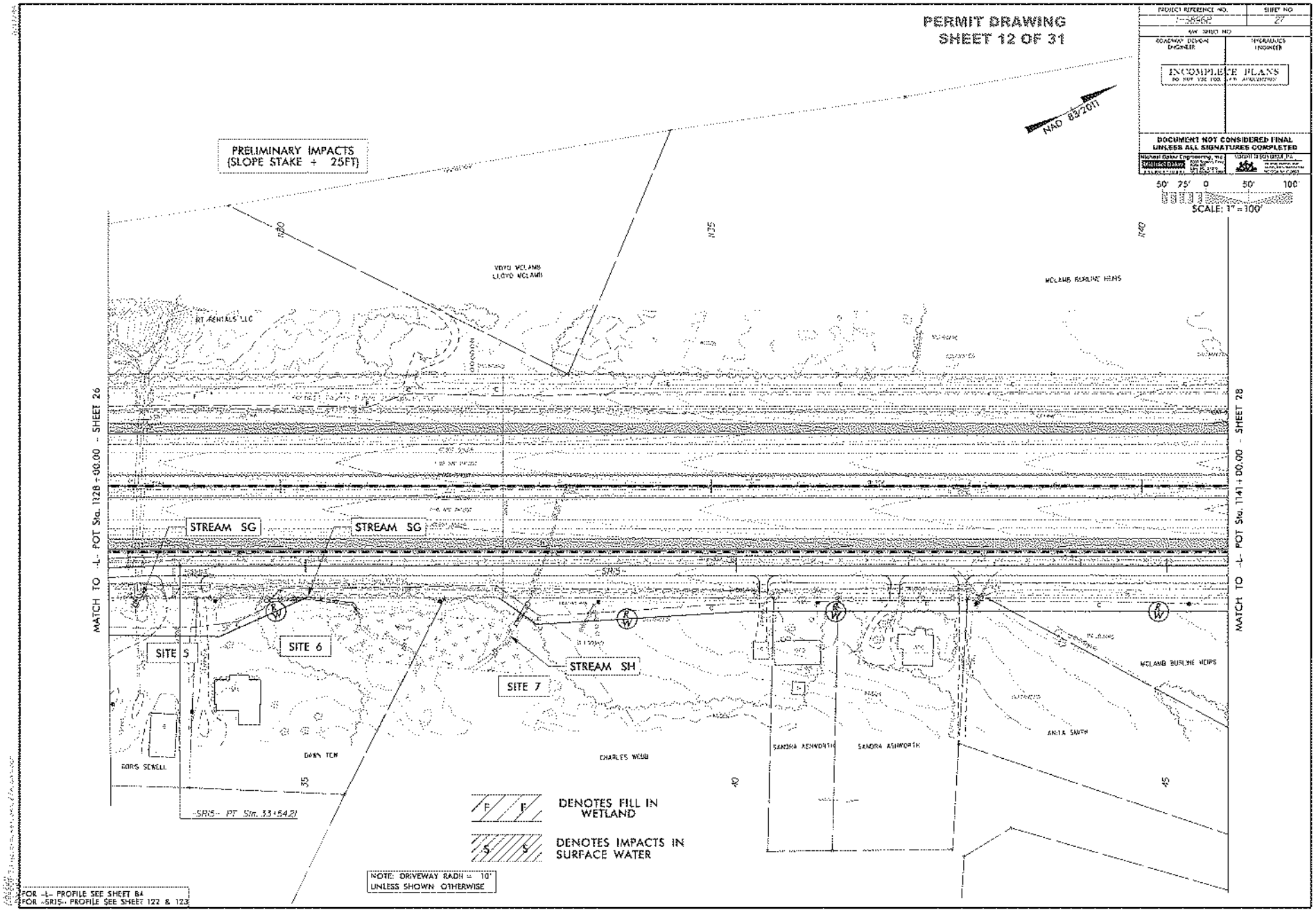


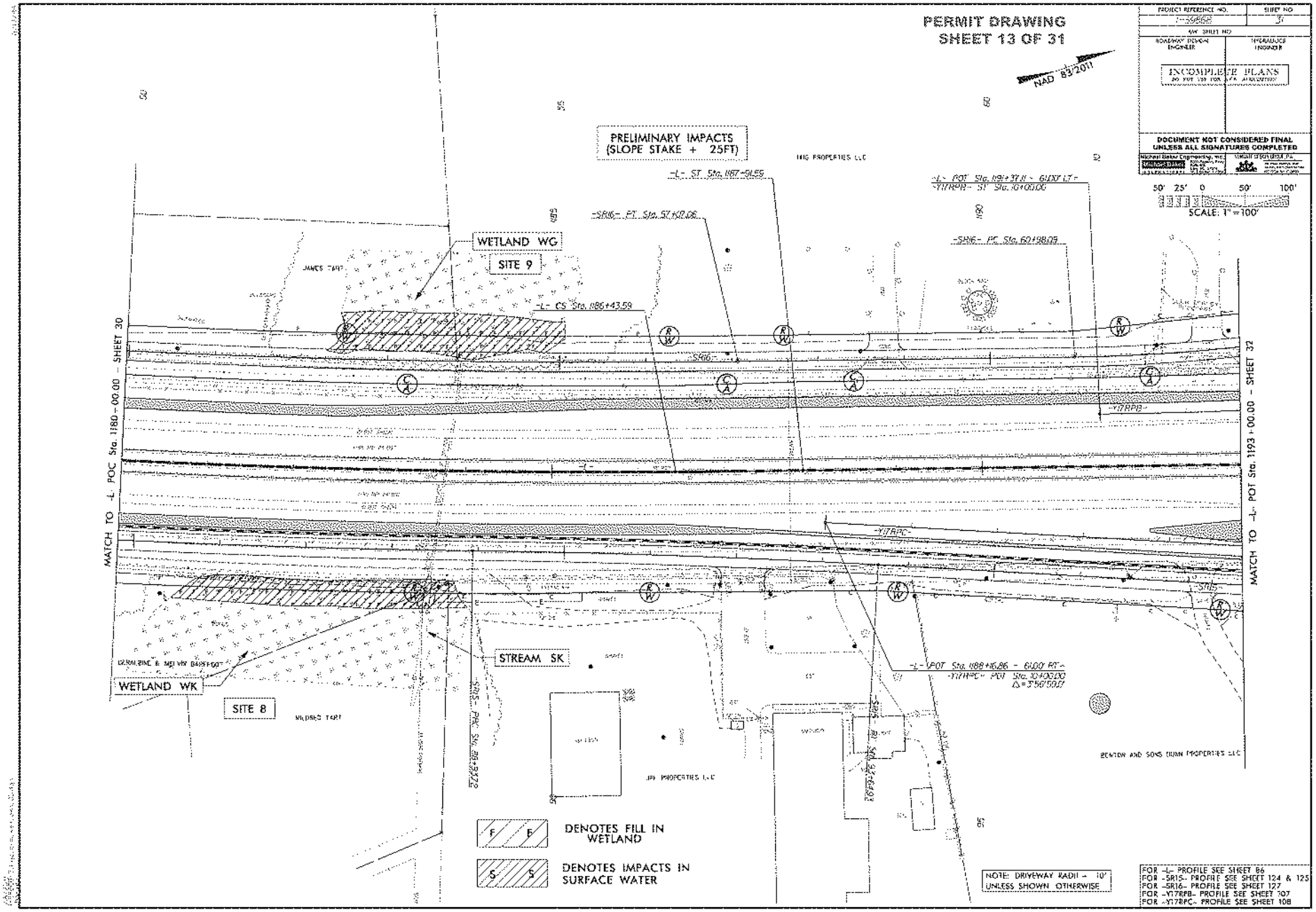

PERMIT DRAWING
SHEET 9 OF 31
PRELIMINARY IMPACTS
(SLOPE STAKE + 25FT)
EXISTING R/W
NAD 83/2011
SITE 3
SITE 4
WETLAND WA
STREAM SA
22+00
-Y16RPC-
25+00
-Y16RPC-
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
INCOMPLETE PLANS
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
12.5' 6.25' 0 12.5' 25'
SCALE: 1" = 25'

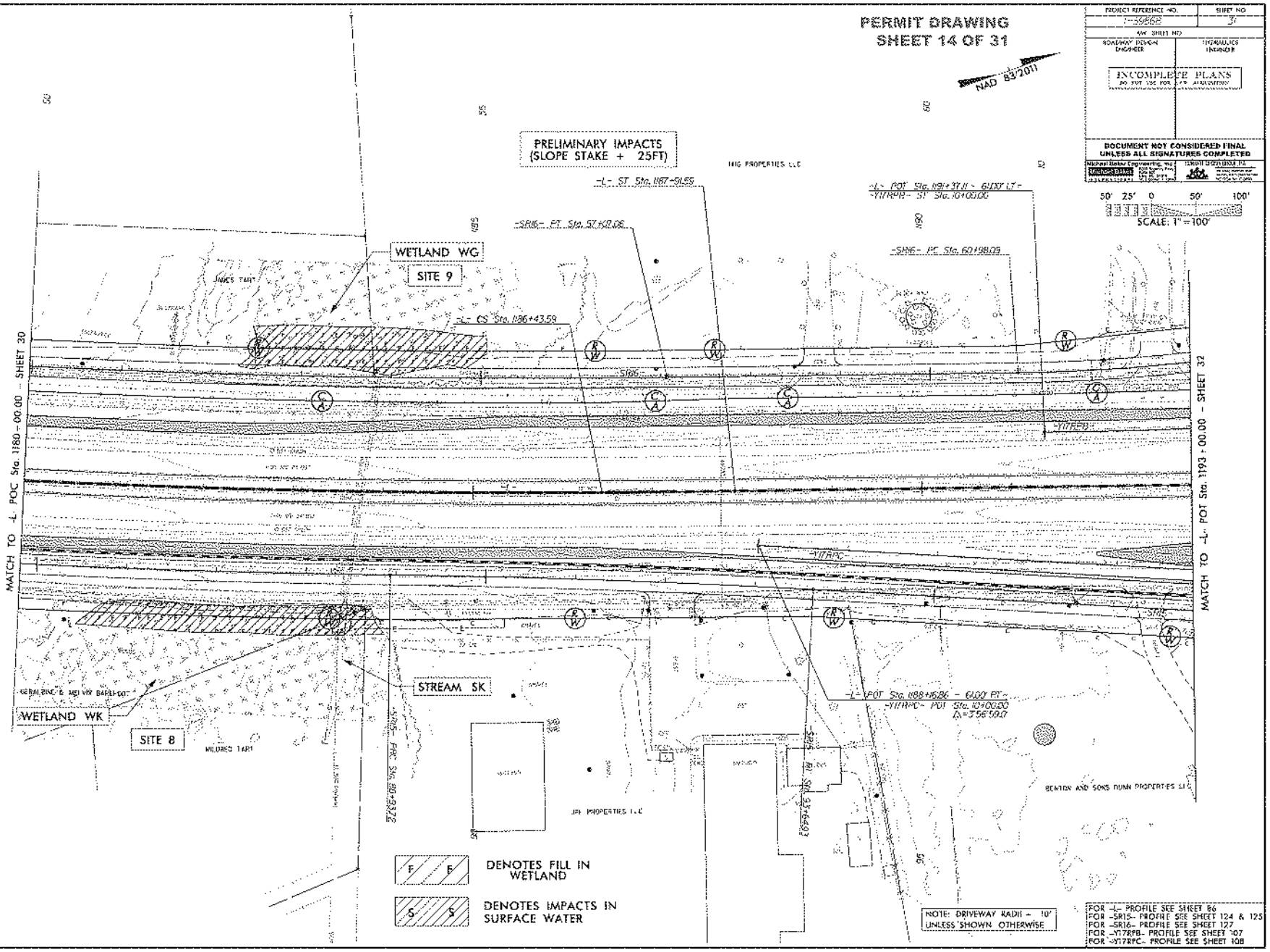
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-5966B	X-612



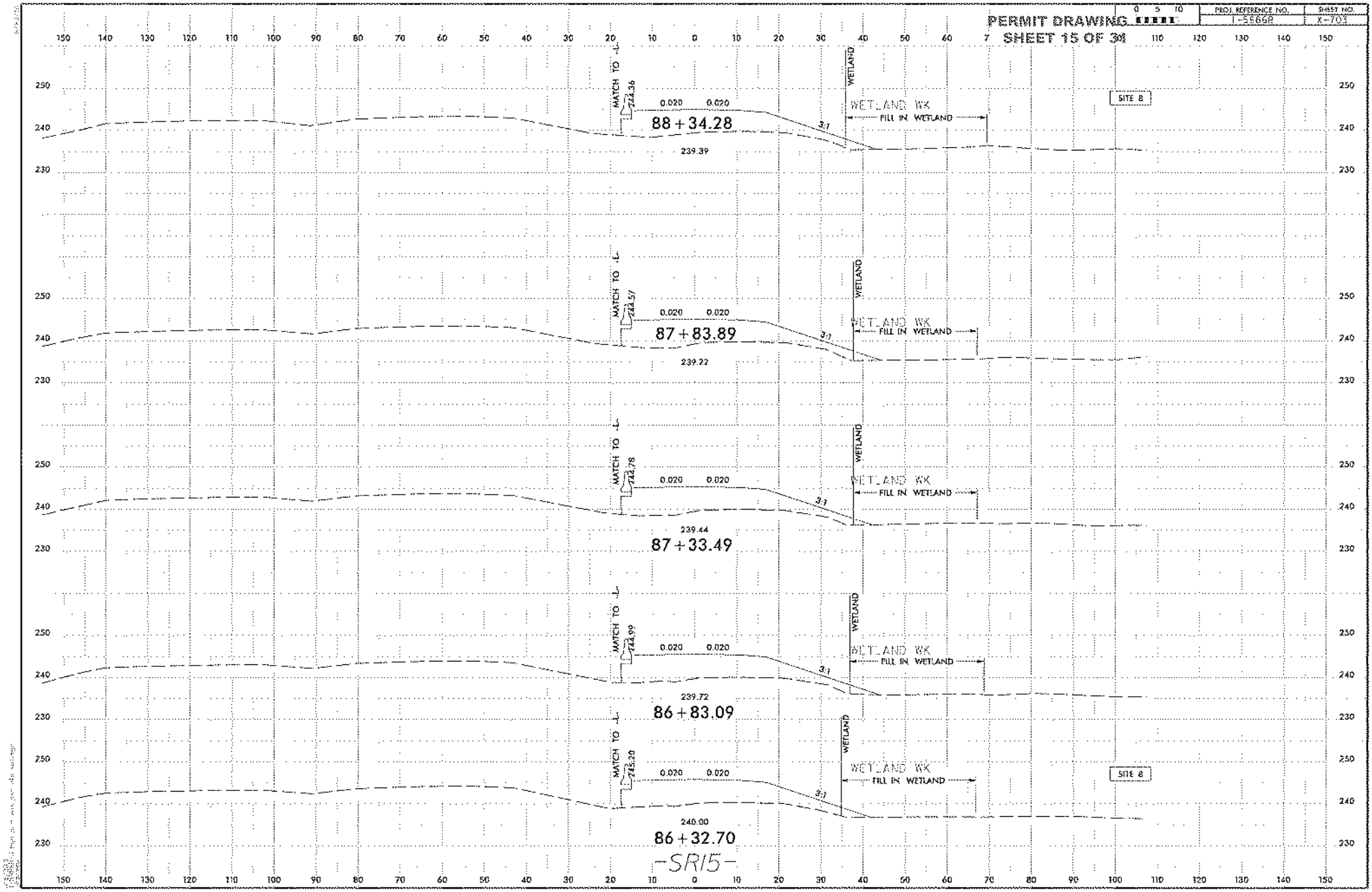

PERMIT DRAWING
SHEET 11 OF 31
PROJECT REFERENCE NO.
SHEET NO.
27
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION PURPOSES
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
Gannett Fleming, Inc.
NAD 83/2011
50' 75' 0 50' 100'
SCALE: 1" = 100'
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
MATCH TO -L- POT Sta. 112B+00.00 - SHEET 26
MATCH TO -L- POT Sta. 114+00.00 - SHEET 28
RT RENTALS LLC
VOYD MCLAMB
LLOYD MCLAMB
MCLAMB BURLINE HEIRS
STREAM SG
STREAM SG
SITE 5
SITE 6
SITE 7
STREAM SH
DORIS SENELL
DAWN TEW
CHARLES WEBB
SANDRA ASHWORTH
SANDRA ASHWORTH
ANITA SMITH
-SR15- PT Sta. 33+54.21
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
NOTE: DRIVEWAY RADII = 10' UNLESS SHOWN OTHERWISE
FOR -L- PROFILE SEE SHEET 84
FOR -SR15- PROFILE SEE SHEET 122 & 123

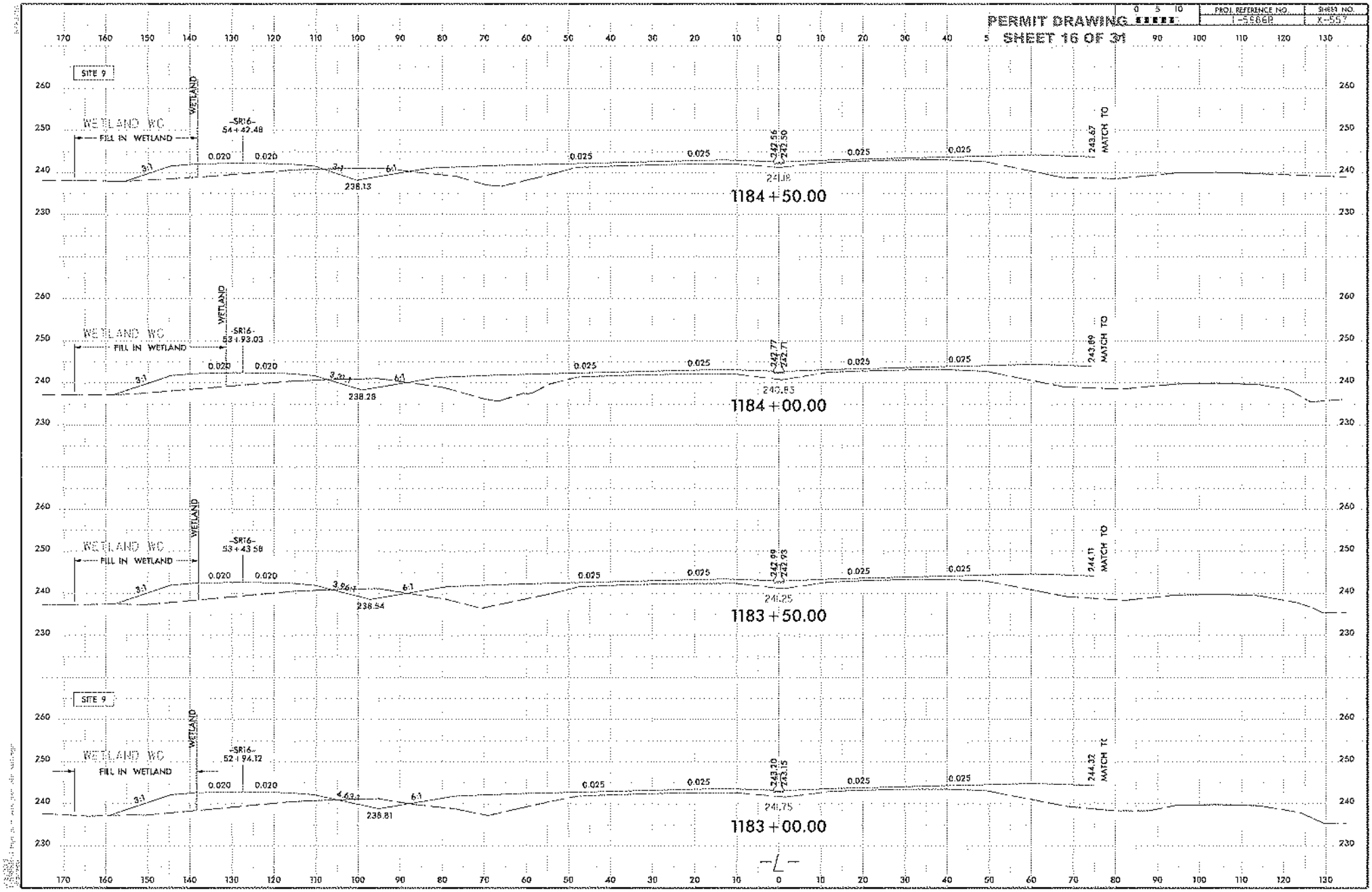

PERMIT DRAWING
SHEET 12 OF 31
PROJECT REFERENCE NO.
SHEET NO.
27
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
NAD 83/2011
SCALE: 1" = 100'
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
MATCH TO -L- POT Sta. 112B+00.00 - SHEET 26
MATCH TO -L- POT Sta. 114+00.00 - SHEET 28
STREAM SG
STREAM SG
STREAM SH
SITE 5
SITE 6
SITE 7
-SR15- PT Sta. 33+54.21
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
NOTE: DRIVEWAY RADII = 10' UNLESS SHOWN OTHERWISE
FOR -L- PROFILE SEE SHEET 84
FOR -SR15- PROFILE SEE SHEET 122 & 123


PERMIT DRAWING
SHEET 13 OF 31
NAD 83/2011
PROJECT REFERENCE NO.
SHEET NO.
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
Michael Baker
STRAUP DESIGN GROUP, P.A.
SCALE: 1" = 100'
50' 25' 0 50' 100'
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
-L- ST Sta. 1187+91.55
-SR16- PT Sta. 57+67.06
-L- POT Sta. 1191+37.11 - 6.00' LT -
-Y17RPB- ST Sta. 10+00.00
-SR16- PC Sta. 60+98.09
-L- CS Sta. 1186+43.59
WETLAND WG
SITE 9
JAMES TART
HIG PROPERTIES LLC
-Y17RPB-
-Y17RPC-
-L- POT Sta. 1188+16.86 - 6.00' RT -
-Y17RPC- POT Sta. 10+00.00
Δ = 3°56'50.0"
STREAM SK
WETLAND WK
SITE 8
MILDRED TART
-SR15- PRC Sta. 80+83.72
JPI PROPERTIES LLC
BENTON AND SONS DUNN PROPERTIES LLC
MATCH TO -L- POC Sta. 1180+00.00 - SHEET 30
MATCH TO -L- POT Sta. 1193+00.00 - SHEET 32
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
NOTE: DRIVEWAY RADII = 10' UNLESS SHOWN OTHERWISE
FOR -L- PROFILE SEE SHEET 86
FOR -SR15- PROFILE SEE SHEET 124 & 125
FOR -SR16- PROFILE SEE SHEET 127
FOR -Y17RPB- PROFILE SEE SHEET 107
FOR -Y17RPC- PROFILE SEE SHEET 108

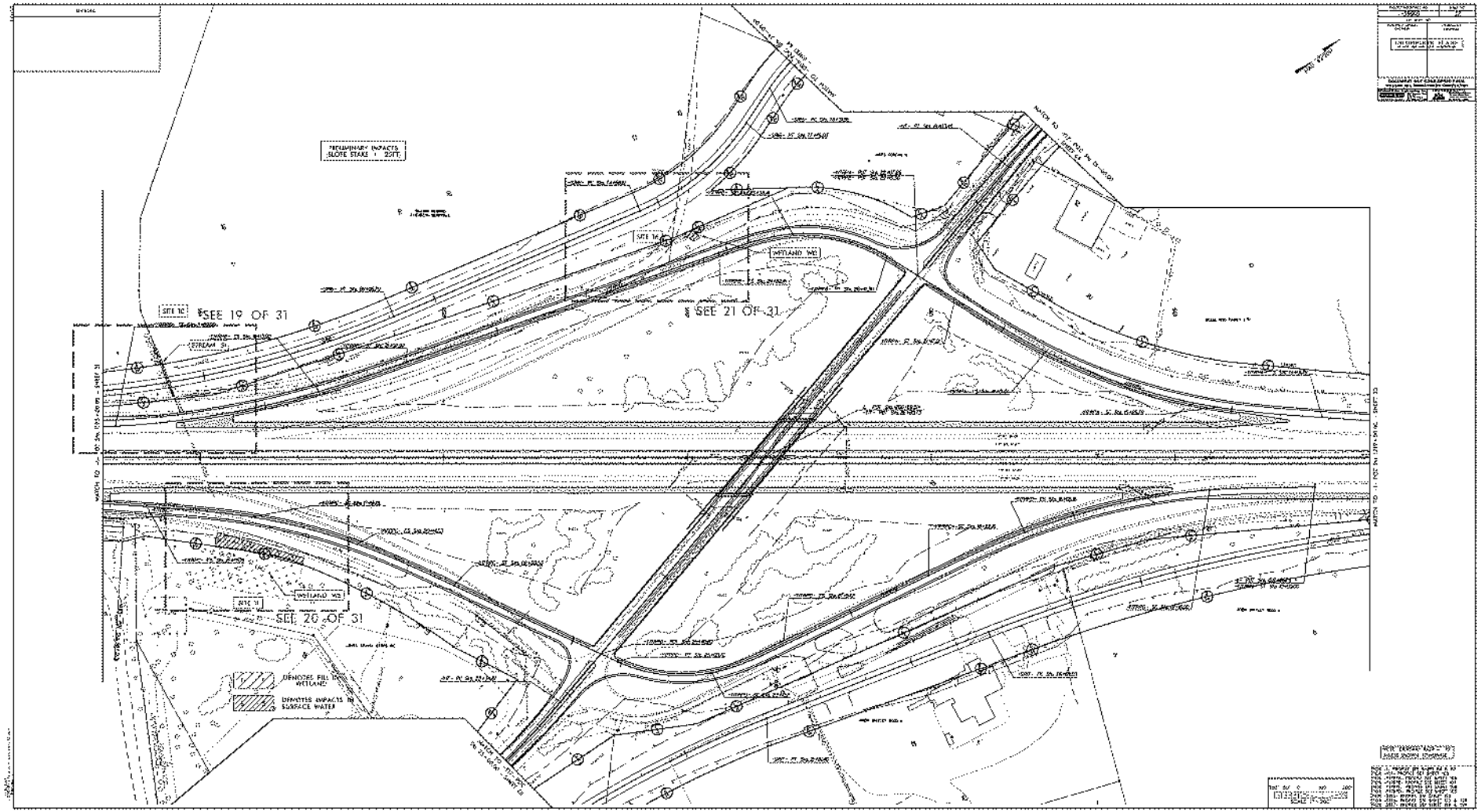

PERMIT DRAWING
SHEET 14 OF 31
NAD 83/2011
PROJECT REFERENCE NO.
SHEET NO.
R-5968B
31
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
Michael Baker
STRAUB DIXON DOUB, P.A.
50' 25' 0 50' 100'
SCALE: 1" = 100'
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
-L- ST Sta. 1187+91.55
-SR16- PT Sta. 57+67.06
-L- CS Sta. 1186+43.59
-L- POT Sta. 1191+37.11 - 6.00' LT -
-Y17RPB- ST Sta. 10+00.00
-SR16- PC Sta. 60+98.09
WETLAND WG
SITE 9
JAMES TART
-SR16-
-Y17RPD-
-Y17RPC-
MATCH TO -L- POC Sta. 1180+00.00 - SHEET 30
MATCH TO -L- POT Sta. 1193+00.00 - SHEET 32
STREAM SK
WETLAND WK
SITE 8
MILDRED TART
-SR16- PRC Sta. 60+93.72
-L- POT Sta. 1188+16.86 - 6.00' RT -
-Y17RPC- POT Sta. 10+00.00
Δ=356°59.0"
-SR16- PT Sta. 57+64.93
BENTON AND SONS DUNN PROPERTIES LLC
JPI PROPERTIES LLC
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
NOTE: DRIVEWAY RADII = 10' UNLESS SHOWN OTHERWISE
FOR -L- PROFILE SEE SHEET 86
FOR -SR15- PROFILE SEE SHEET 124 & 125
FOR -SR16- PROFILE SEE SHEET 127
FOR -Y17RPB- PROFILE SEE SHEET 107
FOR -Y17RPC- PROFILE SEE SHEET 108

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-5666B	X-703

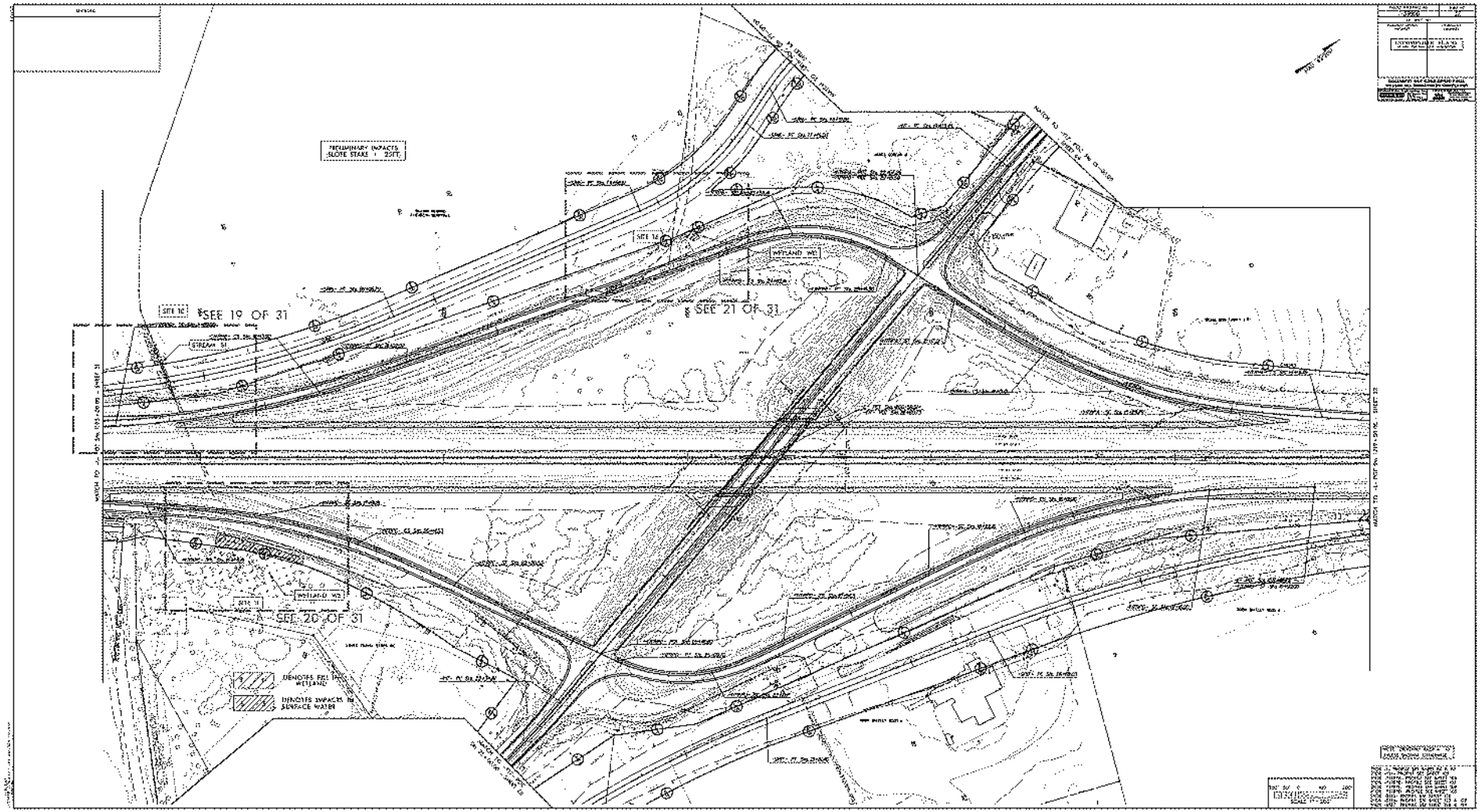



PERMIT DRAWING
SHEET 16 OF 34
PROJ. REFERENCE NO.
SHEET NO.
X-557
SITE 9
WETLAND WC
FILL IN WETLAND
WETLAND
-SR16-
54+42.48
238.13
241.18
242.56
242.50
243.67
MATCH TO
1184+50.00
-SR16-
53+93.03
238.28
240.83
242.77
242.71
243.89
MATCH TO
1184+00.00
-SR16-
53+43.58
238.54
241.25
242.99
242.93
244.11
MATCH TO
1183+50.00
-SR16-
52+94.12
238.81
241.75
243.20
243.15
244.32
MATCH TO
1183+00.00
0.020
0.025
3:1
6:1
-L-

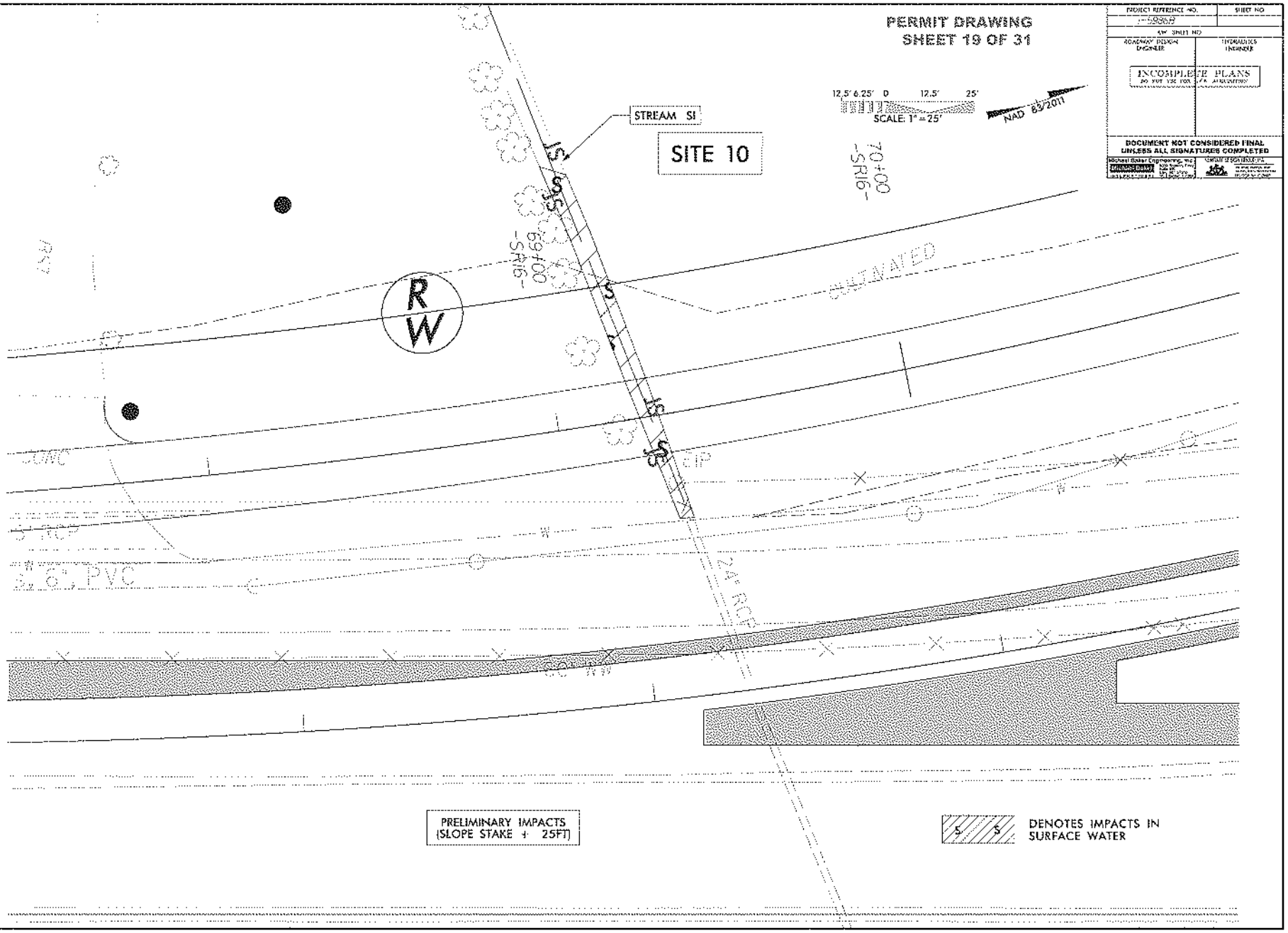
PERMIT DRAWING
SHEET 17 OF 31

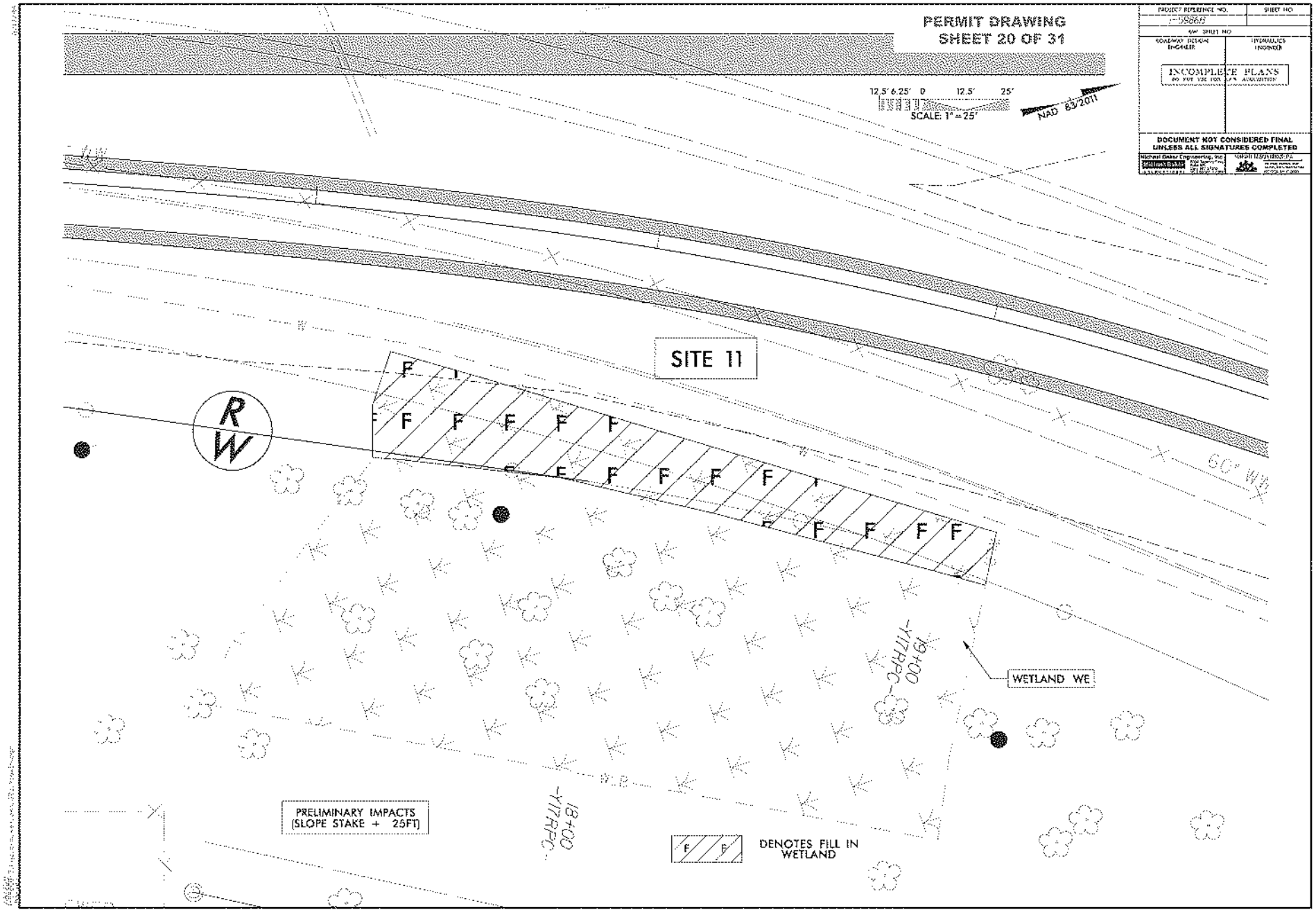


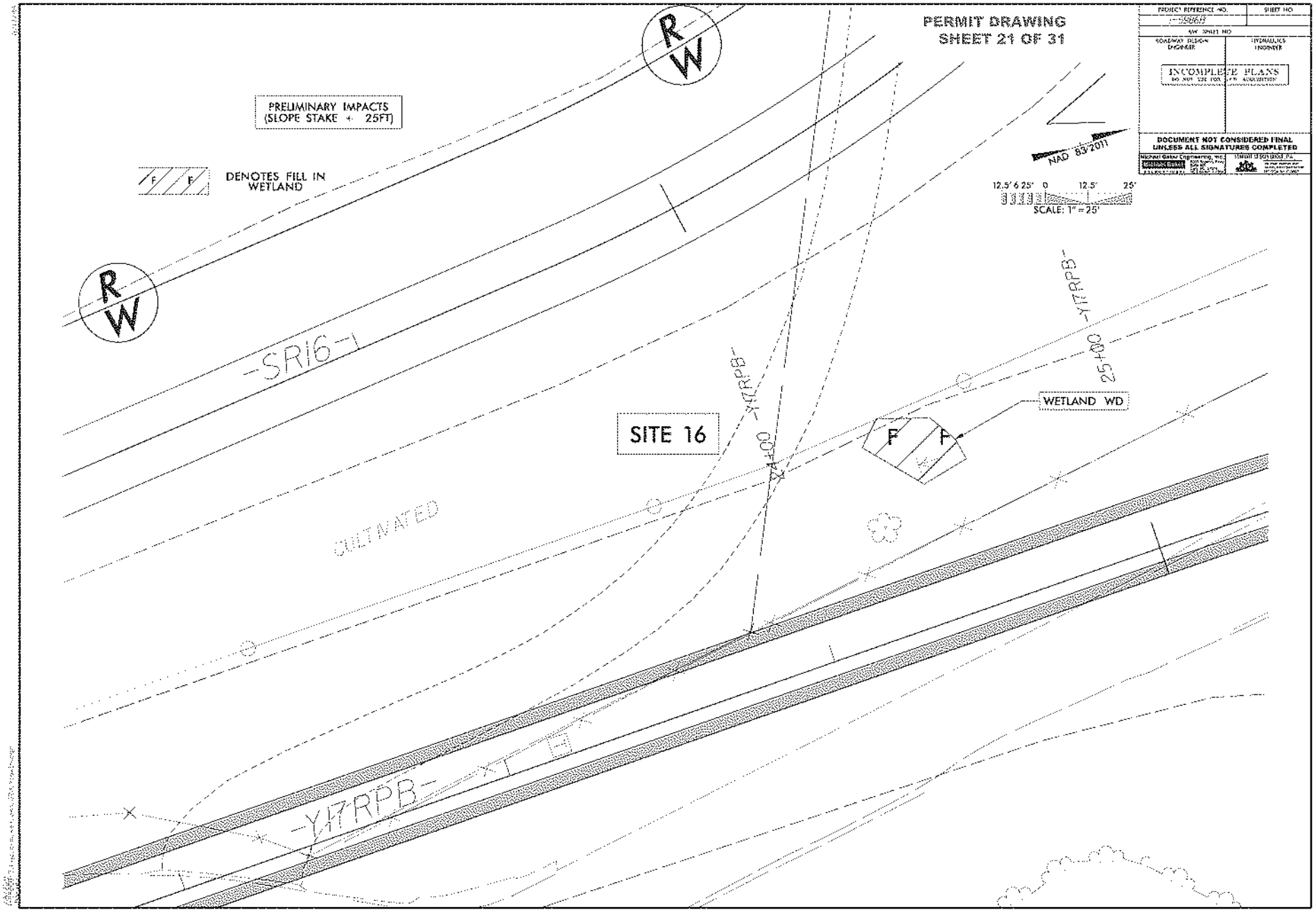
PERMIT DRAWING
SHEET 18 OF 31



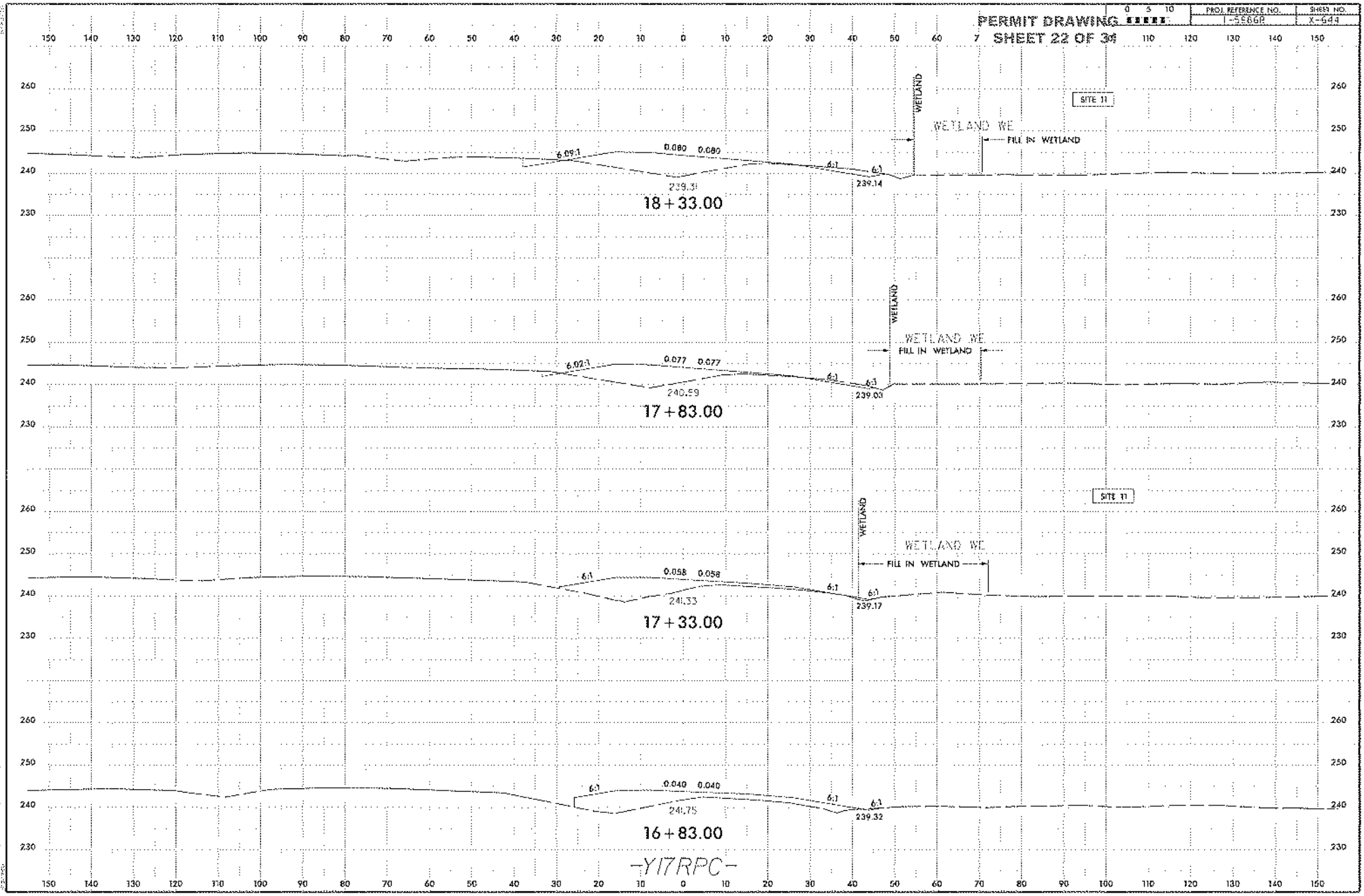
588

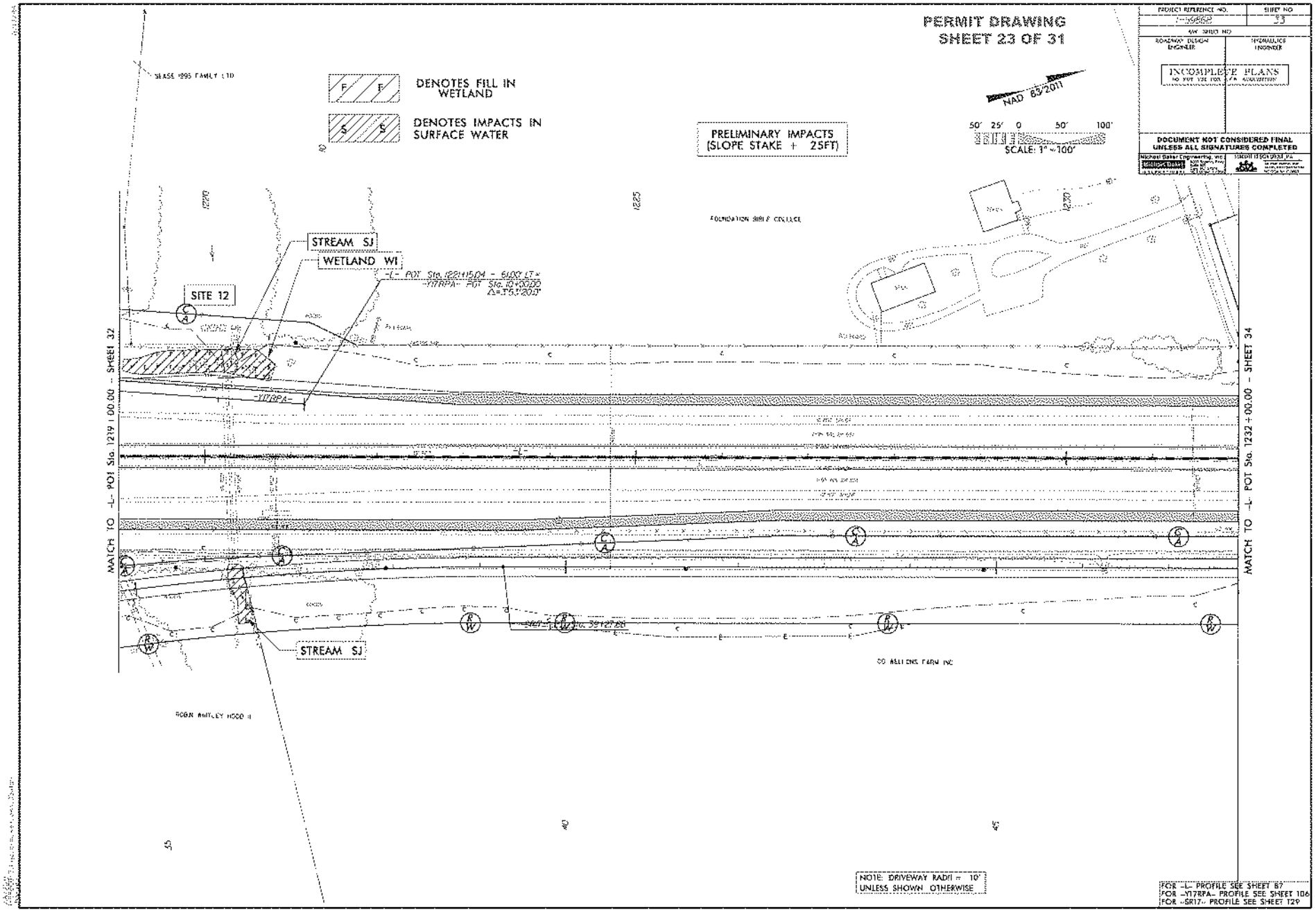

PERMIT DRAWING
SHEET 19 OF 31
PROJECT REFERENCE NO.
SHEET NO.
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
DRAWN BY
CHECKED BY
12.5' 6.25' 0 12.5' 25'
SCALE: 1" = 25'
NAD 83/2011
STREAM SI
SITE 10
70+00
-SR16-
69+00
-SR16-
R/W
PAVED
CONC
EP
24" RCP
6" PVC
PRELIMINARY IMPACTS
(SLOPE STAKE + 25FT)
DENOTES IMPACTS IN SURFACE WATER

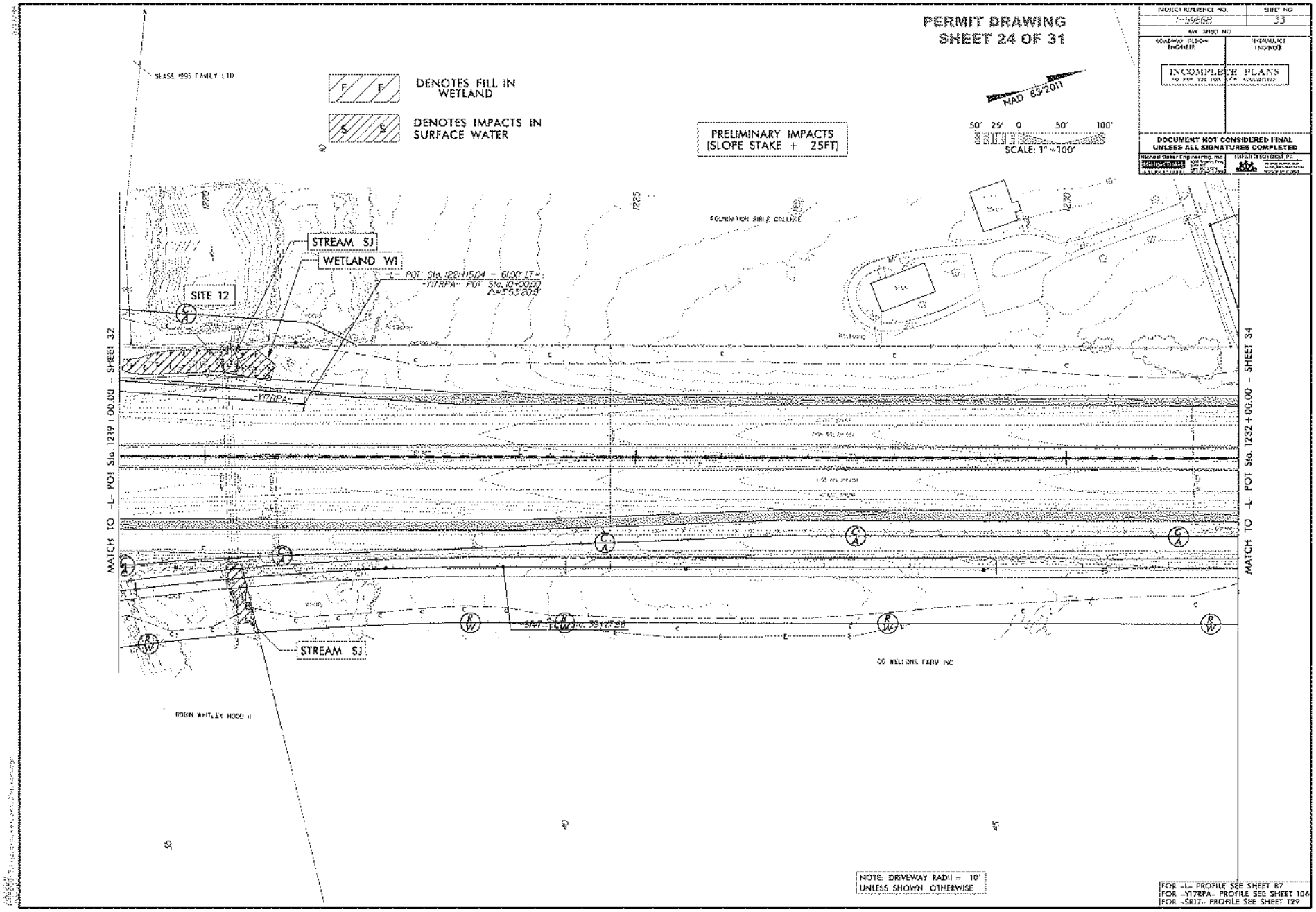

PERMIT DRAWING
SHEET 20 OF 31
PROJECT REFERENCE NO.
SHEET NO.
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
12.5' 6.25' 0 12.5' 25'
SCALE: 1" = 25'
NAD 83/2011
SITE 11
R
W
60" WP
WETLAND WE
19+00
-Y17RPC-
18+00
-Y17RPC-
PRELIMINARY IMPACTS
(SLOPE STAKE + 25FT)
DENOTES FILL IN WETLAND


PERMIT DRAWING
SHEET 21 OF 31
PROJECT REFERENCE NO.
SHEET NO.
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR RIGHT OF WAY ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
Stantec
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
DENOTES FILL IN WETLAND
F
F
R/W
R/W
NAD 83/2011
12.5' 6.25' 0 12.5' 25'
SCALE: 1" = 25'
-SR16-
SITE 16
CULTIVATED
-YTRPB-
-YTRPB-
-YTRPB-
-YTRPB-
WETLAND WD
F
F

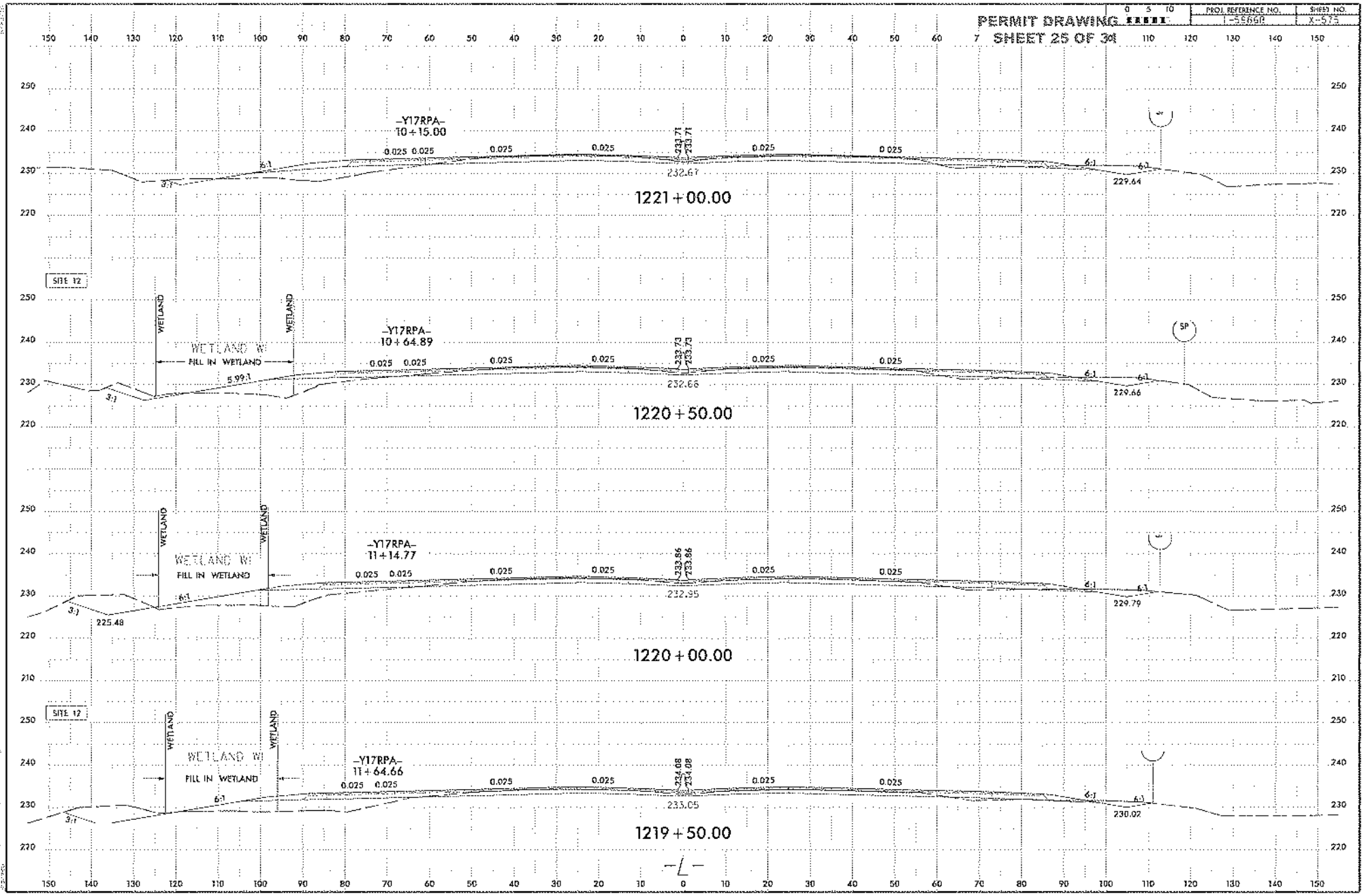
PROJ. REFERENCE NO.	SHEET NO.
I-5866B	X-644

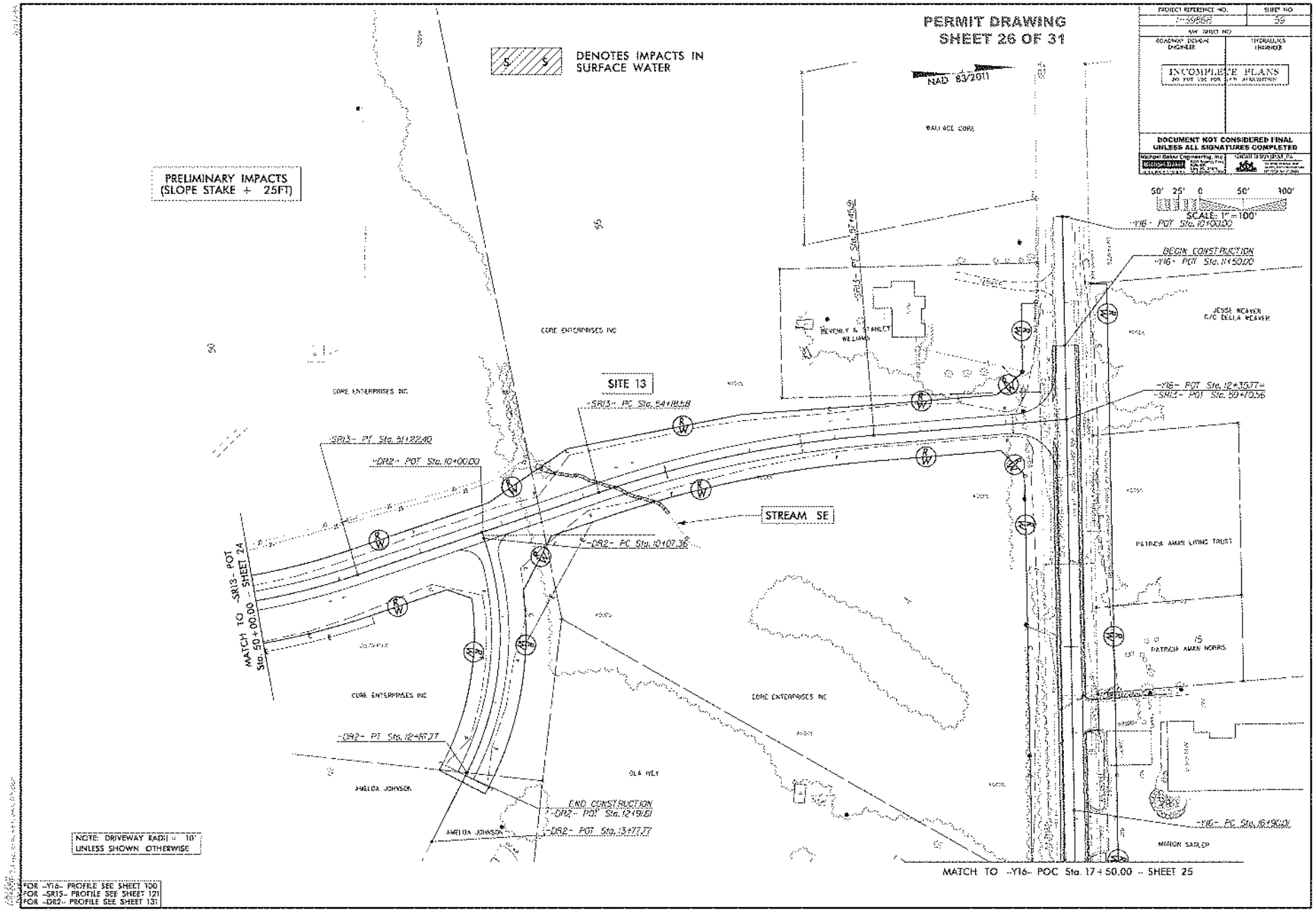


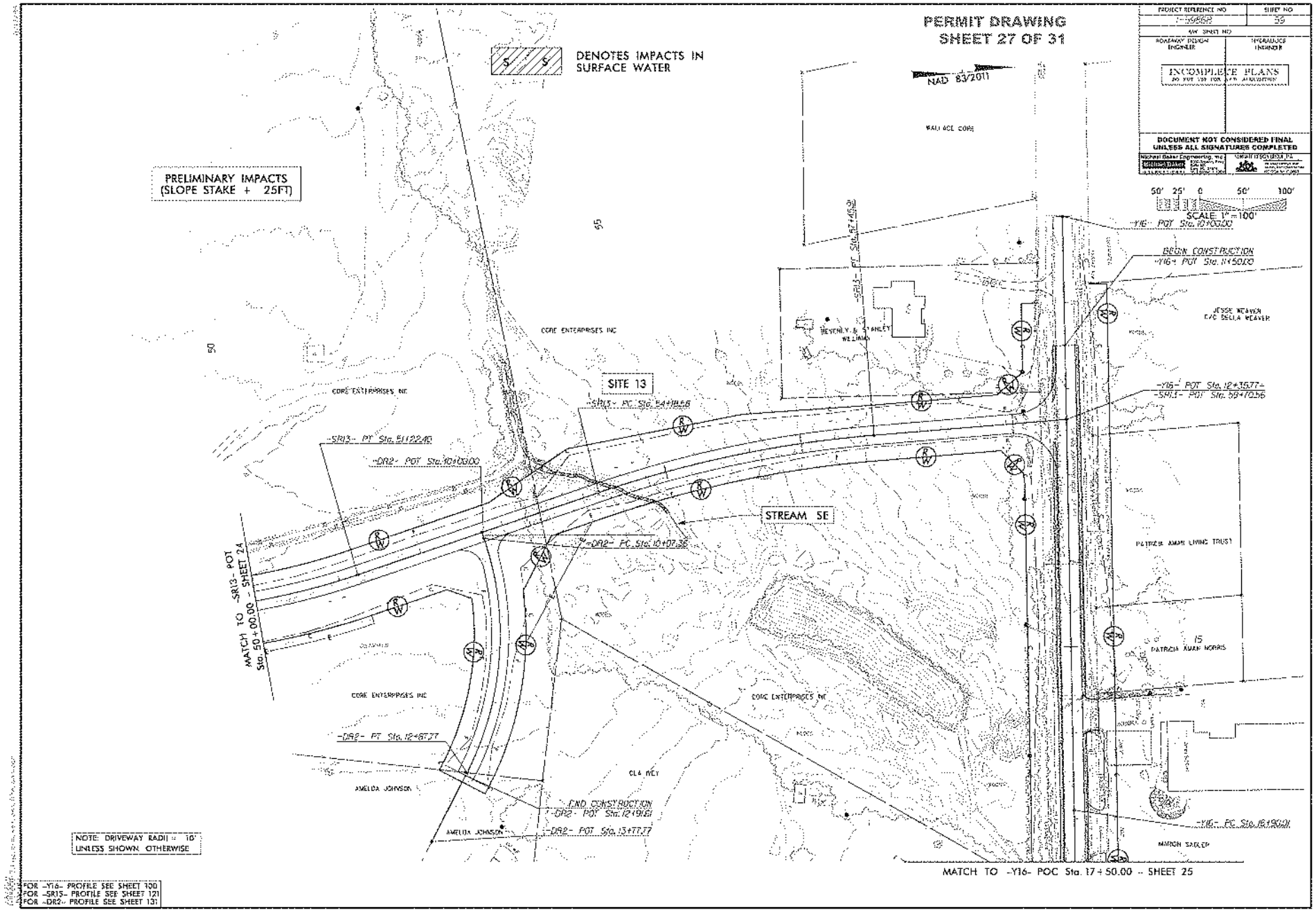

PERMIT DRAWING
SHEET 23 OF 31
PROJECT REFERENCE NO.
SHEET NO.
23
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
STREAMLINE SOLUTIONS
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
NAD 83/2011
50' 25' 0 50' 100'
SCALE: 1" = 100'
SLEASE 1995 FAMILY LTD
FOUNDATION BIBLE COLLEGE
STREAM SJ
WETLAND WI
SITE 12
-L- POT Sta. 1221+15.04 - 6.00' LT
-Y178PA- POT Sta. 10+00.00
Δ=75°20'0"
MATCH TO -L- POT Sta. 1219+00.00 - SHEET 32
MATCH TO -L- POT Sta. 1232+00.00 - SHEET 34
STREAM SJ
CO ALLIONS FARM INC
ROBIN AINTLEY HOOD II
NOTE: DRIVEWAY RADII = 10' UNLESS SHOWN OTHERWISE
FOR -L- PROFILE SEE SHEET 87
FOR -Y178PA- PROFILE SEE SHEET 106
FOR -SR17- PROFILE SEE SHEET 129

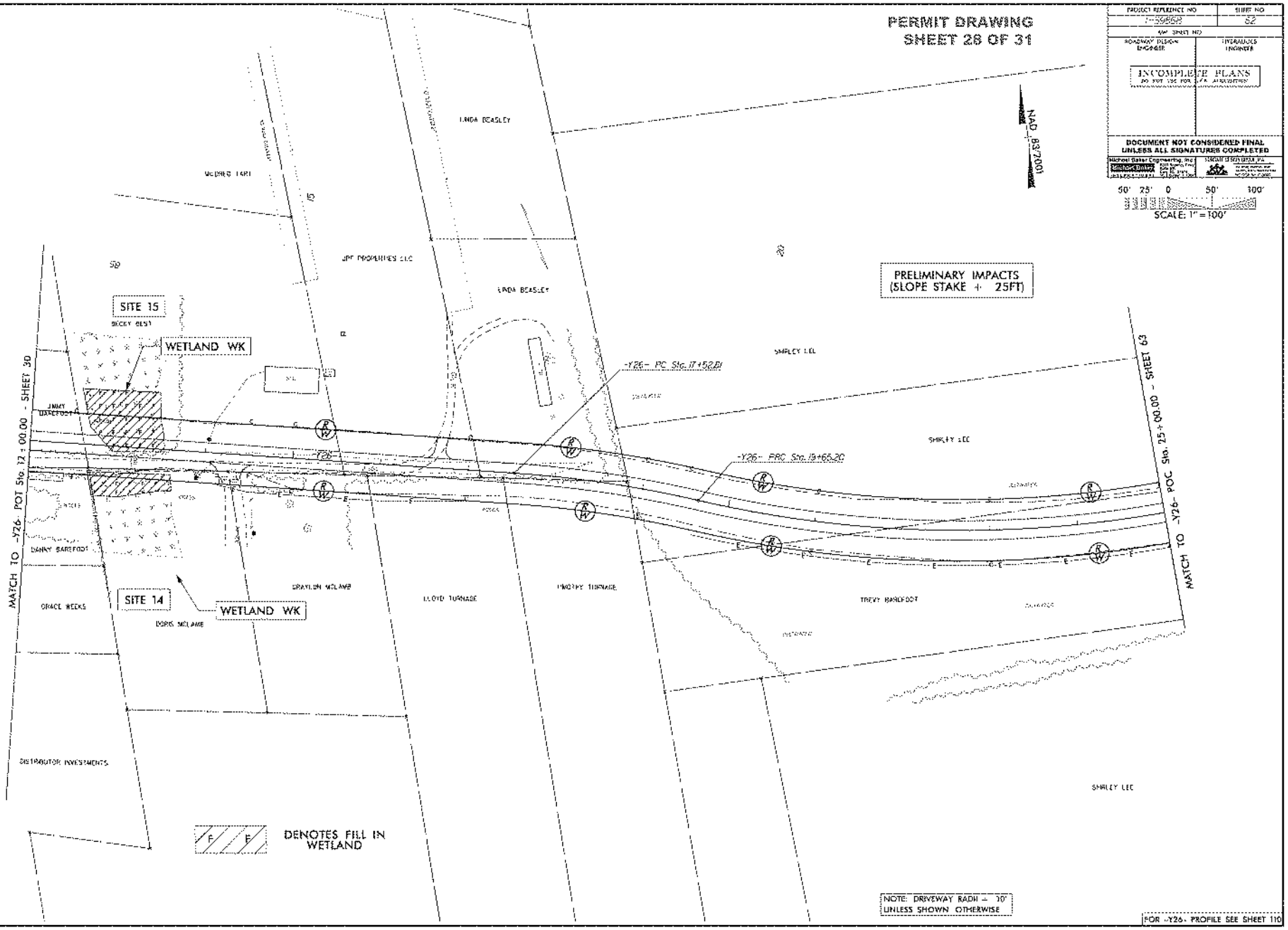

PERMIT DRAWING
SHEET 24 OF 31
PROJECT REFERENCE NO.
SHEET NO.
33
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
STANTEC
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
NAD 83/2011
50' 25' 0 50' 100'
SCALE: 1" = 100'
SLEASE 1995 FAMILY LTD
FOUNDATION BIBLE COLLEGE
STREAM SJ
WETLAND W1
SITE 12
-L- POT Sta. 1221+15.04 - 61.00' LT
-Y178PA- POT Sta. 10+00.00
Δ=3°53'20.1"
-Y178PA-
MATCH TO -L- POT Sta. 1219+00.00 - SHEET 32
MATCH TO -L- POT Sta. 1232+00.00 - SHEET 34
STREAM SJ
SO WELLONS FARM INC
ROBIN WHITLEY HOOD II
NOTE: DRIVEWAY RADII = 10' UNLESS SHOWN OTHERWISE
FOR -L- PROFILE SEE SHEET 87
FOR -Y178PA- PROFILE SEE SHEET 106
FOR -SR17- PROFILE SEE SHEET 129

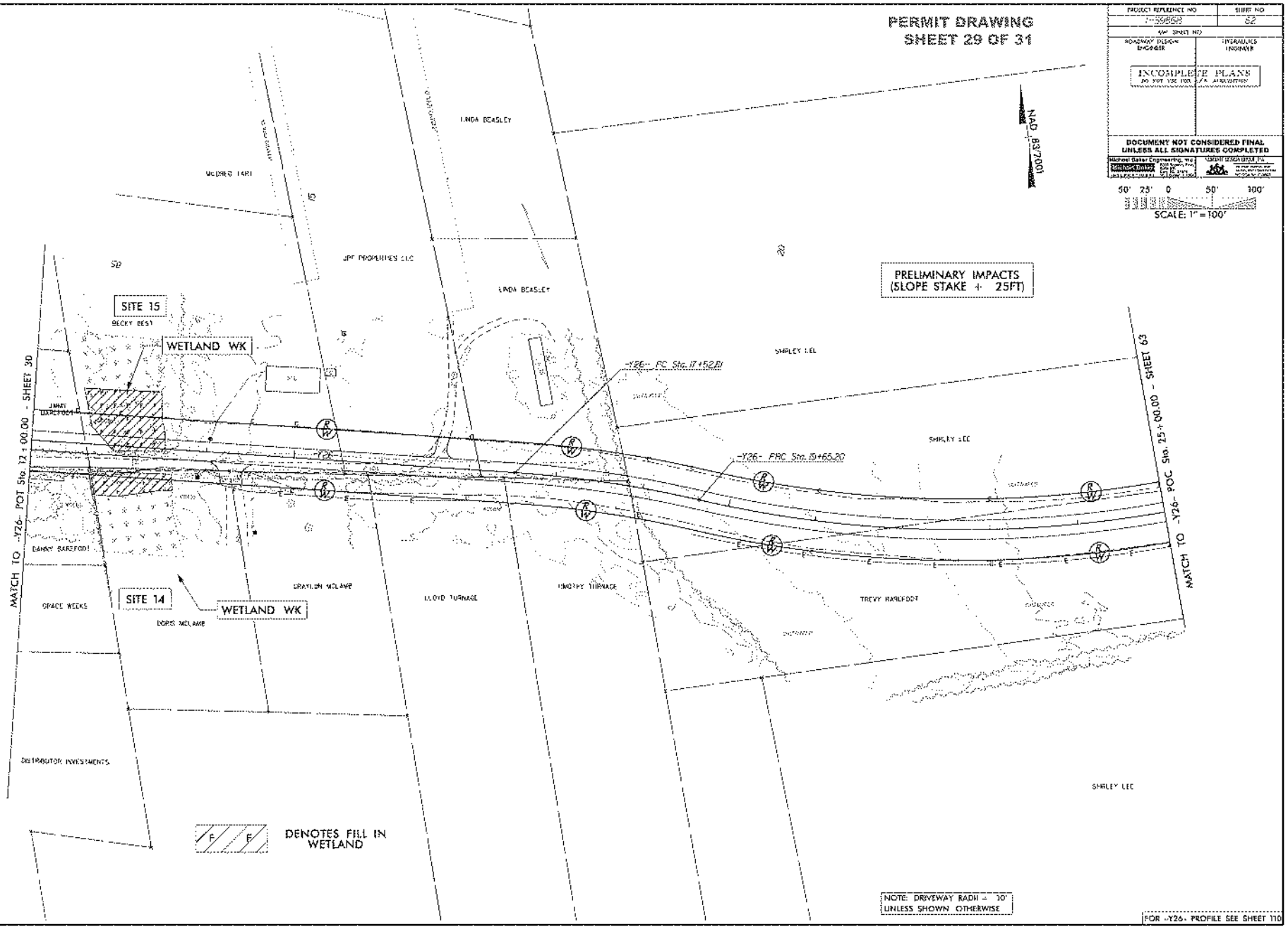
PROJ. REFERENCE NO.	SHEET NO.
I-5666B	X-575



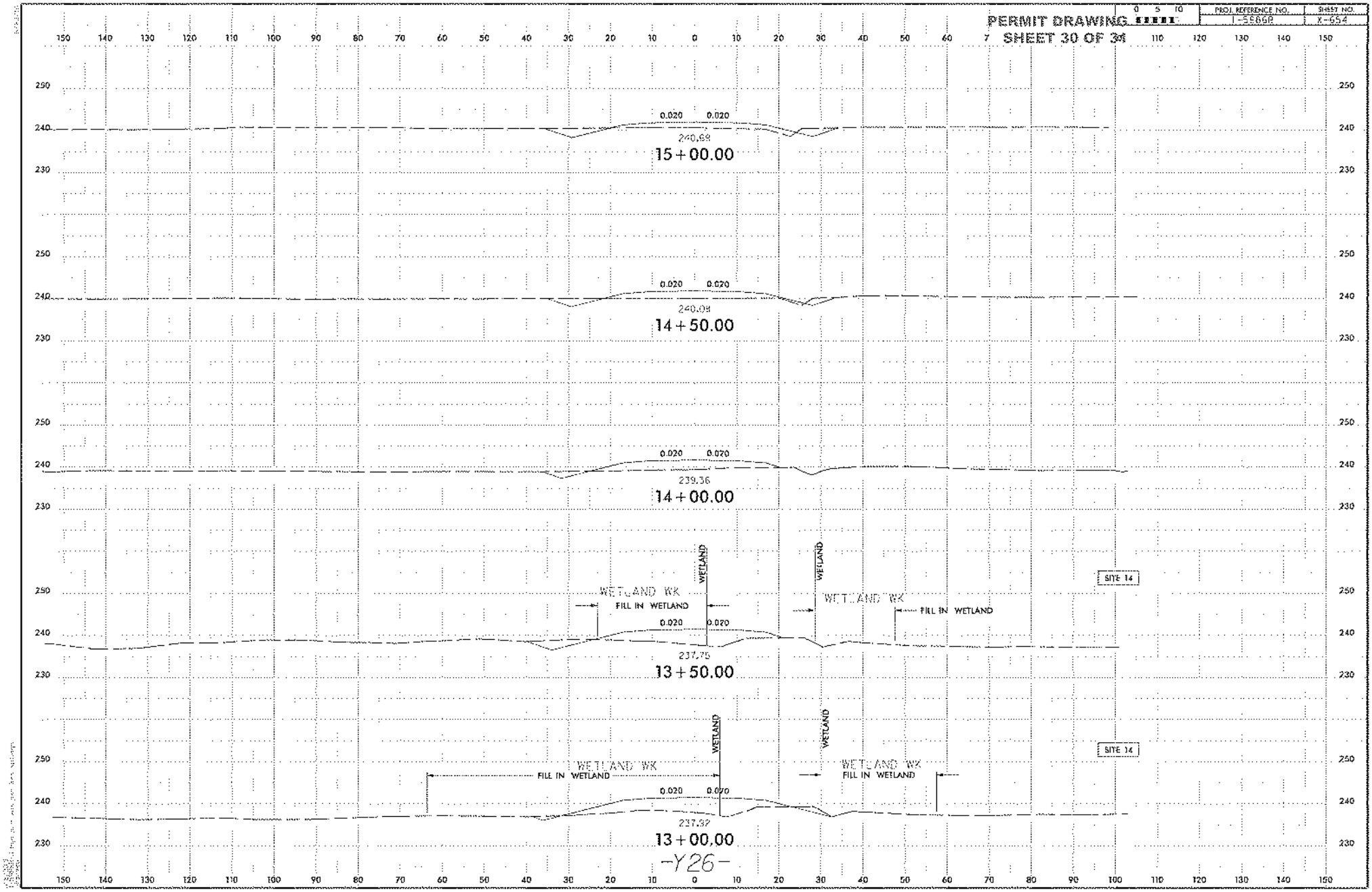

PERMIT DRAWING
SHEET 26 OF 31
PROJECT REFERENCE NO.
SHEET NO.
59
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
NAD 83/2011
DENOTES IMPACTS IN SURFACE WATER
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
SCALE: 1" = 100'
-Y16- POT Sta. 10+00.00
BEGIN CONSTRUCTION
-Y16- POT Sta. 11+50.00
-Y16- POT Sta. 12+35.77 =
-SR13- POT Sta. 59+70.56
-SR13- PC Sta. 54+18.68
-SR13- PT Sta. 51+22.40
-DR2- POT Sta. 10+00.00
-DR2- PC Sta. 10+07.36
-DR2- PT Sta. 12+67.77
END CONSTRUCTION
-DR2- POT Sta. 12+19.61
-DR2- POT Sta. 13+77.77
-Y16- PC Sta. 16+19.03
SITE 13
STREAM SE
CORE ENTERPRISES INC
BEVERLY & STANLEY WILLIAMS
JESSE WEAVER C/O DELLA WEAVER
PATRICIA AMAN LIVING TRUST
PATRICIA AMAN MORRIS
AMELIA JOHNSON
MARION SADLER
OLD HWY
MATCH TO -SR13- POT Sta. 50+00.00 - SHEET 24
MATCH TO -Y16- POC Sta. 17+50.00 - SHEET 25
NOTE: DRIVEWAY RADII = 10' UNLESS SHOWN OTHERWISE
FOR -Y16- PROFILE SEE SHEET 100
FOR -SR13- PROFILE SEE SHEET 121
FOR -DR2- PROFILE SEE SHEET 131


PERMIT DRAWING
SHEET 27 OF 31
PROJECT REFERENCE NO.
SHEET NO.
59
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
DENOTES IMPACTS IN SURFACE WATER
NAD 83/2011
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
SCALE: 1" = 100'
-Y16- POT Sta. 10+00.00
BEGIN CONSTRUCTION
-Y16- POT Sta. 11+50.00
-SR13- PC Sta. 8+47.92
-Y16- POT Sta. 12+35.77
-SR13- POT Sta. 59+70.56
SITE 13
-SR13- PC Sta. 8+18.66
-SR13- PT Sta. 8+22.40
-DR2- POT Sta. 10+00.00
STREAM SE
-DR2- PC Sta. 10+07.38
MATCH TO -SR13- POT Sta. 50+00.00 - SHEET 24
-DR2- PT Sta. 12+87.77
END CONSTRUCTION
-DR2- POT Sta. 12+91.61
-DR2- POT Sta. 13+77.77
-Y16- PC Sta. 16+90.01
CORE ENTERPRISES INC
BEVERLY & STANLEY WELLMAN
JESSE WEAVER C/O DELIA WEAVER
PATRICIA ANN LIVING TRUST
PATRICIA ANN MORRIS
AMELIA JOHNSON
OLA RIEY
MARION SADLER
MATCH TO -Y16- POC Sta. 17+50.00 - SHEET 25
NOTE: DRIVEWAY RADII = 10' UNLESS SHOWN OTHERWISE
FOR -Y16- PROFILE SEE SHEET 100
FOR -SR13- PROFILE SEE SHEET 121
FOR -DR2- PROFILE SEE SHEET 131


PERMIT DRAWING
SHEET 28 OF 31
PROJECT REFERENCE NO.
SHEET NO.
52
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
NAD 83/2001
50' 25' 0 50' 100'
SCALE: 1" = 100'
PRELIMINARY IMPACTS
(SLOPE STAKE + 25FT)
LINDA BEASLEY
WEDDING TART
JPF PROPERTIES LLC
LINDA BEASLEY
SHIRLEY LEE
SHIRLEY LEE
SITE 15
BECKY BEST
WETLAND WK
JIMMY BAREFOOT
DANNY BAREFOOT
-Y26- PC Sta. 17+52.81
-Y26- PRC Sta. 19+65.20
MATCH TO -Y26- POT Sta. 12+00.00 - SHEET 30
MATCH TO -Y26- POC Sta. 25+00.00 - SHEET 63
GRACE WEEKS
SITE 14
WETLAND WK
DORIS MCLAMB
GRAYLIN MCLAMB
LLOYD TURNAGE
TIMOTHY TURNAGE
TREVY BAREFOOT
DISTRIBUTOR INVESTMENTS
SHIRLEY LEE
DENOTES FILL IN WETLAND
NOTE: DRIVEWAY RADII = 30' UNLESS SHOWN OTHERWISE
FOR -Y26- PROFILE SEE SHEET 110


PERMIT DRAWING
SHEET 29 OF 31
PROJECT REFERENCE NO.
SHEET NO.
52
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
NAD 83/2001
50' 25' 0 50' 100'
SCALE: 1" = 100'
PRELIMINARY IMPACTS
(SLOPE STAKE + 25FT)
LINDA BEASLEY
WEDDING TART
JPF PROPERTIES LLC
LINDA BEASLEY
SHIRLEY LEE
SHIRLEY LEE
SITE 15
BECKY BEST
WETLAND WK
JIMMY BAREFOOT
DANNY BAREFOOT
-Y26- FPC Sta. 17+52.81
-Y26- FPC Sta. 19+65.20
MATCH TO -Y26- POT Sta. 12+00.00 - SHEET 30
MATCH TO -Y26- POC Sta. 25+00.00 - SHEET 63
SITE 14
WETLAND WK
DORIS MCLAMB
GRAYLIN MCLAMB
LLOYD TURNAGE
TIMOTHY TURNAGE
TREVY BAREFOOT
GRACE WEEKS
DISTRIBUTOR INVESTMENTS
SHIRLEY LEE
DENOTES FILL IN WETLAND
NOTE: DRIVEWAY RADII = 30' UNLESS SHOWN OTHERWISE
FOR -Y26- PROFILE SEE SHEET 110

PROJ. REFERENCE NO.	SHEET NO.
I-5866B	X-654



-Y26-

600

WETLAND AND SURACE WATER IMPACTS SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	1075+84 to 1077+41-L-LT	ROADWAY FILL	0.05					< 0.01		65		
2	44+86 to 46+09-SR13-	ROADWAY FILL						0.05		329		
3	22+04 to 27+47-Y16RPC-	ROADWAY FILL						0.06		582		
4	24+21 to 24+83-Y16RPC-LT	ROADWAY FILL	0.02									
5	32+96 to33+11-SR15-RT	ROADWAY FILL						< 0.01		12		
6	34+52 to 35+50-SR15RT	ROADWAY FILL						< 0.01		111		
7	37+43 to 37+61-SR15-RT	ROADWAY FILL						< 0.01		29		
8	85+45 to88+88-SR15-RT	ROADWAY FILL	0.22					< 0.01		38		
9	52+29 to 55+07-SR18-LT	ROADWAY FILL	0.26									
10	69+06 to 69+34-SR18-	ROADWAY FILL						0.01		106		
11	17+23 to 19+17-Y17RPC-RT	ROADWAY FILL	0.09									
12	10+37 to12+14-Y17RPA-RT	ROADWAY FILL	0.09					0.03		100		
13	53+57 to 54+92-SR13-	ROADWAY FILL						0.01		167		
14	12+67 to 13+52-Y26-RT	ROADWAY FILL	0.05									
15	12+67 to 13+52-Y26-LT	ROADWAY FILL	0.13									
16	24+28 to 24+55-Y17RPB-LT	ROADWAY FILL	< 0.01									
TOTALS*:			0.92					0.19		1539	0	0

*Rounded totals are sum of actual impacts

NOTES:
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
1-8-2019
HARNETT COUNTY
I-5986B-SECTION 3
47532.1.3
SHEET 31 OF 31

Revised 2018 Feb

PERMIT DRAWING
SHEET 1 OF 19

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5986B	1	

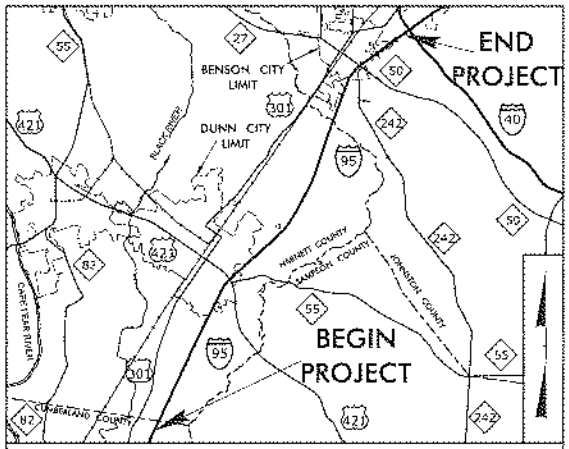
PLAN PREPARED	FILE PLAN NO.	ENGINEER
47532.1.9		PE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CUMBERLAND, HARNETT, AND JOHNSTON COUNTIES

LOCATION: I-95 FROM SR 1811 (BUD HAWKINS ROAD) (EXIT 70) TO I-40 (EXIT 81). WIDEN TO EIGHT LANES.

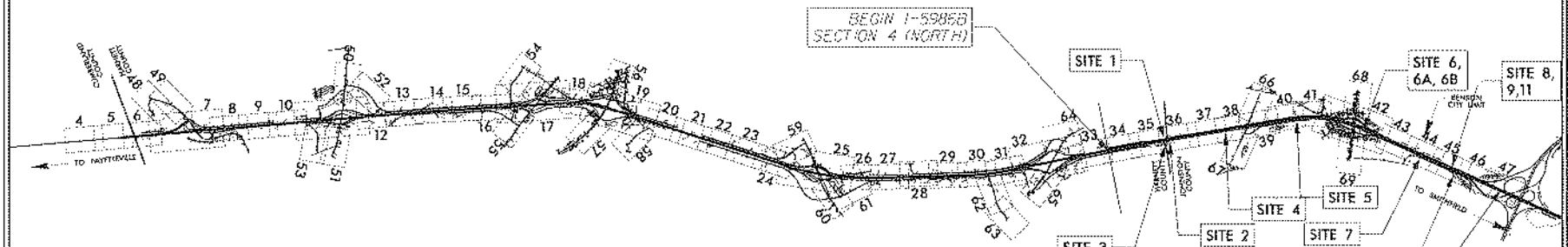
TYPE OF WORK: GRADING, PAVING, DRAINAGE, SIGNALS, CULVERTS, AND STRUCTURES



VICINITY MAP

WETLAND AND SURFACE WATER IMPACTS PERMIT
SECTION 4 (NORTH)

NAD 83/2011



PRELIMINARY IMPACTS
(SLOPE STAKE + 25FT)

INCOMPLETE PLANS
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2020 = 58,900
ADT 2040 = 75,700
K = 7 %
D = 55 %
T = 24 % *
V = 70 MPH
* (17% TTST + 7% DUALS)
FUNC CLASS =
INTERSTATE
STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT I-5986B	=	11.865 MILES
LENGTH STRUCTURE TIP PROJECT I-5986B	=	0.020 MILES
TOTAL LENGTH TIP PROJECT I-5986B	=	11.885 MILES

Prepared in the Office of:
Michael Baker INTERNATIONAL
Michael Baker Engineering, Inc.
8000 Regency Parkway, Suite 600
Cary, NC 27518
Professional Corporation License Number F-1056
FOR DIVISION OF HIGHWAYS

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MAY 1, 2019

LETTING DATE:
JULY 21, 2020

SUSAN C. LANCASTER, P.E.
PROJECT ENGINEER

CURTIS TILLMAN, P.E.
PROJECT DESIGN ENGINEER

STEVE D. KENDALL, P.E.
MINOR CONTACT

HYDRAULICS ENGINEER

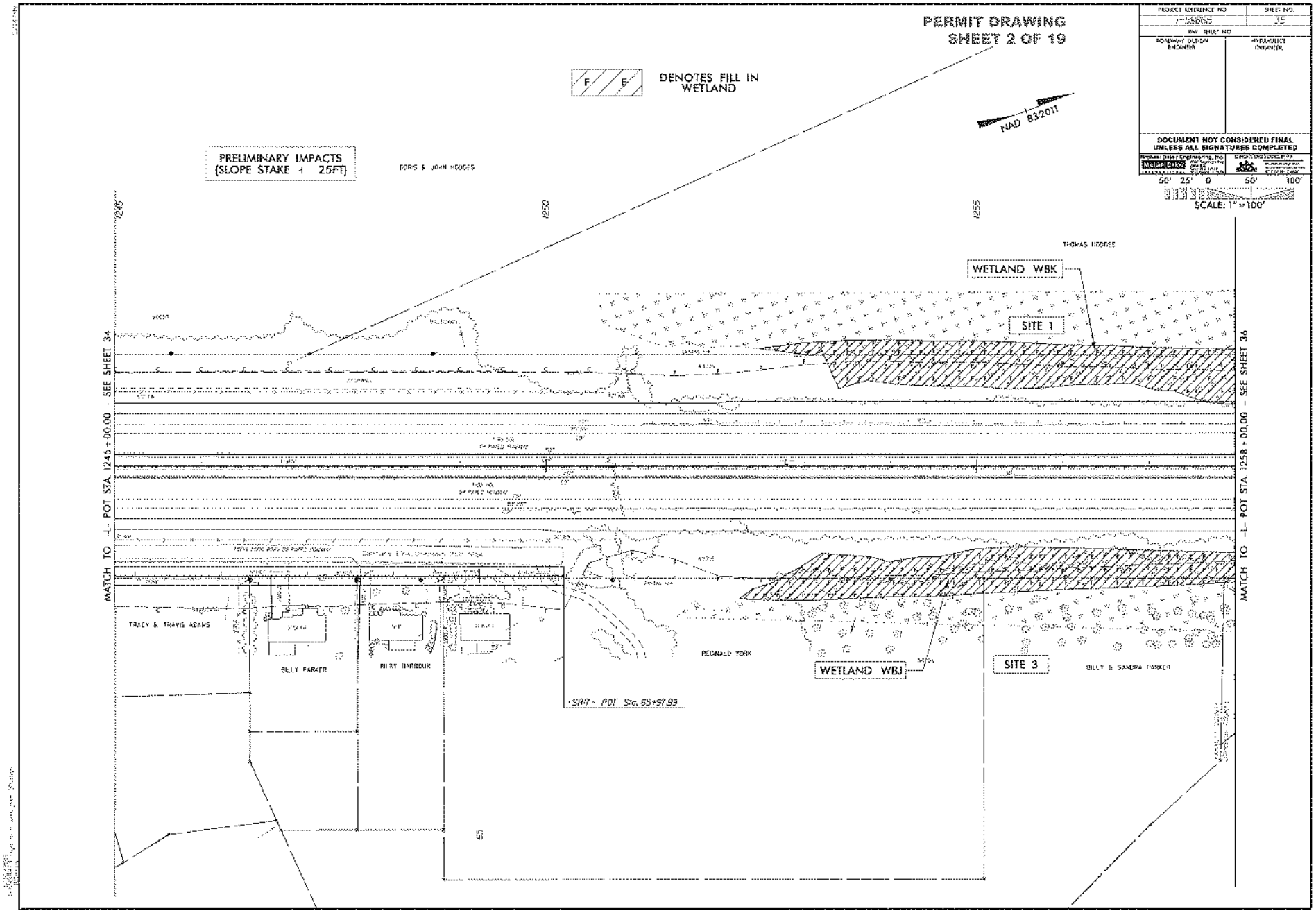
SIGNATURE ..... P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE ..... P.E.

TIP PROJECT: I-5986B

CONTRACT:


PERMIT DRAWING
SHEET 2 OF 19
PROJECT REFERENCE NO.
SHEET NO.
35
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
DENOTES FILL IN WETLAND
NAD 83/2011
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
SCALE: 1" = 100'
MATCH TO -L- POT STA. 1245+00.00 - SEE SHEET 34
MATCH TO -L- POT STA. 1258+00.00 - SEE SHEET 36
WETLAND WBK
SITE 1
WETLAND WBJ
SITE 3
TRACY & TRAVIS ADAMS
BILLY PARKER
RUBY BARBOUR
RONALD YORK
BILLY & SANDRA PARKER
THOMAS HODGES
DORIS & JOHN HODGES
SIR17 - POT Sta. 65+97.93

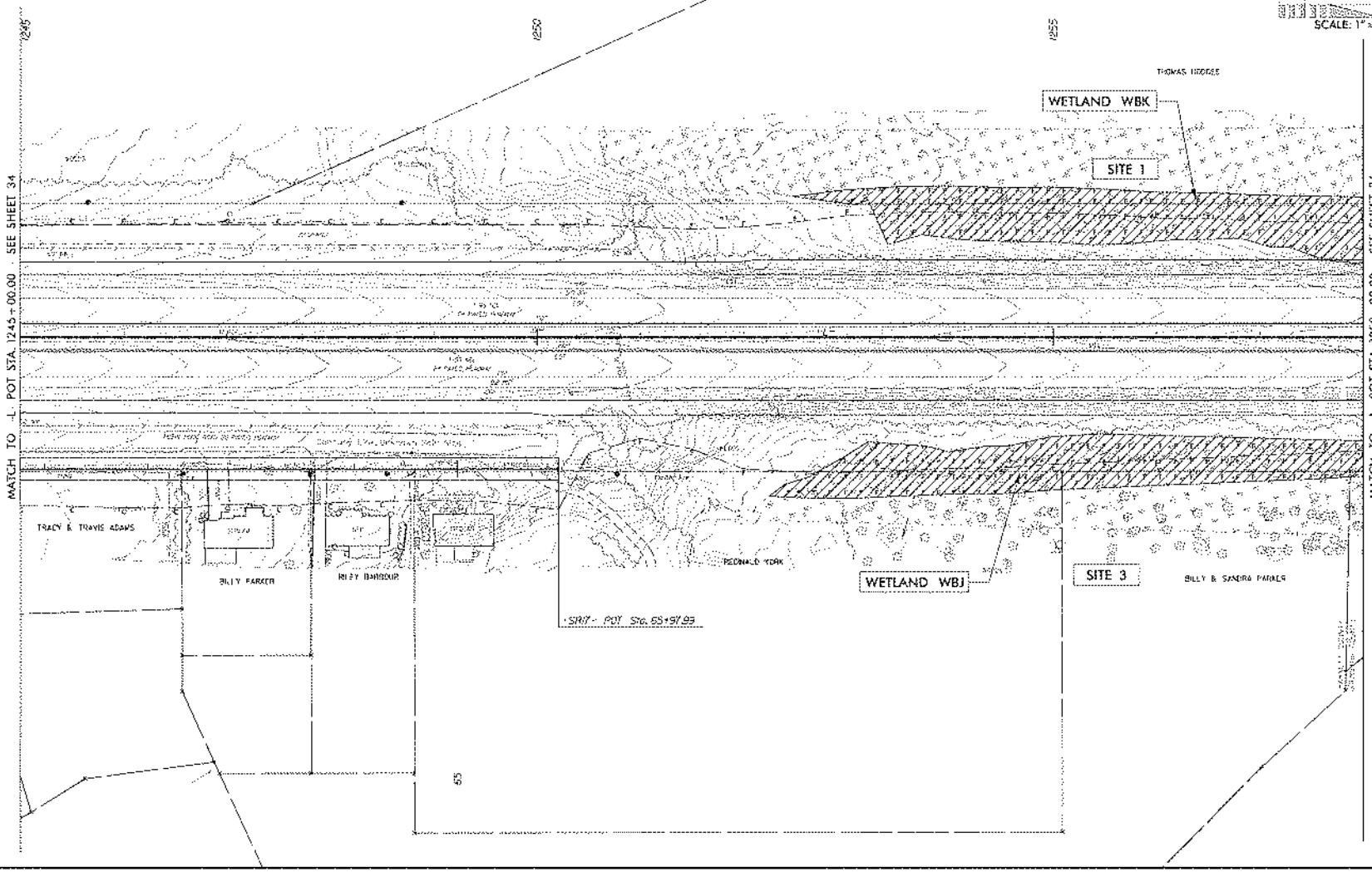
PERMIT DRAWING
SHEET 3 OF 19

PROJECT REFERENCE NO.	SHEET NO.
7-159665	35
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Michael Baker Engineering, Inc.

60' 25' 0 50' 100'
SCALE: 1" = 100'



PERMIT DRAWING
SHEET 4 OF 19

PROJECT REFERENCE NO.	SHEET NO.
U-5985	36
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Michael Baker Engineering, Inc.

50' 25' 0 50' 100'
SCALE: 1" = 100'

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

NAD 83/2011

MATCH TO -L- POT STA. 1258+00.00 - SEE SHEET 35

MATCH TO -L- POT STA. 1271+00.00 - SEE SHEET 37

1260 1265 1270

STREAM MINGO SWAMP

SITE 2

SITE 1

WETLAND WBK

THOMAS PODDLES

CHICOPEE, INC.

SITE 2

SITE 3

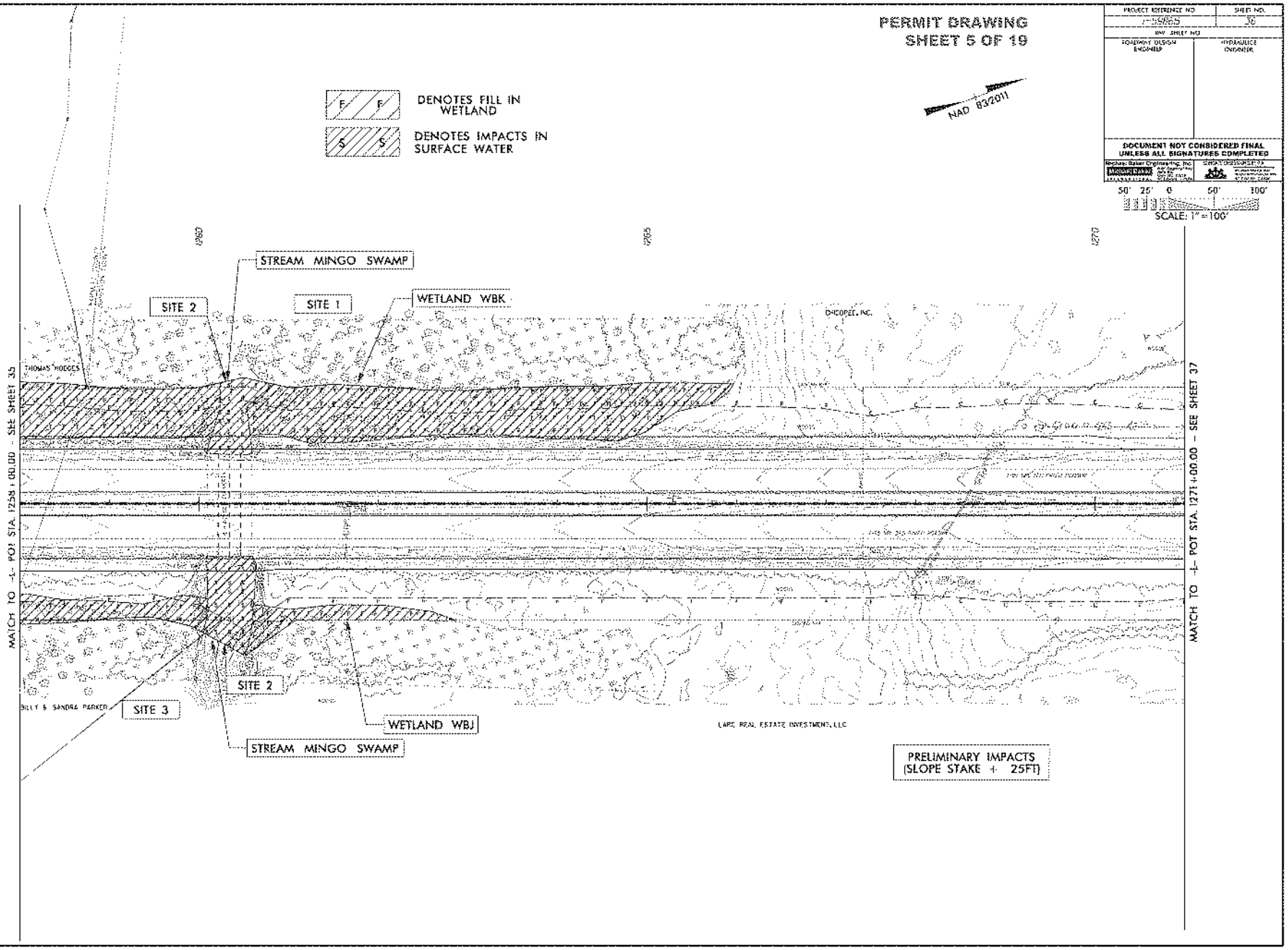
BILLY & SANDRA PARKER

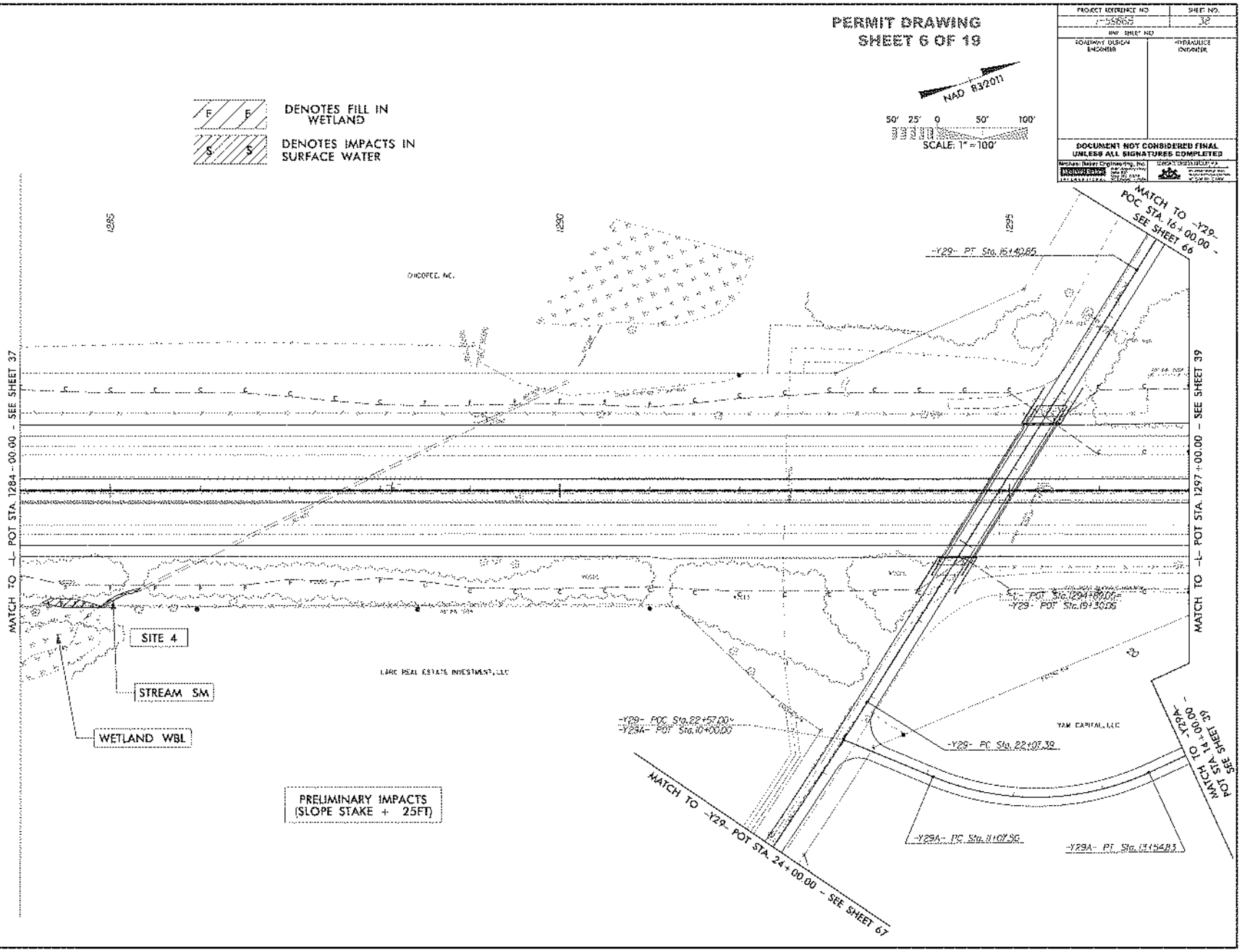
WETLAND WBJ

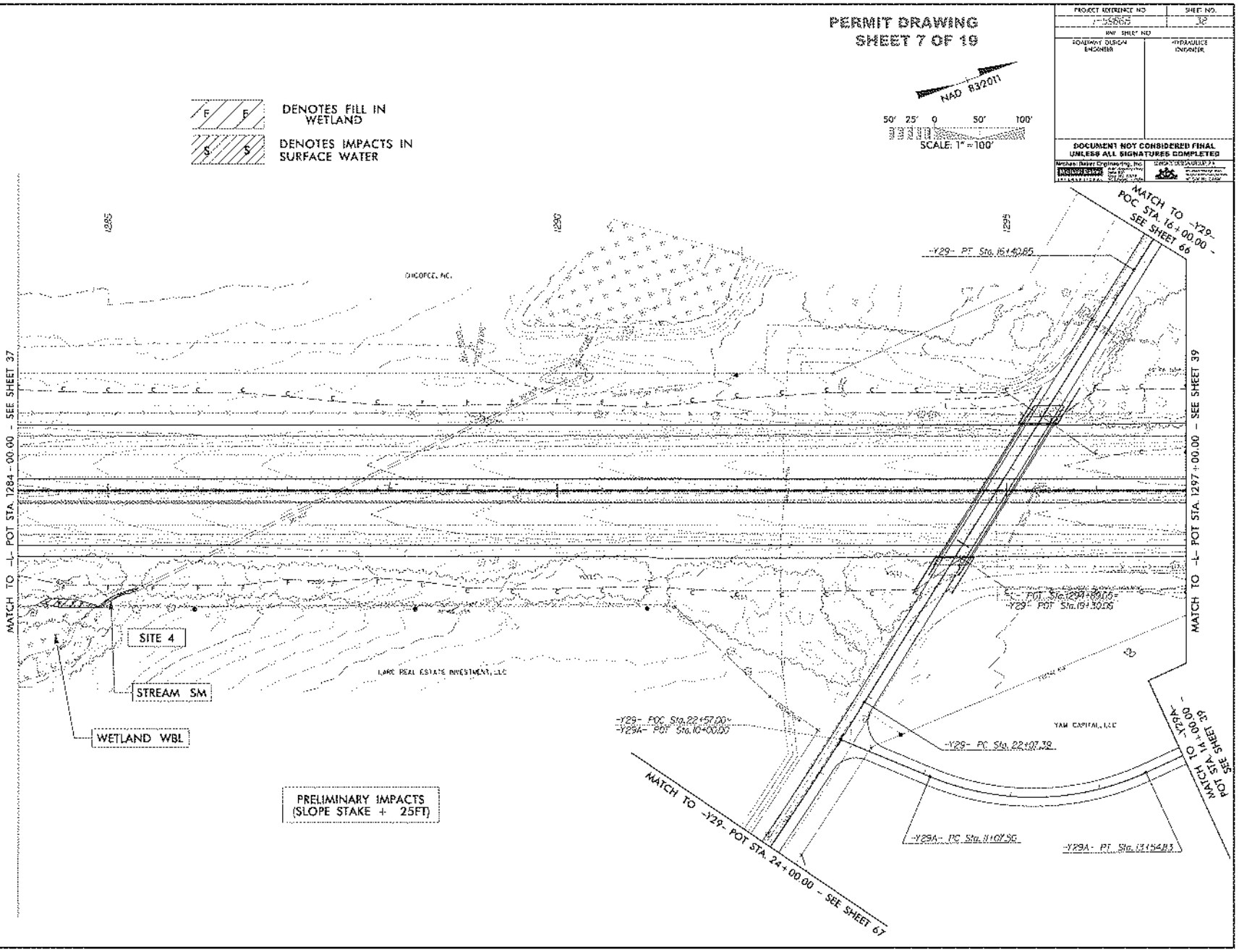
STREAM MINGO SWAMP

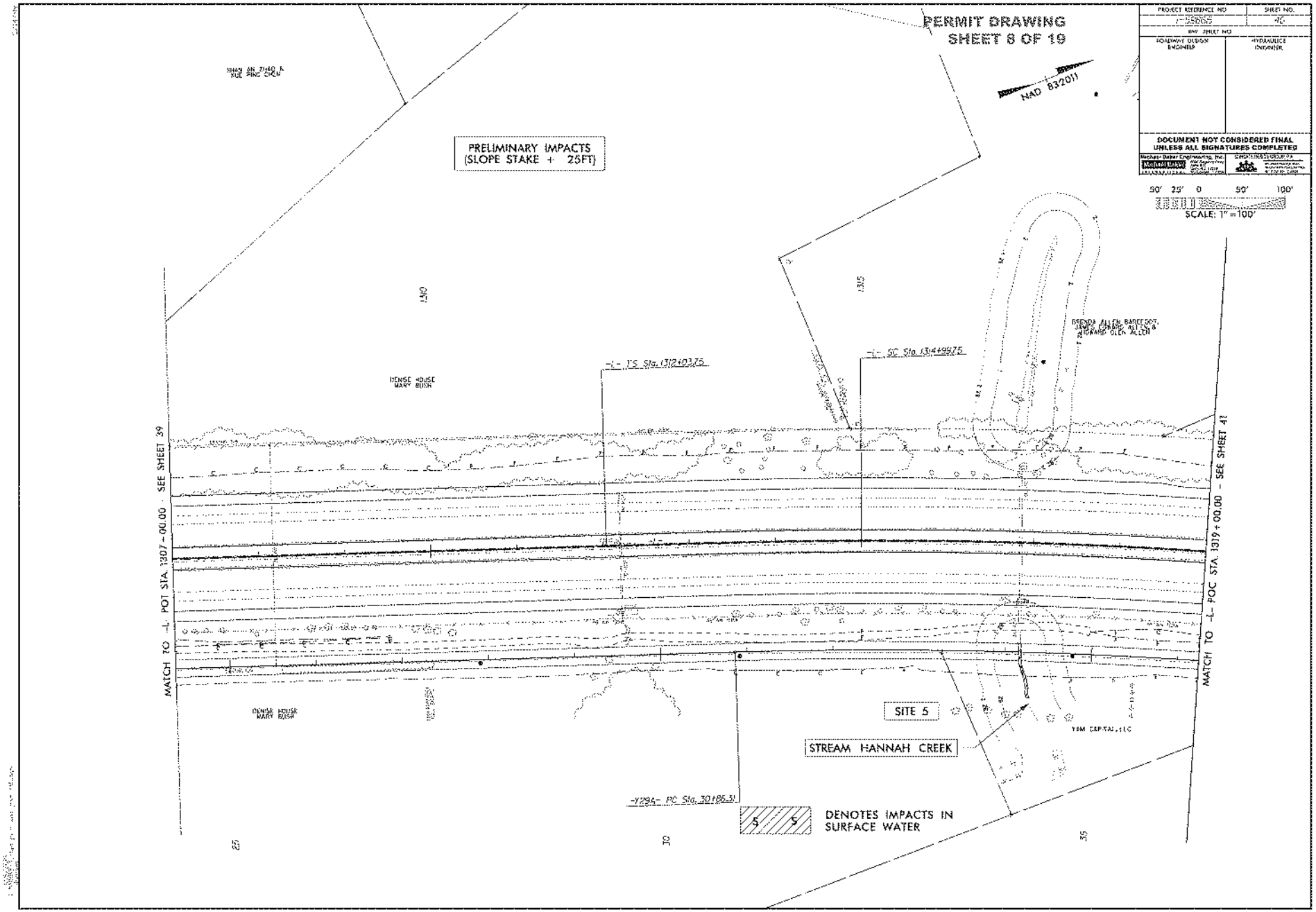
LARE REAL ESTATE INVESTMENT, LLC

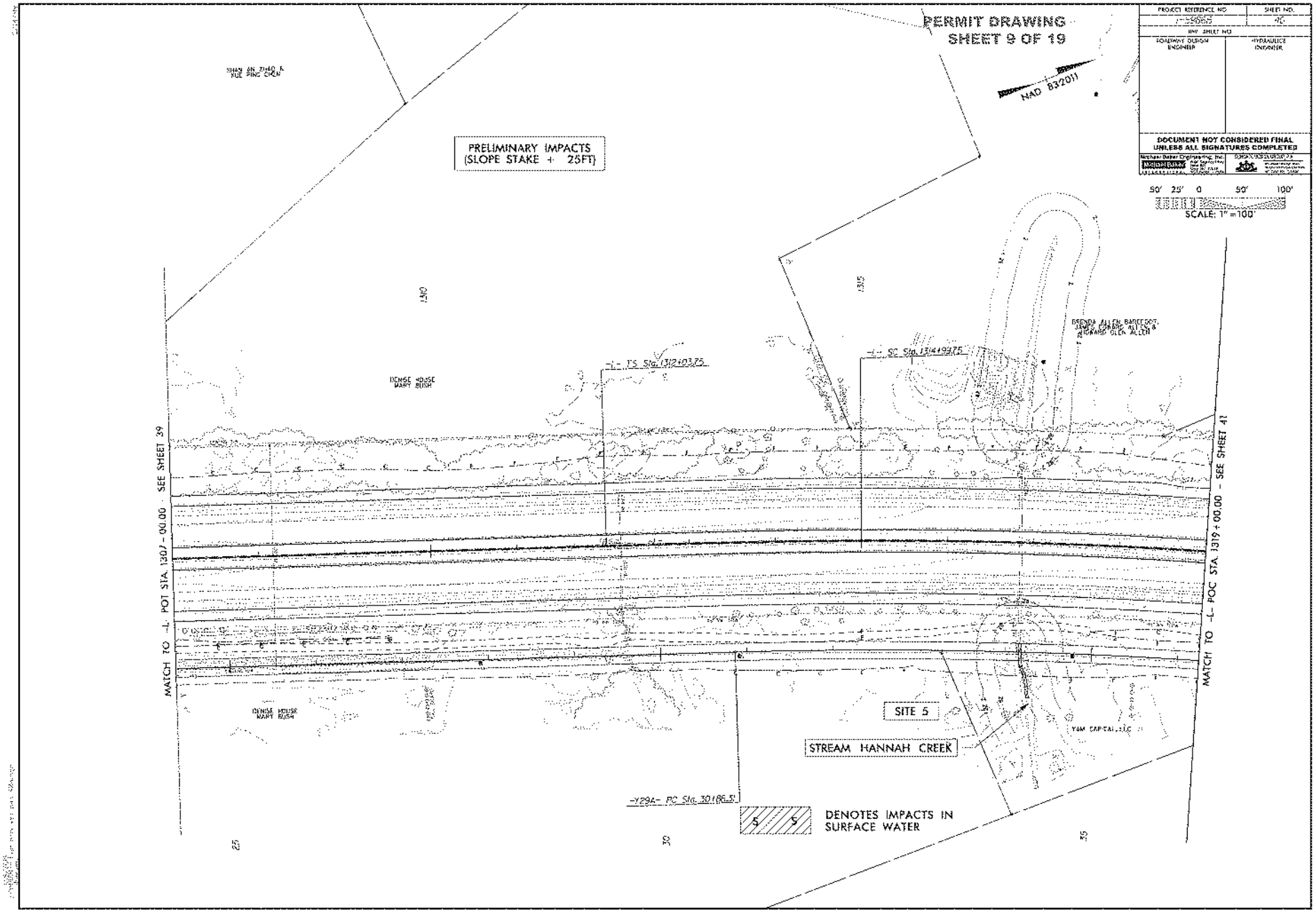
PRELIMINARY IMPACTS
(SLOPE STAKE + 25FT)


PERMIT DRAWING
SHEET 5 OF 19
NAD 83/2011
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
PROJECT REFERENCE NO.
SHEET NO.
36
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
50' 25' 0 50' 100'
SCALE: 1" = 100'
STREAM MINGO SWAMP
SITE 2
SITE 1
WETLAND WBK
THOMAS HODGES
CHICOPEE, INC.
MATCH TO -L- POT STA. 1258+00.00 - SEE SHEET 35
MATCH TO -L- POT STA. 1271+00.00 - SEE SHEET 37
SITE 2
SITE 3
BILLY & SANDRA PARKER
WETLAND WBJ
STREAM MINGO SWAMP
LARC REAL ESTATE INVESTMENTS, LLC
PRELIMINARY IMPACTS
(SLOPE STAKE + 25FT)


PERMIT DRAWING
SHEET 6 OF 19
PROJECT REFERENCE NO.
SHEET NO.
32
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
NAD 83/2011
50' 25' 0 50' 100'
SCALE: 1" = 100'
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
MATCH TO -L- POT STA. 1284+00.00 - SEE SHEET 37
MATCH TO -L- POT STA. 1297+00.00 - SEE SHEET 39
MATCH TO -Y29- POC STA. 16+00.00 - SEE SHEET 66
MATCH TO -Y29- POT STA. 24+00.00 - SEE SHEET 67
MATCH TO -Y29A- POT STA. 14+00.00 - SEE SHEET 39
-Y29- PT Sta. 16+42.65
-L- POT Sta. 1294+86.06
-Y29- POT Sta. 19+30.06
-Y29- POC Sta. 22+57.00
-Y29A- POT Sta. 10+00.00
-Y29- PC Sta. 22+07.39
-Y29A- PC Sta. 11+07.56
-Y29A- PT Sta. 13+54.83
SITE 4
STREAM SM
WETLAND WBL
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
LARC REAL ESTATE INVESTMENT, LLC
YAM CAPITAL, LLC
1285
1290
1295


PERMIT DRAWING
SHEET 7 OF 19
PROJECT REFERENCE NO.
SHEET NO.
32
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
NAD 83/2011
50' 25' 0 50' 100'
SCALE: 1" = 100'
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
MATCH TO -L- POT STA. 1284+00.00 - SEE SHEET 37
MATCH TO -L- POT STA. 1297+00.00 - SEE SHEET 39
MATCH TO -Y29- POC STA. 16+00.00 - SEE SHEET 66
MATCH TO -Y29- POT STA. 24+00.00 - SEE SHEET 67
MATCH TO -Y29A- POT STA. 14+00.00 - SEE SHEET 39
-Y29- PT Sta. 16+40.65
-Y29- POC Sta. 22+57.00
-Y29A- POT Sta. 10+00.00
-Y29- PC Sta. 22+07.39
-Y29A- PC Sta. 11+07.56
-Y29A- PT Sta. 13+54.83
SITE 4
STREAM SM
WETLAND WBL
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
LARC REAL ESTATE INVESTMENT, LLC
YAM CAPITAL, LLC


PERMIT DRAWING
SHEET 8 OF 19
PROJECT REFERENCE NO.
SHEET NO.
R-5965
4C
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
NAD 83/2011
50' 25' 0 50' 100'
SCALE: 1" = 100'
PRELIMINARY IMPACTS
(SLOPE STAKE + 25FT)
-L- TS Sta. 1312+03.75
-L- SC Sta. 1314+99.75
-Y29A- PC Sta. 30+86.31
DENSE HOUSE
MARY BUSH
SITE 5
STREAM HANNAH CREEK
DENOTES IMPACTS IN SURFACE WATER
MATCH TO -L- POT STA. 1307+00.00 - SEE SHEET 3B
MATCH TO -L- POC STA. 1319+00.00 - SEE SHEET 4B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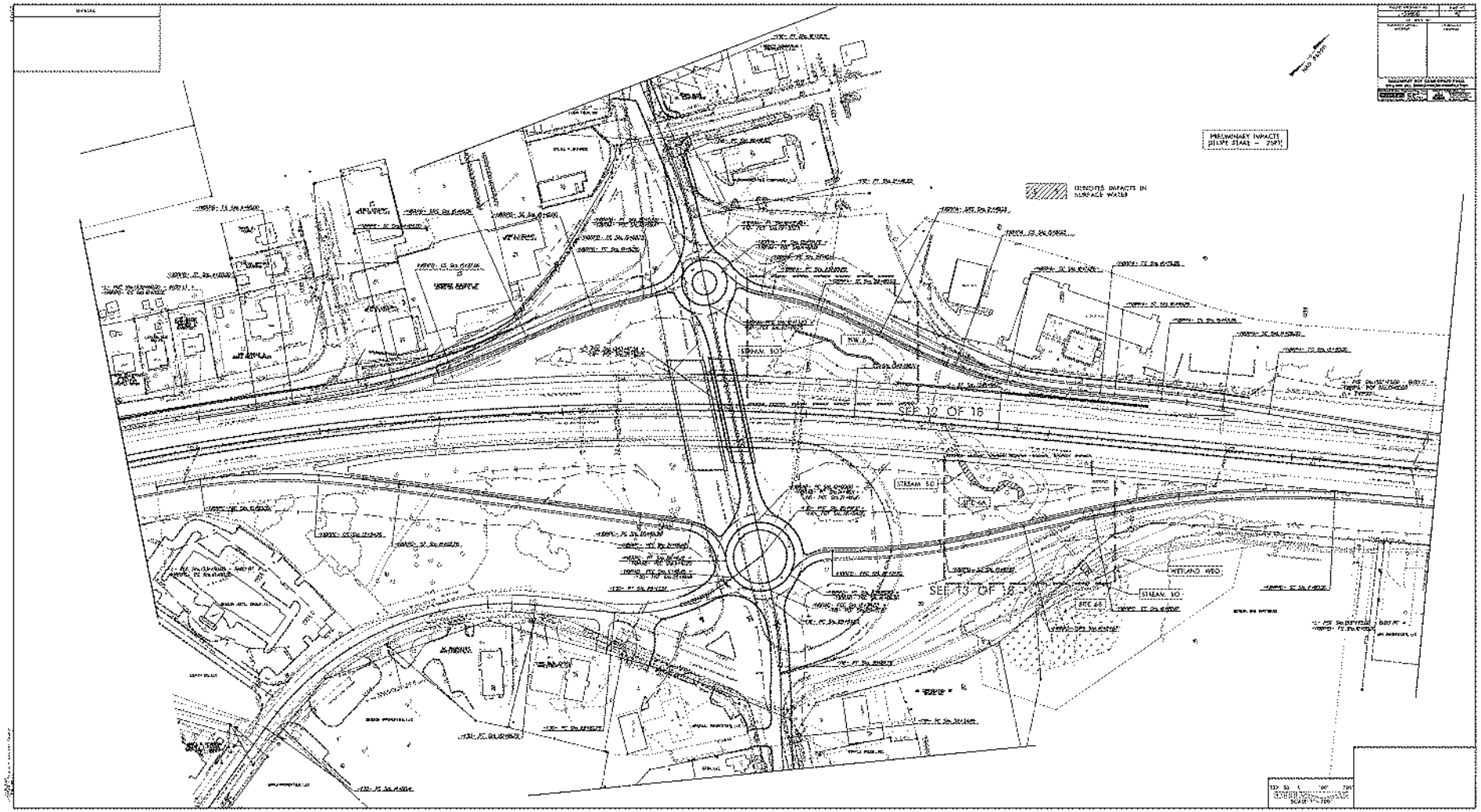
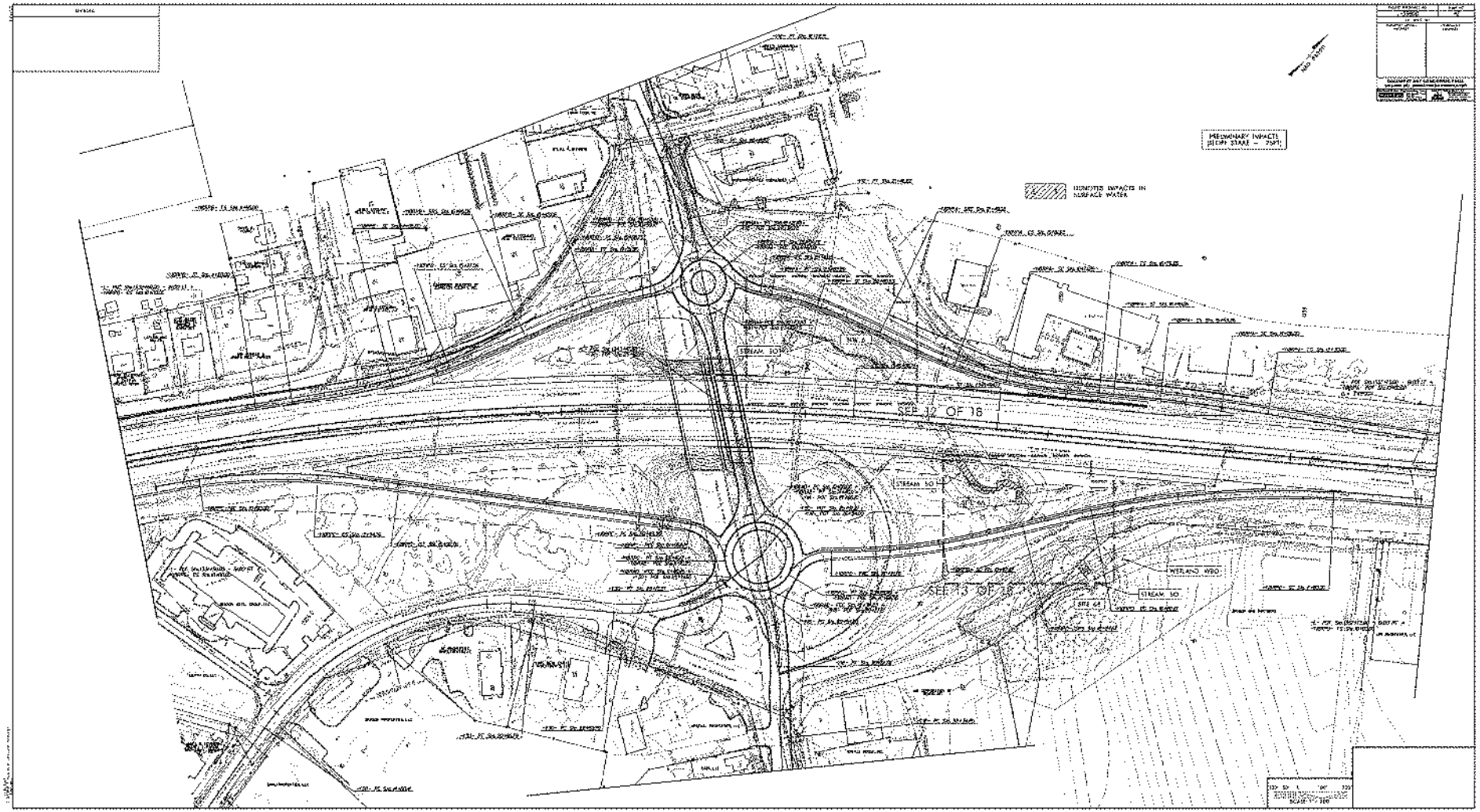
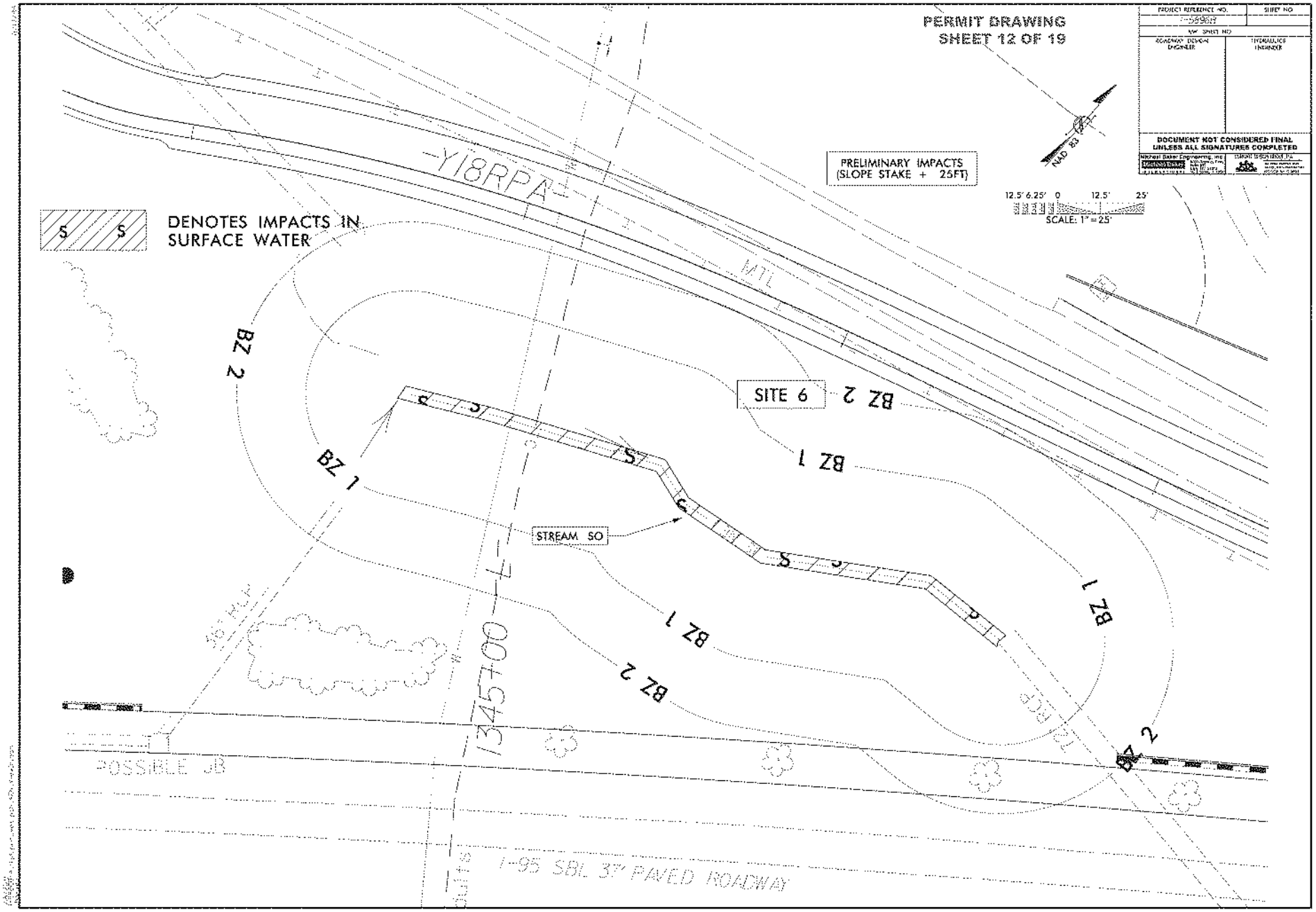
SHEET 9 OF 19
PROJECT REFERENCE NO.
SHEET NO.
R-5965
9C
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
NAD 83/2011
50' 25' 0 50' 100'
SCALE: 1" = 100'
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
-L- TS Sta. 1312+03.75
-L- SC Sta. 1314+99.75
-Y29A- PC Sta. 30+86.31
DENSE HOUSE MARY BUSH
BRENDA ALLEN, BARE DOT, LANCE EDWARD ALLEN & ALGWARD OLEN ALLEN
YOM CAPITAL, LLC
SITE 5
STREAM HANNAH CREEK
DENOTES IMPACTS IN SURFACE WATER
MATCH TO -L- POT STA. 1307 + 00.00 - SEE SHEET 39
MATCH TO -L- POC STA. 1319 + 00.00 - SEE SHEET 41
1310
1315
25
30
35

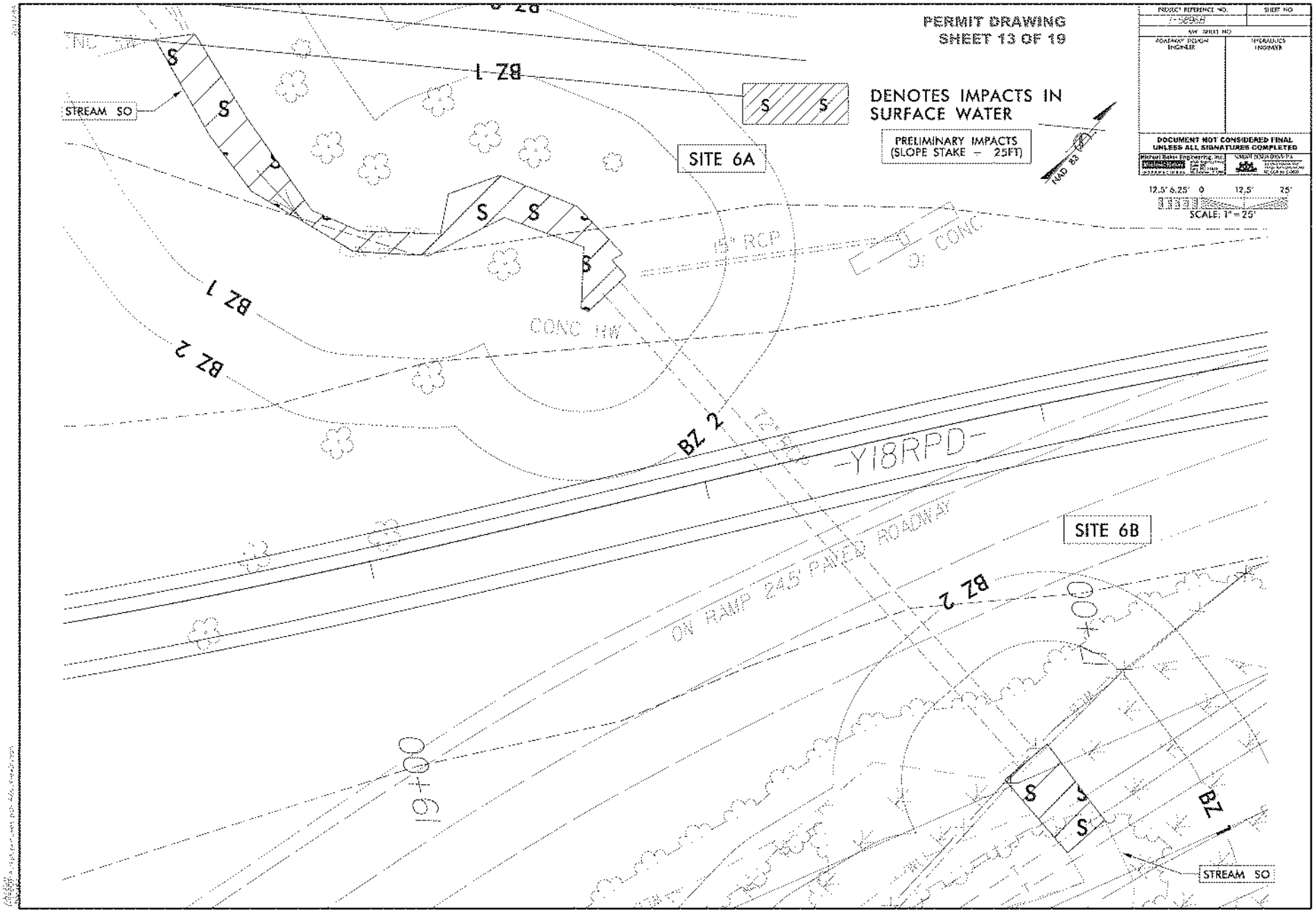
PERMIT DRAWING
SHEET 10 OF 19

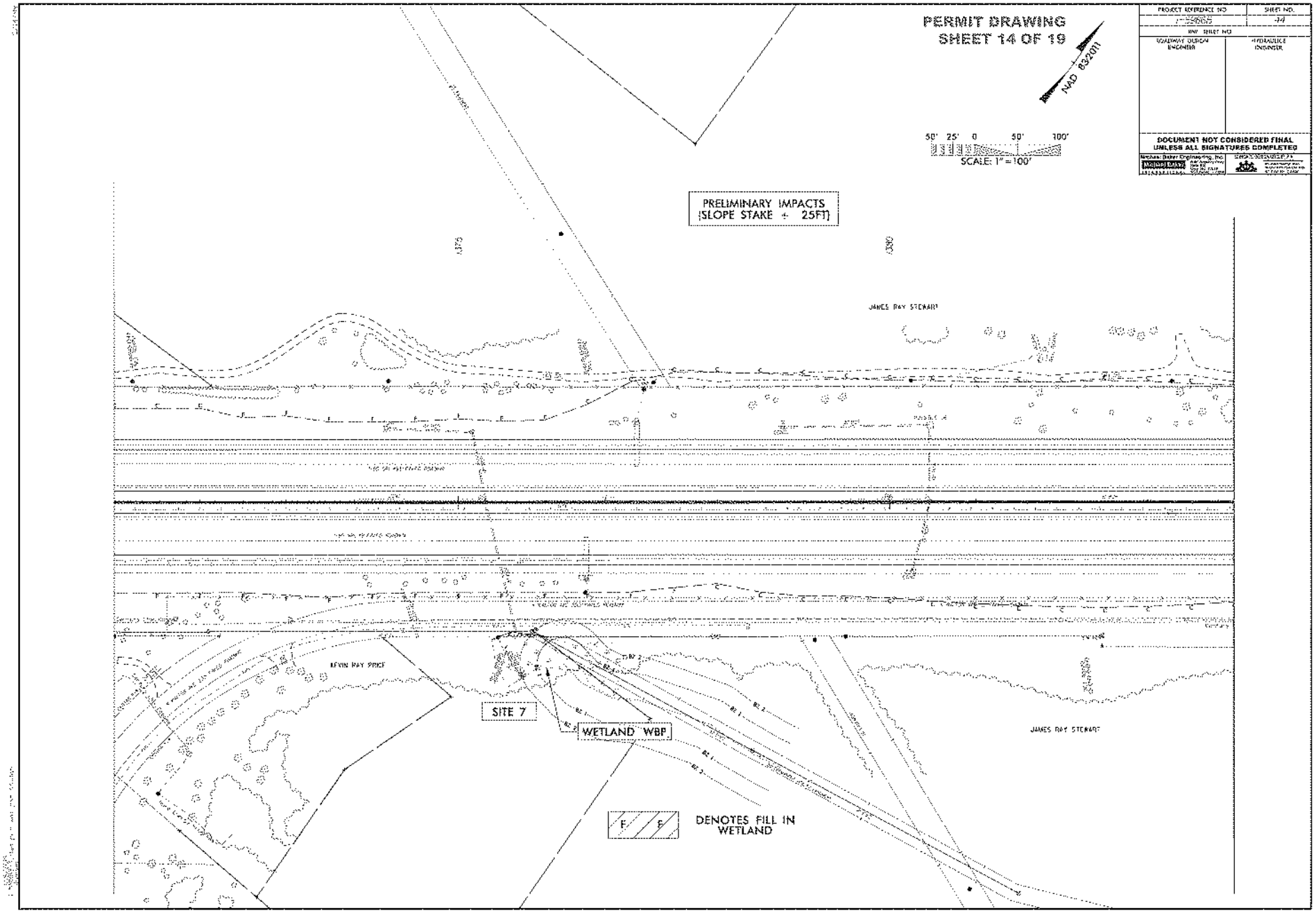


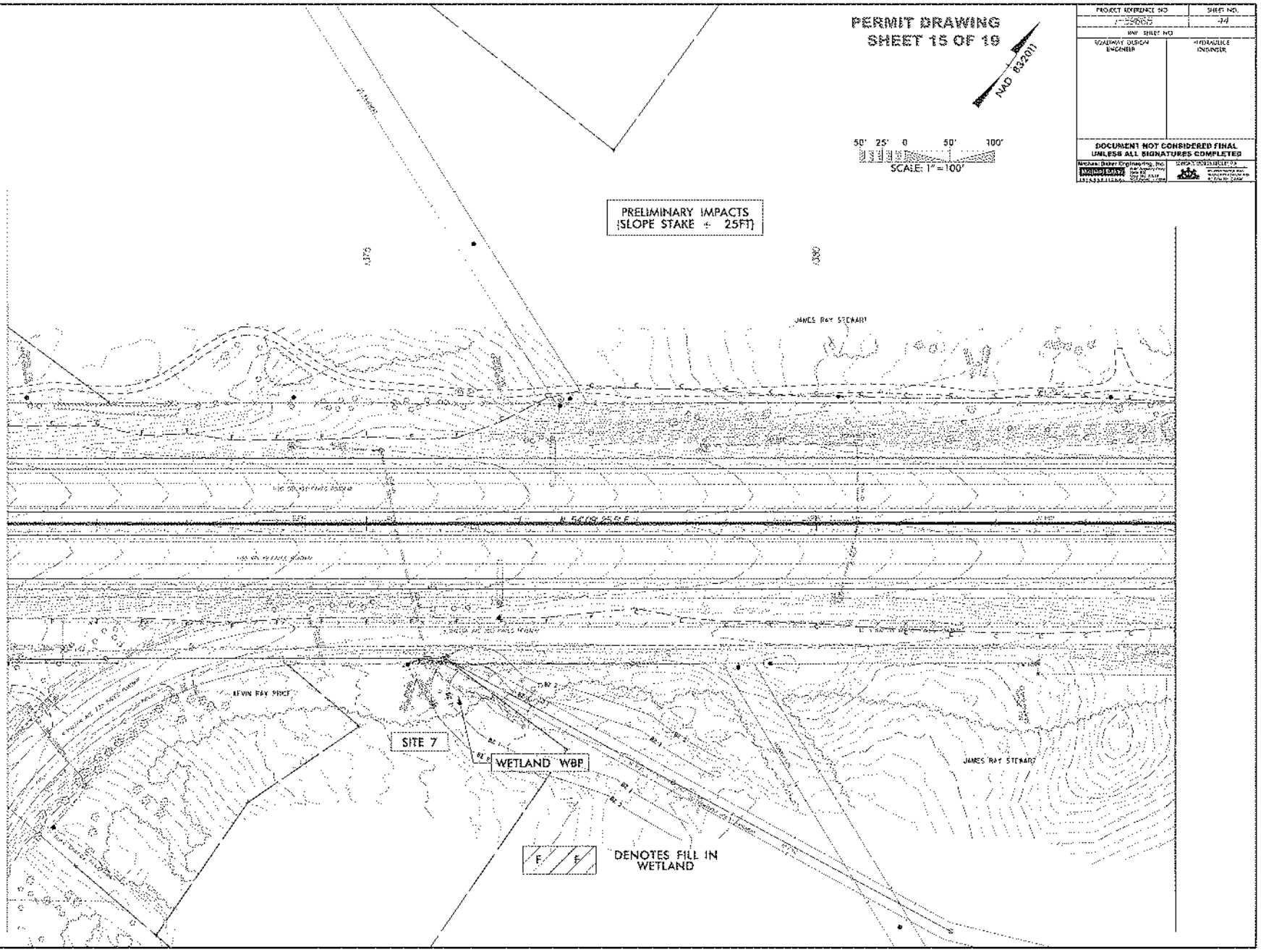
PERMIT DRAWING
SHEET 11 OF 19

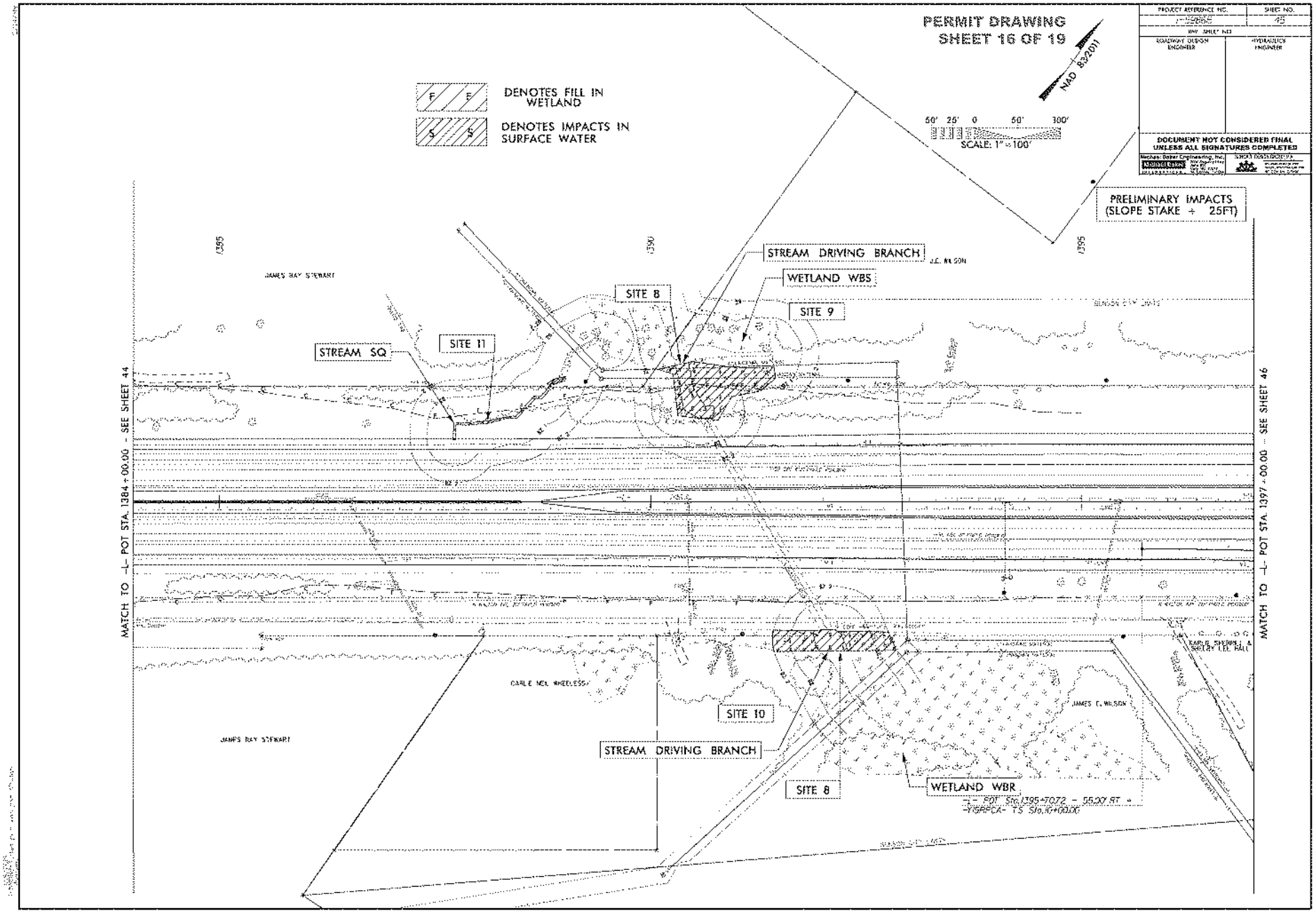


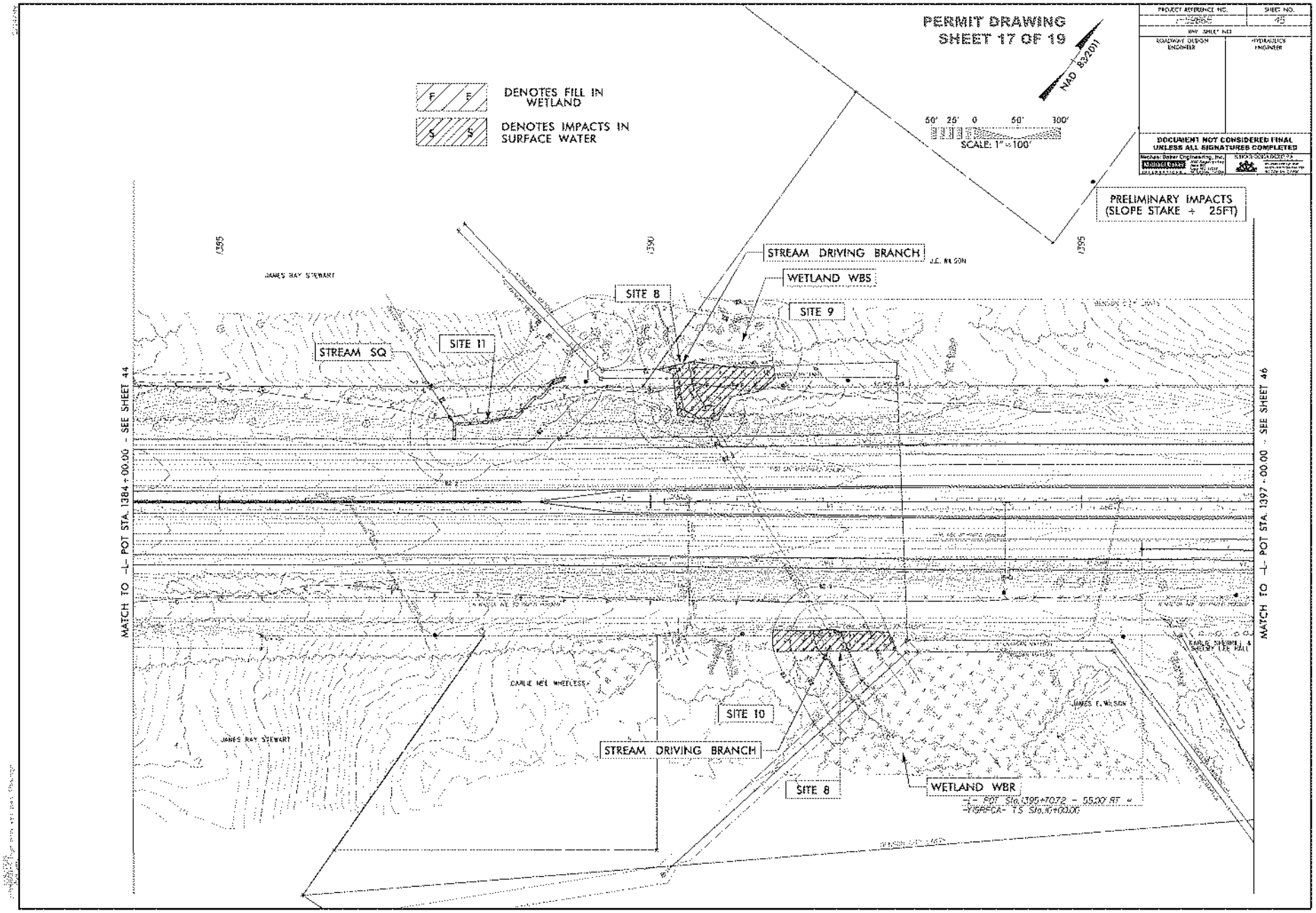

PERMIT DRAWING
SHEET 12 OF 19
PROJECT REFERENCE NO.
SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
NAD 83
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
12.5' 6.25' 0 12.5' 25'
SCALE: 1" = 25'
DENOTES IMPACTS IN SURFACE WATER
S S
Y18RPA
MTL
BZ 2
BZ 1
SITE 6
STREAM SO
BZ 1
BZ 2
BZ 1
BZ 2
BZ 1
BZ 2
POSSIBLE JB
I-95 SBL 3" PAVED ROADWAY


PERMIT DRAWING
SHEET 13 OF 19
DENOTES IMPACTS IN SURFACE WATER
PRELIMINARY IMPACTS (SLOPE STAKE – 25FT)
NAD 83
SITE 6A
SITE 6B
STREAM SO
BZ 1
BZ 2
CONC HW
15" RCP
D. CONC
-Y18RPD-
ON RAMP 24' PAVED ROADWAY
9+00
10+00
PROJECT REFERENCE NO.
SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
12.5' 6.25' 0 12.5' 25'
SCALE: 1" = 25'


PERMIT DRAWING
SHEET 14 OF 19
NAD 83/2011
50' 25' 0 50' 100'
SCALE: 1" = 100'
PROJECT REFERENCE NO.
SHEET NO.
-14
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
PRELIMINARY IMPACTS (SLOPE STAKE ± 25FT)
JAMES RAY STEWART
KEVIN RAY PRICE
SITE 7
WETLAND WBP
JAMES RAY STEWART
DENOTES FILL IN WETLAND

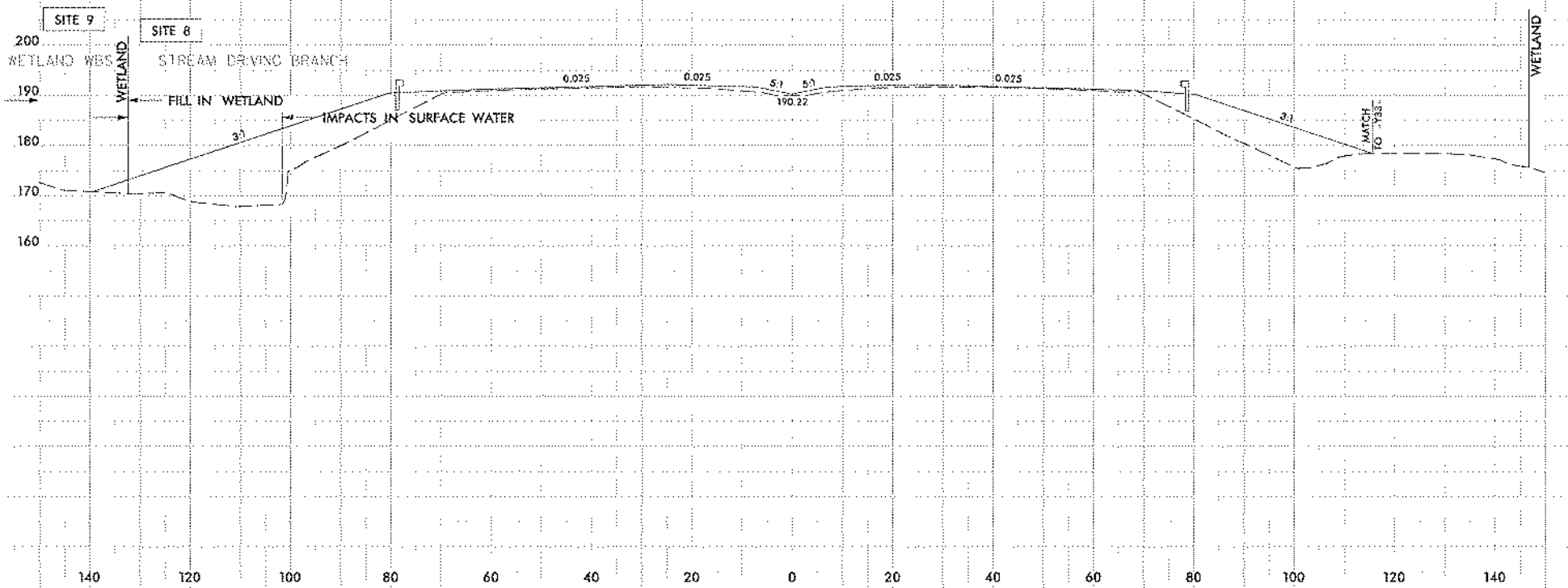

PERMIT DRAWING
SHEET 15 OF 19
NAD 83/2011
50' 25' 0 50' 100'
SCALE: 1" = 100'
PROJECT REFERENCE NO.
SHEET NO.
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
JAMES RAY STEWART
KEVIN RAY PRICE
SITE 7
WETLAND WBP
DENOTES FILL IN WETLAND


PERMIT DRAWING
SHEET 16 OF 19
NAD 83/2011
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
50' 25' 0 50' 100'
SCALE: 1" = 100'
PROJECT REFERENCE NO.
SHEET NO.
45
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
STREAM DRIVING BRANCH
WETLAND WBS
SITE 8
SITE 9
SITE 11
STREAM SQ
SITE 10
STREAM DRIVING BRANCH
SITE 8
WETLAND WBR
-L- POT Sta.1395+70.72 - 55.00 RT =
-Y5BRPCA- TS Sta.0+00.00
JAMES RAY STEWART
J.C. WILSON
CARLE NEIL WHEELESS
JAMES C. WILSON
EARLE SHEPPARD & SHELBY LEE HALL
1395
1390
1395
MATCH TO -L- POT STA. 1384+00.00 - SEE SHEET 44
MATCH TO -L- POT STA. 1397+00.00 - SEE SHEET 46


PERMIT DRAWING
SHEET 17 OF 19
NAD 83/2011
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
50' 25' 0 50' 100'
SCALE: 1" = 100'
PROJECT REFERENCE NO.
SHEET NO.
45
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
1395
1390
1395
STREAM DRIVING BRANCH
WETLAND WBS
SITE 8
SITE 9
SITE 11
STREAM SQ
SITE 10
STREAM DRIVING BRANCH
SITE 8
WETLAND WBR
-L- POT Sta.1395+70.72 - 55.00' RT
-Y5RFCA- TS Sta.0+00.00
JAMES RAY STEWART
J.E. WILSON
CARLIE NEL WHEELESS
JAMES RAY STEWART
JAMES E. WILSON
MATCH TO -L- POT STA. 1384+00.00 - SEE SHEET 44
MATCH TO -L- POT STA. 1397+00.00 - SEE SHEET 46

PERMIT DRAWING
SHEET 18 OF 19

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	7.5986.4	45B



WETLAND AND SURACE WATER IMPACTS SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	1252+48 to 1265+96-L-LT	ROADWAY FILL	1.50									
2	1252+25 to 1263+97-L-RT	ROADWAY FILL						0.20		186		
3	1260+08 to 1260+65-L-	ROADWAY FILL	0.78									
4	1284+24 to 1285+34-L-RT	ROADWAY FILL	0.01					< 0.01		46		
5	1316+85 to 1317+00-L-RT	ROADWAY FILL						< 0.01		64		
6	1344+69 to 1346+45-L-LT	ROADWAY FILL						0.02		192		
6A	1347+18 to 1349+60-L-RT	ROADWAY FILL						0.04		174		
6B	16470 to 17+70-Y18RPD-LT	ROADWAY FILL						0.01		28		
7	1375+46 to 1376+00-L-RT	ROADWAY FILL	< 0.01									
8	1387+79 to 1391+45-L-LT	ROADWAY FILL						0.03		69		
9	1387+79 to 1391+45-L-LT	ROADWAY FILL	0.10									
10	1391+47 to 1392+75-L-RT	ROADWAY FILL	0.06									
11	1387+71 to 1390+96-L-LT	ROADWAY FILL						< 0.01		162		
TOTALS*:			2.44					0.31		923	0	0

*Rounded totals are sum of actual impacts

NOTES:
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
1-18-2019
HARNETT, JOHNSTON COUNTY
I-5986B-SECTION 4
47532.1.3
SHEET 19 OF 19

Revised 2018 Feb

BUFFER DRAWING
SHEET 1 OF 7

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5986B	1	

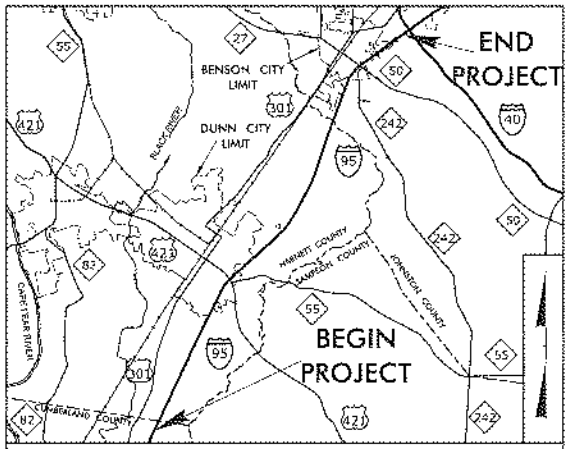
STATE PROJECT NO.	F.A. PROJECT NO.	DESCRIPTION
47532.1.3		PE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CUMBERLAND, HARNETT, AND JOHNSTON COUNTIES

LOCATION: I-95 FROM SR 1811 (BUD HAWKINS ROAD) (EXIT 70) TO I-40 (EXIT 81). WIDEN TO EIGHT LANES.

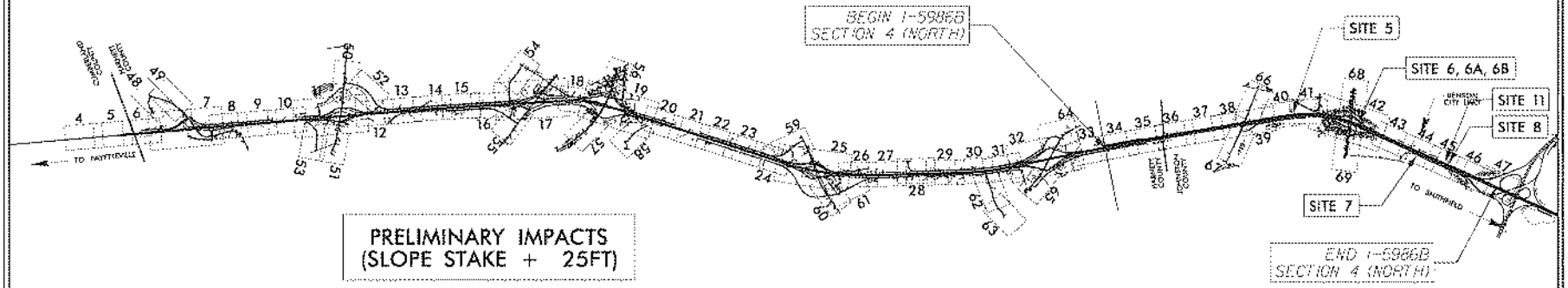
TYPE OF WORK: GRADING, PAVING, DRAINAGE, SIGNALS, CULVERTS, AND STRUCTURES



VICINITY MAP

BUFFER IMPACTS PERMIT
SECTION 4 (NORTH)

NAD 83/2011



PRELIMINARY IMPACTS
(SLOPE STAKE + 25FT)

INCOMPLETE PLANS
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TIP PROJECT: I-5986B

CONTRACT:

GRAPHIC SCALES

50 25 0 50 100 — PLANS
50 25 0 50 100 — PROFILE (HORIZONTAL)
10 5 0 10 20 — PROFILE (VERTICAL)

DESIGN DATA

ADT 2020 = 58,900
ADT 2040 = 75,700
K = 7 %
D = 55 %
T = 24 % *
V = 70 MPH
* (17% TTST + 7% DUALS)
FUNC CLASS =
INTERSTATE
STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT I-5986B	=	11.865 MILES
LENGTH STRUCTURE TIP PROJECT I-5986B	=	0.020 MILES
TOTAL LENGTH TIP PROJECT I-5986B	=	11.885 MILES

Prepared in the Office of:
Michael Baker INTERNATIONAL
Michael Baker Engineering, Inc.
8000 Regency Parkway, Suite 600
Cary, NC 27518
Professional Corporation License Number C-1056
FOR DIVISION OF HIGHWAYS

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MAY 1, 2019

LETTING DATE:
JULY 21, 2020

SUSAN C. LANCASTER, P.E.
PROJECT MANAGER

CURTIS TILLMAN, P.E.
PROJECT DESIGN ENGINEER

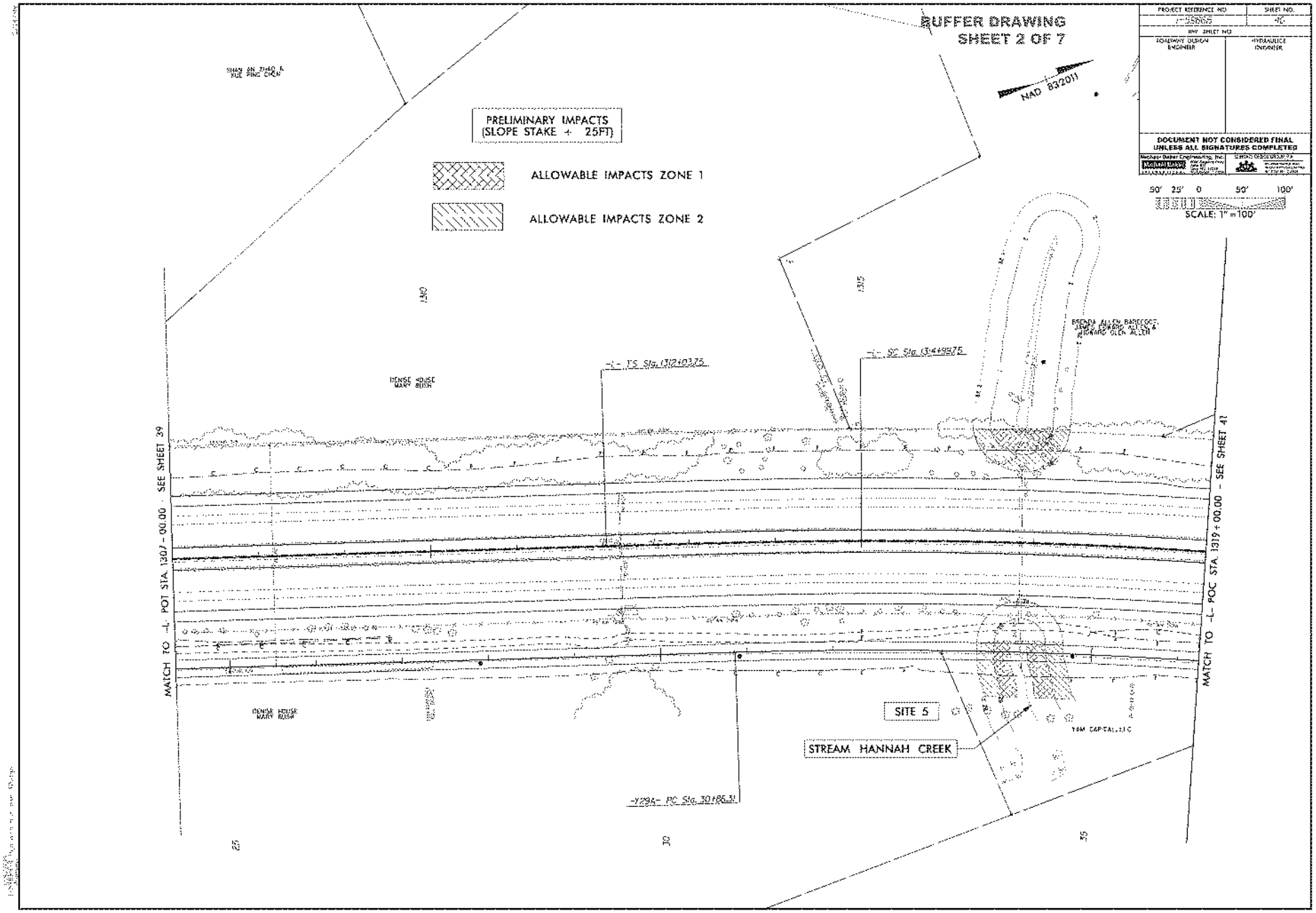
STEVE D. KENDALL, P.E.
AGENCY CONTACT

HYDRAULICS ENGINEER

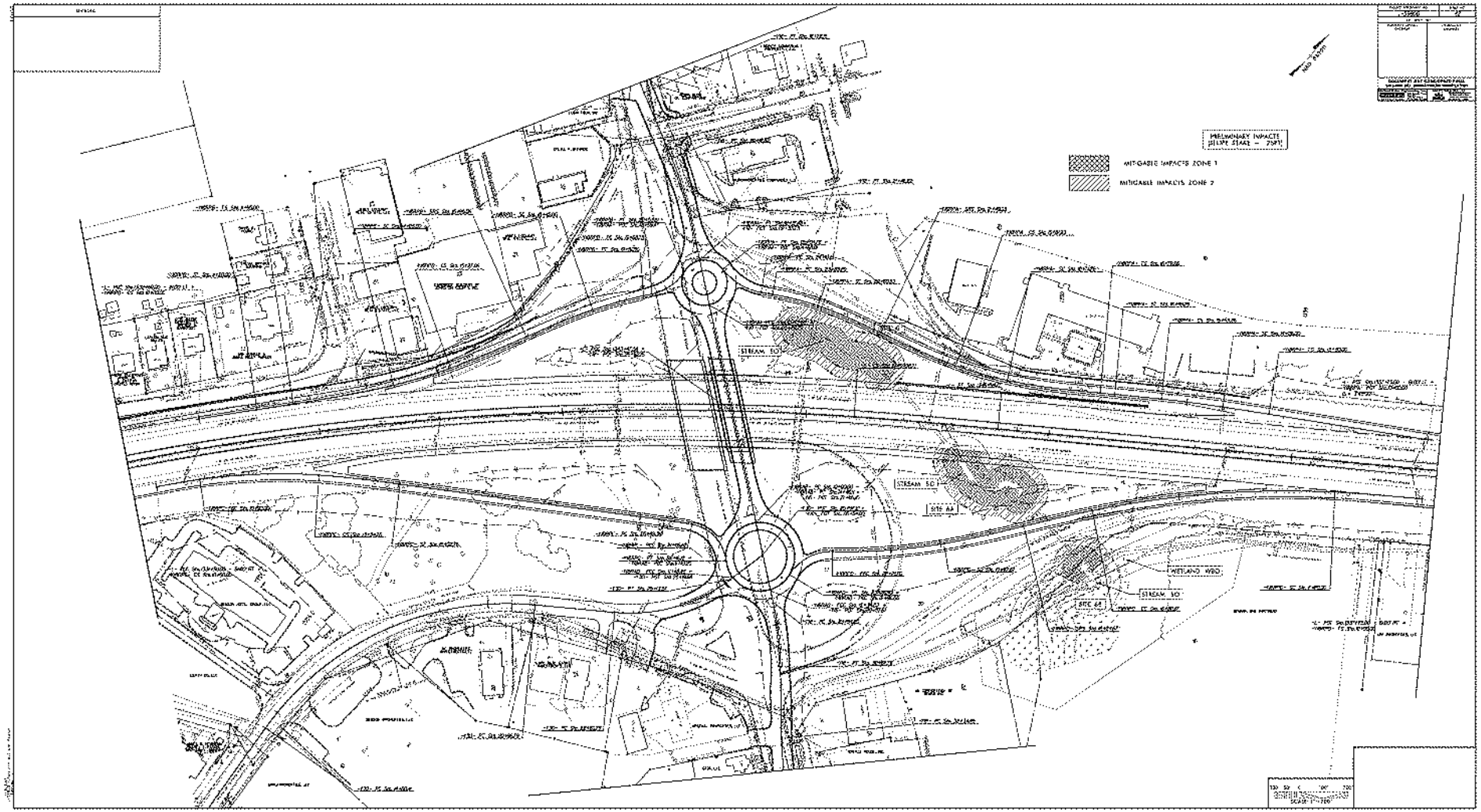
SIGNATURE: ..... P.E.

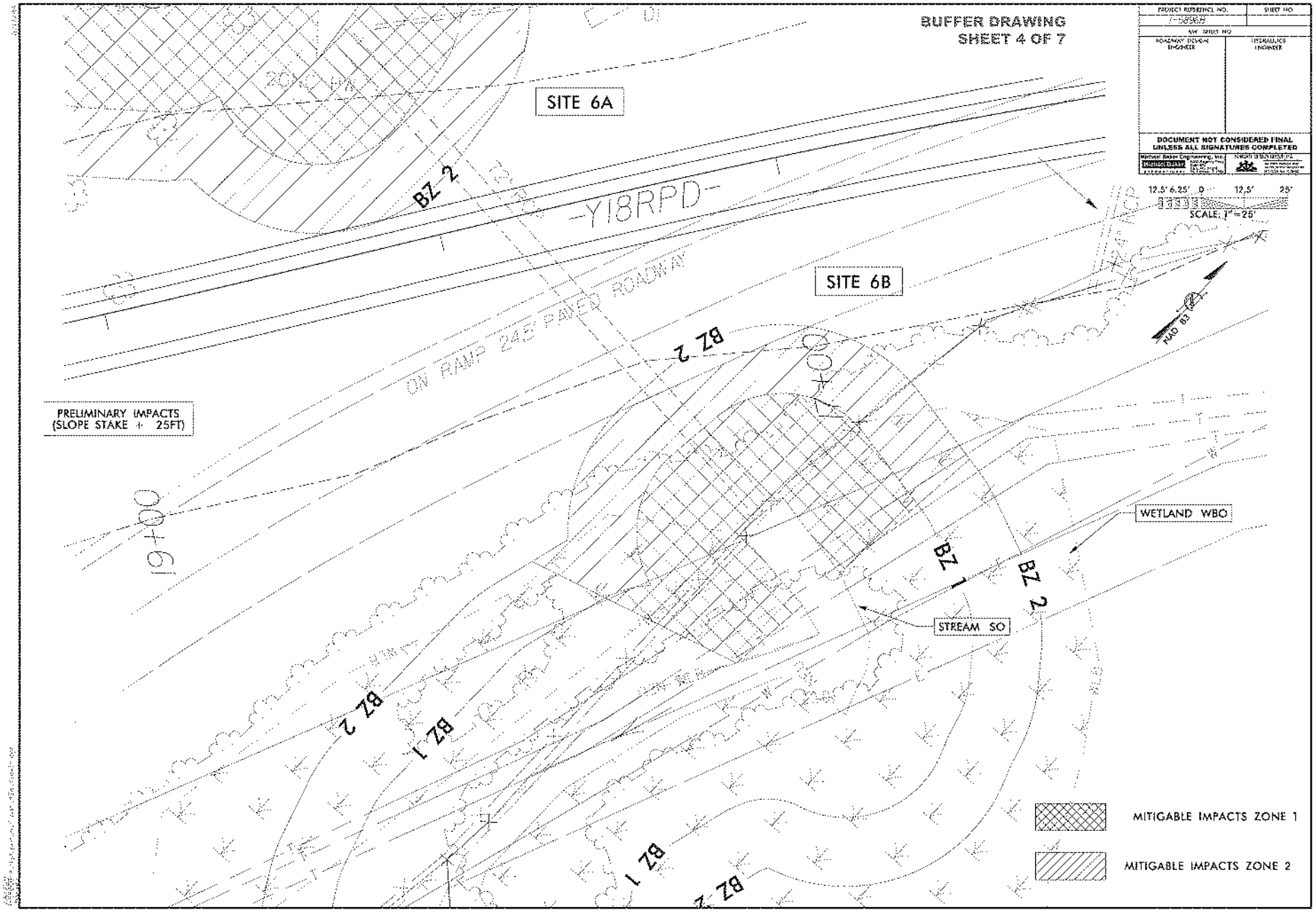
ROADWAY DESIGN ENGINEER

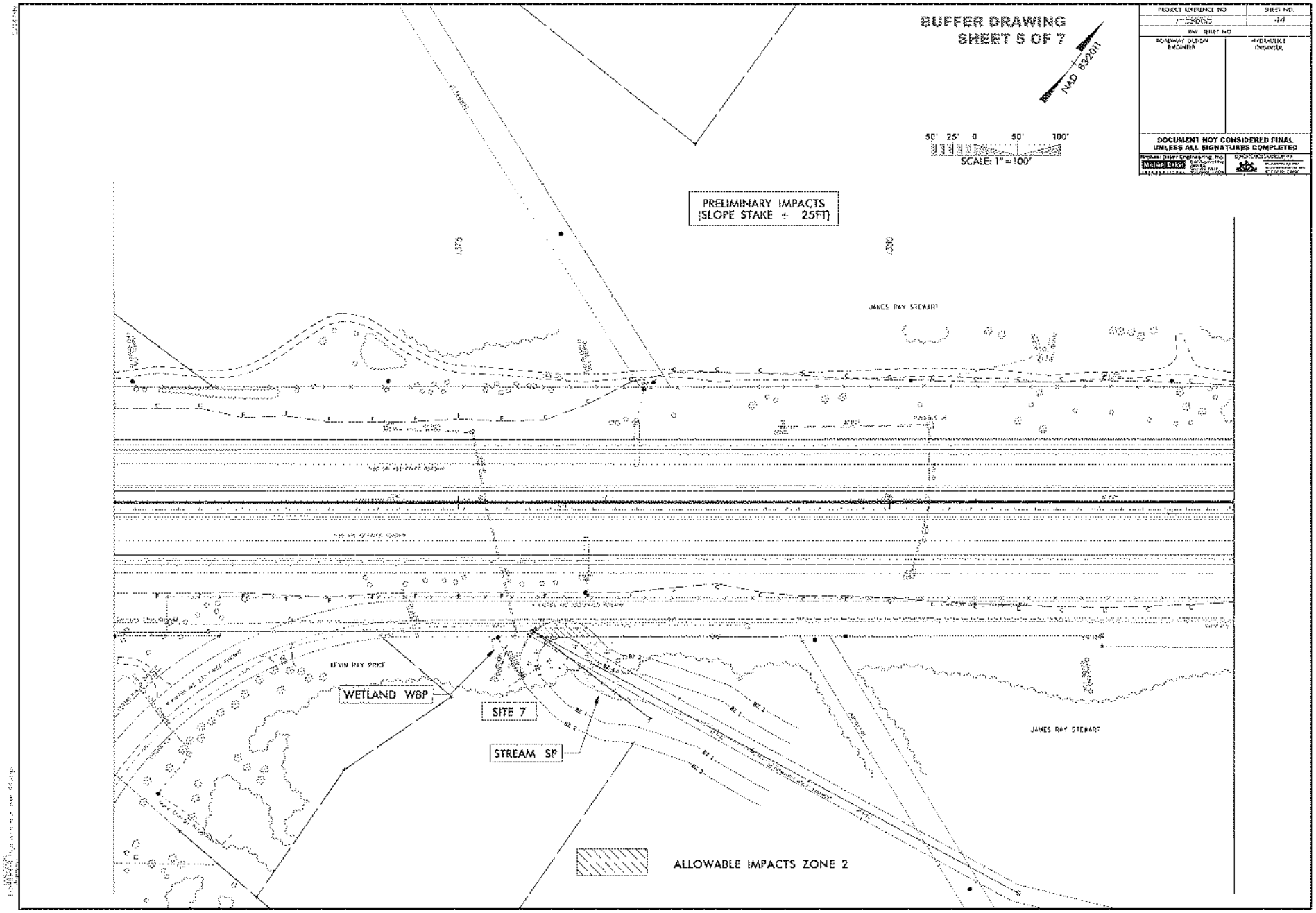
SIGNATURE: ..... P.E.

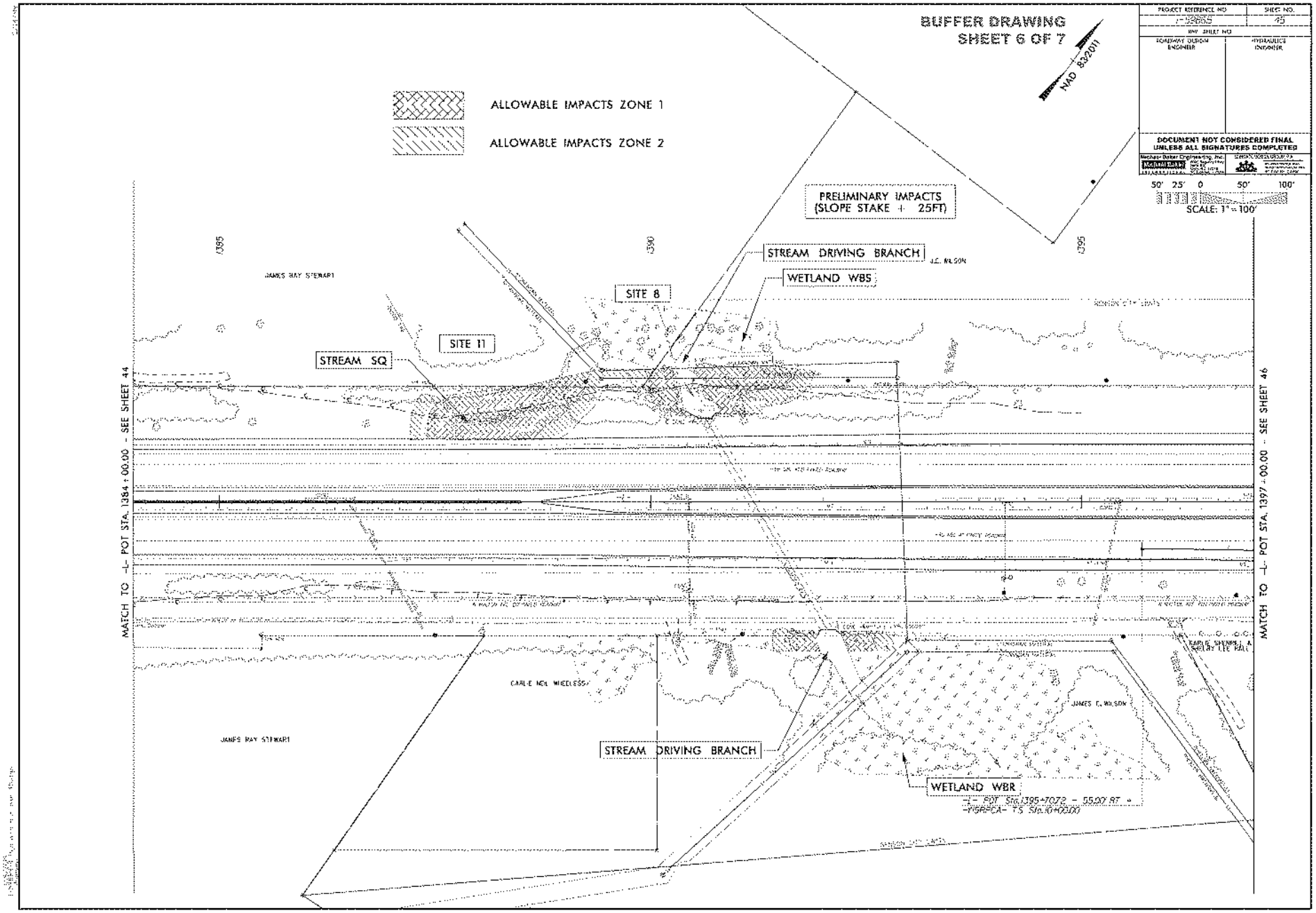

BUFFER DRAWING
SHEET 2 OF 7
PROJECT REFERENCE NO.
SHEET NO.
4C
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
NAD 83/2011
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2
50' 25' 0 50' 100'
SCALE: 1" = 100'
MATCH TO -L- POT STA. 1307 + 00.00 - SEE SHEET 3B
MATCH TO -L- POC STA. 1319 + 00.00 - SEE SHEET 4B
-L- TS Sta. 1312+03.75
-L- SC Sta. 1314+99.75
-Y294- PC Sta. 30+86.31
DENSE HOUSE MARY BUSH
BRENDA ALLEN BARFOOT
JAMES EDWARD ALLEN &
RICHARD GLEN ALLEN
SITE 5
STREAM HANNAH CREEK
YGM CAPITAL, LLC
1310
1315
25
30
35

BUFFER DRAWING
SHEET 3 OF 7




BUFFER DRAWING
SHEET 4 OF 7
PROJECT REFERENCE NO.
SHEET NO.
SR 20B(B) NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
12.5' 6.25' 0 12.5' 25'
SCALE: 1"=25'
NAD 83
SITE 6A
SITE 6B
BZ 2
BZ 1
Y18RPD
ON RAMP 24B PAVED ROADWAY
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
19+00
20+00
WETLAND WBO
STREAM SO
MITIGABLE IMPACTS ZONE 1
MITIGABLE IMPACTS ZONE 2


BUFFER DRAWING
SHEET 5 OF 7
NAD 83/2011
50' 25' 0 50' 100'
SCALE: 1" = 100'
PROJECT REFERENCE NO.
SHEET NO.
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
JAMES RAY STEWART
KEVIN RAY PRICE
WETLAND WBP
SITE 7
STREAM SP
JAMES RAY STEWART
ALLOWABLE IMPACTS ZONE 2


BUFFER DRAWING
SHEET 6 OF 7
NAD 83/2011
PROJECT REFERENCE NO.
R-2555
SHEET NO.
45
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Michael Baker Engineering, Inc.
50' 25' 0 50' 100'
SCALE: 1" = 100'
ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2
PRELIMINARY IMPACTS (SLOPE STAKE + 25FT)
STREAM DRIVING BRANCH
WETLAND WBS
SITE 8
SITE 11
STREAM SQ
STREAM DRIVING BRANCH
WETLAND WBR
-L- POT Sta.1395+70.72 - 55.00 RT =
-Y5R-PCA- TS Sta.10+00.00
1395
1390
1395
JAMES RAY STEWART
J.C. WILSON
CARLE NOL WIRELESS
JAMES C. WILSON
JAMES RAY STEWART
MATCH TO -L- POT STA. 1384+00.00 - SEE SHEET 44
MATCH TO -L- POT STA. 1397+00.00 - SEE SHEET 46

RIPARIAN BUFFER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	IMPACTS									BUFFER REPLACEMENT	
			TYPE			ALLOWABLE			MITIGABLE				
			ROAD CROSSING	BRIDGE	PARALLEL IMPACT	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)
5	1318+27 to 1317+54-L-	ROADWAY FILL	X			4419	5255	9674					
6	1344+24 to 1346+94-L-LT	ROADWAY FILL	X						14343	12530	26873		
6A	1347+68 to 1350+09-L-RT	ROADWAY FILL	X						13546	10120	23666		
6B	15+51 to 17+96-Y18RPD-LT	ROADWAY FILL	X						3684	2921	6605		
7	1375+82 to 1376+60-L-RT	ROADWAY FILL	X				688	688					
8	1389+73 to 1391+85-L-	ROADWAY FILL	X			6599	3531	10130					
11	1387+21 to 1389+73-L-LT	ROADWAY FILL	X			8639	3995	12634					
TOTALS*:						19657	13469	33126	31573	25571	57144	0	0

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
1-8-2019
HARNETT, JOHNSTON COUNTY
I-5986B-SECTION 4
47532.1.3
SHEET 7 OF 8

Revised 2018 Feb

Rev. Jan. 2020

WETLANDS IN BUFFER IMPACTS SUMMARY

SITE NO.	STATION (FROM/TO)		WETLANDS IN BUFFERS ZONE 1 (ft²)	WETLANDS IN BUFFERS ZONE 2 (ft²)
6B	16+61 to 17+96-Y18RPD-LT		1638	899
8	1389+73 to 1391+85-L-		4428	1302
11	1387+21 to 1389+73-L-LT		77	
TOTAL:			6143	2201

Revised 2/21/08

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
TIP-2819
HARNETT, JOHNSTON COUNTY
T-5980 SECTION 4
47532.1.3
SHEET 4 OF 5

Rev. Jan. 2009

*** STANDARD SPECIAL PROVISIONS ***

PLANT AND PEST QUARANTINES

(Imported Fire Ant, Gypsy Moth, Witchweed, Emerald Ash Borer, Guava Root Knot Nematode and Other Noxious Weeds)

(8-31-13) (Rev. 4-1-19) DBI G130

Within Quarantined Area

This project may be within a county regulated for plant and / or pests. If the project or any part of the Design-Build Team's operations is located within a quarantined area, thoroughly clean all equipment prior to moving out of the quarantined area. Comply with federal / state regulations by obtaining a certificate or limited permit for any regulated article moving from the quarantined area.

Originating in a Quarantined County

Obtain a certificate or limited permit issued by the N.C. Department of Agriculture / United States Department of Agriculture. Have the certificate or limited permit accompany the article when it arrives at the project site.

Contact

Contact the N.C. Department of Agriculture / United States Department of Agriculture at 1-800-206-9333, 919-707-3730, or **https://www.ncagr.gov/plantindustry/Plant/quaran/table2.htm** to determine those specific project sites located in the quarantined area or for any regulated article used on this project originating in a quarantined county.

Regulated Articles Include

1. Soil, sand, gravel, compost, peat, humus, muck, and decomposed manure, separately or with other articles. This includes movement of articles listed above that may be associated with cut / waste, ditch pulling, and shoulder cutting.
2. Plants with roots including grass sod
3. Plant crowns and roots
4. Bulbs, corms, rhizomes, and tubers of ornamental plants
5. Hay, straw, fodder, and plant litter of any kind
6. Clearing and grubbing debris
7. Used agricultural cultivating and harvesting equipment
8. Used earth-moving equipment
9. Any other products, articles, or means of conveyance, of any character, if determined by an inspector to present a hazard of spreading imported fire ant, gypsy moth, witchweed, emerald ash borer, guava root knot nematode or other noxious weeds.

ROCK AND BROKEN PAVEMENT FILLS

(12-29-15) (Rev. 8-31-17) 235 DB2 R85

Revise the 2018 *Standard Specifications for Roads and Structures* as follows:

Page 2-23, Article 235-2 MATERIALS, add the following after **Line 15**:

Item	Section
Geotextile for Rock and Broken Pavement Fills, Type 2	1056

Provide Type 2 geotextile for filtration geotextiles. Use rip rap and No. 57 stone from either a quarry or onsite material to fill voids in rock and broken pavement fills. Provide small and large size rip rap with stone sizes that meet Class A and B in accordance with Table 1042-1 and No. 57 stone with a gradation that meets Table 1005-1 or use similar size onsite material approved by the Engineer.

Page 2-24, Subarticle 235-3(B) Embankment Formation, Lines 18 - 19, delete the third sentence in the seventh paragraph.

Page 2-24, Subarticle 235-3(B) Embankment Formation, Lines 21 - 23, replace the eighth paragraph with the following:

Before placing embankment fill material or filtration geotextiles over rock and broken pavement, fill voids in the top of rock and broken pavement fill with rip rap and No. 57 stone. Place and compact larger rip rap first followed by smaller rip rap. Then, fill any remaining voids with No. 57 stone so geotextiles are not torn, ripped or otherwise damaged when installed and covered. Compact rip rap and No. 57 stone with tracked equipment or other approved methods. Install filtration geotextiles on top of rock, broken pavement, rip rap and No. 57 stone in accordance with Article 270-3 before placing remaining embankment fill material.

Remove any rocks, debris or pavement pieces from the roadbed larger than two inches within 12" of the subgrade or finished grade, whichever is lower.

POLYPROPYLENE CULVERT PIPE

(7-1-19) 305, 310 DB3 R35

Revise the 2018 *Standard Specifications for Roads and Structures* as follows:

Page 3-5, Article 305-1 DESCRIPTION, Lines 12 - 14, replace with the following:

Where shown in the plans, the Design-Build Team may use reinforced concrete pipe, aluminum alloy pipe, aluminized corrugated steel pipe, HDPE pipe, polypropylene pipe, or PVC pipe in accordance with the following requirements:

Page 3-5, Article 305-2 MATERIALS, add the following after **Line 16:**

Item	Section
Polypropylene Pipe	1032-9

Page 3-6, Article 310-2 MATERIALS, add the following after **Line 9:**

Item	Section
Polypropylene Pipe	1032-9

Page 3-6, Article 310-4 SIDE DRAIN PIPE, Lines 24 - 25, replace the first sentence of the second paragraph with the following:

Where shown in the plans, side drain pipe may be Class II reinforced concrete pipe, aluminized corrugated steel pipe, corrugated aluminum alloy pipe, polypropylene pipe, HDPE pipe or PVC pipe.

Page 3-7, Article 310-5 PIPE END SECTIONS, Lines 2 - 4, replace the second sentence with the following:

Both corrugated steel and concrete pipe end sections will work on concrete pipe, corrugated steel pipe, polypropylene pipe, and HDPE smooth lined corrugated plastic pipe.

Page 10-60, add Article 1032-9:

(A) General

Use polypropylene pipe from sources participating in the Department's Polypropylene Pipe QA/QC Program. A list of participating sources is available from the Materials and Tests Unit. The Department will remove a manufacturer of polypropylene pipe from this program if the monitoring efforts indicated that non-specification material is being provided or test procedures are not being followed.

Use polypropylene culvert pipe that meets AASHTO M 330 for Type S or Type D, or ASTM F2881 or ASTM F2764 Double or Triple wall; and has been evaluated by NTPEP.

(B) End Treatments, Pipe Tees and Elbows

End treatments, pipe tees and elbows shall meet AASHTO M 330, Section 7.7, or ASTM F2764, Section 6.6.

(C) Marking

Clearly mark each section of pipe, end section, tee and elbow and other accessories according to the Department's Polypropylene Pipe QC/QA Program:

(1) AASHTO or ASTM Designation
(2) The date of manufacture
(3) Name or trademark of the manufacturer

When polypropylene pipe, end sections, tees and elbows have been inspected and accepted a sticker shall be applied to the inside of the pipe. Do no use pipe sections, flared end sections, tees or elbows which do not have this seal of approval.

BRIDGE APPROACH FILLS

(10-19-10) (Rev. 11-22-17) 422 DB4 R02A

Description

Bridge approach fills consist of backfilling behind bridge end bents with select material or aggregate to support all or portions of bridge approach slabs. Install drains to drain water from bridge approach fills and geotextiles to separate approach fills from embankment fills, ABC and natural ground as required. For bridge approach fills behind end bents with mechanically stabilized earth (MSE) abutment walls, reinforce bridge approach fills with MSE wall reinforcement connected to end bent caps. Construct bridge approach fills in accordance with the contract, accepted submittals and 2018 Roadway Standard Drawing No. 422.01, Roadway Standard Drawing No. 422.02 or Roadway Detail Drawing No. 422D10.

Define bridge approach fill types as follows:

Approach Fills - Bridge approach fills in accordance with 2018 Roadway Standard Drawing No. 422.01, Roadway Standard Drawing No. 422.02 or Roadway Detail Drawing No. 422D10

Standard Approach Fill - Type I Standard Bridge Approach Fill in accordance with 2018 Roadway Standard Drawing No. 422.01

Modified Approach Fill - Type II Modified Bridge Approach Fill in accordance with 2018 Roadway Standard Drawing No. 422.02

Reinforced Approach Fill - Type III Reinforced Bridge Approach Fill in accordance with Roadway Detail Drawing No. 422D10

Materials

Refer to Division 10 of the 2018 *Standard Specifications for Roads and Structures*.

Item	Section
Geotextiles, Type I	1056
Portland Cement Concrete	1000
Select Materials	1016
Subsurface Drainage Materials	1044

Provide Type 1 geotextile for separation geotextiles and Class B concrete for outlet pads. Use Class V or Class VI select material for standard and modified approach fills. For an approach fill behind a bridge end bent with an MSE abutment wall, backfill the reinforced approach fill with the same aggregate type approved for the reinforced zone in the accepted MSE wall submittal. For MSE wall aggregate, reinforcement and connector materials, see the *Mechanically Stabilized Earth Retaining Walls* provision. Provide PVC pipes, fittings and outlet pipes for subsurface drainage materials. For PVC drain pipes, use pipes with perforations that meet AASHTO M 278.

Construction Methods

Excavate as necessary for approach fills in accordance with the contract. Notify the Engineer when foundation excavation is complete. Do not place separation geotextiles or aggregate until approach fill dimensions and foundation material are approved.

For reinforced approach fills, cast MSE wall reinforcement or connectors into end bent cap backwalls within 3" of locations shown in the accepted MSE wall submittals. Install MSE wall reinforcement with the orientation, dimensions and number of layers shown in the accepted MSE wall submittals. If a reinforced approach fill is designed with geogrid reinforcement embedded in an end bent cap, cut geogrids to the required lengths and after securing ends of geogrids in place, reroll and rewrap portions of geogrids not embedded in the cap to protect geogrids from damage. Before placing aggregate, pull geosynthetic reinforcement taut so that it is in tension and free of kinks, folds, wrinkles or creases.

Attach separation geotextiles to end bent cap backwalls and wing walls with adhesives, tapes or other approved methods. Overlap adjacent separation geotextiles at least 18" with seams oriented parallel to the roadway centerline. Hold geotextiles in place with wire staples or anchor pins as needed. Contact the Engineer when existing or future obstructions such as foundations, pavements, pipes, inlets or utilities will interfere with separation geotextiles or MSE wall reinforcement.

Install continuous perforated PVC drain pipes with perforations pointing down in accordance with 2018 Roadway Standard Drawing No. 422.01 or 422.02. Connect drain pipes to outlet pipes just beyond wing walls. Connect PVC pipes, fittings and outlet pipes with solvent cement in accordance with Article 815-3 of the 2018 *Standard Specifications for Roads and Structures* and place outlet pads in accordance with 2018 Roadway Standard Drawing No. 815.03.

Install drain pipes so water drains towards outlets. If the groundwater elevation is above drain pipe elevations, raise drains up to maintain positive drainage towards outlets. Place pipe sleeves in or under wing walls so water drains towards outlets. Use sleeves that can withstand wing wall loads.

Place select material or aggregate in 8" to 10" thick lifts. Compact fine aggregate for reinforced approach fills in accordance with Subarticle 235-3(C) of the 2018 *Standard Specifications for Roads and Structures* except compact fine aggregate to a density of at least 98%. Compact select

material for standard or modified approach fills and coarse aggregate for reinforced approach fills with a vibratory compactor to the satisfaction of the Engineer. Do not displace or damage geosynthetics, MSE wall reinforcement or drains when placing and compacting select material or aggregate. End dumping directly on geosynthetics is not permitted. Do not operate heavy equipment on geosynthetics or drain pipes until they are covered with at least 8" of select material or aggregate. Replace any damaged geosynthetics or drains to the satisfaction of the Engineer. When approach fills extend beyond bridge approach slabs, wrap separation geotextiles over select material or aggregate as shown in 2018 Roadway Standard Drawing No. 422.01 or Roadway Detail Drawing No. 422D10.

For temporary walls, use welded wire reinforcement for welded wire facing and Type 5 geotextile for reinforcement geotextiles. Use Type 5 geotextile with lengths and an ultimate tensile strength as shown in 2018 Roadway Standard Drawing No. 422.03. Provide Type 1 geotextile for separation geotextiles and Class B concrete for outlet pads. Use Class V or Class VI select material for alternate approach fills and temporary walls. Provide PVC pipes, fittings and outlet pipes for subsurface drainage materials. For PVC drain pipes, use pipes with perforations that meet AASHTO M 278.

ALTERNATE BRIDGE APPROACH FILLS FOR INTEGRAL ABUTMENTS

(11-21-17) 422 DB4 R02B

Description

At the Design-Build Team's option, use Type A Alternate Bridge Approach Fills instead of Type I or II Bridge Approach Fills to support bridge approach slabs for integral bridge abutments. An alternate bridge approach fill shall consist of constructing an approach fill with a temporary geotextile wall before placing all or a portion of the concrete for the backwall and wing walls of the integral end bent cap. The temporary geotextile wall shall be designed for a crane surcharge, shall remain in place and be aligned so the wall face functions as a form for the end bent cap backwall and wing walls. Install drains, welded wire facing and geotextiles and backfill approach fills and temporary walls with select material as required. Define "geotextiles" as separation or reinforcement geotextiles, "temporary wall" as a temporary geotextile wall and "alternate approach fill" as a Type A Alternate Bridge Approach Fill in accordance with 2018 Roadway Standard Drawing No. 422.03.

Materials

Refer to Division 10 of the 2018 *Standard Specifications for Roads and Structures*.

Item	Section
Geotextiles	1056
Portland Cement Concrete	1000
Select Materials	1016
Subsurface Drainage Materials	1044
Welded Wire Reinforcement	1070-3

For temporary walls, use welded wire reinforcement for welded wire facing and Type 5 geotextile for reinforcement geotextiles. Use Type 5 geotextile with lengths and an ultimate tensile strength as shown in 2018 Roadway Standard Drawing No. 422.03. Provide Type 1 geotextile for separation geotextiles and Class B concrete for outlet pads. Use Class V or Class VI select material for alternate approach fills and temporary walls. Provide PVC pipes, fittings and outlet pipes for subsurface drainage materials. For PVC drain pipes, use pipes with perforations that meet AASHTO M 278.

Construction Methods

Excavate as necessary for alternate approach fills and temporary walls in accordance with the contract. Notify the Engineer when foundation excavation is complete. Do not place geotextiles until approach fill dimensions and foundation material are approved.

Install geotextiles as shown in 2018 Roadway Standard Drawing No. 422.03. Attach separation geotextiles to end bent cap backwalls and wing walls as needed with adhesives, tapes or other approved methods. Overlap adjacent geotextiles at least 18" with seams oriented parallel to the roadway centerline. Hold geotextiles in place with wire staples or anchor pins as needed. Contact the Engineer when existing or future obstructions such as foundations, pavements, pipes, inlets or utilities will interfere with geotextiles.

Install continuous perforated PVC drain pipes with perforations pointing down in accordance with 2018 Roadway Standard Drawing No. 422.03. Connect drain pipes to outlet pipes just beyond wing walls. Connect PVC pipes, fittings and outlet pipes with solvent cement in accordance with Article 815-3 of the 2018 *Standard Specifications for Roads and Structures* and place outlet pads in accordance with 2018 Roadway Standard Drawing No. 815.03.

Install drain pipes so water drains towards outlets. If the groundwater elevation is above drain pipe elevations, raise drains up to maintain positive drainage towards outlets. Place pipe sleeves in or under wing walls so water drains towards outlets. Use sleeves that can withstand wing wall loads.

At the Design-Build Team's option, construct bottom portion of integral end bents before temporary walls as shown in 2018 Roadway Standard Drawings No. 422.03. Erect and set welded wire facing so facing functions as a form for the end bent cap backwall. Place welded wire facing adjacent to each other in the horizontal and vertical directions to completely cover the temporary wall face. Stagger welded wire facing to create a running bond by centering facing over joints in the row below.

Wrap reinforcement geotextiles at the temporary wall face in accordance with 2018 Roadway Standard Drawing No. 422.03 and cover geotextiles with at least 3" of select material. Place layers of reinforcement geotextiles within 3" of locations shown in 2018 Roadway Standard Drawing No. 422.03. Before placing select material, pull reinforcement geotextiles taut so they are in tension and free of kinks, folds, wrinkles or creases. Install reinforcement geotextiles with the direction shown in 2018 Roadway Standard Drawing No. 422.03. Do not splice or overlap reinforcement geotextiles so seams are parallel to the temporary wall face.

Place select material in 8" to 10" thick lifts and compact select material with a vibratory compactor to the satisfaction of the Engineer. Do not displace or damage geotextiles or drains when placing and compacting select material. End dumping directly on geotextiles is not permitted. Do not operate heavy equipment on geotextiles or drain pipes until they are covered with at least 8" of select material. Replace any damaged geotextiles or drains to the satisfaction of the Engineer. When alternate approach fills extend beyond bridge approach slabs, wrap separation geotextiles over select material as shown in 2018 Roadway Standard Drawing No. 422.03.

Temporary walls shall be designed for a surcharge pressure in accordance with 2018 Roadway Standard Drawing No. 422.03. If the crane surcharge will exceed the wall design, contact the Engineer before positioning the crane over reinforcement geotextiles.

AUTOMATED FINE GRADING

(9-1-11) (Rev. 9-13-17) DB5 R05

On mainline portions and ramps of this project, prepare the subgrade and base beneath the pavement structure in accordance with the applicable sections of the 2018 *Standard Specifications for Roads and Structures* except use an automatically controlled fine grading machine utilizing string lines, laser controls, or other approved methods to produce final subgrade and base surfaces meeting the lines, grades, and cross sections required by the plans or established by the Engineer.

AGGREGATE SUBGRADE

(Special)

DESCRIPTION

Construct aggregate subgrades in accordance with the contract. Install geotextile for pavement stabilization and place Class IV subgrade stabilization at locations shown in the plans and as directed.

MATERIALS

Refer to Division 10.

Item	Section
Geotextile for Pavement Stabilization, Type 5	1056
Select Material, Class IV	1016

Use Class IV select material for Class IV subgrade stabilization. (Reference the *Geotextile for Pavement Stabilization* Project Special Provision found elsewhere in this RFP for geotextile requirements)

CONSTRUCTION METHODS

Undercut soil if necessary to construct aggregate subgrades. Perform undercut excavation in accordance with Section 225 of the *Standard Specifications for Roads and Structures*. Define "subbase" as the portion of the roadbed below the Class IV subgrade stabilization. The types of aggregate subgrade with thickness and compaction requirements for each are as shown below.

Type 1 – A 6 to 24 inch thick aggregate subgrade with Class IV subgrade stabilization compacted to 92% of AASHTO T 180 as modified by the Department or to the highest density that can be reasonably obtained.

Type 2 – An 8-inch thick aggregate subgrade on a DCP tested subbase with Class IV subgrade stabilization compacted to 97% of AASHTO T 180 as modified by the Department.

For Type 1 or Type 2 aggregate subgrades, DCP test subbases in accordance with the Geotechnical Scope of Work found elsewhere in the RFP before installing geotextile for pavement stabilization.

Install geotextile in accordance with the *Geotextile for Pavement Stabilization* Project Special Provision found elsewhere in this RFP. Place Class IV subgrade stabilization (standard size ABC) by end dumping ABC on geotextiles. Do not operate heavy equipment on geotextiles until geotextiles are covered with Class IV subgrade stabilization. Compact ABC as required for the type of aggregate subgrade constructed.

Maintain Class IV subgrade stabilization in an acceptable condition and minimize the use of heavy equipment on ABC in order to avoid damaging aggregate subgrades. Provide and maintain drainage ditches and drains as required to prevent entrapping water in aggregate subgrades.

FINAL SURFACE TESTING

(4-26-16) (Rev. 9-13-17) DB6 R45

On all mainline travel lanes, including but not limited to auxiliary lanes, and -Y- Line travel lanes with 1) two or more layers of asphalt, 2) one mile or greater in length, and 3) a posted speed limit of 45 mph or greater, perform smoothness acceptance testing of the longitudinal profile of the finished pavement surface using an Inertial Profiler in accordance with Sections 610 and 710 of the 2018 *Standard Specifications for Roads and Structures* The North Carolina Hearne Straightedge will not be permitted.

MILLING ASPHALT PAVEMENT

(12-17-18) 607 DB6 R59

Revise the 2018 *Standard Specifications for Roads and Structures* as follows:

Page 6-5, Article 607-2, EQUIPMENT, Lines 14 - 16, delete the seventh sentence of this Article and replace with the following:

Use either a non-contacting laser or sonar type ski system with a minimum of three referencing stations mounted on the milling machine at a length of at least 24 feet.

OPEN GRADED ASPHALT FRICTION COURSE, PERMEABLE ASPHALT DRAINAGE COURSE, AND ULTRA-THIN BONDED WEARING COURSE

(4-17-12) (Rev. 9-13-17) 609 DB6 R62

When producing and constructing open graded asphalt friction course, permeable asphalt drainage course, and / or ultra-thin bonded wearing course revise the 2018 *Standard Specifications for Roads and Structures* as follows:

Page 6-9 Subarticle 609-6(B) Required Sampling and Testing Frequencies, delete the third paragraph and replace with the following:

Sample and test the completed mixture from each mix design per plant per year at the following minimum frequency during mix production:

Accumulative Production Increment	Number of Samples per Increment
500 tons	1

Page 6-9, Subarticle 609-6(C) Control Charts, delete the second paragraph and replace with the following:

Record the following data on the standardized control charts and in accordance with the requirements of Section 7.4 of the *HMA/QMS Manual*:

(a) Aggregate Gradation Test Results:

1. 12.5 mm (Types P57 & FC-2 Mod. Only)
2. 9.5 mm (Excluding Type P57)
3. 4.75 mm
4. 2.36 mm
5. 0.075 mm Sieves

(b) Binder Content, %, P_b

Page 6-10, Subarticle 609-6(D) Control Limits, Table 609-1 CONTROL LIMITS, replace with the following:

TABLE 609-1 CONTROL LIMITS			
Mix Control Criteria	**Target Source**	**Moving Average Limit**	**Individual Limit**
12.5 mm Sieve (Types P57 & FC-2 Mod)	JMF	± 4.0	± 8.0
9.5 mm Sieve (Excluding Type P57)	JMF	± 4.0	± 8.0
4.75 mm Sieve	JMF	± 4.0	± 8.0
2.36 mm Sieve	JMF	± 4.0	± 8.0
0.075 mm Sieve	JMF	± 1.5	± 2.5
Binder Content	JMF	± 0.3	± 0.7
TSR (Ultra-thin Only)	Min. Spec. Limit	-	- 15%

Page 6-12, Subarticle 609-6(F) Allowable Retesting for Mix Deficiencies, Table 609-2 RETEST LIMITS FOR MIX DEFICIENCIES, replace with the following:

TABLE 609-2 RETEST LIMITS FOR MIX DEFICIENCIES	
Property	**Limit**
% Binder Content	by more than ± 1.0%
12.5 mm Sieve (Types P 57 & FC-2 Mod)	by more than ± 9.0%
9.5 mm Sieve (Excluding Type P 57)	by more than ± 9.0%
4.75 mm sieve	by more than ± 9.0%
2.36 mm sieve	by more than ± 9.0%
0.075 mm sieve	by more than ± 3.0%
TSR (Ultra-thin only)	by more than -15% from Specification limit

Page 6-14, Subarticle 609-9 QUALITY ASSURANCE, Table 609-3 LIMITS OF PRECISION FOR TEST RESULTS, replace with the following:

TABLE 609-3 LIMITS OF PRECISION FOR TEST RESULTS	
Mix Property	**Limits of Precision**
12.5 mm Sieve (Types P 57 & FC-2 Mod. Only)	± 6.0%
9.5 mm Sieve (Excluding Type P 57)	± 5.0%
4.75 mm Sieve	± 5.0%
2.36 mm Sieve	± 5.0%
0.075 mm Sieve	± 2.0%
Asphalt Binder Content	± 0.5%
TSR (Ultra-thin HMA Only)	± 15.0%

ASPHALT CONCRETE PLANT MIX PAVEMENTS

(12-12-18) 610, 1012 DB6 R65

Revise the 2018 *Standard Specifications for Roads and Structures* as follows:

Page 6-14, Table 609-3, LIMITS OF PRECISION FOR TEST RESULTS, replace with the following:

TABLE 609-3 LIMITS OF PRECISION FOR TEST RESULTS	
Mix Property	**Limits of Precision**
25.0 mm sieve (Base Mix)	± 10.0%
19.0 mm sieve (Base Mix)	± 10.0%
12.5 mm sieve (Intermediate & Type P-57)	± 6.0%
9.5 mm sieve (Surface Mix)	± 5.0%
4.75 mm sieve (Surface Mix)	± 5.0%
2.36 mm sieve (All Mixes, except S4.75A)	± 5.0%
1.18 mm sieve (S4.75A)	± 5.0%
0.075 mm sieve (All Mixes)	± 2.0%
Asphalt Binder Content	± 0.5%
Maximum Specific Gravity (G_{mm})	± 0.020
Bulk Specific Gravity (G_{mb})	± 0.030
TSR	± 15.0%
QA retest of prepared QC Gyratory Compacted Volumetric Specimens	± 0.015
Retest of QC Core Sample	± 1.2% (% Compaction)
Comparison QA Core Sample	± 2.0% (% Compaction)
QA Verification Core Sample	± 2.0% (% Compaction)
Density Gauge Comparison of QC Test	± 2.0% (% Compaction)
QA Density Gauge Verification Test	± 2.0% (% Compaction)

Page 6-17, Table 610-1, MIXING TEMPERATURE AT THE ASPHALT PLANT, replace with the following:

TABLE 610-1 MIXING TEMPERATURE AT THE ASPHALT PLANT	
Binder Grade	**JMF Temperature**
PG 58-28; PG 64-22	250 - 290° F
PG 76-22	300 - 325° F

Page 6-17, Subarticle 610-3(C), Job Mix Formula (JMF), Lines 38 - 39, delete the fourth paragraph.

Page 6-18, Subarticle 610-3(C), Job Mix Formula (JMF), Line 12, replace "SF9.5A" with "S9.5B".

Page 6-18, Table 610-3, MIX DESIGN CRITERIA, replace with the following:

TABLE 610-3
MIX DESIGN CRITERIA

Mix Type	Design ESALs millions [A]	Binder PG Grade [B]	Compaction Levels G_{mm} @		Max. Rut Depth (mm)	Volumetric Properties			
			Nini	Ndes		VMA % Min.	VTM %	VFA Min.-Max.	%Gmm @ Nini
S4.75A	< 1	64 - 22	6	50	11.5	16.0	4.0 - 6.0	65 - 80	≤ 91.5
S9.5B	0 - 3	64 - 22	6	50	9.5	16.0	3.0 - 5.0	70 - 80	≤ 91.5
S9.5C	3 - 30	64 - 22	7	65	6.5	15.5	3.0 - 5.0	65 - 78	≤ 90.5
S9.5D	> 30	76 - 22	8	100	4.5	15.5	3.0 - 5.0	65 - 78	≤ 90.0
I19.0C	ALL	64 - 22	7	65	-	13.5	3.0 - 5.0	65 - 78	≤ 90.5
B25.0C	ALL	64 - 22	7	65	-	12.5	3.0 - 5.0	65 - 78	≤ 90.5
	Design Parameter					**Design Criteria**			
All Mix Types	Dust to Binder Ratio ($P_{0.075}$ / P_{be})					0.6 - 1.4 [C]			
	Tensile Strength Ratio (TSR) [D]					85% Min. [E]			

A. Based on 20 year design traffic.
B. Volumetric Properties based on specimens compacted to N_{des} as modified by the Department.
C. Dust to Binder Ratio ($P_{0.075}$ / P_{be}) for Type S4.75A is 1.0 - 2.0.
D. NCDOT-T-283 (No Freeze-Thaw cycle required).
E. TSR for Type S4.75A & B25.0C mixes is 80% minimum.

Page 6-19, Table 610-5, BINDER GRADE REQUIREMENTS (BASED ON RBR%), replace with the following:

TABLE 610-5
BINDER GRADE REQUIREMENTS (BASED ON RBR%)

Mix Type	%RBR ≤ 20%	21% ≤ %RBR ≤ 30%	%RBR > 30%
S4.75A, S9.5B, S9.5C, I19.0C, B25.0C	PG 64-22	PG 64-22[A]	PG 58-28
S9.5D, OGFC	PG 76-22[B]	n/a	n/a

A. If the mix contains any amount of RAS, the virgin binder shall be PG 58-28.
B. Maximum Recycled Binder Replacement (%RBR) is 18% for mixes using PG 76-22 binder.

Page 6-20, Table 610-6, PLACEMENT TEMPERATURES FOR ASPHALT, replace with the following:

TABLE 610-6
PLACEMENT TEMPERATURES FOR ASPHALT

Asphalt Concrete Mix Type	Minimum Surface and Air Temperature
B25.0C	35° F
I19.0C	35° F
S4.75A, S9.5B, S9.5C	40° F [A]
S9.5D	50° F

A. For the final layer of surface mixes containing recycled asphalt shingles (RAS), the minimum surface and air temperature shall be 50° F.

Page 6-21, Article 610-8, SPREADING AND FINISHING, Lines 34 - 35, delete the second sentence and replace with the following:

Use an MTV for all surface mix regardless of binder grade on Interstates, US Routes, and NC Routes (primary routes) that have four or more lanes and are median divided.

Page 6-21, Article 610-8, SPREADING AND FINISHING, Lines 36 - 38, delete the fourth sentence and replace with the following:

Use MTV for all ramps, loops and -Y- Lines, that have four or more lanes and are median divided; and all full width acceleration lanes, full width deceleration lanes, and full width turn lanes that are greater than 1000 feet in length.

Page 6-23, Table 610-7, DENSITY REQUIREMENTS, replace with the following:

TABLE 610-7
DENSITY REQUIREMENTS

Mix Type	Minimum % G_{mm} (Maximum Specific Gravity)
S4.75A	85.0 [A]
S9.5B	90.0
S9.5C, S9.5D, I19.0C, B25.0C	92.0

A. Compaction to the above specified density will be required when the S4.75A mix is applied at a rate of 100 lbs/sy or higher.

Page 6-24, Article 610-13, FINAL SURFACE TESTING, Lines 35 - 36, delete the second sentence and replace with the following:

Final surface testing is not required on ramps, loops and turn lanes.

Page 6-26, Subarticle 610-13(A)(1), Acceptance for New Construction, Lines 29 - 30, delete the second sentence and replace with the following:

Areas excluded from testing by the profiler may be tested using a ten-foot straightedge in accordance with Article 610-12.

Page 6-27, Subarticle 610-13(B), Option 2 - North Carolina Hearne Straightedge, Lines 41 - 46, delete the eighth and ninth sentence of this paragraph and replace with the following:

Take profiles over the entire length of the final surface travel lane pavement, exclusive of structures, approach slabs, paved shoulders, tapers, and other irregular shaped areas of pavement, unless otherwise approved by the Engineer. In accordance with this provision, test all mainline travel lanes, full width acceleration lanes, full width deceleration lanes and collector lanes.

Page 6-28, Subarticle 610-13(B), Option 2 - North Carolina Hearne Straightedge, Lines 1 - 2, delete these two lines.

Page 10-30, Table 1012-1, AGGREGATE CONSENSUS PROPERTIES, replace with the following:

TABLE 1012-1
AGGREGATE CONSENSUS PROPERTIES[A]

Mix Type	Coarse Aggregate Angularity[B]	Fine Aggregate Angularity % Minimum	Sand Equivalent % Minimum	Flat and Elongated 5 : 1 Ratio % Maximum
Test Method	*ASTM D5821*	*AASHTO T 304*	*AASHTO T 176*	*ASTM D4791*
S4.75A; S9.5B	75 / -	40	40	-
S9.5C; I19.0C; B25.0C	95 / 90	45	45	10
S9.5D	100 / 100	45	50	10
OGFC	100 / 100	45	45	10
UBWC	100 / 85	45	45	10

A. Requirements apply to the design aggregate blend.
B. 95 / 90 denotes that 95% of the coarse aggregate has one fractured face and 90% has 2 or more fractured faces.

SUBSURFACE DRAINAGE
(9-1-11) (Rev. 9-14-17) DB8 R05

Revise the 2018 *Standard Specifications for Roads and Structures* as follows:

Page 8-11, Article 815-1, Delete the first sentence and replace with the following:

The Design-Build Team shall construct subsurface drains, underdrains, blind drains and other types of drains where groundwater is within six feet of subgrade.

GUARDRAIL END UNITS, TYPE TL-3

(4-20-04) (Rev. 9-14-17) DB8 R65

Description

Furnish and install guardrail end units in accordance with the details in the plans, the applicable requirements of Section 862 of the 2018 *Standard Specifications for Roads and Structures*, and at locations shown in the plans.

Materials

The Design-Build Team shall furnish guardrail end units list on the NCDOT Approved Products List at **https://apps.dot.state.nc.us/vendor/approvedproducts/** or approved equal.

Prior to installation, the Design-Build Team shall submit to the Engineer:

- FHWA acceptance letter for each guardrail end unit certifying it meets the requirements of the AASHTO Manual for Assessing Safety Hardware, Test Level 3, in accordance with Article 106-2 of the 2018 *Standard Specifications for Roads and Structures.*

- Certified working drawings and assembling instructions from the manufacturer for each guardrail end unit in accordance with Article 105-2 of the 2018 *Standard Specifications for Roads and Structures*.

No modifications shall be made to the guardrail end unit without the express written permission from the manufacturer. Perform installation in accordance with the details in the plans, and details and assembling instructions furnished by the manufacturer.

Construction Methods

Guardrail end delineation shall be required on all approach and trailing end sections for both temporary and permanent installations. Guardrail end delineation shall consist of yellow reflective sheeting applied to the entire end section of the guardrail in accordance with Article 1088-3 of the 2018 *Standard Specifications for Roads and Structures*.

GUARDRAIL ANCHOR UNITS AND TEMPORARY GUARDRAIL ANCHOR UNITS

(11-22-17) 862 DB8 R70

Guardrail anchor units shall be in accordance with the details in the plans and the applicable requirements of Section 862 of the 2018 *Standard Specifications for Roads and Structures*.

IMPACT ATTENUATOR UNIT, TYPE TL-3

(4-20-04) (Rev. 12-12-18) DB8 R75

Description

Furnish and install impact attenuator units and any components necessary to connect the impact attenuator units in accordance with the manufacturer's requirement, the details in the plans, and at locations shown in the plans.

Materials

The Design-Build Team shall furnish impact attenuator units listed on the NCDOT Approved Products List at **https://apps.dot.state.nc.us/vendor/approvedproducts/** or approved equal.

Prior to installation, the Design-Build Team shall submit to the Engineer:

- FHWA acceptance letter for each impact attenuator unit certifying it meets the requirements of the Manual for Assessing Safety Hardware (MASH-16), Test Level 3, in accordance with Article 106-2 of the 2018 *Standard Specifications for Roads and Structures.*

- Certified working drawings and assembling instructions from the manufacturer for each impact attenuator unit in accordance with Article 105-2 of the 2018 *Standard Specifications for Roads and Structures.*

No modifications shall be made to the impact attenuator unit without the express written permission from the manufacturer. Perform installation in accordance with the details in the plans, and details and assembling instructions furnished by the manufacturer.

Construction Methods

If the median width is 40 feet or less, the Design-Build Team shall supply NON-GATING Impact Attenuator Units.

If the median width is greater than 40 feet, the Design-Build Team may use GATING or NON-GATING Impact Attenuator Units.

TEMPORARY SHORING

(2-20-07) (Rev. 11-22-17) DB11 R02

Description

Temporary shoring includes cantilever, braced and anchored shoring and temporary mechanically stabilized earth (MSE) walls. Temporary shoring does not include trench boxes. At the Design-Build Team's option, use any type of temporary shoring, unless noted otherwise in the plans or as directed.

Design and construct temporary shoring based on actual elevations and shoring dimensions in accordance with the plans and accepted submittals. Construct temporary shoring at locations shown in the plans and as directed. Temporary shoring shall be required to maintain traffic when a 2:1 (H:V) slope from the top of an embankment or bottom of an excavation will intersect the existing ground line less than five feet from the edge of pavement of an open travelway. This standard special provision does not apply to pipe, inlet or utility installation unless noted otherwise in the plans.

Positive protection includes concrete barrier and temporary guardrail. Provide positive protection for temporary shoring at locations shown in the plans and as directed. Positive protection shall be required if temporary shoring is located in the clear zone in accordance with the AASHTO *Roadside Design Guide*.

(A) Cantilever and Braced Shoring

Cantilever shoring consists of steel sheet piles or H-piles with timber lagging. Braced shoring consists of sheet piles or H-piles with timber lagging and bracing such as beams, plates, walers, struts, rakers, etc. Define "piles" as sheet piles or H-piles.

(B) Anchored Shoring

Anchored shoring consists of sheet piles with walers or H-piles with timber lagging anchored with ground or helical anchors. Driven anchors may be accepted at the discretion of the Engineer. A ground anchor consists of a grouted steel bar or multi-strand tendon with an anchorage. A helical anchor consists of a lead section with a central steel shaft and at least one helix steel plate followed by extensions with only central shafts (no helixes) and an anchorage. Anchorages consist of steel bearing plates with washers and hex nuts for bars or steel wedge plates and wedges for strands. Use a prequalified Anchored Wall Contractor to install ground anchors. Define "anchors" as ground, helical or driven anchors.

(C) Temporary MSE Walls

Temporary MSE walls include temporary geosynthetic and wire walls. Define "temporary wall" as a temporary MSE wall and "Temporary Wall Vendor" as the vendor supplying the temporary MSE wall. Define "reinforcement" as geotextile, geogrid, welded wire grid or metallic strip reinforcement.

Temporary geosynthetic walls consist of geotextile or geogrid reinforcement wrapped behind welded wire facing. Define "temporary geotextile wall" as a temporary geosynthetic wall with geotextile reinforcement and "temporary geogrid wall" as a temporary geosynthetic wall with geogrid reinforcement.

Temporary wire walls consist of welded wire grid or metallic strip reinforcement connected to welded wire facing. Define "Wire Wall Vendor" as the vendor supplying the temporary wire wall.

(D) Embedment

Define "embedment" for cantilever, braced and anchored shoring as the pile depth below the grade in front of shoring. Define "embedment" for temporary walls as the wall height below the grade in front of walls.

(E) Positive Protection

Define "unanchored or anchored portable concrete barrier" as portable concrete barrier (PCB) that meets 218 Roadway Standard Drawing No. 1170.01. Define "concrete barrier" as unanchored or anchored PCB or an approved equal. Define "temporary guardrail" as temporary steel beam guardrail that meets 2018 Roadway Standard Drawing No. 862.02.

Materials

Refer to the 2018 *Standard Specifications for Roads and Structures*.

Item	Section
Concrete Barrier Materials	1170-2
Flowable Fill, Excavatable	1000-6
Geosynthetics	1056
Neat Cement Grout	1003
Portland Cement Concrete	1000
Select Materials	1016
Steel Beam Guardrail Materials	862-2
Steel Plates	1072-2
Steel Sheet Piles and H-Piles	1084
Untreated Timber	1082-2
Welded Wire Reinforcement	1070-3

Provide Type 6 material certifications for shoring materials in accordance with Article 106-3 of the 2018 *Standard Specifications for Roads and Structures*. Use Class IV select material for temporary guardrail. Use neat cement grout for Type 2 grout for ground anchors. Use Class A concrete that meets Article 450-2 of the 2018 *Standard Specifications for Roads and Structures* or Type 1 grout for drilled-in piles. Provide untreated timber with a thickness of at least 3" and a bending stress of at least 1,000 pounds per square inch for timber lagging. Provide steel bracing that meets ASTM A36.

(A) Shoring Backfill

Use Class II, Type 1, Class III, Class V or Class VI select material or material that meets AASHTO M 145 for soil classification A-2-4 with a maximum PI of 6 for shoring backfill except do not use A-2-4 soil for backfill around culverts.

(B) Anchors

Store anchor materials on blocking a minimum of 12 inches above the ground and protect it at all times from damage; and when placing in the work make sure it is free from dirt, dust, loose mill scale, loose rust, paint, oil or other foreign materials. Load, transport, unload and store anchor materials so materials are kept clean and free of damage. Bent, damaged or defective materials shall be rejected.

(1) Ground Anchors

Use high-strength deformed steel bars that meet AASHTO M 275 or seven-wire strands that meet ASTM A886 or Article 1070-5 of the 2018 *Standard Specifications for Roads and Structures*. Splice bars in accordance with Article 1070-9 of the 2018 *Standard Specifications for Roads and Structures*. Do not splice strands. Use bondbreakers, spacers and centralizers that meet Article 6.3.5 of the AASHTO *LRFD Bridge Construction Specifications*.

(2) Helical Anchors

Use helical anchors with an ICC Evaluation Service, Inc. (ICC-ES) report. Provide couplers, thread bar adapters and bolts recommended by the Anchor Manufacturer to connect helical anchors together and to piles.

(3) Anchorages

Provide steel plates for bearing plates and steel washers, hex nuts, wedge plates and wedges recommended by the Anchor Manufacturer.

(C) Temporary Walls

(1) Welded Wire Facing

Use welded wire reinforcement for welded wire facing, struts and wires. For temporary wire walls, provide welded wire facing supplied by the Wire Wall Vendor or a manufacturer approved or licensed by the vendor. For temporary wire walls with separate reinforcement and facing components, provide connectors (e.g., bars, clamps, plates, etc.) and fasteners (e.g., bolts, nuts, washers, etc.) required by the Wire Wall Vendor.

(2) Geotextiles

Provide Type 2 geotextile for separation and retention geotextiles. Provide Type 5 geotextile for geotextile reinforcement with ultimate tensile strengths in accordance with the accepted submittals.

(3) Geogrid Reinforcement

Use geogrids with a roll width of at least four feet and an "approved" or "approved for provisional use" status code. The list of approved geogrids is available from:

connect.ncdot.gov/resources/Materials/Pages/Materials-Manual-by-Material.aspx

Provide geogrids for geogrid reinforcement with design strengths in accordance with the accepted submittals. Geogrids are typically approved for ultimate tensile strengths in the machine direction (MD) and cross-machine direction (CD) or short-term design strengths for a three-year design life in the MD based on material type. Define material type from the website above for shoring backfill as follows:

Material Type	Shoring Backfill
Borrow	A-2-4 Soil
Fine Aggregate	Class II, Type 1 or Class III Select Material
Coarse Aggregate	Class V or VI Select Material

(4) Welded Wire Grid and Metallic Strip Reinforcement

Provide welded wire grid and metallic strip reinforcement supplied by the Wire Wall Vendor or a manufacturer approved or licensed by the vendor. Use welded wire grid reinforcement ("mesh", "mats" and "ladders") that meet Article 1070-3 of the 2018 *Standard Specifications for Roads and Structures* and metallic strip reinforcement ("straps") that meet ASTM A572 or A1011.

Preconstruction Requirements

(A) Concrete Barrier

Define "clear distance" behind concrete barrier as the horizontal distance between the barrier and edge of pavement. The minimum required clear distance for concrete barrier is shown in the plans. At the Design-Build Team's option or if the minimum required clear distance is not available, set concrete barrier next to and up against traffic side of temporary shoring except for barrier above temporary walls. Concrete barrier with the minimum required clear distance shall be required above temporary walls.

(B) Temporary Guardrail

Define "clear distance" behind temporary guardrail as the horizontal distance between guardrail posts and temporary shoring. At the Design-Build Team's option or if clear distance for cantilever, braced and anchored shoring is less than four feet, attach guardrail to traffic side of shoring as shown in the plans. Place ABC in clear distance and around

guardrail posts instead of pavement. Do not use temporary guardrail above temporary walls.

(C) Temporary Shoring Designs

Before beginning temporary shoring design, survey existing ground elevations in the vicinity of shoring locations to determine actual design heights (H). Submit .pdf files of working drawings and design calculations for temporary shoring designs in accordance with Article 105-2 of the 2018 *Standard Specifications for Roads and Structures*. Submit working drawings showing plan views, shoring profiles, typical sections and details of temporary shoring design and construction sequence. Do not begin shoring construction until a design submittal is accepted.

Have cantilever and braced shoring designed, detailed and sealed by an engineer licensed in the state of North Carolina. Use a prequalified Anchored Wall Design Consultant to design anchored shoring. Provide anchored shoring designs sealed by a Design Engineer approved as a Geotechnical Engineer (key person) for an Anchored Wall Design Consultant. Include details in anchored shoring working drawings of anchor locations and lock-off loads, unit grout / ground bond strengths for ground anchors or minimum installation torque and torsional strength rating for helical anchors and if necessary, obstructions extending through shoring or interfering with anchors. Include details in the anchored shoring construction sequence of pile and anchor installation, excavation and anchor testing.

Provide temporary wall designs sealed by an Engineer licensed in the state of North Carolina and employed or contracted by the Temporary Wall Vendor. Include details in temporary wall working drawings of geotextile and reinforcement types, locations and directions and obstructions extending through walls or interfering with reinforcement.

(1) Soil Parameters

Design temporary shoring for the assumed soil parameters and groundwater elevations shown in the plans. Assume the following soil parameters for shoring backfill:

(a) Unit weight (γ) = 120 pcf;

(b)

Friction Angle (ϕ)	Shoring Backfill
30°	A-2-4 Soil
34°	Class II, Type 1 or Class III Select Material
38°	Class V or VI Select Material

(c) Cohesion (c) = 0 psf.

(2) Traffic Surcharge

Design temporary shoring for a traffic surcharge of 250 pounds per square foot if traffic will be above and within H of shoring. This traffic surcharge shall not apply to construction traffic. Design temporary shoring for any construction surcharge if construction traffic will be above and within H of shoring. For LRFD shoring designs, apply traffic (live load) surcharge in accordance with Figure C11.5.5-3 of the AASHTO *LRFD Bridge Design Specifications*.

(3) Cantilever, Braced and Anchored Shoring Designs

Use shoring backfill for fill sections and voids between cantilever, braced and anchored shoring and the critical failure surface. Use concrete or grout for embedded portions of drilled-in H-piles. Do not use drilled-in sheet piles.

Define "top of shoring" for cantilever, braced and anchored shoring as where the grade intersects the back of sheet piles or H-piles and timber lagging. Design cantilever, braced and anchored shoring for a traffic impact load of 2,000 pounds per foot applied 18 inches above top of shoring if concrete barrier is above and next to shoring or temporary guardrail is above and attached to shoring. For anchored shoring designs, apply traffic impact load as horizontal load (P_{TH}) in accordance with Figure 3.11.6.3-2(a) of the AASHTO LRFD specifications.

Extend cantilever, braced and anchored shoring at least 32 inches above top of shoring if shoring is designed for traffic impact. Otherwise, extend shoring at least six inches above top of shoring.

Design cantilever, braced and anchored shoring for a maximum deflection of three inches if the horizontal distance to the closest edge of pavement or structure is less than H. Otherwise, design shoring for a maximum deflection of six inches. Design cantilever and braced shoring in accordance with the plans and AASHTO *Guide Design Specifications for Bridge Temporary Works*.

Design anchored shoring in accordance with the plans and Article 11.9 of the AASHTO *LRFD Bridge Design Specifications*. Use a resistance factor of 0.80 for tensile resistance of anchors with bars, strands or shafts. Extend the unbonded length for ground anchors and the shallowest helix for helical anchors at least five feet behind the critical failure surface. Do not extend anchors beyond right of way or easement limits. If existing or future obstructions such as foundations, guardrail posts, pavements, pipes, inlets or utilities will interfere with anchors, maintain a clearance of at least six inches between obstructions and anchors.

(4) Temporary Wall Designs

Use shoring backfill in the reinforced zone of temporary walls. Separation geotextiles are required between shoring backfill and backfill, natural ground or

culverts along the sides of the reinforced zone perpendicular to the wall face. For Class V or VI select material in the reinforced zone, separation geotextiles are also required between shoring backfill and backfill or natural ground on top of and at the back of the reinforced zone.

Design temporary walls in accordance with the plans and Article 11.10 of the AASHTO *LRFD Bridge Design Specifications*. Embed temporary walls at least 18 inches except for walls on structures or rock as determined by the Engineer. Use a uniform reinforcement length throughout the wall height of at least 0.7H or six feet, whichever is longer. Extend the reinforced zone at least six inches beyond end of reinforcement. Do not locate the reinforced zone outside right of way or easement limits.

Use the simplified method for determining maximum reinforcement loads in accordance with the AASHTO LRFD specifications. For geotextile reinforcement, use geotextile properties approved by the Department or default values in accordance with the AASHTO LRFD specifications. For geogrid reinforcement, use approved geogrid properties available from the website shown elsewhere in this provision. If the website does not list a short-term design strength for an approved geogrid, use a short-term design strength equal to the ultimate tensile strength divided by 3.5 for the geogrid reinforcement. Use geosynthetic properties for the direction reinforcement will be installed, a three-year design life and shoring backfill to be used in the reinforced zone.

Do not use more than four different reinforcement strengths for each temporary geosynthetic wall. Design temporary geotextile walls for a reinforcement coverage ratio (R_c) of 1.0. For temporary geogrid walls with an R_c of less than 1.0, use a maximum horizontal clearance between geogrids of three feet and stagger reinforcement so geogrids are centered over gaps in the reinforcement layer below.

For temporary geosynthetic walls, use "L" shaped welded wire facing with 18-inch to 24-inch long legs. Locate geotextile or geogrid reinforcement so reinforcement layers are at the same level as the horizontal legs of welded wire facing. Use vertical reinforcement spacing equal to facing height. Wrap geotextile or geogrid reinforcement behind welded wire facing and extend reinforcement at least three feet back behind facing into shoring backfill.

For temporary wire walls with separate reinforcement and facing components, attach welded wire grid or metallic strip reinforcement to welded wire facing with a connection approved by the Department. For temporary geogrid and wire walls, retain shoring backfill at welded wire facing with retention geotextiles and extend geotextiles at least three feet back behind facing into backfill.

(D) Preconstruction Meeting

The Engineer may require a shoring preconstruction meeting to discuss the construction, inspection and testing of the temporary shoring. If required and if this meeting occurs before all shoring submittals have been accepted, additional preconstruction meetings may be required before beginning construction of temporary shoring without accepted submittals. The Resident, District or Bridge Maintenance Engineer, Bridge or Roadway Construction Engineer, Geotechnical Operations Engineer, Design-Build Team and Shoring Contractor Superintendent will attend preconstruction meetings.

Construction Methods

Control drainage during construction in the vicinity of shoring. Direct run off away from shoring and shoring backfill. Contain and maintain backfill and protect material from erosion.

Install positive protection in accordance with the contract and accepted submittals. Use PCB in accordance with Section 1170 of the 2018 *Standard Specifications for Roads and Structures* and 2018 Roadway Standard Drawing No. 1170.01. Use temporary guardrail in accordance with Section 862 of the 2018 *Standard Specifications for Roads and Structures* and 2018 Roadway Standard Drawing Nos. 862.01, 862.02 and 862.03.

(A) Tolerances

Construct shoring with the following tolerances:

(1) Horizontal wires of welded wire facing are level in all directions,

(2) Shoring location is within six inches of horizontal and vertical alignment shown in the accepted submittals, and

(3) Shoring plumbness (batter) is not negative and within two degrees of vertical.

(B) Cantilever, Braced and Anchored Shoring Installation

If over excavation behind cantilever, braced or anchored shoring is shown in the accepted submittals, excavate before installing piles. Otherwise, install piles before excavating for shoring. Install cantilever, braced or anchored shoring in accordance with the construction sequence shown in the accepted submittals. Remove piles and if applicable, timber lagging when shoring is no longer needed.

(1) Pile Installation

Install piles with the minimum required embedment and extension in accordance with Subarticles 450-3(D) and 450-3(E) of the 2018 *Standard Specifications for Roads and Structures* except that a pile driving equipment data form is not

required. Piles may be installed with a vibratory hammer as approved by the Engineer.

Do not splice sheet piles. Use pile excavation to install drilled-in H-piles. After filling holes with concrete or grout to the elevations shown in the accepted submittals, remove any fluids and fill remaining portions of holes with flowable fill. Cure concrete or grout at least seven days before excavating.

Notify the Engineer if refusal is reached before pile excavation or driven piles attain the minimum required embedment. When this occurs, a revised design submittal may be required.

(2) Excavation

Excavate in front of piles from the top down in accordance with the accepted submittals. For H-piles with timber lagging and braced and anchored shoring, excavate in staged horizontal lifts with a maximum height of five feet Remove flowable fill and material in between H-piles as needed to install timber lagging. Position lagging with at least three inches of contact in the horizontal direction between the lagging and pile flanges. Do not excavate the next lift until timber lagging for the current lift is installed and if applicable, bracing and anchors for the current lift are accepted. Backfill behind cantilever, braced or anchored shoring with shoring backfill.

(3) Anchor Installation

If applicable, install foundations located behind anchored shoring before installing anchors. Fabricate and install ground anchors in accordance with the accepted submittals, Articles 6.4 and 6.5 of the AASHTO *LRFD Bridge Construction Specifications* and the following unless otherwise approved:

(a) Materials in accordance with this provision shall be required instead of materials conforming to Articles 6.4 and 6.5.3 of the AASHTO LRFD Specifications,

(b) Encapsulation-protected ground anchors in accordance with Article 6.4.1.2 of the AASHTO LRFD specifications are not required, and

(c) Corrosion protection for unbonded lengths of ground anchors and anchorage covers are not required.

(d) Measure grout temperature, density and flow during grouting with at least the same frequency grout cubes are made for compressive strength. Perform density and flow field tests in the presence of the Engineer in accordance with American National Standards Institute / American

Petroleum Institute Recommended Practice 13B-1 (Section 4, Mud Balance) and ASTM C939 (Flow Cone), respectively.

Install helical anchors in accordance with the accepted submittals and Anchor Manufacturer's instructions. Measure torque during installation and do not exceed the torsional strength rating of the helical anchor. Attain the minimum required installation torque and penetration before terminating anchor installation. When replacing a helical anchor, embed last helix of the replacement anchor at least three helix plate diameters past the location of the first helix of the previous anchor.

(4) Anchor Testing

Proof test and lock-off anchors in accordance with the accepted submittals and Article 6.5.5 of the AASHTO *LRFD Bridge Construction Specifications* except for the acceptance criteria in Article 6.5.5.5. For the AASHTO LRFD specifications, "ground anchor" refers to a ground or helical anchor and "tendon" refers to a bar, strand or shaft.

(a) Anchor Acceptance

Anchor acceptance is based in part on the following criteria.

(i) For ground and helical anchors, total movement is less than 0.04 inch between the 1 and 10 minute readings or less than 0.08 inch between the 6 and 60 minute readings.

(ii) For ground anchors, total movement at maximum test load exceeds 80% of the theoretical elastic elongation of the unbonded length.

(b) Anchor Test Results

Submit .pdf files of anchor test records including movement versus load plots for each load increment within 24 hours of completing each row of anchors. The Engineer will review the test records to determine if the anchors are acceptable.

If the Engineer determines an anchor is unacceptable, revise the anchor design or installation methods. Submit a revised anchored shoring design for acceptance and provide an acceptable anchor with the revised design or installation methods. If required, replace the anchor or provide additional anchors with the revised design or installation methods.

(C) Temporary Wall Installation

Excavate as necessary for temporary walls in accordance with the plans and accepted submittals. If applicable, install foundations located in the reinforced zone before placing shoring backfill or reinforcement unless otherwise approved. Notify the Engineer when foundation excavation is complete. Do not place shoring backfill or reinforcement until excavation dimensions and foundation material are approved.

Erect welded wire facing so the wall position is as shown in the plans and accepted submittals. Set welded wire facing adjacent to each other in the horizontal and vertical direction to completely cover the wall face with facing. Stagger welded wire facing to create a running bond by centering facing over joints in the row below.

Wrap geotextile reinforcement and retention geotextiles behind welded wire facing as shown in the plans and accepted submittals, and cover geotextiles with at least three inches of shoring backfill. Overlap adjacent geotextile reinforcement and retention and separation geotextiles at least 18 inches with seams oriented perpendicular to the wall face. Hold geotextiles in place with wire staples or anchor pins as needed.

Place reinforcement within three inches of locations shown in the plans and accepted submittals. Before placing shoring backfill, pull reinforcement taut so it is in tension and free of kinks, folds, wrinkles or creases. Install reinforcement with the direction shown in the plans and accepted submittals. For temporary wire walls with separate reinforcement and facing components, attach welded wire grid or metallic strip reinforcement to welded wire facing as shown in the accepted submittals. Do not splice or overlap reinforcement so seams are parallel to the wall face. Contact the Engineer when unanticipated existing or future obstructions such as foundations, pavements, pipes, inlets or utilities will interfere with reinforcement.

Place shoring backfill in the reinforced zone in eight-inch to ten-inch thick lifts. Compact A-2-4 soil and Class II, Type 1 and Class III select material in accordance with Subarticle 235-3(C) of the 2018 *Standard Specifications for Roads and Structures*. Use only hand operated compaction equipment to compact backfill within three feet of welded wire facing. At a distance greater than three feet, compact shoring backfill with at least four passes of an eight-ton to ten-ton vibratory roller in a direction parallel to the wall face. Smooth wheeled or rubber tired rollers are also acceptable for compacting backfill. Do not use sheepsfoot, grid rollers or other types of compaction equipment with feet. Do not displace or damage reinforcement when placing and compacting shoring backfill. End dumping directly on geotextile or geogrid reinforcement shall not be permitted. Do not operate heavy equipment on reinforcement until it is covered with at least eight inches of shoring backfill. Replace any damaged reinforcement to the satisfaction of the Engineer.

Backfill for temporary walls outside the reinforced zone in accordance with Article 410-8 of the 2018 *Standard Specifications for Roads and Structures*. Bench temporary walls into the sides of excavations where applicable. For temporary geosynthetic walls with top

of wall within five feet of finished grade, remove top facing and incorporate top reinforcement layer into fill when placing fill in front of wall. Temporary walls remain in place permanently unless otherwise required.

ON-THE-JOB TRAINING

(2-24-15) (Rev. 7-20-17) Z-10

Description

The North Carolina Department of Transportation will administer a custom version of the Federal On-the-Job Training (OJT) Program, commonly referred to as the Alternate OJT Program. All contractors (existing and newcomers) will be automatically placed in the Alternate Program. Standard OJT requirements typically associated with individual projects will no longer be applied at the project level. Instead, these requirements will be applicable on an annual basis for each contractor administered by the OJT Program Manager.

On the Job Training shall meet the requirements of 23 CFR 230.107 (b), 23 USC - Section 140, this provision and the On-the-Job Training Program Manual.

The Alternate OJT Program will allow a contractor to train employees on Federal, State and privately funded projects located in North Carolina. However, priority shall be given to training employees on NCDOT Federal-Aid funded projects.

Minorities and Women

Developing, training and upgrading of minorities and women toward journeyman level status is a primary objective of this special training provision. Accordingly, the Contractor shall make every effort to enroll minority and women as trainees to the extent that such persons are available within a reasonable area of recruitment. This training commitment is not intended, and shall not be used, to discriminate against any applicant for training, whether a member of a minority group or not.

Assigning Training Goals

The Department, through the OJT Program Manager, will assign training goals for a calendar year based on the contractors' past three years' activity and the contractors' anticipated upcoming year's activity with the Department. At the beginning of each year, all contractors eligible will be contacted by the Department to determine the number of trainees that will be assigned for the upcoming calendar year. At that time the Contractor shall enter into an agreement with the Department to provide a self-imposed on-the-job training program for the calendar year. This agreement will include a specific number of annual training goals agreed to by both parties. The number of training assignments may range from 1 to 15 per contractor per calendar year. The Contractor shall sign an agreement to fulfill their annual goal for the year.

Training Classifications

The Contractor shall provide on-the-job training aimed at developing full journeyman level workers in the construction craft / operator positions. Preference shall be given to providing training in the following skilled work classifications:

Equipment Operators	Office Engineers
Truck Drivers	Estimators
Carpenters	Iron / Reinforcing Steel Workers
Concrete Finishers	Mechanics
Pipe Layers	Welders

The Department has established common training classifications and their respective training requirements that may be used by the contractors. However, the classifications established are not all-inclusive. Where the training is oriented toward construction applications, training will be allowed in lower-level management positions such as office engineers and estimators. Contractors shall submit new classifications for specific job functions that their employees are performing. The Department will review and recommend for acceptance to FHWA the new classifications proposed by contractors, if applicable. New classifications shall meet the following requirements:

Proposed training classifications are reasonable and realistic based on the job skill classification needs, and

The number of training hours specified in the training classification is consistent with common practices and provides enough time for the trainee to obtain journeyman level status.

The Contractor may allow trainees to be trained by a subcontractor provided that the Contractor retains primary responsibility for meeting the training and this provision is made applicable to the subcontract. However, only the Contractor will receive credit towards the annual goal for the trainee.

Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training. The number of trainees shall be distributed among the work classifications on the basis of the contractor's needs and the availability of journeymen in the various classifications within a reasonable area of recruitment.

No employee shall be employed as a trainee in any classification in which they have successfully completed a training course leading to journeyman level status or in which they have been employed as a journeyman.

Records and Reports

The Contractor shall maintain enrollment, monthly and completion reports documenting company compliance under these contract documents. These documents and any other information as requested shall be submitted to the OJT Program Manager.

Upon completion and graduation of the program, the Contractor shall provide each trainee with a certification Certificate showing the type and length of training satisfactorily completed.

Trainee Interviews

All trainees enrolled in the program will receive an initial and Trainee / Post graduate interview conducted by the OJT program staff.

Trainee Wages

Contractors shall compensate trainees on a graduating pay scale based upon a percentage of the prevailing minimum journeyman wages (Davis-Bacon Act). Minimum pay shall be as follows:

60 percent of the journeyman wage for the first half of the training period
75 percent of the journeyman wage for the third quarter of the training period
90 percent of the journeyman wage for the last quarter of the training period

In no instance shall a trainee be paid less than the local minimum wage. The Contractor shall adhere to the minimum hourly wage rate that will satisfy both the NC Department of Labor (NCDOL) and the Department.

Achieving or Failing to Meet Training Goals

The Contractor will be credited for each trainee employed by him on the contract work who is currently enrolled or becomes enrolled in an approved program and who receives training for at least 50 percent of the specific program requirement. Trainees will be allowed to be transferred between projects if required by the Contractor's scheduled workload to meet training goals.

If a contractor fails to attain their training assignments for the calendar year, they may be taken off the NCDOT's Bidders List.

Measurement and Payment

No compensation will be made for providing required training in accordance with these contract documents.

STANDARD SPECIAL PROVISION

AVAILABILITY OF FUNDS - TERMINATION OF CONTRACTS

(9-1-11) Z-2

General Statute 143C-6-11. (h) Highway Appropriation is hereby incorporated verbatim in this contract as follows:

"(h) Amounts Encumbered - Transportation project appropriations may be encumbered in the amount of allotments made to the Department of Transportation by the Director for the estimated payments for transportation project contract work to be performed in the appropriation fiscal year. The allotments shall be multiyear allotments and shall be based on estimated revenues and shall be subject to the maximum contract authority contained in *General Statute 143C-6-11(c).* Payment for transportation project work performed pursuant to contract in any fiscal year other than the current fiscal year is subject to appropriations by the General Assembly. Transportation project contracts shall contain a schedule of estimated completion progress, and any acceleration of this progress shall be subject to the approval of the Department of Transportation provided funds are available. The State reserves the right to terminate or suspend any transportation project contract, and any transportation project contract shall be so terminated or suspended if funds will not be available for payment of the work to be performed during that fiscal year pursuant to the contract. In the event of termination of any contract, the contractor shall be given a written notice of termination at least 60 days before completion of scheduled work for which funds are available. In the event of termination, the contractor shall be paid for the work already performed in accordance with the contract specifications."

Payment will be made on any contract terminated pursuant to the special provision in accordance with Article 108-13(E), of the *North Carolina Department of Transportation Standard Specifications for Roads and Structures*, dated January 2018 and as amended by the Standard Special Provision, Division One found elsewhere in this RFP.

***** STANDARD SPECIAL PROVISIONS *****

NCDOT GENERAL SEED SPECIFICATIONS FOR SEED QUALITY

(5-7-11) Z-3

Seed shall be sampled and tested by the North Carolina Department of Agriculture and Consumer Services, Seed Testing Laboratory. When said samples are collected, the vendor shall supply an independent laboratory report for each lot to be tested. Results from seed so sampled shall be final. Seed not meeting the specifications shall be rejected by the Department of Transportation and shall not be delivered to North Carolina Department of Transportation warehouses. If seed has been delivered it shall be available for pickup and replacement at the supplier's expense.

Any re-labeling required by the North Carolina Department of Agriculture and Consumer Services, Seed Testing Laboratory, that would cause the label to reflect as otherwise specified herein shall be rejected by the North Carolina Department of Transportation.

Seed shall be free from seeds of the noxious weeds Johnsongrass, Balloonvine, Jimsonweed, Witchweed, Itchgrass, Serrated Tussock, Showy Crotalaria, Smooth Crotalaria, Sicklepod, Sandbur, Wild Onion, and Wild Garlic. Seed shall not be labeled with the above weed species on the seed analysis label. Tolerances as applied by the Association of Official Seed Analysts will NOT be allowed for the above noxious weeds except for Wild Onion and Wild Garlic.

Tolerances established by the Association of Official Seed Analysts will generally be recognized. However, for the purpose of figuring pure live seed, the found pure seed and found germination percentages as reported by the North Carolina Department of Agriculture and Consumer Services, Seed Testing Laboratory will be used. Allowances, as established by the NCDOT, will be recognized for minimum pure live seed as listed on the following pages.

The specifications for restricted noxious weed seed refers to the number per pound as follows:

Restricted Noxious Weed	Limitations per Lb. of Seed	Restricted Noxious Weed	Limitations per Lb. of Seed
Blessed Thistle	4 seeds	Cornflower (Ragged Robin)	27 seeds
Cocklebur	4 seeds	Texas Panicum	27 seeds
Spurred Anoda	4 seeds	Bracted Plantain	54 seeds
Velvetleaf	4 seeds	Buckhorn Plantain	54 seeds
Morning-glory	8 seeds	Broadleaf Dock	54 seeds
Corn Cockle	10 seeds	Curly Dock	54 seeds
Wild Radish	12 seeds	Dodder	54 seeds
Purple Nutsedge	27 seeds	Giant Foxtail	54 seeds
Yellow Nutsedge	27 seeds	Horsenettle	54 seeds
Canada Thistle	27 seeds	Quackgrass	54 seeds
Field Bindweed	27 seeds	Wild Mustard	54 seeds
Hedge Bindweed	27 seeds		

Seed of Pensacola Bahiagrass shall not contain more than 7% inert matter, Kentucky Bluegrass, Centipede and Fine or Hard Fescue shall not contain more than 5% inert matter whereas a maximum of 2% inert matter will be allowed on all other kinds of seed. In addition, all seed shall not contain more than 2% other crop seed nor more than 1% total weed seed. The germination rate as tested by the North Carolina Department of Agriculture shall not fall below 70%, which includes both dormant and hard seed. Seed shall be labeled with not more than 7%, 5% or 2% inert matter (according to above specifications), 2% other crop seed and 1% total weed seed.

Exceptions may be made for minimum pure live seed allowances when cases of seed variety shortages are verified. Pure live seed percentages will be applied in a verified shortage situation. Those purchase orders of deficient seed lots will be credited with the percentage that the seed is deficient.

FURTHER SPECIFICATIONS FOR EACH SEED GROUP ARE GIVEN BELOW:

Minimum 85% pure live seed; maximum 1% total weed seed; maximum 2% total other crop seed; maximum 144 restricted noxious weed seed per pound. Seed less than 83% pure live seed will not be approved.

Sericea Lespedeza
Oats (seeds)

Minimum 80% pure live seed; maximum 1% total weed seed; maximum 2% total other crop; maximum 144 restricted noxious weed seed per pound. Seed less than 78% pure live seed will not be approved.

Tall Fescue (all approved varieties)
Kobe Lespedeza
Korean Lespedeza
Weeping Lovegrass
Carpetgrass
Bermudagrass
Browntop Millet
German Millet - Strain R
Clover – Red / White / Crimson

Minimum 78% pure live seed; maximum 1% total weed seed; maximum 2% total other crop seed; maximum 144 restricted noxious weed seed per pound. Seed less than 76% pure live seed will not be approved.

Common or Sweet Sundangrass

Minimum 76% pure live seed; maximum 1% total weed seed; maximum 2% total other crop seed; maximum 144 restricted noxious weed seed per pound. Seed less than 74% pure live seed will not be approved.

Rye (grain; all varieties)
Kentucky Bluegrass (all approved varieties)
Hard Fescue (all approved varieties)
Shrub (bicolor) Lespedeza

Minimum 70% pure live seed; maximum 1% total weed seed; maximum 2% total other crop seed; maximum 144 noxious weed seed per pound. Seed less than 70% pure live seed will not be approved.

Centipedegrass
Crownvetch
Pensacola Bahiagrass
Creeping Red Fescue
Japanese Millet
Reed Canary Grass
Zoysia

Minimum 70% pure live seed; maximum 1% total weed seed; maximum 2% total other crop seed; maximum 5% inert matter; maximum 144 restricted noxious weed seed per pound.

Barnyard Grass
Big Bluestem
Little Bluestem
Bristly Locust
Birdsfoot Trefoil
Indiangrass
Orchardgrass
Switchgrass
Yellow Blossom Sweet Clover

STANDARD SPECIAL PROVISION

ERRATA

(10-16-18) (Rev. 12-12-18) Z-4

Revise the 2018 *Standard Specifications for Roads and Structures* as follows:

Division 6

Page 6-7, Article 609-1 DESCRIPTION, Line 29, replace article number "609-10" with "609-9".

Division 10

Page 10-78, Article 1056-4 GEOTEXTILES, TABLE 1056-1, Permittivity, Type 2, replace "Table 6^{D}" with "Table 7^{D}" and **Permittivity, Type 3^{B},** replace "Table 7^{D}" with "Table 8^{D}".

Page 10-162, Article 1080-50 PAINT FOR VERTICAL MARKERS, Line 1, replace article number "1080-50" with "1080-10".

Page 10-162, Article 1080-61 EPOXY RESIN FOR REINFORCING STEEL, Line 5, replace article number "1080-61" with "1080-11".

Page 10-162, Article 1080-72 ABRASIVE MATERIALS FOR BLAST CLEANING STEEL, Line 22, replace article number "1080-72" with "1080-12".

Page 10-163, Article 1080-83 FIELD PERFORMANCE AND SERVICES, Line 25, replace article number "1080-83" with "1080-13".

TITLE VI AND NONDISCRIMINATION
(6-28-77) (Rev 5-2-18) Z-6

Revise the 2018 *Standard Specifications for Roads and Structures* as follows:

Replace Article 103-4(B) with the following:

The North Carolina Department of Transportation is committed to carrying out the U.S. Department of Transportation's policy of ensuring nondiscrimination in the award and administration of contracts.

The provisions of this section related to United States Department of Transportation (US DOT) Order 1050.2A, Title 49 Code of Federal Regulations (CFR) part 21, 23 United States Code (U.S.C.) 140 and 23 CFR part 200 (or 49 CFR 303, 49 U.S.C. 5332 or 49 U.S.C. 47123) are applicable to all North Carolina Department of Transportation (NCDOT) contracts and to all related subcontracts, material supply, engineering, architectural and other service contracts, regardless of dollar amount. Any Federal provision that is specifically required not specifically set forth is hereby incorporated by reference.

(1) **Title VI Assurances (USDOT Order 1050.2A, Appendix A)**

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

(a) Compliance with Regulations

The contractor (hereinafter includes consultants) shall comply with the Acts and the Regulations relative to Nondiscrimination in Federally-assisted programs of the U.S. Department of Transportation, Federal Highway Administration (FHWA), as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.

(b) Nondiscrimination

The contractor, with regard to the work performed by it during the contract, shall not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor shall not participate directly or indirectly in the discrimination prohibited by the Acts and the Regulations, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR Part 21.

(c) Solicitations for Subcontractors, Including Procurements of Materials and Equipment

In all solicitations, either by competitive bidding, or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier shall be notified by the contractor of the contractor's obligations under this contract and the Acts and the Regulations relative to Nondiscrimination on the grounds of race, color, or national origin.

(d) Information and Reports

The contractor shall provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Recipient or the FHWA to be pertinent to ascertain compliance with such Acts, Regulations, and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish the information, the contractor shall so certify to the Recipient or the FHWA, as appropriate, and shall set forth what efforts it has made to obtain the information.

(e) Sanctions for Noncompliance:

In the event of a contractor's noncompliance with the Nondiscrimination provisions of this contract, the Recipient will impose such contract sanctions as it and / or the FHWA may determine to be appropriate, including, but not limited to:

(i) Withholding payments to the contractor under the contract until the contractor complies; and / or

(ii) Cancelling, terminating, or suspending a contract, in whole or in part.

(f) Incorporation of Provisions

The contractor shall include the provisions of paragraphs (a) through (f) in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations and directives issued pursuant thereto. The contractor shall take action with respect to any subcontract or procurement as the Recipient or the FHWA may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, the contractor may request the Recipient to enter into any litigation to protect the interests of the Recipient. In addition, the contractor may request the United States to enter into the litigation to protect the interests of the United States.

(2) **Title VI Nondiscrimination Program (23 CFR 200.5(p))**

The North Carolina Department of Transportation (NCDOT) has assured the USDOT that, as a condition to receiving federal financial assistance, NCDOT will comply with Title VI of the Civil Rights Act of 1964 and all requirements imposed by Title 49 CFR Part 21 and related nondiscrimination authorities to ensure that no person shall, on the ground of race, color, national origin, limited English proficiency, sex, age, or disability (including religion / creed or income-level, where applicable), be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any programs, activities, or services conducted or funded by NCDOT. Contractors and other organizations under contract or agreement with NCDOT must also comply with Title VI and related authorities, therefore:

(a) During the performance of this contract or agreement, contractors (e.g. subcontractors, consultants, vendors, prime contractors) shall be responsible for

complying with NCDOT's Title VI Program. Contractors are not required to prepare or submit Title VI Programs. To comply with this section, the prime contractor shall:

1. Post NCDOT's Notice of Nondiscrimination and the Contractor's own Equal Employment Opportunity (EEO) Policy in conspicuous locations accessible to all employees, applicants and subcontractors on the jobsite.

2. Physically incorporate the required Title VI clauses into all subcontracts on federally-assisted and state-funded NCDOT projects, and ensure inclusion by subcontractors into all lower-tier subcontracts.

3. Required Solicitation Language. The Contractor shall include the following notification in all solicitations for bids and requests for work or material, regardless of funding source:

   "The North Carolina Department of Transportation, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 US.C. §§ 2000d to 2000d-4) and the Regulations, hereby notifies all bidders that it will affirmatively ensure that any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award. In accordance with other related nondiscrimination authorities, bidders and contractors will also not be discriminated against on the grounds of sex, age, disability, low-income level, creed / religion, or limited English proficiency in consideration for an award."

4. Physically incorporate the FHWA-1273, in its entirety, into all subcontracts and subsequent lower tier subcontracts on Federal-aid highway construction contracts only.

5. Provide language assistance services (i.e., written translation and oral interpretation), free of charge, to LEP employees and applicants. Contact NCDOT OCR for further assistance, if needed.

6. For assistance with these Title VI requirements, contact the NCDOT Title VI Nondiscrimination Program at 1-800-522-0453.

(b) Subrecipients (e.g. cities, counties, LGAs, planning organizations) may be required to prepare and submit a Title VI Plan to NCDOT, including Title VI Assurances and / or agreements. Subrecipients must also ensure compliance by their contractors and subrecipients with Title VI. (23 CFR 200.9(b)(7))

(c) If reviewed or investigated by NCDOT, the contractor or subrecipient agrees to take affirmative action to correct any deficiencies found within a reasonable time period, not to exceed 90 calendar days, unless additional time is granted by NCDOT. (23 CFR 200.9(b)(15))

(d) The Contractor shall be responsible for notifying subcontractors of NCDOT's External Discrimination Complaints Process.

1. Applicability

Title VI and related laws protect participants and beneficiaries (e.g., members of the public and contractors) from discrimination by NCDOT employees, subrecipients and contractors, regardless of funding source.

2. Eligibility

Any person, or class of persons, who believes he / she has been subjected to discrimination based on race, color, national origin, Limited English Proficiency (LEP), sex, age, or disability (and religion in the context of employment, aviation, or transit) may file a written complaint. The law also prohibits intimidation or retaliation of any sort.

3. Time Limits and Filing Options

Complaints may be filed by the affected individual(s) or a representative and must be filed no later than 180 calendar days after the following:

(i) The date of the alleged act of discrimination; or

(ii) The date when the person(s) became aware of the alleged discrimination; or

(iii) Where there has been a continuing course of conduct, the date on which that conduct was discontinued or the latest instance of the conduct.

Title VI and related discrimination complaints may be submitted to the following entities:

- North Carolina Department of Transportation, Office of Civil Rights, Title VI Program, 1511 Mail Service Center, Raleigh, NC 27699-1511; toll free 1-800-522-0453
- Federal Highway Administration, North Carolina Division Office, 310 New Bern Avenue, Suite 410, Raleigh, NC 27601; 919-747-7010
- US Department of Transportation, Departmental Office of Civil Rights, External Civil Rights Programs Division, 1200 New Jersey Avenue, SE, Washington, DC 20590; 202-366-4070

4. Format for Complaints

Complaints must be in writing and signed by the complainant(s) or a representative, and include the complainant's name, address, and telephone number. Complaints received by fax or e-mail will be acknowledged and processed. Allegations received by telephone will be reduced to writing and provided to the complainant for confirmation or revision before processing. Complaints will be accepted in other languages, including Braille.

5. Discrimination Complaint Form

   Contact NCDOT Civil Rights to receive a full copy of the Discrimination Complaint Form and procedures.

6. Complaint Basis

   Allegations must be based on issues involving race, color, national origin (LEP), sex, age, disability, or religion (in the context of employment, aviation or transit). "Basis" refers to the complainant's membership in a protected group category.

TABLE 103-1
COMPLAINT BASIS

Protected Categories	Definition	Examples	Applicable Nondiscrimination Authorities
Race and Ethnicity	An individual belonging to one of the accepted racial groups; or the perception, based usually on physical characteristics that a person is a member of a racial group	Black / African American, Hispanic / Latino, Asian, American Indian / Alaska Native, Native Hawaiian / Pacific Islander, White	Title VI of the Civil Rights Act of 1964; 49 CFR Part 21; 23 CFR 200; 49 U.S.C. 5332(b); 49 U.S.C. 47123. *(Executive Order 13166)*
Color	Color of skin, including shade of skin within a racial group	Black, White, Brown, Yellow, etc.	
National Origin *(Limited English Proficiency)*	Place of birth. Citizenship is not a factor. (*Discrimination based on language or a person's accent is also covered)*	Mexican, Cuban, Japanese, Vietnamese, Chinese	
Sex	Gender. The sex of an individual. *Note:* Sex under this program does not include sexual orientation.	Women and Men	1973 Federal-Aid Highway Act; 49 U.S.C. 5332(b); 49 U.S.C. 47123.
Age	Persons of any age	21-year-old person	Age Discrimination Act of 1975 49 U.S.C. 5332(b); 49 U.S.C. 47123.
Disability	Physical or mental impairment, permanent or temporary, or perceived.	Blind, alcoholic, para-amputee, epileptic, diabetic, arthritic	Section 504 of the Rehabilitation Act of 1973; Americans with Disabilities Act of 1990
Religion (in the context of employment) *(Religion / Creed in all aspects of any aviation or transit-related construction)*	An individual belonging to a religious group; or the perception, based on distinguishable characteristics that a person is a member of a religious group. In practice, actions taken as a result of the moral and ethical beliefs as to what is right and wrong, which are sincerely held with the strength of traditional religious views. ***Note:*** Does not have to be associated with a recognized religious group or church; if an individual sincerely holds to the belief, it is a protected religious practice.	Muslim, Christian, Sikh, Hindu, etc.	Title VII of the Civil Rights Act of 1964; 23 CFR 230; FHWA-1273 Required Contract Provisions. *(49 U.S.C. 5332(b);* *49 U.S.C. 47123)*

(3) **Pertinent Nondiscrimination Authorities**

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest agrees to comply with the following non-discrimination statutes and authorities, including, but not limited to:

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d et seq., 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin); and 49 CFR Part 21

- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C. § 4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects)

- Federal-Aid Highway Act of 1973, (23 U.S.C. § 324 et seq.), (prohibits discrimination on the basis of sex)

- Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. § 794 et seq.), as amended, (prohibits discrimination on the basis of disability) and 49 CFR Part 27

- The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 et seq.), (prohibits discrimination on the basis of age)

- Airport and Airway Improvement Act of 1982, (49 USC § 471, Section 47123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex)

(g) The Civil Rights Restoration Act of 1987, (PL 100-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms "programs or activities" to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not)

(h) Titles II and III of the Americans with Disabilities Act, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131-12189) as implemented by Department of Transportation regulations at 49 C.F.R. parts 37 and 38

(i) The Federal Aviation Administration's Nondiscrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex)

(j) Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures Nondiscrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations

(k) Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of Limited English Proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100)

(l) Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. 1681 et seq)

(m) Title VII of the Civil Rights Act of 1964 (42 U.S.C. § 2000e et seq., Pub. L. 88-352), (prohibits employment discrimination on the basis of race, color, religion, sex, or national origin).

(4) **Additional Title VI Assurances**

***The following Title VI Assurances (Appendices B, C and D) shall apply, as applicable*

(a) Clauses for Deeds Transferring United States Property (1050.2A, Appendix B)

The following clauses shall be included in deeds effecting or recording the transfer of real property, structures, or improvements thereon, or granting interest therein from the United States pursuant to the provisions of Assurance 4.

NOW, THEREFORE, the U.S. Department of Transportation as authorized by law and upon the condition that the North Carolina Department of Transportation (NCDOT) will accept title to the lands and maintain the project constructed thereon in accordance with the North Carolina General Assembly, the Regulations for the Administration of the Federal-Aid Highway Program, and the policies and procedures prescribed by the Federal Highway Administration of the U.S. Department of Transportation in accordance and in compliance with all requirements imposed by Title 49, Code of Federal Regulations, U.S. Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Nondiscrimination in Federally-assisted programs of the U.S Department of Transportation pertaining to and effectuating the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252; 42 U.S.C. § 2000d to 2000d-4), does hereby remise, release, quitclaim and convey unto the NCDOT all the right, title and interest of the U.S. Department of Transportation in and to said lands described in Exhibit A attached hereto and made a part hereof.

(HABENDUM CLAUSE)

TO HAVE AND TO HOLD said lands and interests therein unto the North Carolina Department of Transportation (NCDOT) and its successors forever, subject, however, to the covenants, conditions, restrictions and reservations herein contained as follows, which will remain in effect for the period during which the real property or structures are used for a purpose for which Federal financial assistance is extended or for another purpose involving the provision of similar services or benefits and will be binding on the NCDOT, its successors and assigns.

The NCDOT, in consideration of the conveyance of said lands and interests in lands, does hereby covenant and agree as a covenant running with the land for itself, its successors and assigns, that (1) no person will on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination with regard to any facility located wholly or in part on, over, or under such lands hereby conveyed [,] [and]* (2) that the NCDOT will use the lands and interests in lands and interests in lands so conveyed, in compliance with all requirements imposed by or pursuant to Title 49, Code of Federal Regulations, U.S. Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation, Effectuation of Title VI of the Civil Rights Act of 1964, and as said Regulations and Acts may be amended [, and (3) that in the event of breach of any of the above-mentioned nondiscrimination conditions, the Department will have a right to enter or re-enter said lands and facilities on said land, and that above described land and facilities will thereon revert to and vest in and become the absolute property of the U.S. Department of Transportation and its assigns as such interest existed prior to this instruction].*

(*Reverter clause and related language to be used only when it is determined that such a clause is necessary in order to make clear the purpose of Title VI.)

(b) Clauses for Transfer of Real Property Acquired or Improved Under the Activity, Facility, or Program (1050.2A, Appendix C)

The following clauses shall be included in deeds, licenses, leases, permits, or similar instruments entered into by the North Carolina Department of Transportation (NCDOT) pursuant to the provisions of Assurance 7(a):

1. The (grantee, lessee, permittee, etc. as appropriate) for himself / herself, his / her heirs, personal representatives, successors in interest, and assigns, as a part of the consideration hereof, does hereby covenant and agree [in the case of deeds and leases add "as a covenant running with the land"] that:

   (i.) In the event facilities are constructed, maintained, or otherwise operated on the property described in this (deed, license, lease, permit, etc.) for a purpose for which a U.S. Department of Transportation activity, facility, or program is extended or for another purpose involving the provision of similar services or benefits, the (grantee, licensee, lessee, permittee, etc.) will maintain and operate such facilities and services in compliance with all requirements imposed by the Acts and Regulations (as may be amended) such that no person on the grounds of race, color, or national origin, will be excluded from participation in, denied the benefits of, or be otherwise subjected to discrimination in the use of said facilities.

2. With respect to licenses, leases, permits, etc., in the event of breach of any of the above Nondiscrimination covenants, the NCDOT will have the right to terminate the (lease, license, permit, etc.) and to enter, re-enter, and repossess said lands and facilities thereon, and hold the same as if the (lease, license, permit, etc.) had never been made or issued. *

3. With respect to a deed, in the event of breach of any of the above Nondiscrimination covenants, the NCDOT will have the right to enter or re-enter the lands and facilities thereon, and the above described lands and facilities will there upon revert to and vest in and become the absolute property of the NCDOT and its assigns. *

(*Reverter clause and related language to be used only when it is determined that such a clause is necessary to make clear the purpose of Title VI.)

(c) Clauses for Construction / Use / Access to Real Property Acquired Under the Activity, Facility or Program (1050.2A, Appendix D)

The following clauses shall be included in deeds, licenses, permits, or similar instruments / agreements entered into by the North Carolina Department of Transportation (NCDOT) pursuant to the provisions of Assurance 7(b):

1. The (grantee, licensee, permittee, etc., as appropriate) for himself / herself, his / her heirs, personal representatives, successors in interest, and assigns, as a part of the consideration hereof, does hereby covenant and agree (in the case of deeds and leases add, "as a covenant running with the land") that (1) no person on the ground of race, color, or national origin, will be excluded from participation in, denied the benefits of, or be otherwise subjected to discrimination in the use of said facilities, (2) that in the construction of any improvements on, over, or under such land, and the furnishing of services thereon, no person on the ground of race, color, or national origin, will be excluded from participation in, denied the benefits of, or otherwise be subjected to discrimination, (3) that the (grantee, licensee, lessee, permittee, etc.) will use the premises in compliance with all other requirements imposed by or pursuant to the Acts and Regulations, as amended, set forth in this Assurance.

2. With respect to (licenses, leases, permits, etc.), in the event of breach of any of the above Nondiscrimination covenants, the NCDOT will have the right to terminate the (license, permit, etc., as appropriate) and to enter or re-enter and repossess said land and the facilities thereon, and hold the same as if said (license, permit, etc., as appropriate) had never been made or issued. *

3. With respect to deeds, in the event of breach of any of the above Nondiscrimination covenants, the NCDOT will there upon revert to and vest in and become the absolute property of the NCDOT and its assigns. *

(*Reverter clause and related language to be used only when it is determined that such a clause is necessary to make clear the purpose of Title VI.)

*** STANDARD SPECIAL PROVISIONS ***

MINORITY AND FEMALE EMPLOYMENT REQUIREMENTS

(12-18-07) Z-7

NOTICE OF REQUIREMENTS FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY (*EXECUTIVE NUMBER 11246*)

1. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, see as shown on the attached sheet entitled "Employment Goals for Minority and Female Participation".

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area. If the Contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the Contractor also is subject to the goals for both its federally involved and nonfederally involved construction.

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

2. As used in this Notice and in the contract resulting from this solicitation, the "covered area" is the county or counties shown on the cover sheet of the proposal form and contract.

EMPLOYMENT GOALS FOR MINORITY AND FEMALE PARTICIPATION

Economic Areas

Area 023 29.7%
Bertie County
Camden County
Chowan County
Gates County
Hertford County
Pasquotank County
Perquimans County

Area 024 31.7%
Beaufort County
Carteret County
Craven County
Dare County
Edgecombe County
Green County
Halifax County
Hyde County
Jones County
Lenoir County
Martin County
Nash County
Northampton County
Pamlico County
Pitt County
Tyrrell County
Washington County
Wayne County
Wilson County

Area 025 23.5%
Columbus County
Duplin County
Onslow County
Pender County

Area 026 33.5%
Bladen County
Hoke County
Richmond County
Robeson County
Sampson County
Scotland County

Area 027 24.7%
Chatham County
Franklin County
Granville County
Harnett County
Johnston County
Lee County
Person County
Vance County
Warren County

Area 028 15.5%
Alleghany County
Ashe County
Caswell County
Davie County
Montgomery County
Moore County
Rockingham County
Surry County
Watauga County
Wilkes County

Area 029 15.7%
Alexander County
Anson County
Burke County
Cabarrus County
Caldwell County
Catawba County
Cleveland County
Iredell County
Lincoln County
Polk County
Rowan County
Rutherford County
Stanly County

Area 0480 8.5%
Buncombe County
Madison County

Area 030 6.3%
Avery County
Cherokee County
Clay County
Graham County
Haywood County
Henderson County
Jackson County
McDowell County
Macon County
Mitchell County
Swain County
Transylvania County
Yancey County

SMSA Areas

Area 5720 26.6%
Currituck County

Area 9200 20.7%
Brunswick County
New Hanover County

Area 2560 24.2%
Cumberland County

Area 6640 22.8%
Durham County
Orange County
Wake County

Area 1300 16.2%
Alamance County

Area 3120 16.4%
Davidson County
Forsyth County
Guilford County
Randolph County
Stokes County
Yadkin County

Area 1520 18.3%
Gaston County
Mecklenburg County
Union County

Goals for Female

Participation in Each Trade

(Statewide) 6.9%

STANDARD SPECIAL PROVISION

REQUIRED CONTRACT PROVISIONS FEDERAL - AID CONSTRUCTION CONTRACTS

FHWA - 1273 Electronic Version - May 1, 2012 Z-8

I. General
II. Nondiscrimination
III. Nonsegregated Facilities
IV. Davis-Bacon and Related Act Provisions
V. Contract Work Hours and Safety Standards Act Provisions
VI. Subletting or Assigning the Contract
VII. Safety: Accident Prevention
VIII. False Statements Concerning Highway Projects
IX. Implementation of Clean Air Act and Federal Water Pollution Control Act
X. Compliance with Governmentwide Suspension and Debarment Requirements
XI. Certification Regarding Use of Contract Funds for Lobbying

ATTACHMENTS

A. Employment and Materials Preference for Appalachian Development Highway System or Appalachian Local Access Road Contracts (included in Appalachian contracts only)

I. GENERAL

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under Title 23 (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services).

   The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

   Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services). The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

   Contracting agencies may reference Form FHWA-1273 in bid proposal or request for proposal documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract).
2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.
3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.
4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors.

II. NONDISCRIMINATION

The provisions of this section related to 23 CFR Part 230 are applicable to all Federal-aid construction contracts and to all related construction subcontracts of $10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR 60, 29 CFR 1625-1627, Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding $10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR 60, and 29 CFR 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), and Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The following provision is adopted from 23 CFR 230, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

1. **Equal Employment Opportunity:** Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630, 29 CFR 1625-1627, 41 CFR 60 and 49 CFR 27) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are

incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract.
b. The contractor will accept as its operating policy the following statement:
"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre-apprenticeship, and/or on-the-job training."

2. **EEO Officer:** The contractor will designate and make known to the contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program and who must be assigned adequate authority and responsibility to do so.
3. **Dissemination of Policy:** All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:
   a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.
   b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.
   c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minorities and women.
   d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.
   e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.
4. **Recruitment:** When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minorities and women in the area from which the project work force would normally be derived.
   a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority and women applicants may be referred to the contractor for employment consideration.
   b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.
   c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such applicants will be discussed with employees.
5. **Personnel Actions:** Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:
   a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.
   b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.
   c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.
   d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with its obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of their avenues of appeal.
6. **Training and Promotion:**
   a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.
   b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).
   c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.
   d. The contractor will periodically review the training and promotion potential of employees who are minorities and women and will encourage eligible employees to apply for such training and promotion.
7. **Unions:** If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. Actions by the contractor, either directly or through a contractor's association acting as agent, will include the procedures set forth below:

a. The contractor will use good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.
b. The contractor will use good faith efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.
c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the contracting agency and shall set forth what efforts have been made to obtain such information.
d. In the event the union is unable to provide the contractor with a reasonable flow of referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the contracting agency.

8. **Reasonable Accommodation for Applicants / Employees with Disabilities:** The contractor must be familiar with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established there under. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.
9. **Selection of Subcontractors, Procurement of Materials and Leasing of Equipment:** The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.
   a. The contractor shall notify all potential subcontractors and suppliers and lessors of their EEO obligations under this contract.
   b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.
10. **Assurance Required by 49 CFR 26.13(b):**
   a. The requirements of 49 CFR Part 26 and the State DOT's U.S. DOT-approved DBE program are incorporated by reference.
   b. The contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the contracting agency deems appropriate.
11. **Records and Reports:** The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.
   a. The records kept by the contractor shall document the following:
      (1) The number and work hours of minority and non-minority group members and women employed in each work classification on the project;
      (2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women; and
      (3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women:
   b. The contractors and subcontractors will submit an annual report to the contracting agency each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

III. NONSEGREGATED FACILITIES

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of $10,000 or more.

The contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location, under the contractor's control, where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

IV. DAVIS-BACON AND RELATED ACT PROVISIONS

This section is applicable to all Federal-aid construction projects exceeding $2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size). The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. Contracting agencies may elect to apply these requirements to other projects.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 "Contract provisions and related matters" with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

1. **Minimum wages**
   a. All laborers and mechanics employed or working upon the site of the work, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is

attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 1.d. of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph 1.b. of this section) and the Davis-Bacon poster (WH–1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

b. (1) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(ii) The classification is utilized in the area by the construction industry; and

(iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(2) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(3) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. The Wage and Hour Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(4) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs 1.b.(2) or 1.b.(3) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

c. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

d. If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

2. **Withholding.** The contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract, or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the contracting agency may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

3. **Payrolls and basic records**

a. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

b. (1) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the contracting agency. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g. the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH–347 is available

for this purpose from the Wage and Hour Division Web site at http://www.dol.gov/esa/whd/forms/ wh347instr.htm or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the contracting agency for transmission to the State DOT, the FHWA or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the contracting agency.

(2) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(i) That the payroll for the payroll period contains the information required to be provided under §5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under §5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(ii) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(3) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH–347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(2) of this section.

(4) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

c. The contractor or subcontractor shall make the records required under paragraph 3.a. of this section available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the FHWA may, after written notice to the contractor, the contracting agency or the State DOT, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. **Apprentices and trainees**

a. Apprentices (programs of the USDOL). Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice.

The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

b. Trainees (programs of the USDOL). Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration.

The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration.

Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

d. Apprentices and Trainees (programs of the U.S. DOT). Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

5. **Compliance with Copeland Act requirements.** The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.
6. **Subcontracts.** The contractor or subcontractor shall insert Form FHWA-1273 in any subcontracts and also require the subcontractors to include Form FHWA-1273 in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.
7. **Contract termination:** debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.
8. **Compliance with Davis-Bacon and Related Act requirements.** All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.
9. **Disputes concerning labor standards.** Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.
10. **Certification of eligibility.**

a. By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

c. The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

The following clauses apply to any Federal-aid construction contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

1. **Overtime requirements.** No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.
2. **Violation; liability for unpaid wages; liquidated damages.** In the event of any violation of the clause set forth in paragraph (1.) of this section, the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1.) of this section, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1.) of this section.
3. **Withholding for unpaid wages and liquidated damages.** The FHWA or the contacting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2.) of this section.
4. **Subcontracts.** The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (1.) through (4.) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1.) through (4.) of this section.

VI. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System.

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the contracting agency. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635.116).

a. The term "perform work with its own organization" refers to workers employed or leased by the prime contractor, and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions:

(1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;

(2) the prime contractor remains responsible for the quality of the work of the leased employees;

(3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and

(4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the contract as a whole and in general are to be limited to minor components of the overall contract.

2. The contract amount upon which the requirements set forth in paragraph (1) of Section VI is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.
3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the contracting officer determines is necessary to assure the performance of the contract.
4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the contracting agency has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.
5. The 30% self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements.

VII. SAFETY: ACCIDENT PREVENTION

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.
2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704).
3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C.3704).

VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, Form FHWA-1022 shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined under this title or imprisoned not more than 5 years or both."

IX. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

By submission of this bid/proposal or the execution of this contract, or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any person who is or will be utilized in the performance of this contract is not prohibited from receiving an award due to a violation of Section 508 of the Clean Water Act or Section 306 of the Clean Air Act.
2. That the contractor agrees to include or cause to be included the requirements of paragraph (1) of this Section X in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements.

X. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA approval or that is estimated to cost $25,000 or more – as defined in 2 CFR Parts 180 and 1200.

1. **Instructions for Certification – First Tier Participants:**
   a. By signing and submitting this proposal, the prospective first tier participant is providing the certification set out below.
   b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective first tier participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.
   c. The certification in this clause is a material representation of fact upon which reliance was placed when the contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause of default.
   d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.
   e. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).
   f. The prospective first tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.
   g. The prospective first tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold.
   h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website **(https://www.epls.gov/)**, which is compiled by the General Services Administration.
   i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
   j. Except for transactions authorized under paragraph (f) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

* * * * *

2. **Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – First Tier Participants:**
   a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:
      (1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency;
      (2) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
      (3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (a)(2) of this certification; and
      (4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.
   b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.
2. **Instructions for Certification - Lower Tier Participants:**
   (Applicable to all subcontracts, purchase orders and other lower tier transactions requiring prior FHWA approval or estimated to cost $25,000 or more - 2 CFR Parts 180 and 1200)
   a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.
   b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.
   c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.
   d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of

Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (https://www.epls.gov/), which is compiled by the General Services Administration.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

* * * * *

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency.
2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

* * * * *

XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts which exceed $100,000 (49 CFR 20).

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:
   a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
   b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.
2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.
3. The prospective participant also agrees by submitting its bid or proposal that the participant shall require that the language of this certification be included in all lower tier subcontracts, which exceed $100,000 and that all such recipients shall certify and disclose accordingly.

STANDARD SPECIAL PROVISION
MINIMUM WAGES
GENERAL DECISION NC190090 01/04/2019 NC90

Z-103

Date: January 4, 2019

General Decision Number: NC190090 01/04/2019 NC90

Superseded General Decision Numbers: NC20180103

State: North Carolina

Construction Type: HIGHWAY

COUNTIES

Brunswick	Greene	Onslow
Cumberland	Hoke	Pender
Currituck	Johnston	Pitt
Edgecombe	Nash	Wake
Franklin	New Hanover	Wayne

HIGHWAY CONSTRUCTION PROJECTS (excluding tunnels, building structures in rest area projects & railroad construction; bascule, suspension & spandrel arch bridges designed for commercial navigation, bridges involving marine construction; and other major bridges).

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.60 for calendar year 2019 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.60 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract for calendar year 2019. If this contract is covered by the EO and a classification considered necessary for performance of work on the contract must pay workers in that classification at least the wage rate determined through the conformance process set for the in 29 CFR 5.5(a)(1)(ii) (or the EO minimum wage rate, if it is higher than the conformed wage rate). The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2) – (60). Additional information on contractor requirements and worker protections under the EO is available at **www.dol.gov/whd/govcontracts**.

Modification Number	Publication Date
0	01/04/2019

SUNC2014-005 11/17/2014

	Rates	Fringes
BLASTER	21.04	
CARPENTER	13.72	
CEMENT MASON / CONCRETE FINISHER	14.48	
ELECTRICIAN		
Electrician	17.97	
Telecommunications Technician	16.79	.63
IRONWORKER	16.02	
LABORER		
Asphalt Raker and Spreader	12.46	
Asphalt Screed / Jackman	14.33	
Carpenter Tender	12.88	
Cement Mason / Concrete Finisher Tender	12.54	
Common or General	10.60	
Guardrail / Fence Installer	12.87	
Pipelayer	12.17	
Traffic Signal / Lighting Installer	14.89	
PAINTER		
Bridge	24.57	
POWER EQUIPMENT OPERATORS		
Asphalt Broom Tractor	11.85	
Bulldozer Fine	17.04	
Bulldozer Rough	14.34	
Concrete Grinder / Groover	20.34	2.30
Crane Boom Trucks	20.54	
Crane Other	20.08	
Crane Rough / All-Terrain	20.67	
Drill Operator Rock	14.38	
Drill Operator Structure	21.14	
Excavator Fine	16.60	
Excavator Rough	14.00	
Grader / Blade Fine	18.47	
Grader / Blade Rough	14.62	
Loader 2 Cubic Yards or Less	13.76	
Loader Greater Than 2 Cubic Yards	14.14	
Material Transfer Vehicle (Shuttle Buggy)	15.18	
Mechanic	17.55	
Milling Machine	15.36	
Off-Road Hauler / Water Tanker	11.36	
Oiler / Greaser	13.55	
Pavement Marking Equipment	12.11	
Paver Asphalt	15.59	
Paver Concrete	18.20	
Roller Asphalt Breakdown	12.45	
Roller Asphalt Finish	13.85	
Roller Other	11.36	
Scraper Finish	12.71	
Scraper Rough	11.35	
Slip Form Machine	16.50	
Tack Truck / Distributor Operator	14.52	

	Rates	Fringes
TRUCK DRIVER		
GVWR of 26,000 Lbs or Less	11.12	
GVWR of 26,000 Lbs or Greater	12.37	

Welders – Receive rate prescribed for craft performing operation to which welding is incidental.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at **www.dol.gov/whd/govcontracts**.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29 CFR 5.5(a)(1)(ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average

rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated / CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U. S. Department of Labor
200 Constitution Avenue, N.W.
Washington, D.C. 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, D.C. 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, D.C. 20210

4.) All decisions by the Administrative Review Board are final.

END OF GENERAL DECISION

STANDARD SPECIAL PROVISION
MINIMUM WAGES
GENERAL DECISION NC190091 01/04/2019 NC91

Z-104

Date: January 4, 2019

General Decision Number: NC190091 01/04/2019 NC91

Superseded General Decision Numbers: NC20180104

State: North Carolina

Construction Type: HIGHWAY

COUNTIES

Beaufort	Dare	Jones	Sampson
Bertie	Duplin	Lenoir	Scotland
Bladen	Gates	Martin	Tyrrell
Camden	Granville	Northampton	Vance
Carteret	Halifax	Pamlico	Warren
Chowan	Harnett	Pasquotank	Washington
Columbus	Hertford	Perquimans	Wilson
Craven	Hyde	Robeson	

HIGHWAY CONSTRUCTION PROJECTS (excluding tunnels, building structures in rest area projects & railroad construction; bascule, suspension & spandrel arch bridges designed for commercial navigation, bridges involving marine construction; and other major bridges).

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.60 for calendar year 2019 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.60 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract for calendar year 2019. If this contract is covered by the EO and a classification considered necessary for performance of work on the contract must pay workers in that classification at least the wage rate determined through the conformance process set for the in 29 CFR 5.5(a)(1)(ii) (or the EO minimum wage rate, if it is higher than the conformed wage rate). The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2) – (60). Additional information on contractor requirements and worker protections under the EO is available at **www.dol.gov/whd/govcontracts**.

Modification Number	Publication Date
0	01/04/2019

SUNC2014-006 11/17/2014

	Rates	Fringes
BLASTER	21.85	
CARPENTER	13.72	
CEMENT MASON / CONCRETE FINISHER	14.26	
ELECTRICIAN		
Electrician	18.69	2.66
Telecommunications Technician	14.72	1.67
IRONWORKER	16.32	
LABORER		
Asphalt Raker and Spreader	12.42	
Asphalt Screed / Jackman	13.48	
Carpenter Tender	10.85	
Cement Mason / Concrete Finisher Tender	11.35	
Common or General	10.60	
Guardrail / Fence Installer	13.39	
Pipelayer	13.31	
Traffic Signal / Lighting Installer	16.88	
PAINTER		
Bridge	19.62	
POWER EQUIPMENT OPERATORS		
Asphalt Broom Tractor	13.28	
Bulldozer Fine	18.46	
Bulldozer Rough	14.09	
Concrete Grinder / Groover	24.66	
Crane Boom Trucks	17.25	
Crane Other	21.48	
Crane Rough / All-Terrain	19.00	
Drill Operator Rock	15.43	1.61
Drill Operator Structure	19.12	
Excavator Fine	17.61	
Excavator Rough	12.99	
Grader / Blade Fine	16.73	
Grader / Blade Rough	15.28	
Loader 2 Cubic Yards or Less	10.60	
Loader Greater Than 2 Cubic Yards	13.58	
Material Transfer Vehicle (Shuttle Buggy)	17.39	
Mechanic	18.63	
Milling Machine	14.38	
Off-Road Hauler / Water Tanker	10.60	
Oiler / Greaser	13.45	
Pavement Marking Equipment	11.87	
Paver Asphalt	15.53	
Roller Asphalt Breakdown	12.13	
Roller Asphalt Finish	13.65	
Roller Other	10.60	
Scraper Finish	13.98	
Scraper Rough	10.60	
Slip Form Machine	19.29	
Tack Truck / Distributor Operator	14.56	

	Rates	Fringes
TRUCK DRIVER		
GVWR of 26,000 Lbs or Less	10.60	
GVWR of 26,000 Lbs or Greater	12.04	

Welders – Receive rate prescribed for craft performing operation to which welding is incidental.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at **www.dol.gov/whd/govcontracts**.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29 CFR 5.5(a)(1)(ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average

rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated / CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U. S. Department of Labor
200 Constitution Avenue, N.W.
Washington, D.C. 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, D.C. 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, D.C. 20210

4.) All decisions by the Administrative Review Board are final.

END OF GENERAL DECISION

***** STANDARD SPECIAL PROVISIONS *****

(10-23-17)

DIVISION ONE OF STANDARD SPECIFICATIONS

Division One of the 2018 NCDOT *Standard Specifications for Roads and Structures* (*Standard Specifications*) shall apply except as follows:

Definitions: Throughout Division One of the 2018 *Standard Specifications*, the term "Contractor" is replaced with "Design-Build Team", the term "Bidder" is replaced with "Proposer," the term "Bid" is replaced by "Price Proposal," and the phrase "lowest Responsible Bidder" is replaced with "responsible Proposer with the lowest adjusted price." The replacement of "Contractor" with "Design-Build Team" does not apply to Article 102-2. The replacement of the above terms also does not apply when the terms are part of a phrase (e.g. bid bond, prime contractor, total amount bid, etc.)

Deletions: Articles 102-3(B), 102-4, 102-8(B), 102-9(C)(2), 103-2(B), and 103-4(C) of the 2018 *Standard Specifications for Roads and Structures* are deleted from Design-Build Contracts.

Modifications: The remainder of this Standard Special Provision includes modifications to Division One of the 2018 *Standard Specifications for Roads and Structures*.

SECTION 101
DEFINITION OF TERMS

Page 1-3, Article 101-3, replace and add certain definitions as follows:

ADDITIONAL WORK

Additional work is that which results from a change or alteration to the contract and for which there are contract unit prices in the original contract or an executed supplemental agreement.

ADVERTISEMENT

The public advertisement inviting Statements of Qualifications for the design and construction of specific projects.

AWARD

The decision of the Department of Transportation to accept the proposal of the selected Design-Build Team for work which is subject to the furnishing of payment and performance bonds, and such other conditions as may be otherwise provided by law, the Request for Proposals, and the 2018 *Standard Specifications for Roads and Structures*.

CONTRACT

The executed agreement between the Department and the successful proposer, covering the performance of, and compensation for, the work. The term contract is all inclusive with reference to all written agreements affecting a contractual relationship and all documents referred to therein. The contract shall include, but not be limited to, the Request for Proposals, the Technical Proposal, the Price Proposal, the printed contract form and attachments, contract bonds, plans

and associated special provisions prepared by the Design-Build Team, standard specifications and supplemental specifications, standard special provisions and project special provisions contained in the Request for Proposals or as developed by the Design-Build Team and accepted by the Department, and all executed supplemental agreements. The contract shall constitute one instrument.

DATE OF AVAILABILITY

That date, established as set forth in the Request for Proposals, by which it is anticipated that the Contract will be executed and sufficient design efforts or work sites within the project limits will be available for the Design-Build Team to begin his controlling operations or design.

DESIGN-BUILD

A form of contracting in which the successful proposer undertakes responsibility for both the design and construction of a project.

DESIGN-BUILD TEAM

An individual, partnership, joint venture, corporation or other legal entity that furnishes the necessary design and construction services, whether by itself or through subcontracts.

DESIGN-BUILD PROPOSAL

A proposal to contract consisting of a separately sealed Technical Proposal and a separately sealed Price Proposal submitted in response to a Request for Proposals on a Design-Build project.

PLANS

The project plans, Standard Drawings, working drawings and supplemental drawings, or reproductions thereof, accepted by the Engineer, which show the location, character, dimensions and details of the work to be performed. Unless noted otherwise within the Request for Proposals, the term "plans" shall refer to 1) plans as developed by the Design-Build Team and accepted by the Department for I-5986A, 2) plans as developed by the Department for I-5877 and / or 3) plans as modified by the Design-Build Team and accepted by the Department for I-5877.

(A) Standard Drawings:

Drawings approved for repetitive use, showing details to be used where appropriate. All Standard Drawings approved by the Department plus subsequent revisions and additions. Standard Drawings are available for purchase from:

State Contract Officer
1591 Mail Service Center
Raleigh, NC 27699-1591

(B) Preliminary Plans:

Department-furnished drawings distributed in concert with a Request for Proposals, or as developed by the Design-Build Team.

(C) Project Plans:

Construction drawings prepared, sealed and completed by the Design-Build Team, or as provided by the Department, that contain specific details and dimensions peculiar to the work.

(D) Working Drawings and Supplemental Drawings:

Supplemental design sheets, shop drawings, or similar data which the Design-Build Team is required to submit to the Engineer.

(E) As-Constructed Drawings:

Red-lined mark-up of the latest Released for Construction (RFC) Plans containing the information listed under As-Constructed Plans in the Records and Reports Section of the NCDOT Construction Manual.

(F) As-Built Plans:

Coordinately correct plans documenting the details, dimensions and locations of the completed work.

PRICE PROPOSAL

The offer of a Proposer, submitted on the prescribed forms, to perform the work and furnish the labor and materials at the price quoted.

PROPOSAL (OR REQUEST FOR PROPOSALS)

The paper document provided by the Department that the proposer uses to develop his paper offer to perform the work at designated bid prices.

PROPOSER

An individual, partnership, firm, corporation, LLC, or joint venture formally submitting a Technical Proposal and Price Proposal in response to a Request for Proposals.

RIGHT OF WAY

The land area shown on the plans as right of way within which the project is to be constructed.

SCHEDULE OF VALUES

A schedule of work items necessary to complete work, along with the progress of each work item, primarily for the purpose of partial payments.

TABLE OF QUANTITIES

A listing of work items (corresponding to the items in the Trns*port pay item list) that contributes to a project completion. The table shall include estimated quantities for each work item.

TECHNICAL PROPOSAL

A submittal from a proposer, in accordance with requirements of the Request for Proposals, for the purpose of final selection. The Technical Proposal is defined to also include any supplemental information requested by the Department from a proposer prior to opening bids.

SECTION 102
PROPOSAL REQUIREMENTS AND CONDITIONS

Page 1-9, delete Article 102-1 and replace with the following:

102-1 INVITATION TO BID

After the advertisement has been made, an Invitation to Bid will be made available to known prequalified contractors and any other contracting firms, material suppliers and other interested parties who have requested they be placed on the Invitation to Bid mailing list, informing them that Statements of Qualifications and Proposals will be received for the construction of specific projects. Such invitation will indicate the contract identification number, length, locations and descriptions; a general summary of the scope of work to be performed; and information on how to receive a Request for Qualifications.

All projects will be advertised in daily newspapers throughout the state before the bid opening.

Page 1-12, delete Article 102-3 and replace with the following:

102-3 CONTENTS OF REQUEST FOR PROPOSALS

A Request for Proposals will be furnished by the Department to the selected proposers from among the respondents to the Request for Qualifications. Each Request for Proposals will be marked on the front cover by the Department with an identifier of the Proposer to whom it is being furnished. This Request for Proposals will state the location of the project and will show a schedule of contract items for which Technical and Price Proposals are invited. It will set forth the dates and times Technical and Price Proposals are to be submitted and when the Price Proposals will be opened. The Request for Proposals will also include special provisions or requirements that vary from or are not contained in any preliminary design information or standard specifications.

The Request for Proposals will also include the printed contract forms and signature sheets for execution by both parties to the contract. In the event the Proposer is awarded the contract, execution of the Request for Proposals by the Proposer is considered the same as execution of the contract.

Standard specifications, sealed plans specifically identified as the Department's responsibility and other documents designated in the Request for Proposals shall be considered a part of the Request for Proposals whether or not they are attached thereto. All papers bound with the proposal are necessary parts thereof and shall not be detached, taken apart, or altered.

The names and identity of each prospective Proposer that receives a copy of the Request for Qualifications for the purposes of submitting a Statement of Qualifications shall be made public,

except that a potential Proposer who obtains a Request for Qualifications may, at the time of ordering, request that his name remain confidential.

One copy of the Final Request for Proposals will be furnished to each prospective Proposer. Additional copies may be purchased for the sum of $25 each. The copy of the Final Request for Proposals marked with the Proposer's name and prequalification number shall be returned to the Department as the Proposer's Price Proposal.

Page 1-14, Article 102-7, 4th paragraph, delete the first two sentences and replace with the following:

Details shown in the subsurface investigation report are preliminary only. The subsurface investigation and subsurface report, if provided, is done so for information purposes only.

Pages 1-14, delete Article 102-8 and replace with the following:

102-8 PREPARATION AND SUBMISSION OF BIDS

All Price Proposals shall be prepared and submitted in accordance with the following requirements:

1. The Request for Proposals provided by the Department shall be used and shall not be taken apart or altered. The Price Proposal shall be submitted on the same form, which has been furnished to the Proposer by the Department as identified by the Proposer's name marked on the front cover by the Department.
2. All entries including signatures shall be written in ink.
3. The Proposer shall submit a lump sum or unit price for every item in the Price Proposal. The lump sum or unit prices bid for the various contract items shall be written in figures.
4. An amount bid shall be entered in the Request for Proposals for every item and the price shall be written in figures in the "Amount Bid" column in the Request for Proposals.
5. An amount bid shall be entered in the proposal for every item on which a unit price has been submitted. The amount bid for each item other than lump sum items shall be determined by multiplying each unit bid price by the quantity for that item and shall be written in figures in the Amount Bid column in the proposal.
6. The total amount bid shall be written in figures in the proper place in the Request for Proposals. The total amount bid shall be determined by adding the amounts bid for each lump sum item.
7. Changes in any entry shall be made by marking through the entry in ink and making the correct entry adjacent thereto in ink. A representative of the Proposer shall initial the change in ink.
8. The Price Proposal shall be properly executed. To constitute proper execution, the Price Proposal shall be executed in strict compliance with the following:
    a. If a Price Proposal is by an individual, it shall show the name of the individual and shall be signed by the individual with the word "Individually" appearing under the

signature. If the individual operates under a firm name, the bid shall be signed in the name of the individual doing business under the firm name.

b. If the Price Proposal is by a corporation, it shall be executed in the name of the corporation by the President, Vice President, or Assistant Vice President. It shall be attested by the Secretary or Assistant Secretary. The seal of the corporation shall be affixed. If the Price Proposal is executed on behalf of a corporation in any other manner than as above, a certified copy of the minutes of the Board of Directors of said corporation authorizing the manner and style of execution and the authority of the person executing shall be attached to the Price Proposal or shall be on file with the Department.

c. If the Price Proposal is made by a partnership, it shall be executed in the name of the partnership by one of the general partners.

d. If the Price Proposal is made by a limited liability company, it shall be signed by the manager, member, or authorized agent.

e. If the Price Proposal is made by a joint venture, it shall be executed by each of the joint venturers in the appropriate manner set out above. In addition, the execution by the joint venturers shall appear below their names.

9. The Price Proposal shall not contain any unauthorized additions, deletions, or conditional bids.

10. The Proposer shall not add any provision reserving the right to accept or reject an award or to enter into a contract pursuant to an award.

11. The Price Proposal shall be accompanied by a bid bond on the form furnished by the Department or by a bid deposit. The bid bond shall be completely and properly executed in accordance with the requirements of Article 102-10 and as modified herein. The bid deposit shall be a certified check or cashier check in accordance with Article 102-10 and as modified herein.

12. The Price Proposal shall be placed in a sealed envelope and shall have been delivered to and received by the Department prior to the time specified in the Request for Proposals.

Page 1-17, Article 102-10, 3rd paragraph, delete the fifth sentence and replace with the following:

The condition of the bid bond or bid deposit is: the Principal shall not withdraw its bid within 75 days after the submittal of the same, and if the Department shall award a contract to the Principal, the Principal shall within 14 calendar days after the notice of award is received by him, give payment and performance bonds with good and sufficient surety as required for the faithful performance of the contract and for the protection of all persons supplying labor and materials in the prosecution of the work.

Page 1-18, Article 102-10, delete the end of the Article beginning with, and inclusive of, the 6th paragraph.

Pages 1-18, delete Article 102-12 and replace with the following:

102-12 WITHDRAWAL OR REVISION OF BIDS

A Design-Build Team will not be permitted to withdraw its Technical and / or Price Proposals after they have been submitted to the Department, unless allowed under Article 103-3 or unless otherwise approved by the Chief Engineer.

Page 1-19, delete Article 102-13 and replace with the following:

102-13 RECEIPT AND OPENING OF BIDS

Price Proposals from shortlisted Proposers will be opened and read publicly on the date and time indicated in the Request for Proposals. The Technical Scores of the previously conducted evaluation of the Technical Proposals will also be read publicly in accordance with the procedures outlined in the Request for Proposals. Proposers, their authorized agents, and other interested parties are invited to be present.

Page 1-19, Article 102-14, replace the 1st paragraph with the following:

102-14 REJECTION OF BIDS

Any Price Proposal submitted which fails to comply with any of the requirements of Articles 102-8, 102-9 or 102-10, or with the requirements of the project scope and specifications shall be considered irregular and may be rejected. A Price Proposal that does not contain costs for all proposal items shall be considered irregular and may be rejected.

SECTION 103
AWARD AND EXECUTION OF CONTRACT

Page 1-21, delete Article 103-1 and replace with the following:

103-1 CONSIDERATION OF PRICE PROPOSALS

After the Price Proposals are opened and read, they will be tabulated. The Price Proposal and Technical Score of the Technical Proposal will be made available in accordance with procedures outlined in the Request for Proposals. In the event of errors, omissions, or discrepancies in the Price Proposal, corrections to the Price Proposal will be made in accordance with the provisions of Article 103-2. Such corrected bid prices will be used to determine the lowest adjusted price.

After the reading of the Price Proposals and Technical Scores, the Department will calculate the lowest adjusted price as described in the Request for Proposals.

The right is reserved to reject any or all Price Proposals, to waive technicalities, to request the Proposer with the lowest adjusted price to submit an up-to-date financial and operating statement, to advertise for new proposals, or to proceed to do the work otherwise, if in the judgment of the Department, the best interests of the State will be promoted thereby.

Page 1-21, Subarticle 103-2(A), add items (6) and (7) as follows:

(6) **Discrepancy in the "Total Amount Bid" and the addition of the "Amount Bid" for each line Item**

In the case of the Total Amount Bid does not equal the summation of each Amount Bid for the line items, the summation of each Amount Bid for the line items shall be deemed to be the correct Total Amount Bid for the entire project.

(7) **Omitted Total Amount Bid –Amount Bid Completed**

If the Total Amount Bid is not completed and the Amount Bid for all line items is completed the Total Amount Bid shall be the summation of the Amount Bid for all line items.

Page 1-23, Subarticle 103-4(A), first paragraph, replace the 3rd and 4th sentences with the following:

Where award is to be made, the notice of award will be issued within 75 days after the submittal of Price Proposals, except with the consent of the responsible Proposer with the lowest adjusted price the decision to award the contract to such bidder may be delayed for as long a time as may be agreed upon by the Department and such Proposer. In the absence of such agreement, the Proposer may withdraw his Price Proposal at the expiration of the 75 days without penalty if no notice of award has been issued.

Page 1-29, Article 103-6, delete the 1st and 2nd paragraphs and replace with the following:

Checks that have been furnished as a bid deposit will be retained until after the contract bonds have been furnished by the successful proposer, at which time the checks that were furnished as a bid deposit will be returned.

SECTION 104
SCOPE OF WORK

Page 1-30, delete Article 104-1 and replace with the following:

104-1 INTENT OF CONTRACT

The intent of the contract is to prescribe the work or improvements that the Design-Build Team undertakes to perform, in full compliance with the contract documents. In case the method of construction or character of any part of the work is not covered by the contract, this section shall apply. The Design-Build Team shall perform all work in accordance with the contract or as may be modified by written orders, and shall do such additional, extra, and incidental work as may be considered necessary to complete the work to the full intent of the contract. Unless otherwise provided elsewhere in the contract, the Design-Build Team shall furnish all implements, machinery, equipment, tools, materials, supplies, transportation, and labor necessary for the design, prosecution and completion of the work.

Page 1-30, Article 104-3, replace "plans or details of construction" with "contract" in all instances within this Article.

Page 1-39, delete Article 104-10 and replace with the following:

104-10 MAINTENANCE OF THE PROJECT

The Design-Build Team shall maintain the project from the date of beginning construction on the project until the project is finally accepted. For sections of facilities impacted by utility construction / relocation performed by the Design-Build Team prior to beginning construction on the roadway project, maintenance of the impacted sections of facilities shall be performed by the Design-Build Team beginning concurrently with the impact. This maintenance shall be continuous and effective and shall be prosecuted with adequate equipment and forces to the end that all work covered by the contract is kept in satisfactory and acceptable conditions at all times.

All existing and constructed guardrail / guiderail within the project limits shall be included in this maintenance. The Design-Build Team shall perform weekly inspections of all guardrail and guiderail and shall report damages to the Engineer on the same day of the weekly inspection. Where damaged guardrail or guiderail is repaired or replaced as a result of maintaining the project in accordance with this Article, such repair or replacement shall be performed within seven consecutive calendar days of such inspection report.

The Design-Build Team shall maintain all existing drainage facilities, except where the work consists of resurfacing only, such that they are in the same condition upon acceptance of the project as they were when the project was made available to the Design-Build Team. In the event that the Design-Build Team's work is suspended for any reason, the Design-Build Team shall maintain the work covered by the contract, as provided herein. When a portion of the project is accepted as provided in Article 105-17, immediately after such acceptance, the Design-Build Team will not be required to maintain the accepted portion. Should latent defects be discovered or become evident in an accepted portion of the project, the Design-Build Team shall repair or replace the defective work at no cost to the Department.

Where an observation period(s) is required that extends beyond the final acceptance date, the Design-Build Team shall perform any work required by the observation period until satisfactory completion of the observation period.

With the exception of the maintenance of existing and constructed guardrail / guiderail, the Design-Build Team will not be directly compensated for any maintenance operations. The Design-Build Team will not be compensated for the performance of weekly inspections of guardrail / guiderail, and the damage reports required as described above. Authorized maintenance activities for existing and constructed guardrail / guiderail within the project limits will be paid for as extra work in accordance with Articles 104-7 and 104-8 of the NCDOT *Standard Specifications for Roads and Structures*.

SECTION 105
CONTROL OF WORK

Pages 1-44, delete Article 105-2 and replace with the following:

105-2 PLANS AND WORKING DRAWINGS

All plans shall be supplemented by such approved working drawings as are necessary to adequately control the work. Working drawings furnished by the Design-Build Team and approved by the Engineer shall consist of such detailed drawings as may be required to adequately control the work. They may include stress sheets, shop drawings, erection drawings, falsework drawings, cofferdam drawings, bending diagrams for reinforcing steel, catalog cuts, or any other supplementary drawings or similar data required of the Design-Build Team. When working drawings are approved by the Engineer, such approval shall not operate to relieve the Design-Build Team of any of his responsibility under the contract for the successful completion of the work.

Changes on shop drawings after approval and / or distribution shall be subject to the approval of the Engineer and he shall be furnished a record of such changes.

Page 1-45, Article 105-3, add the following after the 3rd paragraph:

The Design-Build Team shall bear all the costs of providing the burden of proof that the nonconforming work is reasonable and adequately addresses the design purpose. The Design-Build Team shall bear all risk for continuing with nonconforming work in question until it is accepted.

The Engineer may impose conditions for acceptance of the nonconforming work. The Design-Build Team shall bear all costs for fulfilling the conditions.

The decisions whether the product satisfies the design purpose, whether the nonconforming work is reasonably acceptable and the conditions for acceptance are at the sole discretion of the Engineer.

Pages 1-45, delete Article 105-4 and replace with the following:

105-4 COORDINATION OF PLANS, SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS, AND SPECIAL PROVISIONS

The Request for Proposals, all construction Plans, the Standard Specifications, Supplemental Specifications and Special Provisions and all supplementary documents are essential parts of the contract and a requirement occurring in one is as binding as though occurring in all. They are complementary and describe and provide the complete contract.

In case of discrepancy or conflict, the order in which they govern shall be as follows:

(A) Request for Proposals, in which Project Special Provisions govern Standard Special Provisions

(B) Technical Proposal from the Design-Build Team

(C) Accepted Plans and Details from the Design-Build Team, or sealed plans provided by the Department, as applicable

(D) Standard Drawings

(E) Standard Specifications

Where dimensions on the plans are given or can be computed from other given dimensions they shall govern over scaled dimensions.

The Design-Build Team shall take no advantage of any error or omission in the plans, estimated quantities, or specifications. In the event the Design-Build Team discovers an error or omission, he shall immediately notify the Engineer.

Page 1-48, delete Article 105-9 and replace with the following:

105-9 CONTRUCTION STAKES, LINES, AND GRADES

The Design-Build Team shall be responsible for all surveying, construction staking and layout required in the performance of the work. The Design-Build Team will be responsible for the accuracy of lines, slopes, grades and other engineering work which the Design-Build Team provides under this contract.

SECTION 106
CONTROL OF MATERIAL

Page 1-53, Article 106-2, add the following after the second paragraph:

Prior to beginning construction, the Design-Build Team shall provide a Table of Quantities as described in Article 101-3 of these specifications.

The Table of Quantities Work Items shall correspond to Pay Items as defined in the Standard Specifications. These Work Items have associated Materials and Conversion Factors. For non-standard Work Items, a Generic Work Item with the correct Unit of Measure and in an appropriate category will be used. For example, "GENERIC TRAFFIC CONTROL ITEM – EA" or "GENERIC RETAINING WALL ITEM – LF". For these Generic Work Items, Materials must be defined and appropriate conversion factors submitted.

An initial Table of Quantities shall be submitted no later than 30 calendar days after the date of award. The Table of Quantities shall be updated and resubmitted within 14 days of when a set of Plans is sealed as Release for Construction (RFC) Plans, and whenever there are substantial changes to the Quantities on previously incorporated RFC Plans.

Page 1-55, Article 106-6, add the following after the last paragraph:

For items normally pretested by the Department, the Design-Build Team shall provide a minimum of 30 days notice prior to the beginning of production of the items for this project along with final approved shop drawings.

SECTION 107
LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC

Page 1-65, delete Article 107-18 and replace with the following:

107-18 FURNISHING RIGHT OF WAY

The responsibility for coordinating the securing of all necessary rights of way is as outlined in the Request for Proposals.

SECTION 108
PROSECUTION AND PROGRESS

Page 1-68, Article 108-2, replace the 2nd paragraph with the following:

The Design-Build Team shall submit a Progress Schedule for review within thirty (30) calendar days of receiving Notice of Award. The Department will review the Progress Schedule within twenty-one (21) calendar days of receipt. The Design-Build Team shall make any necessary corrections and adjustments to the Progress Schedule as necessitated by the Department's review within seven (7) calendar days. The Department will review the revised Progress Schedule within seven (7) calendar days of receipt.

Page 1-68, Subarticle 108-2(A)(1), add the following:

(k) Utility relocation and construction

Page 1-69, Subarticle 108-2(A)(2), add the following:

(h) Critical design submittal dates

(i) Critical permitting dates

(j) Completion of right of way acquisition

(k) Completion of utility relocation and construction

Page 1-69, Article 108-2, add the following:

(D) The Design-Build Team shall provide a written narrative each month detailing the work and percentage of work completed, anticipated sequence of upcoming work (two-month forecast), controlling operation(s), intermediate completion dates, and milestones. If any milestones are exceeded or will not be achieved, the Design-Build Team shall provide in the written narrative details of the delay; controlling operation affected, impacts to other operations, revisions to future intermediate completion dates and milestones, and remedial action necessary to get the project back to the original completion date.

Page 1-69, delete Article 108-3 and replace with the following:

108-3 PRECONSTRUCTION AND PRE-DESIGN CONFERENCES

The selected Design-Build Team shall meet with the Engineer for a pre-design conference concerning the design phase of the work. This conference shall be held prior to the commencement of work, as it is determined according to Article 108-1, and will be scheduled by the Engineer. At the predesign conference, the Design-Build Team shall furnish authorized signature forms and a list of any proposed subcontractors associated with the design of the project.

A preconstruction conference shall be held at least ten working days before construction activity begins. This second conference, concerning the construction phase, shall also be scheduled by the Engineer. The Design-Build Team shall give the Engineer a minimum of 45 days notice before he plans to begin construction activities. This will allow the Engineer time for any environmental agency representatives involved in the permitting process, as well as any other pertinent entities, to be scheduled to attend the preconstruction conference. If the Design-Build Team is responsible for utilities in accordance with Article 105-8 and the Request for Proposals, he shall be responsible for coordinating with the Engineer in scheduling their attendance and for notifying them. The Design-Build Team shall also be responsible for coordinating with the Engineer in scheduling the attendance of subcontractors and others deemed appropriate, and for notifying them.

At the preconstruction conference, a list of any proposed subcontractors and major material suppliers associated with the construction of the project will be submitted.

If the contract has a DBE requirement, the Design-Build Team shall submit copies of completed and signed DBE subcontracts, purchase orders, or invoices to the Department.

The Design-Build Team shall submit a traffic control plan in accordance with Article 1101-5 and the Request for Proposals. The Design-Build Team shall designate an employee who is competent and experienced in traffic control to implement and monitor the traffic control plan. The qualifications of the designated employee must be satisfactory to the Engineer.

The Design-Build Team shall submit a safety plan and designate an employee as Safety Supervisor.

Both plans shall be submitted at the preconstruction conference and must be satisfactory to the Engineer. Should the design plan include activities that would place personnel on the work site, traffic control and safety plans for those activities shall be submitted at the predesign conference.

During the preconstruction conference, the Engineer will designate a Department employee or employees who will be responsible to see that the traffic control plans and any alterations thereto are implemented and monitored to the end that traffic is carried through the work in an effective manner. If approved by the Engineer, the Design-Build Team may designate one employee to be responsible for both the traffic control and safety plans. The Design-Build Team shall not designate its superintendent as the responsible person for either the traffic control plan or the safety plan, unless approved by the Engineer.

If the project requires that Design-Build Team or State personnel work from falsework, within shoring, or in any other hazardous area the Design-Build Team shall submit, as part of the Design-Build Team's safety plan, specific measures it will use to ensure worker safety.

The Design-Build Team shall also submit a program for erosion control and pollution prevention on all projects involving clearing and grubbing, earthwork, structural work, or other construction, when such work is likely to create erosion or pollution problems.

If the Design-Build Team fails to provide the required submissions, the Engineer may order the preconstruction conference suspended until such time as they are furnished. Work shall not begin until the preconstruction conference has been concluded and the safety plan has been approved, unless authorized by the Engineer. The Design-Build Team shall not be entitled to additional compensation or an extension of contract time resulting from any delays due to such a suspension.

The Design-Build Team shall designate a qualified employee as Quality Control Manager. The Quality Control Manager shall be responsible for implementing and monitoring the quality control requirements of the project.

Page 1-69, Article 108-4, add the following sentence to the end of this article:

The Design-Build Team shall record the proceedings of these conferences and distribute the final minutes of the conferences to all attendees.

Page 1-70, Article 108-6, replace "40%" with "30%" in the 1st paragraph.

Page 1-71, Article 108-6, replace "35%" with "25%" in the 2nd paragraph.

Pages 1-72, delete Article 108-8 and replace with the following:

108-8 FAILURE TO MAINTAIN SATISFACTORY PROGRESS

The Engineer will check the Design-Build Team's progress at the time each partial pay request is received. The Design-Build Team's progress may be considered as unsatisfactory if, according to the Progress schedule, the projected finish date for all work exceeds the scheduled finish date by more than 10%.

When the Design-Build Team's progress is found to be unsatisfactory as described above, the Engineer may make written demand of the Design-Build Team to state in writing the reason for the unsatisfactory progress and produce such supporting data as the Engineer may require or the Design-Build Team may desire to submit. The Engineer will consider the justifications submitted by the Design-Build Team and extensions of the completion date that have or may be allowed in accordance with Article 108-10(B) and as modified herein.

When the Design-Build Team cannot satisfactorily justify the unsatisfactory progress the Engineer may invoke one or more of the following sanctions:

1. Withhold anticipated liquidated damages from amounts currently due or which become due.
2. Remove the Design-Build Team and individual managing firms of the Design-Build Team and / or prequalified design firms from the Department's Prequalified Bidders List.

When any of the above sanctions have been invoked, they shall remain in effect until rescinded by the Engineer.

Page 1-75, Article 108-10(B), add the following as the first paragraph:

Only delays to activities which affect the completion date or intermediate contract date will be considered for an extension of contract time. No extensions will be granted until a delay occurs which impacts the project's critical path and extends the work beyond the contract completion date or intermediate completion date. Any extension to the completion date or intermediate contract date will be based on the number of calendar days the completion date or intermediate completion date is impacted as determined by the Engineer's analysis.

Pages 1-75, delete Subarticle 108-10(B)(1) in its entirety.

Page 1-78, Article 108-13, delete bullet (D)(2) in its entirety.

SECTION 109
MEASUREMENT AND PAYMENT

Page 1-80, Article 109-2, delete the last sentence of the 1st paragraph and replace with the following:

Payment to the Design-Build Team will be made only for the work completed, certified and accepted in accordance with the terms of the contract.

Pages 1-85, delete Article 109-4(A) and replace with the following:

109-4 PARTIAL PAYMENTS

(A) General

Partial payments will be based upon progress estimates prepared by the Engineer at least once each month on the date established by the Engineer. Partial payments may be made twice each month if in the judgment of the Engineer the amount of work performed is sufficient to warrant such payment. No partial payment will be made when the total value of work performed since the last partial payment amounts to less than $10,000.00. Partial payments will be approximate only and will be subject to correction in the final estimate and payment.

When the contract includes one lump sum price for the entire work required by the contract, partial payments for the lump sum design-build price shall be based on a certified Schedule of Values submitted by the successful Design-Build Team and approved by the Engineer. The certification shall indicate the Design-Build Team has reviewed the information submitted and the information accurately represents the work performed for which payment is requested. The certified Schedule of Values shall be submitted no later than 30 calendar days after the date of award. Each item on the certified Schedule of Values shall be assigned a cost and quantity and shall be identified as an activity on the progress schedule. A revised certified Schedule of Values shall be submitted with each update of the Progress schedule as described in Article 108-2, and as

modified herein, or when requested by the Engineer. A certified copy of the Table of Quantities shall also be submitted with each payment request. The certification of the Table of Quantities shall indicate the Design-Build Team has reviewed the information submitted and the information accurately represents the materials for the work performed for which payment is requested.

When the contract includes lump sum items for portions of the work required by the contract, and the applicable section of the Specifications or Request for Proposals specify the means by which the total amount bid be included in the partial pay estimates, the Engineer will determine amounts due on the partial pay estimate in accordance with the applicable portion of the Specifications or Request for Proposals.

The Engineer will withhold an amount sufficient to cover anticipated liquidated damages as determined by the Engineer.

Page 1-86, Subarticle 109-5(D), delete the 4th and 5th paragraphs and replace with the following:

Partial payments will not be made on seed or any living or perishable plant materials.

Partial payment requests shall not be submitted by the Design-Build Team until those items requested have corresponding signed and sealed RFC plans accepted by the Department.

Pages 1-88, Article 109-10, add the following as bullets (E) and (F) under the 1st paragraph.

(E) As-Constructed Drawings, As-Built Plans and other documents required elsewhere in this RFP.

(F) Documents or guarantees to support any warranty provided by the Design Build Team.

Contract Item Sheets For C204283

Line #	ItemNumber	Sec #	Description	Quantity Unit	Unit Bid Price	Amount Bid
			ROADWAY ITEMS			
0001	0000900000-N	SP	GENERIC MISCELLANEOUS ITEM DESIGN & CONSTRUCTION	Lump Sum LS	0.00	404,254,978.00
			TOTAL AMOUNT OF BID FOR ENTIRE PROJECT			$404,254,978.00

0653/Sep04/Q1/D900000/E1

County : Cumberland, Harnett

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
			ROADWAY ITEMS			
0001	0000900000-N	SP	GENERIC MISCELLANEOUS ITEM DESIGN & CONSTRUCTION	Lump Sum	L.S. 404,254,978.00	

1614/Nov06/Q1.0/D900000/E1

Total Amount Of Bid For Entire Project : 404,254,978.00

FUEL USAGE FACTOR CHART AND ESTIMATE OF QUANTITIES

Description of Work	Units	Fuel Usage Factor Diesel #2	Estimate of Quantities
Unclassified Excavation	Gal / CY	0.29	794,285 CY
Borrow Excavation	Gal / CY	0.29	1,162,276 CY
Class IV Subgrade Stabilization Aggregate Base Course Sub-Ballast Aggregate for Cement Treated Base Course	Gal / Ton	0.55	1,610,241 Tons
Portland Cement for Cement Treated Base Course	Gal / Ton	0.55	N/A Tons
Asphalt Concrete Base Course Asphalt Concrete Intermediate Course Asphalt Concrete Surface Course Open-Graded Asphalt Friction Course Permeable Asphalt Drainage Course Sand Asphalt Surface Course, Type SA-I	Gal / Ton	2.90	1,406,901 Tons
Portland Cement Concrete Pavement			
Thru Lanes and Shoulders (> 11")	Gal / SY	0.327	N/A SY
Thru Lanes and Shoulders (9" to 11")		0.272	N/A SY
Thru Lanes and Shoulders (< 9")		0.245	N/A SY
* Structural Concrete (Cast-in-Place Only)	Gal / CY	0.98	16,983 CY

* Structural Concrete shall be defined as cast-in-place Class A or Class AA concrete used in the construction of major structures for various work items identified in Division 4 of the 2018 *Standard Specifications for Roads and Structures*.

☑ The above quantities represent a reasonable estimate of the total quantities anticipated, for each item, as pertaining to fuel price adjustments, and is representative of the design proposed in the Technical Proposal submitted under separate cover.

Or

☐ The Design-Build Team elects not to pursue reimbursement for Fuel Price Adjustments on this project.

The information submitted on this sheet is claimed as a "Trade Secret" in accordance with the requirements of G.S. 66-152(3) until such time as the Price Proposal is opened.

Jonathan Bivens
Signature, Title

7/30/19
Dated

JONATHAN BIVENS
Print Name, Title

(Submit a copy of this sheet in a separate sealed package with the outer wrapping clearly marked "Fuel Price Adjustment" and deliver with the Technical Proposal submittal.)

LISTING OF DBE SUBCONTRACTORS

Sheet 1 of 4

Firm Name and Address	Item No.	Item Description	* Agreed upon Unit Price	** Dollar Volume of Item
Name Pozzolanic Contracting and supply Co Inc Address P.O. Box 14186 Knoxville, TN 37914 865-225-0090	1	misc Design + Construction	13,000,000.00	13,000,000.00
Name Crosalia Concrete Contractors Inc Address 4607 N. 56th St Tampa, FL 33610 813-443-0984	1	misc Design + Construction	13,474,000.00	13,474,000.00
Name Clifton Construction Co Inc Address 1435 Gibbensville Rd. Faison, NC 28341	1	misc. Design + Construction	9,719,000.00	9,719,000.00
Name Tracy King Hauling Address 5425 Old Lake Rd Bolton, NC 28423	1	misc Design + Construction	600,000.00	600,000.00
Name Mar-Jeda Land developers Inc Address P.O. Box 418 Shallotte, NC 28459	1	misc. Design + Construction	1,000,000.00	1,000,000.00
Name KD's Hauling LLC Address 8428 NC Hwy 50 N Angier, NC 27501	1	misc. Design + Construction	300,000.00	300,000.00
Name Stratton Contracting Corp Address 2705 Old Williams Rd. Raleigh, NC 27610	1	misc Design + Construction	500,000.00	500,000.00

This form must be completed in order for the Bid to be considered responsive and be publicly read.
Bidders with no DBE participation must so indicate this on the form by entering the word or number *zero*.

LISTING OF DBE SUBCONTRACTORS

Sheet 2 of 4

Firm Name and Address	Item No.	Item Description	* Agreed upon Unit Price	** Dollar Volume of Item
Name F.11 Er Up Trucka Address 68 Flowers-settlemeyer rd Ringgwood, NC 28466	1	misc. Design + Construction	500,000.00	500,000.00
Name Ross Trucking Inc Address 479 Fay Lockamy rd. Jacksonville, NC 28540	1	mix Design + Construction	300,000.00	300,000.00
Name J & N Hauling LLC Address 109 May dr Smithfield, NC 27577	1	mix Design + Construction	200,000.00	200,000.00
Name JM Collins Hauling LLC Address 151 New Creech Rd. Selma, NC 27576	1	misc. Design + Construction	500,000.00	500,000.00
Name Burtch Trucking Co Address 605 Indian Camp Rd. Smithfield NC, 27577	1	misc. Design + Construction	100,000.00	100,000.00
Name J. Garcia Trucking Inc. Address 4830 Neelhom Rd. Bailey NC 27807	1	misc. Design + Construction	100,000.00	100,000.00
Name KAR Transport Inc Address 5829 Chatmoss Dr. Raleigh, NC 27610	1	misc. Design + Construction	100,000.00	100,000.00

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LISTING OF DBE SUBCONTRACTORS

Sheet 3 of 4

Firm Name and Address	Item No.	Item Description	* Agreed upon Unit Price	** Dollar Volume of Item
Name Totten Trucking Inc Address 34 Prestonwood Dr. P. Hsboro, NC 27312	1	misc Design Contracting	100,000.00	100,000.00
Name Address				
Name Address				
Name Address				
Name Address				
Name Address				
Name Address				

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LISTING OF DBE SUBCONTRACTORS

Sheet 4 of 4

Firm Name and Address	Item No.	Item Description	* Agreed upon Unit Price	** Dollar Volume of Item
Name Address				
Name Address				
Name Address				
Name Address				

COST OF CONSTRUCTION WORK ONLY $ 381,120,127.00

*The Dollar Volume shown in this column shall be the Actual Price Agreed Upon by the Prime Contractor and the DBE subcontractor, and these prices will be used to determine the percentage of the DBE participation in the contract.

** Dollar Volume of DBE Subcontractor $ 40,493,000

Percentage of Total Construction Cost 10.62 %

(Including Right of Way Acquisition Services)

** - Must have entry even if figure to be entered is zero.

** - *If firm is a Material Supplier Only, show Dollar Volume as 60% of Agreed Upon Amount from Letter of Intent.*
If firm is a Manufacturer, show Dollar Volume as 100% of Agreed Upon Amount from Letter of Intent.

This form must be completed in order for the Bid to be considered responsive and be publicly read.
Bidders with no DBE participation must so indicate this on the form by entering the word or number *zero*.

LISTING OF DBE SUBCONTRACTORS

Sheet 1 of 4

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Name Crosalia Concrete Contractors Inc Address 4607 N. 56th St Tampa, FL 33610 813-443-0984	1	misc Design + Construction	$13,474,000.00	13,474,000.00 Committed
Name C.L. Hess Construction Co Inc Address 1435 Gildensville Rd. Faison, NC 28341	1	misc. Design + Construction	$9,719,000.00	9,719,000.00 Committed
Name Tracey Kay Hauling Address 5425 Old Lake Rd Bolton, NC 28423	1	misc Design + Construction	600,000.00	600,000.00 Committed
Name Mar-Jeda Land developers Inc Address P.O. Box 418 Shallotte, NC 28459	1	misc. Design + Construction	1,000,000.00	1,000,000.00 Committed
Name KD's Hauling LLC Address 8428 NC Hwy 50 N Angier, NC 27501	Committed	misc. Design + Construction	300,000.00	300,000.00 Committed
Name Stratton Contracting Corp Address 2705 Old Williams Rd. Raleigh, NC 27610	1	misc Design + Construction	500,000.00	500,000.00 Committed

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Sheet 2 of 4

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Name Poss Trucking Inc Address 479 Fay Lockamy rd. Jacksonville, NC 28540	1	misc Design + Construction	300,000.00	300,000.00 Committed
Name J + N Hauling LLC Address 109 May dr Smithfield, NC 27577	1	misc Design + Construction	200,000.00	200,000.00 Committed
Name J M Collins Hauling LLC Address 151 New Creech Rd. Selma, NC 27576	1	misc. Design + Construction	500,000.00	500,000.00 Committed
Name Burtch Trucking Co Address 605 Indian Camp Rd. Smithfield NC, 27577	1	misc Design + Construction	100,000.00	100,000.00 Committed
NotPreQual Name J. Graccia Trucking Inc. Address 4830 Neckham Rd. Bailey NC 27807	1	misc. Design + Construction	100,000.00	NCommitted 100,000.00
Name KAR Transport Inc Address 5829 Chatmoss Dr. Raleigh, NC 27610	1	misc. Design + Construction	100,000.00	100,000.00 Committed

This form must be completed in order for the Bid to be considered responsive and be publicly read.
Bidders with no DBE participation must so indicate this on the form by entering the word or number *zero*.

LISTING OF DBE SUBCONTRACTORS

Sheet 3 of 4

Firm Name and Address	Item No.	Item Description	* Agreed upon Unit Price	** Dollar Volume of Item
Name Totten Trucking Inc Address 34 Pretonwood Dr. P. Hsboro, NC 27312	1	misc Design + Contract	100,000.00	100,000.00 Committed
Name Address				
Name Address				
Name Address				
Name Address				
Name Address				
Name Address				

This form must be completed in order for the Bid to be considered responsive and be publicly read.
Bidders with no DBE participation must so indicate this on the form by entering the word or number *zero*.

LISTING OF DBE SUBCONTRACTORS

Sheet 4 of 4

Firm Name and Address	Item No.	Item Description	* Agreed upon Unit Price	** Dollar Volume of Item
Name Address				
Name Address				
Name Address				
Name Address				

DBE GOAL SET: 0.00%
DBE GOAL OBT: 10.62%

COST OF CONSTRUCTION WORK ONLY $ 381,120,127.00

*The Dollar Volume shown in this column shall be the Actual Price Agreed Upon by the Prime Contractor and the DBE subcontractor, and these prices will be used to determine the percentage of the DBE participation in the contract.

** Dollar Volume of DBE Subcontractor $ 40,493,000

Percentage of Total Construction Cost 10.62 %

(Including Right of Way Acquisition Services)

** - Must have entry even if figure to be entered is zero.

** - *If firm is a Material Supplier Only, show Dollar Volume as 60% of Agreed Upon Amount from Letter of Intent.*
If firm is a Manufacturer, show Dollar Volume as 100% of Agreed Upon Amount from Letter of Intent.

This form must be completed in order for the Bid to be considered responsive and be publicly read.
Bidders with no DBE participation must so indicate this on the form by entering the word or number *zero*.

EXECUTION OF BID
NON-COLLUSION AFFIDAVIT, DEBARMENT CERTIFICATION AND GIFT BAN CERTIFICATION

CORPORATION

The person executing the bid, on behalf of the Bidder, being duly sworn, solemnly swears (or affirms) that neither he, nor any official, agent or employee of the Bidder has entered into any agreement, participated in any collusion, or otherwise taken any action which is in restraint of free competitive bidding in connection with any bid or contract, that the Bidder has not been convicted of violating *N.C.G.S. § 133-24* within the last three years, and that the Bidder intends to do the work with its own bonafide employees or subcontractors and is not bidding for the benefit of another contractor.

In addition, execution of this bid in the proper manner also constitutes the Bidder's certification of status under penalty of perjury under the laws of the United States in accordance with the Debarment Certification attached, provided that the Debarment Certification also includes any required statements concerning exceptions that are applicable.

N.C.G.S. § 133-32 and Executive Order 24 prohibit the offer to, or acceptance by, any State Employee of any gift from anyone with a contract with the State, or from any person seeking to do business with the State. By execution of any response in this procurement, you attest, for your entire organization and its employees or agents, that you are not aware that any such gift has been offered, accepted, or promised by any employees of your organization.

SIGNATURE OF CONTRACTOR

S. T. WOOTEN CORPORATION
Full name of Corporation

P.O. Box 2408; WILSON, NC 27894-2408
Address as prequalified

Attest Laura E Rouse
~~Secretary~~ / Assistant Secretary
Select appropriate title

By Jonathan Bivens
~~President~~ / Vice President / ~~Assistant Vice President~~
Select appropriate title

Laura E. Rouse
Print or type Signer's name

JONATHAN BIVENS
Print or type Signer's name

CORPORATE SEAL

EXECUTION OF BID
NON-COLLUSION AFFIDAVIT, DEBARMENT CERTIFICATION AND GIFT BAN CERTIFICATION

PARTNERSHIP

The person executing the bid, on behalf of the Bidder, being duly sworn, solemnly swears (or affirms) that neither he, nor any official, agent or employee of the bidder has entered into any agreement, participated in any collusion, or otherwise taken any action which is in restraint of free competitive bidding in connection with any bid or contract, that the bidder has not been convicted of violating *N.C.G.S. § 133-24* within the last three years, and that the Bidder intends to do the work with its own bonafide employees or subcontractors and is not bidding for the benefit of another contractor.

In addition, execution of this bid in the proper manner also constitutes the Bidder's certification of status under penalty of perjury under the laws of the United States in accordance with the Debarment Certification attached, provided that the Debarment Certification also includes any required statements concerning exceptions that are applicable.

N.C.G.S. § 133-32 and Executive Order 24 prohibit the offer to, or acceptance by, any State Employee of any gift from anyone with a contract with the State, or from any person seeking to do business with the State. By execution of any response in this procurement, you attest, for your entire organization and its employees or agents, that you are not aware that any such gift has been offered, accepted, or promised by any employees of your organization.

SIGNATURE OF CONTRACTOR

_____
Full Name of Partnership

_____
Address as Prequalified

_____ By _____
Signature of Witness | Signature of Partner

_____ _____
Print or type Signer's name | Print or type Signer's name

EXECUTION OF BID
NON-COLLUSION AFFIDAVIT, DEBARMENT CERTIFICATION AND GIFT BAN CERTIFICATION

LIMITED LIABILITY COMPANY

The person executing the bid, on behalf of the Bidder, being duly sworn, solemnly swears (or affirms) that neither he, nor any official, agent or employee of the bidder has entered into any agreement, participated in any collusion, or otherwise taken any action which is in restraint of free competitive bidding in connection with any bid or contract, that the bidder has not been convicted of violating *N.C.G.S. § 133-24* within the last three years, and that the Bidder intends to do the work with its own bonafide employees or subcontractors and is not bidding for the benefit of another contractor.

In addition, execution of this bid in the proper manner also constitutes the Bidder's certification of status under penalty of perjury under the laws of the United States in accordance with the Debarment Certification attached, provided that the Debarment Certification also includes any required statements concerning exceptions that are applicable.

N.C.G.S. § 133-32 and Executive Order 24 prohibit the offer to, or acceptance by, any State Employee of any gift from anyone with a contract with the State, or from any person seeking to do business with the State. By execution of any response in this procurement, you attest, for your entire organization and its employees or agents, that you are not aware that any such gift has been offered, accepted, or promised by any employees of your organization.

SIGNATURE OF CONTRACTOR

_____
Full Name of Firm

_____
Address as Prequalified

_____	_____
Signature of Witness	Signature of Member / Manager / Authorized Agent *Select appropriate title*
_____	_____
Print or type Signer's name	Print or type Signer's Name

EXECUTION OF BID
NON-COLLUSION AFFIDAVIT, DEBARMENT CERTIFICATION AND GIFT BAN CERTIFICATION

JOINT VENTURE (2) or (3)

The person executing the bid, on behalf of the Bidder, being duly sworn, solemnly swears (or affirms) that neither he, nor any official, agent or employee of the bidder has entered into any agreement, participated in any collusion, or otherwise taken any action which is in restraint of free competitive bidding in connection with any bid or contract, that the bidder has not been convicted of violating N.C.G.S. § 133-24 within the last three years, and that the Bidder intends to do the work with its own bonafide employees or subcontractors and is not bidding for the benefit of another contractor.

In addition, execution of this bid in the proper manner also constitutes the Bidder's certification of status under penalty of perjury under the laws of the United States in accordance with the Debarment Certification attached, provided that the Debarment Certification also includes any required statements concerning exceptions that are applicable.

N.C.G.S. § 133-32 and Executive Order 24 prohibit the offer to, or acceptance by, any State Employee of any gift from anyone with a contract with the State, or from any person seeking to do business with the State. By execution of any response in this procurement, you attest, for your entire organization and its employees or agents, that you are not aware that any such gift has been offered, accepted, or promised by any employees of your organization.

SIGNATURE OF CONTRACTORS

Instructions: **2 Joint Venturers** Fill in lines (1), (2) and (3) and execute. **3 Joint Venturers** Fill in lines (1), (2), (3) and (4) and execute. On Line (1), fill in the name of the Joint Venture Company. On Line (2), fill in the name of one of the joint venturers and execute below in the appropriate manner. On Line (3), print or type the name of the other joint venturer and execute below in the appropriate manner. On Line (4), fill in the name of the third joint venturer, if applicable and execute below in the appropriate manner.

(1) _____
Name of Joint Venture

(2) _____
Name of Contractor

_____
Address as prequalified

_____		_____
Signature of Witness or Attest	By	Signature of Contractor
_____		_____
Print or type Signer's name		Print or type Signer's name

If Corporation, affix Corporate Seal and

(3) _____
Name of Contractor

_____
Address as prequalified

_____		_____
Signature of Witness or Attest	By	Signature of Contractor
_____		_____
Print or type Signer's name		Print or type Signer's name

If Corporation, affix Corporate Seal and

(4) _____
Name of Contractor *(for 3 Joint Venture only)*

_____
Address as prequalified

_____		_____
Signature of Witness or Attest	By	Signature of Contractor
_____		_____
Print or type Signer's name		Print or type Signer's name

If Corporation, affix Corporate Seal

EXECUTION OF BID
NON-COLLUSION AFFIDAVIT, DEBARMENT CERTIFICATION AND GIFT BAN CERTIFICATION

INDIVIDUAL DOING BUSINESS UNDER A FIRM NAME

The person executing the bid, on behalf of the Bidder, being duly sworn, solemnly swears (or affirms) that neither he, nor any official, agent or employee of the bidder has entered into any agreement, participated in any collusion, or otherwise taken any action which is in restraint of free competitive bidding in connection with any bid or contract, that the bidder has not been convicted of violating *N.C.G.S. § 133-24* within the last three years, and that the Bidder intends to do the work with its own bonafide employees or subcontractors and is not bidding for the benefit of another contractor.

In addition, execution of this bid in the proper manner also constitutes the Bidder's certification of status under penalty of perjury under the laws of the United States in accordance with the Debarment Certification attached, provided that the Debarment Certification also includes any required statements concerning exceptions that are applicable.

N.C.G.S. § 133-32 and Executive Order 24 prohibit the offer to, or acceptance by, any State Employee of any gift from anyone with a contract with the State, or from any person seeking to do business with the State. By execution of any response in this procurement, you attest, for your entire organization and its employees or agents, that you are not aware that any such gift has been offered, accepted, or promised by any employees of your organization.

SIGNATURE OF CONTRACTOR

Name of Contractor _____
Individual name

Trading and doing business as _____
Full name of Firm

_____
Address as Prequalified

_____ _____
Signature of Witness Signature of Contractor, Individually

_____ _____
Print or type Signer's name Print or type Signer's name

EXECUTION OF BID
NON-COLLUSION AFFIDAVIT, DEBARMENT CERTIFICATION AND GIFT BAN CERTIFICATION

INDIVIDUAL DOING BUSINESS IN HIS OWN NAME

The person executing the bid, on behalf of the Bidder, being duly sworn, solemnly swears (or affirms) that neither he, nor any official, agent or employee of the bidder has entered into any agreement, participated in any collusion, or otherwise taken any action which is in restraint of free competitive bidding in connection with any bid or contract, that the bidder has not been convicted of violating *N.C.G.S. § 133-24* within the last three years, and that the Bidder intends to do the work with its own bonafide employees or subcontractors and is not bidding for the benefit of another contractor.

In addition, execution of this bid in the proper manner also constitutes the Bidder's certification of status under penalty of perjury under the laws of the United States in accordance with the Debarment Certification attached, provided that the Debarment Certification also includes any required statements concerning exceptions that are applicable.

N.C.G.S. § 133-32 and Executive Order 24 prohibit the offer to, or acceptance by, any State Employee of any gift from anyone with a contract with the State, or from any person seeking to do business with the State. By execution of any response in this procurement, you attest, for your entire organization and its employees or agents, that you are not aware that any such gift has been offered, accepted, or promised by any employees of your organization.

SIGNATURE OF CONTRACTOR

Name of Contractor _____
Print or type Individual name

_____
Address as Prequalified

_____
Signature of Contractor, Individually

_____
Print or type Signer's Name

_____
Signature of Witness

_____
Print or type Signer's name

DEBARMENT CERTIFICATION

Conditions for certification:

1. The prequalified bidder shall provide immediate written notice to the Department if at any time the bidder learns that his certification was erroneous when he submitted his debarment certification or explanation that is file with the Department, or has become erroneous because of changed circumstances.

2. The terms *covered transaction, debarred, suspended, ineligible, lower tier covered transaction, participant, person, primary covered transaction, principal, proposal,* and *voluntarily excluded,* as used in this provision, have the meanings set out in the Definitions and Coverage sections of the rules implementing Executive Order 12549. A copy of the Federal Rules requiring this certification and detailing the definitions and coverages may be obtained from the Contract Officer of the Department.

3. The prequalified bidder agrees by submitting this form, that he will not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in NCDOT contracts, unless authorized by the Department.

4. For Federal Aid projects, the prequalified bidder further agrees that by submitting this form he will include the Federal-Aid Provision titled *Required Contract Provisions Federal-Aid Construction Contract (Form FHWA PR* 1273) provided by the Department, without subsequent modification, in all lower tier covered transactions.

5. The prequalified bidder may rely upon a certification of a participant in a lower tier covered transaction that he is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless he knows that the certification is erroneous. The bidder may decide the method and frequency by which he will determine the eligibility of his subcontractors.

6. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this provision. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

7. Except as authorized in paragraph 6 herein, the Department may terminate any contract if the bidder knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available by the Federal Government.

DEBARMENT CERTIFICATION

The prequalified bidder certifies to the best of his knowledge and belief, that he and his principals:

a. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

b. Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records; making false statements; or receiving stolen property;

c. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph b. of this certification; and

d. Have not within a three-year period preceding this proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

e. Will submit a revised Debarment Certification immediately if his status changes and will show in his bid proposal an explanation for the change in status.

If the prequalified bidder cannot certify that he is not debarred, he shall provide an explanation with this submittal. An explanation will not necessarily result in denial of participation in a contract.

Failure to submit a non-collusion affidavit and debarment certification will result in the prequalified bidder's bid being considered non-responsive.

☐ Check here if an explanation is attached to this certification.

Contract No. C204283

County Cumberland/Harnett

Rev. 1-16-18

EXECUTION OF CONTRACT
NON-COLLUSION, DEBARMENT AND GIFT BAN CERTIFICATION

CORPORATION

The Contractor declares (or certifies, verifies, or states) under penalty of perjury under the laws of the United States that neither he, nor any official, agent or employee has entered into any agreement, participated in any collusion, or otherwise taken any action which is in restraint of free competitive bidding in connection with this Contract, that the Contractor has not been convicted of violating *N.C.G.S. § 133-24* within the last three years, and that the Contractor intends to do the work with its own bonafide employees or subcontractors and did not bid for the benefit of another contractor.

By submitting this Execution of Contract, Non-Collusion and Debarment Certification, the Contractor is certifying his status under penalty of perjury under the laws of the United States in accordance with the Debarment Certification attached, provided that the Debarment Certification also includes any required statements concerning exceptions that are applicable.

N.C.G.S. § 133-32 and Executive Order 24 prohibit the offer to, or acceptance by, any State Employee of any gift from anyone with a contract with the State, or from any person seeking to do business with the State. By execution of any response in this procurement, you attest, for your entire organization and its employees or agents, that you are not aware that any such gift has been offered, accepted, or promised by any employees of your organization.

SIGNATURE OF CONTRACTOR

S. T. Wooten Corporation

Full name of Corporation

P O Box 2408; Wilson, NC 27894

Address as Prequalified

Attest Laura E. Toler

~~Secretary~~/Assistant Secretary

Select appropriate title

By Gregory N. Nelson

~~President~~/Vice President/~~Assistant Vice President~~

Select appropriate title

Laura Toler

Print or type Signer's name

Gregory N. Nelson

Print or type Signer's name

CORPORATE SEAL

S. T. WOOTEN CORPORATION SEAL 1956 WILSON, N.C.

Contract No. C204283

County Cumberland/Harnett

Rev. 1-16-18

DEBARMENT CERTIFICATION

Conditions for certification:

1. The prequalified bidder shall provide immediate written notice to the Department if at any time the bidder learns that his certification was erroneous when he submitted his debarment certification or explanation filed with the Department, or has become erroneous because of changed circumstances.

2. The terms *covered transaction, debarred, suspended, ineligible, lower tier covered transaction, participant, person, primary covered transaction, principal, proposal,* and *voluntarily excluded,* as used in this provision, have the meanings set out in the Definitions and Coverage sections of the rules implementing Executive Order 12549. A copy of the Federal Rules requiring this certification and detailing the definitions and coverages may be obtained from the Contract Officer of the Department.

3. The prequalified bidder agrees by submitting this form, that he will not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in NCDOT contracts, unless authorized by the Department.

4. For Federal Aid projects, the prequalified bidder further agrees that by submitting this form he will include the Federal-Aid Provision titled *Required Contract Provisions Federal-Aid Construction Contract (Form FHWA PR* 1273) provided by the Department, without subsequent modification, in all lower tier covered transactions.

5. The prequalified bidder may rely upon a certification of a participant in a lower tier covered transaction that he is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless he knows that the certification is erroneous. The bidder may decide the method and frequency by which he will determine the eligibility of his subcontractors.

6. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this provision. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

7. Except as authorized in paragraph 6 herein, the Department may terminate any contract if the bidder knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available by the Federal Government.

Contract No. C204283

County Cumberland/Harnett

Rev. 1-16-18

DEBARMENT CERTIFICATION

The prequalified bidder certifies to the best of his knowledge and belief, that he and his principals:

a. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

b. Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records; making false statements; or receiving stolen property;

c. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph b. of this certification; and

d. Have not within a three-year period preceding this proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

e. Will submit a revised Debarment Certification immediately if his status changes and will show in his bid proposal an explanation for the change in status.

If the prequalified bidder cannot certify that he is not debarred, he shall provide an explanation with this submittal. An explanation will not necessarily result in denial of participation in a contract.

Failure to submit a non-collusion and debarment certification will result in the prequalified bidder's bid being considered non-responsive.

☐ Check here if an explanation is attached to this certification.

Contract No.: **C204283**

Counties: **Cumberland and Harnett**

ACCEPTED BY THE
DEPARTMENT OF TRANSPORTATION

DocuSigned by:
Ronald E. Davenport, Jr.
F81B6038A47A442...
Contract Officer

9/4/2019
Date

Execution of Contract and Bonds
Approved as to Form:

DocuSigned by:
Ebony Pittman
0792319F4AB64C2...
Attorney General

Rev 5-17-11

Contract No. C204283
County Cumberland/Harnett

CONTRACT PAYMENT BOND

Bond No. 9329653

Date of Payment Bond Execution	August 27, 2019
Name of Principal Contractor	S. T. Wooten Corporation
Name of Surety:	Fidelity and Deposit Company of Maryland Zurich American Insurance Company Attn: Surety Claims 1299 Zurich Way Schaumburg, IL 60196-1056
Name of Contracting Body:	**North Carolina Department of Transportation** **Raleigh, North Carolina**
Amount of Bond:	$404,254,978.00
Contract ID No.:	C204283
County Name:	Cumberland/Harnett

KNOW ALL MEN BY THESE PRESENTS, That we, the PRINCIPAL CONTRACTOR (hereafter, PRINCIPAL) and SURETY above named, are held and firmly bound unto the above named Contracting Body, hereinafter called the Contracting Body, in the penal sum of the amount stated above for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the principal entered into a certain contract with the Contracting Body, numbered as shown above and hereto attached:

NOW THEREFORE, if the principal shall promptly make payment to all persons supplying labor and material in the prosecution of the work provided for in said contract, and any and all duly authorized modifications of said contract that may hereafter be made, notice of which modifications to the surety being hereby waived, then this obligation to be void; otherwise to remain in full force and virtue.

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

Rev 5-17-11

Contract No. C204283

County Cumberland/Harnett

CONTRACT PAYMENT BOND

Affix Seal of Surety Company

Fidelity and Deposit Company of Maryland
Zurich American Insurance Company
Print or type Surety Company Name

By Angela M. Yount, Attorney-in-Fact
Print, stamp or type name of Attorney-in-Fact

Signature of Attorney-in-Fact

Signature of Witness

Wendy E. Lahm
Print or type Signer's Name

Marsh & McLennan Agency LLC
5605 Carnegie Blvd., Suite 300
Charlotte, NC 28209
Address of Attorney-in-Fact

Rev 5-17-11

Contract No. C204283
County Cumberland/Harnett

CONTRACT PAYMENT BOND

CORPORATION

SIGNATURE OF CONTRACTOR (Principal)

S. T. Wooten Corporation
Full name of Corporation

Post Office Box 2408; Wilson, North Carolina 27894-2408
Address as prequalified

By: Gregory N. Nelson
Signature of **Vice President**
Select appropriate title

Gregory N. Nelson
Print or type Signer's name

Affix Corporate Seal

Attest Laura E Toler
Signature of **Secretary, Assistant Secretary**
Select appropriate title

Laura Toler
Print or type Signer's name

Rev 5-17-11

Contract No. C204283
County Cumberland/Harnett

CONTRACT PERFORMANCE BOND

Bond No. 9329653

Date of Performance Bond Execution: August 27, 2019

Name of Principal Contractor: S. T. Wooten Corporation

Name of Surety: Fidelity and Deposit Company of Maryland
Zurich American Insurance Company
Attn: Surety Claims
1299 Zurich Way
Schaumburg, IL 60196-1056

Name of Contracting Body: **North Carolina Department of Transportation**

Raleigh, North Carolina

Amount of Bond: $404,254,978.00

Contract ID No.: C204283

County Name: Cumberland/Harnett

KNOW ALL MEN BY THESE PRESENTS, That we, the PRINCIPAL CONTRACTOR (hereafter, PRINCIPAL) and SURETY above named, are held and firmly bound unto the above named Contracting Body, hereinafter called the Contracting Body, in the penal sum of the amount stated above for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that whereas the principal entered into a certain contract with the Contracting Body, numbered as shown above and hereto attached:

NOW THEREFORE, if the principal shall well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term of said contract and any extensions thereof that may be granted by the Contracting Body, with or without notice to the Surety, and during the life of any guaranty required under the contract, and shall also well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of any and all duly authorized modifications of said contract that may hereafter be made, notice of which modifications to the surety being hereby waived, then this obligation to be void; otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above-bound parties have executed this instrument under their several seals on the date indicated above, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by it undersigned representative, pursuant to authority of its governing body.

Rev 5-17-11

Contract No. C204283
County Cumberland/Harnett

CONTRACT PERFORMANCE BOND

Affix Seal of Surety Company

Fidelity and Deposit Company of Maryland
Zurich American Insurance Company
Print or type Surety Company Name

By Angela M. Yount, Attorney-in-Fact
Print, stamp or type name of Attorney-in-Fact

Signature of Attorney-in-Fact

Signature of witness

Wendy E. Lahm
Print or type Signer's Name

Marsh & McLennan Agency LLC
5605 Carnegie Blvd., Suite 300
Charlotte, NC 28209
Address of Attorney-in-Fact

Rev 5-17-11

Contract No. C204283
County Cumberland/Harnett

CONTRACT PERFORMANCE BOND

CORPORATION

SIGNATURE OF CONTRACTOR (Principal)

S. T. Wooten Corporation
Full name of Corporation

Post Office Box 2408; Wilson, North Carolina 27894-2408
Address as prequalified

By: Gregory N. Nelson
Signature of **Vice President**
Select appropriate title

Gregory N. Nelson
Print or type Signer's name

Affix Corporate Seal

Attest Laura E. Toler
Signature of ~~**Secretary,**~~ **Assistant Secretary**
Select appropriate title

Laura Toler
Print or type Signer's name

ZURICH AMERICAN INSURANCE COMPANY
COLONIAL AMERICAN CASUALTY AND SURETY COMPANY
FIDELITY AND DEPOSIT COMPANY OF MARYLAND
POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS: That the ZURICH AMERICAN INSURANCE COMPANY, a corporation of the State of New York, the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, a corporation of the State of Illinois, and the FIDELITY AND DEPOSIT COMPANY OF MARYLAND a corporation of the State of Illinois (herein collectively called the "Companies"), by **ROBERT D. MURRAY, Vice President,** in pursuance of authority granted by Article V, Section 8, of the By-Laws of said Companies, which are set forth on the reverse side hereof and are hereby certified to be in full force and effect on the date hereof, do hereby nominate, constitute, and appoint **Raymond J. GARRUTO, Debra S. RITTER, Martin D. PALLAZZA, Brad W. GIBSON, Angela M. YOUNT, Jenny SNELL, H. Thomas DAWKINS, Robert C. TRESHER and Wendy E. LAHM, all of Charlotte, North Carolina, EACH** its true and lawful agent and Attorney-in-Fact, to make, execute, seal and deliver, for, and on its behalf as surety, and as its act and deed: **any and all bonds and undertakings,** and the execution of such bonds or undertakings in pursuance of these presents, shall be as binding upon said Companies, as fully and amply, to all intents and purposes, as if they had been duly executed and acknowledged by the regularly elected officers of the ZURICH AMERICAN INSURANCE COMPANY at its office in New York, New York., the regularly elected officers of the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY at its office in Owings Mills, Maryland., and the regularly elected officers of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND at its office in Owings Mills, Maryland., in their own proper persons.

The said Vice President does hereby certify that the extract set forth on the reverse side hereof is a true copy of Article V, Section 8, of the By-Laws of said Companies, and is now in force.

IN WITNESS WHEREOF, the said Vice-President has hereunto subscribed his/her names and affixed the Corporate Seals of the said **ZURICH AMERICAN INSURANCE COMPANY, COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, and FIDELITY AND DEPOSIT COMPANY OF MARYLAND,** this 15th day of August, A.D. 2019.

ATTEST:

ZURICH AMERICAN INSURANCE COMPANY
COLONIAL AMERICAN CASUALTY AND SURETY COMPANY
FIDELITY AND DEPOSIT COMPANY OF MARYLAND

By: _____
Assistant Secretary
Dawn E. Brown

_____
Vice President
Robert D. Murray

State of Maryland
County of Baltimore

On this 15th day of August, A.D. 2019, before the subscriber, a Notary Public of the State of Maryland, duly commissioned and qualified, **ROBERT D. MURRAY, Vice President, and DAWN E. BROWN, Assistant Secretary,** of the Companies, to me personally known to be the individuals and officers described in and who executed the preceding instrument, and acknowledged the execution of same, and being by me duly sworn, deposeth and saith, that he/she is the said officer of the Company aforesaid, and that the seals affixed to the preceding instrument are the Corporate Seals of said Companies, and that the said Corporate Seals and the signature as such officer were duly affixed and subscribed to the said instrument by the authority and direction of the said Corporations.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my Official Seal the day and year first above written.

_____
Constance A. Dunn, Notary Public
My Commission Expires: July 9, 2023

POA-F 177-0134B

EXTRACT FROM BY-LAWS OF THE COMPANIES

"Article V, Section 8, Attorneys-in-Fact. The Chief Executive Officer, the President, or any Executive Vice President or Vice President may, by written instrument under the attested corporate seal, appoint attorneys-in-fact with authority to execute bonds, policies, recognizances, stipulations, undertakings, or other like instruments on behalf of the Company, and may authorize any officer or any such attorney-in-fact to affix the corporate seal thereto; and may with or without cause modify of revoke any such appointment or authority at any time."

CERTIFICATE

I, the undersigned, Vice President of the ZURICH AMERICAN INSURANCE COMPANY, the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, and the FIDELITY AND DEPOSIT COMPANY OF MARYLAND, do hereby certify that the foregoing Power of Attorney is still in full force and effect on the date of this certificate; and I do further certify that Article V, Section 8, of the By-Laws of the Companies is still in force.

This Power of Attorney and Certificate may be signed by facsimile under and by authority of the following resolution of the Board of Directors of the ZURICH AMERICAN INSURANCE COMPANY at a meeting duly called and held on the 15th day of December 1998.

RESOLVED: "That the signature of the President or a Vice President and the attesting signature of a Secretary or an Assistant Secretary and the Seal of the Company may be affixed by facsimile on any Power of Attorney...Any such Power or any certificate thereof bearing such facsimile signature and seal shall be valid and binding on the Company."

This Power of Attorney and Certificate may be signed by facsimile under and by authority of the following resolution of the Board of Directors of the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY at a meeting duly called and held on the 5th day of May, 1994, and the following resolution of the Board of Directors of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND at a meeting duly called and held on the 10th day of May, 1990.

RESOLVED: "That the facsimile or mechanically reproduced seal of the company and facsimile or mechanically reproduced signature of any Vice-President, Secretary, or Assistant Secretary of the Company, whether made heretofore or hereafter, wherever appearing upon a certified copy of any power of attorney issued by the Company, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

IN TESTIMONY WHEREOF, I have hereunto subscribed my name and affixed the corporate seals of the said Companies, this 4th day of August, 2019.

Brian M Hodges

Brian M. Hodges, Vice President

TO REPORT A CLAIM WITH REGARD TO A SURETY BOND, PLEASE SUBMIT ALL REQUIRED INFORMATION TO:

Zurich American Insurance Co.
Attn: Surety Claims
1299 Zurich Way
Schaumburg, IL 60196-1056